DECLARATION FOR THE RECORD OF DECISION

SITE NAME AND LOCATION

Frontera Creek Site - Humacao, Puerto Rico

STATEMENT OF BASIS AND PURPOSE

This decision document presents the selected remedial action for the Frontera Creek Superfund Site, in Humacao, Puerto Rico, which was chosen in accordance with the requirements of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) as amended by the Superfund Amendments and Reauthorization Act of 1986 ("SARA") and the National Oil and Hazardous Substances Pollution Contingency Plan ("NCP"). This decision document summarizes the factual and legal basis for selecting the remedy for this site.

The Commonwealth of Puerto Rico Environmental Quality Board ("EQB") concurs with the selected remedy. A letter of concurrence from EQB is appended to this document.

The information supporting this remedial action decision is contained in the administrative record for this site, an index of which is appended to this document.

ASSESSMENT OF THE SITE

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action selected in this Record of Decision ("ROD"), may present an imminent and substantial threat to public health, welfare, or the environment.

DESCRIPTION OF THE SELECTED REMEDY

This action addresses the threats posed by the Site by excavating mercury contaminated sediments and soils at the Site.

The major components of the selected remedy include:

- Excavation of 370 cubic yards of mercury-contaminated sediments in the Technicon ditch.
- Excavation of 180 cubic yards of mercury-contaminated soils at the Technicon facility surroundings.
- Dewatering and containment of excavated material.
- Off-site disposal of excavated material at a RCRA Subtitle D or C waste facility.
- Pretreatment of wastewater generated from dewatering and discharge to Technicon's wastewater treatment plant, a local

POTW, or an on-site treatment plant.

- Performance of confirmatory soil sampling in the remediated areas to verify that mercury concentrations in residual, on-site materials do not exceed the remedial action objective of 35 ppm.

- Regrading and revegetating the remediated areas.

DECLARATION OF STATUTORY DETERMINATIONS

The selected remedy is protective of human health and the environment, complies with Federal and State requirements that are legally applicable or relevant and appropriate to the remedial action, and is cost effective. This remedy utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable for this site. However, because treatment of the principal threats at the site was not found to be practicable, this remedy does not satisfy the statutory preference for treatment as a principal element of the remedy. As this remedy will result in no hazardous substances remaining on-site above health-based levels, a five year review is not required.

Constantine Sidamon-Eristoff
Regional Administrator

Date 9/30/91

TABLE OF CONTENTS

DECISION SUMMARY		PAGE
I.	SITE LOCATION AND DESCRIPTION	1
II.	SITE HISTORY AND ENFORCEMENT ACTIVITIES.....	2
III.	HIGHLIGHTS OF COMMUNITY PARTICIPATION.....	4
IV.	SCOPE AND ROLE OF RESPONSE ACTION.....	4
V.	SUMMARY OF SITE CHARACTERISTICS.....	4
VI.	SUMMARY OF SITE RISKS.....	9
VII.	DESCRIPTION OF REMEDIAL ALTERNATIVES.....	12
VIII.	SUMMARY OF COMPARATIVE ANALYSIS OF ALTERNATIVES.....	17
IX.	DESCRIPTION OF THE SELECTED REMEDY.....	22
X.	STATUTORY DETERMINATIONS.....	22

ATTACHMENTS

APPENDIX A - FIGURES

APPENDIX B - TABLES

APPENDIX C - COMMONWEALTH OF PUERTO RICO ENVIRONMENTAL QUALITY BOARD LETTER OF CONCURRENCE

APPENDIX D - RESPONSIVENESS SUMMARY

APPENDIX E - ADMINISTRATIVE RECORD INDEX

DECISION SUMMARY

FRONTERA CREEK SITE

HUMACAO, PUERTO RICO

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION II

NEW YORK

I. SITE LOCATION AND DESCRIPTION

The Frontera Creek Site (the "Site") is located on the eastern coast of Puerto Rico within the Municipality of Humacao at approximately 18°9' north latitude and 65°47' west longitude. A site location map is provided as Figure 1. The Site includes Frontera Creek from east of Junquito Ward to its entry into the Caribbean Sea; the 13 industrial properties adjacent to the creek; the North, Southeast and Southwest Frontera lagoons also known as the Santa Teresa Lagoons; their associated abandoned pump stations which were used to keep the lagoons dry for agricultural purposes and the Ciudad Cristiana housing development located alongside the creek. Land use in the area surrounding the site consists of mixed residential, industrial and wildlife refuge.

The section of Frontera Creek within the study area extends for a distance of approximately three miles from Route 925 to El Morrillo, where it enters the Caribbean Sea. It is a small channelized drainage ditch that varies from 3 to 45 feet in width and from about 0.3 to 6 feet in depth. The creek channel runs past the 13 site industries, under Route 3 and then past Ciudad Cristiana before bisecting the Frontera Lagoons and intersecting the Caribbean Sea at El Morrillo.

Downstream of Route 3, in-stream flow is negligible and the creek consists primarily of stagnant pools. Except for the section from the pump station to the sea, the entire creek within the study area flows through a man-made channel, constructed prior to the 1960s to improve coastal drainage.

The creek runs between three large shallow freshwater lagoons which are currently owned by the Puerto Rico Department of Natural Resources (DNR). These lagoons, which cover an area of approximately 200 acres, are in hydraulic connection under the creek. In the early 1930s the section of Frontera Creek's channel from Route 3 to the Santa Teresa pump station was constructed and the lagoon areas were drained for agricultural purposes, including sugarcane, coconut and livestock production. When the drainage pumps located at the Santa Teresa pump station ceased operations in 1979, the coastal lagoons refilled and now support an abundant and varied aquatic wildlife community. The DNR acquired the lagoons in 1984 and the area is now a wildlife refuge.

The Mandri Canal was originally constructed to drain the wetlands north of Route 3, including the Mandri Lagoon. As shown on Figure 1, the portion of the canal within the study area is on DNR property and extends from Route 3 to the Santa Teresa pump station. This canal is approximately 20 feet wide and 20 feet deep and appears to be a healthy ecosystem as evidenced by an abundance of wildlife and species diversity. The Mandri Canal was included in the study area, since it has been alleged

that the waters of the canal are in hydraulic connection with the creek and Frontera lagoons.

According to the 1980 Census, the total population of the Municipality of Humacao was 51,402.

The Site lies within the Humacao River watershed located on the southeastern coast of Puerto Rico. Low-lying hills and small mountains of Cretaceous igneous deposits with steep slopes are found a short distance inland from the coast. These elevations comprise the borders of the Humacao River watershed. Frontera Creek runs parallel to and lies north of the Humacao River.

Frontera Creek runs approximately 3.82 miles from the hills northwest of Rio Abajo to its outlet in the Caribbean Sea. The head of the creek originates at an elevation of approximately 230 feet. The creek runs southeast 1.09 miles to Route 925 which marks the start of the coastal plain at an elevation of around 16 feet above sea level and the edge of the study area. From there it continues east 2.73 miles to the sea. Frontera Creek drains a 2,540 acre watershed into the sea at a location just north of El Morillo.

Groundwater occurs in the alluvial aquifer under water table conditions. Although the alluvial sediments do not have hydraulic characteristics generally associated with a productive aquifer, five industrial wells and one agricultural well are reportedly in use at the site. The Site is underlain by Quaternary Age alluvial deposits. These deposits consist primarily of brown and gray clay and silty clay, interbedded with brown and gray fine to coarse sand. These sediments overlie and grade into beach deposits near the coast. The alluvial deposits are underlain by the igneous bedrock.

For the purpose of this document, the Frontera Creek drainage system is defined as the waters of Frontera Creek, the Frontera lagoons and the Mandri Canal. The entire system contains extensive lagoons, mangrove stands, swamps, grasslands, coconut groves, estuaries and saltwater marshes. The entire lagoon system covers an area of about 500 acres. It is a nesting ground for the endangered West Indian whistling duck, brown pelican, as well as several other species that are considered rare in Puerto Rico, such as the ruddy duck and the pied-billed grebe.

II. SITE HISTORY AND ENFORCEMENT ACTIVITIES

Industrial wastewaters from industries within the Site were discharged into the creek from 1971 to 1981. Public concern about the site arose in 1977 following the death of thirty cows that grazed in the area. Since that time, the area has been investigated by EPA, EQB and several industries located in the vicinity. These investigations confirmed the presence of

contaminants including mercury in sediments and surface water samples.

Several industries, including Technicon Electronics, (formerly a subsidiary of Revlon, Inc.), which used mercury in its manufacturing process, previously discharged their waste water directly into Frontera Creek. The EQB fined Technicon in June 1978 for this practice. Technicon stopped its mercury discharges into Frontera Creek in 1978.

As a result of the potential threat to public health, in August 1983, the Frontera Creek Site was included on EPA's National Priorities List of hazardous waste sites.

From 1978 to 1980, a housing development, Ciudad Cristiana, was built along Frontera Creek. The community of approximately 500 families began to complain of health problems within a year after their arrival. In February 1985, the Puerto Rico Department of Health (PRDOH) sampled the blood and urine of a number of residents of the community and found elevated levels of mercury. Soil samples collected by EQB also revealed the presence of mercury. As a result of these investigations, the Governor of Puerto Rico ordered an immediate evacuation of the community.

In March 1985, at the request of PRDOH, EPA, in coordination with the Agency for Toxic Substances and Disease Registry (ATSDR), began a Focused Remedial Investigation to assess the problem of mercury contamination in Ciudad Cristiana. This investigation included sampling for mercury and lindane in soil, sediments, water biota and air. The ATSDR evaluation of the data collected during this investigation and the data previously collected by EQB concluded that mercury did not present an immediate or significant health threat to residents of Ciudad Cristiana.

In March 1988, the residents of Ciudad Cristiana submitted additional biological examination results to ATSDR for review. ATSDR examined the results of 258 blood tests, 7 urine tests and 37 hair tests. No conclusion could be made by ATSDR regarding the relationship between these mercury results and environmental contamination at the Site. Several factors may be responsible for this including other sources of mercury exposure, sample contamination and laboratory error.

On October 3, 1986, Revlon, Inc., former parent company of Technicon, entered into an Administrative Order on Consent with EPA pursuant to Section 106(a) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA). The Consent Order gave Revlon the opportunity to perform the Remedial Investigation and Feasibility Study (RI/FS) under EPA's supervision. Revlon retained Dynamac Corporation to perform the investigation. EPA's contractor NUS Corp. and EQB's contractor,

IT Corporation, provided oversight throughout the remedial investigation and collected split samples for independent testing.

III. HIGHLIGHTS OF COMMUNITY PARTICIPATION

The RI/FS Reports and the Proposed Plan for the Site were released to the public on July 24, 1991. These documents were made available at two information repositories maintained at the Humacao Town Hall and the U.S. Environmental Protection Agency Caribbean Field Office in Spanish and English. The notice of availability for these documents was published in El Nuevo Dia, a Spanish language newspaper of major circulation, on July 24, 1991 and in the San Juan Star, an English language newspaper of major circulation, on July 26, 1991. The public comment period was from July 24, 1991 through September 23, 1991. In addition, a public meeting was held on August 8, 1991 to present the results of the RI/FS and the preferred alternative as presented in the Proposed Plan for the Site. This meeting was announced to the affected communities by flyers distribution and soundtruck announcements. At this meeting, representatives of the EPA presented the Proposed Plan regarding remediation of the Site and later answered questions and responded to community comments concerning such Plan and other details related to the RI/FS reports. Responses to these comments are included in the Responsiveness Summary, which is appended to this ROD.

IV. SCOPE AND ROLE OF RESPONSE ACTION

This ROD addresses all of the Site mercury contamination in sediments and soils on the Technicon property. It is the only operable unit planned for this Site. The response action will reduce mercury concentrations in these media to levels protective of human health and the environment.

V. SUMMARY OF SITE CHARACTERISTICS

Based on sampling and analyses during the RI/FS, EPA has identified mercury and methylene chloride as the only contaminants of concern at the Frontera Creek Site.

The RI data indicate that elevated concentrations of mercury occur primarily in surface soils at Technicon at locations historically associated with the storage, use or discharge of mercury-containing compounds, and in sediments in the Technicon ditch, which historically received process and sanitary wastewaters from Technicon's on-site treatment plant. The levels range from non-detected to 535 ppm in these areas.

The source of the methylene chloride is believed to be limited to

fugitive and stack air releases from the Squibb facility located within the Site. It was detected in levels from 180 ppb to 840 ppb. EPA is currently seeking an agreement with Squibb to reduce the emissions to levels protective of human health and the environment. This agreement is being sought under the authority of the Clean Air Act. Therefore, the remedy selection for the Site is driven by the mercury contamination.

Affected Media

This section summarizes the quantities and types of contamination found in each area of the Site under consideration.

Technicon Soils

Table 1 provides a summary of the mercury analytical data from the RI soil sampling program. The average mercury concentration in soils is approximately 4 ppm. The highest mercury concentration is 535 ppm, which was located immediately adjacent to a small break in a concrete berm surrounding the former raw materials storage area.

The contaminated area has been defined as 40 feet by 40 feet in size. Utilizing an average depth of 3 feet, the volume of soils contaminated above 35 ppm, which is the cleanup goal as determined by the Risk Assessment, is 180 cubic yards. Figure 2 identifies this area as area 3.

Technicon Ditch Sediments

Table 2 provides a summary of the mercury analytical data from the RI Technicon ditch sediments sampling program. Average mercury concentrations in the Technicon ditch are 6 to 7 ppm. The highest concentrations were 43.2 and 88.5 ppm. In almost all cases, at sampling locations at which shallow (0"-12") and deep (12" - 24") samples were taken, mercury concentrations decreased substantially with increased depth.

Based on the available data, two areas exist within the Technicon ditch that potentially contain sediment concentrations above the remedial action objective of 35 ppm of mercury. Area 1 consists of approximately 200 feet of the Technicon ditch. Utilizing an average sediment depth of two feet and a average cross section of 15 feet, the total volume of sediments potentially contaminated above 35 ppm is approximately 220 cubic yards. Area 2 consists of approximately 100 feet of the Technicon ditch. Utilizing an average sediment depth of two feet and average cross section of 20 feet, the total potential volume of contaminated sediments above 35 ppm is approximately 150 cubic yards. Figure 3 identifies these areas.

Unaffected Media

Ciudad Cristiana Surface Soils

As summarized in Table 3, mercury concentrations in soil samples collected from Cuidad Cristiana as part of the surface soil sampling program ranged from 0 to 0.312 ppm with an average concentration of 0.091 ppm. Mercury concentrations in surface soils collected as part of the test boring program ranged from 0 to 0.836 ppm with an average concentration of 0.148 ppm. At 63 of the 147 locations where samples were collected, mercury was either not detected or the concentrations were below the Minimum Detection Level (MDL) (0.080 ppm).

Soil mercury concentrations detected at Ciudad Cristiana were all within the range of values reported to occur naturally in soils.

The results of the sampling for hazardous substances in Ciudad Cristiana soils revealed that there is no evidence to suggest a widespread past or present release of Hazardous Substance List (HSL) chemicals to soils.

Ciudad Cristiana Subsurface Soils

A total of 71 subsurface soil samples were collected for mercury analysis as part of the subsurface soil sampling program at Ciudad Cristiana. Results of these analyses are presented in Table 4.

All but five of the 71 subsurface soil samples collected from the Cristiana test borings had mercury concentrations either below the MDL (0.080 ppm) or contained no mercury. The highest detected value was 0.236 ppm.

The subsurface investigations indicated that mercury concentrations in the fill and alluvial sediments underlying Ciudad Cristiana are also within background ranges. Moreover, the continuous lithologic monitoring conducted during the installation of the Cristiana test boring did not identify the presence of dredge spoils in the fill underlying Cristiana.

Of the 71 subsurface soil samples, 11 samples from 11 discrete depth intervals were analyzed for HSL parameters. A summary of the results are presented in Table 5. The results revealed that there is no evidence of a source of HSL compounds in either the fill or alluvial sediments underlying Ciudad Cristiana.

Groundwater

Groundwater samples from the study area were tested for total and inorganic mercury. All samples analyzed were below the 2 ug/l federal Safe Drinking Water Act Maximum Contaminant Level (MCL) for mercury with the highest value reported as 0.33 ug/l.

The data indicate that there is no significant source of mercury contamination to groundwater from either the industrial area or Ciudad Cristiana. Results are presented in Table 6.

Potable Water

Two potable water samples were collected from a Cristiana hydrant and tested for HSL parameters. Results for mercury are presented in Table 7. HSL data is provided in Table 8. All HSL parameters tested showed concentrations below all relevant federal MCLs.

Surface Water

Quantifiable concentrations of mercury were detected in only three of twenty unfiltered surface water samples collected in the study area. This pattern has been observed historically in Frontera Creek surface waters, with the highest concentrations typically observed in the vicinity of the Technicon ditch.

The highest observed concentration was 0.86 ug/l and was below the P.R. Water Quality Standard of 1 ug/l. Results are summarized in Table 9.

With respect to HSL compounds, the known potential sources of HSL chemicals within the study area include each of the site industries, the PRASA wastewater treatment plants at Cristiana and Villa Palmira, the PRASA pumping station at Ciudad Cristiana, and the broken sewer pipeline at Cristiana. All of these potential sources of HSL chemicals historically resulted in the discharge of wastewaters to Frontera Creek, either directly or via discharges to the Humacao Industrial Park Water Treatment Plant (HIPWTP).

Several volatile organic compounds, including acetone, methylene chloride and methyl isobutyl ketone were detected in Frontera Creek surface water samples at concentrations in excess of 1,000 ug/l in an area adjacent to the Squibb facility. Based on the available data on reported chemical usage and the results of the industrial soil sampling program, these results may be due to a point source discharge from Squibb. With respect to inorganic HSL compounds, the surface water data indicate above background concentrations of chromium, copper, lead, iron, aluminum, nickel and vanadium. It is likely that these peak values are attributable to entrained sediment particles in the unfiltered surface water sample. Above background concentrations of zinc, chromium, lead, nickel, potassium and sodium were also found in the water adjacent to a broken sewer line fixed by PRASA in 1990. Table 10 provides a summary of average concentrations of HSL Compounds detected at the Creek.

In general it appears that potentially elevated concentrations of inorganic HSLs in surface water occur only sporadically and are

associated with the broken sewer line and the point source discharge.

Sediments

Sediment samples were collected from depositional areas along Frontera Creek, Frontera Lagoons, Mandri Canal and Squibb ditch. Samples were analyzed for mercury and a limited number for HSLs. Mercury results are summarized in Tables 111, 112, 113. In Frontera Creek, the highest mercury concentration detected was 2.9 ppm with average concentrations in upstream, midstream and downstream portions of the Creek estimated at 0.091 ppm, 0.505 ppm and 0.330 respectively. Approximately 90% of the samples from the Creek had less than 1 ppm of mercury. Lower concentrations were found in samples from the Frontera Lagoons. Mercury was not detected in the two samples collected from the Mandri Canal.

With respect to HSLs, methyl chloride, methylene chloride, acetone, carbon disulfide and methyl ethyl ketone were the only volatile organic compounds detected above background concentrations in sediment. The highest concentrations of these compounds were found in one lagoon sample. The highest concentrations at the Creek were detected far downstream of the most likely sources of these chemicals, which are various industries within the study area. Furthermore, the physical and chemical properties of these volatile organic compounds are such that these same compounds should also be present in surface water, which they are not, at least at the locations with the highest alleged sediment concentrations.

Average and peak concentrations for inorganic HSLs found at the Creek were comparable to background concentrations.
A summary of the HSL data is provided in Table 12

Air

Mercury concentrations measured in air within the study area were below the National Emission Standard for Hazardous Air Pollutants (NESHAPS) of 1 ug/m^3 which represents an acceptable risk level of mercury in the air. Also, results were below the Threshold Limit Value-Time Weighted Average (TWA) value for mercury vapor of 0.05 mg/m^3. This represents the TWA concentration for a normal 8-hour workday to which workers may be exposed without adverse effects.

Air samples collected for the analysis of volatile organic compounds showed the presence of methylene chloride. The highest concentrations of methylene chloride (840 ppb) were detected along Technicon-Squibb fence lines. A summary of the air data is presented in Table 13.

Biota

Analytical data from the biota tissue samples indicate that there is no evidence of significant mercury contamination in flora or fauna at the site. Mercury concentrations in all samples were below the Food and Drug Administration level of 1 ppm.

The analytical results for the other HSL parameters indicate that biota are not being impacted by the site. Positive HSL analytical results were comparable to background samples. Results for the biota samples are presented in Table 14 through Table 15.

VI. SUMMARY OF SITE RISKS

EPA conducted a Risk Assessment of the "no-action" alternative to evaluate the potential risks to human health and the environment associated with the Site in its current state and with respect to future land use. The contaminants of concern were identified based on their frequency of detection, degree of toxicity, detection in various media, mobility and prevalence in the environment. These chemicals are listed in Table 16.

The potential exposure routes identified and evaluated in the Risk Assessment under current and future land-use scenarios are presented in Table 17.

The pathways evaluated include:

- exposure to mercury from dermal contact of contaminated soils and sediments at the Technicon facility within the Site.

- inhalation exposure to methylene chloride released to the air by stack and/or fugitive air emissions.

The potentially exposed populations under current land use are workers at the Technicon facility and local residents. Potentially exposed populations under future land use include workers and future local residents (adults and children).

Under current EPA guidelines, the likelihood of carcinogenic (cancer causing) and noncarcinogenic effects due to exposure to site chemicals are considered separately. It was assumed that the toxic effects of the site-related chemicals would be additive. Thus, carcinogenic and noncarcinogenic risks associated with exposures to individuals were summed to indicate the potential risks associated with mixtures of potential carcinogens and non-carcinogens, respectively.

Noncarcinogenic risks were assessed using a hazard index ("HI") approach, based on a comparison of expected contaminant intakes

and safe levels of intake (Reference Doses). Reference doses ("RfDs") have been developed by EPA for indicating the potential for adverse health effects. RFDs, which are expressed in units of milligram per killogram per day (mg/kg-day), are estimates of daily exposure levels for humans which are thought to be safe over a lifetime (including sensitive individuals). Estimated intakes of chemicals from environmental media (e.g., the amount of a chemical ingested from contaminated drinking water) are compared with the RfD to derive the hazard quotient (HQ) for the contaminant in the particular medium. The HI is obtained by adding the hazard quotients (HQs) for all compounds across all media. A HI greater than 1 indicates that potential exists for noncarcinogenic health effects to occur as a result of site-related exposures. The HI provides a useful reference point for gauging the potential significance of multiple contaminant exposures within a single medium or across media. If the HI is greater than unity as a consequence of summing several hazard quotients (HQ) of similar value, it would be appropriate to segregate the compounds by effect and by mechanism of action to derive separate hazard indices for each group. The RdDs for the contaminants are presented in Table 18 and teh HIs are in Table 19.

The HI for potential exposure to adults from noncarcinogenic site-related mercury via dermal contact with soils (8.1) and volatile organic compounds (VOC) via air inhalation (3.3) are above one, suggesting that adverse noncarcinogenic effects are likely to occur at the Site. Furthermore, the HIs for a child under a future residential exposure exceeded 1 (i.e., the mercury HI was 3.6,1 the VOC HQ was 35).

A concentration of 35 ppm for mercury has been established as the clean up level for contaminated soils and sediments at the Technicon facility. This clean-up level will result in a HI of one. Therefore, a concentration of 35 ppm for mercury will be protective of human health under all identified exposure routes.

Potential carcinogenic risks were evaluated using the cancer slope factors developed by the EPA for the compounds of concern. Cancer slope factors ("SFs") have been developed by EPA's Carcinogen Risk Assessment Verification Endeavor (CRAVE) for estimating excess lifetime cancer risks associated with exposure to potentially carcinogenic chemicals. SFs, which are expressed in units of (mg/kg-day), are multiplied by the estimated intake of a potential carcinogen, in mg/kg-day, to generate an upper-bound estimate of the excess lifetime cancer risk associated with exposure to the compound at that intake level. The term "upper bound" reflects the conservative estimate of the risks calculated from the SF. Use of this approach makes the underestimation of the risk highly unlikely. The available SFs for the contaminants of concern are listed in Table 20 and the cancer risk levels are

presented in Table 21.

For known or suspected carcinogens, the USEPA considers excess upper bound individual lifetime cancer risks of between 10^{-4} to 10^{-6} to be acceptable. This level indicates that an individual has not greater than a one in ten thousand to one in a million chance of developing cancer as a result of site-related exposure to a carcinogen over a 70-year period under specific exposure conditions at the Site. The cumulative upper bound risk for adults for all carcinogens at the Site is 1.2×10^{-3} (Cristiana and local residents) under current land use scenario and 2.0×10^{-3} under future land use scenario. The cumulative upper bound risk for children from methylene chloride at the Site under future land use scenario is 1.1×10^{-3}.

Uncertainties

The procedures and inputs used to assess risks in this evaluation, as in all such assessments, are subject to a wide variety of uncertainties. In general, the main sources of uncertainty include:

- environmental chemistry sampling and analysis
- environmental parameter measurement
- fate and transport modeling
- exposure parameter estimation
- toxicological data

Uncertainty in environmental sampling arises in part from the potentially uneven distribution of chemicals in the media sampled. Consequently, there is significant uncertainty as to the actual levels present. Environmental chemistry analysis uncertainty can stem from several sources including the errors inherent in the analytical methods and characteristics of the matrix being sampled.

Uncertainties in the exposure assessment are related to estimates of how often an individual would actually come in contact with the chemicals of concern, the period of time over which such exposure would occur, and in the models used to estimate the concentrations of the chemicals of concern at the point of exposure.

Uncertainties in toxicological data occur in extrapolating both from animals to humans and from high to low doses of exposure, as well as from the difficulties in assessing the toxicity of a mixture of chemicals. The uncertainties are addressed by making conservative assumptions concerning risk and exposure parameters

throughout the assessment. As a result, the Risk Assessment provides upper bound estimates of the risks to populations near the Site, and is highly unlikely to underestimate actual risks related to the Site.

Actual or threatened releases of hazardous substances from the Site, if not addressed by implementing the response action selected in this ROD, may present an imminent and substantial endangerment to public health, welfare, or the environment.

Environmental Evaluation

A comprehensive and qualitative environmental assessment was performed to compare species diversity and abundance in the Frontera Creek drainages with two control locations.

In general, the Frontera lagoons and the Mandri Canal appear to represent thriving ecosystems as measured quantitatively by species diversity and abundance, with healthy populations of fish, crabs, and water birds compared to control sites. From this perspective, no negative impacts to these ecosystems associated with potential hazardous substance releases to Frontera Creek were detected.

By comparison, Frontera Creek itself is clearly impoverished in the number and diversity of species it supports. However, the general lack of species diversity and abundance in the creek appears to be attributed to the prevailing low or intermittent flow conditions, and more importantly to the very low dissolved oxygen levels recorded in many parts of the creek. Since most, if not all, industrial discharges to Frontera Creek have been stopped for many years, these dissolved oxygen levels are not likely related to industrial discharges. It is possible that the low oxygen levels may be attributed in part to the raw sewage observed flowing into the creek at various times and locations from the observed PRASA broken sewer line and Ciudad Cristiana pump station which was intermittently by-passed allowing sewer flow to enter the creek. The broken sewer line was fixed by PRASA in 1991.

VII. DESCRIPTION OF REMEDIAL ALTERNATIVES

The goal of the remedial action is to prevent the potential impacts caused by exposure to mercury from dermal contact with contaminated sediments and soils within the Technicon facility. This includes two areas in the Technicon ditch totalling approximately 370 cubic yards of sediment and one area at Technicon totalling approximately 180 cubic yards of soil. These are the only areas throughout the Site with mercury concentrations exceeding the cleanup level of 35 ppm of mercury.

The FS focused on the no-action alternative, excavation-removal alternatives, treatment technologies and a closure alternative for detailed evaluation. Estimated costs and implementation times are summarized here from the FS. The time to implement refers only to the actual construction time and excludes the time needed to design the remedy and negotiate with the Potentially Responsible Parties.

Alternative 1: No Action

CERCLA requires that the "No Action" alternative be considered at every site to provide a baseline of comparison among other alternatives. Under the No Action alternative, the Site conditions would essentially remain unchanged as no remedial action would be implemented. The costs for this alternative are as follows:

Capital Cost:	**$0**
Annual O&M:	**$0**
Present Worth:	**$0**

However, because the Risk Assessment identified an unacceptable current risk under existing conditions for mercury, some remedial action is necessary to reduce the risk.

In accordance with Section 121 of CERCLA, remedial actions that leave hazardous substances at a Site above health-based levels are to be reviewed at least once every five years to assure that the remedial action is protective of human health and the environment. The No Action alternative would have to be reviewed by EPA at least once every five years.

Alternative 2: Limited Action

Under this approach, no remedial action would be taken to remove, reduce, or contain the existing contamination in Technicon soils and sediments. However, measures such as deed and access restrictions would be implemented in the area in an effort to prevent trespassing and minimize future intrusive land uses. In addition, a monitoring program would be implemented to assess changes in conditions over time and warn of threats to human health and the environment. The monitoring program will include soil, sediment and air sampling within the Technicon facility and sediment sampling at Frontera Creek. For this alternative, a five year review would be conducted. The time to obtain deed and access restrictions is 10 months. The costs for this alternative over a 30-year time period are as follows:

Capital Cost:	**$124,000**
Annual O&M:	**$ 9,000**
Present Worth:	**$209,000**

Alternative 3: Excavation, Removal, and Off-Site Disposal without Treatment

Under this alternative, approximately 550 cubic yards of soils and sediments (370 cubic yards from the Technicon ditch and 180 cubic yards from Technicon soils) with concentrations of mercury above 35 ppm would be excavated for off-site disposal. The excavated materials would be dewatered, contained, and transported to a RCRA Subtitle C or D waste facility for disposal. The materials were tested for TCLP toxicity and were found not to be a RCRA characteristic waste. However, some Subtitle D facilities may not accept these materials and therefore Subtitle D and Subtitle C facilities are included in the cost evaluation. If necessary, a staging area would be constructed to provide for temporary storage of containers at the Site.

Confirmatory soil sampling in the remediated areas would be performed to verify that mercury concentrations in remaining materials did not exceed the remedial objective of 35 ppm. The remediated areas would subsequently be filled and revegetated. The time to implement (excavate and dispose) this alternative is 12 months, not including the time for design. The costs for this alternative are as follows:

Capital Cost	**$562,000[1] to $730,000[2]**
Annual O&M:	**$0**
Present Worth:	**$562,000[1] to $730,000[2]**

[1] **If disposed of as a solid waste**
[2] **If disposed of as a hazardous waste**

Alternative 4: Excavation, Removal, and Off-Site Disposal with Treatment

This alternative is a variation of the preceding alternative.

All excavated materials would be physically treated with a stabilizing agent in order to convert the waste to a more chemically stable form. Such treatment would occur after shipment to a disposal facility. Although the total volume of the treated matrix would increase, fixation would improve the handling characteristics of the waste and reduce the mobility and toxicity of the mercury. Appropriate confirmatory sampling and closure procedures would be followed under this alternative. The time to implement (excavate, treat and dispose) this alternative is 15 months, not including the time for design. The costs for this alternative are as follows:

Capital Cost:	**$722,000[1] to $1,013,000[2]**
Annual O&M:	**$0**

Present Worth: **$722,000[1] to $1,013,000[2]**

[1] **If disposed of as a solid waste**
[2] **If disposed of as a hazardous waste**

Alternative 5: Excavation Followed by On-Site Solidification/Fixation and Disposal

This alternative consists of excavation followed by physical fixation and solidification of the contaminated soils and sediments. Such treatment would reduce the potential for erosion and release of mercury from the contaminated materials. More specifically, approximately 550 cubic yards of contaminated materials with mercury concentrations above 35 ppm would be excavated, mixed with a fixation/solidification agent and blended into solid waste blocks. The solid blocks would be disposed of on-site at a designated area. A low permeability soil would be placed on top of the disposal area to minimize infiltration. The disposal and excavated areas would be revegetated to prevent erosion. Land use restrictions would be required for this alternative to preserve the integrity of the designated area and prevent intrusive (construction) activities. For this alternative, a five year review would be conducted. The time to implement (excavate, fix and dispose) this alternative is 16 months, not including time for design. The costs of this alternative are as follows:

Capital Cost:	**$461,000**
Annual O&M:	**$0**
Present Worth:	**$461,000**

Alternative 6: Excavation Followed by On-Site Thermal Treatment and Disposal

This alternative involves the thermal treatment of contaminated soils and sediments. Approximately 550 cubic yards of material with mercury concentrations above 35 ppm would be excavated, dewatered, and fed to a thermal unit designed to apply sufficient heat to volatilize and drive off mercury.

Mercury has a relatively low boiling point (375 C) and most of its compounds decompose into metallic mercury readily upon heating. The mercury vapors would then be condensed, recovered and recycled. There is a range of temperatures at which thermal treatment systems could be operated. At the high end of the range is incineration. Since the mercury materials at the Site are highly adsorbed to the soils and sediments (bound in a matrix configuration) the high end of the range would be the temperature necessary for the mercury to be separated from the materials.

The optimal operating temperature for the thermal treatment system, as well as the condensation, recovery and recycling processes for the mercury vapors, would be decided during design. Complex technical issues during the design phase relate principally to the condenser operation and off-gas treatment. Wastewater generated from dewatering would be pretreated prior to discharge to a wastewater treatment plant, which would most likely be Technicon's. The residue from the process would be backfilled in the excavated area. A low permeability soil cover would be placed on top and the area revegetated.

Since the source of contamination would be treated and the residuals left on-site would be below health-based levels, no land use restrictions would be necessary. The time to implement (complete excavation and treatment) this alternative is 16 months, not including the time for design. The costs for this alternative are as follows:

Capital Cost:	**$1,540,000**
Annual O&M:	**$0**
Present Worth:	**$1,540,000**

Alternative 7: On-Site Closure without Treatment

Under this alternative, the areas with contaminated sediments and soils would be contained via appropriate engineering controls designed to reduce the potential for direct contact with contaminated materials and to minimize infiltration, migration, and erosion of the contaminated media. Under this alternative, the ditch would be diverted around the area with contaminated sediments and vegetation would be removed. This will prevent the migration of contaminated sediments into the creek by surface water erosion.

Upon completion of the above, a geotextile cap (synthetic impermeable fabric) would be installed over the exposed, contaminated materials in the ditch to provide additional bearing capacity and to minimize subsidence and/or settlement. Subsequently, the ditch would be backfilled with a low permeability single layer clay liner approximately two feet in thickness. The cap would be constructed in 6" layers and compacted to 95 percent density to achieve a permeability of 10^{-7} cm/sec or less.

In order to mitigate damage to the cap due to wet/dry cycles and to prevent erosion, the cap would be covered with a 6" topsoil layer and revegetated. Adequate drainage controls would be provided along the edges of the cap to collect and direct the surface runoff to Frontera Creek. Similar procedures would be implemented to remediate the Technicon soils.

Deed and access restrictions would be implemented in the capped areas to prevent trespassing and minimize future intrusive land uses. The time to implement (complete construction) this alternative is 12 months, not including the time for design. For this alternative, a five year review would be conducted. The costs for this alternative are as follows:

Capital Cost:	**$319,000**
Annual O&M:	**$13,000**
Present Worth:	**$442,000**

VIII. SUMMARY OF THE COMPARATIVE ANALYSIS OF ALTERNATIVES

In accordance with the National Contingency Plan (NCP), a detailed analysis of each alternative was performed. The purpose of the detailed analysis was to objectively assess the alternatives with respect to nine evaluation criteria that encompass statutory requirements and include other gauges of the overall feasibility and acceptability of remedial alternatives. The analysis was comprised of an individual assessment of the alternatives against each criterion and a comparative analysis designed to determine the relative performance of the alternatives and identify major trade-offs, that is, relative advantages and disadvantages, among them.

The nine evaluation criteria against which the alternatives were evaluated are as follows:

Threshold Criteria - The first two criteria must be satisfied in order for an alternative to be eligible for selection.

1. **Overall Protection of Human Health and the Environment** addresses whether a remedy provides adequate protection and describes how risks posed through each pathway are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.

2. **Compliance with Applicable, or Relevant and Appropriate Requirements (ARARs)** addresses whether or not a remedial alternative would meet all of the applicable or relevant and appropriate requirements of other Federal and State environmental statutes and/or satisfy the criteria for invoking a waiver as set forth in Section 121(a) of CERCLA.

Primary Balancing Criteria - The next five "primary balancing criteria" are to be used to weigh major trade-offs among the different hazardous waste management strategies.

3. **Long-term Effectiveness and Permanence** focuses on any residual risk remaining at the Site after the completion of the remedial action. This analysis includes consideration of the degree of threat posed by the hazardous substances

remaining at the Site and the adequacy of any controls (for example, engineering and institutional) used to manage the hazardous substances remaining at the Site.

4. **Reduction of Toxicity, Mobility, or Volume Through Treatment** is the anticipated performance of the treatment technologies a particular remedy may employ.

5. **Short-term Effectiveness** addresses the effects of the alternative during the construction and implementation phase until the remedial response objectives are met. It also considers the time required to implement the remedy.

6. **Implementability** addresses the technical and administrative feasibility of implementing an alternative including the availability of various services and materials required during its implementation.

7. **Cost** includes estimated capital, and operation and maintenance costs, both translated to a present-worth basis. The detailed analysis evaluates and compares the cost of the respective alternatives, but draws no conclusions as to the cost effectiveness of the alternatives. Cost effectiveness is determined in the remedy selection phase, when cost is considered along with the other balancing criteria.

Modifying Criteria - The final two criteria are regarded as "modifying criteria", and are to be taken into account after the above criteria have been evaluated. They are generally to be focused upon after public comment is received.

8. **State Acceptance** reflects the statutory requirement to provide for substantial and meaningful State and Tribal involvement.

9. **Community Acceptance** refers to the community's comments on the remedial alternatives under consideration. Comments received during the public comment period, and the EPA's responses to those comments, are summarized in the Responsiveness Summary which is appended to this ROD.

The following is a summary of the comparison of each alternative's strengths and weaknesses with respect to the nine evaluation criteria.

Overall Protection of Human Health and the Environment

With the exception of Alternative 1 (No Action), and Alternative 2, all alternatives described in this ROD are protective of public health and the environment. Alternative 2 (Limited

Action) is not likely to protect human health and the environment because institutional controls would not ensure that people would not come in contact with the contaminated soils and sediments. Alternatives 3, 4, 5, 6 and 7 would either eliminate or control the source of contamination at the Site to provide overall protection of human health and the environment. Therefore, Alternatives 1 and 2 will not be discussed further.

Compliance with ARARs

The chemical, action, and location-specific requirements are provided in Table 22. However, because the remedial action is limited to the Technicon ditch and facility, which do not have any sensitive environments within this area, there are no location-specific ARARs for this remedial action. As noted in Table 22, there are no chemical-specific ARARs available for mercury-contaminated soils or sediments. Typically, if such an ARAR were available, it would establish the acceptable maximum concentrations of mercury in soils and sediments.

In cases where chemical-specific ARARs are unavailable, CERCLA requires the completion of a site-specific Risk Assessment to determine concentrations of contaminants in media of concern that would be protective of public health and the environment. Accordingly, a baseline Risk Assessment was performed for the Frontera Creek Site and remedial objectives were established for mercury in soils and sediments. Alternatives 3 through 7 attain the remedial action objective of insuring no exposures to mercury in soils and sediments in excess of 35 ppm.

Potential action-specific ARARs for the various alternatives are also discussed in Section 3 of the Feasibility Study Report. Alternatives 3 and 4, incorporating off-site disposal, would be implemented so as to comply with all applicable RCRA requirements. Alternatives 5, 6, and 7, which include on-site remedial actions, would have to be designed and implemented in accordance with the substantive requirements of any otherwise applicable permits such as for air emissions.

Long-Term Effectiveness and Permanence

Alternatives 3 and 4, which involve the excavation and off-site disposal of contaminated materials, offer the highest degree of long-term effectiveness and permanence by removing the mercury from the Site down to acceptable concentrations. However, the extra long-term effectiveness and permanence that Alternatve 4 would provide is not necessary because disposal in a permitted landfill would be more than adequate. Any potential threats to human health and the environment will be eliminated. These remedial actions would provide for unrestricted land use and no exposure in the area. Under these alternatives, no long-term monitoring would be required.

Alternative 5 involves the solidification and redeposition of contaminated soils. Although this is an effective treatment for metals, contaminants will remain on site and the time period associated with the long-term effectiveness of this alternative is uncertain since any future intrusive activity in the disposal area may originate a release. Therefore this Alternative has less long-term effectiveness than the full off-site removal or total destruction of all contaminated soils. Alternative 6 uses a treatment technology that is more effective in the long term because the mercury is permanently removed from the soil matrix. Alternative 7, on-site disposal without treatment would not implement any permanent treatment technology and is less effective in the long-term than treatment or off-site disposal in a permitted facility. Alternative 7 requires long-term maintenance of the cap to ensure long-term protection of human health and the environment.

Reduction of Toxicity, Mobility, and Volume Through Treatment

Only Alternative 6 uses a treatment technology. Alternative 3 would reduce the mobility without treatment by removing the contaminated soils from the Site, but would not reduce the toxicity or volume. Alternatives 4 and 5 would reduce the toxicity and mobility but would increase the volume by the addition of a stabilization agent. If the mercury can be effectively removed from the vapor phase, Alternative 6 would best meet the criterion by reducing the toxicity, volume, and mobility. Alternative 7 would only reduce the mobility of the contaminated sediments and soils.

Short-Term Effectiveness

In general, effective alternatives which can be implemented quickly with little risk to human health and the environment are favored under this criterion. All of the alternatives, with the exception of Alternative 6, would take approximately the same amount of time to implement. Alternative 6 would require an extensive treatability study to develop the off-gas treatment to remove the mercury from the gas, thereby increasing the time to design this remedy. Furthermore, the high temperature treatment may increase the short term risks to public health and the environment due to the possible hazard of releasing mercury vapor into the atmosphere. Alternatives 4 and 5 would also require a treatability study during design, but this technology is more proven, thus the time frame would be shorter than for Alternative 6.

Alternatives 3 through 7 include a series of activities that involve excavation, handling, storage, off-site transportation, and/or treatment of contaminated media. Consequently, there is potential for unfavorable short-term health and environmental impacts. However, these impacts can be mitigated by implementing

Site specific health and safety plans, including the use of personal protective equipment during implementation. In addition, since Alternatives 3 and 4 involve the off-site transfer and disposal of contaminated media, there would be an increase in traffic in the area. These issues could be adequately mitigated by developing and implementing appropriate contingency procedures.

Implementablity

Alternatives 3 and 4 involve the off-site disposal of contaminated material. These alternatives may pose implementation problems as a permitted Subtitle D or C facility would have to be located to accept the material. The treatment components of Alternatives 4 and 5 use standard technologies and are implementable from an engineering perspective. However, Alternative 5 would pose some implementation problems because the addition of a fixation/solidification agent would increase the volume of the contaminated material to be disposed of at the Site. Alternative 6 is the least implementable alternative because it is uncertain if the mercury can be condensed and recovered due to the low levels of mercury contamination found at the Site.

Cost

These costs are reported on the basis of net present worth so that all alternatives can be compared on the same basis. These cost estimates are intended to provide a range of accuracy to within a +50% to -30% and may change as a result of design and construction modifications. The least costly alternative is Alternative 2, limited action, with a present worth cost of $209,000. ALternative 7, on-site closure without treatment is the next least costly alternative with a present worth cost of $442,000. Alternative 6, excavation followed by on-site thermal desorption and disposal is the most costly alternative with a present worth cost of $1,540,000.

State Acceptance

The Commonwealth of Puerto Rico Environmental Quality Board concurs with the selected remedy.

Community Acceptance

All comments submitted during the public comment period were evaluated and are addressed in the attached Responsiveness Summary. In general, the community did not support the remedy because it did not include a remedial action for the soils located at the Ciudad Cristiana housing development.

IX. DESCRIPTION OF THE SELECTED REMEDY

Based on the results of the RI/FS Reports and after careful consideration of all reasonable alternatives, EPA recommends Alternative 3 as the preferred choice for addressing the contamination of the Technicon soils and sediments. This alternative involves:

1) Excavation of 370 cubic yards of mercury-contaminated sediments in the Technicon ditch.

2) Excavation of 180 cubic yards of mercury-contaminated soils in the Technicon facility surroundings.

3) Dewatering and containment of excavated material.

4) Off-site disposal of excavated material at a RCRA Subtitle D or C waste facility.

5) Pretreatment of wastewater generated from dewatering and discharge to Technicon's wastewater treatment plant, a local POTW, or an on-Site treatment plant.

6) Performance of confirmatory soil sampling in the remediated areas to verify that mercury concentrations in residual on-site materials do not exceed the remedial action objective of 35ppm.

7) Regrading and revegetating the remediated areas.

X. STATUTORY DETERMINATIONS

1. Protection of Human Health and the Environment

The selected remedy protects human health and the environment by removing contaminated soils and sediments and eliminating the risk for exposure. This alternative will attain the remedial action objective of insuring no exposures to mercury in soils and sediments in excess of 35 ppm and will comply with all RCRA applicable requirements for off-site disposal.

2. Compliance with Applicable on Relevant and Appropriate Requirements of Environmental Laws

A list of ARARs for the selected remedy is presented in Table 23.

Since the remedial action is limited to the Technicon ditch and facility, which do not have any sensitive environments within this area, there are no location-specific ARARs for this remedial action. Also, there are no chemical-specific ARARs available for

mercury-contaminated soils or sediments. Remedial objectives were established for mercury in soils and sediments based on a site specific Risk Assessment for the Site insuring no exposures to mercury in soils and sediments in excess of 35 ppm.

The off-site disposal will be implemented as to comply with all applicable RCRA requirements.

3. Cost Effectiveness

The selected remedy is cost effective because it has been demonstrated to provide overall effectiveness proportional to its costs. This alternative involves a minimal cost due to the relatively small amount of contaminated soils and sediments needed to be excavated and disposal of.

4. Utilization of Permanent Solutions and Alternative Treatment Technologies to the Maximum Extent Practicable

EPA and the Commonwealth of Puerto Rico have determined that the selected remedy represents the maximum extent to which permanent solutions and treatment technologies can be utilized in a cost effective manner for the remediation of the contaminated soils and sediments at the Technicon facility within the Site. Due to the minimal amount (550 yds^3) of contaminated soils and sediments at the Site, treatment technologies such as thermal desorption are impractical because of their very high cost. Furthermore, the condensation operation of mercury off gases resulting from thermal desorption represents a complex technical issue that would require considerable time and effort during the design phase. Solidification and disposal in a permitted landfill would not provide any more protection than disposal in a permitted landfill without solidification. Therefore, it would not be cost effective to provide this type of treatment before disposal.

The critical decisional role was given to the five balancing criteria of "long-term effectiveness and permanence", "short-term effectiveness", "implementability", "cost" and "reduction of toxicity, mobility, or volume." The balancing criteria are summarized below to assess their collective impacts on the remedy selection process. First, the selected remedy offers the highest degree of long-term effectiveness and permanence by removing the mercury from the Site to acceptable concentrations at a relatively minimal cost. Regarding "short-term effectiveness", the selected remedy presents minor problems by increasing traffic in the area, but that can be adequately mitigated by developing and implementing appropriate contingency procedures. Other options such as thermal desorption increase the short-term risks to public health and the environment due to the possible hazard of releasing mercury vapor into the atmosphere. In terms of "implementability", the selected remedy may pose implementation

problems as a permitted Subtitle D or C facility would have to be located to accept the material. Other options such as thermal desorption is the least implementable, since it is uncertain if the mercury can be condensed and recovered at the low levels of mercury contamination found at the Site. The "reduction of toxicity, mobility or volume" will be achieved to some degree by, without treatment, excavating the contaminated soils and sediments at the Site, therefore eliminating the mobility of the waste.

5. Preference for Treatment as a Principal Element

The selected remedy does not satisfy the statutory preference for treatment because it is impractical to do so and not cost effective.

Implementation of treatment technologies such as thermal treatment to treat a minimal amount of the Site waste material (550 yds^3) contaminated with mercury at relatively low concentrations is not cost effective. Furthermore, thermal treatment of mercury contaminated wastes at the Site is impractical, since it may generate incomplete combustion products that are difficult to assess and control, therefore posing a risk to residents and workers in close proximity to the Site. Treatment by solidification and then disposal in a permitted landfill would not provide additional protectiveness and would not be cost effective.

APPENDIX A

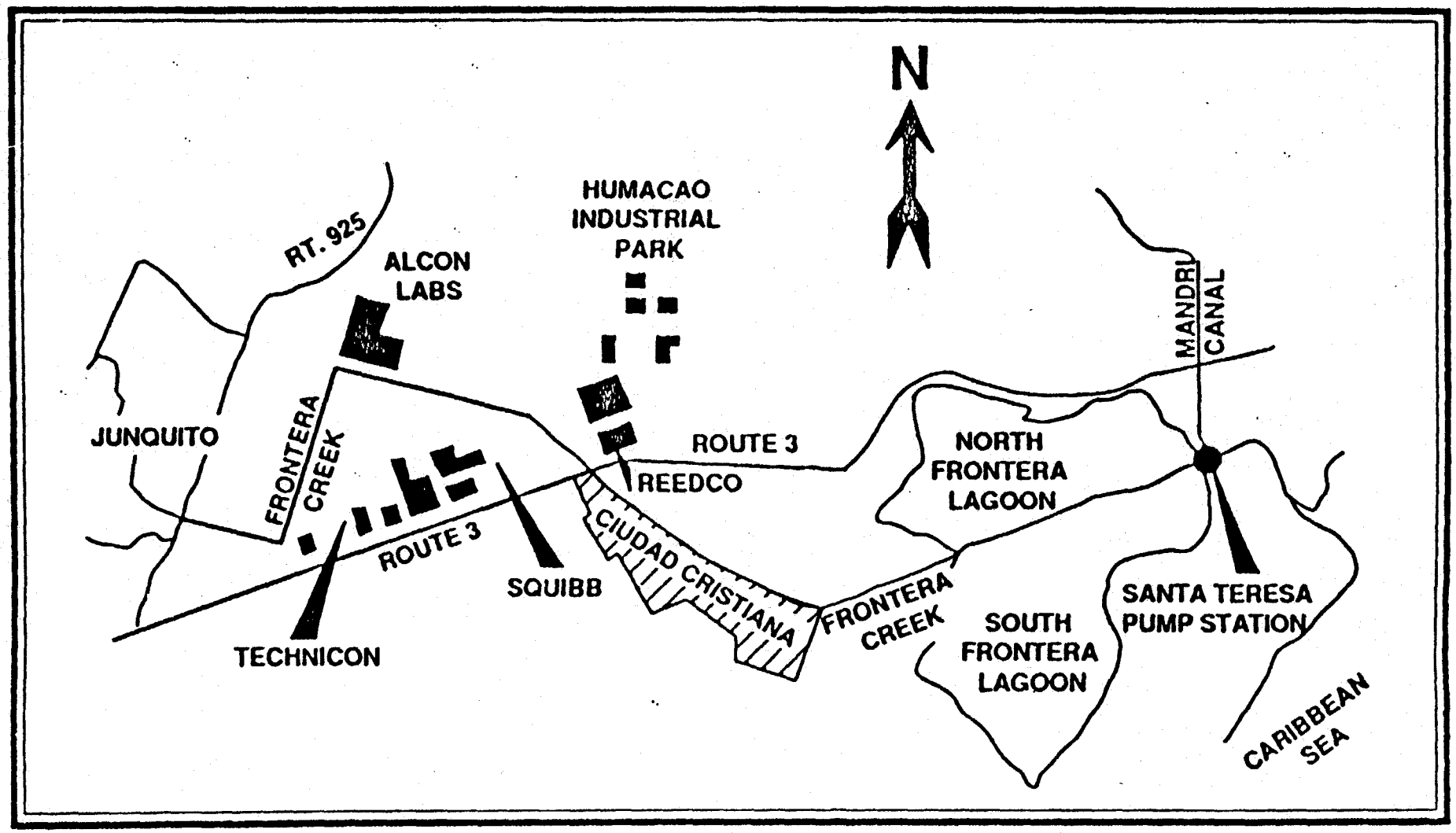
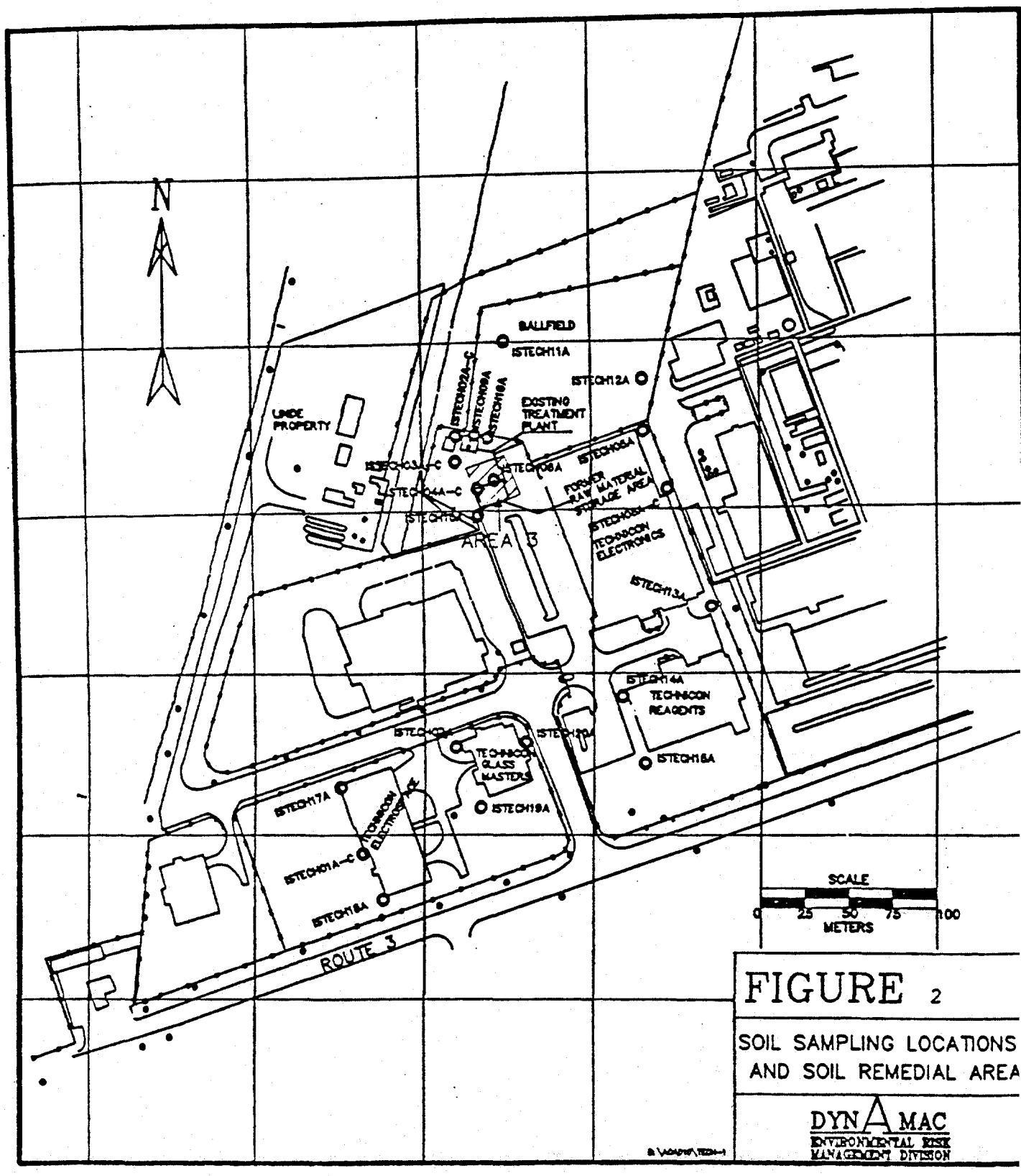

N
HUMACAO
INDUSTRIAL
PARK
RT. 925
ALCON
LABS
MANDRI
CANAL
JUNQUITO
FRONTERA
CREEK
ROUTE 3
REEDCO
NORTH
FRONTERA
LAGOON
ROUTE 3
SQUIBB
CIUDAD CRISTIANA
FRONTERA
CREEK
SANTA TERESA
PUMP STATION
TECHNICON
SOUTH
FRONTERA
LAGOON
CARIBBEAN
SEA

FIGURE 1

FIGURE 2



FRO 002 0672

FIGURE 3

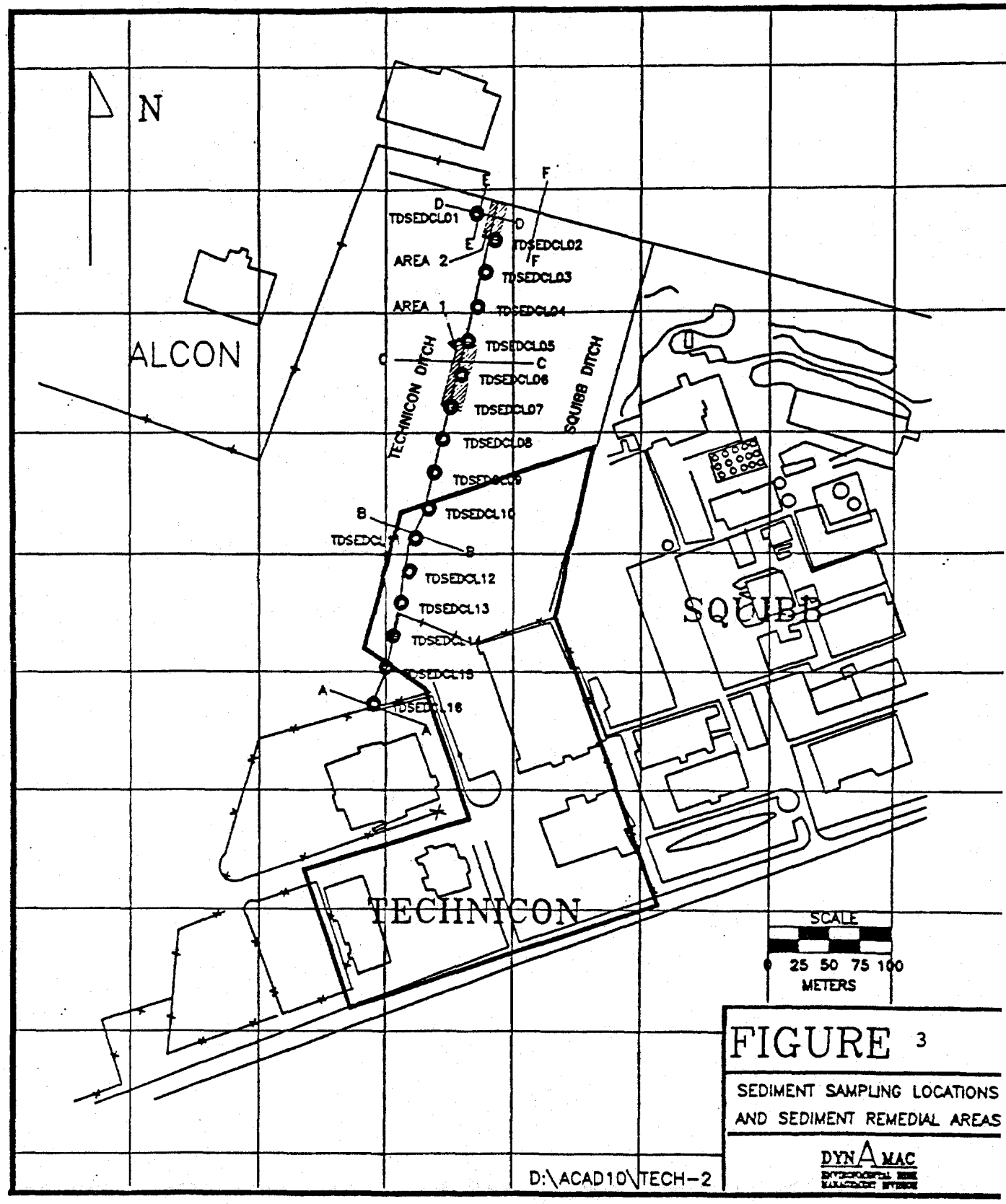


FIGURE 3

SEDIMENT SAMPLING LOCATIONS AND SEDIMENT REMEDIAL AREAS

DYNAMAC

APPENDIX B

TABLE 1

Mercury Data for Technicon Soil Sampling Program

Dynamac Number	ETC Number	Date	Total Mercury Qual	Total Mercury Value	Inorganic Mercury Qual	Inorganic Mercury Value	MDL
ISTECH01A	BE6187	880616		160		108	80
ISTECH01B	BE6127	880616	ND	0	BMDL	48	80
ISTECH01C	BE6128	880616	ND	0	BMDL	48	80
ISTECH02A	BE6179	880615		5600		7000	80
ISTECH02B	BE6106	880615		5900		2640	80
ISTECH02C	BE6107	880615		1720		812	80
ISTECH03A	BE6180	880615		420		423	80
ISTECH03B	BE6108	880615	BMDL	77	BMDL	76	80
ISTECH03C	BE6109	880615		92	ND	0	80
ISTECH04A	BE6181	880615		1400		591	80
ISTECH04B	BE6111	880615		1160			80
ISTECH04C	BE6112	880615		1430			80
ISTECH05A	BE6183	880615		9700			80
ISTECH06A	BE6182	880615		535000			80
ISTECH07A	BE6185	880616		260			80
ISTECH08A	BE6184	880615		110		120	80
ISTECH08B	BE6125	880615	ND	0			80
ISTECH08C	BE6126	880615	ND	0			80
ISTECH09A	BE6115	880615		1150			80
ISTECH10A	BE6116	880615		2900			80
ISTECH11A	BE6117	880615		18300			80
ISTECH12A	BE6121	880615		583			80
ISTECH13A	BE6122	880615		284			80
ISTECH14A	BE6123	880615		827			80
ISTECH15A	BE6124	880615		30600			80
ISTECH16A	BE6113	880615		17400			80
ISTECH17A	BE6129	880616		104			80

TABLE 1

Dynamac Number	ETC Number	Date	Total Mercury Qual	Total Mercury Value	Inorganic Mercury Qual	Inorganic Mercury Value	MDL
ISTECH18A	BE6130	880616		135			80
ISTECH19A	BE6131	880616	BMDL	62			80
ISTECH20A	BE6132	880616	BMDL	69			80
ISTECHA07	BE6186	880616		220			80
ISTECHA16	BE6114	880615		21400			80
ISTECHB02	BE6110	880615		5450		1320	80

Note: Sample numbers ending with an "A" are 0" to 6" samples.
Sample numbers ending with a "B" are 6" to 18" samples.
Sample numbers ending with a "C" are 18" to 36" samples.

TABLE 2

Mercury Data for the Technicon Ditch Sediment Sampling Program

Dynamac Number	ETC Number	Date	Total Mercury Qual	Total Mercury Value	Inorganic Mercury Qual	Inorganic Mercury Value	MDL
Technicon Ditch							
TDSEDCL01A	BE1879	880509		3780		2610	80
TDSEDCL02A	BE1711	880506		15380			80
TDSEDCL02B	BE1712	880506		132			80
TDSEDCL03A	BE1713	880506		908			80
TDSEDCL04A	BE1761	880506		2420		18700	80
TDSEDCL04B	BE1762	880506		141		110	80
TDSEDCL05A	BE1714	880506		33280			80
TDSEDCL06A	BE1716	880509		43320			80
TDSEDCL06B	BE1717	880509		384			80
TDSEDCL07A	BE1718	880509		404			80
TDSEDCL08A	BE1763	880509		141		3530	80
TDSEDCL08B	BE1765	880509		924		187	80
TDSEDCL09A	BE1719	880509		26760			80
TDSEDCL10A	BE1720	880509		447			80
TDSEDCL10B	BE1721	880509		238			80
TDSEDCL11A	BE1722	880509		483			80
TDSEDCL12A	BE1766	880509		706		154	80
TDSEDCL12B	BE1767	880509		107		188	80
TDSEDCL13A	BE1723	880509		277			80
TDSEDCL14A	BE1725	880510		109			80
TDSEDCL15A	BE1726	880510		181			80
TDSEDCL15B	BE1727	880510	BMDL	60			80
TDSEDCL16A	BE1880	880510		197		158	80
TDSEDCL16B	BE1728	880510	BMDL	55			80
TDSEDCLA05	BE1715	880506		23660			80
TDSEDCLA08	BE1764	880509		794		4480	80
TDSEDCLA13	BE1724	880509		265			80
TDSEDCLA16	BE1881	880510		176		149	80

TABLE 2

Dynamac Number	ETC Number	Date	Total Mercury Qual	Total Mercury Value	Inorganic Mercury Qual	Inorganic Mercury Value	MDL
Sediment Transect A							
SEDTRANA1A	BE3877	880519		240			80
SEDTRANA1B	BE3878	880519	BMDL	76			80
SEDTREPA1B	BE3879	880519		89			80
SEDTRANA2A	BE3875	880519		183			80
SEDTRANA2B	BE3876	880519	ND	0			80
SEDTRANA3A	BE1855	880519		383			80
SEDTRANA3B	BE1856	880519		133			80
SEDTRANA4A	BE1853	880519		267			80
SEDTRANA4B	BE1854	880519		122			80
SEDTRANA5A	BE1851	880519		166			80
SEDTRANA5B	BE1852	880519	ND	0			80
Sediment Transect B							
SEDTRANB1A	BE1840	880519		932			80
SEDTRANB1B	BE1841	880519		178			80
SEDTRANB2A	BE1842	880519		328			80
SEDTRANB2B	BE1843	880519		146			80
SEDTRANB3A	BE1844	880519		11200			80
SEDTRANB3B	BE1845	880519		1680			80
SEDTRANB4A	BE1846	880519		199			80
SEDTREPB4A	BE1847	880519		229			80
SEDTRANB4B	BE1848	880519	ND	0			80
SEDTRANB5A	BE1849	880519		1320			80
SEDTRANB5B	BE1850	880519	BMDL	74			80

TABLE 2

Dynamac Number	ETC Number	Date	Total Mercury Qual	Total Mercury Value	Inorganic Mercury Qual	Inorganic Mercury Value	MDL
Sediment Transect C							
SEDTRANC1A	BE1838	880518		293			80
SEDTRANC1B	BE1839	880518		91			80
SEDTRANC2A	BE1836	880518		52100			80
SEDTRANC2B	BE1837	880518		4020			80
SEDTRANC3A	BE1834	880518		38700			80
SEDTRANC3B	BE1835	880518		64100			80
SEDTRANC4A	BE1832	880518		4720			80
SEDTRANC4B	BE1833	880518		113			80
SEDTRANC5A	BE1830	880518		230			80
SEDTRANC5B	BE1831	880518	BMDL	49			80
Sediment Transect D							
SEDTRAND1A	BE1816	880517		1430			80
SEDTRAND1B	BE1818	880517		184			80
SEDTREPD1B	BE1817	880517		98			80
SEDTRAND2A	BE1814	880517		7260			80
SEDTRAND2B	BE1815	880517		20400			80
SEDTRAND3A	BE1812	880517		88500			80
SEDTRAND3B	BE1813	880517		100			80
SEDTRAND4A	BE1811	880517		7760			80
SEDTRAND4B	BE1810	880517		7402			80
SEDTRAND5A	BE1808	880517		1730			80
SEDTRAND5B	BE1809	880517		128			80
Sediment Transect E							
SEDTRANE1A	BE1755	880517		97			80
SEDTRANE1B	BE1795	880517		147			80
SEDTRANE2A	BE1796	880517		114			80
SEDTRANE2B	BE1798	880517		112			80

TABLE 2

Dynamac Number	ETC Number	Date	Total Mercury Qual	Total Mercury Value	Inorganic Mercury Qual	Inorganic Mercury Value	MDL
Sediment Transect E (continued)							
SEDTRANE3A	BE1799	880517		153			80
SEDTRANE4A	BE1800	880517		169			80
SEDTRANE4B	BE1804	880517	BMDL	57			80
SEDTRANE5A	BE1805	880517		269			80
SEDTRANE5B	BE1807	880517		836			80
Sediment Transect F							
SEDTRANF1A	BE1819	880518		1520			80
SEDTRANF1B	BE1820	880518		120			80
SEDTRANF2A	BE1821	880518		1000			80
SEDTRANF2B	BE1822	880518		100			80
SEDTRANF3A	BE1823	880518		960			80
SEDTRANF3B	BE1824	880518		960			80
SEDTRANF4A	BE1827	880518		580			80
SEDTRANF4B	BE1826	880518		113			80
SEDTREPF4B	BE1825	880518		150			80
SEDTRANF5A	BE1828	880518		330			80
SEDTRANF5B	BE1829	880518		230			80

Note: Samples ending with an "A" are 0" to 12" sediment samples.
Samples ending with a "B" are 12" to 24" sediment samples.

TABLE 3

Mercury Data Summary for Cristiana and Background Surface Soil Samples
(MDL = 80; values in ug/kg)

Parameter/Sample Program	N	N>0	N≥MDL	Min	Max	Avg*
Total Mercury - Ciudad Cristiana						
CCSS	135	128	75	0	312	91
TB Surf	12	9	9	0	836	148
Total	147	137	84	0	836	96
Total Mercury - Background						
CCSSBG(M)	14	11	1	0	80	48
TBBG Surf	5	5	0	BMDL	BMDL	53
ISBG Surf	13	13	2	BMDL	150	67
Total	32	29	3	0	150	57
Inorganic Mercury - Ciudad Cristiana						
CCSS	49	38	15	0	279	64
TB Surf	13	6	5	0	717	94
Total	62	44	20	0	717	70
Inorganic Mercury - Background						
CCSSBG(M)	6	3	0	0	BMDL	25
TBBG Surf	5	3	1	0	106	39
ISBG Surf	6	5	0	0	BMDL	55
Total	17	11	1	0	106	39

CCSS - Ciudad Cristiana Surface Soil
TB Surf - Test Boring Surface Soil
CCSSBG(M) - Ciudad Cristiana Surface Soil Background
TBBG Surf - Test Boring Background Surface Soil
ISBG Surf - Industrial Soil Background Surface Soil

* Where values are shown as BMDL (below method detection limit) or ND (not detected), averages are calculated based on estimated concentrations which are below quantitation limits.

TABLE 4

Mercury Data Summary
for Cristiana and Background Subsurface Soil Samples
(MDL = 80;values in ug/kg)

Parameter/Sample Program	N	N>0	N≥MDL	Min	Max	Avg
Total Mercury - Ciudad Cristiana						
TB Subsurf	71	21	5	0	236	23
Total Mercury - Background						
TBBG Subsurf	30	15	2	0	109	34
ISBG Subsurf	9	7	1	0	95	47
Total	39	26	3	0	109	37
Inorganic Mercury - Ciudad Cristiana						
TB Subsurf	71	8	2	0	182	9
Inorganic Mercury - Background						
TBBG Subsurf	30	9	5	0	261	32
ISBG Subsurf	5	4	1	0	90	54
Total	35	13	6	0	261	35

TBBG Subsurf - Test Boring Subsurface Soil
ISBG Subsurf - Industrial Soil Background Subsurface Soil

TABLE 5

HSL Data Summary for Ciudad Cristiana Subsurface Soil Samples
(MDL = 80; values in ug/kg)

Sample Program: Test Boring Subsurface Soil (TB Subsurf)

Parameter/Sample Program	N	N>0	N≥MDL	Min	Max	Avg*
Volatile Organic Compounds						
ACETONE	11	11	11	26.2	247	94.8
METHYL ETHYL KETONE	11	2	2	0	45	33
METHYLENE CHLORIDE	11	9	9	0	44.4	20.9
Acid Extractables						
2-CHLOROPHENOL	9	1	0	0	BMDL	90.4
PHENOL	9	1	0	0	BMDL	87.3
RCRA Metals						
ARSENIC	9	8	0	0	BMDL	417
BARIUM	9	9	9	74,100	402,000	144,072
CADMIUM	9	4	0	0	BMDL	96
CHROMIUM	9	9	8	BMDL	9,600	5,328
COPPER	9	9	9	13,000	39,000	26,278
LEAD	9	8	8	0	4,700	2,431
SELENIUM	9	3	0	0	ND	133
SILVER	9	2	0	0	BMDL	405
ZINC	9	9	9	19,000	83,000	46,667
Other/Miscellaneous Compounds						
ALUMINUM	9	9	9	5,570,000	25,800,000	14,790,000
BERYLLIUM	9	8	8	0	400	226
CALCIUM	9	9	9	1,200,000	3,480,000	2,132,222
COBALT	9	9	6	BMDL	19,000	10,728
CYANIDE	9	9	2	< 500	9,200	1,194
IRON	9	9	9	10,100,000	33,000,000	22,025,555
MAGNESIUM	9	9	9	1,190,000	13,400,000	5,222,778
MANGANESE	9	9	9	74,700	2,410,000	749,144
NICKEL	9	9	6	BMDL	3,800	2,511
POTASSIUM	9	9	9	90,000	430,000	212,222
SODIUM	9	9	9	210,000	1,500,000	617,778
SULFATE (AS SO_4)	1	1	1	92.8	92.8	92.8
THALLIUM	9	8	0	0	ND	91
VANADIUM	9	9	9	46,000	80,000	67,056
% SOLID	71	71	-	68	93.7	83.8

* Based on all samples with a concentration or estimated concentration greater than zero. Includes samples which are listed as BMDL (below method detection limit) or ND (not detected).

09/12/1990

TABLE 6

Mercury Data Summary for Groundwater Samples
(MDL = 0.2; values in ug/l)

Parameter/Sample Program	N	N>0	N≥MDL	Min	Max	Avg*
TOTAL MERCURY						
GW Ciudad Cristiana	12	4	3	0	0.33	0.09
GW Industries	5	0	0	0	0	0
GW Background	2	0	0	0	0	0
INORGANIC MERCURY						
GW Ciudad Cristiana	12	10	5	0	0.5	0.21
GW Industries	5	0	0	0	0	0
GW Background	2	1	0	0	BMDL	0.07

* Where values are shown as BMDL (Below Method Detection Limit) or ND (Not Detected), averages are calculated based on estimated concentrations which are below quantitation limits.

09/12/1990

TABLE 7

Mercury Data Summary for Potable Water Samples
(MDL = 0.2; values in ug/l)

Parameter/Sample Program	N	N>0	N≥MDL	Min	Max	Avg
TOTAL MERCURY						
PW	2	0	0	0	0	0
INORGANIC MERCURY						
PW	1	0	0	0	0	0

TABLE 8

ESL Data Summary for Potable Water Samples
(values in ug/l)

Parameter/Sample Program	N	N>0	N≥MDL	Min	Max	Avg*
Sample Program: PW						
Volatile Organic Compounds						
CHLOROFORM	2	2	2	67.9	69.6	68.8
DICHLOROBROMOMETHANE	2	2	2	12.9	15.4	14.2
RCRA Metals						
ARSENIC	2	2	0	ND	ND	0.32
BARIUM	2	2	2	14	19	16.5
CADMIUM	2	1	0	0	ND	0.38
CHROMIUM	2	1	0	0	ND	2.4
COPPER	2	2	2	15	20	18
LEAD	2	2	0	BMDL	BMDL	2.4
SILVER	2	1	0	0	ND	0.74
ZINC	2	2	2	BMDL	BMDL	9.8
Other/Miscellaneous Compounds						
ALUMINUM	2	2	2	720	790	755
BERYLLIUM	2	1	0	0	ND	0.99
CALCIUM	2	2	2	19,200	22,300	20,750
COBALT	2	2	0	BMDL	BMDL	4.5
CYANIDE	2	2	0	<50	<50	<50
IRON	2	2	2	250	1,300	775
MAGNESIUM	2	2	2	3,600	4,000	3,800
MANGANESE	2	2	2	23	45	34
NICKEL	2	2	0	ND	ND	1.6
POTASSIUM	2	2	2	1,100	1,300	1,200
SODIUM	2	2	2	10,000	11,000	10,500
VANADIUM	2	2	0	ND	BMDL	2.85

* Based on all samples with a concentration or estimated concentration greater than zero. Includes samples which are listed as BMDL (below method detection limit) or ND (not detected).

TABLE 8

BSL Data Summary for Surface Water Samples
(values in ug/l)

Parameter/Sample Program	N	N>0	N≥MDL	Min	Max	Avg*
Volatile Organic Compounds						
ACETONE						
SW Upgradient	3	2	2	0	184	135.6
SW Midstream	6	6	6	34.83	2,870	751
SW Downstream	6	5	5	0	189	76.9
SW Frontera Lagoons	4	1	1	0	8.74	8.74
SW Technicon Ditch	1	1	1	41.4	41.4	41.4
Total	20	15	15	0	2,870	347.5
BENZENE						
SW Downstream	6	6	0	0	BMDL	2.65
CARBON DISULFIDE						
SW Midstream	6	1	0	BMDL	1.43	1.43
SW Downstream	6	4	1	1.85	4.33	2.75
SW Total	12	5	1	1.43	4.33	2.48
CHLOROFORM						
SW Downstream	6	2	0	0	BMDL	2.24
1,1 DICHLOROETHANE						
SW Midstream	6	1	1	0	17.4	17.4
SW Downstream	6	1	0	0	BMDL	3.71
Total	12	2	1	0	17.4	10.56
ETHYLBENZENE						
SW Midstream	6	2	1	0	BMDL	72.55
SW Downstream	6	4	1	0	6.91	2.64
Total	12	6	2	0	BMDL	25.94
METHYL ETHYL KETONE						
SW Upgradient	3	2	2	0	5.89	5.29
SW Midstream	6	1	1	0	21.4	21.4
SW Downstream	6	3	3	0	20.2	12.93
Total	15	6	6	0	21.4	11.79
METHYLENE CHLORIDE						
SW Upgradient	3	2	0	0	BMDL	3.46
SW Midstream	6	3	3	0	1,890	656.5
SW Downstream	6	1	0	0	BMDL	3.99
SW Frontera Lagoons	4	3	2	0	14.6	7.44
SW Technicon Ditch	1	1	0	BMDL	BMDL	2.47
Total	20	10	5	0	1,890	200.52

TABLE 9

Mercury Data Summary for Surface Water Samples
(MDL = 0.2; values in ug/l)

Parameter/Sample Program	N	N>0	N≥MDL	Min	Max	Avg*
TOTAL MERCURY						
SW Upgradient	3	0	0	0	0	0
SW Midstream	6	3	3	0	0.43	0.16
SW Downstream	6	2	0	0	BMDL	0.05
SW Frontera Lagoons	4	0	0	0	0	0
SW Technicon Ditch	1	1	1	BMDL	BMDL	0.14
Total	20	6	4	0	0.43	0.07
INORGANIC MERCURY						
SW Upgradient	3	0	0	0	0	0
SW Midstream	6	2	2	0	0.43	0.12
SW Downstream	6	2	2	0	1.2	0.24
SW Frontera Lagoons	4	0	0	0	0	0
SW Technicon Ditch	1	1	1	3	3	3
Total	20	5	5	0	3	0.26

* Where values are shown as BMDL (Below Method Detection Limit) or ND (Not Detected), averages are calculated based on estimated concentrations which are below quantitation limits.

TABLE 9

Parameter/Sample Program	N	N>0	N≥MDL	Min	Max	Avg*
Volatile Organic Compounds (continued)						
METHYL-ISO-BUTYL KETONE						
SW Midstream	6	2	2	0	4,650	3,120
SW Downstream	6	4	4	0	220	67.54
Total	12	6	6	0	4,650	1,085.03
M-XYLENE						
SW Midstream	6	2	1	0	185	145.5
SW Downstream	6	4	2	0	21.2	7.75
Total	12	6	3	0	185	53.67
O+P-XYLENES						
SW Midstream	6	2	1	0	BMDL	102.1
SW Downstream	6	4	1	0	11.3	4.05
Total	12	6	2	0	BMDL	36.73
TOLUENE						
SW Upgradient	3	3	0	BMDL	BMDL	2.13
SW Midstream	6	1	1	0	15.9	15.9
SW Downstream	6	6	4	0	19.5	10.29
SW Technicon Ditch	1	1	1	5.64	5.64	5.64
Total	16	11	6	0	19.5	8.15
1,1,1-TRICHLOROETHANE						
SW Midstream	6	1	0	0	BMDL	3.14
Base/Neutral Extractable Compounds						
BIS(2-ETHYLHEXYL)PHTHALATE						
SW Midstream	6	2	0	0	BMDL	2.81
SW Downstream	6	1	0	0	BMDL	4.45
Total	12	3	0	0	BMDL	3.36
DI-N-OCTYL PHTHALATE						
SW Midstream	6	2	0	0	BMDL	5.14
SW Downstream	6	4	0	0	BMDL	4.17
SW Frontera Lagoons	4	4	0	BMDL	BMDL	3.57
Total	16	9	0	0	BMDL	4.01
ISOPHORONE						
SW Midstream	6	2	0	0	BMDL	4.44
SW Downstream	6	5	0	0	BMDL	14.71
Total	12	7	0	0	BMDL	11.77

TABLE 10

Parameter/Sample Program	N	N>0	N≥MDL	Min	Max	Avg*
Acid Extractable Compounds						
BENZOIC ACID						
SW Downstream	6	2	1	0	66	34.36
4-METHYLPHENOL						
SW Midstream	6	1	0	0	BMDL	2.99
PHENOL						
SW Downstream	6	2	0	0	BMDL	12.29
RCRA Metals						
ARSENIC						
SW Upgradient	3	3	0	BMDL	BMDL	5.6
SW Midstream	6	6	1	BMDL	9.31	6.52
SW Downstream	6	6	0	ND	BMDL	2.14
SW Frontera Lagoons	4	4	0	BMDL	BMDL	4.2
SW Technicon Ditch	1	1	0	ND	ND	0.58
Total	20	20	1	ND	9.39	4.31
BARIUM						
SW Upgradient	3	3	3	56	133	96.7
SW Midstream	6	6	6	75	226	122.9
SW Downstream	6	6	6	61	105	83.5
SW Frontera Lagoons	4	4	4	120	145	130
SW Technicon Ditch	1	1	1	32	32	32
Total	20	20	20	32	226	104.5
CADMIUM						
SW Upgradient	3	2	0	0	ND	0.135
SW Midstream	6	6	0	ND	ND	0.3245
SW Downstream	6	4	0	0	BMDL	0.6708
SW Frontera Lagoons	4	3	0	0	ND	0.3492
Total	19	15	0	ND	BMDL	0.3965
CHROMIUM						
SW Upgradient	3	3	0	ND	ND	3.37
SW Midstream	6	6	1	ND	34.6	9.47
SW Downstream	6	6	1	ND	41	10.84
SW Frontera Lagoons	4	1	0	0	ND	3.7
Total	19	16	2	0	41	8.48
COPPER						
SW Upgradient	3	3	0	BMDL	BMDL	5.23
SW Midstream	6	6	1	BMDL	21.5	7.68
SW Downstream	6	4	1	0	290	74.1
SW Frontera Lagoons	4	4	0	ND	BMDL	3.18
SW Technicon Ditch	1	1	0	BMDL	BMDL	6.8
Total	20	18	2	0	290	20.98

TABLE 10

Parameter/Sample Program	N	N>0	N≥MDL	Min	Max	Avg*
RCRA Metals (continued)						
LEAD						
SW Upgradient	3	3	0	BMDL	BMDL	2.87
SW Midstream	6	6	1	BMDL	14.45	3.71
SW Downstream	6	5	1	0	18	4.68
SW Technicon Ditch	1	1	0	ND	ND	0.99
Total	16	15	2	0	18	3.68
SELENIUM						
SW Downstream	6	2	0	0	ND	0.49
SW Frontera Lagoons	4	1	0	0	ND	0.9
Total	10	3	0	0	ND	0.63
SILVER						
SW Midstream	6	1	0	0	ND	0.021
SW Downstream	6	1	0	0	BMDL	3.1
SW Frontera Lagoons	4	2	0	0	ND	0.021
Total	16	4	0	0	BMDL	0.79
ZINC						
SW Upgradient	3	3	3	22	140	66.3
SW Midstream	6	6	6	29	190	69.3
SW Downstream	6	6	5	BMDL	3,560	763
SW Frontera Lagoons	4	4	0	ND	BMDL	5.6
SW Technicon Ditch	1	1	1	52	52	52
Total	20	20	15	ND	3,560	263
Other/Miscellaneous Compounds						
ALUMINUM						
SW Upgradient	3	3	3	160	970	587
SW Midstream	6	6	6	98	3,275	767
SW Downstream	6	6	6	50.5	840	270
SW Frontera Lagoons	4	4	4	100	290	173
SW Technicon Ditch	1	1	1	260	260	260
Total	20	20	20	50.5	3,275	447
ANTIMONY						
SW Upgradient	3	3	0	ND	ND	1.13
SW Midstream	6	4	0	0	ND	0.9
SW Downstream	6	2	0	0	BMDL	2.45
SW Frontera Lagoons	4	4	0	BMDL	BMDL	2.18
Total	19	13	0	0	BMDL	1.6

TABLE 10

Parameter/Sample Program	N	N>C	N≥MDL	Min	Max	Avg*
Other/Miscellaneous Compounds (continued)						
BERYLLIUM						
SW Upgradient	3	3	0	ND	ND	0.061
SW Midstream	6	6	0	ND	BMDL	0.1605
SW Downstream	6	6	0	ND	BMDL	0.0607
SW Frontera Lagoons	4	4	0	ND	ND	0.0873
SW Technicon Ditch	1	1	0	ND	ND	0.0032
Total	20	20	0	ND	BMDL	0.0931
CALCIUM						
SW Upgradient	3	3	3	24,200	26,100	25,233
SW Midstream	6	6	6	24,600	31,500	27,317
SW Downstream	6	6	6	37,800	44,400	40,067
SW Frontera Lagoons	4	4	4	11,000	42,700	33,325
SW Technicon Ditch	1	1	1	13,000	13,000	13,000
Total	20	20	20	11,000	44,400	31,315
COBALT						
SW Upgradient	3	3	0	ND	BMDL	3.933
SW Midstream	6	6	0	ND	BMDL	4.45
SW Downstream	6	6	0	ND	BMDL	4.23
SW Frontera Lagoons	4	2	0	0	BMDL	4.85
SW Technicon Ditch	1	1	0	ND	ND	1.3
Total	20	18	0	0	BMDL	4.8
CYANIDE						
SW Upgradient	3	3	0	< 50	< 50	< 50
SW Midstream	6	6	0	< 50	< 50	< 50
SW Downstream	6	6	0	< 50	< 50	< 50
SW Frontera Lagoons	4	4	0	< 50	< 50	< 50
SW Technicon Ditch	1	1	0	< 50	< 50	< 50
Total	20	20	0	< 50	< 50	< 50
IRON						
SW Upgradient	3	3	3	2,500	5,700	4,500
SW Midstream	6	6	6	1,100	14,650	5,842
SW Downstream	6	6	6	220	3,700	1,098
SW Frontera Lagoons	4	4	4	270	670	403
SW Technicon Ditch	1	1	1	2,100	2,100	2,100
Total	20	20	20	210	20,100	2,943
MAGNESIUM						
SW Upgradient	3	3	3	6,270	7,260	6,887
SW Midstream	6	6	6	6,690	8,040	7,472
SW Downstream	6	6	6	10,100	12,900	11,467
SW Frontera Lagoons	4	4	4	89,100	170,000	140,525
SW Technicon Ditch	1	1	1	2,400	2,400	2,400
Total	20	20	20	2,400	170,100	34,940

TABLE 10

Parameter/Sample Program	N	N>0	N≥MDL	Min	Max	Avg*
Other/Miscellaneous Compounds (continued)						
MANGANESE						
SW Upgradient	3	3	3	1,110	3,300	2,260
SW Midstream	6	6	6	2,250	4,840	3,808
SW Downstream	6	6	6	190	1,340	632
SW Frontera Lagoons	4	4	4	230	660	383
SW Technicon Ditch	1	1	1	520	520	520
Total	20	20	20	190	4,840	1,773
NICKEL						
SW Upgradient	3	1	0	0	ND	0.047
SW Midstream	6	3	1	0	33.1	11.98
SW Downstream	5	5	1	ND	27	6.532
Total	14	9	2	0	33.1	7.629
POTASSIUM						
SW Upgradient	3	3	3	2,100	5,600	4,167
SW Midstream	6	6	6	4,100	5,700	4,792
SW Downstream	6	6	6	2,600	112,000	36,417
SW Frontera Lagoons	4	4	4	25,900	47,800	40,000
SW Technicon Ditch	1	1	1	1,000	1,000	1,000
Total	20	20	20	1,000	112,000	11,200
SODIUM						
SW Upgradient	3	3	3	23,800	45,900	34,500
SW Midstream	6	6	6	35,500	80,800	50,250
SW Downstream	5	5	5	53,700	678,500	521,040
SW Frontera Lagoons	4	4	4	791,000	1,430,000	1,180,250
SW Technicon Ditch	1	1	1	20,100	20,100	20,100
Total	19	19	19	20,100	1,430,000	407,963
THALLIUM						
SW Upgradient	3	1	0	0	BMDL	2.4
SW Midstream	6	1	0	0	ND	0.77
SW Downstream	6	5	0	0	ND	0.766
SW Frontera Lagoons	4	4	0	ND	BMDL	1.047
SW Technicon Ditch	1	1	0	ND	ND	0.41
Total	20	12	0	0	BMDL	0.967
VANADIUM						
SW Upgradient	3	2	0	0	BMDL	2.95
SW Midstream	6	5	1	0	24.45	6.29
SW Downstream	6	4	0	0	BMDL	3.39
SW Frontera Lagoons	4	4	0	ND	BMDL	3.6
Total	19	15	1	0	24.45	4.53

* Based on all samples with a concentration or estimated concentration greater than zero. Includes samples which are listed as BMDL (below method detection limit) or ND (not detected).

TABLE 11-1

Mercury Data Summary for On-site and Background Sediment Samples
(MDL = 80; values in ug/kg)

Parameter/Sample Program	N	N>0	N≥MDL	Min	Max	Avg*
Total Mercury - On-site (0-12")						
FCSED, Midstream	25	23	17	0	2,900	505
FCSED, Downstream	31	29	24	0	1,508	330
FLSED	23	21	21	0	330	153
SDSED	8	8	8	89	4,020	744
TDSED	19	19	19	109	43,320	6,668
SEDTRAN	30	30	30	97	88,500	7,436
MCSED	2	0	0	0	0	0
DREDGE	6	5	3	0	119	73
Total	144	135	132	0	88,500	2,657
Total Mercury - Background (0-12")						
BGSED	8	4	2	0	134	39
FCSED, Upstream	7	7	6	BMDL	121	91
Total	15	11	8	0	134	63
Inorganic Mercury - On-site (0-12")						
FCSED, Midstream	9	8	7	0	1,030	416
FCSED, Downstream	10	8	8	0	553	169
FLSED	6	5	4	0	153	90
SDSED	4	4	3	BMDL	2,000	596
TDSED	5	5	5	154	18,700	5,125
MCSED	2	0	0	0	0	0
DREDGE	6	2	2	0	89	30
Total	42	32	29	0	18,700	813
Inorganic Mercury - Background (0-12")						
BGSED	4	0	0	0	0	0
FCSED, Upstream	3	1	0	0	BMDL	24
Total	7	1	0	0	BMDL	10

TABLE 11-1

Parameter/Sample Program	N	N>0	N≥MDL	Min	Max	Avg*
Total Mercury - On-site (12-24")						
FCSED, Midstream	13	11	6	0	959	195
FCSED, Downstream	14	12	9	0	2,020	373
FLSED	10	9	7	0	313	118
SDSED	4	4	4	80	93	85
TDSED	11	10	7	0	924	202
SEDTRAN	29	26	23	0	64,100	3,505
MCSED	2	0	0	0	0	0
Total	83	72	56	0	64,100	1,363
Total Mercury - Background (12-24")						
BGSED	3	3	0	BMDL	BMDL	52
FCSED, Upstream	3	3	3	83	114	95
Total	6	6	3	ND	114	74
Inorganic Mercury - On-site (12-24")						
FCSED, Midstream	5	3	2	0	597	250
FCSED, Downstream	5	2	2	0	1,149	287
FLSED	2	2	1	BMDL	111	93
SDSED	2	1	0	0	BMDL	28
TDSED	3	3	3	110	188	162
MCSED	2	0	0	0	0	0
Total	19	11	8	0	1,149	179
Inorganic Mercury - Background (12-24")						
BGSED	1	0	0	0	0	0
FCSED, Upstream	1	0	0	0	0	0
Total	1	0	0	0	0	0

BGSED - Background Locations Sediment
DREDGE - Dredge Spoils
FCSED - Frontera Creek Sediment
FLSED - Frontera lagoons Sediment
MCSED - Mandri Canal Sediment
SDSED - Squibb Ditch Sediment
SEDTRAN - Sediment Transect Study
TDSED - Technicon Ditch Sediment (includes Technicon Tributaries (TDTRIB) for this table)

* Where values are shown as BMDL (Below Method Detection Limit) or ND (Not Detected), averages are calculated based on estimated concentrations which are below quantitation limits.

TABLE 11-2

Mercury Data Summary for Frontera Lagoons Sediment Samples (MDL = 80; values in ug/kg)

Parameter/Sample Program	N	N>0	N≥MDL	Min	Max	Avg*
Total Mercury (0-12")						
FLSED, North Lagoon	11	10	10	0	330	159
FLSED, Southeast Lagoon	3	2	2	0	115	76
FLSED, Southwest Lagoon	9	9	9	85	243	170
Total	23	21	21	0	330	153
Inorganic Mercury (0-12")						
FLSED, North Lagoon	2	2	1	BMDL	116	86
FLSED, Southeast Lagoon	1	0	0	0	0	0
FLSED, Southwest Lagoon	3	3	3	90	153	122
Total	6	5	4	0	153	90
Total Mercury (12-24")						
FLSED, North Lagoon	5	4	4	0	313	153
FLSED, Southeast Lagoon	1	1	1	97	97	97
FLSED, Southwest Lagoon	4	4	2	BMDL	110	81
Total	10	9	7	0	313	118
Inorganic Mercury (12-24")						
FLSED, North Lagoon	-	-	-	-	-	-
FLSED, Southeast Lagoon	-	-	-	-	-	-
FLSED, Southwest Lagoon	2	2	1	BMDL	111	93
Total	2	2	1	BMDL	111	93

* Where values are shown as BMDL (Below Method Detection Limit) or ND (Not Detected), averages are calculated based on estimated concentrations which are below quantitation limits.

TABLE 11-3

Mercury Data Summary for Sediment Transect Samples
(MDL = 80; values in ug/kg)

Parameter/Sample Program	N	N>0	N≥MDL	Min	Max	Avg*
Technicon Ditch Total Mercury (0-12")						
SEDTRAN, Transect A	5	5	5	166	383	248
SEDTRAN, Transect B	5	5	5	214	11,200	2,799
SEDTRAN, Transect C	5	5	5	230	52,100	19,209
SEDTRAN, Transect D	5	5	5	1,430	88,500	21,336
Total	20	20	20	166	88,500	10,898
Frontera Creek Total Mercury (0-12")						
SEDTRAN, Transect E	5	5	5	97	269	160
SEDTRAN, Transect F	5	5	5	330	1,520	878
Total	10	10	10	97	1,520	519
Technicon Ditch Total Mercury (12-24")						
SEDTRAN, Transect A	5	3	3	0	133	68
SEDTRAN, Transect B	5	4	3	0	1,680	416
SEDTRAN, Transect C	5	5	4	BMDL	64,100	13,675
SEDTRAN, Transect D	5	5	5	100	20,400	5,634
Total	20	17	15	0	64,100	4,948
Frontera Creek Inorganic Mercury (12-24")						
SEDTRAN, Transect E	4	3	3	BMDL	836	288
SEDTRAN, Transect F	5	5	5	100	960	308
Total	9	8	8	BMDL	960	299

* Where values are shown as BMDL (Below Method Detection Limit) or ND (Not Detected), averages are calculated based on estimated concentrations which are below quantitation limits.

TABLE 12

ESL Data Summary for On-Site Sediment Samples
(values in ug/kg)

Parameter/Sample Program	N	N>0	N≥MDL	Min	Max	Avg*
Volatile Organic Compounds (0-12")						
1,1,1-TRICHLOROETHANE						
FCSED, Midstream	9	1	1	0	8	8
ACETONE						
FCSED, Midstream	9	7	7	0	1,160	326
FCSED, Downstream	10	8	8	47.4	1,430	427.9
FLSED	4	4	4	293	2,980	1,385.6
SDSED	2	2	2	107	254	180.5
TDSED	2	2	2	204	288	246
MCSED	1	1	1	6.75	6.75	6.75
Total	28	24	24	0	2,980	511
BENZENE						
FCSED, Downstream	10	3	0	0	BMDL	3.08
CARBON DISULFIDE						
FCSED, Downstream	10	4	4	0	540	269.95
FLSED	4	4	3	BMDL	230	91
SDSED	2	1	1	8.73	8.73	8.73
Total	16	9	8	6.35	540	161
CHLOROBENZENE						
TDSED	2	1	0	0	BMDL	0.748
MCSED	1	1	0	0	BMDL	1.26
Total	3	2	0	0	BMDL	1.004
ETHYLBENZENE						
FCSED, Midstream	9	1	0	0	BMDL	2.15
METHYL CHLORIDE						
FCSED, Downstream	10	3	3	0	26.5	20.8
FLSED	4	4	4	25	1,730	507
Total	14	7	7	0	1,730	299
METHYL ETHYL KETONE						
FCSED, Midstream	9	4	4	0	232	164.8
FCSED, Downstream	10	4	4	0	242	133.6
FLSED	4	4	4	56.9	624	222
SDSED	2	1	1	79	79	79
TDSED	2	2	2	0	48	43.6
Total	27	15	15	0	624	149.8

TABLE 12

Parameter/Sample Program	N	N>0	N≥MDL	Min	Max	Avg*
Volatile Organic Compounds (0-12") (continued)						
METHYLENE CHLORIDE						
FCSED, Midstream	9	2	2	0	11.1	8.51
FCSED, Downstream	10	10	10	21.7	93.5	46.98
FLSED	4	4	3	BMDL	338	97.16
SDSED	2	2	2	21.2	24.4	22.8
TDSED	2	2	2	0	157	133
MCSED	1	1	1	5.28	5.28	5.28
Total	28	21	20	0	338	56.8
M-XYLENES						
FCSED, Downstream	10	2	1	0	7.53	5.3
O+P-XYLENE						
FCSED, Downstream	10	2	0	0	BMDL	5.08
TOLUENE						
FCSED, Midstream	9	1	1	0	11.5	11.5
FCSED, Downstream	10	4	0	0	BMDL	2.6
TDSED	2	1	1	0	64.8	64.8
MCSED	1	1	0	BMDL	BMDL	3.32
Total	22	7	2	0	64.8	12.9
VINYL ACETATE						
FLSED	4	4	2	0	BMDL	21.61
TDSED	2	1	0	0	BMDL	2.95
Total	6	5	2	0	BMDL	17.87
Base/Neutral Extractable Compounds (0-12")						
BENZO(A)ANTHRACENE						
FCSED, Midstream	9	1	0	0	BMDL	430
BENZO(A)PYRENE						
FCSED, Midstream	9	2	0	0	BMDL	252
BENZO(B)FLUORANTHENE						
FCSED, Midstream	9	2	1	0	921	541
BENZYL ALCOHOL						
FLSED	4	3	0	0	BMDL	265
BIS(2-ETHYLHEXYL) PHTHALATE						
FCSED, Midstream	9	6	0	0	BMDL	257
FCSED, Downstream	10	4	3	0	5,770	2,524
Total	19	10	3	0	5,770	1,164
CHRYSENE						
FCSED, Midstream	9	2	0	0	BMDL	286

TABLE 12

Parameter/Sample Program	N	N>0	N≥MDL	Min	Max	Avg*
Base/Neutral Extractable Compounds (0-12") (continued)						
DI-N-BUTYL PHTHALATE						
FLSED	4	1	0	0	BMDL	152
MCSED	1	1	0	109	BMDL	109
Total	5	2	0	0	152	131
FLUORANTHENE						
FCSED, Midstream	9	2	0	0	BMDL	394
INDENO(1,2,3-C,D)PYRENE						
FCSED, Midstream	9	1	0	0	BMDL	160
PYRENE						
FCSED, Midstream	9	2	0	0	BMDL	366
Acid Extractable Compounds						
PHENOL						
FCSED, Midstream	9	1	0	0	BMDL	39
RCRA Metals (0-12")						
ARSENIC						
FCSED, Midstream	9	9	6	ND	10,000	3,990
FCSED, Downstream	10	10	2	ND	10,000	3,818
FLSED	4	4	4	2,600	14,000	8,225
SDSED	2	2	0	BMDL	BMDL	1,250
TDSED	2	2	1	BMDL	9,000	5,125
MCSED	1	1	0	BMDL	BMDL	1,900
Total	28	28	13	ND	14,000	4,344
BARIUM						
FCSED, Midstream	9	9	9	33,000	185,000	132,056
FCSED, Downstream	10	10	10	5,400	162,000	82,140
FLSED	4	4	4	40,000	195,000	100,138
SDSED	2	2	2	129,000	186,000	157,500
TDSED	2	2	2	78,700	278,000	178,350
MCSED	1	1	1	8,300	8,300	8,300
Total	28	28	28	5,400	278,000	110,373
CADMIUM						
FCSED, Midstream	9	5	0	0	BMDL	143
FCSED, Downstream	10	10	2	BMDL	880	402
FLSED	4	1	0	0	ND	84
SDSED	2	1	1	0	610	610
Total	25	17	3	0	880	318

TABLE 12

Parameter/Sample Program	N	N>0	N≥MDL	Min	Max	Avg*
RCRA Metals (0-12") (continued)						
CHROMIUM						
FCSED, Midstream	9	9	9	5,700	10,400	8,222
FCSED, Downstream	10	10	9	BMDL	56,000	13,180
FLSED	4	4	1	BMDL	7,400	5,262
SDSED	2	2	1	4,600	11,000	7,800
TDSED	2	2	1	BMDL	14,000	9,025
MCSED	1	1	0	ND	ND	1,000
Total	28	28	21	ND	56,000	9,339
COPPER						
FCSED, Midstream	9	9	9	20,000	44,000	30,889
FCSED, Downstream	10	10	10	4,400	110,000	37,140
FLSED	4	4	4	30,500	57,000	39,125
SDSED	2	2	2	16,000	27,000	21,500
TDSED	2	2	2	22,500	58,000	40,250
MCSED	1	1	0	BMDL	BMDL	1,300
Total	28	28	27	BMDL	110,000	33,239
LEAD						
FCSED, Midstream	9	9	7	BMDL	15,000	7,106
FCSED, Downstream	10	10	9	BMDL	36,000	10,620
FLSED	4	4	4	3,700	12,000	7,525
SDSED	2	2	2	2,600	2,700	2,650
TDSED	2	2	2	5,400	11,000	8,200
MCSED	1	1	0	BMDL	BMDL	700
Total	28	28	24	BMDL	36,000	7,952
SELENIUM						
FCSED, Midstream	9	6	1	0	2,600	576
FCSED, Downstream	10	5	0	0	BMDL	243
FLSED	4	3	0	0	BMDL	337
TDSED	2	2	1	0	1,400	722
Total	25	16	2	0	2,600	445
SILVER						
FCSED, Midstream	9	4	0	0	BMDL	433
FCSED, Downstream	10	7	0	0	BMDL	370
SDSED	2	1	0	0	BMDL	370
Total	21	12	0	0	BMDL	391
ZINC						
FCSED, Midstream	9	9	9	44,000	120,000	84,833
FCSED, Downstream	10	10	10	8,700	200,000	84,670
FLSED	4	4	4	31,000	72,000	53,000
SDSED	2	2	2	33,000	40,000	36,500
TDSED	2	2	2	65,000	160,000	112,500
MCSED	1	1	1	4,600	4,600	4,600
Total	28	28	28	4,600	200,000	75,886

TABLE 12

Parameter/Sample Program	N	N>0	N≥MDL	Min	Max	Avg*
Other/Miscellaneous Compounds (0-12")						
ALUMINUM						
FCSED, Midstream	9	9	9	6,760,000	21,900,000	15,651,111
FCSED, Downstream	10	10	10	1,200,000	30,000,000	14,766,000
FLSED	4	4	4	8,280,000	22,800,000	15,680,000
SDSED	2	2	2	9,750,000	14,800,000	12,275,000
TDSED	2	2	2	15,400,000	43,500,000	29,450,000
MCSED	1	1	1	1,400,000	1,400,000	1,400,000
Total	28	28	28	1,200,000	43,500,000	15,574,642
ANTIMONY						
FCSED, Midstream	9	4	0	0	BMDL	1,139
FLSED	4	1	0	0	ND	1,300
SDSED	2	2	0	ND	ND	240
TDSED	2	1	0	0	BMDL	5,400
Total	17	8	0	0	BMDL	1,467
BERYLLIUM						
FCSED, Midstream	9	4	4	0	470	413
FCSED, Downstream	10	10	9	ND	910	434
FLSED	4	1	0	0	ND	11
SDSED	2	1	1	0	380	380
Total	25	16	14	0	910	399
CALCIUM						
FCSED, Midstream	9	9	9	1,300,000	3,890,000	2,786,666
FCSED, Downstream	10	10	10	920,000	5,630,000	2,721,000
FLSED	4	4	4	940,000	1,930,000	1,405,000
SDSED	2	2	2	1,600,000	5,210,000	3,405,000
TDSED	2	2	2	1,590,000	5,720,000	3,655,000
MCSED	1	1	1	10,800,000	10,800,000	10,800,000
Total	28	28	28	920,000	10,800,000	2,958,214
COBALT						
FCSED, Midstream	9	9	10	12,000	20,000	16,444
FCSED, Downstream	10	10	9	BMDL	30,000	12,980
FLSED	4	4	1	BMDL	8,800	5,163
SDSED	2	2	1	BMDL	15,000	10,550
TDSED	2	2	2	10,750	22,000	16,375
MCSED	1	1	0	BMDL	BMDL	1,900
Total	28	28	23	BMDL	30,000	12,650
CYANIDE						
FCSED, Midstream	9	9	0	< 500	< 500	500
FCSED, Downstream	10	10	0	< 500	< 700	550
FLSED	4	4	0	< 500	< 500	500
SDSED	2	2	0	< 500	< 500	500
TDSED	2	2	0	< 500	< 500	500
MCSED	1	1	0	< 500	< 500	500
Total	28	28	0	< 500	< 700	518

TABLE 12

Parameter/Sample Program	N	N>0	N≥MDL	Min	Max	Avg*
Other/Miscellaneous Compounds (0-12") (continued)						
IRON						
FCSED, Midstream	9	9	9	27,700,000	41,500,000	33,744,444
FCSED, Downstream	10	10	10	3,000,000	49,000,000	27,200,000
FLSED	4	4	4	24,700,000	45,700,000	30,162,500
SDSED	2	2	2	27,700,000	30,400,000	29,050,000
TDSED	2	2	2	26,250,000	57,200,000	41,725,000
MCSED	1	1	1	3,200,000	3,200,000	3,200,000
Total	28	28	28	3,000,000	57,200,000	30,039,285
MAGNESIUM						
FCSED, Midstream	9	9	9	2,640,000	9,020,000	5,393,888
FCSED, Downstream	10	10	10	901,000	6,330,000	3,303,100
FLSED	4	4	4	2,410,000	3,340,000	2,770,000
SDSED	2	2	2	1,650,000	2,670,000	2,160,000
TDSED	2	2	2	4,270,000	7,510,000	5,890,000
MCSED	1	1	1	440,000	440,000	440,000
Total	28	28	28	440,000	8,065,000	3,899,857
MANGANESE						
FCSED, Midstream	9	9	9	197,000	1,780,000	985,167
FCSED, Downstream	10	10	10	57,000	732,000	344,700
FLSED	4	4	4	79,000	191,000	130,000
SDSED	2	2	2	270,000	1,050,000	660,000
TDSED	2	2	2	496,500	1,550,000	1,023,250
MCSED	1	1	1	17,000	17,000	17,000
Total	28	28	28	17,000	1,780,000	579,179
NICKEL						
FCSED, Midstream	9	9	8	BMDL	5,200	3,644
FCSED, Downstream	10	10	8	BMDL	12,000	6,053
FLSED	4	4	1	0	2,100	602
SDSED	2	2	1	BMDL	6,200	3,750
TDSED	2	2	1	BMDL	4,700	2,725
Total	27	27	19	0	12,000	4,025
POTASSIUM						
FCSED, Midstream	9	9	9	190,000	410,000	303,889
FCSED, Downstream	10	10	10	170,000	1,600,000	624,000
FLSED	4	4	4	610,000	850,000	750,000
SDSED	2	2	2	160,000	250,000	205,000
TDSED	2	2	2	240,000	650,000	445,000
MCSED	1	1	1	140,000	140,000	140,000
Total	28	28	28	140,000	1,600,000	479,107

TABLE 12

Parameter/Sample Program	N	N>0	N≥MDL	Min	Max	Avg*
Other/Miscellaneous Compounds (0-12") (continued)						
SODIUM						
FCSED, Midstream	9	9	9	180,000	440,000	323,333
FCSED, Downstream	10	10	10	180,000	3,260,000	1,160,000
FLSED	4	4	4	1,900,000	4,760,000	3,191,250
SDSED	2	2	2	68,000	520,000	294,000
TDSED	2	2	2	165,000	530,000	347,500
MCSED	1	1	1	570,000	570,000	570,000
Total	28	28	28	68,000	4,760,000	1,040,285
SULFATE (AS SO_4) (mg/kg)						
FCSED, Midstream	9	9	8	290	3,300	1,441
FCSED, Downstream	10	10	10	550	2,100	1,278
FLSED	6	6	6	1,300	1,700	1,533
SDSED	4	4	2	< 250	5,500	1,800
TDSED	5	5	5	< 250	2,900	1,224
MCSED	2	2	1	< 250	720	485
Total	36	36	32	< 250	5,500	1,368
SULFIDE (AS S) (mg/kg)						
FCSED, Midstream	9	9	5	< 10	680	113
FCSED, Downstream	10	10	5	< 10	570	121
FLSED	6	6	6	53	3,700	896
SDSED	4	4	0	< 10	< 10	10
TDSED	5	5	3	< 10	100	31
MCSED	2	2	0	< 10	< 10	10
Total	36	36	19	< 10	3,700	217
THALLIUM						
FCSED, Midstream	9	9	0	ND	ND	124
FCSED, Downstream	10	9	0	0	ND	149
FLSED	4	3	0	0	ND	36
SDSED	2	2	0	ND	ND	121
MCSED	1	1	0	ND	ND	91
Total	26	24	0	0	ND	121
TOTAL ORGANIC CARBON (mg/kg)						
FCSED, Midstream	9	9	9	3,565	57,150	23,063
FCSED, Downstream	10	10	10	1,665	85,650	26,464
FLSED	6	6	6	41,755	178,000	97,588
SDSED	4	4	4	3,980	37,100	13,509
TDSED	5	5	5	14,350	34,050	22,936
MCSED	2	2	2	3,510	33,200	18,355
Total	36	36	36	1,665	178,000	35,190

TABLE 12

Parameter/Sample Program	N	N>0	N≥MDL	Min	Max	Avg*
Other/Miscellaneous Compounds (0-12") (continued)						
VANADIUM						
FCSED, Midstream	9	9	9	92,000	115,000	100,222
FCSED, Downstream	10	10	10	9,800	110,000	73,780
FLSED	4	4	4	65,000	230,000	112,750
SDSED	2	2	2	60,000	95,000	77,500
TDSED	2	2	2	75,500	160,000	117,750
MCSED	1	1	1	9,000	9,000	9,000
Total	28	28	28	9,000	230,000	88,939
% SOLID						
FCSED, Midstream	25	25	-	53.1	85.2	70.8
FCSED, Downstream	31	31	-	25.2	90	58.2
FLSED	23	22	-	26.7	70.8	53.3
SDSED	8	8	-	63.8	91.2	80.1
TDSED	19	19	-	44	79.4	70.1
SEDTRAN	30	30	-	57.8	90.1	74.8
MCSED	2	2	-	83.6	85.1	84.4
Total	137	137	-	25.2	91.2	66.7
Other/Miscellaneous Compounds (12-24")						
SULFATE (AS SO_4) (mg/kg)						
FCSED, Midstream	5	5	3	< 250	2,100	1,026
FCSED, Downstream	5	5	5	< 250	2,300	1,142
FLSED	2	2	2	1,100	6,700	3,900
SDSED	2	2	0	< 250	< 250	< 250
TDSED	3	3	3	340	4,100	1,777
MCSED	2	2	0	< 250	< 250	< 250
Total	19	19	13	< 250	6,700	1,314
SULFIDE (AS S) (mg/kg)						
FCSED, Midstream	5	5	3	< 10	440	180
FCSED, Downstream	5	5	2	< 10	870	306
FLSED	2	2	0	< 10	< 10	< 10
SDSED	2	2	0	< 10	< 10	< 10
TDSED	3	3	0	< 10	< 10	< 10
MCSED	2	2	0	< 10	< 10	< 10
Total	19	19	5	< 10	870	121
TOTAL ORGANIC CARBON (mg/kg)						
FCSED, Midstream	5	5	5	3,820	29,950	15,024
FCSED, Downstream	5	5	5	2,850	187,350	52,325
FLSED	2	2	2	60,400	97,000	78,700
SDSED	2	2	2	3,835	6,440	5,138
TDSED	3	3	3	2,835	4,745	3,695
MCSED	2	2	2	14,250	14,900	14,575
Total	19	19	19	2,835	187,350	28,663

TABLE 12

Parameter/Sample Program	N	N>0	N≥MDL	Min	Max	Avg*
Other/Miscellaneous Compounds (12-24) (continued)*						
% SOLID						
FCSED, Midstream	13	13	-	61.2	82.4	74
FCSED, Downstream	14	14	-	24.7	86.4	60.6
FLSED	10	10	-	28.1	75.1	54.5
SDSED	4	4	-	77.4	86.7	82.7
TDSED	11	11	-	72.9	81.2	78.9
SEDTRAN	29	29	-	62.6	90.1	79.6
MCSED	2	2	-	81.2	81.8	81.5
Total	83	83	-	24.7	90.1	72.6

FCSED - Frontera Creek Sediment
FLSED - Frontera Lagoons Sediment
SDSED - Squibb Ditch Sediment
TDSED - Technicon Ditch Sediment; includes Technicon Ditch Tributaries (TDTRIB) for this table)
SEDTRAN - Sediment Transect
MCSED - Mandri Canal Sediment

* Based on all samples with a concentration or estimated concentration greater than zero. Includes samples which are listed as BMDL (below method detection limit) or ND (not detected).

TABLE 13

Summary of Average Analyte Concentrations Detected
at Air Sampling Locations
(values in mg/m^3)

Station Number	Mercury	Acetone	Methylene Chloride	Ethyl Benzene	Total Xylene	Toluene
1	0.000043	0.018	0.059	0	0	0.006
2	0.000087	0	0.033	0	0.047	0.012
3	0.000031	NA	NA	NA	NA	NA
4	0.000031	NA	NA	NA	NA	NA
5	0.000055	0.055	2.101	0.014	0.012	0.021
6	0.002223	0	0.673	0	0.003	0.272
7	0.000245	0.453	0.841	0.019	0.039	0.029
8	0.000062	0.143	0.739	0	0	0.011
9	0.000111	NA	NA	NA	NA	NA
10	0.000050	0	0.054	0	0	0.016
11	0.000082	0	0.039	0	0.001	0.008

NA Not Analyzed

TABLE 14

Mercury Data Summary for Biota Samples
(values in ug/kg; MDL = 80)

Parameter/Sample Program	N	0<N<MDL	N≥MDL	Mean	Range
Total Mercury					
CRABS (WHOLE)					
Frontera North Lagoon	3	2	0	34	0-52
Mandri Canal	3	1	0	13	0-40
Boqueron	3	1	0	19	0-56
Roosevelt Roads	3	0	0	0	0
CRABS (EDIBLE)					
Frontera North Lagoon	6	2	0	13	0-42
Mandri Canal	6	0	0	0	0
Boqueron	6	3	0	21	0-48
Roosevelt Roads	7	0	0	0	0
SHRIMP (WHOLE)					
Frontera North Lagoon	6	4	0	25	0-40
Mandri Canal	3	2	0	28	0-48
Boqueron	3	0	0	0	0
Roosevelt Roads	3	0	0	0	0
TARPON (WHOLE)					
Frontera Lagoons	3	3	0	37	0-56
Boqueron*	4	0	0	0	0
Roosevelt Roads	3	0	0	0	0
TARPON (FILLET)					
Frontera Lagoons	6	0	6	110	92-144
Mandri Canal	5	0	5	115	56-156
Boqueron	8	3	0	17	0-50
Roosevelt Roads	6	6	3	131	52-238
TARPON (LIVER)					
Frontera Lagoons	3	1	0	16	0-48
Mandri Canal	1	1	0	58	58
Boqueron	2	0	0	0	0
Roosevelt Roads	2	1	0	32	0-48
TILAPIA (WHOLE)					
Frontera Lagoons	3	2	0	27	0-40
Mandri Canal	3	1	0	14	0-24
Boqueron	3	0	0	0	0
Roosevelt Roads	3	0	0	0	0

TABLE .14

Parameter/Sample Program	N	0<N<MDL	N≥MDL	Mean	Range
Total Mercury (continued)					
TILAPIA (FILLET)					
Frontera Creek*	7	7	6	161	64-460
Frontera Lagoons	6	5	0	46	0-71
Mandri Canal	6	1	0	11	0-64
Boqueron	6	0	0	0	0
Roosevelt Roads	6	1	0	9	0-64
TILAPIA (LIVER)					
Frontera Lagoons	1	0	1	133	133
Mandri Canal	1	0	1	80	80
Boqueron	1	0	0	0	0
Roosevelt Roads	1	0	0	0	0
LIZARDS (WHOLE)					
Mandri Canal	3	1	0	20	0-60
Boqueron	3	3	0	37	36-40
GALLINULES (MUSCLE)					
Frontera Lagoons	5	3	2	54	0-120
Boqueron	5	0	0	0	0
GALLINULES (LIVER)					
Frontera Lagoons	1	0	1	160	160
Boqueron	1	0	0	0	0
CATTLE EGRETS (MUSCLE)					
Frontera Lagoons	6	1	0	6	0-36
Boqueron	6	4	1	48	0-132
CATTLE EGRETS (LIVER)					
Frontera Lagoons	1	1	0	44	44
Boqueron	1	0	1	98	98
BIRD EGGS					
Mandri Canal	1	0	0	0	0

TABLE 14

Parameter/Sample Program	N	0<N<MDL	N≥MDL	Mean	Range
Inorganic Mercury					
CRABS (WHOLE)					
Frontera North Lagoon	3	0	0	0	0
Mandri Canal	3	0	0	0	0
Boqueron	3	0	0	0	0
Roosevelt Roads	3	0	0	0	0
CRABS (EDIBLE)					
Frontera North Lagoon	6	0	0	0	0
Mandri Canal	6	0	0	0	0
Boqueron	6	0	0	0	0
Roosevelt Roads	7	0	0	0	0
SHRIMP (WHOLE)					
Frontera North Lagoon	6	1	0	6	0-36
Mandri Canal	3	1	0	12	0-36
Boqueron	3	0	0	0	0
Roosevelt Roads	3	0	0	0	0
TARPON (WHOLE)					
Frontera Lagoons	3	0	0	0	0
Boqueron*	4	0	0	0	0
Roosevelt Roads	3	0	0	0	0
TARPON (FILLET)					
Frontera Lagoons*	6	0	0	0	0
Mandri Canal*	5	0	0	0	0
Boqueron	8	0	0	0	0
Roosevelt Roads	6	0	0	0	0
TARPON (LIVER)					
Frontera Lagoons	3	0	0	0	0
Mandri Canal	1	0	0	0	0
Boqueron	2	0	0	0	0
Roosevelt Roads	2	0	0	0	0
TILAPIA (WHOLE)					
Frontera Lagoons*	3	0	0	0	0
Mandri Canal	3	0	0	0	0
Boqueron	3	0	0	0	0
Roosevelt Roads	3	0	0	0	0
TILAPIA (FILLET)					
Frontera Creek	7	2	1	19	0-84
Frontera Lagoons	6	0	0	0	0
Mandri Canal	6	0	0	0	0
Boqueron	6	0	0	0	0
Roosevelt Roads	6	0	0	0	0

TABLE 14

Parameter/Sample Program	N	0<N<MDL	N≥MDL	Mean	Range
Inorganic Mercury (continued)					
TILAPIA (LIVER)					
Frontera Creek	1	0	1	480	480
Frontera Lagoons	1	0	0	0	0
Mandri Canal	1	0	0	0	0
Boqueron	1	0	0	0	0
Roosevelt Roads	1	0	0	0	0
LIZARDS (WHOLE)					
Mandri Canal	3	0	0	0	0
Boqueron	3	0	0	0	0
GALLINULES (MUSCLE)					
Frontera Lagoons	5	0	0	0	0
Boqueron	5	0	0	0	0
GALLINULES (LIVER)					
Frontera Lagoons	1	0	1	92	92
Boqueron	1	0	0	0	0
CATTLE EGRETS (MUSCLE)					
Frontera Lagoons	6	0	0	0	0
Boqueron	6	0	0	0	0
CATTLE EGRETS (LIVER)					
Frontera Lagoons	1	0	0	0	0
Boqueron	1	1	0	36	36
BIRD EGGS					
Mandri Canal	1	0	0	0	0

* Due to the limited number of specimens collected, the number of samples analyzed and numbers of individuals in a composite sample varies by location (see Table 4-74).

NSL Data Summary for Biota Samples
(values in ug/kg)

Dynamac Number	ETC Number	Date	Lab Qual	Value	MDL
BASE/NEUTRALS - bis(2-Ethylhexyl)phthalate					
CRABS - FRONTERA NORTH LAGOON (WHOLE - 5 CRABS)					
CF204	BH1314	880227	BMDL	203	990
CF220	BH1322	880224	BMDL	118	960
CRABS - MANDRI CANAL (WHOLE - 5 CRABS)					
CM208	BH1327	880224	BMDL	120	980
CRABS - BOQUERON (WHOLE - 5 CRABS)					
C001	BH1312	880222	BMDL	197	1,000
CRABS - ROOSEVELT ROADS (WHOLE - 5 CRABS)					
C411	BH1334	880327	BMDL	305	990
C415	BH1331	880328	BMDL	79	990
TARPON - BOQUERON (WHOLE - 2 FISH)					
X003	BH1329	880324	BMDL	335	990
TARPON - BOQUERON (WHOLE - 5 FISH, COMPOSITE)					
X041	BH1326	880324	BMDL	189	990
TARPON - ROOSEVELT ROADS (WHOLE - 5 FISH)					
X430	BH1315	880328	BMDL	227	1,000
GALLINULES - BOQUERON (LIVER - 5 GALLINULES)					
M052	BH1330	880222	BMDL	177	1,900
BASE/NEUTRALS - Di-n-octyl phthalate					
CRABS - FRONTERA NORTH LAGOON (WHOLE - 5 CRABS)					
CF204	BH1314	880227	BMDL	136	990
CRABS - MANDRI CANAL (WHOLE - 5 CRABS)					
CM207	BH1311	880224	BMDL	152	1,000
CM208	BH1327	880224	BMDL	175	980
CM220	BH1336	880225	BMDL	667	990
CRABS - BOQUERON (WHOLE - 5 CRABS)					
C001	BH1312	880222	BMDL	425	1,000
CRABS - ROOSEVELT ROADS (WHOLE - 5 CRABS)					
C415	BH1331	880328	BMDL	130	990
TARPON - FRONTERA LAGOONS (WHOLE - 5 FISH)					
X251	BH1325	880226	BMDL	368	980

TABLE 15 (continued)

Dynamac Number	ETC Number	Date	Lab Qual	Value	MDL
BASE/NEUTRALS - Di-n-octyl phthalate (continued)					
TARPON - BOQUERON (WHOLE - 2 FISH)					
X003	BH1329	880324		1,280	990
X014	BH1324	880324	BMDL	490	980
TARPON - BOQUERON (WHOLE - 1 FISH)					
X040	BH1328	880324		1,140	990
TARPON - BOQUERON (WHOLE - 5 FISH, COMPOSITE)					
X041	BH1326	880324	BMDL	723	990
GALLINULES - BOQUERON (LIVER - 5 GALLINULES)					
M052	BH1330	880222	BMDL	110	1,900
ACID EXTRACTABLES - Benzoic acid					
CRABS - MANDRI CANAL (WHOLE - 5 CRABS)					
CM207	BH1311	880224	BMDL	1,810	5,000
TARPON - FRONTERA LAGOONS (WHOLE - 5 FISH)					
X209	BH1318	880226	BMDL	854	50,000
X220	BH1321	880227	BMDL	980	50,000
X227	BH1320	880226	BMDL	658	50,000
TARPON - BOQUERON (WHOLE - 2 FISH)					
X003	BH1329	880324	BMDL	111	5,000
TARPON - BOQUERON (WHOLE - 5 FISH, COMPOSITE)					
X041	BH1326	880324	BMDL	165	4,900
TARPON - ROOSEVELT ROADS (WHOLE - 5 FISH)					
X417	BH1332	880326	BMDL	102	5,000
X430	BH1315	880328	BMDL	575	5,000
GALLINULES - FRONTERA LAGOONS (LIVER - 5 GALLINULES)					
M053	BH1317	880225	BMDL	1,890	100,000
CATTLE EGRETS - BOQUERON (LIVER - 6 CATTLE EGRETS)					
M050	BH1319	880222	BMDL	882	100,000
ACID EXTRACTABLES - 2,4,6-Trichlorophenol					
TARPON - ROOSEVELT ROADS (WHOLE - 5 FISH)					
X430	BH1315	880328	BMDL	127	1,000

Dynamac Number	ETC Number	Date	Lab Qual	Value	MDL
RCRA METALS - Barium					
CRABS - FRONTERA NORTH LAGOON (WHOLE - 5 CRABS)					
CF203	BH1323	880225		170,000	4,000
CF204	BH1314	880227		250,000	4,000
CF220	BH1322	880224		72,000	4,000
CRABS - MANDRI CANAL (WHOLE - 5 CRABS)					
CM207	BH1311	880224		140,000	4,000
CM208	BH1327	880224		210,000	4,000
CM220	BH1336	880225		250,000	4,000
CRABS - BOQUERON (WHOLE - 5 CRABS)					
C001	BH1312	880222		83,000	4,000
C008	BH1313	880323		62,000	4,000
C026	BH1335	880325		8,700	4,000
CRABS - ROOSEVELT ROADS (WHOLE - 5 CRABS)					
C411	BH1334	880327		7,900	4,000
C415	BH1331	880328		9,500	4,000
C418	BH1333	880328		8,400	4,000
TARPON - FRONTERA LAGOONS (WHOLE - 5 FISH)					
X209	BH1318	880226		4,800	4,000
X251 REP	BH1325	880226	BMDL	3,800	4,000
X220	BH1321	880227	BMDL	1,500	4,000
X227	BH1320	880226		9,400	4,000
TARPON - ROOSEVELT ROADS (WHOLE - 5 FISH)					
X410	BH1310	880326	ND	180	4,000
RCRA METALS - Cadmium					
CRABS - BOQUERON (WHOLE - 5 CRABS)					
C026	BH1335	880325	BMDL	140	400
CRABS - ROOSEVELT ROADS (WHOLE - 5 CRABS)					
C411	BH1334	880327	BMDL	100	400
GALLINULES - FRONTERA LAGOONS (LIVER - 5 GALLINULES)					
M053	BH1317	880225	ND	54	400
CATTLE EGRETS - FRONTERA LAGOONS (LIVER - 6 CATTLE EGRETS)					
M051	BH1316	880225	ND	45	400
RCRA METALS - Chromium					
CRABS - FRONTERA NORTH LAGOON (WHOLE - 5 CRABS)					
CF203	BH1323	880225	ND	39	2,000
CF204	BH1314	880227	BMDL	1,000	2,000
CF220	BH1322	880224	BMDL	1,500	2,000

Dynamac Number	ETC Number	Date	Lab Qual	Value	MDL
RCRA METALS - Arsenic (continued)					
CRABS - BOQUERON (WHOLE - 5 CRABS)					
C001	BH1312	880222		3,800	2,000
C008	BH1313	880323		2,500	2,000
C026	BH1335	880325	BMDL	4,100	10,000
CRABS - ROOSEVELT ROADS (WHOLE - 5 CRABS)					
C411	BH1334	880327	ND	390	2,000
C415	BH1331	880328	ND	310	2,000
C418	BH1333	880328	ND	310	2,000
TARPON - FRONTERA LAGOONS (WHOLE - 5 FISH)					
X209	BH1318	880226	ND	160	2,000
X251 REP	BH1325	880226	ND	190	2,000
X220	BH1321	880227	ND	270	2,000
X227	BH1320	880226	ND	190	2,000
TARPON - BOQUERON (WHOLE - 2 FISH)					
X003	BH1329	880324	BMDL	700	2,000
X014	BH1324	880324	ND	39	2,000
TARPON - BOQUERON (WHOLE - 1 FISH)					
X040	BH1328	880324	ND	39	2,000
TARPON - BOQUERON (WHOLE - 5 FISH, COMPOSITE)					
X041	BH1326	880324	ND	230	2,000
TARPON - ROOSEVELT ROADS (WHOLE - 5 FISH)					
X410	BH1310	880326	BMDL	990	4,000
X417	BH1332	880326	BMDL	580	2,000
X430	BH1315	880328	BMDL	620	2,000
GALLINULES - FRONTERA LAGOONS (LIVER - 5 GALLINULES)					
M053	BH1317	880225	ND	78	2,000
GALLINULES - BOQUERON (LIVER - 5 GALLINULES)					
M052	BH1330	880222	ND	39	2,000
CATTLE EGRETS - FRONTERA LAGOONS (LIVER - 6 CATTLE EGRETS)					
M051	BH1316	880225	ND	50	2,000
CATTLE EGRETS - BOQUERON LIVER - 6 CATTLE EGRETS)					
M050	BH1319	880222	ND	39	2,000

TABLE (continued)

Dynamac Number	ETC Number	Date	Lab Qual	Value	MDL
ORGANOCHLORINE PESTICIDES/PCBs - 4,4'-DDD					
CRABS - ROOSEVELT ROADS (WHOLE - 5 CRABS)					
C415	BH1331	880328		23	20
TARPON - ROOSEVELT ROADS (WHOLE - 5 FISH)					
X417	BH1332	880326		27	20
ORGANOCHLORINE PESTICIDES/PCBs - 4,4'-DDE					
CRABS - ROOSEVELT ROADS (WHOLE - 5 CRABS)					
C411	BH1334	880327		110	20
C415	BH1331	880328		120	20
TARPON - FRONTERA LAGOONS (WHOLE - 5 FISH)					
X251 REP	BH1325	880226		28	20
TARPON - ROOSEVELT ROADS (WHOLE - 5 FISH)					
X410	BH1310	880326		110	20
X417	BH1332	880326		160	20
X430	BH1315	880328		74	20
GALLINULES - FRONTERA LAGOONS (LIVER - 5 GALLINULES)					
M053	BH1317	880225		47	40
CATTLE EGRETS - BOQUERON (LIVER - 6 CATTLE EGRETS)					
M050	BH1319	880222		83	40
ORGANOCHLORINE PESTICIDES/PCBs - Delta-BHC					
CRABS - FRONTERA NORTH LAGOON (WHOLE - CRABS)					
CF203	BH1323	880225		62	10
CF220	BH1322	880224		48	9.6
GALLINULES - BOQUERON (LIVER - 5 GALLINULES)					
M053	BH1317	880225		67	20
RCRA METALS - Arsenic					
CRABS - FRONTERA NORTH LAGOON (WHOLE - 5 CRABS)					
CF203	BH1323	880225	BMDL	460	2,000
CF204	BH1314	880227	ND	380	2,000
CF220	BH1322	880224	BMDL	460	2,000
CRABS - MANDRI CANAL (WHOLE - 5 CRABS)					
CM207	BH1311	880224	BMDL	430	2,000
CM208	BH1327	880224	ND	350	2,000
CM220	BH1336	880225	ND	120	4,000

TABLE 15 (continued)

Dynamac Number	ETC Number	Date	Lab Qual	Value	MDL
RCRA METALS - Chromium (continued)					
CRABS - MANDRI CANAL (WHOLE - 5 CRABS)					
CM207	BH1311	880224	BMDL	740	2,000
CM208	BH1327	880224	BMDL	1,800	2,000
CM220	BH1336	880225	BMDL	1,400	2,000
CRABS - BOQUERON (WHOLE - 5 CRABS)					
C001	BH1312	880222	BMDL	1,100	2,000
C008	BH1313	880323	BMDL	1,200	2,000
C026	BH1335	880325	BMDL	1,600	2,000
CRABS - ROOSEVELT ROADS (WHOLE - 5 CRABS)					
C411	BH1334	880327	BMDL	1,600	2,000
C415	BH1331	880328	BMDL	700	2,000
C418	BH1333	880328	BMDL	520	2,000
TARPON - FRONTERA LAGOONS (WHOLE - 5 FISH)					
X209	BH1318	880226	BMDL	920	2,000
X251 REP	BH1325	880226	BMDL	870	2,000
X220	BH1321	880227	ND	350	2,000
X227	BH1320	880226	BMDL	1,200	2,000
TARPON - BOQUERON (WHOLE - 2 FISH)					
X003	BH1329	880324	BMDL	680	2,000
X014	BH1324	880324	ND	280	2,000
TARPON - BOQUERON (WHOLE - 1 FISH)					
X040	BH1328	880324	BMDL	480	2,000
TARPON - BOQUERON (WHOLE - 5 FISH, COMPOSITE)					
X041	BH1326	880324	BMDL	480	2,000
TARPON - ROOSEVELT ROADS (WHOLE - 5 FISH)					
X410	BH1310	880326	BMDL	1,400	2,000
X417	BH1332	880326	BMDL	700	2,000
X430	BH1315	880328	BMDL	1,600	2,000
GALLINULES - FRONTERA LAGOONS (LIVER - 5 GALLINULES)					
M053	BH1317	880225	BMDL	1,200	2,000
CATTLE EGRETS - FRONTERA LAGOONS (LIVER - 6 CATTLE EGRETS)					
M051	BH1316	880225	BMDL	940	2,000
CATTLE EGRETS - BOQUERON (LIVER - 6 CATTLE EGRETS)					
M050	BH1319	880222	BMDL	480	2,000

TABLE 15 (continued)

Dynamac Number	ETC Number	Date	Lab Qual	Value	MDL
RCRA METALS - Copper					
CRABS - FRONTERA NORTH LAGOON (WHOLE - 5 CRABS)					
CF203	BH1323	880225		15,000	2,000
CF204	BH1314	880227		26,000	2,000
CF220	BH1322	880224		22,000	2,000
CRABS - MANDRI CANAL (WHOLE - 5 CRABS)					
CM207	BH1311	880224		12,000	2,000
CM208	BH1327	880224		24,000	2,000
CM220	BH1336	880225		10,000	2,000
CRABS - BOQUERON (WHOLE - 5 CRABS)					
C001	BH1312	880222		14,000	2,000
C008	BH1313	880323		18,000	2,000
C026	BH1335	880325		11,000	2,000
CRABS - ROOSEVELT ROADS (WHOLE - 5 CRABS)					
C411	BH1334	880327		10,000	2,000
C415	BH1331	880328		8,600	2,000
C418	BH1333	880328		7,000	2,000
TARPON - FRONTERA LAGOONS (WHOLE - 5 FISH)					
X209	BH1318	880226	BMDL	1,100	2,000
X251 REP	BH1325	880226	BMDL	680	2,000
X220	BH1321	880227	BMDL	970	2,000
X227	BH1320	880226	BMDL	960	2,000
TARPON - BOQUERON (WHOLE - 2 FISH)					
X003	BH1329	880324	BMDL	820	2,000
X014	BH1324	880324	BMDL	1,300	2,000
TARPON - BOQUERON (WHOLE - 1 FISH)					
X040	BH1328	880324	BMDL	1,300	2,000
TARPON - BOQUERON (WHOLE - 5 FISH, COMPOSITE)					
X041	BH1326	880324	BMDL	750	2,000
TARPON - ROOSEVELT ROADS (WHOLE - 5 FISH)					
X410	BH1310	880326	BMDL	600	2,000
X417	BH1332	880326	BMDL	460	2,000
X430	BH1315	880328	BMDL	890	2,000
GALLINULES - FRONTERA LAGOONS (LIVER - 5 GALLINULES)					
M053	BH1317	880225		10,000	2,000
GALLINULES - BOQUERON (LIVER - 5 GALLINULES)					
M052	BH1330	880222		3,100	2,000
CATTLE EGRETS - FRONTERA LAGOONS (LIVER - 6 CATTLE EGRETS)					
M051	BH1316	880225		8,100	2,000

Dynamac Number	ETC Number	Date	Lab Qual	Value	MDL
OTHER/MISCELLANEOUS - Aluminum (continued)					
CRABS - MANDRI CANAL (WHOLE - 5 CRABS)					
CM207	BH1311	880224		26,000	20,000
CM208	BH1327	880224	BMDL	15,000	20,000
CM220	BH1336	880225	BMDL	9,000	20,000
CRABS - BOQUERON (WHOLE - 5 CRABS)					
C001	BH1312	880222		51,000	20,000
C008	BH1313	880323		49,000	20,000
C026	BH1335	880325		91,000	20,000
CRABS - ROOSEVELT ROADS (WHOLE - 5 CRABS)					
C411	BH1334	880327		27,000	20,000
C415	BH1331	880328	BMDL	4,200	20,000
C418	BH1333	880328	BMDL	4,600	20,000
TARPON - FRONTERA LAGOONS (WHOLE - 5 FISH)					
X209	BH1318	880226	ND	1,400	20,000
X251 REP	BH1325	880226	ND	2,000	20,000
TARPON - BOQUERON (WHOLE - 2 FISH)					
X003	BH1329	880324	BMDL	5,700	20,000
X014	BH1324	880324	ND	640	20,000
TARPON - ROOSEVELT ROADS (WHOLE - 5 FISH)					
X410	BH1310	880326	ND	1,200	20,000
X417	BH1332	880326	BMDL	7,500	20,000
X430	BH1315	880328	ND	41	20,000
GALLINULES - FRONTERA LAGOONS (LIVER - 5 GALLINULES)					
M053	BH1317	880225	BMDL	6,900	20,000
GALLINULES - BOQUERON (LIVER - 5 GALLINULES)					
M052	BH1330	880222	ND	1,100	20,000
CATTLE EGRETS - FRONTERA LAGOONS (LIVER - 6 CATTLE EGRETS)					
M051	BH1316	880225	BMDL	8,200	20,000
CATTLE EGRETS - BOQUERON (LIVER - 6 CATTLE EGRETS)					
M050	BH1319	880222	BMDL	6,800	20,000
OTHER/MISCELLANEOUS - Antimony					
CRABS - FRONTERA NORTH LAGOON (WHOLE - 5 CRABS)					
CF204	BH1314	880227	BMDL	7,400	12,000
CF220	BH1322	880224	BMDL	6,100	12,000

TABLE 15 (continued)

Dynamac Number	ETC Number	Date	Lab Qual	Value	MDL
RCRA METALS - Copper (continued)					
CATTLE EGRETS - BOQUERON (LIVER - 6 CATTLE EGRETS)					
M050	BH1319	880222		6,400	2,000
RCRA METALS - Lead					
CRABS - FRONTERA NORTH LAGOON (WHOLE - 5 CRABS)					
CF203	BH1323	880225	ND	130	15,000
CF204	BH1314	880227	BMDL	470	1,000
CF220	BH1322	880224	ND	130	15,000
CRABS - MANDRI LAGOONS (WHOLE - 5 CRABS)					
CM207	BH1311	880224	ND	170	1,000
CM208	BH1327	880224	ND	35	15,000
CM220	BH1336	880225	BMDL	400	1,000
CRABS - BOQUERON (WHOLE - 5 CRABS)					
C001	BH1312	880222	BMDL	240	1,000
C008	BH1313	880323	BMDL	200	1,000
C026	BH1335	880325	ND	130	15,000
CRABS - ROOSEVELT ROADS (WHOLE - 5 CRABS)					
C411	BH1334	880327	ND	380	15,000
C415	BH1331	880328	ND	180	15,000
C418	BH1333	880328	ND	730	15,000
TARPON - FRONTERA LAGOONS (WHOLE - 5 FISH)					
X209	BH1318	880226	ND	130	15,000
X251 REP	BH1325	880226	ND	780	15,000
X220	BH1321	880227	ND	85	15,000
X227	BH1320	880226	ND	85	15,000
TARPON - BOQUERON (WHOLE - 2 FISH)					
X003	BH1329	880324	ND	35	15,000
X014	BH1324	880324	ND	35	15,000
TARPON - BOQUERON (WHOLE - 1 FISH)					
X040	BH1328	880324	ND	85	15,000
TARPON - BOQUERON (WHOLE - 5 FISH, COMPOSITE)					
X041	BH1326	880324	ND	85	15,000
TARPON - ROOSEVELT ROADS (WHOLE - 5 FISH)					
X410	BH1310	880326	ND	170	1,000
X417	BH1332	880326	ND	85	15,000
X430	BH1315	880328	ND	140	1,000
GALLINULES - FRONTERA LAGOONS (LIVER - 5 GALLINULES)					
M053	BH1317	880225	ND	230	15,000

TABLE 15 (continued)

Dynamac Number	ETC Number	Date	Lab Qual	Value	MDL
RCRA METALS - Lead (continued)					
GALLINULES - BOQUERON (LIVER - 5 GALLINULES)					
M052	BH1330	880222	ND	180	15,000
CATTLE EGRETS - FRONTERA LAGOONS (LIVER - 6 CATTLE EGRETS)					
M051	BH1316	880225	BMDL	270	1,000
CATTLE EGRETS - BOQUERON (LIVER - 6 CATTLE EGRETS)					
M050	BH1319	880222	ND	480	15,000
RCRA METALS - Selenium					
CRABS - FRONTERA NORTH LAGOON (WHOLE - 5 CRABS)					
CF203	BH1323	880225	ND	1	1,000
CF204	BH1314	880227	ND	80	1,000
CF220	BH1322	880224	ND	130	1,000
CRABS - MANDRI CANAL (WHOLE - 5 CRABS)					
CM207	BH1311	880224	ND	6.8	1,000
CM208	BH1327	880224	ND	130	1,000
CM220	BH1336	880225	ND	370	2,000
CRABS - BOQUERON (WHOLE - 5 CRABS)					
C001	BH1312	880222	ND	80	1,000
C026	BH1335	880325	ND	130	1,000
TARPON - FRONTRERA LAGOONS (WHOLE - 5 FISH)					
X209	BH1318	880226	ND	1	1,000
X251 REP	BH1325	880226	ND	63	1,000
X220	BH1321	880227	ND	87	5,000
X227	BH1320	880226	ND	510	5,000
TARPON - BOQUERON (WHOLE - 2 FISH)					
X014	BH1324	880324	ND	510	5,000
TARPON - BOQUERON (WHOLE - 1 FISH)					
X040	BH1328	880324	ND	87	5,000
TARPON - ROOSEVELT ROADS (WHOLE - 5 FISH)					
X410	BH1310	880326	ND	6.8	1,000
X417	BH1332	880326	ND	87	5,000
GALLINULES - FRONTERA LAGOONS (LIVER - 5 GALLINULES)					
M053	BH1317	880225	ND	510	5,000
GALLINULES - BOQUERON (LIVER - 5 GALLINULES)					
M052	BH1330	880222	ND	930	5,000
CATTLE EGRETS - FRONTERA CREEK (LIVER - 6 CATTLE EGRETS)					
M051	BH1316	880225		1,200	1,000

Dynamac Number	ETC Number	Date	Lab Qual	Value	MDL
RCRA METALS - Selenium (continued)					
CATTLE EGRETS - BOQUERON (LIVER - 6 CATTLE EGRETS)					
M050	BH1319	880222	ND	510	5,000
RCRA METALS - Silver					
CRABS - FRONTERA NORTH LAGOON (WHOLE - 5 CRABS)					
CF220	BH1322	880224	BMDL	460	2,000
CRABS - MANDRI CANAL (WHOLE - 5 CRABS)					
CM208	BH1327	880224	BMDL	590	2,000
CM220	BH1336	880225	BMDL	590	2,000
CRABS - BOQUERON (WHOLE - 5 CRABS)					
C001	BH1312	880222	ND	390	2,000
C026	BH1335	880325	BMDL	850	2,000
CRABS - ROOSEVELT ROADS (WHOLE - 5 CRABS)					
C411	BH1334	880327	BMDL	920	2,000
TARPON - FRONTERA LAGOONS (WHOLE - 5 FISH)					
X209	BH1318	880226	ND	260	2,000
TARPON - BOQUERON (WHOLE - 2 FISH)					
X003	BH1329	880324	ND	260	2,000
X014	BH1324	880324	ND	330	2,000
TARPON - BOQUERON (WHOLE - 1 FISH)					
X040	BH1328	880324	BMDL	530	2,000
TARPON - ROOSEVELT ROADS (WHOLE - 5 FISH)					
X410	BH1310	880326	ND	3.6	2,000
X430	BH1315	880328	ND	200	2,000
GALLINULES - FRONTERA LAGOONS (LIVER - 5 GALLINULES)					
M053	BH1317	880225	ND	200	2,000
RCRA METALS - Zinc					
CRABS - FRONTERA NORTH LAGOON (WHOLE - 5 CRABS)					
CF203	BH1323	880225		28,000	4,000
CF204	BH1314	880227		28,000	4,000
CF220	BH1322	880224		41,000	4,000
CRABS - MANDRI CANAL (WHOLE - 5 CRABS)					
CM207	BH1311	880224		25,000	4,000
CM208	BH1327	880224		29,000	4,000
CM220	BH1336	880225		37,000	4,000

Dynamac Number	ETC Number	Date	Lab Qual	Value	MDL
RCRA METALS - Zinc (continued)					
CRABS - BOQUERON (WHOLE - 5 CRABS)					
C001	BH1312	880222		24,000	4,000
C008	BH1313	880323		22,000	4,000
C026	BH1335	880325		30,000	4,000
CRABS - ROOSEVELT ROADS (WHOLE - 5 CRABS)					
C411	BH1334	880327		28,000	4,000
C415	BH1331	880328		30,000	4,000
C418	BH1333	880328		21,000	4,000
TARPON - FRONTERA LAGOONS (WHOLE - 5 FISH)					
X209	BH1318	880226		17,000	4,000
X251 REP	BH1325	880226		15,000	4,000
X220	BH1321	880227		20,000	4,000
X227	BH1320	880226		22,000	4,000
TARPON - BOQUERON (WHOLE - 2 FISH)					
X003	BH1329	880324		21,000	4,000
X014	BH1324	880324		13,000	4,000
TARPON - BOQUERON (WHOLE - 1 FISH)					
X040	BH1328	880324		21,000	4,000
TARPON - BOQUERON (WHOLE - 5 FISH, COMPOSITE)					
X041	BH1326	880324		12,000	4,000
TARPON - ROOSEVELT ROADS (WHOLE - 5 FISH)					
X410	BH1310	880326		36,000	4,000
X417	BH1332	880326		27,000	4,000
X430	BH1315	880328		24,000	4,000
GALLINULES - FRONTERA LAGOONS (LIVER - 5 GALLINULES)					
M053	BH1317	880225		35,000	4,000
GALLINULES - BOQUERON (LIVER - 5 GALLINULES)					
M052	BH1330	880222		36,000	4,000
CATTLE EGRETS - FRONTERA LAGOONS (LIVER - 6 CATTLE EGRETS)					
M051	BH1316	880225		39,000	4,000
CATTLE EGRETS - BOQUERON (WHOLE - 6 CATTLE EGRETS)					
M050	BH1319	880222		26,000	4,000
OTHER/MISCELLANEOUS - Aluminum					
CRABS - FRONTERA NORTH LAGOON (WHOLE - 5 CRABS)					
CF203	BH1323	880225		34,000	20,000
CF204	BH1314	880227		26,000	20,000
CF220	BH1322	880224		33,000	20,000

TABLE 15 (continued)

Dynamac Number	ETC Number	Date	Lab Qual	Value	MDL
OTHER/MISCELLANEOUS - Antimony (continued)					
CRABS - MANDRI CANAL (WHOLE - 5 CRABS)					
CM207	BH1311	880224	BMDL	3,900	12,000
CM208	BH1327	880224	ND	1,000	12,000
CM220	BH1336	880225	BMDL	4,200	12,000
CRABS - BOQUERON (WHOLE - 5 CRABS)					
C001	BH1312	880222	BMDL	3,200	12,000
C008	BH1313	880323	BMDL	2,700	12,000
C026	BH1335	880325	BMDL	3,700	12,000
CRABS - ROOSEVELT ROADS (WHOLE - 5 CRABS)					
C411	BH1334	880327	BMDL	3,400	12,000
C418	BH1333	880328	ND	720	12,000
TARPON - FRONTERA LAGOONS (WHOLE - 5 FISH)					
X209	BH1318	880226	ND	1,900	12,000
X251 REP	BH1325	880226	ND	1,600	12,000
X220	BH1321	880227	BMDL	2,500	12,000
X227	BH1320	880226	ND	2,100	12,000
TARPON - BOQUERON (WHOLE - 2 FISH)					
X003	BH1329	880324	BMDL	3,300	12,000
X014	BH1324	880324	BMDL	2,800	12,000
TARPON - BOQUERON (WHOLE - 1 FISH)					
X040	BH1328	880324	BMDL	3,600	12,000
TARPON - BOQUERON (WHOLE - 5 FISH, COMPOSITE)					
X041	BH1326	880324	BMDL	3,500	12,000
TARPON - ROOSEVELT ROADS (WHOLE - 5 FISH)					
X410	BH1310	880326	ND	1,500	12,000
X417	BH1332	880326	ND	700	12,000
X430	BH1315	880328	BMDL	3,000	12,000
GALLINULES - FRONTERA LAGOONS (LIVER - 5 GALLINULES)					
M053	BH1317	880225	BMDL	2,400	12,000
GALLINULES - BOQUERON (LIVER - 5 GALLINULES)					
M052	BH1330	880222	BMDL	4,300	12,000
CATTLE EGRETS - FRONTERA LAGOONS (LIVER - 6 CATTLE EGRETS)					
M051	BH1316	880225	BMDL	5,300	12,000
CATTLE EGRETS - BOQUERON (LIVER - 6 CATTLE EGRETS)					
M050	BH1319	880222	BMDL	2,700	12,000

TABLE 15 (continued)

Dynamac Number	ETC Number	Date	Lab Qual	Value	MDL
OTHER/MISCELLANEOUS - Calcium					
CRABS - FRONTERA NORTH LAGOON (WHOLE - 5 CRABS)					
CF203	BH1323	880225		42,300,000	40,000
CF204	BH1314	880227		39,500,000	40,000
CF220	BH1322	880224		18,700,000	40,000
CRABS - MANDRI CANAL (WHOLE - 5 CRABS)					
CM207	BH1311	880224		60,100,000	40,000
CM208	BH1327	880224		68,600,000	40,000
CM220	BH1336	880225		97,800,000	40,000
CRABS - BOQUERON (WHOLE - 5 CRABS)					
C001	BH1312	880222		78,300,000	40,000
C008	BH1313	880323		66,300,000	40,000
C026	BH1335	880325		32,700,000	40,000
CRABS - ROOSEVELT ROADS (WHOLE - 5 CRABS)					
C411	BH1334	880327		45,300,000	40,000
C415	BH1331	880328		43,400,000	40,000
C418	BH1333	880328		57,900,000	40,000
TARPON - FRONTERA LAGOONS (WHOLE - 5 FISH)					
X209	BH1318	880226		16,600,000	40,000
X251 REP	BH1325	880226		10,500,000	40,000
X220	BH1321	880227		18,800,000	40,000
X227	BH1320	880226		22,300,000	40,000
TARPON - BOQUERON (WHOLE - 2 FISH)					
X003	BH1329	880324		10,200,000	40,000
X014	BH1324	880324		7,100,000	40,000
TARPON - BOQUERON (WHOLE - 1 FISH)					
X040	BH1328	880324		15,500,000	40,000
TARPON - BOQUERON (WHOLE - 5 FISH, COMPOSITE)					
X041	BH1326	880324		3,100,000	40,000
TARPON - ROOSEVELT ROADS (WHOLE - 5 FISH)					
X410	BH1310	880326		52,100,000	40,000
X417	BH1332	880326		29,700,000	40,000
X430	BH1315	880328		21,400,000	40,000
GALLINULES - FRONTERA LAGOONS (LIVER - 5 GALLINULES)					
M053	BH1317	880225		300,000	40,000
GALLINULES - BOQUERON (LIVER - 5 GALLINULES)					
M052	BH1330	880222		280,000	40,000
CATTLE EGRETS - FRONTERA LAGOONS (LIVER - 6 CATTLE EGRETS)					
M051	BH1316	880225		130,000	40,000

TABLE 15 (continued)

Dynamac Number	ETC Number	Date	Lab Qual	Value	MDL
OTHER/MISCELLANEOUS - Calcium (continued)					
CATTLE EGRETS - BOQUERON (LIVER - 6 CATTLE EGRETS)					
M050	BH1319	880222		140,000	40,000
OTHER/MISCELLANEOUS - Cobalt					
CRABS - FRONTERA NORTH LAGOON (WHOLE - 5 CRABS)					
CF204	BH1314	880227	ND	520	4,000
CF220	BH1322	880224	ND	440	4,000
CRABS - MANDRI CANAL (WHOLE - 5 CRABS)					
CM207	BH1311	880224	ND	630	4,000
CM220	BH1336	880225	BMDL	870	4,000
CRABS - BOQUERON (WHOLE - 5 CRABS)					
C008	BH1313	880323	ND	630	4,000
C026	BH1335	880325	ND	250	4,000
CRABS - ROOSEVELT ROADS (WHOLE - 5 CRABS)					
C411	BH1334	880327	ND	260	4,000
C415	BH1331	880328	ND	350	4,000
TARPON - FRONTERA LAGOONS (WHOLE - 5 FISH)					
X220	BH1321	880227	ND	300	4,000
TARPON - BOQUERON (WHOLE - 2 FISH)					
X003	BH1329	880324	ND	160	4,000
X014	BH1324	880324	ND	630	4,000
TARPON - BOQUERON (WHOLE - 1 FISH)					
X040	BH1328	880324	ND	570	4,000
TARPON - ROOSEVELT ROADS (WHOLE - 5 FISH)					
X410	BH1310	880326	ND	240	4,000
X430	BH1315	880328	BMDL	1,000	4,000
GALLINULES - FRONTERA LAGOONS (LIVER - 5 GALLINULES)					
M053	BH1317	880225	ND	300	4,000
GALLINULES - BOQUERON (LIVER - 5 GALLINULES)					
M052	BH1330	880222	ND	470	4,000
CATTLE EGRETS - BOQUERON (WHOLE - 6 CATTLE EGRETS)					
M050	BH1319	880222	ND	88	4,000

Dynamac Number	ETC Number	Date	Lab Qual	Value	MDL
OTHER/MISCELLANEOUS - Cyanide, Total					
CRABS - FRONTERA NORTH LAGOON (WHOLE - 5 CRABS)					
CF203	BH1323	880225		< 430	430
CF204	BH1314	880227		< 550	550
CF220	BH1322	880224		< 380	380
CRABS - MANDRI CANAL (WHOLE - 5 CRABS)					
CM207	BH1311	880224		< 630	630
CM208	BH1327	880224		< 520	520
CM220	BH1336	880225		< 590	590
CRABS - BOQUERON (WHOLE - 5 CRABS)					
C001	BH1312	880222		< 470	470
C008	BH1313	880323		< 410	410
C026	BH1335	880325		< 570	570
CRABS - ROOSEVELT ROADS (WHOLE - 5 CRABS)					
C411	BH1334	880327		< 370	370
C415	BH1331	880328		< 440	440
C418	BH1333	880328		< 500	500
TARPON - FRONTERA LAGOONS (WHOLE - 5 FISH)					
X209	BH1318	880226		< 500	500
X251 REP	BH1325	880226		< 500	500
X220	BH1321	880227		< 500	500
X227	BH1320	880226		< 500	500
TARPON - BOQUERON (WHOLE - 2 FISH)					
X003	BH1329	880324		< 620	620
X014	BH1324	880324		< 610	610
TARPON - BOQUERON (WHOLE - 1 FISH)					
X040	BH1328	880324		< 580	580
TARPON - BOQUERON (WHOLE - 5 FISH, COMPOSITE)					
X041	BH1326	880324		< 620	620
TARPON - ROOSEVELT ROADS (WHOLE - 5 FISH)					
X410	BH1310	880326		< 530	530
X417	BH1332	880326		< 430	430
X430	BH1315	880328		< 420	420
OTHER/MISCELLANEOUS - Iron					
CRABS - FRONTERA NORTH LAGOON (WHOLE - 5 CRABS)					
CF203	BH1323	880225		530,000	30,000
CF204	BH1314	880227		570,000	30,000
CF220	BH1322	880224		300,000	30,000

TABLE 15 (continued)

Dynamac Number	ETC Number	Date	Lab Qual	Value	MDL
OTHER/MISCELLANEOUS - Iron (continued)					
CRABS - MANDRI CANAL (WHOLE - 5 CRABS)					
CM207	BH1311	880224		350,000	30,000
CM208	BH1327	880224		170,000	30,000
CM220	BH1336	880225		220,000	30,000
CRABS - BOQUERON (WHOLE - 5 CRABS)					
C001	BH1312	880222		140,000	30,000
C008	BH1313	880323		92,000	30,000
C026	BH1335	880325		470,000	30,000
CRABS - ROOSEVELT ROADS (WHOLE - 5 CRABS)					
C411	BH1334	880327		95,000	30,000
C415	BH1331	880328		42,000	30,000
C418	BH1333	880328		54,000	30,000
TARPON - FRONTERA LAGOONS (WHOLE - 5 FISH)					
X209	BH1318	880226		29,000	30,000
X251 REP	BH1325	880226		26,000	30,000
X220	BH1321	880227		23,000	30,000
X227	BH1320	880226		30,000	30,000
TARPON - BOQUERON (WHOLE - 2 FISH)					
X003	BH1329	880324		33,000	30,000
X014	BH1324	880324		30,000	30,000
TARPON - BOQUERON (WHOLE - 1 FISH)					
X040	BH1328	880324		20,000	30,000
TARPON - BOQUERON (WHOLE - 5 FISH, COMPOSITE)					
X041	BH1326	880324	BMDL	16,000	30,000
TARPON - ROOSEVLET ROADS (WHOLE - 5 FISH)					
X410	BH1310	880326		33,000	30,000
X417	BH1332	880326	BMDL	18,000	30,000
X430	BH1315	880328		36,000	30,000
GALLINULES - FRONTERA LAGOONS (LIVER - 5 GALLINULES)					
M053	BH1317	880225		1,600,000	30,000
GALLINULES - BOQUERON (LIVER - 5 GALLINULES)					
M052	BH1330	880222		1,000,000	30,000
CATTLE EGRETS - FRONTERA LAGOONS (LIVER - 6 CATTLE EGRETS)					
M051	BH1316	880225		610,000	30,000
CATTLE EGRETS - BOQUERON (LIVER - 6 CATTLE EGRETS)					
M050	BH1319	880222		350,000	30,000

TABLE 15 (continued)

Dynamac Number	ETC Number	Date	Lab Qual	Value	MDL
OTHER/MISCELLANEOUS - Magnesium					
CRABS - FRONTERA NORTH LAGOON (WHOLE - 5 CRABS)					
CF203	BH1323	880225		2,300,000	20,000
CF204	BH1314	880227		2,490,000	20,000
CF220	BH1322	880224		1,600,000	20,000
CRABS - MANDRI CANAL (WHOLE - 5 CRABS)					
CM207	BH1311	880224		2,620,000	20,000
CM208	BH1327	880224		3,430,000	20,000
CM220	BH1336	880225		4,980,000	20,000
CRABS - BOQUERON (WHOLE - 5 CRABS)					
C001	BH1312	880222		4,120,000	20,000
C008	BH1313	880323		3,730,000	20,000
C026	BH1335	880325		2,760,000	20,000
CRABS - ROOSEVELT ROADS (WHOLE - 5 CRABS)					
C411	BH1334	880327		2,620,000	20,000
C415	BH1331	880328		2,580,000	20,000
C418	BH1333	880328		3,010,000	20,000
TARPON - FRONTERA LAGOONS (WHOLE - 5 FISH)					
X209	BH1318	880226		510,000	20,000
X251 REP	BH1325	880226		430,000	20,000
X220	BH1321	880227		600,000	20,000
X227	BH1320	880226		650,000	20,000
TARPON - BOQUERON (WHOLE - 2 FISH)					
X003	BH1329	880324		600,000	20,000
X014	BH1324	880324		350,000	20,000
TARPON - BOQUERON (WHOLE - 1 FISH)					
X040	BH1328	880324		500,000	20,000
TARPON - BOQUERON (WHOLE - 5 FISH, COMPOSITE)					
X041	BH1326	880324		290,000	20,000
TARPON - ROOSEVELT ROADS (WHOLE - 5 FISH)					
X410	BH1310	880326		1,100,000	20,000
X417	BH1332	880326		800,000	20,000
X430	BH1315	880328		610,000	20,000
GALLINULES - FRONTERA LAGOONS (LIVER - 5 GALLINULES)					
M053	BH1317	880225		210,000	20,000
GALLINULES - BOQUERON (LIVER - 5 GALLINULES)					
M052	BH1330	880222		210,000	20,000

Dynamac Number	ETC Number	Date	Lab Qual	Value	MDL
OTHER/MISCELLANEOUS - Magnesium (continued)					
CATTLE EGRETS - FRONTERA LAGOONS (LIVER - 6 CATTLE EGRETS)					
M051	BH1316	880225		230,000	20,000
CATTLE EGRETS - BOQUERON (LIVER - 6 CATTLE EGRETS)					
M050	BH1319	880222		190,000	20,000
OTHER/MISCELLANEOUS - Manganese					
CRABS - FRONTERA NORTH LAGOON (WHOLE - 5 CRABS)					
CF203	BH1323	880225		480,000	1,000
CF204	BH1314	880227		493,000	1,000
CF220	BH1322	880224		460,000	1,000
CRABS - MANDRI CANAL (WHOLE - 5 CRABS)					
CM207	BH1311	880224		385,000	1,000
CM208	BH1327	880224		567,000	1,000
CM220	BH1336	880225		527,000	1,000
CRABS - BOQUERON (WHOLE - 5 CRABS)					
C001	BH1312	880222		127,000	1,000
C008	BH1313	880323		86,000	1,000
C026	BH1335	880325		99,000	1,000
CRABS - ROOSEVELT ROADS (WHOLE - 5 CRABS)					
C411	BH1334	880327		79,000	1,000
C415	BH1331	880328		60,000	1,000
C418	BH1333	880328		83,000	1,000
TARPON - FRONTERA LAGOONS (WHOLE - 5 FISH)					
X209	BH1318	880226		11,000	1,000
X251 REP	BH1325	880226		8,700	1,000
X220	BH1321	880227		11,000	1,000
X227	BH1320	880226		20,000	1,000
TARPON - BOQUERON (WHOLE - 2 FISH)					
X003	BH1329	880324		2,500	1,000
X014	BH1324	880324		1,700	1,000
TARPON - BOQUERON (WHOLE - 1 FISH)					
X040	BH1328	880324		2,800	1,000
TARPON - BOQUERON (WHOLE - 5 FISH, COMPOSITE)					
X041	BH1326	880324	BMDL	670	1,000
TARPON - ROOSEVELT ROADS (WHOLE - 5 FISH)					
X410	BH1310	880326		10,000	1,000
X417	BH1332	880326		6,300	1,000
X430	BH1315	880328		3,900	1,000

TABLE 15 (continued)

Dynamac Number	ETC Number	Date	Lab Qual	Value	MDL
OTHER/MISCELLANEOUS - Manganese (continued)					
GALLINULES - FRONTERA LAGOONS (LIVER - 5 FISH)					
M053	BH1317	880225		11,000	1,000
GALLINULES - BOQUERON (LIVER - 5 FISH)					
M052	BH1330	880222		2,900	1,000
CATTLE EGRETS - FRONTERA LAGOONS (LIVER - 6 CATTLE EGRETS)					
M051	BH1316	880225		4,200	1,000
CATTLE EGRETS - BOQUERON (LIVER - 6 CATTLE EGRETS)					
M050	BH1319	880222		2,700	1,000
OTHER/MISCELLANEOUS - Nickel					
CRABS - FRONTERA NORTH LAGOON (WHOLE - 5 CRABS)					
CF220	BH1322	880224	BMDL	830	4,000
CRABS - MANDRI CANAL (WHOLE - 5 CRABS)					
CM207	BH1311	880224	ND	220	4,000
CM208	BH1327	880224	ND	170	4,000
CM220	BH1336	880225	ND	110	4,000
CRABS - BOQUERON (WHOLE - 5 CRABS)					
C001	BH1312	880222	ND	740	4,000
C008	BH1313	880323	BMDL	1,100	4,000
C026	BH1335	880325	ND	770	4,000
CRABS - ROOSEVELT ROADS (WHOLE - 5 CRABS)					
C411	BH1334	880327	ND	460	4,000
TARPON - FRONTERA LAGOONS (WHOLE - 5 FISH)					
X209	BH1318	880226	ND	460	4,000
X227	BH1320	880226	ND	55	4,000
TARPON - BOQUERON (WHOLE - 2 FISH)					
X003	BH1329	880324	ND	280	4,000
X014	BH1324	880324	ND	290	4,000
TARPON - ROOSEVELT ROADS (WHOLE - 5 FISH)					
X410	BH1310	880326	ND	93	4,000
X417	BH1332	880326	ND	93	4,000
X430	BH1315	880328	BMDL	950	4,000
GALLINULES - FRONTERA LAGOONS (LIVER - 5 GALLINULES)					
M053	BH1317	880225	ND	240	4,000

TABLE 15 (continued)

Dynamac Number	ETC Number	Date	Lab Qual	Value	MDL
OTHER/MISCELLANEOUS - Potassium					
CRABS - FRONTERA NORTH LAGOON (WHOLE - 5 CRABS)					
CF203	BH1323	880225		2,300,000	100,000
CF204	BH1314	880227		2,500,000	100,000
CF220	BH1322	880224		2,300,000	100,000
CRABS - MANDRI CANAL (WHOLE - 5 CRABS)					
CM207	BH1311	880224		1,800,000	100,000
CM208	BH1327	880224		3,000,000	100,000
CM220	BH1336	880225		2,400,000	100,000
CRABS - BOQUERON (WHOLE - 5 CRABS)					
C001	BH1312	880222		2,200,000	100,000
C008	BH1313	880323		2,100,000	100,000
C026	BH1335	880325		1,900,000	100,000
CRABS - ROOSEVELT ROADS (WHOLE - 5 CRABS)					
C411	BH1334	880327		2,200,000	100,000
C415	BH1331	880328		2,000,000	100,000
C418	BH1333	880328		1,800,000	100,000
TARPON - FRONTERA LAGOONS (WHOLE - 5 FISH)					
X209	BH1318	880226		2,900,000	100,000
X251 REP	BH1325	880226		2,200,000	100,000
X220	BH1321	880227		2,700,000	100,000
X227	BH1320	880226		2,500,000	100,000
TARPON - BOQUERON (WHOLE - 2 FISH)					
X003	BH1329	880324		3,200,000	100,000
X014	BH1324	880324		2,400,000	100,000
TARPON - BOQUERON (WHOLE - 1 FISH)					
X040	BH1328	880324		3,100,000	100,000
TARPON - BOQUERON (WHOLE - 5 FISH, COMPOSITE)					
X041	BH1326	880324		3,400,000	100,000
TARPON - ROOSEVELT ROADS (WHOLE - 5 FISH)					
X410	BH1310	880326		3,200,000	100,000
X417	BH1332	880326		2,900,000	100,000
X430	BH1315	880328		2,300,000	100,000
GALLINULES - FRONTERA LAGOONS (LIVER - 5 GALLINULES)					
M053	BH1317	880225		2,600,000	100,000
GALLINULES - BOQUERON (LIVER - 5 GALLINULES)					
M052	BH1330	880222		3,000,000	100,000
CATTLE EGRETS - FRONTERA LAGOONS (LIVER - 6 CATTLE EGRETS)					
M051	BH1316	880225		2,600,000	100,000

TABLE 15 (continued)

Dynamac Number	ETC Number	Date	Lab Qual	Value	MDL
OTHER/MISCELLANEOUS - Potassium (continued)					
CATTLE EGRETS - BOQUERON (LIVER - 6 CATTLE EGRETS)					
M050	BH1319	880222		2,800,000	100,000
OTHER/MISCELLANEOUS - Sodium					
CRABS - FRONTERA NORTH LAGOON (WHOLE - 5 CRABS)					
CF203	BH1323	880225		3,600,000	100,000
CF204	BH1314	880227		3,500,000	100,000
CF220	BH1322	880224		3,200,000	100,000
CRABS - MANDRI CANAL (WHOLE - 5 CRABS)					
CM207	BH1311	880224		3,400,000	100,000
CM208	BH1327	880224		3,700,000	100,000
CM220	BH1336	880225		3,700,000	100,000
CRABS - BOQUERON (WHOLE - 5 CRABS)					
C001	BH1312	880222		5,000,000	100,000
C008	BH1313	880323		6,600,000	100,000
C026	BH1335	880325		5,400,000	100,000
CRABS - ROOSEVELT ROADS (WHOLE - 5 CRABS)					
C411	BH1334	880327		3,300,000	100,000
C415	BH1331	880328		4,100,000	100,000
C418	BH1333	880328		4,500,000	100,000
TARPON - FRONTERA LAGOONS (WHOLE - 5 FISH)					
X209	BH1318	880226		1,200,000	100,000
X251 REP	BH1325	880226		1,100,000	100,000
X220	BH1321	880227		1,300,000	100,000
X227	BH1320	880226		1,200,000	100,000
TARPON - BOQUERON (WHOLE - 2 FISH)					
X003	BH1329	880324		2,200,000	100,000
X014	BH1324	880324		1,100,000	100,000
TARPON - BOQUERON (WHOLE - 1 FISH)					
X040	BH1328	880324		1,100,000	100,000
TARPON - BOQUERON (WHOLE - 5 FISH, COMPOSITE)					
X041	BH1326	880324		1,300,000	100,000
TARPON - ROOSEVELT ROADS (WHOLE - 5 FISH)					
X410	BH1310	880326		2,100,000	100,000
X417	BH1332	880326		1,700,000	100,000
X430	BH1315	880328		1,700,000	100,000
GALLINULES - FRONTERA LAGOONS (LIVER - 5 GALLINULES)					
M053	BH1317	880225		1,200,000	100,000

Dynamac Number	ETC Number	Date	Lab Qual	Value	MDL
OTHER/MISCELLANEOUS - Sodium (continued)					
GALLINULES - BOQUERON (LIVER - 5 GALLINULES)					
M052	BH1330	880222		1,300,000	100,000
CATTLE EGRETS - FRONTERA LAGOONS (LIVER - 6 CATTLE EGRETS)					
M051	BH1316	880225		1,100,000	100,000
CATTLE EGRETS - BOQUERON (LIVER - 6 CATTLE EGRETS)					
M050	BH1319	880222		1,100,000	100,000
OTHER/MISCELLANEOUS - Vanadium					
CRABS - FRONTERA NORTH LAGOON (WHOLE - 5 CRABS)					
CF203	BH1323	880225	ND	740	4,000
CF204	BH1314	880227	ND	320	4,000
CF220	BH1322	880224	ND	550	4,000
CRABS - MANDRI CANAL (WHOLE - 5 CRABS)					
CM207	BH1311	880224	ND	460	4,000
CM208	BH1327	880224	ND	220	4,000
CRABS - BOQUERON (WHOLE - 5 CRABS)					
C001	BH1312	880222	BMDL	840	4,000
C008	BH1313	880323	ND	650	4,000
C026	BH1335	880325	BMDL	2,300	4,000
CRABS - ROOSEVELT ROADS (WHOLE - 5 CRABS)					
C411	BH1334	880327	ND	650	4,000
C418	BH1333	880328	ND	220	4,000
TARPON - FRONTERA LAGOONS (WHOLE - 5 FISH)					
X209	BH1318	880226	ND	410	4,000
TARPON - BOQUERON (WHOLE - 2 FISH)					
X014	BH1324	880324	ND	460	4,000
TARPON - BOQUERON (WHOLE - 1 FISH)					
X040	BH1328	880324	ND	410	4,000
TARPON - ROOSEVELT ROADS (WHOLE - 5 FISH)					
X410	BH1310	880326	ND	270	4,000
X430	BH1315	880328	BMDL	840	4,000
GALLINULES - FRONTERA LAGOONS (LIVER - 5 GALLINULES)					
M053	BH1317	880225	BMDL	930	4,000

REP - replicate of sample on line above

Table 16
Contaminants of Concern

Receptors and Media	Samples Location	Chemical Name	Arithmetic* Mean Y	Maximum Exposure Concentration (UCL 95%)***
I. CURRENT LAND USE:				
1. Local Residents				
A. Biota (ug/kg)	Fish & crab (Whole, edible or filet) collected from the Frontera Lagoons	Mercury	49	58
B. Sediment (ug/kg)	Frontera Lagoon surface sediments	Mercury	154	220
		Acetone	1,423	2,980
		MEK	222	624 ●
		Methylene Chloride	97	338 ●
		Carbon Disulfide	91	230 ●
		Methyl Chloride	507	1,730 ●
2. Workers				
A. Soils (ug/kg)	Technicos industrial soils	Mercury	1,175 **	296,913
		Arsenic	753 **	1,600 ●
		Cadmium	202 **	520 ●
		Lead	16,585 **	100,000 ●
B. Air (mg/m3)	Stations 5 & 7	Mercury	0.00015	0.000275
		Acetone	0.43	0.933 ●
		Methylene Chloride	1.5	2.73 ●
		Ethyl Benzene	0.017	0.059 ●
		Xylene (Total)	0.026	0.083 ●
		Toluene	0.025	0.045 ●
II. FUTURE LAND USE:				
1. Hypothetical Christians Residents				
A. Soil (ug/kg)	Cristiana surface and test boring surface soils(0–3")	Mercury	97	104
B. Air (mg/m3)	Stations 10 & 11	Mercury	0.0000693	0.000112
		Methylene Chloride	0.047	0.152 ●
		Xylene (Total)	0.00027	0.003 ●
	Surface Water Supply Locations 8 – 10	Acetone	116	189 ●
		Ethyl Benzene	3.2	6.9 ●
		MIBK	89	220 ●
		Xylene (Total)	15	32.5 ●
		Toluene	14	19.5 ●
D. Sediments (ug/kg)	Frontera Creek Sediment Locations 33 – 42 (0–6")	Mercury	114	197 ●
		Acetone	346	619 ●
2. Hypothetical Local Residents				
A. Air (mg/m3)	Modeled values for Hypothetical Community	Mercury	0.00014	0.0002 ●
		Acetone	0.09	0.2 ●
		Ethyl Benzene	0.007	0.085 ●
		Methylene Chloride	0.56	0.63 ●
		Toluene	0.008	0.12 ●
		Xylene (Total)	0.005	0.017 ●
B. Surface Water (ug/l)	Frontera Creek Midstream locations 11 – 17	Mercury	0.22	0.48 ●
		Acetone	751	2,870 ●
		Ethyl Benzene	26	97 ●
		MIBK	1,041	4,650 ●
		Methylene Chloride	329	1,890 ●
		Toluene	4.3	15.9 ●
		Xylene (Total)	43	283 ●
C. Sediments (ug/kg)	The highest measured concentrations of midstream or downstream locations at Frontera Creek	Mercury	906	2,900 ●
		Acetone	428	1,430 ●
		Carbon Disulfide	270	540 ●
		Methyl Chloride	21	26.5 ●
		MEK	165	232 ●
		Xylene (Total)	10	13.5 ●
D. Technicos Sediments(ug/kg)	Technicos ditch and transect samples	Mercury	7,139	88,500 ●
3. Hypothetical Workers Technicos Sediments (ug/kg)	Technicos ditch and transect samples	Mercury	7,139	88,500 ●

*One-half the detection limit was used for sampling results listed as n.d. (not detected)

Values marked with "" are the geometric means.

***Values represent the 95th % upper confidence limit of the mean (UCL 95%) unless otherwise indicated. The UCL 95% was calculated using the equation UCL 95% = exp {1+0.5S²+[(H–S)1 (N–1)½]} from Gilbert, "Statistical Methods for Environmental Pollution Monitoring" Van Nostrand Reinhold Company, New York (1987)

●Maximum measured concentration is used because UCL 95% exceeded this maximum.

Table 17
Potential Exposure Pathways

MEDIUM	ROUTE	POTENTIALLY EXPOSED POPULATION			PATHWAY SELECTED FOR EVALUATION?
		WORKERS	ADULTS	CHILDREN	
I. CURRENT LAND USE:					
Biota	Ingestion	N	Y	Y	Y
Surface Water	Ingestion	N	N	N	N
	Dermal Contact	N	Y	Y	Y
Sediments					
Frontera Lagoons	Dermal Contact	N	Y	N	Y
	Ingestion	N	N	N	N
Technicon Ditch	Dermal Contact	N	N	N	N
	Ingestion	N	N	N	N
Frontera Creek Sediments	Dermal Contact	N	N	N	N
	Ingestion	N	N	N	N
Air	Inhalation	Y	N	N	Y
	Particulates	N	N	N	N
Soils	Ingestion	Y	N	N	Y
	Dermal Contact	Y	N	N	Y
Groundwater	Ingestion	N	N	N	N
	Dermal Contact	N	N	N	N
II. FUTURE LAND USE:					
Biota	Ingestion	N	N	N	N

Table 17

Surface Water	Ingestion	N	N	N	N
	Dermal Contact	N	Y	Y	Y
Sediments					
Frontera Lagoons	Dermal Contact	N	Y	Y	Y
	Ingestion	N	N	N	N
Technicon Ditch	Dermal Contact	N	Y	Y	Y
	Ingestion	N	Y	Y	Y
Frontera Creek	Dermal Contact	N	Y	Y	Y
	Ingestion	N	N	N	N
Air	Inhalation	Y	Y	Y	Y
	Particulates	N	N	N	N
Soils	Ingestion	N	Y	Y	Y
	Dermal	N	Y	Y	Y

Table 18

Toxicity Values for Noncarcinogenic Effects

Chemical	RfD (mg/kg-day)	Confidence Level[1]	Critical Effect	RfD Source	UF and MF[2]
Oral Route					
Acetone	1.00E-01	Low	Hepatic effects	IRIS	UF = 1,000 for H,A,S,L MF = 1
Arsenic	1.00E-03				Health Effects Summary Tables, USEPA 1990
Cadmium	1.00E-03				Health Effects Summary Tables, USEPA 1990
Carbon Disulfide	1.00E-01	Medium	Fetal Toxicity Teratogenicity	IRIS	UF = 100 for H,A MF = 1
Ethyl Benzene	1.00E-01	Low	Hepatic and Renal Effects	IRIS	UF = 1,000 for H,A,S MF = 1
Mercury	3.00-04	Medium	Neurological Effects	IRIS	UF = 10 for L MF = 1
Methyl Ethyl Ketone	5.00E-02	Medium	No adverse erffects	IRIS	UF = 1,000 for H,A,S,L MF = 1
Methyl Isobutyl Ketone	5.00E-02	Low	Hepatic Effects	IRIS	UF = 1,000 for H,A,S,L MF = 1
Methyl Chloride[5]	2.40E-01	Low	Neurological effects	Dynamac	UF = 100 for H,A MF = 1
Methylene Chloride	6.00E-02	Medium	Hepatic Effects	IRIS	UF = 100 for H,A MF = 1
Toluene	2.00E-01	Medium	Hepatic and Renal Effects	IRIS	UF = 1,000 for H,A,S MF = 1
Xylene	2.00E+00	Medium	Hyperactivity, decrease in body weight and increased mortality	IRIS	UF = 100 for H,A MF = 1
Dermal Route[3]					
Acetone	1.00E-01	Low[3]	-	-	-
Arsenic	1.00E-03				Health Effects Summary Tables, USEPA 1990
Cadmium	1.00E-03				Health Effects Summary Tables, USEPA 1990
Carbon Disulfide	1.00E-01	Low[3]	-	-	-
Ethyl Benzene	1.00E-01	Low[3]	-	-	-
Mercury	3.00E-04	Low[3]	-	-	-
Methyl Ethyl Ketone	5.00E-02	Low[3]	-	-	-
Methyl Isobutyl Ketone	5.00E-02	Low[3]	-	-	-

Toxicity Values for Noncarcinogenic Effects

Chemical	RfD (mg/kg-day)	Confidence Level[1]	Critical Effect	RfD Source	UF and MF[2]
Methyl Chloride[5]	2.40E-01	Low[3]	-	-	-
Methylene Chloride	6.00E-02	Low[3]	-	-	-
Toluene	2.00E-01	Low[3]	-	-	-
Xylene	2.00E+00	Low[3]	-	-	-
<u>Inhalation Route</u>					
Acetone	2.99E+00	Low[6]	Narcosis, local	NEA	-
Ethyl Benzene	1.00E-01	Low[3]	-	-	-
Mercury	3.00E-04	Low[3]	-	-	-
Methylene Chloride	6.00E-02	Low[3]	-	-	-
Toluene	2.00E+00	Low[6]	-	FR[4]	-
Xylene	3.00E-01	Low[6]	-	FR[4]	-

1 - Confidence level from IRIS
2 - UF = Uncertainty Factor; MF = Modifying Factor
Uncertainty Adjustments:
M = variation in human sensitivity
A = animal to human extrapolation
S = extrapolation from subchronic to chronic NOAEL
L = extrapolation from LOAEL to NOAEL
3 - If dermal or inhalation RfDs are not available, oral RfDs were used, in such circumstances confidence levels were judged low
4 - 55FR 30798 - July 27, 1990 Federal Register, Proposed Corrective Action Rule for Solid Waste Management Units
5 - RfD estimates by Dynamac based on data obtained from IRIS and ATDSR
6 - Confidence level judged low since RfD for inhalation exposures not reviewed by EPA and/or cited by IRIS

Table 19
Hazard Indices for Reasonable Maximum Exposures

	Reasonable Maximum Exposure Case							
	HQ Mercury		HI VOCs(3)		HQ Arsenic		HQ Cadmium	
Receptor Group/Pathway	Adult	Child	Adult	Child	Adult	Child	Adult	Child
I. CURRENT LAND USE								
1. Local Residents								
Ingestion of Aquatic Biota	3.6E-01	2.6E-01	-	-	-	-	-	-
Dermal Contact with Sediments	5.0E-03	-	7.9E-04	-	-	-	-	-
TOTAL HI	3.7E-01	2.6E-01	7.9E-04	-	-	-	-	-
2. Workers								
Inhalation	6.4E-02	-	3.3E+00	-	-	-	-	-
Incidental Ingestion Soil**	4.8E-01	-	-	-	1.6E-03	-	4.0E-04	-
Dermal Contact Soil**	8.1E+0	-	-	-	6.6E-02	-	1.7E-02	-
TOTAL HI	8.6E+0	-	3.3E+00	-	6.7E-02	-	1.7E-02	-
TOTAL CURRENT HI	9.0E+0	2.6E-01	3.3E+0	-	6.7E-02	-	1.7E-02	-
II. FUTURE LAND USE								
1. Cristiana Residents								
Ingestion of Soil	2.5E-04	2.2E-03	-	-	-	-	-	-
Dermal Contact with Soil	1.6E-02	1.9E-02	-	-	-	-	-	-
Inhalation	1.2E-01	4.4E-01	1.0E+0	3.8E+00	-	-	-	-
Dermal Contact with Surface Water	9.5E-06	1.1E-04	6.4E-02	7.4E-01	-	-	-	-
Dermal Contact with Sediment	4.5E-03	2.6E-02	8.5E-05	5.0E-04	-	-	-	-
TOTAL HI	1.4E-01	4.8E-01	1.1E+0	4.5E+00	-	-	-	-

Table 19
Hazard Indices for Reasonable Maximum Exposures

	Reasonable Maximum Exposure Case							
	HQ Mercury		HI VOCs(3)		HQ Arsenic		HQ Cadmium	
Receptor Group/Pathway	Adult	Child	Adult	Child	Adult	Child	Adult	Child
2. Future Local Residents								
Inhalation	2.2E-01	7.8E-01	4.8E+0	1.7E+1	-	-	-	-
Dermal Contact with Surface Water	3.5E-05	4.1E-04	1.5E+0	1.8E+1	-	-	-	-
Dermal Contact with Sediments	8.8E-02	3.9E-01	3.6E-4	1.6E-03	-	-	-	-
Incidental Ingestion of Techaicon Ditch Sediments	7.5E-03	1.3E-01	-	-	-	-	-	-
Dermal Contact with Techaicon Ditch Sediments	6.4E-01	2.3E+0	-	-	-	-	-	-
TOTAL HI	9.6E-01	3.6E+0	6.3E+0	3.5E+1	-	-	-	-
3. Future Workers								
Incidental Ingestion of Techaicon Ditch Sediments	7.2E-02	-	-	-	-	-	-	-
Dermal Contact with Techaicon Ditch Sediments	2.4E+0	-	-	-	-	-	-	-
TOTAL HI	2.5E+0	-	-	-	-	-	-	-

* Hazard Quotient = DI/RfD

** For Peerless Tube workers, and assuming reasonable maximum exposures, the HQ arsenic due to incidental ingestion of or dermal contact with arsenic in soil was estimated at 4.1E-1 and 1.8E+1, respectively. For WJK workers, the HQ cadmium was estimated at 9.8E-3 and 4.2E-1, respectiv

HI Hazard Index = SUM(HQ)

Toxicity Values for Carcinogenic Effects

Route	Slope Factor (mg/kg-day)-1	Weight of Evidence Classification	Source
Oral			
Methylene Chloride	7.50E-03	B2	IRIS
Arsenic	1.75E-00	A	IRIS(2/91)
Dermal			
Methylene Chloride	7.50E-03	B2	IRIS
Arsenic	1.75E-00	A	IRIS(2/91)
Inhalation			
Methylene Chloride	1.40E-02	B2	IRIS

Table 21

Summary of Potential Carcinogenic Risks

Reasonable Maximum Exposures

Group/Pathway	Methylene Chloride Adult	Methylene Chloride Child	Arsenic Adult	Arsenic Child	Total
I. CURRENT LAND USE					
1. Local Residents					
Dermal Contact - Sediments	1.5E-8	-	-	-	1.5E-8
2. Workers					
Inhalation	1.2E-3	-	-	-	1.2E-3
Incidental Soil Ingestion**	-	-	1.2E-6	-	1.2E-6
Dermal Contact with Soil**	-	-	4.9E-5	-	4.9E-5
TOTAL CURRENT RISK	1.2E-3	-	5.0E-5	-	1.2E-3
II. FUTURE LAND USE					
1. Cristiana Residents					
Inhalation	3.8E-4	2.6E-4	-	-	6.4E-4
TOTAL	3.8E-4	2.6E-4	-	-	6.4E-4
2. Future Local Residents					
Inhalation	1.6E-3	1.1E-3	-	-	2.7E-3
Dermal Contact with SW	6.0E-5	4.7E-5	-	-	1.1E-4
TOTAL	1.6E-3	1.1E-3			2.8E-3
3. Future Workers	-	-	-	-	-

**Assuming reasonable maximum exposures, the total lifetime carcinogenic risk for a hypothetical Peerless Tube worker exposed over a lifetime to the maximum detected arsenic concentration in soil was estimated at 3.2E-4 and 1.3E-2 for the direct ingestion and dermal contact pathways, respectively.

RESPONSIVENESS SUMMARY
FOR THE
REMEDIAL ACTION

AT THE
FRONTERA CREEK SUPERFUND SITE
HUMACAO, PUERTO RICO

TABLE OF CONTENTS

SECTION	PAGE
Introduction	1
I. Background on Community Involement and Concerns	2
II. Comprehensive Summary of Major Questions, Comments, Concerns, and Responses	3
A. Summary of and Concerns from the Public Meeting and EPA Responses to those Questions and Concerns	3
B. Summary of Written Questions and Concerns and EPA Responses to those Written Comments and Concerns	10
ATTACHMENT	
Community Relations Activities at the Frontera Creek Superfund Site	

RESPONSIVENESS SUMMARY
FRONTERA CREEK SUPERFUND SITE
HUMACAO, PUERTO RICO

INTRODUCTION

This Responsiveness Summary summarizes the public's comments and concerns and the U.S. Environmental Protection Agency's (EPA's) responses to those comments regarding the Proposes Plan (PP) for the Frontera Creek Superfund Site (Site) in Humacao, Puerto Rico. EPA's preferred remedial alternative is excavation of 550 cubic yards mercury-contaminated sediments in the Technicon ditch and soils on Technicon's property above 35 ppm with dewatering and disposal at a landfill on the mainland certified for accepting these materials. In addition, air emissions of methylene chloride at the Squibb facility would be reduced to acceptable levels.

EPA held a public comment period from July 24, 1991 through September 23, 1991 to provide interested parties with the opportunity to comment on the PP for the Site.

EPA held a public information meeting to present its preferred remedial action on August 8, 1991 at the Humacao Town Hall, Humacao, Puerto Rico.

EPA conducted the meeting in Spanish because Spanish is spoken by the majority of the local residents. An EPA Region II Caribbean Field Office staff member summarized and translated questions to and responses from non-Spanish speaking EPA representatives into Spanish. EPA distributed copies of the Spanish PP to citizens who attended the meeting. In addition, English and Spanish versions of the PP were made available for the public to review in the information repository, which is located at the Humacao Town Hall in Humacao, Puerto Rico and at EPA's Caribbean Field Office in Santurce at 1413 Fernandez Juncos Avenue.

Based on the comments received during the public comment period, EPA believes that residents of Humacao and the officials of the Puerto Rico Environmental Quality Board (EQB) were responsive to the PP and generally supported EPA's preferred alternative. However, at the public meeting, many long-standing issues and concerns about the health of the ex-residents of the Ciudad Christiana community were discussed.

This Responsiveness Summary is divided into the following sections:

I. BACKGROUND ON COMMUNITY INVOLVEMENT AND CONCERNS: This section provides the history of community concerns and describes community involvement in the process of selecting a remedy for the Frontera Creek Site.

II. COMPREHENSIVE SUMMARY OF MAJOR QUESTIONS, COMMENTS, CONCERNS, AND RESPONSES: This section summarizes the comments EPA received

during the public comment period. Oral comments received at the public meeting and written comments received during the public comment period, in addition to EPA's responses to those comments, are included.

In addition to Sections I and II, a list of EPA community relations activities conducted at the Frontera Creek Site is included as an attachment to this Responsiveness Summary. A Spanish transcript of the proceedings of the public meeting is available in the information repository.

I. BACKGROUND ON COMMUNITY INVOLVEMENT AND CONCERNS

From 1978 to 1980, a housing development, Ciudad Christiania, was built along Frontera Creek. The community of approximately 500 families began to complain of health problems within a year after their arrival. In February 1985, the Puerto Rico Department of Health (DOH) sampled the blood and urine of a number of residents of the community and found elevated levels of mercury. Soil samples collected by EQB also revealed the presence of mercury. As a result of these investigations, the Governor of Puerto Rico ordered an immediate evacuation of the community.

In March 1985, at the request of DOH, EPA, in coordination with the Agency for Toxic Substances and Disease Registry (ATSDR), began a Focused Remedial Investigation to assess the problem of mercury contamination in Ciudad Christiania. This investigation included sampling for mercury and lindane in soil, sediments, water biota and air. The ATSDR evaluation of the data collected during this investigation and the data previously collected by EQB concluded that mercury did not present an immediate or significant health threat to residents of Ciudad Christiania.

In March 1988, the residents of Ciudad Christiania submitted additional biological examination results to ATSDR for review. ATSDR examined the results of 258 blood tests, 7 urine tests and 37 hair tests. No conclusion could be made by ATSDR regarding the relationship between these mercury results and environmental contamination at the Site. Several factors may have ben responsible for this including other sources of mercury exposure, sample contamination and laboratory error.

EPA has sponsored a number of public meetings and issued a series of fact sheets regarding the Site activities. The most recent EPA community relations efforts include distribution of a fact sheet and a public meeting held August 8, 1991 to present the Remedial Investigation results; a notice of the PP and availability of the administrative record that appeared in the San Juan Star on July 29, 1991 and in El Nuevo Dia on July 24, 1991; and a notice

extending the public comment period that appeared in the El Nuevo Dia on August 22, 1991. Further public communication regarding the meeting was issued using flyers and a sound truck in the days prior to the meeting to discuss the proposed plan. EPA has maintained contact with the local community throughout the remedy selection process.

Specific issues of concern described by residents and local officials include health effects, housing, public participation, impact on the marine environment and food chain, Site security and information on Site activities.

The PP for remedial action was issued in June 1991, soliciting public comments regarding EPA's preferred remedial options as well as other alternatives for cleaning up the Site. The initial, 30-day, public comment period on the PP began July 23, 1991 and ended August 22, 1991; the comment period was extended thirty days, to September 23, to facilitate additional public comment. During the public comment period, on August 8, 1991, EPA held a public meeting to present the findings of the Feasibility Study and explain the preferred remedy for the Site.

II. COMPREHENSIVE SUMMARY OF MAJOR QUESTIONS, COMMENTS, CONCERNS, AND RESPONSES

SUMMARY OF QUESTIONS AND CONCERNS FROM THE PUBLIC MEETING AND EPA RESPONSES TO THOSE QUESTIONS AND CONCERNS

This section provides a summary of commenter's major issues and concerns, and expressly acknowledges and responds to those raised by the local community. The major issues and concerns on the PP for the Frontera Creek Superfund Site, received at the public meeting on August 8, 1991 , and during the public comment period, can be grouped into three areas:

A. Health effects/sampling results
B. Involvement of PRPs
C. Selection of remedy

A summary of the comments and questions asked by meeting attendees (with commenter noted in parenthesis) and EPA's response to each comment is provided below. A complete transcript of concerns raised during this segment of the meeting, along with the responses, is included in the meeting transcript.

A. Health Effects/Sampling Results

Comment: The Ciudad Christiania Ex-Residents Group had submitted additional blood, hair and urine mercury analyses results other than those mentioned in the Proposed Remedial Action Plan. (Mr.

Jose Sepulveda Rivas).

Response: The first set of data was provided to EPA through NUS Corp. (an EPA Contractor) in 1985 and the second set was submitted in March 1988. Both sets have been evaluated by ATSDR. ATSDR concluded that no correlation existed between the environmental sampling results and the data provided by the Ex-Residents.

Comment: The PP states that the hazard index for Technicon workers suggests that they will suffer non-carcinogenic adverse health effects and no further discussion is provided. This seems to imply that workers' site-related illnesses other than cancer are not important. (Mr. Jose Sepulveda Rivas)

Response: It was not our intention to minmimize worker Site-related illnesses in our discussion in the PP. To the contrary, the fact that the HI for potential exposure to adults from noncarcinogenic Site-related mercury is greater than one, resulting in EPA taking action to remove the mercury-contaminated soils. A concentration of 35 ppm for mercury has been established as the cleanup level for contaminated soils and sediments at the Site. This cleanup level will result an a HI of one. Therefore, a concentration of 35 ppm for mercury will be protective of human health under all identified exposure routes.

Comment: The only valid point in the PP is that EPA finally admits that mercury contamination exists at the Site, even though it is limited to Technicon soils and ditch sediments. It should be highlighted that the Technicon ditch is approximately a quarter mile long and during heavy rains it gets flooded and discharges into Frontera Creek. (Mr. Jose Sepulveda Rivas)

Response: The data collected during the Remedial Investigation (RI) indicates that no migration of mercury is occurring from the Technicon soils and sediments into the creek. Analysis performed on the sediment samples with the highest mercury concentrations showed that mercury is highly absorbed into the soil particles or bound in a matrix configuration.

Comment: EPA should be aware that the Ciudad Christiania Ex-Residents are suffering various health problems which are related to mercury contamination at the Site. These health problems are multiplied due to the synergistic effect of mercury and other chemicals detected at the Site. (Mr. Jose Sepulveda Rivas)

Comment: It is mentioned in the RI that mercury concentrations in Ciudad Christiania are within naturally occurring values. In our previous comments we have stated that mercury levels in Ciudad Christiania surficial soils are higher than background levels.

Mercury concentrations in background samples are homogeneous at all soil depths; this is not the case in Ciudad Christiania. This suggests that mercury contaminated sediments were used as fill material during the construction of Ciudad Christiania. (Mr. Neftali Garcia Martinez)

Response: Irrespective of whether or not Ciudad Christiania mercury concentrations in soils are comparable to background or naturally occurring mercury concentrations, the results of the Risk Assessment performed for the Site suggest that there is no health risk associated with such concentrations. Furthermore, the mercury concentrations detected at Ciudad Christiania were evaluated by ATSDR, EQB and DOH and it was concluded that mercury does not represent any health threat to residents of Ciudad Christiania.

In addition, Superfund requires that the Risk Assessment determine if any remediation is warranted at a Site and the cleanup level to be achieved.

Comment: I know the case of a neighbor from Yabucoa that used to come to the Santa Teresa Pump Station for fishing every Saturday. He never lived in Humacao. He has shown alarming mercury levels in his body. (Mr. Jose Sepulveda)

Response: The results of biota sampling during 1985 and later during the RI have indicated that mercury concentrations in all samples were below the Food and Drug Administration action level of 1 ppm of mercury. This information suggests that no biomagnification of mercury in the food chain within the study area is occurring.

Comment: Concrete evidence exists regarding the dredging of contaminated sediments from the Creek during Ciudad Christiania construction. Workers who built the Ciudad Christiana development have been compensated by the Commonwealth of Puerto Rico for illnesses related to mercury. (Gilberto Rivera Ortiz)

Response: EPA's investigation of the Creek sediments have not revealed the presence of mercury concentrations that might pose a problem to human health or the environment. EPA has no information about construction workers being compensated by the Commonwealth for illnesses attributed to the construction of Ciudad Christiana.

Question: What is the criteria for calculating the mercury-associated risk at the Site? (Sonia Luz Vazquez Garcia)

Answer: Under current EPA guidelines, the likelihood of the carcinogenic and non-carcinogenic effects due to the exposure to Site chemicals is considered separately. It was assumed that the

toxic effects of the site-related chemicals would be additive. Thus, carcinogenic and non-carcinogenic risks associated with exposures to individuals were summed to indicate the potential risks associated with mixtures of potential carcinogens and non-carcinogens respectively. Mercury is considered a non-carcinogen.

Non-carcinogenic risks were assessed using a hazard index ("HI") approach, based on a comparison of expected contaminant intakes and safe levels of intake Reference Doses (RfDs). RfDs have been developed by EPA for indicating the potential for adverse health effects. RfDs, which are expressed in units of milligram per kilogram per day (mg/kg-day), are estimates of daily exposure levels for humans which are thought to be safe over a lifetime (including sensitive individuals). Estimated intakes of chemicals from environmental media (e.g., the amount of a chemical ingested from contaminated drinking water) are compared with the RfD to derive the Hazard Quotient (HQ) for the contaminant in the particular medium. The HI is obtained by adding the HQs for all compounds across all media. An HI greater than 1 indicates that the potential exists for non-carcinogenic health effects to occur as a result of site-related exposures. The HI provides a useful reference point for gauging the potential significance of multiple contaminant exposures within a single medium or across media.

Question: How was the 35 ppm cleanup level established? (Sonia Luz Vazquez Garcia)

Answer: Given a total HI for exposure to non-carcinogenic Site-related mercury contamination of 8.6 as calculated in the Risk Assessment, with exposure to 296,913 ug/kg, the concentration of mercury in soil resulting in a HI of 1 can be calculated by dividing 296,913 by 8.6. This provides an approximate residual concentration of less than 35 ppm which would not result in unacceptable levels of hazard for any receptor.

Question: The PP states that mercury was detected in air in concentrations within acceptable levels. What are these levels? (Sonia Luz Vazquez Garcia)

Answer: Mercury concentrations measured in air within the study area were below the National Emission Standard for Hazardous Air Pollutants (NESHAPS) of 1 ug/m^3 which represents an acceptable risk level of mercury in the air. Also, results were below the Threshold Limit Value-Time Weighted Average (TLV-TWA) value for mercury vapor of 0.05 mg/m^3. This represents the time weighted average concentration for a normal 8-hour workday to which workers may be exposed without adverse effects.

Comment: When air sampling is conducted it should include

monitoring during the night since air becomes stagnant. (Sonia Luz Vazquez Garcia)

Response: Air samples were collected during eight hour intervals for periods of twenty-four hours.

B: Involvement of PRPs

Question: What precautions if any will be observed during the proposed excavation of contaminated soils and sediments at the Site? (Gilberto Rivera Ortiz)

Answer: Strict health and safety measures will be observed during the excavation of mercury-contaminated soils and sediments to avoid workers' exposure and the release of mercury to other media.

Question: The PP states that high concentrations of methylene chloride released to the air by Squibb were measured at an air monitoring station at Technicon. However, it should be observed that air releases from Squibb stacks have been observed to reach Ciudad Christiania, Junquito and Villa Humacao depending on atmospheric conditions, therefore endangering the health of the people in this community. How will EPA negotiate an agreement with Squibb to reduce their toxic emissions by 90%? Since EPA has taken more than ten years to deal with the mercury problem at Technicon, it can be anticipated that EPA will need until the end of the century to reduce Squibb air emissions. (Mr. Jose Sepulveda Rivas)

Answer: EPA has met twice with Squibb during June 1991 to develop a course of action for emissions reduction. Squibb is currently undertaking several activities related to the methylene chloride problem. In August 1991, Squibb initiated a point source air emission study that will: (1) review existing processes, (2) recalculate plant-wide, substance-specific point source emission rates, and (3) recommend the selection of additional control equipment and/or process modifications, as may be deemed necessary to further reduce emissions. This study is expected to take six to twelve months to complete. Squibb is also undertaking an air quality study to confirm the presence of methylene chloride. The monitoring is anticipated to occur during the next several months and EPA is working with Squibb on these studies.

C. Selection of Remedy

Question: Who are the EPA employees responsible for the selection of the remedial alternative to be implemented at the Site? (Jose Sepulveda Rivas)

Answer: Congress has delegated this authority to EPA Headquarters and EPA Headquarters redelegates this authority to the Regional

Administrator. In Region II this authority is delegated to Mr. Constantine Sidamon-Eristoff.

Comment: The Ex-Residents of Ciudad Christiania disagree with the findings of the RI and the proposed remedial alternative. It is recommended that a new PP be developed including the remediation of the lagoons, beach and toxic chemicals released by Squibb. (Mr. Jose Sepulveda Rivas)

Response: The results of the RI field sampling indicate that mercury concentrations significantly in excess of background values are limited primarily to some surface soils and ditch sediments on Technicon property. In terms of Hazardous Substance List (HSL) parameters, the results of the RI indicate that widespread releases of these chemicals have not occurred in soil, groundwater and biota. While sporadic detection of relatively high concentrations of volatile organics have occurred in a few surface water and sediment samples, and inorganic chemicals have occurred in a few industrial soil samples, there is no evidence in these media to suggest widespread contamination at sampling locations throughout the Site and/or over long stretches of Frontera Creek or the Frontera lagoons. The only exception appears to be volatile organics in air.

The Squibb facility appears to be the source of the methylene chloride detected in the ambient air at unacceptable concentrations. EPA has sought an agreement from Squibb to reduce these emissions by 90% which will result in a 10^{-4} risk level. This agreement is being conducted under will first be sought under the authority of the Clean Air Act. As described previously, Squibb is currently undertaking several activities related to the methylene chloride problem. In August 1991, Squibb initiated a point source air emission study that will: (1) review existing processes, (2) recalculate plant-wide, substance-specific point source emission rates, and (3) recommend the selection of additional control equipment and/or process modifications, as may be deemed necessary to further reduce emissions. This study is expected to take six to twelve months to complete. Squibb is also undertaking an air quality study to confirm the presence of methylene chloride. The monitoring is anticipated to occur during the next several months and EPA is working with Squibb on these studies.

Comment: A thirty-day time extension was requested to comment on the PP. (Mr. Neftali Garcia Martinez)

Response: A thirty-day time extensión was granted.

Question: Why has EPA decided that the Frontera Creek needs to be remediated? (Mr. Gilberto Rivera Ortiz)

Answer: EPA is not proposing any remediation in the Creek. EPA's proposed remedial alternative addresses the Site mercury contamination in sediments and soils of the Technicon property. The response action will reduce mercury concentrations to levels protective of human health and the environment. EPA has determined that the areas that need to be remediated are Technicon facility soils and the sediments of the Technicon ditch. It is estimated that 500 cubic yards of mercury contaminated soils and sediments above 35 ppm need to be excavated and disposed of. The cleanup level of 35 ppm was determined through a Risk Assessment performed for the Site.

Comment: Serious doubts have been raised during the public meeting on whether the Creek is contaminated or not according to the RI results. If the Creek is contaminated, this eliminates the theory that mercury is not migrating from the Technicon soils and sediments into the Creek. If this is the case, then the proposed alternative might not be protective of human health and the environment. (Jesus Cintron Rosario)

Response: According to the RI results, there is no indication of mercury migration from the Technicon soils or the Technicon ditch sediments. Mercury concentrations for the Creek sediment samples and analyses revealed average concentrations in upstream, midstream and downstream portions of the Creek at 0.091 ppm, 0.505 ppm and 0.330 ppm respectively. The highest mercury concentration detected was 2.9 ppm. Approximately 90% of the samples from the Creek had less than 1 ppm of mercury. The Frontera Creek sediments are generally within background ranges.

Comment: "Frontera Creek Site" Superfund PP is mis-named and does not actually clean up Frontera Creek. This plan, as now proposed, seems to be a pretext for the clean up of the Technicon Site only. (Sonia Luz Vazquez Garcia)

Response: The Frontera Creek Site is defined as the Frontera Creek from east of Junquito Ward to its entry into the Caribbean Sea; the 13 industrial properties adjacent to the creek, the North, Southeast and Southwest Frontera lagoons also known as the Santa Teresa Lagoons; their associated abandoned pump stations which were used to keep the lagoons dry for agricultural purposes and the Ciudad Christiania housing development located alongside the creek.

The PP identifies the EPA's preferred alternative for remediating contaminated sediments and soils at the Site.

Comment: ATSDR has questioned the integrity and validity of the health data from the ex-residents and also the integrity of local professionals, hospitals and laboratories. However, they have not made any effort to investigate and collect the evidence they need

to qualify our data. Instead they made irresponsible statements that no conclusions can be reached or that potential for laboratory error exists or potential for sample contamination. (Sonia Luz Vazquez Garcia)

Response: ATSDR's position is that no correlation can be made between the environmental data and the health data provided by the Ex-Residents of Ciudad Christiania. Given the mercury concentrations present at the Site, it is not expected that people will be found with mercury levels in blood, urine and hair as high as those reported by the Ex-Residents, which are claimed to be resulting from Site exposure.

ATSDR is willing to meet with the affected community, to learn about their health problems and to cooperate and assist local agencies in the investigation and clarification of such problems and their potential causes.

SUMMARY OF WRITTEN COMMENTS AND CONCERNS AND EPA RESPONSES TO THOSE WRITTEN COMMENTS AND CONCERNS

Comment: The PP for the Site presents serious historical, theoretical and methodological flaws. The plan sidesteps the past and the health of the Ex-Residents of Ciudad Christiania. Furthermore, it hides the history of the industries and the developer of Ciudad Christiania who originated the problem.

Answer: Sampling efforts at the Site were initiated by EQB in 1977, approximately seven years after industrial operations began, and efforts by EPA began in October 1979. The database from the historical sampling activities at the Site until 1985, provide a general indication of the nature and extent of contamination. More specifically, with respect to aquatic media, the data from approximately 355 samples taken from approximately 170 locations indicated that mercury concentrations in sediment were generally less than 1,000 ug/kg in Frontera Creek, the Frontera Lagoons and Mandri Canal, and were one to two orders of magnitude higher in the Technicon ditch. Low concentrations of mercury were also detected in approximately 100 surface water samples from approximately 80 locations, and in the limited number of aquatic biota samples collected. Other hazardous substances, including volatile organic compounds such as methylene chloride and acetone, and metals such as chromium, were detected sporadically and generally at low concentrations in some sediment and surface water samples. Effluent sampling by the EQB, Technicon and EPA identified releases of lindane, mercury and organic priority pollutants by Reedco, Technicon, and Squibb, respectively. Overall, the historical database indicated that discharges from the Site industries were collectively

contributing to the degraded water quality observed in the creek.

These activities culminated in a Remedial Investigation/ Feasibility Study conducted at the Site by Dynamac Corp. (Revlon's contractor) with EPA and EQB oversight. The oversight is performed to assure that the investigation is being performed in adherence to EPA protocols. The objectives of the RI included the identification of potential sources of hazardous substances at the Site; definition of the nature and extent of contamination in the environmental media; identification of potential pathways of contaminant migration; and assessment of the potential risks posed to receptors.

The Scope of Work for the RI was delineated, based on the historical database available for the Site. Furthermore, the health data provided by the Ex-Residents of Ciudad Christiania was used for the selection of soil sampling locations within Ciudad Christiania.

Comment: Citizens questioned how EPA can accept the findings of the RI, since Technicon's (Revlon) contractor performed this study.

Answer: Under CERCLA, EPA has the authority to enter legally binding Consent Agreements with Potentially Responsible Parties (PRPs) to conduct remedial investigations, which EPA and the Commonwealth oversaw. Based on the results of these studies, EPA, not the PRPs, selects the remedy. This system allows EPA to address a maximum number of Superfund sites in the most cost-effective manner possible. However, EPA has overseen all aspects of this study including field work and review of the data that was collected.

Comment: Citizens claimed that EPA and ATSDR have sidestepped the evidence that the Ex-Residents of Ciudad Christiania were intoxicated with mercury and other chemicals at the Site by raising flaws in the methodology used to collect the blood samples by Humacao's medial laboratories.

Answer: ATSDR concluded, after their evaluation of the biological examination results submitted by the Ex-Residents through EPA, that no conclusion could be made regarding the relationship between these mercury results and environmental contamination at the Site.

Comment: Citizens claimed that the objective of the RI/FS was to characterize present conditions at the Site and not past conditions.

Answer: The objective of the RI/FS was to define the nature and

TABLE 22

Potential Chemical-Specific ARARs

Item	Reference	Mercury Concentration Limits	Remarks
1. Soil/Sediment Spray	ROD-GE Wiring Services Site, Juana Diaz, PR	-	No chemical-specific ARARs for mercury in soil/sediment are available
2. Freshwater and Saltwater Criteria for Protection of Human Health and Aquatic Life	CWA Ambient Water Quality Criteria EPA, Oct. 1980 and EPA, Jan. 1985	Protection of human health: a) water and fish ingestion $= 1.4 \times 10^{-4}$ mg/l b) fish consumption only $= 1.5 \times 10^{-4}$ mg/l Protection of aquatic life in freshwater: acute $= 2.4 \times 10^{-3}$ mg/l chronic $= 1.2 \times 10^{-5}$ mg/l Protection of aquatic life in marine water: acute $= 2.1 \times 10^{-3}$ mg/l chronic $= 2.5 \times 10^{-5}$ mg/l	For chronic exposures based on 4 day average concentration exceedance, once every 3 years for acute exposures, based on 1 hour average concentration exceedance once every 3 years. Also, criteria based on acid soluable filtered samples.
3. PR State Dept. of Health: Freshwater Water Quality Criteria	PRDOH Regulations	Water uptake = 1 ppb (instream) or 1×30^{-3} mg/l	Liquid phase not considering sediment or fish consumption
4. Standards for discharge to POTW, Puerto Rico	Puerto Rico ASA Rules and Regulations for the supply of water and sewer services, State Dept. 3308	a) surcharge condition limit = 0.05 mg/l (when applicable) b) max permissible limit = 0.10 mg/l (when applicable)	

TABLE 22

Potential Chemical-Specific ARARs

Item	Reference	Mercury Concentration Limits	Remarks
5. Characteristic Hazardous Solid Waste	40 CFR 261, Subpart C 261.24		EP Toxicity Max. Conc. = 0.2 mg/l
6. Air Exposure Limits	CAA; NESHAPs (National Emission Standard for a Hazardous Pollutant)	1 ug/m^3	Ambient air quality for mercury issued under NESHAP, pursuant to CAA

Potential Action-Specific ARARs

Action	Requirements/Applicability	Citation
Dredging	Removal of all contaminated soil/ sediment:	
	a) RCRA hazardous waste placed at site or into another unit	40 CFR 264.228 40 CFR 264.258
	b) Dredging must comply with section 10 of the Rivers and Harbors Act and U.S. Army Corps of Engineers Regulation	33 USC 403 33 CFR 320-330
	c) Permits under Section 404 of CWA	
Excavation	Material containing hazardous waste subject to land disposal in another unit	40 CFR 268 C
Discharge to POTWs	Guidance in EPA memorandum entitled "Discharge of Wastewater from CERCLA Sites into POTW	40 CFR 403.5 and local regulations
Dike Construction/ Stabilization	Existing surface impoundments containing hazardous wastes, or creation of a new surface impoundment	40 CFR 264.221-227
Waste Transportation	RCRA and Dept. of Transportation rules for the transportation of hazardous materials	49 CFR Parts 107, 171.1 - 172.558 49 CFR.173
On-site Treatment	RCRA hazardous waste being treated on-site or placed into another unit	40 CFR 264.271-283
Container Storage	Container of RCRA hazardous waste held for a temporary period	40 CFR 264.171-178
Closure with waste in place	Stabilization of waste and waste residues to support cover	40 CFR 264.228, 258, 310

In addition to action-specific ARARs, other Federal requirements may include:

- OSHA requirements for workers engaged in response or other hazardous waste operations (29 CFR 1910.120)
- Occupational Safety and Health Act of 1970 (20 U.S.C. 651)

TABLE 22

Location Specific ARARs

Location specific ARARs are restrictions placed on the concentrations of hazardous substances or the conduct of activities solely because they are in specific locations. Examples of special locations include floodplains, wetlands, historic places, sensitive ecosystems or habitats.

1. Parts of Frontera Creek site may have locational significance (sensitive habitats in the Lagoons and surrounding areas); and may be subject to the Endangered Species Act. The Act requires action to avoid jeopardizing the continued existence of listed endangered or threatened species or modification of their habitat.

2. Fish and Wildlife Coordination Act: Requires action to protect fish and wildlife from actions modifying streams or areas affecting streams. The Act may become relevant if remedial alternatives include Frontera Creek diversion or channel modification.

APPENDIX C

APPENDIX D

extent of contamination at the Site and to evaluate a range of remedial alternatives for the remediation of any contamination problem present at the Site.

Comment: Peerless Tube Company requested that a letter dated July 25, 1991, from Carole Petersen, Chief, New York/Caribbean Superfund Branch II, EPA Region II to Dr. David Lipsky of Dynamac Corporation regarding the Frontera Creek RI approval be made part of the Administrative Record for the Site.

Answer: Such letter dated July 25, 1991 will be made part of the Administrative Record for the Frontera Creek Site.

Comment: The July 25 letter refers to Addenda to the RI dated June 5, 1991 and July 10, 1991 as submitted by Revlon. We believe that the reference to the July 10, 1991 Addendum is to the Technical Memorandum of the same date prepared and submitted to EPA by Dynamac Corporation. If that reference is correct, we request that it be clearly reflected in the Administrative Record.

Answer: The July 10, 1991 Addendum refers to a Technical Memorandum submitted by Dynamac Corp. to EPA to provide the results of the focused sampling effort completed at Peerless Tube's facility in Humacao, Puerto Rico and to update and amend sections of the Frontera Creek RI report regarding potential risks to Peerles Tube workers associated with exposure to arsenic in soils.

Comment: The concluding sentence of Carole Petersen's letter states that "we (EPA) are hereby granting our approval of the above mentioned reports." That statement would appear to be an affirmation by EPA of its agreement with the Risk Assessment conclusion, i.e., risk of worker exposure to arsenic is within the acceptable range by Dynamac Corporation as set forth in the July 10, 1991 Technical Memorandum. If this is so, we hereby request that the EPA, as part of the Administrative Record, set forth such affirmation in clear and unambiguous language.

Answer: EPA's approval of said document means that EPA is in agreement with the findings and conclusions expressed in the document.

Comment: The PP incorrectly states that the background mercury concentration for industrial soil is 0.15 ppm when it should be 0.057 ppm.

Answer: The background mercury concentrations for industrial soils varied from non-detect to 0.190 ppm, according to the RI analytical results.

Comment: The RI states that the fill material in Ciudad Christiania is of a homogeneous nature. This contradicts our observations during the test boring logs performed.

Answer: Based on the lithologic descriptions reported on the test boring logs, alluvial sediments underlie the fill at Ciudad Christiania. The lithologic descriptions indicate that these alluvial deposits consist primarily of grayish interbedded sand and clay. In contrast to the overlying fill, samples of these deposits tended to exhibit stratification and generally did not contain gravel. Although lateral continuity of these deposits was not observed, this is expected for alluvial sediments and is a function of depositional processes. Moreover, disruption of these sediments may have occurred during the earth-moving activities reported to have taken place in this area in the 1930's associated with the channelization of Frontera Creek.

THE FOLLOWING ARE SPECIFIC COMMENTS FROM SQUIBB. The comments are identified by the numbering in Squibb's comment letter to EPA.

Comment: 2.0 SAMPLING ISSUES

Comment A: "Due to cost concerns," the HSL air sampling was limited to Christiana, the Technicon area, and upwind control sites only. Table 4-85 indicates that for the Christiania locations, the methylene chloride concentrations were not measured on 07-21-89, 07-26-89, 08-17,89, and 08-18-89. Out of eleven (11) sampling rounds, six (6) rounds were not analyzed for the parameters in question. How then were the HI values for Christiania determined in the Risk Assessment report? Theoretically, Christiania was selected as an important sampling point, yet more than 50% of the time samples were not taken there.

Answer: The air monitoring for HSLs at the Site was a quantitative screening program to provide an initial evaluation of the ambient air quality within the study area. Although the data was limited in scope, EPA feels it is reasonable to assume that these data may be potentially representative of exposures to workers under current land use conditions and exposure to future residents at Ciudad Christiania via the inhalation pathway.

Comment B: Apparently, no air monitoring was done within the Squibb property. A review of the details of the air monitoring program at the Technicon Site indicates there are significant experimental biases, as listed below, that may lead to incorrect conclusions based on available sampling data validity. There may also be statistical errors that would contribute to falsely high concentrations of methylene chloride reported coming from the

Squibb facility. For example:

The air sampling was done between 7:00 a.m. and 3:00 p.m. and 8:00 a.m. and 4:00 p.m. This time span does not represent 24 hours. The hypothetical receptor concentrations are based on 3X any measured concentrations rather than a genuine reading for a 24 hour cycle.

The methylene chloride results were admitted to be "rough" or at best semi-quantitative. Therefore, all model work based on this data would be inexact at best and may very well be incorrect.

Calculations listed in Table 1 in Appendix 3 were impossible to relate to raw data. The logic used to determine the five day average is unclear, as are the values reported as highest and second highest concentration. Further explanation is necessary for this data. Comparison between Table 4-86 and Table 1 of Appendix 3 should be possible, yet the values are quite different.

The speculated high source rates of the two areas should be verified. There is a reference in Appendix 3 that the required emission rate is 3,500 g./sec./m^2. This is a very large emission rate and should be confirmed. It would appear that the emission rate was back calculated using the measured air concentrations and an assumed "in-plant" source shape.

Answer: Squibb was identified by EPA as the source for high methylene chloride concentrations measured in air during the RI, based on the Toxic Release Inventory database for the town of Humacao. Squibb has reported stack and fugitive air emissions of methylene chloride of 103,300 lbs, 226,140 lbs, and 233,520 lbs for the years 1987, 1988 and 1989 respectively. No other company within the Humacao Industrial Park has reported any air release of methylene chloride.

Comment: 3.0 DATA REDUCTION AND VALIDATION ISSUES

Comment A. Methylene chloride is a common lab contaminant and was frequently detected in trip blanks and method blanks processed throughout the sampling program. (See Table 5-14). This is a serious concern as the presence of methylene chloride in blanks, especially the method blank, compromises the accuracy of the measured sample concentrations.

Answer: All the data collected during the RI was validated following EPA Region II data validation protocols for rejecting or qualifying all analytical data. In the case of common laboratory contaminants (including acetone, MEK, methylene

chloride, toluene and phthalate esters) qualifiers were applied when the analyte was detected at a concentration less than ten times the maximum amount in the associated blank samples.

Comment B: How did the laboratory determine the analytical results for parameters reported in Table 4-85? The footnote explains the values are reported as ppb. Ppb needs to be defined as an air quality unit of concentration. Were these analytical values reported as ppb converted to mg/m^3 at some point and was that conversion done correctly? Issues concerning data reduction, conversion, and validation, as well as QA/QC practices for these analyses should be addressed.

Answer: The results are reported in ppb in a volume/volume basis.

Comment C: Table 4-86 lists the average values reported for methylene chloride. These values are not consistent with the individual results listed in Table 4-85. For example, consider the individual results for location 1 for methylene chloride:

07/21	BMDL (below minimum detection level)
07/26	BMDL
07/26	BMDL
07/27	28 ppb - The average is reported at 0.059 mg/m^3
08/07	16 ppb

How were the average values on Table 4-86 determined? What statistical procedures were used throughout the study concerning data reduction, especially for samples with values less than minimum detection level (MDL)? We have been unable to reproduce the air concentration values utilizing the reported analytical data.

Answer: For all hazardous substances excluding mercury, the average concentrations were calculated based upon the data for all samples excluding the rejected data and by averaging the data from replicate pairs for those concentrations reported to be greater than zero.

Comment; 4.0 RISK ASSESSMENT ISSUES

Comment A: Air monitoring program is admitted semi-quantitative (p. 6.21 of RIR). This is very important to remember since all risk assessment data is now based on values for methylene chloride that are approximate and the values also are a product of apparently flawed sampling, analysis, and data reduction processes.

Answer: Already answered.

Comment B: It is illogical that the only volatile organic compound targeted for Risk Assessment concern was methylene chloride. Toluene, xylene, and ethyl benzene were all found to be present at concentrations of a comparable risk concern as the levels of methylene chloride. Why were these organics discounted from the Risk Assessment concern?

Answer: Toluene, xylene and ethyl benzene were considered as chemicals of potential concern in the Risk Assessment. Total xylenes were detected at three and surface water locations and ethyl benzene was detected at two surface water locations; with maximum concentrations of 185 ug/l and 48 ug/l respectively. Both compounds were also detected in some air samples and in a Squibb storm sewer sediment sample. Toluene was also detected at trace concentrations (less than 20 ug/l in several surface water samples, in air and in two sediment sampling locations.

Comment C: A significant portion of the Risk Assessment concern for methylene chloride is via an inhalation pathway. There is no EPA approved RfD for methylene chloride for inhalation exposure. Therefore, an oral RfD was used. The hazard quotient calculated for methylene chloride is by definition an estimate only. The RI Report does acknowledge the HQ is an estimate, however, inhalation data on methylene chloride should be available and should have been used rather than an oral RfD.

Answer: The RI Report does acknowledge that the methylene chloride HQ is an estimate; however, the inhalation carcinogenic risk for methylene chloride was derived from a slope factor available on the Integrated Risk Information System (IRIS).

Comment D: The HI for all VOCs for adult receptor groups: local residents, Christiania residents and workers was 0.16, 0.3, and 6.1×10^{-5} respectively. For children living in Christiania, the HI for all VOCs was 0.86. Since all of these HI values are < 1 of all receptor groups, age group, each pathway and all VOCs, methylene chloride should not be considered an issue. The RI Report clearly states an HI value of < 1 is considered acceptable.

Answer: The HI for potential exposure to adults from non-carcinogenic site related volatile organic compounds via air inhalation is 3.3.

Comment E: It must also be stressed that the HQ for methylene chloride for the Christiania area is similar to background concentration according to the RI Report. Therefore, why does

the report state (p. 3-2) that children living in Christiania are potentially exposed to VOCs at projected hazard levels?

Answer: The RI Report states that on average the reported concentrations in Ciudad Christiania were close to background levels. For the purpose of the Site Risk Assessment, it was assumed that a resident of Ciudad Christiania would be exposed to the upper 95th percentile concentration from the two Christiania sampling points for the entire sampling campaign.

Comment F: In the RI Report, they state on p. 6-53, "In summary, there is no evidence that any receptor group would be at risk within the study area due to potential exposures to mercury or volatile organics in air utilizing realistic assumptions about likely exposure scenarios."

Answer: The Revised Draft RI Report dated February 1991, which is the EPA approved report clearly states that the Site poses an unacceptable health risk under the reasonable maximum.

Comment G: In discussing the carcinogenic risk, the RI Report states that methylene chloride concentrations at Christiania are identical at upwind, downwind, and background control sites. The RI Report states that the total lifetime incremental carcinogenic risk for residents of Christiania is 7.3×10^{-5}. This value is within the range of 1×10^{-6} to 1×10^{-4} considered by regulatory agencies* to be within the range of acceptable risk. The estimated excess carcinogenic risk for workers at the location downwind of Squibb and behind Technicon where the methylene chloride concentration was found to be highest was 3.2×10^{-5}, again within acceptable limits. Therefore, the carcinogenic risk for methylene chloride is well within the range of acceptable risk, even for the people with the greatest exposure.

Answer: The total lifetime incremental carcinogenic risk for residents of Christiania is 6.4×10^{-4}. This value is at the higher end of the range considered by regulatory agencies. The estimated excess carcinogenic risk for workers is 1.2×10^{-3} which is above the acceptable range.

Comments H & I: Already answered.

Comment K: The RI Report states p. 6-70 "Using highly unlikely worst case exposure assumptions, the HQ slightly exceed one (1.1) for a child residing ion Christiania due to the inhalation of methylene chloride in the ambient air." This does not indicate a methylene chloride problem since a HQ of 1 is considered acceptable and this scenario by their own admission is highly unlikely.

Answer: The Revised RI Report dated February 1991 states that by using reasonable maximum exposure assumptions the HQ for a child residing in Ciudad Christiania is 3.7 due to inhalation of methylene chloride in the ambient air.

Comment L: Interestingly enough, the HI for all other VOCs was ◄ 1.0 for all pathways with the exception of children hypothetically exposed to MIBK through dermal contact with surface water. (Estimated HI of 4.0). Why is such a large HI value ignored if the potential new residents Risk Assessment for VOCs is a concern?

It is also confusing that methylene chloride is a target compound for air emission concerns; yet a review of the risk assessment indicates xylene, ethylbenzene and toluene have a greater HQ than methylene chloride (see Table 3-2). What is the criteria used to determine methylene chloride as the analyte requiring greater emission control?

Answer: Using reasonable maximum exposure assumptions the HQ for a child residing in Christiania and exposed to MIBK through dermal contact with surface water is 0.51.

Comment M: Also in the RI Report: "While sporadic detection of relatively high concentrations of volatile organics have occurred in a few surface water and sediment samples, there is no evidence for these media to suggest widespread contamination at sampling locations throughout the site and/or over long stretches of Frontera Creek or the Frontera Lagoons," (p. 7-5). Therefore, risk exposure is limited.

Answer: An unacceptable risk might exist for dermal contact with Frontera Creek surface water containing acetone to children under the future local residents scenario (HI 3.3). However, no source was identified throughout the RI other than a broken sewer line fixed by PRASA in 1991.

Comment N: Also in the RI Report: In their discussion of the adequacy of the data, they acknowledge the need for additional data "to assess the issue of volatile organics in air and to refine the risk estimates for this pathway."

Answer: Already answered.

Comment O: Below is a quote from the RI Report; clearly there are serious doubts about the validity of the model:

"For hypothetical exposures associated with highly unlikely future changes in land or water usage, and assuming conservative estimates of receptor behavior, the HI for methylene chloride was

estimated to exceed 1.0 via the inhalation pathway for future residents of the hypothetical housing development (3.9 and 14 for adults and children, respectively). However, there are a significant number of uncertainties associated with this estimate. First, it assumes no future changes in the ambient air concentrations of methylene chloride. Second, there is no RfD for methylene chloride based on inhalation exposures. Third, the model used to estimate methylene chloride concentrations in the hypothetical community utilized a limited number of data points. On an annual basis, the average concentrations of methylene chloride could be substantially higher or lower than was modeled in the Risk Assessment."

Therefore, it is not possible to determine with any reasonable accuracy from this report what the exposure will be for future land usage.

Answer: Already answered.

Comment P: The inhalation exposure used in the RI Report for methylene chloride assumed 100% of all methylene chloride inhaled would be absorbed. This is unrealistic. Typically, 30% would be absorbed, perhaps as much as 50% would be absorbed as a worst case situation. Therefore, all these Risk Assessment conclusions based on an inhalation pathway for methylene chloride may be incorrect. Also, the ventilation rate of children should be calculated at half the rate for adults. This was not the rate assumed for the Risk Assessment calculation for this report and will result in false high values.

Answer: An absorption rate of 30-50% is more typical at high concentrations or during hyperventilation; under "normal" conditions, 100% absorption is more representative of a reasonable maximum scenario. Furthermore, the respirable minute (rate) volume for children is approximately the same as that for adults. Additionally, the question equates ventilation rate with total volume thereby not accounting for volume exchange per breath (tidal volume). Thus, because children have a lower tidal volume than adults, they have a greater ventilation rate in comparison to adults.

Comment Q: It is important that any Risk Assessment analysis be site specific. Apparently, Risk Assessment calculations were done at background sites (i.e., Christiania). This is unusual - typically Risk Assessment is not done on background site. What the RI Report did not do is subtract any background Risk Assessment values from any other site specific Risk Assessment values to obtain a representational actual risk.

Answer: Please note that Christiania is considered part of the

"Site" and hence does not represent a "background site."

Comment R: Also, missing from the RI Report discussion of Risk Assessment is a calculation of probable risk. Typically, a calculation of the probability of a scenario x the Risk Assessment = a probable risk.

In this situation, it is believed that the probable risk in the case of methylene chloride inhalation exposure for future and current residents would be quite low.

Answer: "Probable risk calculations" as defined in the question are not included in Superfund Risk Assessments.

Comment S: In the RI Report, the assumed exposure period of six (6) years for children (200 mg of soil ingestion per day, 365 days/year) should have dictated the use of a subchronic RfD. This was not done. The use of a subchronic RfD could have changed the Risk Assessment value by as much as an order of magnitude.

Answer: Children at this Site were not considered to be "subchronic receptors" because a subchronic calculation would assume that exposure is limited exclusively to that period and this receptor may experience continued exposure as an adult.

Comment T: The RI Report also present unrealistic sediment adherence (2.77 mg/cm^2) and dermal absorption rate (10% for mercury, 25% for volatiles). Therefore, the Risk Assessment values calculated based on this information are inaccurate.

Answer: The soil adherence factor used in the Risk Assessment was obtained from Risk Assessment Guidance for Superfund and hence considered representative of a reasonable maximum scenario for the Site. Furthermore, the dermal absorption rates were considered appropriate. Many volatiles, for instance, are rapidly absorbed by the skin.

NOAA COMMENTS:

Comment: The PP should not state that mercury levels in Frontera Creek are generally within background ranges when background levels for that system are not known. Levels of 1 to 2.9 ppm in Frontera Creek were found in several locations confirming that mercury has migrated into Frontera Creek. These are not background levels.

Answer: The statement that "mercury levels in Frontera Creek are generally within background ranges" is based on data reported by

USGS for streams and rivers in the US for natural occurrence of mercury. In Frontera Creek, approximately 90% of stream sediments sampled had less than 1,000 ug/kg, consistent with the data reported by USGS.

In addition, an evaluation was made to determine whether current mercury concentrations are higher or lower than those reported in the past. If the concentrations are lower, it might have been indicative of significant losses of mercury due to physical/chemical/biological activities (e.g. volatilization, methylation, uptake) or due to hydraulic transport of mercury-entrained sediments. After performing the evaluation from a qualitative perspective, the evaluation concluded that recent data is indicative of the results of previous sampling campaigns. For example, the highest concentrations were detected in the Technicon ditch and nearby downstream section of Frontera Creek, with mercury concentrations in the 10 to 30 ppm range.

Comment: The PP cannot conclude that no biomagnification occurs up the food chain. The biotic study does not provide the type of data necessary to make that conclusion. The study was not designed for the way that mercury bioaccumulates and biomagnifies.

Answer: The results of biota sampling indicate that mercury concentrations in all samples were below the FDA action level of 1 ppm.

Even though the biota study was not delineated to assess mercury biomagnification in food chain, the biota sampling analytical results coupled with the environmental data suggests that no biomagnification is occurring or should be expected based on the mercury concentrations detected in these medias.

Comment: Bioaccumulation was not considered one of the exposure routes for the human health risk assessment for mercury. At many sites with mercury contamination, this route is the primary route of exposure. Are people drinking milk or eating meat from cows that graze in the area? The bioaccumulation of mercury by aquatic biota was not adequately determined from the biota sampling. Therefore, a new study would be needed for assessing exposure to mercury from ingesting aquatic organisms in a human health risk assessment.

Answer: Cow hair, blood, and milk samples were collected and analyzed for mercury. No quantifiable concentrations of mercury were found in any of the samples. These media were sampled from cows along Frontera Creek behind Squibb.

It should be noted that not all the appropriate biological

species needed to be sampled to address biota mercury uptake are available at the Site.

Comment: The cleanup of 35 ppm was based on human health protection and did not consider the environment. A level that would be protective of the environment would have to be determined independently of the human based assessment.

Answer: A comprehensive and quantitative environmental assessment was performed to compare species diversity and abundance at the Site. The results indicated that the Frontera Lagoons and Mandri Canal represent thriving ecosystems as measured quantitatively by species diversity and abundance. In comparison, the Frontera Creek is clearly impoverished in the number and diversity of species it supports. However, this lack of species diversity and abundance in the Creek is attributed to the prevailing low or intermittent flow conditions and the significantly low dissolved oxygen levels recorded at the creek. Since industrial discharges to Frontera Creek have been stopped for many years, these dissolved oxygen levels are not likely related to industrial discharges. These may have been related to the broken PRASA sewer line which has since been repaired.

Comment: Under long-term effectiveness and permanence it is stated that potential threats to human health and the environment will be eliminated therefore no long-term monitoring is needed. There is insufficient data to support this claim in the absence of an environmental risk assessment. Since the cleanup level was not environmentally based, a well-planned monitoring program is the only way to demonstrate the absence of a threat to the environment.

Answer: The excavation and off-site disposal of contaminated materials offers the highest degree of long-term effectiveness and permanence by removing the mercury from the Site down to acceptable concentrations. Furthermore, the Toxicity Characteristic Leaching Procedure (TCLP) analysis performed on samples from the highest mercury contaminated areas (Technicon ditch and Technicon soils) revealed that mercury will not leach out of soils or sediments. However, additional measures like revegetation and erosion control will be implemented during the remediation to eliminate the potential for mercury migration to Frontera Creek sediments. Therefore no long-term monitoring is required for the selected remedy.

APPENDIX E

COMMONWEALTH OF PUERTO RICO / OFFICE OF THE GOVERNOR

Environmental Quality Board

September 17, 1991

Kathleen Callahan
Director
Emergency and Remedial
Response Division
Environmental Protection Agency
Region II - Room 737
26 Federal Plaza
New York, New York 10278

RE: ENVIRONMENTAL PROTECTION AGENCY (EPA) DECLARATION FOR RECORD OF DECISION OF FRONTERA CREEK SITE, HUMACAO, PUERTO RICO

Dear Ms Callahan:

The Superfund Core Program of the Air Quality Area, received the Declaration for the Record of Decision of Frontera Creek Site, Humacao, Puerto Rico for evaluation and comments.

The alternative chosen by the Environmental Protection Agency (EPA) is Alternative 3: "Excavation, Removal and off-site Disposal without Treatment". This alternative involves the excavation of 370 cubic yards of mercury-contaminated sediments at the Technicon ditch, the excavation of 180 cubic yards of mercury-contaminated soils at the Technicon surrounding facility and the dewatering and containment of excavated material. The off-site disposal of excavated material will be at a RCRA Subtitle D or C waste facility in the mainland. Waste generated from dewatering will be analyzed and pre-treated prior to their discharge to Technicon's wastewater treatment plant, a local POTW, or an on-site treatment plant.

Confirmatory soil sampling at the remediated areas will be performed to verify that mercury concentrations in on-site material do not exceed the remedial action objective of 35 ppm. The remediated areas will be subsequently regraded and revegetated.

FRO 002 0774

OFFICE OF THE BOARD NATIONAL BANK PLAZA / 431 PONCE DE LEON AVE. / SANTURCE, PUERTO RICO 00910
P.O. BOX 11488 / SANTURCE, PUERTO RICO 00910 / TELEPHONE: 767-8181

The selected alternative is in compliance with the nine evaluation criteria that encompass the statutory requirements for EPA. They are:

1. Threshold Criteria - Overall protection of Human Health and the Environment in compliance with the Applicable or Relevant and Appropriate Requirements (ARARs).

2. Primary Balancing Criteria - Long-Term effectiveness and permanence, reduction of toxicity, mobility or volume through Treatment, Short-Term Effectiveness, Implementability and Cost Effectiveness.

3. Modifying Criteria - State and Community Acceptance.

There is potential for unfavorable short-term health and environmental impacts since this alternative includes a series of activities that involve excavation, handling, storage, off-site transportation and/or treatment of contaminated media regarding the short-term effectiveness. However, these impact can be mitigated by implementing site specific health and safety plans, including the use of personal protective equipment during its implementation. Also, the selected remedy will pose some problems such as the material will have to be shipped to the mainland for disposal due the lack of RCRA subtitle D or C facilities in Puerto Rico that are likely to accept these materials.

The Puerto Rico Environmental Quality Board (PREQB) concurs on the selected alternative: "Excavation, Removal and off-site Disposal without treatment" and request that EPA inform EQB of all future activities at the site.

PREQB also requests that the following specific information be provided as it becomes available:

1. Air, page 1s:
   Specify what kind of treatment will receive the VOCs detected in the air surrounding the Technicon-Squibb fence.

2. Part IX Description of the Selected Remedy:
   "Dewatering and Containment of excavated material", Page 41:

   a. Comply with the requirements of Erosion and Sedimentation Control Plan since the remedy involve ground removal.

b. Coordinate with the local POTW that will receive the wastewater generated from the dewatering process in such a way that the wastewater treatment plant can be in good condition to accept the discharge.

Is there any question about this comments please contact me at phone number (809)767-8056 or Miss Eileen C. Villafañe of the Superfund Core Program at (809)767 8071.

Cordially,

Pedro A. Maldonado, Esq.
Acting Chairman

cc: Eng. José Font
Mr. Melvin Hauptman
Miss Eileen C. Villafañe
Adrew Praschak, Esq.

Document Number: FRO-001-0001 To 0006 Date: 03/04/83

Title: Sampling Trip Report (for the Frontera Creek site)

Type: REPORT
Author: Farley, Dennis P.: NUS Corporation
Recipient: none: US EPA

Document Number: FRO-001-0007 To 0021 Date: 08/10/81

Title: Potential Hazardous Waste Site Inspection Report (for the Frontera Creek site)

Type: REPORT
Author: Lipsky, David: Fred C. Hart Associates
Recipient: none: US EPA

Document Number: FRO-001-0022 To 0032 Date: 09/14/81

Title: Potential Hazardous Waste Site Identification and Preliminary Assessment (for the Frontera Creek site)

Type: REPORT
Author: Lipsky, David: Fred C. Hart Associates
Recipient: none: US EPA

Document Number: FRO-001-0033 To 0058 Date: 09/14/81

Title: Potential Hazardous Waste Site Inspection Report (for the Frontera Creek site)

Type: REPORT
Author: Lipsky, David: Fred C. Hart Associates
Recipient: none: US EPA

Document Number: FRO-001-0059 To 0077 Date: 08/10/81

Title: Potential Hazardous Waste Site Inspection Report (for the Frontera Creek site)

Type: REPORT
Author: Lipsky, David: Fred C. Hart Associates
Recipient: none: US EPA

Document Number: FRO-001-0078 To 0079 Date: 06/07/84

Title: (Letter notifying of a proposed Superfund project at Frontera Creek site)

Type: CORRESPONDENCE
Condition: DRAFT
Author: Librizzi, William J.: US EPA
Recipient: Soto, Nelson: Puerto Rico Planning Board

Document Number: FRO-001-0080 To 0089 Date: / /

Title: (Base Neutral Extractables Data)

Type: DATA
Author: none: none
Recipient: none: none

Document Number: FRO-001-0090 To 0457 Date: 08/17/87

Title: Draft Site Operations Plan, Revlon Inc., Frontera Creek Site, Humacao, Puerto Rico

Type: PLAN
Condition: DRAFT
Author: none: Dynamac Corporation
Recipient: none: US EPA

Document Number: FRO-001-0458 To 0563 Date: 07/01/85

Title: Sampling Trip Report, Focused Remedial Investigation of Ciudad Cristiana, Frontera Creek Site, Humacao, Puerto Rico

Type: REPORT
Author: Knutson, Jerome C.: NUS Corporation
Recipient: none: US EPA

Document Number: FRO-001-0564 To 0930 Date: 02/01/91

Title: Remedial Investigation Report for Frontera Creek Site, Humacao, Puerto Rico, Volume 1 of 7 (Report) - Revised Draft

Type: REPORT
Condition: DRAFT
Author: none: Dynamac Corporation
Recipient: none: none

Document Number: FRO-001-0931 To 1186 Date: 02/01/91

Title: Remedial Investigation Report for Frontera Creek Site, Humacao, Puerto Rico, Volume 2 of 7 (Tables, Part 1) - Revised Draft

Type: REPORT
Condition: DRAFT
Author: none: Dynamac Corporation
Recipient: none: none

Document Number: FRO-001-1187 To 1437 Date: 02/01/91

Title: Remedial Investigation Report for Frontera Creek Site, Humacao, Puerto Rico, Volume 3 of 7 (Tables, Part 2) - Revised Draft

Type: REPORT
Condition: DRAFT
Author: none: Dynamac Corporation
Recipient: none: none

Document Number: FRO-001-1438 To 1524 Date: 02/01/91

Title: Remedial Investigation Report for Frontera Creek Site, Humacao, Puerto Rico, Volume 4 of 7 (Figures) - Revised Draft

Type: REPORT
Condition: DRAFT
Author: none: Dynamac Corporation
Recipient: none: none

Document Number: FRO-001-1525 To 1540 Date: 02/01/91

Title: Remedial Investigation Report for Frontera Creek Site, Humacao, Puerto Rico, Volume 5 of 7 (Plates) - Revised Draft

Type: REPORT
Condition: DRAFT
Author: none: Dynamac Corporation
Recipient: none: none

Document Number: FRO-001-1541 To 1787 Date: 02/01/91

Title: Remedial Investigation Report for Frontera Creek Site, Humacao, Puerto Rico, Volume 6 of 7 (Appendices, Part 1) - Revised Draft

Type: REPORT
Condition: DRAFT
Author: none: Dynamac Corporation
Recipient: none: none

Document Number: FRO-001-1788 To 2111 Date: 02/01/91

Title: Remedial Investigation Report for Frontera Creek Site, Humacao, Puerto Rico, Volume 7 of 7 (Appendices, Part 2) - Revised Draft

Type: REPORT
Condition: DRAFT
Author: none: Dynamac Corporation
Recipient: none: none

Document Number: FRO-001-2112 To 2116 Date: 06/05/91

Title: (Letter discussing the attached analytical results of the sediment and soil samples taken from the Technicon facility in Humacao, Puerto Rico - Addendum No. 1 for Revised Draft Remedial Investigation Report)

Type: CORRESPONDENCE
Author: Lipsky, David: Dynamac Corporation
Recipient: Font, Jose C.: US EPA

Document Number: FRO-001-2117 To 2130 Date: 07/10/91

Title: (Letter discussing the final report of the results of the focused sampling effort completed at Peerless Tube's facility in Humacao, PR, and to update and amend sections of the Frontera Creek RI Report - Addendum No. 2 for Revised Draft RI Report)

Type: CORRESPONDENCE
Author: Lipsky, David: Dynamac Corporation
Recipient: Font, Jose C.: US EPA

Document Number: FRO-001-2131 To 2131 Date: 09/24/86

Title: (Letter forwarding copies of the Remedial Investigation/Feasibility Study (RI/FS) for the Frontera Creek site)

Type: CORRESPONDENCE
Author: Dowiak, Mark J.: NUS Corporation
Recipient: Font, Jose C.: US EPA
Attached: FRO-001-2132

Document Number: FRO-001-2132 To 2333 Parent: FRO-001-2131 Date: 09/01/86

Title: Work Plan for the Remedial Investigation/Feasibility Study of the Frontera Creek Site, Humacao, Puerto Rico

Type: PLAN
Author: Dowiak, Mark J.: NUS Corporation
Recipient: none: none

Document Number: FRO-001-2334 To 2335 Date: 12/22/89

Title: (Letter on behalf of Revlon, Inc., pertaining to the preparation of the Draft Phase I Remedial Investigation Report)

Type: CORRESPONDENCE
Author: Davis, Seth A.: Fink Weinberger, P.C.
Recipient: Font, Jose C.: US EPA

Document Number: FRO-001-2336 To 2337 Date: 04/13/89

Title: (Letter responding to concerns about the Frontera Creek site)

Type: CORRESPONDENCE
Author: Guerrero, Peter F.: US General Accounting Office
Recipient: Singmaster III, James A.: none

Document Number: FRO-001-2338 To 2347 Date: 02/01/89

Title: Sampling Results from the Cuidad Cristiana Investigation

Type: CORRESPONDENCE
Author: none: US EPA
Recipient: none: none

Document Number: FRO-001-2348 To 2349 Date: 01/19/89

Title: (Letter confirming that Revlon, Inc., will indemnify and hold harmless EPA and the United States for any claims related to injuries and damages in gaining access to properties near Frontera Creek as part of the Remedial Investigation/Feasibility Study)

Type: CORRESPONDENCE
Author: Davis, Seth A.: Revlon, Inc.
Recipient: Simon, Paul: US EPA

Document Number: FRO-001-2350 To 2351 Date: 01/13/89

Title: (Letter stating that Revlon must agree in writing to indemnify and hold harmless EPA before the government can exercise its 104(e) access authority to gain access to various properties to perform Remedial Investigation (RI) sampling)

Type: CORRESPONDENCE
Author: Simon, Paul: US EPA
Recipient: Gomez, Juan Carlos: Fiddler, Gonzalez, Rodriguez

Document Number: FRO-001-2352 To 2353 Date: 12/16/87

Title: (Letter regarding the January 12, 1988, meeting to discuss the Work Plan)

Type: CORRESPONDENCE
Author: Font, Jose C.: US EPA
Recipient: Higgins, Juan Miguel: Mayor, Municipality of Humacao
Attached: FRO-001-2354

Document Number: FRO-001-2354 To 2367 Parent: FRO-001-2352 Date: 12/18/87

Title: (Letters regarding the January 12, 1988, meeting to discuss the Work Plan)

Type: CORRESPONDENCE
Author: Font, Jose C.: US EPA
Recipient: various: various

Document Number: FRO-001-2368 To 2368 Date: 10/05/87

Title: (Letter on behalf of Squibb Manufacturing, Inc., stating that information provided by Revlon's consultant presents certain discrepancies with NUS Corporation's Work Plan)

Type: CORRESPONDENCE
Author: Cepeda-Rodriguez, Jose A.: Goldman & Antonetti
Recipient: Luftig, Stephen D.: US EPA
Attached: FRO-001-2369 FRO-001-2371

Document Number: FRO-001-2369 To 2370 Parent: FRO-001-2368 Date: 08/20/87

Title: (Letter addressing concerns about Revlon's proposed sampling plan for the Squibb Manufacturing facility at the Frontera Creek site)

Type: CORRESPONDENCE
Author: Lipsky, David: Dynamac Corporation
Recipient: Cepeda-Rodriguez, Jose A.: Goldman & Antonetti

Document Number: FRO-001-2371 To 2372 Parent: FRO-001-2368 Date: 07/24/87

Title: (Letter requesting information prior to granting EPA permission to enter Squibb Manufacturing, Inc., property to collect samples for chemical analysis)

Type: CORRESPONDENCE
Author: Cepeda-Rodriguez, Jose A.: Goldman & Antonetti
Recipient: Lipsky, David: Dynamac Corporation

Document Number: FRO-001-2373 To 2374 Date: 06/08/87

Title: (Letter stating activities that will occur when Revlon performs the RI/FS at the Frontera Creek site)

Type: CORRESPONDENCE
Author: Luftig, Stephen D.: US EPA
Recipient: Singmaster III, James A.: none
Attached: FRO-001-2375 FRO-001-2376

Document Number: FRO-001-2375 To 2375 Parent: FRO-001-2373 Date: 05/01/87

Title: (Letter forwarding attached material pertaining to Cuidad Cristiana and the Frontera Creek site, and requesting that EPA take additional action)

Type: CORRESPONDENCE
Author: Singmaster III, James A.: none
Recipient: Daggett, Christopher J.: US EPA

Document Number: FRO-001-2376 To 2378 Parent: FRO-001-2373 Date: / /

Title: Quantitative Organics in the Sediment Sampling by EPA, October 23 to 26, 1979, Frontera Creek Site

Type: DATA
Author: none: none
Recipient: none: none

Document Number: FRO-001-2379 To 2379 Date: 03/18/87

Title: (Letter, in Spanish, expressing the residents' concern about the Frontera Creek site)

Type: CORRESPONDENCE
Author: Sepulveda, Jose: Portavoz Comite Timon Ex-Residentes Cuidad Cristiana
Recipient: Font, Jose C.: US EPA
Attached: FRO-001-2380

Document Number: FRO-001-2380 To 2384 Parent: FRO-001-2379 Date: 10/03/86

Title: (Letter containing the Corps of Engineers' action, carried out under its Regulatory Program, regarding the Ciudad Cristiana controversy)

Type: CORRESPONDENCE
Condition: MISSING ATTACHMENT
Author: none: US Army Corps of Engineers
Recipient: Ortiz, Gilberto Rivera: Senator, Legislature of Puerto Rico

---

Document Number: FRO-001-2385 To 2385 Date: 01/19/87

Title: (Letter, in Spanish, regarding the coordination of a committee of scientists put together by Mision Industrial de Puerto Rico, Inc., to discuss the Frontera Creek site)

Type: CORRESPONDENCE
Author: Meyn, Marianne: Mision Industrial de Puerto Rico, Inc.
Recipient: Negron-Navas, Eduardo M.: Fiddler, Gonzalez, Rodriguez

---

Document Number: FRO-001-2386 To 2389 Date: 11/20/86

Title: (Letter, in Spanish, inviting participation in an advisory committee established by Revlon to study the Frontera Creek site)

Type: CORRESPONDENCE
Author: Negron-Navas, Eduardo M.: Fiddler, Gonzalez, Rodriguez
Recipient: Ortiz, Gilberto Rivera: Senado de Puerto Rico
Attached: FRO-001-2390

Document Number: FRO-001-2390 To 2391 Parent: FRO-001-2386 Date: 11/20/86

Title: (Letter, in Spanish, inviting participation in an advisory committee established by Revlon to study the Frontera Creek site)

Type: CORRESPONDENCE
Author: Negron-Navas, Eduardo M.: Fiddler, Gonzalez, Rodriguez
Recipient: none: Mision Industrial de Puerto Rico, Inc.

Document Number: FRO-001-2392 To 2394 Date: 11/20/86

Title: (Letter, in Spanish, inviting participation in an advisory committee established by Revlon to study the Frontera Creek site)

Type: CORRESPONDENCE
Author: Negron-Navas, Eduardo M.: Fiddler, Gonzalez, Rodriguez
Recipient: Rohena-Betancourt, Santos: Junta de Calidad Ambiental

---

Document Number: FRO-001-2395 To 2398 Date: 11/20/86

Title: (Letter, in Spanish, inviting participation in an advisory committe established by Revlon to study the Frontera Creek site)

Type: CORRESPONDENCE
Author: Negron-Navas, Eduardo M.: Fiddler, Gonzalez, Rodriguez
Recipient: Ruiz, Juan: Asociacion Pro-Mejoramiento del Ambiente
Attached: FRO-001-2399

Document Number: FRO-001-2399 To 2400 Parent: FRO-001-2395 Date: 10/20/86

Title: (Letter, in Spanish, inviting participation in an advisory committee established by Revlon to study the Frontera Creek site)

Type: CORRESPONDENCE
Author: Negron-Navas, Eduardo M.: Fiddler, Gonzalez, Rodriguez
Recipient: Grau, Jose Orlando: none

Document Number: FRO-001-2401 To 2403 Date: 11/20/86

Title: (Letter, in Spanish, inviting participation in an advisory committee established by Revlon to study the Frontera Creek site)

Type: CORRESPONDENCE
Author: Negron-Navas, Eduardo M.: Fiddler, Gonzalez, Rodriguez
Recipient: Mora, Luis Izquierdo; Departmento de Salud

Document Number: FRO-001-2404 To 2430 Date: 09/17/86

Title: (Letter, in Spanish, discussing the causes of mercury contamination of soil and water at the Frontera Creek site)

Type: CORRESPONDENCE
Author: Gelabert, Pedro A.: US EPA
Recipient: Ortiz, Gilberto Rivera: Comision Especial sobre la Investigacion de Ciudad Cristiana
Attached: FRO-001-2431

Document Number: FRO-001-2431 To 2431 Parent: FRO-001-2404 Date: 07/16/86

Title: (Letter giving an extension of time to comment on the RI/FS Work Plan for the Frontera Creek site)

Type: CORRESPONDENCE
Author: Librizzi, William J.: US EPA
Recipient: Rivera, Bethsaida: Urbanization Quintas de Humacao

---

Document Number: FRO-001-2432 To 2432 Date: / /

Title: (Letter confirming a meeting scheduled for February 19, 1987)

Type: CORRESPONDENCE
Author: Font, Jose C.: US EPA
Recipient: Rivera, Bethsaida: Urbanization Quintas de Humacao

---

Document Number: FRO-001-2433 To 2433 Date: 08/15/86

Title: (Letter summarizing the discussion at a July 17, 1986, meeting at EPA)

Type: CORRESPONDENCE
Author: Marshall, James R.: US EPA
Recipient: Davis, Seth A.: Revlon, Inc.
Attached: FRO-001-2434 FRO-001-2436

Document Number: FRO-001-2434 To 2435 Parent: FRO-001-2433 Date: 06/05/86

Title: (Letter stating that Revlon's subsidiary, Technicon Electronics Corporation, would like to perform the RI/FS)

Type: CORRESPONDENCE
Author: Davis, Seth A.: Revlon, Inc.
Recipient: Daggett, Christopher J.: US EPA

Document Number: FRO-001-2436 To 2436 Parent: FRO-001-2433 Date: 04/23/86

Title: (Letter requesting a copy of the NUS Work Plan for the Frontera Creek site RI/FS)

Type: CORRESPONDENCE
Author: Negron-Navas, Eduardo M.: Fiddler, Gonzalez, Rodriguez
Recipient: Gelabert, Pedro A.: US EPA

Document Number: FRO-001-2437 To 2437 Date: 08/07/86

Title: (Letter forwarding a copy of Reedco, Inc.'s comments on the Work Plan for the RI/FS)

Type: CORRESPONDENCE
Condition: MISSING ATTACHMENT
Author: Font, Jose C.: US EPA
Recipient: Mandelbaum, David G.: Wolf, Block, Schorr, and Solis-Cohen

---

Document Number: FRO-001-2438 To 2440 Date: 06/05/86

Title: (Letter submitting a Work Plan and requesting comments, also giving notification of status as a Potentially Responsible Party)

Type: CORRESPONDENCE
Condition: MISSING ATTACHMENT
Author: Marti, Noelia: US EPA
Recipient: Davis, Seth A.: Technicon Electronics Corporation

Document Number: FRO-001-2441 To 2441 Date: 06/25/86

Title: (Letter requesting a 30-day extension in which to comment on the Work Plan)

Type: CORRESPONDENCE
Author: Davis, Seth A.: Revlon, Inc.
Recipient: Marti, Noelia: US EPA

Document Number: FRO-001-2442 To 2442 Date: 06/25/86

Title: (Letter stating that comments to the Work Plan will be provided prior to July 17, 1986)

Type: CORRESPONDENCE
Author: Halak, John J.: Block Drug Company, Inc.
Recipient: Marti, Noelia: US EPA

Document Number: FRO-001-2443 To 2457 Date: 02/15/85

Title: (Letter forwarding information pertaining to past sampling of water and sediment at the Frontera Creek site)

Type: CORRESPONDENCE
Author: Davis, Seth A.: Revlon, Inc.
Recipient: Font, Jose C.: US EPA

Document Number: FRO-001-2458 To 2458 Date: 06/06/86

Title: (Letter forwarding the revised Work Plan for the Frontera Creek site)

Type: CORRESPONDENCE
Condition: MISSING ATTACHMENT
Author: Font, Jose C.: US EPA
Recipient: Grau, Jose Orlando: Casillas & Grau

Document Number: FRO-001-2459 To 2459 Date: 06/02/86

Title: (Letter forwarding a copy of the Work Plan for the Frontera Creek site for review and comment)

Type: CORRESPONDENCE
Condition: MISSING ATTACHMENT
Author: Librizzi, William J.: US EPA
Recipient: Higgins, Juan Miguel: Mayor, Municipality of Humacao

Document Number: FRO-001-2460 To 2462 Date: 02/21/86

Title: (Letter pertaining to the investigation of the contamination and the determination of which remedial response is to be implemented at the site)

Type: CORRESPONDENCE
Author: Gelabert, Pedro A.: US EPA
Recipient: Archilla-Diez, Efrain: Asociacion Pro-Mejoramiento del Ambiente
Attached: FRO-001-2463

Document Number: FRO-001-2463 To 2465 Parent: FRO-001-2460 Date: 02/12/86

Title: (Letter stating concerns about the clean-up of the Frontera Creek site)

Type: CORRESPONDENCE
Author: Archilla-Diez, Efrain: Asociacion Pro-Mejoramiento del Ambiente
Recipient: Gelabert, Pedro A.: US EPA

Document Number: FRO-001-2466 To 2467 Date: 08/21/85

Title: (Letter discussing environmental sampling near the Frontera Creek Superfund site, around the community of Ciudad Cristiana)

Type: CORRESPONDENCE
Author: Daggett, Christopher J.: US EPA
Recipient: Mora, Luis Izquierdo: Department of Health, Commonwealth of Puerto Rico

---

Document Number: FRO-001-2468 To 2470 Date: / /

Title: RI/FS Work Plan Fact Sheet - Frontera Creek Site, Humacao, Puerto Rico

Type: CORRESPONDENCE
Author: none: none
Recipient: none: none

Document Number: FRO-001-2471 To 2474 Date: 03/17/89

Title: (Letter expressing concern about EPA's handling of the Frontera Creek site and forwarding newspaper articles and data)

Type: CORRESPONDENCE
Author: Singmaster III, James A.: none
Recipient: none: US General Accounting Office

Document Number: FRO-001-2475 To 2483 Date: 05/01/87

Title: (Letter expressing concern about EPA's handling of the Frontera Creek site)

Type: CORRESPONDENCE
Author: Singmaster III, James A.: none
Recipient: Daggett, Christopher J.: US EPA

Document Number: FRO-002-0001 To 0136 Date: 04/01/91

Title: Feasibility Study for Frontera Creek Site, Humacao, Puerto Rico

Type: REPORT
Condition: DRAFT
Author: none: Dynamac Corporation
Recipient: none: none

Document Number: FRO-002-0137 To 0139 Date: 04/01/91

Title: Addendum - Draft Feasibility Study Report, Frontera Creek Site, Humacao, Puerto Rico

Type: REPORT
Author: none: US EPA
Recipient: none: none

Document Number: FRO-002-0140 To 0146 Date: 05/17/91

Title: Addendum No. 1 for Feasibility Study Report, Frontera Creek Site

Type: REPORT
Author: Lipsky, David: Dynamac Corporation
Recipient: Font, Jose C.: US EPA

Document Number: FRO-002-0147 To 0149 Date: 05/21/91

Title: Addendum No. 2 for Feasibility Study Report, Frontera Creek Site

Type: REPORT
Author: Lipsky, David: Dynamac Corporation
Recipient: Font, Jose C.: US EPA

Document Number: FRO-002-0150 To 0151 Date: 06/19/91

Title: Addendum No. 3 for Feasibility Study Report, Frontera Creek Site

Type: REPORT
Author: Lipsky, David: Dynamac Corporation
Recipient: Font, Jose C.: US EPA

Document Number: FRO-002-0152 To 0153 Date: 06/20/91

Title: Addendum No. 4 for Feasibility Study Report, Frontera Creek Site

Type: REPORT
Author: Lipsky, David: Dynamac Corporation
Recipient: Font, Jose C.: US EPA

Document Number: FRO-002-0154 To 0155 Date: 04/01/91

Title: Addendum No. 5 for Feasibility Study Report, Frontera Creek Site

Type: REPORT
Author: none: US EPA
Recipient: none: none

Document Number: FRO-002-0156 To 0157 Date: 07/16/91

Title: (Letter commenting on the remedial alternatives for the Frontera Creek site, Humacao, Puerto Rico)

Type: CORRESPONDENCE
Author: Ojeda, Pedro A. Maldonado: Commonwealth of Puerto Rico
Recipient: Font, Jose C.: US EPA

Document Number: FRO-002-0158 To 0188 Date: 01/30/91

Title: (Letter identifying the applicable or relevant and appropriate requirements (ARARs) for three National Priorities List (NPL) sites - Frontera Creek, Juncos Landfill, and Fibers Public Supply Wells)

Type: CORRESPONDENCE
Author: Ojeda, Pedro A. Maldonado: none
Recipient: Caspe, Richard L.: US EPA

Document Number: FRO-002-0189 To 0190 Date: 12/20/90

Title: (Letter requesting the applicable or relevant and appropriate requirements (ARARs) and attached response)

Type: CORRESPONDENCE
Author: Caspe, Richard L.: US EPA
Recipient: Rohena-Betancourt, Santos: PR Environmental Quality Board

---

Document Number: FRO-002-0191 To 0221 Date: 10/03/86

Title: Administrative Order on Consent

Type: LEGAL DOCUMENT
Author: Daggett, Christopher J.: US EPA
Recipient: Davis, Seth A.: Revlon, Inc.

Document Number: FRO-002-0222 To 0223 Date: 03/18/88

Title: (Letter, in Spanish, describing the group "Grupo Asesor" and identifying its members to EPA)

Type: CORRESPONDENCE
Author: Negron-Navas, Eduardo M.: Fiddler, Gonzalez, Rodriguez
Recipient: Font, Jose C.: US EPA

Document Number: FRO-002-0224 To 0227 Date: 06/24/87

Title: (Letter on behalf of Reedco, Inc., expressing concern about EPA's failure to issue Notice Letters to all Potentially Responsible Parties)

Type: CORRESPONDENCE
Author: Nucciarone, A. Patrick: Hannoch Weisman
Recipient: Luftig, Stephen D.: US EPA

Document Number: FRO-002-0228 To 0232 Date: 07/09/87

Title: (Letter forwarding correspondence which contains information stating why Reedco, Inc., should not be named a Potentially Responsible Party)

Type: CORRESPONDENCE
Author: Nucciarone, A. Patrick: Hannoch Weisman
Recipient: Luftig, Stephen D.: US EPA

Document Number: FRO-002-0233 To 0233 Date: 02/20/87

Title: (Letter confirming that Dynamac will be allowed to review 104(e) responses)

Type: CORRESPONDENCE
Author: Davis, Seth A.: Revlon, Inc.
Recipient: Font, Jose C.: US EPA

Document Number: FRO-002-0234 To 0245 Date: 08/28/86

Title: (Response to a 104(e) Request for Information Letter)

Type: CORRESPONDENCE
Author: Peterson, Alonso: April Industries, Inc.
Recipient: Demel, Morris: US EPA

Document Number: FRO-002-0246 To 0247 Date: 08/15/86

Title: (Letter notifying Revlon that an informational meeting was held on July 17, 1986, at which time Revlon's proposal to conduct the RI/FS was accepted)

Type: CORRESPONDENCE
Author: Marshall, James R.: US EPA
Recipient: Davis, Seth A.: Revlon, Inc.

Document Number: FRO-002-0248 To 0248 Date: 06/13/86

Title: (Letter certifying that mercury is not used at the Reedco plant)

Type: CORRESPONDENCE
Author: Irizarry, William M.: Reedco, Inc.
Recipient: Perez, Gil: Occupational Safety and Health Office

Document Number: FRO-002-0249 To 0252 Date: 04/30/85

Title: (Response to a 104(e) Information Request Letter)

Type: CORRESPONDENCE
Author: Borrero, Manuel: Squibb Manufacturing, Inc.
Recipient: Font, Jose C.: US EPA

Document Number: FRO-002-0253 To 0266 Date: 04/30/85

Title: (Response to a 104(e) Information Request Letter)

Type: CORRESPONDENCE
Author: Borrero, Manuel: Squibb Manufacturing, Inc.
Recipient: Walka, Richard M.: US EPA

Document Number: FRO-002-0267 To 0269 Date: 04/23/85

Title: (Response to a 104(e) Information Request Letter)

Type: CORRESPONDENCE
Author: Santiago, Maria E.: Alcon (Puerto Rico)
Recipient: Font, Jose C.: US EPA

Document Number: FRO-002-0270 To 0277 Date: 04/04/85

Title: (Letter reiterating Technicon's interest in performing the RI/FS)

Type: CORRESPONDENCE
Author: Davis, Seth A.: Revlon, Inc.
Recipient: Praschak, Andrew: US EPA

Document Number: FRO-002-0278 To 0286 Date: 04/03/85

Title: (Peerless Tube Company's Response to 104(e) Information Request Letter)

Type: CORRESPONDENCE
Author: Vasquez, Ruben F.: MFV Environmental Planning Consultants
Recipient: Font, Jose C.: US EPA

Document Number: FRO-002-0287 To 0287 Date: 04/02/85

Title: (Letter confirming a telephone conversation granting a 30-day extension in which to respond to the EPA Information Request)

Type: CORRESPONDENCE
Author: Fernandez, Francis Torres: Cepeda Sanchez-Betances & Sifre
Recipient: Font, Jose C.: US EPA

Document Number: FRO-002-0288 To 0290 Date: 03/14/85

Title: (Letter stating that Technicon does not believe itself to be a Potentially Responsible Party at the Frontera Creek site)

Type: CORRESPONDENCE
Author: Davis, Seth A.: Revlon, Inc.
Recipient: Font, Jose C.: US EPA

Document Number: FRO-002-0291 To 0294 Date: 04/02/85

Title: (Letter stating that USI Properties Corp. does not believe itself to be a Potentially Responsible Party, with a 107(a) Notice Letter attached)

Type: CORRESPONDENCE
Author: Alberty, Donald L.: USI Properties Corp., Puerto Rico Division
Recipient: Font, Jose C.: US EPA

Document Number: FRO-002-0295 To 0296 Date: 03/29/85

Title: (Response to a 104(e) Information Request Letter)

Type: CORRESPONDENCE
Author: Solecki, L. H.: Denver Chemical (Puerto Rico), Inc.
Recipient: Font, Jose C.: US EPA

Document Number: FRO-002-0297 To 0299 Date: 03/29/85

Title: (Response to a 104(e) Information Request Letter)

Type: CORRESPONDENCE
Author: Cardona, Maritza: Warren-Teed, Inc.
Recipient: Font, Jose C.: US EPA

Document Number: FRO-002-0300 To 0303 Date: 03/27/85

Title: (Response to a 104(e) Information Request Letter, with the 104(e) Request Letter attached)

Type: CORRESPONDENCE
Author: Casillas, Arnold: Colorcon P.R., Inc.
Recipient: none: US EPA

Document Number: FRO-002-0304 To 0305 Date: 03/26/85

Title: (Letter requesting an extension of 60 days to respond to the 104(e) Information Request Letter)

Type: CORRESPONDENCE
Author: Rodriguez-Cepeda, Jose A.: Cepeda Sanchez-Betances & Sifre
Recipient: Librizzi, William J.: US EPA

Document Number: FRO-002-0306 To 0307 Date: 03/25/85

Title: (Response to a 104(e) Information Request Letter)

Type: CORRESPONDENCE
Author: Rodriguez, Carlos: Bolar, Inc.
Recipient: Librizzi, William J.: US EPA

Document Number: FRO-002-0308 To 0309 Date: 03/21/85

Title: (Response to a 104(e) Information Request Letter)

Type: CORRESPONDENCE
Author: Marrero, Pedro A.: Schmid Products Corporation of Puerto Rico
Recipient: Font, Jose C.: US EPA

Document Number: FRO-002-0310 To 0310 Date: 03/15/85

Title: (Letter stating that Reedco, Inc., feels that it is not responsible for performing any clean-up of the area)

Type: CORRESPONDENCE
Author: Steinberg, Alan J.: Reedco, Inc.
Recipient: Font, Jose C.: US EPA

Document Number: FRO-002-0311 To 0313 Date: 03/13/85

Title: (Response to a 104(e) Information Request Letter)

Type: CORRESPONDENCE
Author: Rivera, Julio: Polyplastics, Inc.
Recipient: Font, Jose C.: US EPA

Document Number: FRO-002-0314 To 0316 Date: 03/13/85

Title: (Response to a 104(e) Information Request Letter)

Type: CORRESPONDENCE
Author: Rivera, Julio: Esplas, Inc.
Recipient: Font, Jose C.: US EPA

Document Number: FRO-002-0317 To 0345 Date: 03/12/85

Title: (Response to a 104(e) Information Request Letter)

Type: CORRESPONDENCE
Author: Martinez, Pedro A.: PCR, Inc.
Recipient: Librizzi, William J.: US EPA

Document Number: FRO-002-0346 To 0347 Date: 03/12/85

Title: (Response to a 104(e) Information Request Letter)

Type: CORRESPONDENCE
Author: Paterson, William: Chanel Manufacturing Company, Inc.
Recipient: Font, Jose C.: US EPA

Document Number: FRO-002-0348 To 0350 Date: 03/01/85

Title: (107(a) Notice Letter)

Type: CORRESPONDENCE
Author: Librizzi, William J.: US EPA
Recipient: Davis, Seth A.: Revlon, Inc.

Document Number: FRO-002-0351 To 0353 Date: 03/01/85

Title: (107(a) Notice Letter)

Type: CORRESPONDENCE
Author: Librizzi, William J.: US EPA
Recipient: none: Reedco, Inc.

Document Number: FRO-002-0354 To 0363 Date: 01/23/85

Title: (Response to EPA requests for information regarding Technicon operations, with information attached)

Type: CORRESPONDENCE
Author: Davis, Seth A.: Revlon, Inc.
Recipient: Font, Jose C.: US EPA

Document Number: FRO-002-0364 To 0368 Date: 01/21/85

Title: (Response to a 104(e) Information Request Letter)

Type: CORRESPONDENCE
Author: Davis, Seth A.: Revlon, Inc.
Recipient: Font, Jose C.: US EPA

Document Number: FRO-002-0369 To 0369 Date: 12/21/84

Title: (Letter, on behalf of Reedco, Inc., stating that EPA already has information on record concerning Reedco's procedures for handling hazardous wastes)

Type: CORRESPONDENCE
Author: Rexach, Ralph J.: Rexach and Pico
Recipient: Font, Jose C.: US EPA
Attached: FRO-002-0370

Document Number: FRO-002-0370 To 0370 Parent: FRO-002-0369 Date: 01/22/85

Title: (Letter forwarding results comparing soil and water samples taken by EPA on March 19, 1984)

Type: CORRESPONDENCE
Author: Steinberg, Alan J.: Reedco, Inc.
Recipient: Font, Jose C.: US EPA

Document Number: FRO-002-0371 To 0408 Date: 12/26/84

Title: (Response to a 104(e) Information Request Letter on behalf of Technicon Electronics Corporation)

Type: CORRESPONDENCE
Author: Davis, Seth A.: Revlon, Inc.
Recipient: Font, Jose C.: US EPA

Document Number: FRO-002-0409 To 0413 Date: 11/26/84

Title: (104(e) Information Request Letter)

Type: CORRESPONDENCE
Author: Librizzi, William J.: US EPA
Recipient: none: Reedco, Inc.

Document Number: FRO-002-0414 To 0418 Date: / /

Title: (104(e) Information Request Letter)

Type: CORRESPONDENCE
Condition: DRAFT
Author: Librizzi, William J.: US EPA
Recipient: Demel, Morris: April Industries, Inc.

Document Number: FRO-002-0419 To 0419 Date: 05/04/89

Title: (Letter requesting a copy of Attachment III, the sampling protocol, to the Memorandum of Understanding between EPA and Squibb Manufacturing, Inc.)

Type: CORRESPONDENCE
Author: illegible: Revlon, Inc.
Recipient: Simon, Paul: US EPA
Attached: FRO-002-0420

Document Number: FRO-002-0420 To 0428 Parent: FRO-002-0419 Date: 04/28/89

Title: (Letter forwarding Memorandum of Understanding)

Type: CORRESPONDENCE
Author: Simon, Paul: US EPA
Recipient: Cepeda-Rodriguez, Jose A.: Goldman & Antonetti

Document Number: FRO-002-0429 To 0429 Date: 01/24/89

Title: (Letter requesting an extension to respond to the Access Request and Memorandum of Understanding)

Type: CORRESPONDENCE
Author: Cepeda-Rodriguez, Jose A.: Goldman & Antonetti
Recipient: Simon, Paul: US EPA

Document Number: FRO-002-0430 To 0431 Date: 01/13/89

Title: (Letter discussing the Memorandum of Understanding, specifically sampling protocols and access to property owned by Squibb Manufacturing, Inc.)

Type: CORRESPONDENCE
Condition: MISSING ATTACHMENT
Author: Simon, Paul: US EPA
Recipient: Cepeda-Rodriguez, Jose A.: Goldman & Antonetti

Document Number: FRO-002-0432 To 0432 Date: 11/09/88

Title: (Letter forwarding proposed Memorandum of Understanding between EPA and Squibb Manufacturing, Inc., for review and comment)

Type: CORRESPONDENCE
Author: Simon, Paul: US EPA
Recipient: Cepeda-Rodriguez, Jose A.: Goldman & Antonetti
Attached: FRO-002-0433

Document Number: FRO-002-0433 To 0439 Parent: FRO-002-0432 Date: 11/09/88

Title: Memorandum of Understanding between the US EPA and Squibb Manufacturing, Inc. - Frontera Creek Superfund Site, Remedial Investigation/Feasibility Study

Type: LEGAL DOCUMENT
Condition: DRAFT; MARGINALIA
Author: Muszynski, William J.: US EPA
Recipient: none: Squibb Manufacturing, Inc.

Document Number: FRO-002-0440 To 0447 Date: 11/07/86

Title: (Letter confirming that the Administrative Order has been carried out)

Type: CORRESPONDENCE
Author: Davis, Seth A.: Revlon, Inc.
Recipient: none: US EPA

Document Number: FRO-002-0448 To 0448 Date: 10/16/86

Title: (Letter appointing a Facility Coordinator pursuant to the Administrative Order on Consent)

Type: CORRESPONDENCE
Author: Davis, Seth A.: Senado de Puerto Rico
Recipient: none: US EPA

Document Number: FRO-002-0449 To 0449 Date: 06/21/91

Title: (Memo forwarding the completed Agency for Toxic Substances and Disease Registry's (ATSDR) Health Consultation evaluating the health implications of mercury and lindane levels at the Frontera Creek site)

Type: CORRESPONDENCE
Author: Block, Arthur: Agency for Toxic Substances & Disease Registry (ATSDR)
Recipient: Font, Jose C.: US EPA
Attached: FRO-002-0450

Document Number: FRO-002-0450 To 0457 Parent: FRO-002-0449 Date: 06/12/91

Title: (Memo discussing Health Consultation, Frontera Creek site, National Priorities List (NPL) site, Humacao, Puerto Rico)

Type: CORRESPONDENCE
Author: Crellin, John R.: Agency for Toxic Substances & Disease Registry (ATSDR)
Recipient: Block, Arthur: Agency for Toxic Substances & Disease Registry (ATSDR)

Document Number: FRO-002-0458 To 0460 Date: 11/21/88

Title: (Memo discussing Health Consultation: Ciudad Cristiana Mercury Analysis Results for Soils and Groundwater, Humacao, Puerto Rico)

Type: CORRESPONDENCE
Author: Nelson, William Q.: Agency for Toxic Substances & Disease Registry (ATSDR)
Recipient: Font, Jose C.: US EPA

Document Number: FRO-002-0461 To 0463 Date: 03/18/88

Title: (Memo forwarding the attached Health Consultation entitled "Review of Biological Mercury Testing of Persons Residing near the Frontera Creek Site in Humacao, Puerto Rico")

Type: CORRESPONDENCE
Author: Lybarger, Jeffrey A.: Agency for Toxic Substances & Disease Registry (ATSDR)
Recipient: Nelson, William Q.: Agency for Toxic Substances & Disease Registry (ATSDR)

Document Number: FRO-002-0464 To 0467 Date: 08/18/86

Title: (Memo discussing review of laboratory analyses of biological samples, Frontera Creek site, Ciudad Cristiana)

Type: CORRESPONDENCE
Author: Lybarger, Jeffrey A.: Agency for Toxic Substances & Disease Registry (ATSDR)
Recipient: Nelson, William Q.: Agency for Toxic Substances & Disease Registry (ATSDR)

Document Number: FRO-002-0468 To 0476 Date: 07/30/85

Title: (Letter forwarding the enclosed scientific review document concerning quality assurance and replicability of the Environment Quality Board laboratory values)

Type: CORRESPONDENCE
Author: Houk, Vernon N.: Agency for Toxic Substances & Disease Registry (ATSDR)
Recipient: Daggett, Christopher J.: US EPA

Document Number: FRO-002-0477 To 0479 Date: 11/21/88

Title: (Memo discussing a Health Consultation for the Frontera Creek site dealing with mercury analysis results for soils and groundwater)

Type: CORRESPONDENCE
Author: Nelson, William Q.: Agency for Toxic Substances & Disease Registry (ATSDR)
Recipient: Font, Jose C.: US EPA

Document Number: FRO-002-0480 To 0480 Date: 05/30/86

Title: (Letter forwarding a copy of the Addendum to the Center for Disease Control Scientific Review document)

Type: CORRESPONDENCE
Condition: MISSING ATTACHMENT
Author: Font, Jose C.: US EPA
Recipient: Rohena-Betancourt, Santos: Environmental Quality Board PR

Document Number: FRO-002-0481 To 0482 Date: 01/30/89

Title: (Letter forwarding the Final Community Relations Plan for the Frontera Creek site)

Type: CORRESPONDENCE
Author: Sachdev, Dev R.: Ebasco Services
Recipient: Johnson, Lillian: US EPA
Attached: FRO-002-0483

Document Number: FRO-002-0483 To 0505 Parent: FRO-002-0481 Date: 01/01/89

Title: Final Community Relations Plan for the Frontera Creek Site, Municipality of Humacao, Puerto Rico

Type: PLAN
Author: Sachdev, Dev R.: Ebasco Services
Recipient: none: US EPA

Document Number: FRO-002-0506 To 0506 Date: 01/24/89

Title: (Letter, in Spanish, announcing a meeting scheduled for February 1, 1989, to present and discuss the results of earlier research at the Frontera Creek site)

Type: CORRESPONDENCE
Author: Negron-Navas, Eduardo M.: Fiddler, Gonzalez, Rodriguez
Recipient: Mayoral, Ricardo: Departmento de Salud
Attached: FRO-002-0507 FRO-002-0508 FRO-002-0509

Document Number: FRO-002-0507 To 0507 Parent: FRO-002-0506 Date: 01/24/89

Title: (Letter, in Spanish, announcing a meeting scheduled for February 1, 1989, to present and discuss the results of earlier research at the Frontera Creek site)

Type: CORRESPONDENCE
Author: Negron-Navas, Eduardo M.: Fiddler, Gonzalez, Rodriguez
Recipient: Ojeda, Pedro A. Maldanado: Junta de Calidad Ambiental

---

Document Number: FRO-002-0508 To 0508 Parent: FRO-002-0506 Date: 01/24/89

Title: (Letter, in Spanish, announcing a meeting scheduled for February 1, 1989, to present and discuss the results of earlier research at the Frontera Creek site)

Type: CORRESPONDENCE
Author: Negron-Navas, Eduardo M.: Fiddler, Gonzalez, Rodriguez
Recipient: Grau, Jose Orlando: none

Document Number: FRO-002-0509 To 0509 Parent: FRO-002-0506 Date: 01/24/89

Title: (Letter, in Spanish, announcing a meeting scheduled for February 1, 1989, to present and discuss the results of earlier research at the Frontera Creek site)

Type: CORRESPONDENCE
Author: Negron-Navas, Eduardo M.: Fiddler, Gonzalez, Rodriguez
Recipient: Martinez, Patricia: none

Document Number: FRO-002-0510 To 0512 Date: 01/12/88

Title: (Attendance list for Frontera Creek Public Meeting held on January 12, 1988)

Type: CORRESPONDENCE
Author: none: US EPA
Recipient: none: none

Document Number: FRO-002-0513 To 0513 Date: 01/12/88

Title: (Agenda for Public Meeting, Frontera Creek site, Humacao, Puerto Rico, January 12, 1988)

Type: CORRESPONDENCE
Author: none: US EPA
Recipient: none: none

Document Number: FRO-002-0514 To 0515 Date: 01/09/85

Title: (Letter confirming a meeting and site inspection scheduled for January 15, 1984)

Type: CORRESPONDENCE
Author: O'Neill, Carlos E.: US EPA
Recipient: Irizarry, William M.: Reedco, Inc.

Document Number: FRO-002-0516 To 0517 Date: 01/08/85

Title: (Letter confirming a meeting and site inspection scheduled for January 15, 1984)

Type: CORRESPONDENCE
Author: O'Neill, Carlos E.: US EPA
Recipient: Garcia, Cesar: Technicon Electronics Corporation

Document Number: FRO-002-0518 To 0519 Date: 01/08/85

Title: (Letter confirming a meeting and site inspection scheduled for January 15, 1984)

Type: CORRESPONDENCE
Author: Santos, Luis E.: US EPA
Recipient: Ortiz, Julio: Squibb Manufacturing, Inc.

Document Number: FRO-002-0520 To 0606 Date: 01/12/88

Title: Public Meeting Transcript - Frontera Creek

Type: LEGAL DOCUMENT
Author: none: Bonafide Bilingual Reporting Service
Recipient: none: none

Document Number: FRO-002-0607 To 0613 Date: 08/29/78

Title: (Letter discussing Environmental Quality Board sampling at Technicon Electronics Corporation)

Type: CORRESPONDENCE
Author: Rohena-Betancourt, Santos: Environmental Quality Board PR
Recipient: Scolnick, Meyer: US EPA

Document Number: FRO-002-0614 To 0621 Date: 06/29/79

Title: Order To Show Cause And To Do, Ref. No. D-78003-122 (Copies in Spanish and English)

Type: LEGAL DOCUMENT
Author: illegible: Environmental Quality Board PR
Recipient: illegible: Technicon Electronics Corporation

Document Number: FRO-002-0622 To 0625 Date: 02/18/81

Title: Order To Show Cause, To Cease, Desist, And To Do. Case No. Q-AG-77-0294 (copies in Spanish and English)

Type: LEGAL DOCUMENT
Author: Torres, Francis: Environmental Quality Board PR
Recipient: Peters, John E.: Reedco, Inc.

Document Number: FRO-002-0626 To 0627 Date: 11/06/90

Title: (Letter forwarding documents and designating the Town of Humacao as an Information Repository for the Frontera Creek site)

Type: CORRESPONDENCE
Condition: MISSING ATTACHMENT
Author: O'Neill, Carlos E.: US EPA
Recipient: Vega-Sosa, Ramon: Mayor, Municipality of Humacao

ent Number: FRO-002-0628 To 0628 Date: 02/01/89

: (Attendance list from EPA meeting with Citizens Advisory Group)

Type: CORRESPONDENCE
thor: none: US EPA
ient: none: none

---

ent Number: FRO-002-0629 To 0629 Date: 12/28/87

: (Letter scheduling public meeting to present Work Plan for the Frontera Creek Remedial Investigation)

Type: CORRESPONDENCE
thor: Rohena-Betancourt, Santos: Environmental Quality Board PR
ient: Font, Jose C.: US EPA

---

ent Number: FRO-002-0630 To 0630 Date: 12/23/87

: (Letter discussing planned one-day public meeting for the Frontera Creek Remedial Investigation Work Plan)

Type: CORRESPONDENCE
thor: Font, Jose C.: US EPA
ient: Sepulveda, Jose: Ciudad Cristiana Steering Committee

---

ent Number: FRO-002-0631 To 0631 Date: 02/06/87

: (Letter confirming a meeting scheduled on February 19, 1987, to discuss the "Residents Fund" to be used at the Frontera Creek site)

Type: CORRESPONDENCE
thor: Font, Jose C.: US EPA
ient: Rivera, Bethsaida: Urbanization Quintas de Humacao

---

ent Number: FRO-002-0632 To 0632 Date: 05/13/86

(Letter regarding public meeting to discuss the Remedial Investigation/Feasibility Study Work Plan for the Frontera Creek site)

Type: CORRESPONDENCE
thor: Gelabert, Pedro A.: US EPA
ent: Izquierdo-Mora, Luis: PR Dept of Health

Document Number: FRO-001-0080 To 0089 Date: / /

Title: (Base Neutral Extractables Data)

Type: DATA
Author: none: none
Recipient: none: none

Document Number: FRO-001-2376 To 2378 Parent: FRO-001-2373 Date: / /

Title: Quantitative Organics in the Sediment Sampling by EPA, October 23 to 26, 1979, Frontera Creek Site

Type: DATA
Author: none: none
Recipient: none: none

Document Number: FRO-001-2432 To 2432 Date: / /

Title: (Letter confirming a meeting scheduled for February 19, 1987)

Type: CORRESPONDENCE
Author: Font, Jose C.: US EPA
Recipient: Rivera, Bethsaida: Urbanization Quintas de Humacao

---

Document Number: FRO-001-2468 To 2470 Date: / /

Title: RI/FS Work Plan Fact Sheet - Frontera Creek Site, Humacao, Puerto Rico

Type: CORRESPONDENCE
Author: none: none
Recipient: none: none

Document Number: FRO-002-0414 To 0418 Date: / /

Title: (104(e) Information Request Letter)

Type: CORRESPONDENCE
Condition: DRAFT
Author: Librizzi, William J.: US EPA
Recipient: Demel, Morris: April Industries, Inc.

Document Number: FRO-002-0638 To 0638 Date: / /

Title: (Attendance list from a Technical Assistance Fund meeting about the Frontera Creek site)

Type: CORRESPONDENCE
Author: none: none
Recipient: none: none

Document Number: FRO-002-0639 To 0641 Date: / /

Title: (Memo summarizing the concerns of the Steering Committee expressed at a meeting with EPA held on May 22, 1986)

Type: CORRESPONDENCE
Condition: MARGINALIA; MISSING ATTACHMENT
Author: Librizzi, William J.: US EPA
Recipient: Daggett, Christopher J.: US EPA

Document Number: FRO-002-0607 To 0613 Date: 08/29/78

Title: (Letter discussing Environmental Quality Board sampling at Technicon Electronics Corporation)

Type: CORRESPONDENCE
Author: Rohena-Betancourt, Santos: Environmental Quality Board PR
Recipient: Scolnick, Meyer: US EPA

Document Number: FRO-002-0614 To 0621 Date: 06/29/79

Title: Order To Show Cause And To Do, Ref. No. D-78003-122 (Copies in Spanish and English)

Type: LEGAL DOCUMENT
Author: illegible: Environmental Quality Board PR
Recipient: illegible: Technicon Electronics Corporation

Document Number: FRO-002-0622 To 0625 Date: 02/18/81

Title: Order To Show Cause, To Cease, Desist, And To Do. Case No. Q-AG-77-0294 (copies in Spanish and English)

Type: LEGAL DOCUMENT
Author: Torres, Francis: Environmental Quality Board PR
Recipient: Peters, John E.: Reedco, Inc.

Document Number: FRO-001-0007 To 0021 Date: 08/10/81

Title: Potential Hazardous Waste Site Inspection Report (for the Frontera Creek site)

Type: REPORT
Author: Lipsky, David: Fred C. Hart Associates
Recipient: none: US EPA

Document Number: FRO-001-0059 To 0077 Date: 08/10/81

Title: Potential Hazardous Waste Site Inspection Report (for the Frontera Creek site)

Type: REPORT
Author: Lipsky, David: Fred C. Hart Associates
Recipient: none: US EPA

Document Number: FRO-001-0022 To 0032 Date: 09/14/81

Title: Potential Hazardous Waste Site Identification and Preliminary Assessment (for the Frontera Creek site)

Type: REPORT
Author: Lipsky, David: Fred C. Hart Associates
Recipient: none: US EPA

Document Number: FRO-001-0033 To 0058 Date: 09/14/81

Title: Potential Hazardous Waste Site Inspection Report (for the Frontera Creek site)

Type: REPORT
Author: Lipsky, David: Fred C. Hart Associates
Recipient: none: US EPA

Document Number: FRO-001-0001 To 0006 Date: 03/04/83

Title: Sampling Trip Report (for the Frontera Creek site)

Type: REPORT
Author: Farley, Dennis P.: NUS Corporation
Recipient: none: US EPA

Document Number: FRO-001-0078 To 0079 Date: 06/07/84

Title: (Letter notifying of a proposed Superfund project at Frontera Creek site)

Type: CORRESPONDENCE
Condition: DRAFT
Author: Librizzi, William J.: US EPA
Recipient: Soto, Nelson: Puerto Rico Planning Board

Document Number: FRO-002-0409 To 0413 Date: 11/26/84

Title: (104(e) Information Request Letter)

Type: CORRESPONDENCE
Author: Librizzi, William J.: US EPA
Recipient: none: Reedco, Inc.

Document Number: FRO-002-0369 To 0369 Date: 12/21/84

Title: (Letter, on behalf of Reedco, Inc., stating that EPA already has information on record concerning Reedco's procedures for handling hazardous wastes)

Type: CORRESPONDENCE
Author: Rexach, Ralph J.: Rexach and Pico
Recipient: Font, Jose C.: US EPA
Attached: FRO-002-0370

Document Number: FRO-002-0371 To 0408 Date: 12/26/84

Title: (Response to a 104(e) Information Request Letter on behalf of Technicon Electronics Corporation)

Type: CORRESPONDENCE
Author: Davis, Seth A.: Revlon, Inc.
Recipient: Font, Jose C.: US EPA

Document Number: FRO-002-0516 To 0517 Date: 01/08/85

Title: (Letter confirming a meeting and site inspection scheduled for January 15, 1984)

Type: CORRESPONDENCE
Author: O'Neill, Carlos E.: US EPA
Recipient: Garcia, Cesar: Technicon Electronics Corporation

Document Number: FRO-002-0518 To 0519 Date: 01/08/85

Title: (Letter confirming a meeting and site inspection scheduled for January 15, 1984)

Type: CORRESPONDENCE
Author: Santos, Luis E.: US EPA
Recipient: Ortiz, Julio: Squibb Manufacturing, Inc.

Document Number: FRO-002-0514 To 0515 Date: 01/09/85

Title: (Letter confirming a meeting and site inspection scheduled for January 15, 1984)

Type: CORRESPONDENCE
Author: O'Neill, Carlos E.: US EPA
Recipient: Irizarry, William M.: Reedco, Inc.

Document Number: FRO-002-0364 To 0368 Date: 01/21/85

Title: (Response to a 104(e) Information Request Letter)

Type: CORRESPONDENCE
Author: Davis, Seth A.: Revlon, Inc.
Recipient: Font, Jose C.: US EPA

Document Number: FRO-002-0370 To 0370 Parent: FRO-002-0369 Date: 01/22/85

Title: (Letter forwarding results comparing soil and water samples taken by EPA on March 19, 1984)

Type: CORRESPONDENCE
Author: Steinberg, Alan J.: Reedco, Inc.
Recipient: Font, Jose C.: US EPA

Document Number: FRO-002-0354 To 0363 Date: 01/23/85

Title: (Response to EPA requests for information regarding Technicon operations, with information attached)

Type: CORRESPONDENCE
Author: Davis, Seth A.: Revlon, Inc.
Recipient: Font, Jose C.: US EPA

Document Number: FRO-001-2443 To 2457 Date: 02/15/85

Title: (Letter forwarding information pertaining to past sampling of water and sediment at the Frontera Creek site)

Type: CORRESPONDENCE
Author: Davis, Seth A.: Revlon, Inc.
Recipient: Font, Jose C.: US EPA

Document Number: FRO-002-0348 To 0350 Date: 03/01/85

Title: (107(a) Notice Letter)

Type: CORRESPONDENCE
Author: Librizzi, William J.: US EPA
Recipient: Davis, Seth A.: Revlon, Inc.

Document Number: FRO-002-0351 To 0353 Date: 03/01/85

Title: (107(a) Notice Letter)

Type: CORRESPONDENCE
Author: Librizzi, William J.: US EPA
Recipient: none: Reedco, Inc.

Document Number: FRO-002-0317 To 0345 Date: 03/12/85

Title: (Response to a 104(e) Information Request Letter)

Type: CORRESPONDENCE
Author: Martinez, Pedro A.: PCR, Inc.
Recipient: Librizzi, William J.: US EPA

Document Number: FRO-002-0346 To 0347 Date: 03/12/85

Title: (Response to a 104(e) Information Request Letter)

Type: CORRESPONDENCE
Author: Paterson, William: Chanel Manufacturing Company, Inc.
Recipient: Font, Jose C.: US EPA

Document Number: FRO-002-0311 To 0313 Date: 03/13/85

Title: (Response to a 104(e) Information Request Letter)

Type: CORRESPONDENCE
Author: Rivera, Julio: Polyplastics, Inc.
Recipient: Font, Jose C.: US EPA

Document Number: FRO-002-0314 To 0316 Date: 03/13/85

Title: (Response to a 104(e) Information Request Letter)

Type: CORRESPONDENCE
Author: Rivera, Julio: Esplas, Inc.
Recipient: Font, Jose C.: US EPA

Document Number: FRO-002-0288 To 0290 Date: 03/14/85

Title: (Letter stating that Technicon does not believe itself to be a Potentially Responsible Party at the Frontera Creek site)

Type: CORRESPONDENCE
Author: Davis, Seth A.: Revlon, Inc.
Recipient: Font, Jose C.: US EPA

Document Number: FRO-002-0310 To 0310 Date: 03/15/85

Title: (Letter stating that Reedco, Inc., feels that it is not responsible for performing any clean-up of the area)

Type: CORRESPONDENCE
Author: Steinberg, Alan J.: Reedco, Inc.
Recipient: Font, Jose C.: US EPA

Document Number: FRO-002-0308 To 0309 Date: 03/21/85

Title: (Response to a 104(e) Information Request Letter)

Type: CORRESPONDENCE
Author: Marrero, Pedro A.: Schmid Products Corporation of Puerto Rico
Recipient: Font, Jose C.: US EPA

Document Number: FRO-002-0306 To 0307 Date: 03/25/85

Title: (Response to a 104(e) Information Request Letter)

Type: CORRESPONDENCE
Author: Rodriguez, Carlos: Bolar, Inc.
Recipient: Librizzi, William J.: US EPA

Document Number: FRO-002-0304 To 0305 Date: 03/26/85

Title: (Letter requesting an extension of 60 days to respond to the 104(e) Information Request Letter)

Type: CORRESPONDENCE
Author: Rodriguez-Cepeda, Jose A.: Cepeda Sanchez-Betances & Sifre
Recipient: Librizzi, William J.: US EPA

Document Number: FRO-002-0300 To 0303 Date: 03/27/85

Title: (Response to a 104(e) Information Request Letter, with the 104(e) Request Letter attached)

Type: CORRESPONDENCE
Author: Casillas, Arnold: Colorcon P.R., Inc.
Recipient: none: US EPA

Document Number: FRO-002-0295 To 0296 Date: 03/29/85

Title: (Response to a 104(e) Information Request Letter)

Type: CORRESPONDENCE
Author: Solecki, L. M.: Denver Chemical (Puerto Rico), Inc.
Recipient: Font, Jose C.: US EPA

Document Number: FRO-002-0297 To 0299 Date: 03/29/85

Title: (Response to a 104(e) Information Request Letter)

Type: CORRESPONDENCE
Author: Cardona, Maritza: Warren-Teed, Inc.
Recipient: Font, Jose C.: US EPA

Document Number: FRO-002-0287 To 0287 Date: 04/02/85

Title: (Letter confirming a telephone conversation granting a 30-day extension in which to respond to the EPA Information Request)

Type: CORRESPONDENCE
Author: Fernandez, Francis Torres: Cepeda Sanchez-Betances & Sifre
Recipient: Font, Jose C.: US EPA

Document Number: FRO-002-0291 To 0294 Date: 04/02/85

Title: (Letter stating that USI Properties Corp. does not believe itself to be a Potentially Responsible Party, with a 107(a) Notice Letter attached)

Type: CORRESPONDENCE
Author: Alberty, Donald L.: USI Properties Corp., Puerto Rico Division
Recipient: Font, Jose C.: US EPA

Document Number: FRO-002-0278 To 0286 Date: 04/03/85

Title: (Peerless Tube Company's Response to 104(e) Information Request Letter)

Type: CORRESPONDENCE
Author: Vasquez, Ruben F.: MFV Environmental Planning Consultants
Recipient: Font, Jose C.: US EPA

Document Number: FRO-002-0270 To 0277 Date: 04/04/85

Title: (Letter reiterating Technicon's interest in performing the RI/FS)

Type: CORRESPONDENCE
Author: Davis, Seth A.: Revlon, Inc.
Recipient: Praschak, Andrew: US EPA

Document Number: FRO-002-0267 To 0269 Date: 04/23/85

Title: (Response to a 104(e) Information Request Letter)

Type: CORRESPONDENCE
Author: Santiago, Maria E.: Alcon (Puerto Rico)
Recipient: Font, Jose C.: US EPA

****

Document Number: FRO-002-0249 To 0252 Date: 04/30/85

Title: (Response to a 104(e) Information Request Letter)

Type: CORRESPONDENCE
Author: Borrero, Manuel: Squibb Manufacturing, Inc.
Recipient: Font, Jose C.: US EPA

Document Number: FRO-002-0253 To 0266 Date: 04/30/85

Title: (Response to a 104(e) Information Request Letter)

Type: CORRESPONDENCE
Author: Borrero, Manuel: Squibb Manufacturing, Inc.
Recipient: Walka, Richard M.: US EPA

Document Number: FRO-002-0636 To 0637 Date: 06/12/85

Title: (Letter forwarding documents requested through the Freedom of Information Act)

Type: CORRESPONDENCE
Condition: MISSING ATTACHMENT
Author: Ogg, Robert N.: US EPA
Recipient: Rodriguez-Cepeda, Jose A.: Cepeda, Sanchez-Betanies, & Sifre

---

Document Number: FRO-001-0458 To 0563 Date: 07/01/85

Title: Sampling Trip Report, Focused Remedial Investigation of Ciudad Cristiana, Frontera Creek Site, Humacao, Puerto Rico

Type: REPORT
Author: Knutson, Jerome C.: NUS Corporation
Recipient: none: US EPA

Document Number: FRO-002-0468 To 0476 Date: 07/30/85

Title: (Letter forwarding the enclosed scientific review document concerning quality assurance and replicability of the Environment Quality Board laboratory values)

Type: CORRESPONDENCE
Author: Houk, Vernon N.: Agency for Toxic Substances & Disease Registry (ATSDR)
Recipient: Daggett, Christopher J.: US EPA

Document Number: FRO-001-2466 To 2467 Date: 08/21/85

Title: (Letter discussing environmental sampling near the Frontera Creek Superfund site, around the community of Ciudad Cristiana)

Type: CORRESPONDENCE
Author: Daggett, Christopher J.: US EPA
Recipient: Mora, Luis Izquierdo: Department of Health, Commonwealth of Puerto Rico

---

Document Number: FRO-001-2463 To 2465 Parent: FRO-001-2460 Date: 02/12/86

Title: (Letter stating concerns about the clean-up of the Frontera Creek site)

Type: CORRESPONDENCE
Author: Archilla-Diez, Efrain: Asociacion Pro-Mejoramiento del Ambiente
Recipient: Gelabert, Pedro A.: US EPA

Document Number: FRO-001-2460 To 2462 Date: 02/21/86

Title: (Letter pertaining to the investigation of the contamination and the determination of which remedial response is to be implemented at the site)

Type: CORRESPONDENCE
Author: Gelabert, Pedro A.: US EPA
Recipient: Archilla-Diez, Efrain: Asociacion Pro-Mejoramiento del Ambiente
Attached: FRO-001-2463

Document Number: FRO-002-0635 To 0635 Parent: FRO-002-0634 Date: 03/10/86

Title: (Letter requesting meeting with EPA to discuss the Frontera Creek site)

Type: CORRESPONDENCE
Author: Rivera, Bethsaida: Ciudad Cristiana Steering Committee
Recipient: Daggett, Christopher J.: US EPA

Document Number: FRO-001-2436 To 2436 Parent: FRO-001-2433 Date: 04/23/86

Title: (Letter requesting a copy of the NUS Work Plan for the Frontera Creek site RI/FS)

Type: CORRESPONDENCE
Author: Negron-Navas, Eduardo M.: Fiddler, Gonzalez, Rodriguez
Recipient: Gelabert, Pedro A.: US EPA

Document Number: FRO-002-0634 To 0634 Date: 05/08/86

Title: (Letter responding to a March 10, 1986, letter which requested meeting with EPA)

Type: CORRESPONDENCE
Author: Librizzi, William J.: US EPA
Recipient: Rivera, Bethsaida: Urbanization Quintas de Humacao
Attached: FRO-002-0635

Document Number: FRO-002-0632 To 0632 Date: 05/13/86

Title: (Letter regarding public meeting to discuss the Remedial Investigation/Feasibility Study Work Plan for the Frontera Creek site)

Type: CORRESPONDENCE
Author: Gelabert, Pedro A.: US EPA
Recipient: Izquierdo-Mora, Luis: PR Dept of Health

Document Number: FRO-002-0633 To 0633 Date: 05/13/86

Title: (Letter regarding public meeting to discuss the Remedial Investigation/Feasibility Study Work Plan for the Frontera Creek site)

Type: CORRESPONDENCE
Author: Gelabert, Pedro A.: US EPA
Recipient: Rohena-Betancourt, Santos: Environmental Quality Board PR

Document Number: FRO-002-0480 To 0480 Date: 05/30/86

Title: (Letter forwarding a copy of the Addendum to the Center for Disease Control Scientific Review document)

Type: CORRESPONDENCE
Condition: MISSING ATTACHMENT
Author: Font, Jose C.: US EPA
Recipient: Rohena-Betancourt, Santos: Environmental Quality Board PR

Document Number: FRO-001-2459 To 2459 Date: 06/02/86

Title: (Letter forwarding a copy of the Work Plan for the Frontera Creek site for review and comment)

Type: CORRESPONDENCE
Condition: MISSING ATTACHMENT
Author: Librizzi, William J.: US EPA
Recipient: Higgins, Juan Miguel: Mayor, Municipality of Humacao

---

Document Number: FRO-001-2434 To 2435 Parent: FRO-001-2433 Date: 06/05/86

Title: (Letter stating that Revlon's subsidiary, Technicon Electronics Corporation, would like to perform the RI/FS)

Type: CORRESPONDENCE
Author: Davis, Seth A.: Revlon, Inc.
Recipient: Daggett, Christopher J.: US EPA

Document Number: FRO-001-2438 To 2440 Date: 06/05/86

Title: (Letter submitting a Work Plan and requesting comments, also giving notification of status as a Potentially Responsible Party)

Type: CORRESPONDENCE
Condition: MISSING ATTACHMENT
Author: Marti, Noelia: US EPA
Recipient: Davis, Seth A.: Technicon Electronics Corporation

Document Number: FRO-001-2458 To 2458 Date: 06/06/86

Title: (Letter forwarding the revised Work Plan for the Frontera Creek site)

Type: CORRESPONDENCE
Condition: MISSING ATTACHMENT
Author: Font, Jose C.: US EPA
Recipient: Grau, Jose Orlando: Casillas & Grau

Document Number: FRO-002-0248 To 0248 Date: 06/13/86

Title: (Letter certifying that mercury is not used at the Reedco plant)

Type: CORRESPONDENCE
Author: Irizarry, William M.: Reedco, Inc.
Recipient: Perez, Gil: Occupational Safety and Health Office

Document Number: FRO-001-2441 To 2441 Date: 06/25/86

Title: (Letter requesting a 30-day extension in which to comment on the Work Plan)

Type: CORRESPONDENCE
Author: Davis, Seth A.: Revlon, Inc.
Recipient: Marti, Noelia: US EPA

Document Number: FRO-001-2442 To 2442 Date: 06/25/86

Title: (Letter stating that comments to the Work Plan will be provided prior to July 17, 1986)

Type: CORRESPONDENCE
Author: Halak, John J.: Block Drug Company, Inc.
Recipient: Marti, Noelia: US EPA

Document Number: FRO-001-2431 To 2431 Parent: FRO-001-2404 Date: 07/16/86

Title: (Letter giving an extension of time to comment on the RI/FS Work Plan for the Frontera Creek site)

Type: CORRESPONDENCE
Author: Librizzi, William J.: US EPA
Recipient: Rivera, Bethsaida: Urbanization Quintas de Humacao

---

Document Number: FRO-001-2437 To 2437 Date: 08/07/86

Title: (Letter forwarding a copy of Reedco, Inc.'s comments on the Work Plan for the RI/FS)

Type: CORRESPONDENCE
Condition: MISSING ATTACHMENT
Author: Font, Jose C.: US EPA
Recipient: Mandelbaum, David G.: Wolf, Block, Schorr, and Solis-Cohen

Document Number: FRO-001-2433 To 2433 Date: 08/15/86

Title: (Letter summarizing the discussion at a July 17, 1986, meeting at EPA)

Type: CORRESPONDENCE
Author: Marshall, James R.: US EPA
Recipient: Davis, Seth A.: Revlon, Inc.
Attached: FRO-001-2434 FRO-001-2436

Document Number: FRO-002-0246 To 0247 Date: 08/15/86

Title: (Letter notifying Revlon that an informational meeting was held on July 17, 1986, at which time Revlon's proposal to conduct the RI/FS was accepted)

Type: CORRESPONDENCE
Author: Marshall, James R.: US EPA
Recipient: Davis, Seth A.: Revlon, Inc.

Document Number: FRO-002-0464 To 0467 Date: 08/18/86

Title: (Memo discussing review of laboratory analyses of biological samples, Frontera Creek site, Ciudad Cristiana)

Type: CORRESPONDENCE
Author: Lybarger, Jeffrey A.: Agency for Toxic Substances & Disease Registry (ATSDR)
Recipient: Nelson, William O.: Agency for Toxic Substances & Disease Registry (ATSDR)

Document Number: FRO-002-0234 To 0245 Date: 08/28/86

Title: (Response to a 104(e) Request for Information Letter)

Type: CORRESPONDENCE
Author: Peterson, Alonso: April Industries, Inc.
Recipient: Demel, Morris: US EPA

Document Number: FRO-001-2132 To 2333 Parent: FRO-001-2131 Date: 09/01/86

Title: Work Plan for the Remedial Investigation/Feasibility Study of the Frontera Creek Site, Humacao, Puerto Rico

Type: PLAN
Author: Dowiak, Mark J.: NUS Corporation
Recipient: none: none

Document Number: FRO-001-2404 To 2430 Date: 09/17/86

Title: (Letter, in Spanish, discussing the causes of mercury contamination of soil and water at the Frontera Creek site)

Type: CORRESPONDENCE
Author: Gelabert, Pedro A.: US EPA
Recipient: Ortiz, Gilberto Rivera: Comision Especial sobre la Investigacion de Ciudad Cristiana
Attached: FRO-001-2431

Document Number: FRO-001-2131 To 2131 Date: 09/24/86

Title: (Letter forwarding copies of the Remedial Investigation/Feasibility Study (RI/FS) for the Frontera Creek site)

Type: CORRESPONDENCE
Author: Dowiak, Mark J.: NUS Corporation
Recipient: Font, Jose C.: US EPA
Attached: FRO-001-2132

Document Number: FRO-001-2380 To 2384 Parent: FRO-001-2379 Date: 10/03/86

Title: (Letter containing the Corps of Engineers' action, carried out under its Regulatory Program, regarding the Ciudad Cristiana controversy)

Type: CORRESPONDENCE
Condition: MISSING ATTACHMENT
Author: none: US Army Corps of Engineers
Recipient: Ortiz, Gilberto Rivera: Senator, Legislature of Puerto Rico

---

Document Number: FRO-002-0191 To 0221 Date: 10/03/86

Title: Administrative Order on Consent

Type: LEGAL DOCUMENT
Author: Daggett, Christopher J.: US EPA
Recipient: Davis, Seth A.: Revlon, Inc.

Document Number: FRO-002-0448 To 0448 Date: 10/16/86

Title: (Letter appointing a Facility Coordinator pursuant to the Administrative Order on Consent)

Type: CORRESPONDENCE
Author: Davis, Seth A.: Senado de Puerto Rico
Recipient: none: US EPA

Document Number: FRO-001-2399 To 2400 Parent: FRO-001-2395 Date: 10/20/86

Title: (Letter, in Spanish, inviting participation in an advisory committee established by Revlon to study the Frontera Creek site)

Type: CORRESPONDENCE
Author: Negron-Navas, Eduardo M.: Fiddler, Gonzalez, Rodriguez
Recipient: Grau, Jose Orlando: none

Document Number: FRO-002-0440 To 0447 Date: 11/07/86

Title: (Letter confirming that the Administrative Order has been carried out)

Type: CORRESPONDENCE
Author: Davis, Seth A.: Revlon, Inc.
Recipient: none: US EPA

Document Number: FRO-001-2386 To 2389 Date: 11/20/86

Title: (Letter, in Spanish, inviting participation in an advisory committee established by Revlon to study the Frontera Creek site)

Type: CORRESPONDENCE
Author: Negron-Navas, Eduardo M.: Fiddler, Gonzalez, Rodriguez
Recipient: Ortiz, Gilberto Rivera: Senado de Puerto Rico
Attached: FRO-001-2390

Document Number: FRO-001-2390 To 2391 Parent: FRO-001-2386 Date: 11/20/86

Title: (Letter, in Spanish, inviting participation in an advisory committee established by Revlon to study the Frontera Creek site)

Type: CORRESPONDENCE
Author: Negron-Navas, Eduardo M.: Fiddler, Gonzalez, Rodriguez
Recipient: none: Mision Industrial de Puerto Rico, Inc.

Document Number: FRO-001-2392 To 2394 Date: 11/20/86

Title: (Letter, in Spanish, inviting participation in an advisory committee established by Revlon to study the Frontera Creek site)

Type: CORRESPONDENCE
Author: Negron-Navas, Eduardo M.: Fiddler, Gonzalez, Rodriguez
Recipient: Rohena-Betancourt, Santos: Junta de Calidad Ambiental

---

Document Number: FRO-001-2395 To 2398 Date: 11/20/86

Title: (Letter, in Spanish, inviting participation in an advisory committe established by Revlon to study the Frontera Creek site)

Type: CORRESPONDENCE
Author: Negron-Navas, Eduardo M.: Fiddler, Gonzalez, Rodriguez
Recipient: Ruiz, Juan: Asociacion Pro-Mejoramiento del Ambiente
Attached: FRO-001-2399

Document Number: FRO-001-2401 To 2403 Date: 11/20/86

Title: (Letter, in Spanish, inviting participation in an advisory committee established by Revlon to study the Frontera Creek site)

Type: CORRESPONDENCE
Author: Negron-Navas, Eduardo M.: Fiddler, Gonzalez, Rodriguez
Recipient: Mora, Luis Izquierdo: Departmento de Salud

Document Number: FRO-001-2385 To 2385 Date: 01/19/87

Title: (Letter, in Spanish, regarding the coordination of a committee of scientists put together by Mision Industrial de Puerto Rico, Inc., to discuss the Frontera Creek site)

Type: CORRESPONDENCE
Author: Meyn, Marianne: Mision Industrial de Puerto Rico, Inc.
Recipient: Negron-Navas, Eduardo M.: Fiddler, Gonzalez, Rodriguez

Document Number: FRO-002-0631 To 0631 Date: 02/06/87

Title: (Letter confirming a meeting scheduled on February 19, 1987, to discuss the "Residents Fund" to be used at the Frontera Creek site)

Type: CORRESPONDENCE
Author: Font, Jose C.: US EPA
Recipient: Rivera, Bethsaida: Urbanization Quintas de Humacao

---

Document Number: FRO-002-0233 To 0233 Date: 02/20/87

Title: (Letter confirming that Dynamac will be allowed to review 104(e) responses)

Type: CORRESPONDENCE
Author: Davis, Seth A.: Revlon, Inc.
Recipient: Font, Jose C.: US EPA

Document Number: FRO-001-2379 To 2379 Date: 03/18/87

Title: (Letter, in Spanish, expressing the residents' concern about the Frontera Creek site)

Type: CORRESPONDENCE
Author: Sepulveda, Jose: Portavoz Comite Timon Ex-Residentes Cuidad Cristiana
Recipient: Font, Jose C.: US EPA
Attached: FRO-001-2380

Document Number: FRO-001-2475 To 2483 Date: 05/01/87

Title: (Letter expressing concern about EPA's handling of the Frontera Creek site)

Type: CORRESPONDENCE
Author: Singmaster III, James A.: none
Recipient: Daggett, Christopher J.: US EPA

Document Number: FRO-001-2375 To 2375 Parent: FRO-001-2373 Date: 05/01/87

Title: (Letter forwarding attached material pertaining to Cuidad Cristiana and the Frontera Creek site, and requesting that EPA take additional action)

Type: CORRESPONDENCE
Author: Singmaster III, James A.: none
Recipient: Daggett, Christopher J.: US EPA

****

Document Number: FRO-001-2373 To 2374 Date: 06/08/87

Title: (Letter stating activities that will occur when Revlon performs the RI/FS at the Frontera Creek site)

Type: CORRESPONDENCE
Author: Luftig, Stephen D.: US EPA
Recipient: Singmaster III, James A.: none
Attached: FRO-001-2375 FRO-001-2376

Document Number: FRO-002-0224 To 0227 Date: 06/24/87

Title: (Letter on behalf of Reedco, Inc., expressing concern about EPA's failure to issue Notice Letters to all Potentially Responsible Parties)

Type: CORRESPONDENCE
Author: Nucciarone, A. Patrick: Hannoch Weisman
Recipient: Luftig, Stephen D.: US EPA

Document Number: FRO-002-0228 To 0232 Date: 07/09/87

Title: (Letter forwarding correspondence which contains information stating why Reedco, Inc., should not be named a Potentially Responsible Party)

Type: CORRESPONDENCE
Author: Nucciarone, A. Patrick: Hannoch Weisman
Recipient: Luftig, Stephen D.: US EPA

Document Number: FRO-001-2371 To 2372 Parent: FRO-001-2368 Date: 07/24/87

Title: (Letter requesting information prior to granting EPA permission to enter Squibb Manufacturing, Inc., property to collect samples for chemical analysis)

Type: CORRESPONDENCE
Author: Cepeda-Rodriguez, Jose A.: Goldman & Antonetti
Recipient: Lipsky, David: Dynamac Corporation

Document Number: FRO-001-0090 To 0457 Date: 08/17/87

Title: Draft Site Operations Plan, Revlon Inc., Frontera Creek Site, Humacao, Puerto Rico

Type: PLAN
Condition: DRAFT
Author: none: Dynamac Corporation
Recipient: none: US EPA

Document Number: FRO-001-2369 To 2370 Parent: FRO-001-2368 Date: 08/20/87

Title: (Letter addressing concerns about Revlon's proposed sampling plan for the Squibb Manufacturing facility at the Frontera Creek site)

Type: CORRESPONDENCE
Author: Lipsky, David: Dynamac Corporation
Recipient: Cepeda-Rodriguez, Jose A.: Goldman & Antonetti

Document Number: FRO-001-2368 To 2368 Date: 10/05/87

Title: (Letter on behalf of Squibb Manufacturing, Inc., stating that information provided by Revlon's consultant presents certain discrepancies with NUS Corporation's Work Plan)

Type: CORRESPONDENCE
Author: Cepeda-Rodriguez, Jose A.: Goldman & Antonetti
Recipient: Luftig, Stephen D.: US EPA
Attached: FRO-001-2369 FRO-001-2371

Document Number: FRO-001-2352 To 2353 Date: 12/16/87

Title: (Letter regarding the January 12, 1988, meeting to discuss the Work Plan)

Type: CORRESPONDENCE
Author: Font, Jose C.: US EPA
Recipient: Higgins, Juan Miguel: Mayor, Municipality of Humacao
Attached: FRO-001-2354

Document Number: FRO-001-2354 To 2367 Parent: FRO-001-2352 Date: 12/18/87

Title: (Letters regarding the January 12, 1988, meeting to discuss the Work Plan)

Type: CORRESPONDENCE
Author: Font, Jose C.: US EPA
Recipient: various: various

Document Number: FRO-002-0630 To 0630 Date: 12/23/87

Title: (Letter discussing planned one-day public meeting for the Frontera Creek Remedial Investigation Work Plan)

Type: CORRESPONDENCE
Author: Font, Jose C.: US EPA
Recipient: Sepulveda, Jose: Ciudad Cristiana Steering Committee

---

Document Number: FRO-002-0629 To 0629 Date: 12/28/87

Title: (Letter scheduling public meeting to present Work Plan for the Frontera Creek Remedial Investigation)

Type: CORRESPONDENCE
Author: Rohena-Betancourt, Santos: Environmental Quality Board PR
Recipient: Font, Jose C.: US EPA

Document Number: FRO-002-0510 To 0512 Date: 01/12/88

Title: (Attendance list for Frontera Creek Public Meeting held on January 12, 1988)

Type: CORRESPONDENCE
Author: none: US EPA
Recipient: none: none

Document Number: FRO-002-0513 To 0513 Date: 01/12/88

Title: (Agenda for Public Meeting, Frontera Creek site, Humacao, Puerto Rico, January 12, 1988)

Type: CORRESPONDENCE
Author: none: US EPA
Recipient: none: none

Document Number: FRO-002-0520 To 0606 Date: 01/12/88

Title: Public Meeting Transcript - Frontera Creek

Type: LEGAL DOCUMENT
Author: none: Bonafide Bilingual Reporting Service
Recipient: none: none

Document Number: FRO-002-0222 To 0223 Date: 03/18/88

Title: (Letter, in Spanish, describing the group "Grupo Asesor" and identifying its members to EPA)

Type: CORRESPONDENCE
Author: Negron-Navas, Eduardo M.: Fiddler, Gonzalez, Rodriguez
Recipient: Font, Jose C.: US EPA

Document Number: FRO-002-0461 To 0463 Date: 03/18/88

Title: (Memo forwarding the attached Health Consultation entitled "Review of Biological Mercury Testing of Persons Residing near the Frontera Creek Site in Humacao, Puerto Rico")

Type: CORRESPONDENCE
Author: Lybarger, Jeffrey A.: Agency for Toxic Substances & Disease Registry (ATSDR)
Recipient: Nelson, William O.: Agency for Toxic Substances & Disease Registry (ATSDR)

Document Number: FRO-002-0432 To 0432 Date: 11/09/88

Title: (Letter forwarding proposed Memorandum of Understanding between EPA and Squibb Manufacturing, Inc., for review and comment)

Type: CORRESPONDENCE
Author: Simon, Paul: US EPA
Recipient: Cepeda-Rodriguez, Jose A.: Goldman & Antonetti
Attached: FRO-002-0433

Document Number: FRO-002-0433 To 0439 Parent: FRO-002-0432 Date: 11/09/88

Title: Memorandum of Understanding between the US EPA and Squibb Manufacturing, Inc. - Frontera Creek Superfund Site, Remedial Investigation/Feasibility Study

Type: LEGAL DOCUMENT
Condition: DRAFT; MARGINALIA
Author: Muszynski, William J.: US EPA
Recipient: none: Squibb Manufacturing, Inc.

Document Number: FRO-002-0477 To 0479 Date: 11/21/88

Title: (Memo discussing a Health Consultation for the Frontera Creek site dealing with mercury analysis results for soils and groundwater)

Type: CORRESPONDENCE
Author: Nelson, William Q.: Agency for Toxic Substances & Disease Registry (ATSDR)
Recipient: Font, Jose C.: US EPA

Document Number: FRO-002-0458 To 0460 Date: 11/21/88

Title: (Memo discussing Health Consultation: Ciudad Cristiana Mercury Analysis Results for Soils and Groundwater, Humacao, Puerto Rico)

Type: CORRESPONDENCE
Author: Nelson, William Q.: Agency for Toxic Substances & Disease Registry (ATSDR)
Recipient: Font, Jose C.: US EPA

Document Number: FRO-002-0483 To 0505 Parent: FRO-002-0481 Date: 01/01/89

Title: Final Community Relations Plan for the Frontera Creek Site, Municipality of Humacao, Puerto Rico

Type: PLAN
Author: Sachdev, Dev R.: Ebasco Services
Recipient: none: US EPA

Document Number: FRO-001-2350 To 2351 Date: 01/13/89

Title: (Letter stating that Revlon must agree in writing to indemnify and hold harmless EPA before the government can exercise its 104(e) access authority to gain access to various properties to perform Remedial Investigation (RI) sampling)

Type: CORRESPONDENCE
Author: Simon, Paul: US EPA
Recipient: Gomez, Juan Carlos: Fiddler, Gonzalez, Rodriguez

Document Number: FRO-002-0430 To 0431 Date: 01/13/89

Title: (Letter discussing the Memorandum of Understanding, specifically sampling protocols and access to property owned by Squibb Manufacturing, Inc.)

Type: CORRESPONDENCE
Condition: MISSING ATTACHMENT
Author: Simon, Paul: US EPA
Recipient: Cepeda-Rodriguez, Jose A.: Goldman & Antonetti

Document Number: FRO-001-2348 To 2349 Date: 01/19/89

Title: (Letter confirming that Revlon, Inc., will indemnify and hold harmless EPA and the United States for any claims related to injuries and damages in gaining access to properties near Frontera Creek as part of the Remedial Investigation/Feasibility Study)

Type: CORRESPONDENCE
Author: Davis, Seth A.: Revlon, Inc.
Recipient: Simon, Paul: US EPA

Document Number: FRO-002-0429 To 0429 Date: 01/24/89

Title: (Letter requesting an extension to respond to the Access Request and Memorandum of Understanding)

Type: CORRESPONDENCE
Author: Cepeda-Rodriguez, Jose A.: Goldman & Antonetti
Recipient: Simon, Paul: US EPA

Document Number: FRO-002-0506 To 0506 Date: 01/24/89

Title: (Letter, in Spanish, announcing a meeting scheduled for February 1, 1989, to present and discuss the results of earlier research at the Frontera Creek site)

Type: CORRESPONDENCE
Author: Negron-Navas, Eduardo M.: Fiddler, Gonzalez, Rodriguez
Recipient: Mayoral, Ricardo: Departmento de Salud
Attached: FRO-002-0507 FRO-002-0508 FRO-002-0509

Document Number: FRO-002-0507 To 0507 Parent: FRO-002-0506 Date: 01/24/89

Title: (Letter, in Spanish, announcing a meeting scheduled for February 1, 1989, to present and discuss the results of earlier research at the Frontera Creek site)

Type: CORRESPONDENCE
Author: Negron-Navas, Eduardo M.: Fiddler, Gonzalez, Rodriguez
Recipient: Ojeda, Pedro A. Maldanado: Junta de Calidad Ambiental

---

Document Number: FRO-002-0508 To 0508 Parent: FRO-002-0506 Date: 01/24/89

Title: (Letter, in Spanish, announcing a meeting scheduled for February 1, 1989, to present and discuss the results of earlier research at the Frontera Creek site)

Type: CORRESPONDENCE
Author: Negron-Navas, Eduardo M.: Fiddler, Gonzalez, Rodriguez
Recipient: Grau, Jose Orlando: none

Document Number: FRO-002-0509 To 0509 Parent: FRO-002-0506 Date: 01/24/89

Title: (Letter, in Spanish, announcing a meeting scheduled for February 1, 1989, to present and discuss the results of earlier research at the Frontera Creek site)

Type: CORRESPONDENCE
Author: Negron-Navas, Eduardo M.: Fiddler, Gonzalez, Rodriguez
Recipient: Martinez, Patricia: none

Document Number: FRO-002-0481 To 0482 Date: 01/30/89

Title: (Letter forwarding the Final Community Relations Plan for the Frontera Creek site)

Type: CORRESPONDENCE
Author: Sachdev, Dev R.: Ebasco Services
Recipient: Johnson, Lillian: US EPA
Attached: FRO-002-0483

Document Number: FRO-001-2338 To 2347 Date: 02/01/89

Title: Sampling Results from the Cuidad Cristiana Investigation

Type: CORRESPONDENCE
Author: none: US EPA
Recipient: none: none

Document Number: FRO-002-0628 To 0628 Date: 02/01/89

Title: (Attendance list from EPA meeting with Citizens Advisory Group)

Type: CORRESPONDENCE
Author: none: US EPA
Recipient: none: none

Document Number: FRO-001-2471 To 2474 Date: 03/17/89

Title: (Letter expressing concern about EPA's handling of the Frontera Creek site and forwarding newspaper articles and data)

Type: CORRESPONDENCE
Author: Singmaster III, James A.: none
Recipient: none: US General Accounting Office

Document Number: FRO-001-2336 To 2337 Date: 04/13/89

Title: (Letter responding to concerns about the Frontera Creek site)

Type: CORRESPONDENCE
Author: Guerrero, Peter F.: US General Accounting Office
Recipient: Singmaster III, James A.: none

Document Number: FRO-002-0420 To 0428 Parent: FRO-002-0419 Date: 04/28/89

Title: (Letter forwarding Memorandum of Understanding)

Type: CORRESPONDENCE
Author: Simon, Paul: US EPA
Recipient: Cepeda-Rodriguez, Jose A.: Goldman & Antonetti

Document Number: FRO-002-0419 To 0419 Date: 05/04/89

Title: (Letter requesting a copy of Attachment III, the sampling protocol, to the Memorandum of Understanding between EPA and Squibb Manufacturing, Inc.)

Type: CORRESPONDENCE
Author: illegible: Revlon, Inc.
Recipient: Simon, Paul: US EPA
Attached: FRO-002-0420

Document Number: FRO-001-2334 To 2335 Date: 12/22/89

Title: (Letter on behalf of Revlon, Inc., pertaining to the preparation of the Draft Phase I Remedial Investigation Report)

Type: CORRESPONDENCE
Author: Davis, Seth A.: Fink Weinberger, P.C.
Recipient: Font, Jose C.: US EPA

Document Number: FRO-002-0626 To 0627 Date: 11/06/90

Title: (Letter forwarding documents and designating the Town of Humacao as an Information Repository for the Frontera Creek site)

Type: CORRESPONDENCE
Condition: MISSING ATTACHMENT
Author: O'Neill, Carlos E.: US EPA
Recipient: Vega-Sosa, Ramon: Mayor, Municipality of Humacao

Document Number: FRO-002-0189 To 0190 Date: 12/20/90

Title: (Letter requesting the applicable or relevant and appropriate requirements (ARARs) and attached response)

Type: CORRESPONDENCE
Author: Caspe, Richard L.: US EPA
Recipient: Rohena-Betancourt, Santos: PR Environmental Quality Board

Document Number: FRO-002-0158 To 0188 Date: 01/30/91

Title: (Letter identifying the applicable or relevant and appropriate requirements (ARARs) for three National Priorities List (NPL) sites - Frontera Creek, Juncos Landfill, and Fibers Public Supply Wells)

Type: CORRESPONDENCE
Author: Ojeda, Pedro A. Maldonado: none -
Recipient: Caspe, Richard L.: US EPA

Document Number: FRO-001-0564 To 0930 Date: 02/01/91

Title: Remedial Investigation Report for Frontera Creek Site, Humacao, Puerto Rico, Volume 1 of 7 (Report) - Revised Draft

Type: REPORT
Condition: DRAFT
Author: none: Dynamac Corporation
Recipient: none: none

Document Number: FRO-001-0931 To 1186 Date: 02/01/91

Title: Remedial Investigation Report for Frontera Creek Site, Humacao, Puerto Rico, Volume 2 of 7 (Tables, Part 1) - Revised Draft

Type: REPORT
Condition: DRAFT
Author: none: Dynamac Corporation
Recipient: none: none

Document Number: FRO-001-1187 To 1437 Date: 02/01/91

Title: Remedial Investigation Report for Frontera Creek Site, Humacao, Puerto Rico, Volume 3 of 7 (Tables, Part 2) - Revised Draft

Type: REPORT
Condition: DRAFT
Author: none: Dynamac Corporation
Recipient: none: none

Document Number: FRO-001-1438 To 1524 Date: 02/01/91

Title: Remedial Investigation Report for Frontera Creek Site, Humacao, Puerto Rico, Volume 4 of 7 (Figures) - Revised Draft

Type: REPORT
Condition: DRAFT
Author: none: Dynamac Corporation
Recipient: none: none

Document Number: FRO-001-1525 To 1540 Date: 02/01/91

Title: Remedial Investigation Report for Frontera Creek Site, Humacao, Puerto Rico, Volume 5 of 7 (Plates) - Revised Draft

Type: REPORT
Condition: DRAFT
Author: none: Dynamac Corporation
Recipient: none: none

Document Number: FRO-001-1541 To 1787 Date: 02/01/91

Title: Remedial Investigation Report for Frontera Creek Site, Humacao, Puerto Rico, Volume 6 of 7 (Appendices, Part 1) - Revised Draft

Type: REPORT
Condition: DRAFT
Author: none: Dynamac Corporation
Recipient: none: none

Document Number: FRO-001-1788 To 2111 Date: 02/01/91

Title: Remedial Investigation Report for Frontera Creek Site, Humacao, Puerto Rico, Volume 7 of 7 (Appendices, Part 2) - Revised Draft

Type: REPORT
Condition: DRAFT
Author: none: Dynamac Corporation
Recipient: none: none

Document Number: FRO-002-0001 To 0136 Date: 04/01/91

Title: Feasibility Study for Frontera Creek Site, Humacao, Puerto Rico

Type: REPORT
Condition: DRAFT
Author: none: Dynamac Corporation
Recipient: none: none

Document Number: FRO-002-0137 To 0139 Date: 04/01/91

Title: Addendum - Draft Feasibility Study Report, Frontera Creek Site, Humacao, Puerto Rico

Type: REPORT
Author: none: US EPA
Recipient: none: none

Document Number: FRO-002-0154 To 0155 Date: 04/01/91

Title: Addendum No. 5 for Feasibility Study Report, Frontera Creek Site

Type: REPORT
Author: none: US EPA
Recipient: none: none

Document Number: FRO-002-0140 To 0146 Date: 05/17/91

Title: Addendum No. 1 for Feasibility Study Report, Frontera Creek Site

Type: REPORT
Author: Lipsky, David: Dynamac Corporation
Recipient: Font, Jose C.: US EPA

Document Number: FRO-002-0147 To 0149 Date: 05/21/91

Title: Addendum No. 2 for Feasibility Study Report, Frontera Creek Site

Type: REPORT
Author: Lipsky, David: Dynamac Corporation
Recipient: Font, Jose C.: US EPA

Document Number: FRO-001-2112 To 2116 Date: 06/05/91

Title: (Letter discussing the attached analytical results of the sediment and soil samples taken from the Technicon facility in Humacao, Puerto Rico - Addendum No. 1 for Revised Draft Remedial Investigation Report)

Type: CORRESPONDENCE
Author: Lipsky, David: Dynamac Corporation
Recipient: Font, Jose C.: US EPA

Document Number: FRO-002-0450 To 0457 Parent: FRO-002-0449 Date: 06/12/91

Title: (Memo discussing Health Consultation, Frontera Creek site, National Priorities List (NPL) site, Humacao, Puerto Rico)

Type: CORRESPONDENCE
Author: Crellin, John R.: Agency for Toxic Substances & Disease Registry (ATSDR)
Recipient: Block, Arthur: Agency for Toxic Substances & Disease Registry (ATSDR)

Document Number: FRO-002-0150 To 0151 Date: 06/19/91

Title: Addendum No. 3 for Feasibility Study Report, Frontera Creek Site

Type: REPORT
Author: Lipsky, David: Dynamac Corporation
Recipient: Font, Jose C.: US EPA

Document Number: FRO-002-0152 To 0153 Date: 06/20/91

Title: Addendum No. 4 for Feasibility Study Report, Frontera Creek Site

Type: REPORT
Author: Lipsky, David: Dynamac Corporation
Recipient: Font, Jose C.: US EPA

Document Number: FRO-002-0449 To 0449 Date: 06/21/91

Title: (Memo forwarding the completed Agency for Toxic Substances and Disease Registry's (ATSDR) Health Consultation evaluating the health implications of mercury and lindane levels at the Frontera Creek site)

Type: CORRESPONDENCE
Author: Block, Arthur: Agency for Toxic Substances & Disease Registry (ATSDR)
Recipient: Font, Jose C.: US EPA
Attached: FRO-002-0450

Document Number: FRO-001-2117 To 2130 Date: 07/10/91

Title: (Letter discussing the final report of the results of the focused sampling effort completed at Peerless Tube's facility in Humacao, PR, and to update and amend sections of the Frontera Creek RI Report - Addendum No. 2 for Revised Draft RI Report)

Type: CORRESPONDENCE
Author: Lipsky, David: Dynamac Corporation
Recipient: Font, Jose C.: US EPA

Document Number: FRO-002-0156 To 0157 Date: 07/16/91

Title: (Letter commenting on the remedial alternatives for the Frontera Creek site, Humacao, Puerto Rico)

Type: CORRESPONDENCE
Author: Ojeda, Pedro A. Maldonado: Commonwealth of Puerto Rico
Recipient: Font, Jose C.: US EPA
