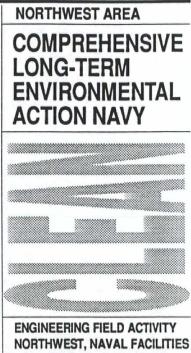


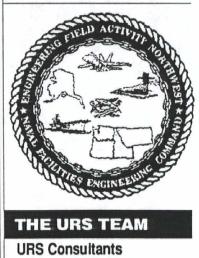


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FEDERAL FACILITIES SF BR.



NORTHWEST, NAVAL FACILITIES ENGINEERING COMMAND CONTRACT #N62474-89-D-9295



Science Applications International Corp.

B&V Waste Science and Technology Corp.

Shannon & Wilson, Inc.

CTO #0051 Revised Site Inspection White Alice Site Northeast Cape

St. Lawrence Island, Alaska

Final Report April 27, 1992

FINAL REVISED SITE INSPECTION REPORT

FOR THE

COMPREHENSIVE LONG-TERM ENVIRONMENTAL ACTION NAVY (CLEAN PROGRAM) NORTHWEST AREA

WHITE ALICE SITE NORTHEAST CAPE, ST. LAWRENCE ISLAND, ALASKA CONTRACT TASK ORDER #0051

PREPARED BY: URS CONSULTANTS, INC. ANCHORAGE, ALASKA

PREPARED FOR: ENGINEERING FIELD ACTIVITY, NORTHWEST WESTERN DIVISION, NAVAL FACILITIES ENGINEERING COMMAND SILVERDALE, WASHINGTON

APRIL 27, 1992

Title Page Revision No.: 0 Date: April 27, 1992 Page i

REVISED SITE INSPECTION TITLE PAGE

Document Title:

Revised Site Inspection Report U.S. Navy - CLEAN Program, Northwest Area

Site Name:

Site Location:

Contract Task Order No.:

Document Control No.:

Plan Coverage:

Organization Title: Address:

Prime Contractor: Address: White Alice Site

White Alice Site, St. Lawrence Island, Alaska

CTO #0051

9204.693

This report summarizes the results of revised site inspection activities as a part of the Comprehensive Long-Term Environmental Action Navy (CLEAN) Program under Contract No. N62474-89-D-9295 for the Engineering Field Activity, Northwest, of the Western Division, Naval Facilities Engineering Command. These services are provided by URS Consultants, Inc. as Prime Contractor for the site indicated above and described within this Report.

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Title Page Revision No.: 0 Date: April 27, 1992 Page ii

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Date:

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EXECUTIVE SUMMARY

A site inspection (SI) was performed by URS Consultants, Inc. (URS) at the White Alice Site, Northeast Cape (WASNC), Saint Lawrence Island, Alaska, as part of the Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract No. N62474-89-D-9295, Task Order No. 0051 (CTO #0051). The results of this supplemental site inspection are reported in this document as a revised SI. The objective of CTO #0051 was to generate sampling and other field data to augment information collected in a previous SI (CTO #0019). Soil samples, as well as wipe and concrete chip samples, were taken from the historic transformer pads and surrounding soils, and analyzed for volatile organic compounds, polychlorinated biphenyls (PCB), and pesticides. All usable data from both CTOs was combined and analyzed to determine (1) if a threat or potential threat to public health or the environment exists, and (2) if further action or investigations are warranted.

The results of the supplemental sampling verified the presence of significant levels of PCBs at each of the site areas, both in soils and on the concrete transformer pads, as indicated in the initial SI. Significant levels of 4,4-DDT, methoxychlor, and endrin aldehyde (all pesticides) were also found at the Lower Tram Site (Site 2). No other significant levels of contaminants were detected.

Because of the most recent sampling efforts, WASNC transformer sites appear to have relatively low amounts of contamination, with the exception of high concentrations of PCBs on and immediately adjacent to all the former transformer pads. However, outer-sampling grid-boundary contamination is evident from this sampling effort and from the sampling effort conducted in the previous SI (CTO #0019). Therefore, it is likely that sampling did not fully delineate the lateral extent of contaminated soils. The presence or absence of contaminants at other locations of the WASNC facility has not been investigated under this CTO.

The initial SI (CTO #0019) had unvalidated data, which indicated hydrocarbons in the soil at the Tramway Drumfield and at the Upper Camp Drumfield. At that time, stream samples did not appear to detect water contamination. Asbestos-containing materials were also identified in that effort in the Upper Camp Radome Building (Building 221), Building 124, Building 1001, the arctic walkway, the tram hallway, and at Antennas #2, #3, and #4 at the lower camp.

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Utilizing the information contained in this revised SI and the usable data from the original SI (CTO #0019), we recommend that a further investigation under a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Remedial Investigation/Feasibility Study (RI/FS) be conducted to delineate the contaminant extent and concentrations, and to evaluate appropriate cleanup procedures. The RI/FS should address delineation (laterally and at depth) of existing PCB-contaminated areas, and identification and delineation of additional potential source areas that may have contributed to the PCB or semi-volatile tentatively identified compound (TIC) contamination that was detected. Polychlorinated biphenyls, dioxin/furan, and semi-volatile tests should be conducted on surficial materials, with at-depth sample analysis adding volatile organic testing. In addition, total petroleum compounds/total petroleum hydrocarbons (TPC/TPH) testing should be performed on surficial samples to ascertain the need for hydrocarbon-spill remedial actions, and on subsurface samples at sites with detected surface-hydrocarbon contamination to enable evaluation of the potential extent of any such spills.

It is postulated that a limited-area cleanup at the transformer pads would result in removal of the high-level PCB contamination that was detected. Such an action would remove the highest level contaminants known onsite, which contribute, based on the information to date, the vast majority of the site risk from hazardous materials contamination.

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ACRONYMS

| ACM | Asbestos-Containing Material |
|--------|-----------------------------------------------------------------------|
| ADEC | Alaska Department of Environmental Conservation |
| ARAR | Applicable or Relevant and Appropriate Requirements |
| bgs | below ground surface |
| BLM | Bureau of Land Management |
| BNA | Base-Neutral-Acid Semi-Volatile Analysis |
| CERCLA | Comprehensive Environmental Response, Compensation, and Liability Act |
| CLEAN | Comprehensive Long-Term Environmental Action Navy |
| СТО | Contract Task Order |
| EPA | U.S. Environmental Protection Agency |
| F | Fahrenheit |
| H&S | Health and Safety |
| IRP | Installation Restoration Program |
| MCL | Maximum Contaminant Level |
| mph | miles per hour |
| NEESA | Naval Energy and Environmental Support Activity |
| NIOSH | National Institute of Occupational Safety and Health |
| NOSC | Naval Ocean System Center |
| OSHA | Occupational Safety and Health Administration |

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ACRONYMS (continued)

| PA | Preliminary Assessment |
|-------|------------------------------------------------------|
| PCB | Polychlorinated Biphenyls |
| PPE | Personal Protective Equipment |
| QA | Quality Assurance |
| QAPP | Quality Assurance Project Plan |
| QC | Quality Control |
| RA | Removal Action |
| RI/FS | Remedial Investigation/Feasibility Study |
| SARA | Superfund Amendments and Reauthorization Act of 1986 |
| SI | Site Inspection |
| SVOA | Semivolatile Organic Analysis |
| TCE | Trichloroethylene |
| TIC | Tentatively Identified Compound |
| TPC | Total Petroleum Compounds |
| TPH | Total Petroleum Hydrocarbons |
| TSCA | Toxic Substances Control Act |
| TWA | Time-Weighted Average |
| URS | URS Consultants, Inc. |
| USGS | United States Geological Survey |
| VOC | Volatile Organic Compound |
| | |

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ACRONYMS (continued)

WASNC

4

White Alice Site, Northeast Cape

XFMR

Transformer

Section 1.0 Revision No.: 0 Date: April 27, 1992 Page 1

1.0 INTRODUCTION

The Engineering Field Activity, Northwest, Naval Facilities Engineering Command requested that engineering services be provided by URS Consultants, Inc. (URS) to perform a revised site inspection (SI) for three sites at the White Alice Site, Northeast Cape (WASNC), St. Lawrence Island, Alaska. The revised SI was performed under the Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract, N62474-89-D-9295, Task Order No. 0051 (CTO #0051).

This report presents the results of the summer 1991 WASNC sampling effort, incorporating data from the 1990 initial SI sampling. Details of the 1990 sampling procedures (CTO #0019) are not provided in this report. Basically, the chemical (as opposed to asbestos-containing materials [ACM]) results based on the CTO #0019 lab analyses failed validation due to laboratory procedure errors.

Therefore, CTO #0051 involved resampling and retesting the WASNC site, and incorporating those results with the usable CTO #0019 data.

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2.0 PROJECT PURPOSE AND OBJECTIVES

The purposes and scope of work, as stated in the Contract Task Order (CTO) scope of work were:

"The objective of CTO-51 is to revise the Site Inspection for the Northeast Cape White Alice Site to determine if a threat or potential threat to public health and the environment exists.

The Site Inspection is an on-site investigation to determine whether there is a release or potential release and the nature of the associated threats. The purpose of the SI is to augment data collected in the Preliminary Assessment and to generate sampling and other field data to determine if further action or investigation is appropriate....

Soil samples from the grids established around the transformer pads by the Site Investigation Work Plan shall be obtained and analyzed for volatile organic compounds and PCBs/chlorinated pesticides. Concrete samples and swipe samples shall be obtained from the pads and analyzed for PCBs/chlorinated pesticides.

All samples collected for determination of environmental contamination shall be submitted to a Navy certified laboratory for analysis.

The contractor shall review data obtained during the field sampling and laboratory analysis for data quality and shall enter this information in a database for future reference.

The contractor shall prepare a revised Site Inspection Report which incorporates all available and relevant information collected [as part of this CTO]..."

The usefulness of the CTO #0019 data in determining the degree of contamination at this site was limited. The analytical laboratory could not demonstrate that proper procedures were followed in analyzing the samples from the site in the course of the CTO #0019 work. Therefore, the data was not suitable for use in quantitative determinations of the existence, extent, or severity of site contamination. The 1990 SI report stated that contamination appeared to be present at the site, but was unable to quantify contamination levels with validated data. The purpose of CTO #0051 was to provide credible data on contamination levels present at the site.

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CTO #0051 utilized the Quality Assurance Project Plan (QAPP) (URS 1990B) and Site Safety and Health Plan (URS 1990C) from CTO #0019. The Work Plan (URS 1990D) presented the tasks and rationale used to conduct the revised SI. Only the sampling plan portion of the Project Plans (URS 1990D) for the original SI was revised, to extend sampling areas (as shown in subsequent figures) and to reflect the modified sampling scope.

The objectives of the project were to collect (1) soil samples adjacent to three transformer bank electrical substations, and (2) wipe and concrete samples from the transformer pads at the following three sites identified in the Scope of Work for CTO #0051:

- Site 1 White Alice Transformer Bank No. 1
- Site 2 Lower Tram Transformer Bank No. 2
- Site 3 Upper Camp Transformer Bank No. 3

The scope of work was limited to the three transformer pads, and did not involve sampling or evaluation of any other areas or facilities. Therefore, the qualitative results of CTO #0019 (including sampling of areas not covered in the scope of this CTO) must be considered in conjunction with this report when assessing overall site risk and contamination levels.

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3.0 PROJECT DESCRIPTION

3.1 SITE BACKGROUND

The facilities at WASNC (Figure 3-1) were constructed in 1952 for the U.S. Air Force and used as part of the high-energy-pulse tropospheric scatter system located throughout coastal Alaska. Excess property of the original Air Force facility (16,213 acres) was relinquished to the Bureau of Land Management (BLM) on March 14, 1958, and conveyed to the Gambell and Savoonga Native Corporation on June 27, 1979. White Alice Site, Northeast Cape (WASNC) was used by the Air Force until it was closed in 1975, when the White Alice communication sites became obsolete with the introduction of communications satellites. After its closure, an additional 4,855 acres of the remaining base property were relinquished to the BLM on August 20, 1975, and conveyed to the Gambell and Savoonga Native Corporation on June 27, 1979.

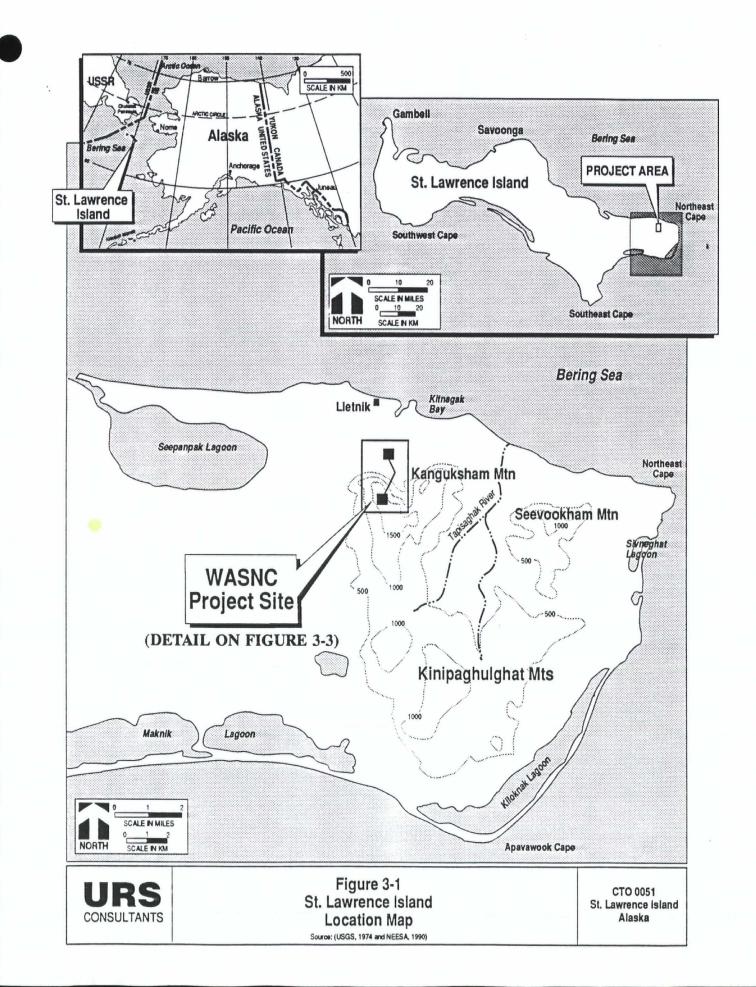
On July 12, 1982, 26 acres of property were transferred from the Air Force to the U.S. Navy. The transferred property consisted of the lower antenna site (White Alice Lower Camp), the lower tramway terminal, the tramway up Mount Kangukhsam, and the upper camp complex.

On July 29, 1982, the Naval Ocean System Center (NOSC) accepted control of the 26 acres of property. The Naval Ocean System Center (NOSC) originally planned to use the WASNC facilities as part of experiments run by the Arctic Submarine Laboratory; however, the Navy has not used the property (NEESA 1990).

3.2 SITE DESCRIPTION

3.2.1 Location

WASNC is located on St. Lawrence Island, Alaska (Figure 3-1), which lies in the Bering Sea with its southern and northern limits marked by 62° 52' and 63° 52' North latitude, and between 168° 30' and 172° 00' West longitude, respectively. The island is approximately 100 miles in length and averages about 20 miles in width. The distance to the nearest point in Siberia, Cape Chaplin, is about 40 miles to the northwest of Gambell, while the distance to the nearest point on the Alaskan mainland at Cape Rodney on the Seward Peninsula is 118 miles to the northeast of Northeast Cape.



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The topography of Northeast Cape begins at the coastal plain at the Bering Sea. A transition from the seaside rolling terrain leads to the Kinipaghulghat Mountains with Kangukhsam Mountain at 1,820 feet above mean sea level as the highest local peak. The mountain is steep, with exposed weathered talus slopes.

The two population centers of Saint Lawrence Island are Savoonga and Gambell. A number of campsites are scattered along the shoreline of the island. One of these sites is Lietnik, located to the west of the runway, which appears to be an abandoned native site recognized by the United States Geological Survey (USGS).

All present-day fishing and hunting activities take place out of the Kitnagak Bay fish camp located to the east of the WASNC runway. Kitnagak Bay is the former lighterage area for material and supplies for the WASNC when it was an active facility. Local native people from Savoonga and Gambell use the camp at Kitnagak Bay for seasonal fishing and hunting.

3.2.2 Climate

The weather on the island is characterized by a typically arctic maritime climate, with a relatively milder winter and a relatively cooler summer than arctic continental areas at a similar latitude. Measurable precipitation as rain or snow is recorded about 250 days out of the year. The greatest precipitation is recorded during the months of August and September. Mean precipitation for these months at Savoonga (the nearest of the two villages) is 1.98 and 1.78 inches, respectively. The months with the lowest mean precipitation are April, May, and June with means of 0.36, 0.45, and 0.55 inches, respectively. However, most months have significant precipitation.

Winter temperatures seldom fall below -10° Fahrenheit (F), and summer temperatures above 55°F are infrequent and of short duration. The record minimum temperature of the villages of Gambell and Savoonga is -34°F recorded in February 1929, and the maximum is 69°F recorded in July of 1987 (AEIDC 1989).

Located in a stormy sea with water temperatures that vary only a few degrees from 32°F throughout the year, the island is characterized by cold winds of gale and occasionally, hurricane force. Commonly, the chill factor created by high winds, sometimes up to 100 miles per hour (mph), produce effective temperatures of -70°F. These winds can also produce severe winter blizzards that cause whiteout conditions. Prevailing winds are from the southwest and northwest in summer, and northerly in winter. The average annual hourly wind velocity is 17.8 mph. The average velocity in January is 19.4 mph and in July the average is 11.0 mph.

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The growing season extends from early June through late August, but there may be snow and freezing temperatures in any month. The first autumn snowfall and formation of freshwater ice generally occur in October, and sea ice usually forms in late November. The spring icepack breakup usually occurs in the first two weeks of June, and some ice and snow may remain until July or later in certain localities (NEESA 1990).

3.2.3 Geology

The eastern part of the island is a broad, wave-cut bedrock platform now elevated to nearly 100 feet above mean sea level. The surface of the platform is covered with numerous small shallow lakes and blanketed by a thin veneer of water-saturated mossy turf and peat.

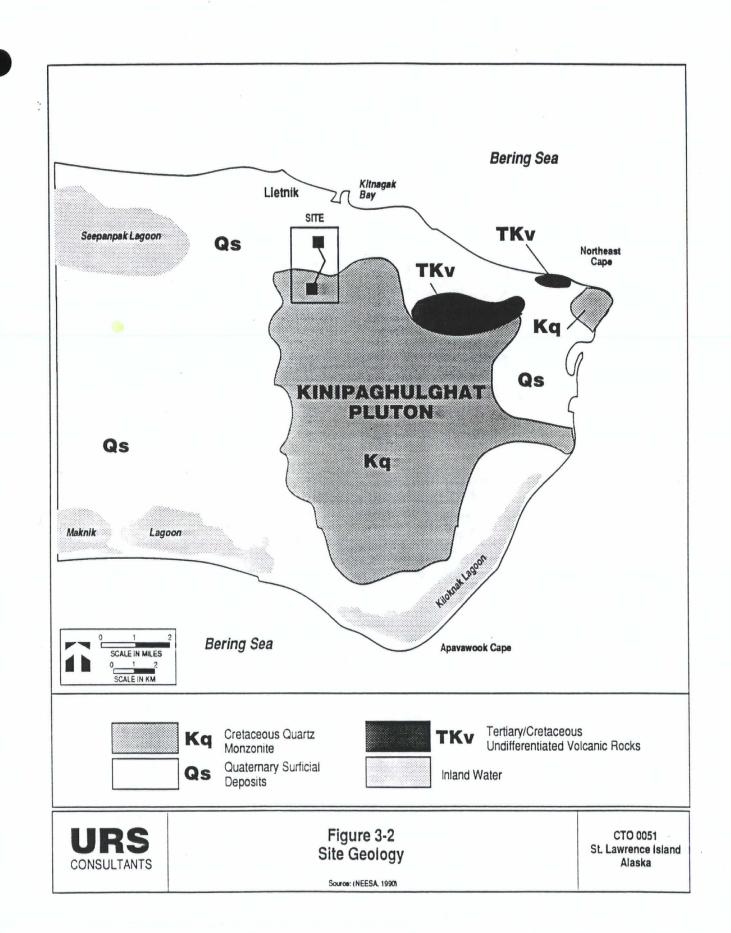
Several isolated groups of talus-covered hills containing ancient sea cliffs rise to elevations of 1,000 to 2,000 feet above mean sea level. These hills, which consist of the Kinipaghulghat Mountains in the vicinity of Northeast Cape, are formed by the Kinipaghulghat pluton. This pluton is Cretaceous in age (65 to 136 million years old) and consists predominantly of quartz monzonite and other granitic rock types. Towards the northeast of the pluton, a contact exists with undifferentiated volcanic rocks of Cretaceous and/or Tertiary (2 to 70 million years old) age (Figure 3-2).

The pluton and volcanic rocks are surrounded by Quaternary (<2 million years old) age surficial deposits consisting of gravel, sand, silt, and peat, which overlie the wave-cut bedrock platform (Patton and Csejtey 1980).

3.2.4 Hydrology

The principal surface-water feature at the site is the Bering Sea, which is located (at the closest point) approximately 1.5 miles to the north and east of the Main Electronics Center (Figure 3-1). All surface-water run-off from the area investigated in this report discharges to the Bering Sea.

The lowland areas of Northeast Cape are typical of a subarctic coastal plain where flat topography, frozen soils, and wet tundra have created numerous shallow thaw lake basins and peat in-filled thaw lake basins. These lakes are clear but tannic in color. In addition, there are numerous glacial run-off streams throughout the area. These clear flowing streams have vegetated, incised banks, with sandy gravel streambeds, and range from a few feet to 20 to 30 feet in width. These streams are braided in the lowlands in contrast to high-velocity single-channel streams in the mountainous areas.



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A water supply well was drilled at the lower tramway terminal (Figure 3-3) in September 1962 to a depth of 68 feet. Bedrock consisting of decomposed granitic rocks was encountered at a depth of 32 feet, with the primary source of water located in a fractured zone from 61 to 65 feet below ground surface (bgs). At the time of drilling, the static water level was 25 feet bgs and the well sustained a yield of 12 gallons per minute for at least seven and a half hours. Several weeks after the well was tested, the water level dropped to a depth of 58 feet bgs and the well became unusable. It appears that seasonal fluctuations of the water table made the well usable only during the summer and early fall months. The well was eventually abandoned (U.S. Army Corps of Engineers 1962).

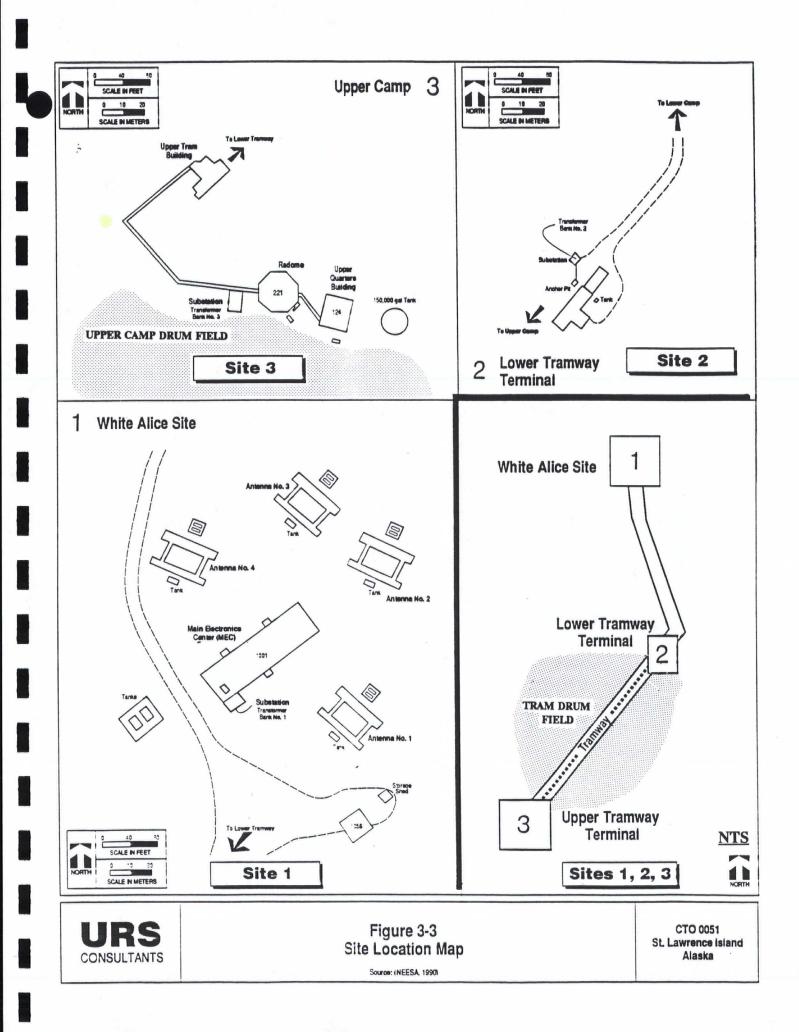
According to files of the USGS, Water Resources Division in Anchorage, Alaska, records exist for nine wells drilled on the island. Two of these were drilled by the Air Force in the vicinity of Northeast Cape and have been abandoned. The others appear to have been at locations away from the area under investigation. The nearest water supply well to WASNC, according to USGS records, is approximately 100 miles to the west in Gambell (USGS 1990).

3.2.5 Ecology

The vegetation of Northeast Cape is classified as alpine tundra, which is dominated by white mountain avens, mat-forming herbs, grasses, and sedges. Indigenous shrubs include alpine bearberry, dwarf birch, Labrador tea, willows, heaths, and cassipes. The lowland area is mainly wet tundra with lakes, bogs, and generally poorly drained soils. Vegetation at higher, drier areas is sparse to almost nonexistent. Steep slopes, lack of soils, and harsh climate make plant populations and densities low.

Arctic fox may be found at sea on pack ice during the winter and are present on the island year-round. Red fox, short-tailed weasels (ermine), and arctic ground squirrels are also permanent residents. Smaller mammals are numerous and provide the primary spring diet to migratory raptors, foxes, and jaegers (aggressive seabirds) when the snow first begins to leave the tundra. These small mammals include the tundra shrew, Greenland collared lemming, the red-backed vole, and the tundra vole.

Walrus, sea lion, minke, beluga and killer whales, harbor porpoise, bearded seals, and possibly ribbon seals are present during open water (July to September). Walrus frequently haul out at Northeast Cape, which is also a minor haul-out area for sea lions. Ringed seals breed and pup on shorefast ice during late winter (March to April) at Northeast Cape between Kangighsak Point and Apavawook Cape. Polar bears are likely to be present in winter on ice pack and/or on shore. There is a minor bowhead whale (April to May) and



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gray whale (May to June) migration route off the eastern coast of the island. A gray whale summer feeding area is located northeast of the island. Walrus and bearded, ringed, and spotted seals are also harvested in this area by the native population.

Most of the island provides important summer/fall nesting and molting habitat for migratory waterfowl. It also provides habitat for a major part of the seabird population in the northern Bering Sea. The waters surrounding the island are the major seabird concentration and foraging area. Three seabird colonies at the Northeast Cape area are located at Kinipaghulghat Mountain, Punuk Island, and Seevookhan Mountain. At each location, only a few pairs of a handful of species are present.

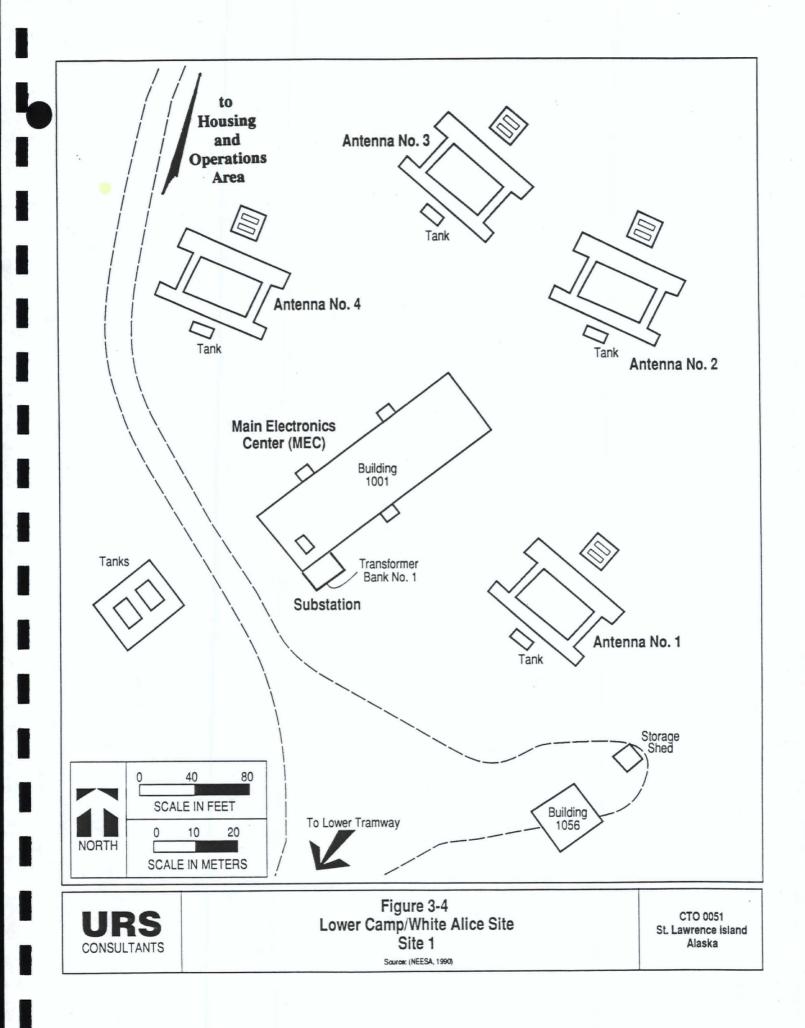
There have been sightings of peregrine falcons on the island, but they are listed as accidental and irregular visitors.

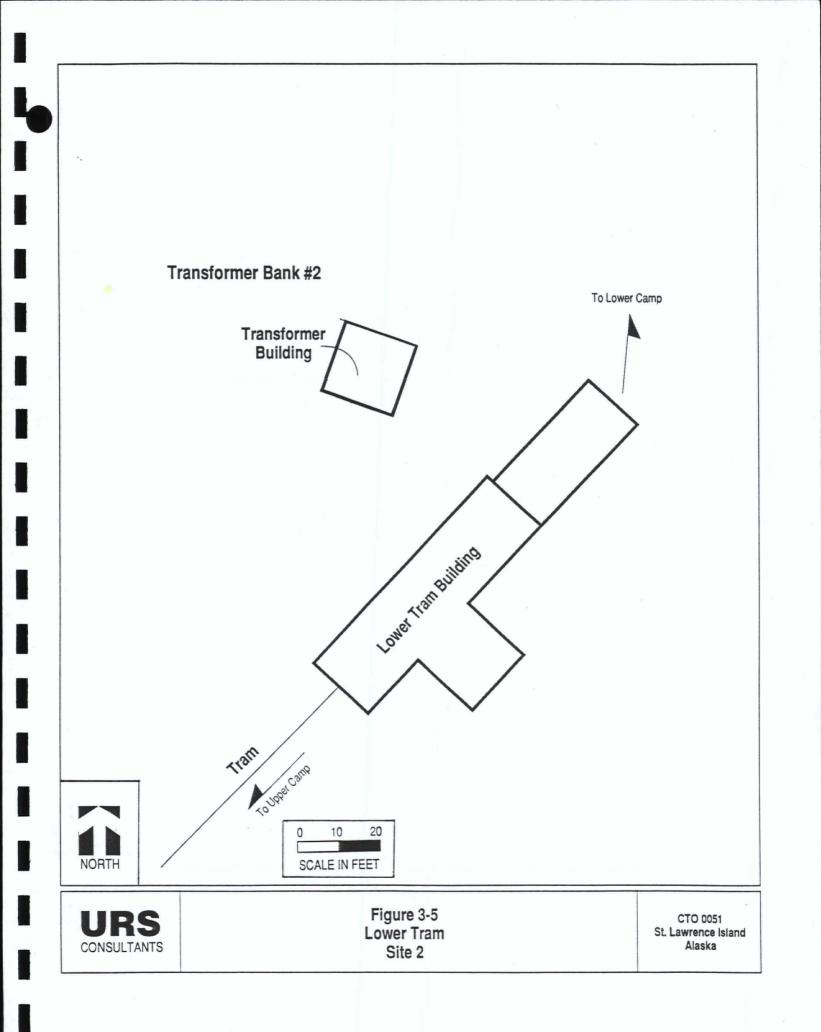
A small, few-flowered primula (<u>Primula tschuktschorum</u>), restricted to the Chukchi and Seward Peninsulas and St. Lawrence Island, is listed as an endangered species candidate. While current knowledge suggests that this species may be threatened or endangered, data to fully support this sentiment is not available.

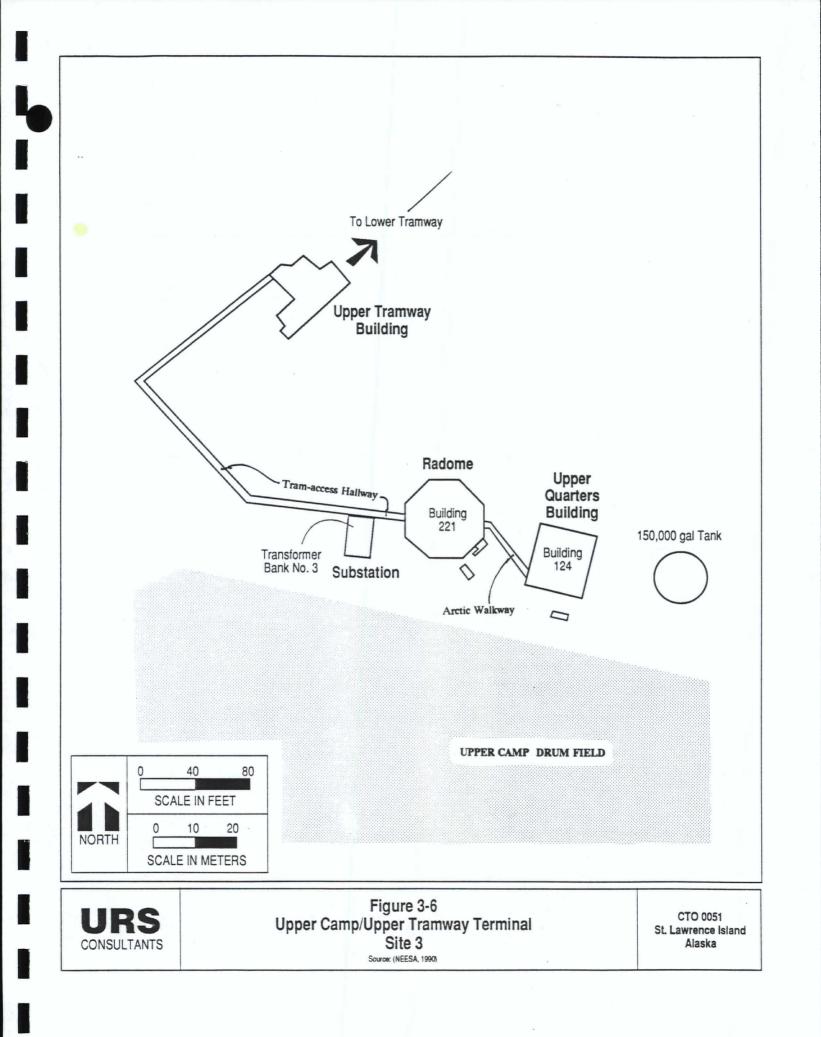
There are eleven known historic and prehistoric sites of Eskimo and Punuk affiliation on the island. Site features include house pits, house remains, middens, and artifacts. These sites are located on wet tundra areas along the coast. There are probably numerous other undiscovered sites throughout the area (NEESA 1990).

3.2.6 Types and Behavior of Contaminants Present

Electricity for WASNC was obtained from the main power plant located in the housing and operations area approximately 3/4 mile by road from the White Alice Site lower camp. On the present Navy property, power was delivered to three separate transformer banks, located in the substation of Building 1001 (Figure 3-4), the Lower Tramway Transformer Building (Figure 3-5), and the Upper Camp Transformer Building as shown in Figure 3-6. For emergency service in case of normal power source failure, there were two diesel-engine-driven emergency generators located near each of the transformer banks. The electrical system was abandoned in 1975 when the Air Force ceased operations at Northeast Cape.







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Because the equipment at the White Alice sites was a high-power-pulse system, it reportedly would occasionally seriously overheat, and at times transformer fires would occur. When this would happen, the burned dielectric fluid was reportedly dumped onto the ground outside the building and the transformer was flushed with the solvent trichloroethylene (TCE) and refilled with fresh oil. There are no known records of the number, amount, or time period of these reported releases of dielectric fluid and flushing material. No physical records were produced to show dielectric fluid oil with PCB; however, the results of the Removal Action (RA) of CTO #0018 showed the transformers to have "ASKAREL" stamped on the face plates. Because of the stamped data statement, the transformers' oil and flush-oil were assumed to be over 500 ppm, and manifested and shipped accordingly. Records do not indicate if any of the dielectric fluid contained PCBs (although it is likely considering the years of operation), or the amount(s) and/or location(s) of these reported releases.

PCB are thermally and chemically stable compounds with dielectric properties, specifically developed as a transformer and high-energy dielectric and electrical-equipment immersion coolant. In 1974, regulations limited PCB use in the United States to closed systems, with approximately seventy percent of the PCB produced reportedly used in capacitors and the remaining thirty percent utilized in transformers (NEESA 1990).

The environmental behavior of PCB mixtures is a function of the individual chlorinated biphenyl species. In general, as chlorine content increases, sorption increases while transport and transformation processes decrease. Adsorption onto building materials, soils, and sediments is the major fate process affecting PCB in the environment. Soil material adsorption capacity is normally directly related to organic content, specific soil surface area, and clay content (NEESA 1990).

Air Force sites in Alaska also commonly utilized a variety of chemicals for cleaning purposes. In addition to various phosphates and ammoniated cleaning materials, solvents such as napthene, toluene, alcohols, trichloroethylene, acetone, carbon tetrachloride, sulfuric acid, trichlorophenoxy acetic acid (2,4,5-T), trichloroethane, trichloroethene, hexane, and various chlorobenzenes. Most of these chemicals were volatiles, so tests for volatile organic compounds (VOC) are the best detectors. In some cases, base-neutral-acid extractable semi-volatile analysis (BNA) tests will also detect constituents of these cleaning compounds.

TCE was widely used as an industrial solvent. It is highly volatile in aqueous solutions, moderately soluble in water, and not strongly adsorbed or bioaccumulated. TCE on the soil surface is likely to volatilize, but that portion not removed by volatilization is likely to become mobile in groundwater.

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Pesticides (particularly rodenticides, larvacides, and insecticides) were also commonly utilized at remote sites. Some remote sites have records of herbicide use to reduce grass and weed growth. Use of these materials at WASNC is not in records reviewed by URS, but is a viable potential source of contamination.

Antifreeze compounds, including acetic acids, glycols, alcohol, silicates (aluminated and glycolated), and salts were also common. Metals (inorganics analysis) tests will commonly detect various metallic wastes from maintenance activities, metal-based greases and other lubricants, and from deterioration of the scrap metals that were commonly discarded at the White Alice sites. Asbestos is common at the site, in the possible forms of building, duct, and pipe insulation; ceiling tiles; floor tiles; and shingles.

3.2.7 General Waste-Handling Practices

Past material handling and waste disposal at the WASNC caused contamination at several locations around the WASNC site. Although many of these disposal practices were considered acceptable at the time, unexpected long-term problems may result from releases of pollutants into soil, groundwater, surface water, or the air. Generally, remote sites like WASNC did not have deliberate waste-disposal procedures, so wastes tend to be widely distributed around the facilities with only limited information on wastegeneration rates and types. Wastes commonly generated from operations included waste petroleum, oil lubricants, chlorinated and non-chlorinated solvents, and batteries. Pesticides were also used at the facility.

No large-scale industrial operations were conducted at the various areas within the WASNC site. Past industrial operations at the WASNC were broken into two activities. The White Alice Building 1001, the antennas, the tram unit and the upper camp area were primarily for electronic transmission and receiving. The lower main base camp area was for site personnel, aircraft, aircraft support, automotive, fire and total maintenance of all ground support equipment to the WASNC.

The majority of incoming material was shipped in 55-gallon metal drums. Occasionally, material was shipped in small drums or 5-gallon metal containers. The drums typically contained petroleum products, PCB-containing dielectric and/or cooling fluid, cleaning solvents, alcohol, and other substances. No known generation of hazardous waste, other than degradation of steel drums on site, has taken place since WASNC was abandoned in 1975. Exact quantities of potential waste generated over the life of the project is unknown, but potentially could run into the tens of thousands of gallons, based on the number of discarded drums.

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3.3 PREVIOUS INVESTIGATIONS

The Navy Installation Restoration Program (IRP) is designed to assess, clean up, or control contamination from past hazardous-waste-disposal operations and hazardous-material spills at Navy and Marine Corps facilities. The U.S. Navy has adopted terminology used by the U.S. Environmental Protection Agency (EPA) pursuant to the Superfund Amendments and Reauthorization Act of 1986 (SARA). The NOSC at San Diego, California, had requested in a letter dated November 17, 1988, that the Naval Energy and Environmental Support Activity (NEESA) perform a Preliminary Assessment (PA) at the WASNC as part of the initial phase of the IRP.

The principal purpose of the PA was to collect existing information to be used (1) in assessing the presence of hazardous waste at the site, and (2) to evaluate the potential for offsite migration. The NEESA team visited the site from July 16 to July 22, 1989, and produced a report that identified ACM, transformers, compressed gas cylinders, and 55-gallon drums containing various fuels and solvents that might pose a threat to human health and/or the environment.

A Removal Action (CTO #0018) was performed by URS in July and August of 1990. All drums, transformers, and gas cylinders from eight locations identified in the PA were removed. The 1990 SI (CTO #0019) was conducted by URS immediately following the completion of the Removal Action to determine the presence of hazardous materials remaining at the sites identified in the PA.

The results of the SI indicated significant PCB contamination at each of the transformer pad areas. The lateral extent or penetration into the soil of the PCBs was not delineated. Pesticides (including 4,4-DDT; 4,4-DDE; 4,4-DDD; and endrin aldehyde) were also detected in low concentrations in the same areas, and several low-concentration dioxin and furan samples were also detected.

Sampling at the drum fields (along the tramway and at the upper camp) revealed levels of total petroleum hydrocarbons (TPH), which were generally below 100 ppm -- the soil cleanup criteria established by the Alaska Department of Environmental Conservation (ADEC). Various typical solvent materials, including benzene, toluene, xylenes, methylene chloride, and sporadic encounters with semi-volatile compounds, were recorded at the drum fields.

No contaminants were noted in the analysis of the stream water samples collected downgradient from the WASNC areas.

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4.0 SAMPLING AND ANALYSIS

This section identifies the location, number, and types of samples collected to fulfill the objectives of this investigation. Details on sampling methodology and quality assurance/quality control (QA/QC) measures are provided in the CTO #0019 Project Plans (URS 1990A, 1990B, 1990C, 1990D, 1990E) and in the Standard Operating Procedures (URS 1990F). More detailed descriptions of the specific areas, and the historic uses and facilities, may be found in the CTO #0019 SI report (URS 1991A).

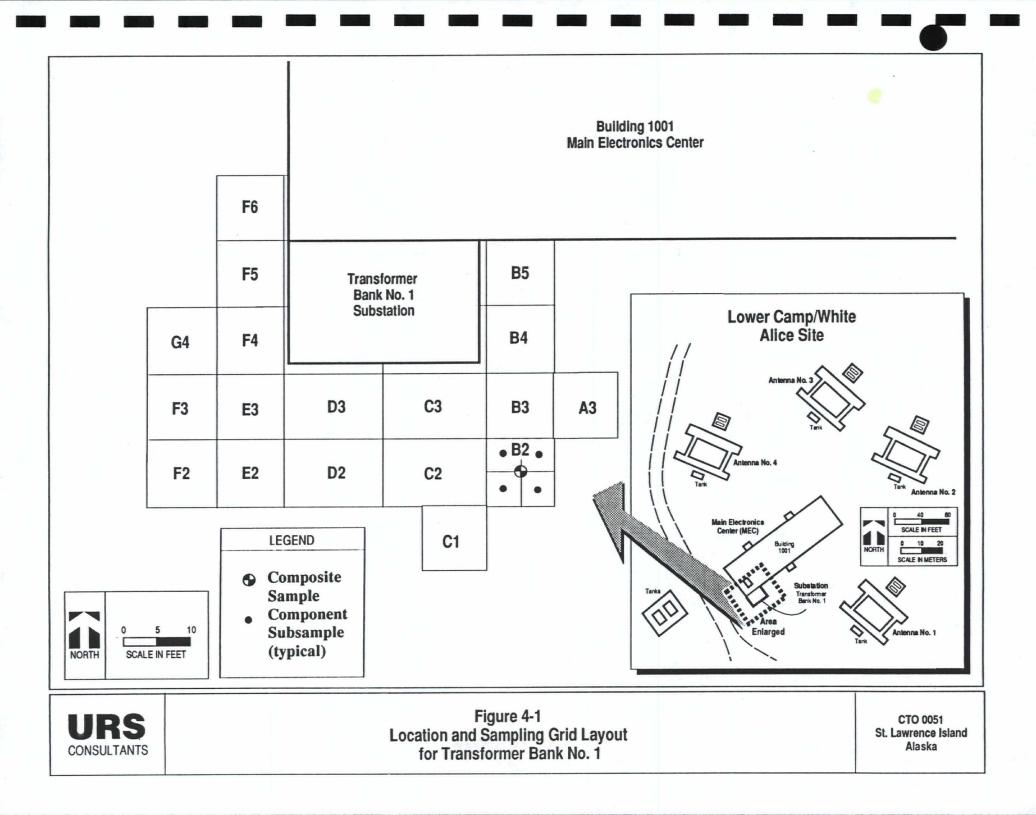
4.1 SOIL AND MATRIX SAMPLING

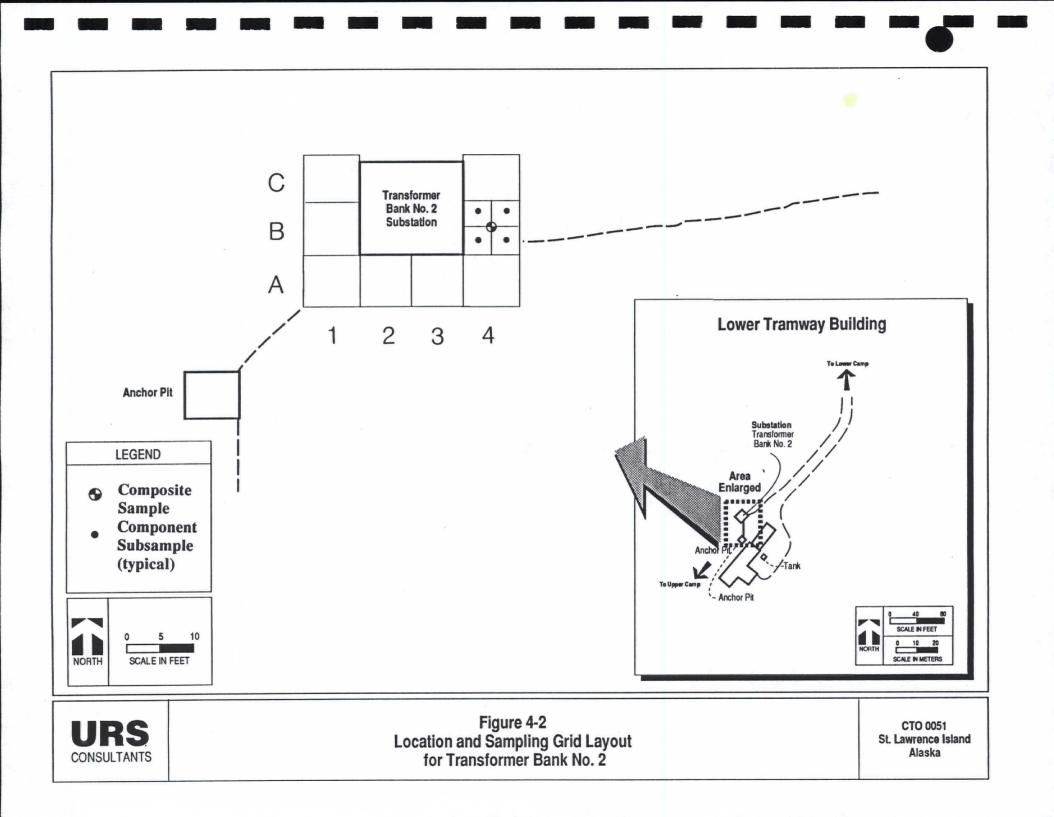
Sampling grids were developed (Figures 4-1, 4-2, and 4-3) and soil sampling was performed in the three areas adjacent to the substations where PCB-laden fluid was allegedly disposed. Because there were no records of actual disposal location, a grid space of five feet by five feet was selected. This spacing was chosen because it approximates the sampling density to detect a hypothetical PCB spill area. Based upon the grid spacing and assumed diameter of the spill area, a probability factor of greater than 80 percent of detecting any indications of PCB spillage is expected (EPA 1987). Sampling was performed utilizing a four-point system, with one sample from the center of each quadrant of each grid cell. The four samples were composited into one sample and submitted for analysis. Samples from all three sites were analyzed for VOCs, PCBs, and pesticides.

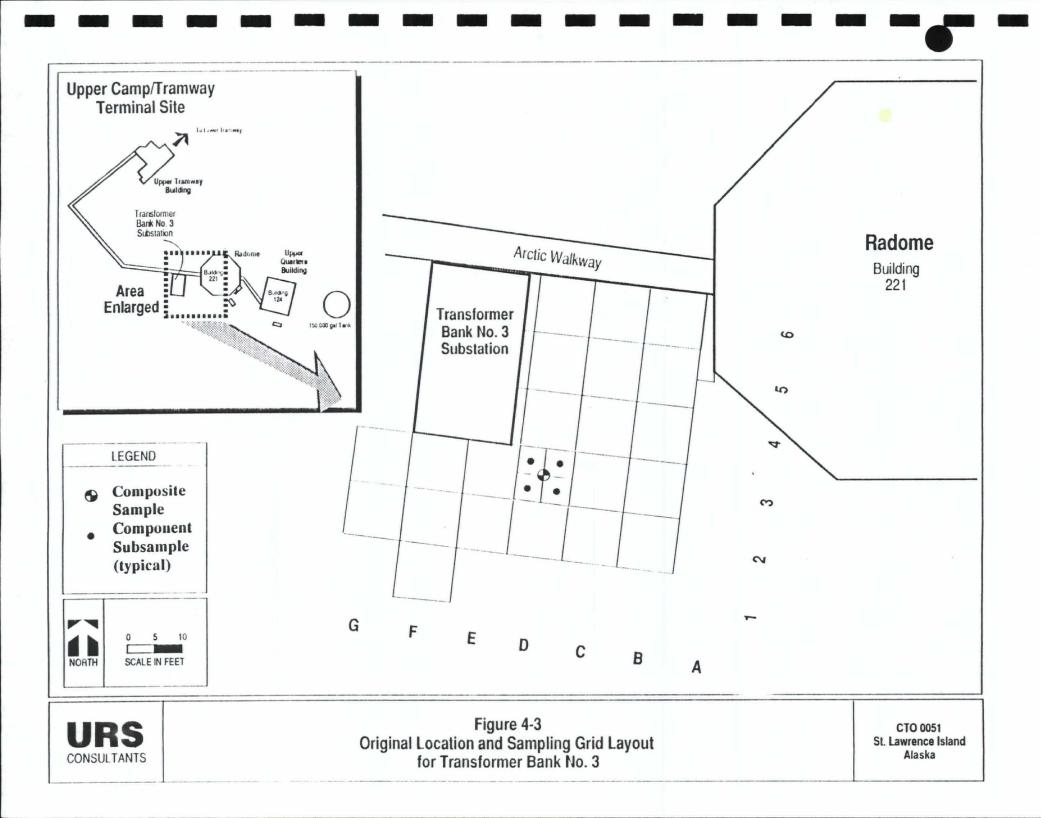
4.1.1 Site 1

Site 1, located at Building 1001, consists of (1) a wood structure on a concrete pad that previously housed transformers, and (2) the soils adjacent to the entrance of Transformer Bank Number 1 (Figure 3-3).

The grid layout for the soil-sampling effort of Site 1 was identical to the grid established during the previous SI Sampling Plan (URS 1990E) with the exception of three additional sample-point locations shown as shaded boxes in Figure 4-1. The sample grid was extended to add one composite sample each to the southwest, southeast, and east sides of the grid where previous sampling efforts had indicated the presence of contamination (URS 1991). This extension was intended to identify whether the contamination limit was immediately adjacent to the prior grid boundary, or if the contamination was more widespread.







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Eighteen soil samples -- one from each grid point -- were submitted for analysis of VOCs and PCB/pesticides.

The electrical substation at Site 1 consists of an 8.8-foot by 13.9-foot building over a concrete pad. Previous wipe and concrete chip samples indicated the presence of PCB, aldrin, and heptachlor. Therefore, four wipe and four concrete chip samples were collected from the concrete pad and analyzed for PCB/pesticides (Figures B-2 and B-3).

4.1.2 Site 2

Site 2 is located at Transformer Bank Number 2, adjacent to the Lower Tram Building (Figure 4-2). Site 2 consists of (1) an 18.6-foot by 19.0-foot concrete pad within a wood structure that previously housed transformers, and (2) the soils adjacent to the entrance of Transformer Bank Number 2. No evidence was obtained from the previous sampling effort that indicated PCB soil contamination in this area. Current sampling indicated low levels of pesticide contamination on the concrete pad, and one wipe sample contained 390,000 ppb of Aroclor 1260 (URS 1991A).

All soil sample grid locations established in the previous SI (CTO #0019) remained the same and were resampled (Figure 4-2). A total of eight composite soil samples were collected from the sample grid area outside of the transformer building (Figure B-4) and submitted for analysis of VOCs and PCB/pesticides. Two wipe (Figure B-5) and four concrete chip samples (Figure B-6) were obtained from the concrete pad within the building and analyzed for PCB/pesticides. Four composite soil samples (Figure B-7) were obtained from soils within the building (an unconcreted floor area) and analyzed for PCB/pesticides.

4.1.3 Site 3

Site 3 is located at the Upper Camp Transformer Bank Number 3 (Figure 4-3). Site 3 consists of (1) a concrete pad within a wood structure that previously housed transformers, and (2) the soils adjacent to the entrance of Transformer Bank Number 3. The previous SI (CTO #0019) sampling effort indicated that Aroclor 1260 was evident in four composite soil samples. Several pesticides were detected, including 4,4-DDE; 4,4-DDT; and 4,4-DDD. The concrete pad contained evidence of Aroclor 1260 in both the wipe and chip samples.

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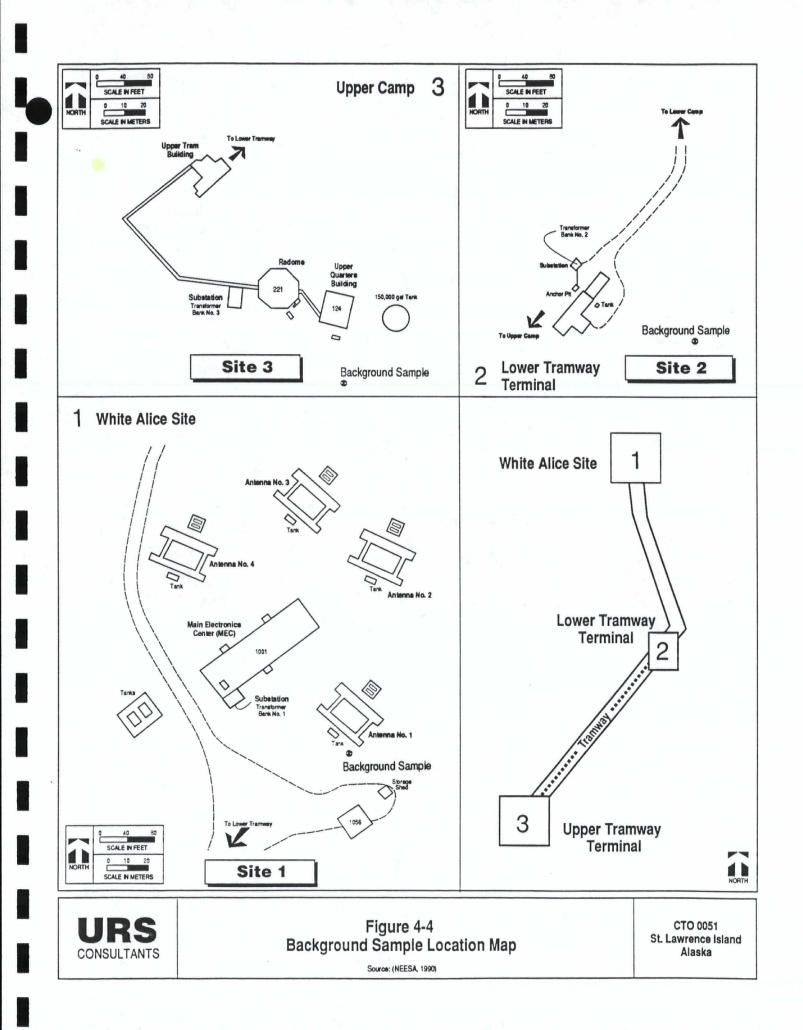
The grid layout for the soil sampling effort of Site 3 was identical to the grid established during the previous SI performed in 1990 under CTO #0019, with the exception of four additional sample point locations (Figure 4-3). The sample grid was extended to add three composite samples to the southwest side of the grid and one composite sample to the northeast side of the grid where previous sampling efforts indicated the possible presence of PCB contamination (URS 1991). This extension was intended to determine if the contamination extended significantly beyond the initial sample grid. A total of 23 composite soil samples from the grid were submitted for analysis of VOCs and PCB/pesticides (Figure B-8).

The electrical substation at Site 3 consists of a 16.2-foot by 29.5-foot concrete pad. Four wipe and six concrete chip samples were collected from the pad and analyzed for PCB/pesticides (Figures B-9 and B-10).

4.1.4 Background Samples

The following samples were collected as a background reference for comparison, and analyzed for VOCs and PCB/pesticides (Locations are indicated in Figure 4-4.):

- Site 1 (Sample #8427) approximately 100 feet south and slightly upgradient from the site. Background contaminants detected consisted of Aroclor 1260 at 90 ppb and a tentatively identified compound (TIC) at 7 ppb.
- Site 2 (Sample #8447) approximately 150 feet south and upgradient of the site. No contaminants were detected in Sample 8447.
- Site 3 (Sample #8482) approximately 75 feet south and across a flat, rocky field. Background contaminants detected consisted of Aroclor 1254 at 140 ppb, concentrations of benzene at 12 ppb, and naphalene at 20 ppb.



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5.0 SAMPLING RESULTS

The results of analyses from this site inspection, presented as sample data summaries, are detailed in this section. All sample data used in this report was reviewed according to EPA guidelines and compared with the data quality objectives presented in CTO #0019 Project Plans (EPA 1988A, EPA 1988B, URS 1990B, C, D, E). The CTO #0019 results in the drum fields and streams are not discussed because CTO #0051 did not resample these areas.

5.1 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

Federal and state public health and environmental standards considered to be indicative of potential, albeit generally conservative, comparison or screening-level values for this field investigation are presented with each sample result as appropriate (Table A-1). Definitive site Applicable or Relevant and Appropriate Requirements (ARARs) or cleanup standards have not been developed for WASNC.

5.2 SAMPLE ANALYSIS RESULTS

This field investigation consisted of 83 collected samples, which were comprised of 50 composite soil samples, 10 wipes, 14 concrete chip samples, 3 background soil samples, and 6 QA/QC samples. Each of the collected samples were analyzed by Eureka Laboratory in California for VOCs (Method V-CLP [2/88]) and PCB/pesticides (Method 8080). Sample data results are tabulated in Appendix A and discussed in the following sections. The sample locations are provided in Appendix B. The sample test results are provided in Appendix C. Section 5.3 discusses the data validation processes and the data quality problems encountered. Appendix D presents the data validation reports, which detail the lab procedure and data quality qualifications and limitations.

5.2.1 Volatile Organic Compounds

Only one VOC contaminant -- 1,1,1-trichloroethane (Sample #8433) -- was definitively detected at 1 ppb at Site 2 (Lower Tram) in Cell B-1 (Figure B-4 and Table A-1). The VOC contamination level is well below the ADEC action level of 200 ppb, and could be a trace sampling or lab contaminant rather than an indication of actual contaminant presence. Previous sampling (CTO #0019) had reported methylene chloride, chloroform, TCE, xylene, and styrenes. These were not detected in the current sampling. However, several TICs

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were identified, some of which are volatiles (Table A-2). The greatest detected concentration of any TIC was 170 ppb, so no major volatile contamination was detected at the sites sampled.

5.2.2 PCB/Pesticides

On the concrete pad at Site 1, in one concrete chip sample (#8425), Aroclor 1260 was detected at 470,000 ppb and in one wipe sample (#8421) Aroclor 1260 was detected at 3,200 ppb, both at Location C (Figures B-2 and B-3 and Table A-1). However, all 28 samples detected PCB, ranging from 90 ppb (for the background sample) to 470,000 ppb. The Toxic Substances Control Act (TSCA) action levels for PCB in soil are 1,000 ppb, whereas the ADEC states that soils must be cleaned to background levels. The levels for soil and mixed media at all three sites are well above these accepted levels. Therefore, these detected levels would appear to require remedial action. CTO #0019 reported aldrin and heptachlor at Site 1, but these were not reported in the CTO #0051 results.

At Site 2, the following pesticide contaminants were detected in the wipe samples collected from the concrete pad (Figure B-5 and Table A-1).

| • | 4,4-DDT | (Sample #8437) | 2,970 ppb | Location A |
|---|-----------------|----------------|-----------|------------|
| • | Methoxychlor | (Sample #8438) | 5,170 ppb | Location B |
| • | Endrin Aldehyde | (Sample #8438) | 4,500 ppb | Location B |

CTO #0019 had also reported endosulfan I, which was not detected in the current testing.

In addition, at Site 2 (location D), Aroclor 1260 (Sample #8442) was detected in a concrete chip sample at a high level of 390,000 ppb. Other hits included values from 130 to 2,100 ppb. A total of 6 of the 20 site samples at Site 2 detected PCB. All these values are substantially above commonly accepted action levels.

The only contaminant of concern at Site 3 was Aroclor 1260 (Sample #8475) in a concrete pad wipe at Location D (Sample #8475). Aroclor 1260 was detected at a level of 2,200 ppb, which exceeds commonly accepted action levels (Figure B-9 and Table A-1). CTO #0019 had also reported low levels of dioxins, furans, and a range of pesticides.

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5.2.3 Semivolatile Organic Compounds

The Statement of Work dated May 7, 1991, did not request semi-volatile organic analysis (SVOA) sampling and analysis. However, 36 TICs (including potential VOCs and semi-VOCs) were identified at the White Alice Site, Site 1 (Table A-2). Some of these values exceeded probable action levels, although overall concentrations were apparently relatively low. The highest concentration detected for a TIC was 170 ppb.

5.2.4 Dioxins/Furans

Dioxin and furan contaminants were identified only at Site 3, as noted in the CTO #0019 SI. The dioxin and furan contaminant levels in the CTO #0019 validated data are considered usable data. The four dioxin samples and the three furan samples in the grid correlate to the PCB "hits" of the revised CTO #0051 SI (Figure B-11). Dioxins and furans generally have non-detectable concentration cleanup standards. Detected levels were very low; less than 10 ppb in all cases.

5.2.5 Asbestos-Containing Materials

The CTO #0019 sampling detected ACMs in the Radome Building (221); Building 124; the Arctic Walkway; the Tram Hallway (all in the Upper Camp); Building 1001; and Antennas #2, #3, and #4 at the Lower Camp. Details of the sampling and results are presented in the CTO #0019 Report (URS 1991A).

5.2.6 Background Samples

Background samples were taken at each of the three (3) sites and included in the analyses of contaminants. Site 2 did not detect contaminants in the background sample, whereas the other two sites have contaminants present, indicating what appears to be a wide spread contamination problem.

Site 1 background (Sample #8427) was taken approximately 100' south and slightly upgradient from the main site. Background contaminants detected consisted of Aroclor 1260 at 90 ppb, and a Tentatively Identified Compound (TIC) at 7 ppb.

Site 2 background (Sample #8447) was taken approximately 150' south and upgradient of the site. No contaminants were detected.

Site 3 background (Sample #8482) was taken approximately 75' south across a flat, rock field. Background contaminants detected consisted of Aroclor 1254 at 140 ppb and concentrations of benzene at 12 ppb and naphthalene at 20 ppb.

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5.3 LABORATORY VALIDATION

The sample validation program was performed in accordance with the Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Restoration Program, under the purview of the URS Quality Assurance Coordinator.

The laboratory sample validation reports (excluding data sheets with validation amendments) are included in Appendix D. These sheets explain validation results, detail changes made in data results by the validators, and provide a discussion of unique test validation issues such as dilution samples and results of sample and shipping blank tests. The validation recommended changes have been included on the summary test data sheets in Appendix A, and the data summary in Appendix C.

This SI report has been prepared based on certain assumptions (reflected in CTO #0019) regarding site conditions and contamination presence, as presented in previous site- assessment work. This previous work has been referenced where applicable, and has been relied upon by URS in preparation of its work plan, SI sampling, and report writing.

This report presents the results of SI activities at WASNC, and is intended to provide the Navy with data and preliminary conclusions for use in future studies and potential remediation activities. The conclusions and recommendations are preliminary in nature because of the need for more in-depth and comprehensive discrete sampling and evaluation of the sites, as required by various sections of 40 CFR and the Navy CLEAN program.

The purpose of the validation process is to eliminate unacceptable analytical data, and to designate with data qualifiers any data whose quality is subject to limitation. In some instances, the qualified analytical data may be used only for approximation purposes, while in other cases the data is usable, subject to minor limitations on statistical quantifications. Data-validation summary reports are filed with the data and describe the usability of the data for further technical interpretations. Data-usability review determines the degree to which validated data are suitable for the purposes intended, and whether the data are useful for other purposes. Sample validation analyses for this CTO was performed by C.C. Johnson & Malhotra, P.C., Lakewood, Colorado.

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Certain data was flagged in validation with a "J" qualifier. This does not invalidate the use of the data, although strict reliance on reported quantitative data would not be recommended. The majority of the samples were composite samples rather than discrete samples; therefore, strict quantitative reliance is not possible. This does not invalidate or hinder use of this data for SI screening purposes, which was the intent of the project.

Due to lab procedural and calibration difficulties, and due to reported hydrocarbon masking, a large percentage of the lab data was "J" qualified. Therefore, while the data can be used qualitatively, strict adherence to quantitative values is, in many cases, not advised.

The following "hits" were ignored as they were consistently at or near detection limits in multiple samples and were flagged during validation as probable lab or transit contamination of the samples: methylene chloride, 2-butanone, and a TIC with retention time of 22.8. Some samples were flagged "R" as unusable because of problems with overlap contamination or lab procedure. In these cases, it is therefore unknown whether or not these samples were contaminated.

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6.0 SITE SAFETY

During the CTO #0051 site-inspection tasks, all health and safety guidelines outlined in the Site Safety and Health Plan were implemented (URS 1990C). A brief summary of safety issues is presented below.

6.1 WORK ZONES

Safe work zones were established around all hazardous-waste areas in accordance with 29 CFR 1910.120. Because of the remote, uninhabited location, no intrusion events or risk of public exposure occurred.

6.2 PERSONAL PROTECTIVE EQUIPMENT USAGE

During all sample activities, disposable personal protective equipment (PPE) was available. The modified Level D PPE consisted of Tyvek suits, silver sheaths over nitro gloves, and boot covers.

6.3 FINAL WASTE DISPOSITION

All modified Level D PPE (Tyveks, gloves, and boot covers) was removed during decontamination and remained in the Exclusion Zone. The sampling equipment and used PPE were stored within one of the contaminated buildings and became part of the existing "debris pile" waste unit. It will be disposed during future remediation activities.

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7.0 CONCLUSIONS AND RECOMMENDATIONS

This section presents a summary discussion of CTO #0051 site inspection, assessing the extent of soil contamination in accordance with EPA and State of Alaska potential ARARs.

The revised SI verified that the previously suspected PCB/pesticide contaminants are present in the soil immediately surrounding each transformer bank, as well as existing in very high concentrations in the concrete transformer bank pads and their corresponding surfaces. In addition, outer-boundary grid contamination is evident from this sampling effort as well as the previous SI (CTO #0019). Therefore, it is likely that the sampling did not delineate the full extent of contaminated soils. Since the site was abandoned in 1975, the majority of VOCs have probably volatilized, but this conclusion cannot be verified due to a lack of subsurface soil analysis. In the Site 2 grid (Lower Tram), one VOC was detected at a very low concentration. Multiple TICs were detected in the soil grid at Site 1, adjacent to the White Alice electronics building. Of the three background samples, only the one for Site 2 did not demonstrate a contaminant in the revised sampling effort, indicating that contamination may be widespread. Dioxin and furan contaminants, collected in the original SI, were in evidence in the Site 3 grid surrounding the transformer building. These specific contaminants were also evident in grid cells that contain PCB contaminants, as would be expected if they were the result of disposal of burned PCB-treated dielectric fluids.

Utilizing the information contained in the revised SI and the usable data from the original SI, it is recommended that further remedial actions be considered for the future. The remoteness of the site and the presence of a large formerly used defense site (the former Air Force Housing and Operations Area) adjacent to the site which has not yet been investigated, indicate that it would be in the Federal Government's interest to coordinate remedial activities on the Navy and formerly used defense sites to achieve economies of scale on mobilization, transportation, and disposal costs.

If a CERCLA RI/FS is conducted to delineate the contaminant levels and the contaminant boundaries and evaluate appropriate cleanup levels, it should determine the lateral and vertical extent of existing PCB-contaminated areas and additional source areas which may have contributed to BNA TIC hits, as well as the extent of contamination inside the buildings and in the drum fields. Therefore, PCB, dioxin/furan, and semi-volatiles tests should be conducted, along with TPX/TPH tests to ascertain the need for hydrocarbon remedial actions.

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An interim cleanup action on a limited area at the transformer pads may also be considered. This cleanup, by cleaning concrete (or removing it) and removing adjacent contaminated soils, could result in removal of the high-level PCB contamination that was detected. Such an action would remove the highest detected levels of contaminants onsite, which comprise, based on current information, the majority of the site contamination risk. It is also possible that removing PCBs, as a selected analyte of concern, would also incorporate simultaneous removal of other associated contamination.

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8.0 REFERENCES

- Alaska Environmental Information and Data Center. 1989. Alaska Climate Summaries, Second Edition. Alaska Climate Center Technical Note Number 5.
- Naval Energy and Environmental Support Activity. June 1988. Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Restoration Program, NEESA 20.2-047B, NEESA.
- Naval Energy and Environmental Support Activity. January 1990. Preliminary Assessment Report, White Alice Site Northeast Cape, Saint Lawrence Island, AK, NEESA 13-205.
- Patton, W.W., and Csejtey, B. 1980. Geological Map of St. Lawrence Island, Alaska: U.S.G.S. Misc. Invest. Map I-1203 Scale 1:250,000.
- URS 1990. Scope of Work, CTO #0019.
- URS Consultants, Inc. July 1990B. Quality Assurance Project Plan for CTO #0019 Site Investigation of White Alice Site Northeast Cape, St. Lawrence Island, Alaska.
- URS Consultants, Inc. June 1990C. Site Safety and Health Plan for CTO #0019 for the White Alice Site Northeast Cape, St. Lawrence Island, Alaska.
- URS Consultants, Inc. July 1990D. Site Investigation Draft Workplan for CTO #0019 for the Site Investigation, White Alice Site, Northeast Cape, St. Lawrence Island, Alaska.
- URS Consultants, Inc. July 1990E. Field Sampling Plan for the CTO #0019 Site Investigation, White Alice Site, Northeast Cape, St. Lawrence Island, Alaska.
- URS Consultants, Inc. December 1990F. Standard Operating Procedures for the Comprehensive Long-Term Environmental Action Navy (CLEAN) Program, Northwest Area.
- URS Consultants, Inc. May 22, 1991A. Final Report for CTO #0019 Site Inspection of White Alice Site Northeast Cape, St. Lawrence Island, Alaska.

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- U.S. Army Corps of Engineers. November 1962. Report on Well No. 5 Lower Tramway Terminal Water Supply Well Northeast Cape AFS.
- U.S. Environmental Protection Agency. March 1987. Data Quality Objectives for Remedial Response Activities. OSWER Directive 9355.0-7B. Office of Emergency and Remedial Response, Office of Solid Waste and Emergency Response, U.S. EPA, Washington, D.C.
- U.S. EPA. 1988A. Laboratory Data Validation Functional Guidelines for Evaluating Organics Analyses.
- U.S. EPA. 1988B. Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analyses.
- U.S. Geological Survey Water Resources Division. June 1990. Computer Well Inventory for St. Lawrence Island, Alaska.

APPENDIX A

4

CTO #0051 Laboratory Data Summary

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Appendix A CTO #0051 SI Data Summary

The tables in Appendix A present the maximum detected contaminant levels (MCL) for each site for use in preliminary site-contamination evaluation. These values are <u>not</u> representative or average values, nor are they necessarily the highest level present on each site.

The determination of "threshold limit" or acceptable MCL "no-action" values of various hazardous materials and substances is highly dependent on the exposure factors at the site; whether the public or workers are regularly exposed to the potential hazards; continually changing regulatory thresholds; and various site-exposure, risk-severity, and related factors. Therefore, the weighted averages or MCLs at which an action to remediate to an ARAR is required demands information that is not available until at least an HRS (II) ranking is performed, and possibly until an RI/FS is performed at the site.

The "comparison value" in Appendix A represents a tentative threshold value for use in evaluating relative significance of the compounds detected at the various sites. In general, the comparison values generally represent EPA or National Institute of Occupational Safety and Health (NIOSH) action levels or regulatory levels from Toxicity Characteristic tables. (Reference from which comparison level was extracted is noted in parentheses.) Where such values are not available, State of Alaska or Occupational Safety and Health Administration (OSHA) time-weighted-average (TWA) values have been used for comparative purposes. In some cases, levels for closely related derivatives have been listed in lieu of specific isomer guidelines, where isomer-specific data is not available.

The values presented as comparison values should not be considered equivalent to remedial action or emergency action threshold limits, nor to "safe" or "permissible" levels. Such determination requires a deliberate site ranking, establishment and agency concurrence with site ARAR, and accomplishing screening-quality sampling and testing, which is not fully satisfied by the samples represented in the data in these tables.

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SYMBOL DESIGNATION

- (1) 40 CFR 257.4. Appendix I, eff 10/15/79, 7/1/89 edition (levels for wastes) and 40 CFR 264.94 Table 1.
- (2) 40 CFR 261.24. Table 1 Maximum Concentration of Contaminants for Characteristics of EP Toxicity (EP Toxicity Extraction Levels). 7/1/89 edition.
- (3) 40 CFR 260.41. Table CCWE Constituent Concentrations in Waste Extract.
- (4) Summary of General PCB Regulations. EPA Region 10. February 1990.
- (5) EPA Region 10. Supplemental Risk Assessment Guidance. August 1991. (Regulated MCL, Risk = 10⁻⁶ concentration if no regulated MCL).
- (6) EPA Region 10. Supplemental Risk Assessment Guidance, August 1991. Table II-2, Soil Cheat Sheet: Risk-based Concentrations.
- (7) Toxicity Characteristic Based on TCLP (Sept. 90 tentative list) regulated levels.
- (8) Internal URS Anchorage composite summary notebook of Federal/ACGIH TLV standards.
- (9) NIOSH Pocket Guide to Chemical Hazards. U.S. Public Health Service, CDC. June 1990. (value listed is Exposure Limit, usually TWA, for occupational exposure).
- (10) CERCLA Compliance with Other Laws Manual, Interim Final. EPA, EPA/540/G-89-006, August 1988.
- (11) Interim Guidance for Non-UST Contaminated Soil Cleanup Levels, Appendix I: Final and Proposed Maximum Contaminant Levels (MCL) for Selected Organic and Inorganic Contaminants, Alaska Department of Environmental Conservation.

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Table A-1 (page 1 of 7) White Alice Site, Northeast Cape Sites 1, 2, 3 Maximum Detected Contaminant Concentrations

| TEST METHOD: 808 (pesticides) | 0 | | CTO: 0051 LOCATION: ST. LAWRENCE ISLAND, ALASKA | | |
|----------------------------------|-----------|--------------------------------|-------------------------------------------------------|------------|----------|
| SITE Compound: | CAS # | Comparison Value ug/l (ppb) | White Alice | Lower Tram | Top Camp |
| alpha-BHC | 319-84-6 | .0092 (10) | nd | nd | nd |
| beta-BHC | 319-85-7 | .00012 (10) | nd | nd | nd |
| delta-BHC | 319-86-8 | .00012 (10) | nd | nd | nd |
| gamma-BHC (Lindane) | 58-89-9 | 0.2 (1) | nd | nd | nd |
| Heptachlor | 76-44-8 | .00028 (10) | nd | nd | nd |
| Aldrin | 309-00-2 | .000074 (10) | nd | nd | nd |
| Heptachlor epoxide | 1024-57-3 | .00028 (10) | nd | nd | nd |
| Endosulfan I | 959-98-8 | < 10 (6) | nd | nd | nd |
| Dieldrin | 60-57-1 | 40 (6) | nd | nd | nd |

nd = non detected

N/A = not available as published standard, or exposure/contamination standards not yet established.

X, B, J - lab validation qualifiers (see qualification reports; qualifiers per standards)

DL = diluted sample, dilution factor shown. Value reported represents calculated undiluted value.

(s) = soil matrix, (w) = water matrix

R = sample data rejected in qualification procedure, value suspect.

Designation codes:

Appendix A Revision No.: 0 Date: April 27, 1992 Page 2

Table A-1 (page 2 of 7) White Alice Site, Northeast Cape Sites 1, 2, 3 Maximum Detected Contaminant Concentrations

| TEST METHOD: 808 (pesticide) | 30 | | CTO: 0051 Location: St. Lawrence Island, Alaska | | |
|---------------------------------|------------|--------------------------------|-------------------------------------------------------|--------------|----------|
| SITE Compound: | CAS # | Comparison Value ug/l (ppb) | White Alice | Lower Tram | Top Camp |
| 4,4'-DDE | 72-55-9 | 2,000 (6) | nd | nd | nd |
| Endrin | 72-20-8 | 0.18 (10) | nd | nd | nd |
| Endosulfan II | 33213-65-9 | 10 (10) | nd | nd | nd |
| 4,4'-DDD | 72-54-8 | 2,000 (6) | nd | nd | nd |
| Endosulfan sulfate | 1031-07-8 | N/A (6) | nd | nd | nd |
| 4,4'-DDT | 50-29-3 | .000024 (10) | nd | 2,970 (wipe) | nd |
| Methoxychlor | 72-43-5 | .03 (10) | nd | 5,170 (wipe) | nd |
| Endrin aldehyde | 53494-70-5 | N/A (6) | nd | 4,500 (wipe) | nd |
| alpha-Chlordane | 5103-71-9 | .0046 (10) | nd | nd | nd |

nd = non detected

N/A = not available as published standard, or exposure/contamination standards not yet established.

X, B, J - lab validation qualifiers (see qualification reports; qualifiers per standards)

DL = diluted sample, dilution factor shown. Value reported represents calculated undiluted value.

(s) = soil matrix, (w) = water matrix

R = sample data rejected in qualification procedure, value suspect.

Designation codes:

Appendix A Revision No.: 0 Date: April 27, 1992 Page 3

Table A-1 (page 3 of 7) White Alice Site, Northeast Cape Sites 1, 2, 3 **Maximum Detected Contaminant Concentrations**

| TEST METHOD: 80 (pesticides) | 080 | | CTO: 0051 LOCATION: ST. LAWRENCE ISLAND, ALASKA | | |
|---------------------------------|------------|--------------------------------|-------------------------------------------------------|----------------|--------------|
| SITE Compound: | CAS # | Comparison Value ug/l (ppb) | White Alice | Lower Tram | Top Camp |
| gamma-Chlordane | 5103-74-2 | 0.0046 (10) | nd | nd | nd |
| Toxaphene | 8001-35-2 | .00071 (10) | nd | nd | nd |
| Aroclor-1016 | 12674-11-2 | 0.5 (11) | nd | nd | nd |
| Aroclor-1221 | 11104-28-2 | 0.5 (11) | nd | nd | nd |
| Aroclor-1232 | 11141-16-5 | 0.5 (11) | nd | nd | nd |
| Aroclor-1242 | 53469-21-9 | 0.5 (11) | nd | nd | nd |
| Aroclor-1248 | 12672-29-6 | 0.5 (11) | nd | nd | nd |
| Aroclor-1254 | 11097-69-1 | 0.5 (11) | nd | 180 (s) J | 1,400 (s) |
| Aroclor-1260 | 11096-82-5 | 0.5 (11) | 470,000 (c) J 3,200 (s) J | 390,000 (chip) | 2,200 (wipe) |

nd = non detected

N/A = not available as published standard, or exposure/contamination standards not yet established.

X, B, J - lab validation qualifiers (see qualification reports; qualifiers per standards)

DL = diluted sample, dilution factor shown. Value reported represents calculated undiluted value.

(s) = soil matrix, (w) = water matrix

R = sample data rejected in qualification procedure, value suspect.

TABLE51.A-1

Designation codes:

Appendix A Revision No.: 0 Date: April 27, 1992 Page 4

Table A-1 (page 4 of 7) White Alice Site, Northeast Cape Sites 1, 2, 3 Maximum Detected Contaminant Concentrations

| TEST METHOD: V-CLP | | | CTO: 0051 LOCATION: ST. LAWRENCE ISLAND, ALASKA | | |
|--------------------|---------|--------------------------------|-------------------------------------------------------|------------|----------|
| SITE Compound: | CAS # | Comparison Value ug/l (ppb) | White Alice | Lower Tram | Top Camp |
| Chloromethane | 74-87-3 | 50,000 (6) | nd | nd | nd |
| Bromomethane | 74-83-9 | 5,000 (8) | nd | nd | nd |
| Vinyl Chloride | 75-01-4 | 2 (10) | nd | nd | nd |
| Chloroethane | 75-00-3 | N/A (6) | nd | nd | nd |
| Methylene Chloride | 75-09-2 | 20 (3) | nd | nd | nd |
| Acetone | 67-64-1 | 50 (3) | nd | nd | nd |
| Carbon Disulfide | 75-15-0 | 1,000 (8) | nd | nd | nd |
| 1,1-Dichloroethene | 75-34-4 | 1,000 (6) | nd | nd | nd |
| 1,1-Dichloroethane | 75-34-3 | 100,000 (8) | nd | nd | nd |

nd = non detected

N/A = not available as published standard, or exposure/contamination standards not yet established.

X, B, J - lab validation qualifiers (see qualification reports; qualifiers per standards)

DL = diluted sample, dilution factor shown. Value reported represents calculated undiluted value.

(s) = soil matrix, (w) = water matrix

R = sample data rejected in qualification procedure, value suspect.

TABLE51.A-1

Designation codes:

Appendix A Revision No.: 0 Date: April 27, 1992 Page 5

Table A-1 (page 5 of 7) White Alice Site, Northeast Cape Sites 1, 2, 3 Maximum Detected Contaminant Concentrations

| TEST METHOD: V-C | CLP | | CTO: 0051 LOCATION: ST. LAWRENCE ISLAND, ALASKA | | |
|--------------------------|----------|--------------------------------|-------------------------------------------------------|------------|----------|
| SITE Compound: | CAS # | Comparison Value ug/l (ppb) | White Alice | Lower Tram | Top Camp |
| trans-1,2-Dichloroethene | 156-60-5 | 5,000 (8) | nd | nd | nd |
| cis-1,2-Dichloroethene | 156-59-2 | N/A (6) | nd | nd | nd |
| Chloroform | 67-66-3 | 0.19 (10) | nd | nd | nd |
| 1,2-Dichloroethane | 107-06-2 | 0.94 (10) | nd | nd | nd |
| 2-Butanone | 78-93-3 | 200,000 (8) | nd | nd | nd |
| 1,1,1-Trichloroethane | 71-55-6 | 200 (11) | nd | 1 (s) J | nd |
| Carbon Tetrachloride | 56-23-5 | 0.4 (10) | nd | nd | nd |
| Vinyl Acetate | 108-05-4 | 10,000 (8) | nd | nd | nd |
| Bromodichloromethane | 75-27-4 | 5,000 (6) | nd | nd | nd |

nd = non detected

N/A = not available as published standard, or exposure/contamination standards not yet established.

X, B, J - lab validation qualifiers (see qualification reports; qualifiers per standards)

DL = diluted sample, dilution factor shown. Value reported represents calculated undiluted value.

(s) = soil matrix, (w) = water matrix

R = sample data rejected in qualification procedure, value suspect.

Designation codes:

Appendix A Revision No.: 0 Date: April 27, 1992 Page 6

Table A-1 (page 6 of 7) White Alice Site, Northeast Cape Sites 1, 2, 3 Maximum Detected Contaminant Concentrations

| TEST METHOD: V-C | CLP | | CTO: 0051 LOCATION: ST. LAWRENCE ISLAND, ALASKA | | |
|---------------------------|------------|--------------------------------|-------------------------------------------------------|------------|----------|
| SITE Compound: | CAS # | Comparison Value ug/l (ppb) | White Alice | Lower Tram | Top Camp |
| 1,2-Dichloropropane | 78-87-5 | 5 (11) | nd | nd | nd |
| cis-1,3-Dichloropropene | 10061-01-5 | 87 (10) | nd | nd | nd |
| Trichloroethene | 79-01-6 | 62 (3) | nd | nd | nd |
| Dibromochloromethane | 124-48-1 | 8,000 (6) | nd | nd | nd |
| 1,1,2-Trichloroethane | 79-00-5 | 0.6 (10) | nd | nd | nd |
| Benzene | 71-43-2 | 0.66 (10) | nd | nd | nd |
| trans-1,3-Dichloropropene | 10061-02-6 | 1,000 (8) | nd | nd | nd |
| Bromoform | 75-25-2 | 500 (8) | nd | nd | nd |
| 4-Methyl-2-Pentanone | 108-10-1 | 50,000 (8) | nd | nd | nd |

nd = non detected

N/A = not available as published standard, or exposure/contamination standards not yet established.

X, B, J - lab validation qualifiers (see qualification reports; qualifiers per standards)

DL = diluted sample, dilution factor shown. Value reported represents calculated undiluted value.

(s) = soil matrix, (w) = water matrix

R = sample data rejected in qualification procedure, value suspect.

Designation codes:

Appendix A Revision No.: 0 Date: April 27, 1992 Page 7

Table A-1 (page 7 of 7) White Alice Site, Northeast Cape Sites 1, 2, 3 Maximum Detected Contaminant Concentrations

| TEST METHOD: V-0 | CLP | | CTO: 0051 LOCATION: ST. LAWRENCE ISLAND, ALASKA | | |
|--------------------------|-----------|--------------------------------|-------------------------------------------------------|------------|----------|
| SITE Compound: | CAS # | Comparison Value ug/l (ppb) | White Alice | Lower Tram | Top Camp |
| 2-Hexanone | 591-78-6 | N/A (6) | nd | nd | nd |
| Tetrachloroethane | 127-18-4 | .79 (3) | nd | nd | nd |
| 1,1,2,-Tetrachloroethane | 79-31-5 | 170 (10) | nd | nd | nd |
| Toluene | 108-88-3 | 1,120 (6) | nd | nd | nd |
| Chlorobenzene | 108-90-7 | 100 (11) | nd | nd | nd |
| Ethylbenzene | 100-41-4 | 50 (3) | nd | nd | nd |
| Styrene | 100-42-5 | 20,000 (6) | nd | nd | nd |
| Xylene (total) | 1330-20-7 | 50 (3) | nd | nd | nd |

nd = non detected

N/A = not available as published standard, or exposure/contamination standards not yet established.

X, B, J - lab validation qualifiers (see qualification reports; qualifiers per standards)

DL = diluted sample, dilution factor shown. Value reported represents calculated undiluted value.

(s) = soil matrix, (w) = water matrix

R = sample data rejected in qualification procedure, value suspect.

Designation codes:

Appendix A Revision No.: 0 Date: April 27, 1992 Page 1

Table A-2 (page 1 of 3) White Alice Site, Site 1 Tentatively Identified Compounds

| SEMI VOA TICs (Isomers; base compound | listed) | CTO: 0051 LOCATION: | ST. LAWRENCE ISLAND, ALASKA |
|------------------------------------------|------------|--------------------------------|--------------------------------|
| PRODUCT | CAS # | Comparison Value ug/l (ppb) | QUANTITY |
| Cyclohexane | 7058-05-1 | .012 (10) | 36 J |
| Cyclohexene | 1003-64-1 | 9,200 (10) | 44 J |
| Naphthalene | 493-02-7 | 10,000 (8) | 170 J |
| Cyclohexane | 61141-80-8 | 0.12 (10) | 37 J |
| Naphthalene | 2958-76-1 | 10,000 (5) | 150 J |
| Cyclopropane | 61142-25-4 | N/A | 14 J |
| Naphthalene | 1750-51-2 | 10,000 (8) | 79 J |
| Benzene | 17851-27-3 | .1 (10) | 48 J |
| Naphthalene | 91-17-8 | 10,000 (8) | 8 J |
| Naphathalene | 2958-76-1 | 10,000 (8) | 13 J |
| Benzene | 2050-24-0 | 1,400 (10) | 18 J |
| Benzene | 4132-72-3 | 1,400 (10) | 12 J |
| Naphthalene | 25419-33-4 | 10,000 (8) | 7 J |

TIC = tentatively identified compound

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Table A-2 (page 2 of 3) White Alice Site, Site 1 Tentatively Identified Compounds

| SEMI VOA TICs (Isomers; base compound | listed) | CTO: 0051 LOCATION: | ST. LAWRENCE ISLAND, ALASKA |
|------------------------------------------|-----------|--------------------------------|--------------------------------|
| PRODUCT | CAS # | Comparison Value ug/l (ppb) | QUANTITY |
| Naphthalene | | 10,000 (8) | 42 JN |
| Cyclohexane | | .012 (10) | 10 JN |
| Naphthalene | | 10,000 (10) | 43 JN |
| 2-Cyclohexane | | 0.012 (10) | 46 JN |
| Naphthalene | | 10,000 (8) | 14 JN |
| Camphor | | 2,000 (9) | 27 JN |
| 4,5-Nonadiene | | N/A | 92 JN |
| Naphthalene | | 10,000 (10) | 35 JN |
| Naphthalene | | 10,000 (10) | 20 JN |
| Undecane | | N/A | 26 JN |
| 2,5-Octadiyne | | N/A | 19 JN |
| Nonane, 1-chloro | 2473-01-0 | N/A | 7 J |
| Pentane, 3-methylene | 760-21-4 | 10,000 (8) | 8 J |

TIC = tentatively identified compound

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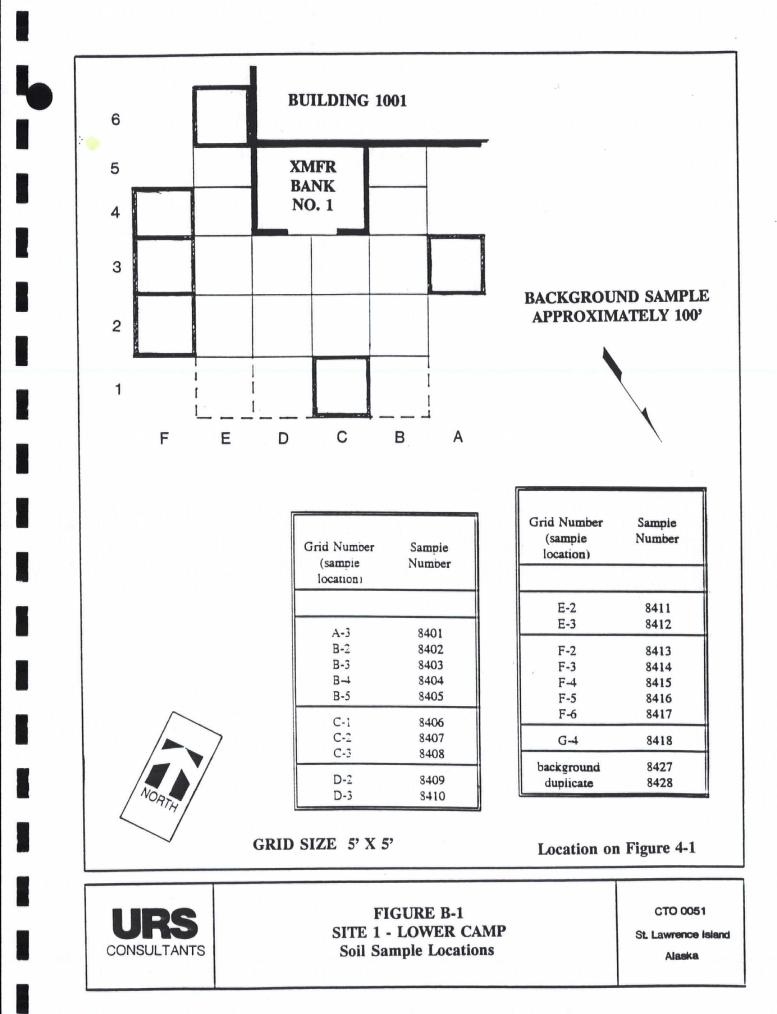
Table A-2 (page 3 of 3) White Alice Site, Site 1 Tentatively Identified Compounds

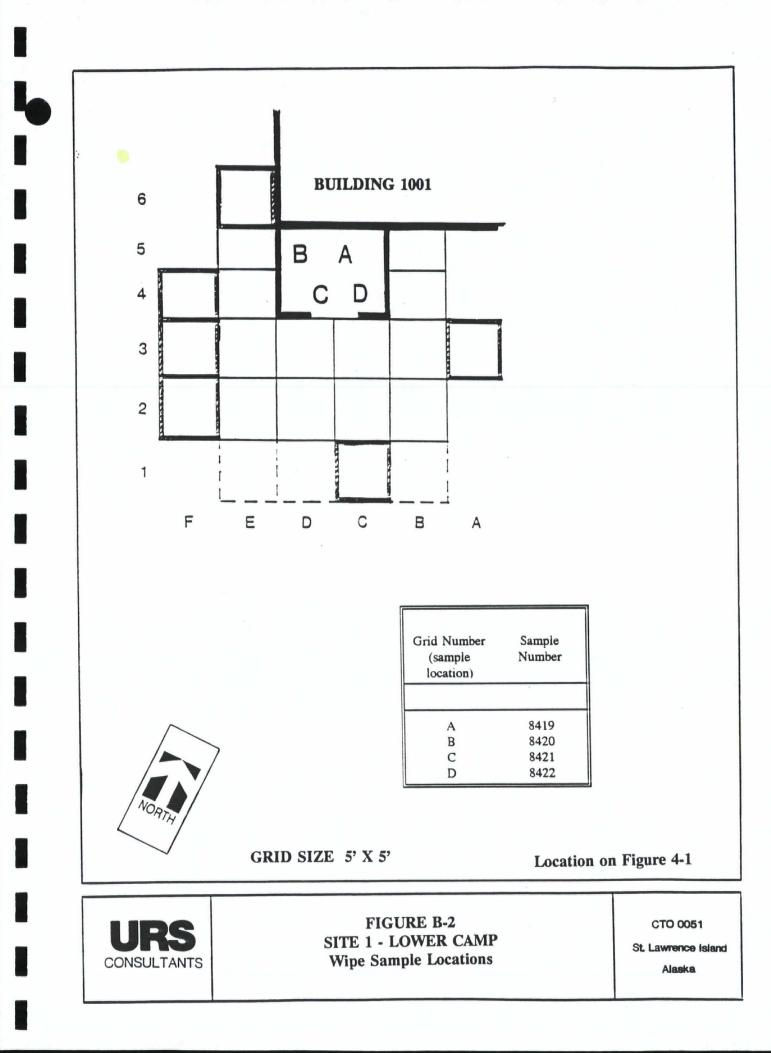
| SEMI VOA TICs (Isomers; base compound listed | ł) | CTO: 0051 LOCATION: | ST. LAWRENCE ISLAND, ALASKA |
|-------------------------------------------------|------------|--------------------------------|--------------------------------|
| PRODUCT CAS # | | Comparison Value ug/l (ppb) | QUANTITY |
| Cyclohexane, 1,4-dimethyl | 624-29-3 | .012 (10) | 8 J |
| Cyclohexane, 1-ethyl-2, 3-dim | 7058-05-1 | 9,200 (10) | 24 J |
| Cyclopentene, 1-isopropyl-2 | 7112-73-4 | N/A | 20 J |
| 4-Decane, 9-methyl-(E)-9 | 62338-49-2 | N/A | 33 J |
| Naphthalene, decahydro (8CI) | 493-07-2 | 10,000 (8) | 100 J |
| Cyclohexane (1,1-dimethylpr) | 31797-64-5 | .012 (10) | 25 J |
| Naphthalene, decahydro-2-me | 2958-76-1 | 10,000 (8) | 51 J |
| Spiro(3,5)nonan-1-one,5-me | 65147-56-0 | N/A | 6 J |
| Naphthalene, decahydro-2,6-d | 1618-22-0 | 10,000 (8) | 46 J |
| Naphthalene, decahydro-1,6-d | 1750-51-2 | 10,000 (8) | 88 J |

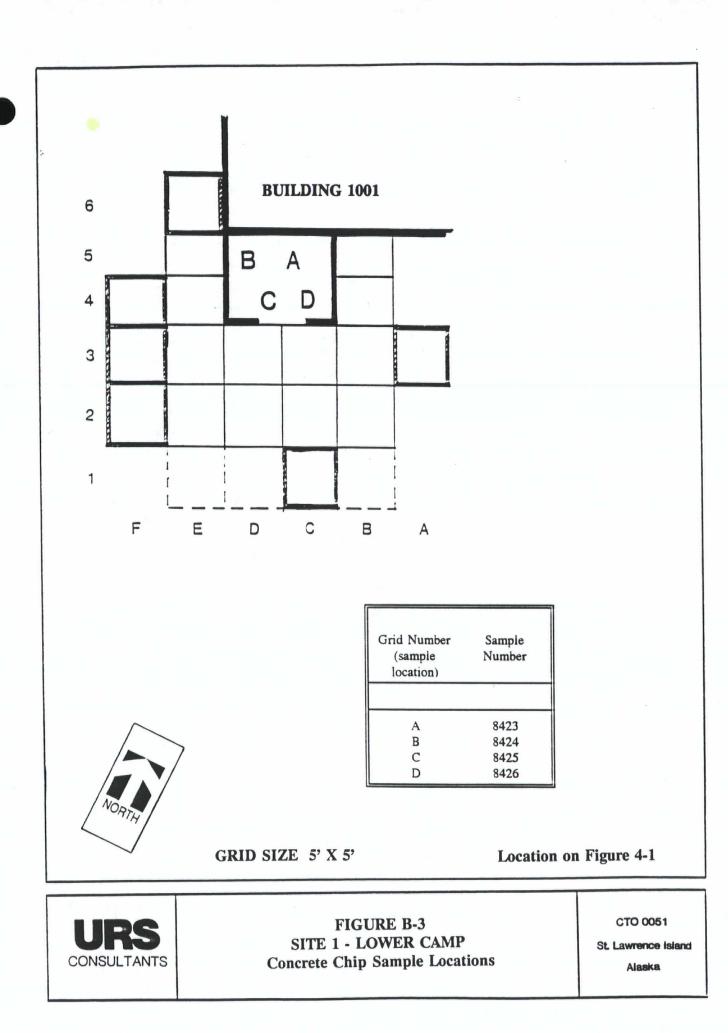
TIC = tentatively identified compound

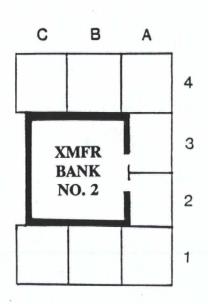
APPENDIX B

CTO #0051 Site Grids and Associated Sample Numbers









BACKGROUND SAMPLE APPROXIMATELY 150'



| Grid Number (sample location) | Sample Number |
|-------------------------------------|------------------|
| | |
| A-1 | 8429 |
| A-2 | 8430 |
| A-3 | 8431 |
| A-4 | 8432 |
| B-1 | 8433 |
| B-4 | 8434 |
| C-1 | 8435 |
| C-4 | 8436 |
| background | 8447 |



GRID SIZE 5' X 5'

Location on Figure 4-2



FIGURE B-4 SITE 2 - LOWER TRAMWAY TERMINAL Soil Sample Locations CTO 0051

St. Lawrence island

| С | в | А | |
|---|---|---|---|
| | | | 4 |
| | | | 3 |
| | В | | 2 |
| | | | 1 |

| Grid Number (sample location) | Sample Number | |
|-------------------------------------|------------------|--|
| A | 8437 | |
| B | 8438 | |



4

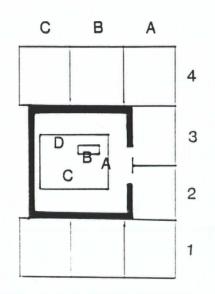
GRID SIZE 5' X 5'

Location on Figure 4-2



FIGURE B-5 SITE 2 - LOWER TRAMWAY TERMINAL Wipe Sample Locations CTO 0051

St. Lawrence Island



| Grid Number (sample location) | Sample ⁻ Number |
|-------------------------------------|-------------------------------|
| AB | 8439 8440 |
| C D | 8441 8442 |



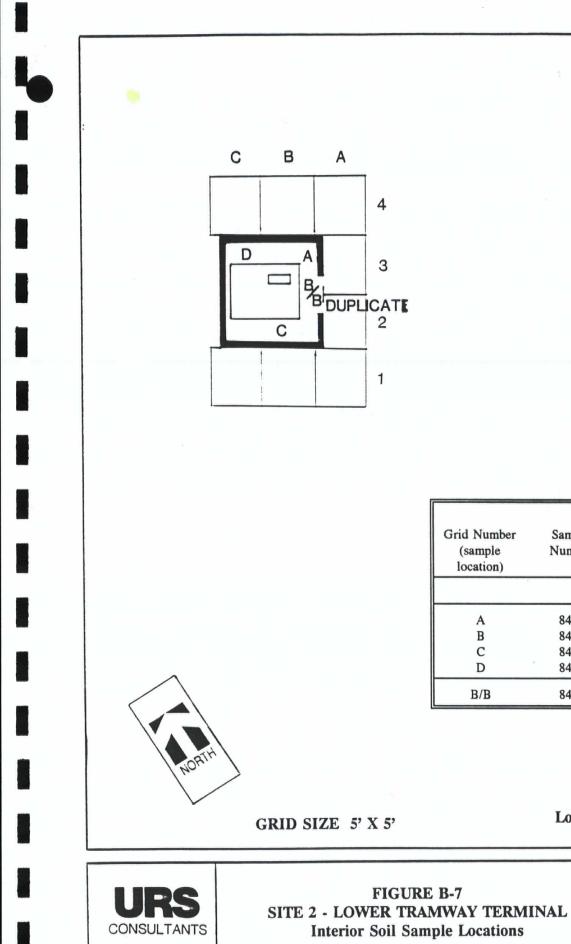
GRID SIZE 5' X 5'

Location on Figure 4-2



FIGURE B-6 SITE 2 - LOWER TRAMWAY TERMINAL Concrete Chip Sample Locations CTO 0051

St. Lawrence island

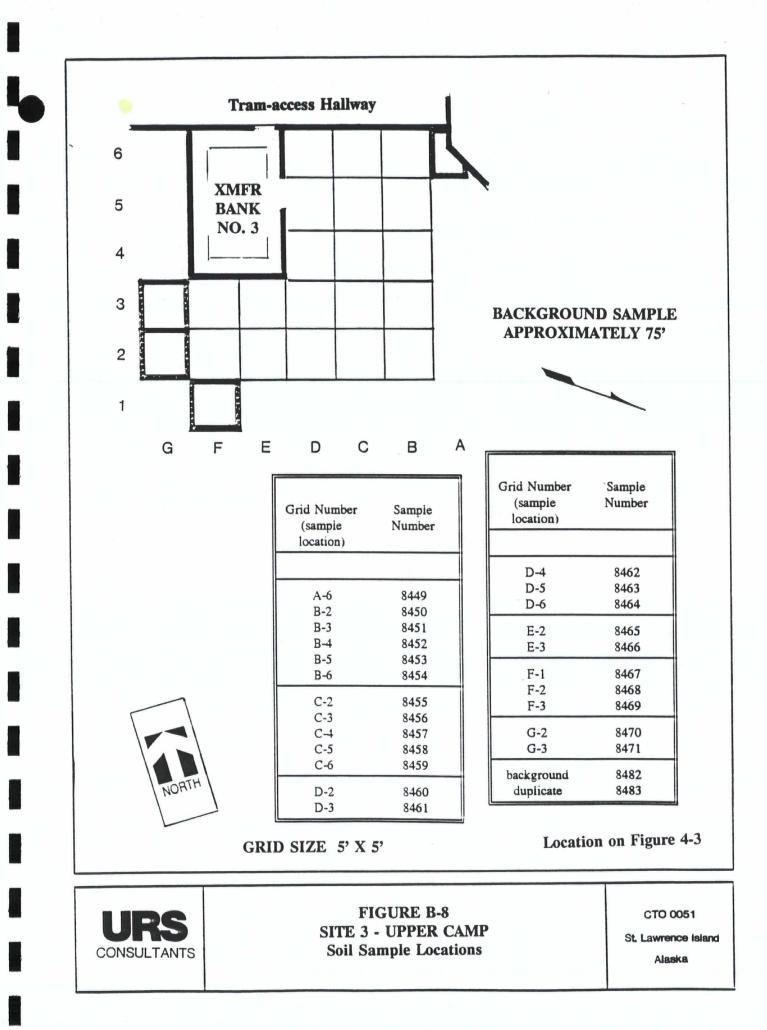


| Sample Number | |
|------------------|------------------------------------------------|
| 8443 | _ |
| 8444 | |
| 8445 | |
| 8446 | |
| 8448 | |
| | Number 8443 8444 8445 8445 8446 |

Location on Figure 4-2

CTO 0051

St. Lawrence Island



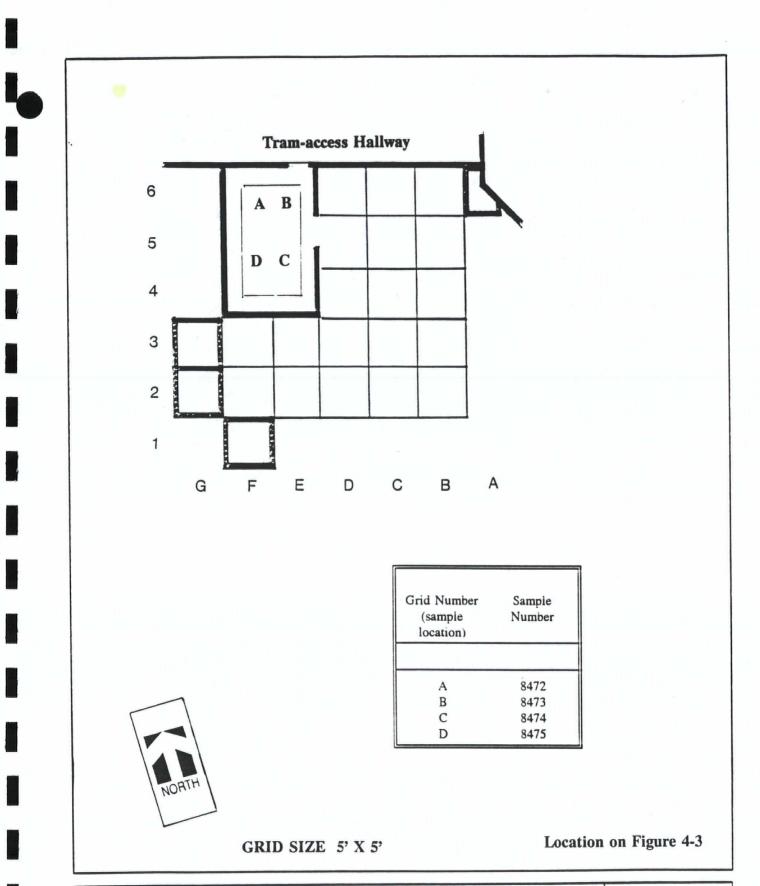
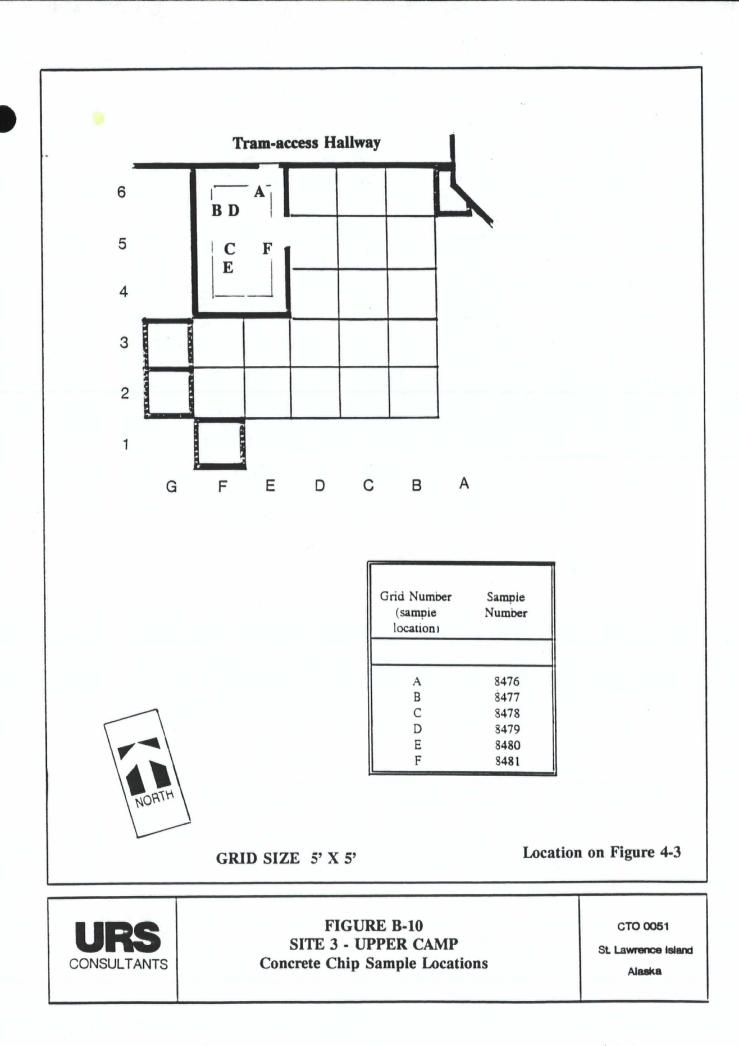
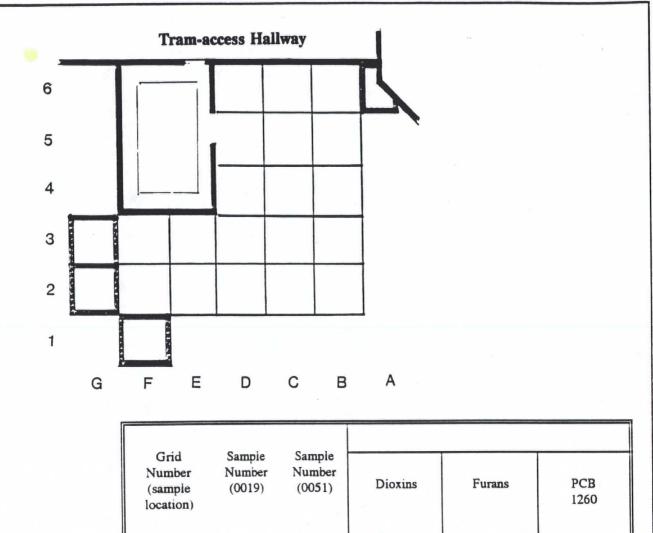




FIGURE B-9 SITE 3 - UPPER CAMP Wipe Sample Locations CTO 0051

St. Lawrence island





| location) | | | | | 1260 |
|------------|------|------|------|-------|--------|
| | | | | (ppb) | 1 |
| A-6 | | 8449 | | | 1400 J |
| B-2 | 2121 | 8450 | 0.46 | | 190 J |
| D-2 D-3 | 2131 | | 1.5 | 0.89 | 85 J |
| D-6 | 2135 | 8464 | 7.8 | 4.3 | |
| F-1 | | 8467 | | | 74 J |
| F-2 | | 8468 | | | 180 J |
| F-3 | 2139 | | 1.5 | 1.1 | |

GRID SIZE 5' X 5'

Location on Figure 4-3



NORTH

FIGURE B-11 SITE 3 - UPPER CAMP Dioxin, Furan and PCB Comparison CTO 0051

St. Lawrence island

APPENDIX C

CTO #0051 Contaminant Distribution by Sample Number

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Table C-1 (page 1 of 3) White Alice Site (Lower Camp), Northeast Cape Detected Contaminants by Sample Number

| СТО #0051 | | LOCATION: | ST. LAWRENCE ISLAND, ALASKA |
|---------------|--------------|----------------------|--------------------------------|
| SAMPLE NUMBER | ANALYTE | DETECTED QUANTITY | MATRIX |
| 8401 | Aroclor 1260 | 660 J | s |
| 8402 | Aroclor 1260 | 1,100 J | S |
| 8403 | Aroclor 1260 | 1,700 J | S |
| 8404 | Aroclor 1260 | 490 J | S |
| | TIC | 14 J | S |
| 8405 | Aroclor 1260 | 480 J | S |
| | TIC | 7 J | S |
| 8406 | Aroclor 1260 | 1,000 J | S |
| 8407 | Aroclor 1260 | 980 J | s |
| | 2 TICs | 13 J, 6 J | s |
| 8408 | Aroclor 1260 | 790 J | s |
| | 20 TICs | 12 to 170 J | s |
| 8409 | Aroclor 1260 | 730 J | s |

nd = non detected

J,R = lab validation qualifiers

Appendix C Revision No.: 0 Date: April 27, 1992 Page 2

Table C-1 (page 2 of 3)White Alice Site (Lower Camp), Northeast CapeDetected Contaminants by Sample Number

| CTO #0051 | | LOCATION: | ST. LAWRENCE ISLAND, ALASKA | |
|---------------|--------------|----------------------|--------------------------------|--|
| SAMPLE NUMBER | ANALYTE | DETECTED QUANTITY | MATRIX | |
| | TIC | 16 J | S | |
| 8410 | Aroclor 1260 | 960 J | S | |
| | 13 TICs | 7 to 28 J | S | |
| 8411 | Aroclor 1260 | 340 J | S | |
| 8412 | Aroclor 1260 | 1,200 J | S | |
| | 20 TICs | 6 to 100 J | S | |
| 8413 | Aroclor 1260 | 200 J | s | |
| | TIC | 10 J | s | |
| 8414 | Aroclor 1260 | 1,600 J | S | |
| 8415 | Aroclor 1260 | 1,000 J | s | |
| | 6 TICs | 4 to 17 J | s | |
| 8416 | Aroclor 1260 | 920 J | s | |
| 8417 | Aroclor 1260 | 190 J | S | |

nd = non detected

J, R = lab validation qualifiers

Appendix C Revision No.: 0 Date: April 27, 1992 Page 3

Table C-1 (page 3 of 3) White Alice Site (Lower Camp), Northeast Cape Detected Contaminants by Sample Number

| CTO #0051 | | LOCATION: | ST. LAWRENCE ISLAND, ALASKA | |
|---------------|--------------|----------------------|--------------------------------|--|
| SAMPLE NUMBER | ANALYTE | DETECTED QUANTITY | MATRIX | |
| | 14 TICs | 10 to 92 J | S | |
| 8418 | Aroclor 1260 | 250 J | S | |
| | TIC | 4 J | S | |
| 8419 | Aroclor 1260 | 64,000 J | w | |
| 8420 | Aroclor 1260 | 2,000 J | w | |
| 8421 | Aroclor 1260 | 3,200 J | w | |
| 8422 | Aroclor 1260 | 73,000 J | w | |
| 8423, 24, 25 | Aroclor 1260 | 470,000 J | с | |
| 8426 | | nd | c | |
| 8427 | Aroclor 1260 | 90 J | bkgds | |
| | TIC | 7 J | | |
| 8428 | Aroclor 1260 | 870 J | dup s | |

nd = non detected

J, R = lab validation qualifiers

Appendix C Revision No.: 0 Date: April 27, 1992 Page 1

Table C-2 (page 1 of 2)Lower Tram Site, Northeast CapeDetected Contaminants by Sample Number

| СТО #0051 | | LOCATION: | ST. LAWRENCE ISLAND, ALASKA | |
|---------------|------------------------|----------------------|--------------------------------|--|
| SAMPLE NUMBER | ANALYTE | DETECTED QUANTITY | MATRIX | |
| 8429 | TIC | 10 J | S | |
| 8430 | | nd | s | |
| 8431 | | nd | S | |
| 8432 | | nd | S | |
| 8433 | 1,1,1,-Trichloroethane | 1 J | S | |
| 8434 | | nd | S | |
| 8435 | | nd | S | |
| 8436 | | nd | S | |
| 8437 | Aroclor 1260 | 2,100 J | w | |
| 8438 | Aroclor 1260 | 1,800 J | w | |
| 8439 | | nd | с | |
| 8440 | Aroclor 1260 | 330 J | с | |
| 8441 | | nd | c | |

nd = non detected

J, R = lab validation qualifiers

s = soil matrix, w = wipe, c = chip

TABLE51.C-2

Appendix C Revision No.: 0 Date: April 27, 1992 Page 2

Table C-2 (page 2 of 2)Lower Tram Site, Northeast CapeDetected Contaminants by Sample Number

| CTO #0051 | | LOCATION: | ST. LAWRENCE ISLAND, ALASKA | |
|---------------|--------------|----------------------|--------------------------------|--|
| SAMPLE NUMBER | ANALYTE | DETECTED QUANTITY | MATRIX | |
| 8442 | Aroclor 1260 | 390,000 J | с | |
| 8443 | Aroclor 1254 | 180 J | S | |
| 8444 | | R | S | |
| 8445 | Aroclor 1260 | 130 J | S | |
| 8446 | | nd | S | |
| 8447 | | nd | bkgd s | |
| 8448 | | R | dup s | |

nd = non detected

J, R = lab validation qualifiers

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Table C-3 (page 1 of 3)Top Camp Site, Northeast CapeDetected Contaminants by Sample Number

| СТО #0051 | | LOCATION: | ST. LAWRENCE ISLAND, ALASKA |
|---------------|-------------------|----------------------|--------------------------------|
| SAMPLE NUMBER | ANALYTE | DETECTED QUANTITY | MATRIX |
| 8449 | Aroclor 1254 | 1,400 JP | S |
| 8450 | Aroclor 1260 | 190 J | S |
| 8451 | Aroclor 1254 | 410 J | S |
| 8452 | Aroclor 1254 | 150 J | S |
| 8453 | Aroclor 1254 | 220 J | S |
| 8454 | Aroclor 1254 | 790 J | S |
| 8455 | Aroclor 1260 | 88 J | S |
| | TIC | 45 J, 16 J | S |
| 8456 | TIC | 20 J, 5 J | S |
| 8457 | Aroclor 1254 | 54 J | S |
| 8458 | Aroclor 1254 93 J | | S |
| | 3 TICs | 5 to 33 J | s |
| 8459 | Aroclor 1254 | 230 J | S |

nd = non detected

J, R = lab validation qualifiers

Appendix C Revision No.: 0 Date: April 27, 1992 Page 2

Table C-3 (page 2 of 3)Top Camp Site, Northeast CapeDetected Contaminants by Sample Number

| СТО #0051 | | LOCATION: | ST. LAWRENCE ISLAND, ALASKA |
|---------------|--------------|----------------------|--------------------------------|
| SAMPLE NUMBER | ANALYTE | DETECTED QUANTITY | MATRIX |
| 8460 | | nd | s |
| 8461 | Aroclor 1260 | 85 J | S |
| 8462 | Aroclor 1254 | 67 J | S |
| 8463 | Aroclor 1254 | 74 J | S |
| 8464 | Aroclor 1254 | 65 J | S |
| 8465 | Aroclor 1254 | 63 J | S |
| 8466 | Aroclor 1260 | 57 J | S |
| 8467 | Aroclor 1254 | 74 J | S |
| 8468 | Aroclor 1254 | 180 J | S |
| 8469 | | nd | S |
| 8470 | | nd | S |
| 8471 | TIC | 7 J, 7 J | S |
| 8472 | | nd | w |

nd = non detected

J, R = lab validation qualifiers

Appendix C Revision No.: 0 Date: April 27, 1992 Page 3

Table C-3 (page 3 of 3)Top Camp Site, Northeast CapeDetected Contaminants by Sample Number

| СТО #0051 | | LOCATION: | ST. LAWRENCE ISLAND, ALASKA | |
|---------------|--------------|----------------------|--------------------------------|--|
| SAMPLE NUMBER | ANALYTE | DETECTED QUANTITY | MATRIX | |
| 8473 | | nd | w | |
| 8474 | | nd | w | |
| 8475 | Aroclor 1260 | 2,200 J | w | |
| 8476 | | R | с | |
| 8477 | | nd | с | |
| 8478 | | R | с | |
| 8479 | | R | с | |
| 8480 | | R | с | |
| 8481 | | R | с | |
| 8482 | Aroclor 1254 | 140 J | bkgd s | |
| | 3 TICs | 12 to 20 J | | |
| 8483 | Aroclor 1260 | 97 J | dup s | |

nd = non detected

J, R = lab validation qualifiers

APPENDIX D

CTO #0051 Laboratory Sample Validation Reports



RECEIVED DEC 3 0 1991 AS/ST/DV

SILVER SPRING CHICAGO DENVER DETROIT GRAND RAPIDS

DOCUMENT NO .: 068NCODS .RVW

ORGANICS DATA REVIEW SUMMARY - NEESA LEVEL C

| Case No URS TDCN 300 | 01436 Project No |
|------------------------------------------------------------|------------------------------------|
| Site Name <u>St. Lawrence Island, AK</u> | Project Name <u>N.E. Cape</u> |
| Contract Laboratory Eureka Laboratories | s, Inc. |
| Sample Delivery Group (SDG) <u>8401</u> Sample | Ling Date (Month/Year) 8/91 |
| Sample Matrix 20 low level soils | |
| Type of Analyses <u>Volatile Organics</u> , Pestic | ide/PCB (see page 2) |
| 14 Jun | 1-1 |
| Data Reviewer Roger Simon/Alan Alai | Date) 2-/28/91 |
| QA Review by Jeralyn Guthrie | Date 12/28/91 |
| QA Review by | Date2/2.8/91 |
| Telephone logs/correspondence attached? Yes | · · · · · |
| Laboratory case narrative attached? Yes | X No Not Avail |
| Required deliverables provided? Yes | No X Not Appl. |
| Airbill enclosed? Yes | X No Not Avail |
| CLP SOW used by laboratory for analysis | 3/90 |
| Remarks: <u>Report is based on resubmissions</u> as final. | (rec'd 12/19/91) and is considered |

Note:

- -- The Level C Data Validation Guidelines as specified by NEESA in the Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Restoration Program, NEESA 20.2-047B, June, 1988, the EPA's Functional Guidelines for Organics Analysis and method specific references have been used by the data reviewer as a basis for reviewing the data and applying flags, except as specifically noted in review comments.
- -- Please see data flagging definitions on the last page of this report.

(Revised 12/91) C.C. JOHNSON & MALHOTRA, P.C. 215 UNION BOULEVARD, SUITE 215 • LAKEWOOD, COLORADO 80228 • (303) 987-2928

| Sample Number | Sample <u>Matrix</u> | VOA | Pest/PCB | |
|------------------|-------------------------|-----|----------|--|
| | | | | |
| 8401 | soil | Х | х | |
| 8402 | soil | x | Х | |
| 8403 | soil | Х | х | |
| 8404 | soil | х | х | |
| 8405 | soil | х | х | |
| 8406 | soil | Х | х | |
| 8407 | soil | Х | Х | |
| 8408 | soil | Х | Х | |
| 8409 | soil | X | х | |
| 8410 | soil | Х | х | |
| 8411 | soil | Х | х | |
| 8412 | soil | х | Х | |
| 8413 | soil | х | Х | |
| 8414 | soil | х | Х | |
| 8415 | soil | Х | Х | |
| 8469 | soil | Х | x | |
| 8470 | soil | Х | X | |
| 8471 | soil | Х | х | |
| 8482 | soil | Х | х | |
| | (continued next page) | | | |

X = Analysis has been provided for validation.

0 = Analysis was requested per the Chain of Custody, however, no data was received for validation.

- = Analysis was not requested per the Chain of Custody or required to meet criteria.

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| (continue) Sample | d from page 2) Sample | | | |
|----------------------|--------------------------|-----|----------|--|
| <u>Number</u> | Matrix | VOA | Pest/PCB | |
| | | | | |
| 8483 | soil | Х | Х | |
| 8411MS | soil | Х | | |
| 8411MSD | soil | Х | | |
| 8410MS | soil | | х | |
| 8410MSD | soil | | х | |
| | | | | |
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- X = Analysis has been provided for validation.
- 0 = Analysis was requested per the Chain of Custody, however, no data was received for validation.
- = Analysis was not requested per the Chain of Custody or required to meet criteria.

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Deliverables

I.

All data deliverables as specified for NEESA Level C quality control were found in the package.

Yes No X

Comments: The following Level C Data Deliverables Checklist shows the Forms and data found in the package.

LEVEL C DELIVERABLES COMPLETENESS CHECKLIST - ORGANICS

KEY

X Included in package

0 Not included and/or Not available

NA Not applicable or Not required

<u>RS</u> Provided as resubmission

- X Method blank spikes with each batch
 - X/O Control chart developed by lab
- X Sample results Form 1 or spreadsheet
 - X/O CLP data flags used by laboratory
 - X_____ Sample chromatograms and mass spectra
- X/RS Holding times (sampling, prep and analysis dates provided)
- X System Monitoring Compound (SMC) and Surrogate recoveries Form 2
- X Matrix spike/matrix spike duplicate (MS/MSD) Form 3 (MS/MSD is to be 1 per 20 samples of similar matrix)
- X Method blank summary Form 4
- X Report form for method blank results (Form 1 or spreadsheet) X GC/MS tuning - Form 5
- X Initial calibration data and Resolution Summary Form 6
- X Continuing calibration data and Verification Summary Form 7
- X Internal standard area summary and analytical sequence, Form 8
- X Pesticide Florisil Cartridge Check and GPC Calibration

II. Holding Times

Samples were extracted and analyzed within holding times specified by the NEESA data validation guidelines or SW846 holding time requirements. See the following table for a summarization of sample holding times.

Yes ____ No _X_

Comments: An asterisk and number in parentheses indicate a sample fraction outside holding time specifications and the number of days exceeded based on the date sampled. Sample data for any fraction exceeding holding time specifications are flagged as estimated (J or UJ).

| Sample Sampling | | | VOA | | icide |
|-----------------|---------|------|----------|----------|----------|
| Number | Date | VISR | Analysis | Extract | Analysis |
| | | | | | |
| 8401+ | 8/23/91 | 8/27 | 9/04 | 9/4 (*5) | 10/01 |
| 8402+ | 8/23/91 | 8/27 | 9/04 | 9/4 (*5) | 10/01 |
| 8403+ | 8/23/91 | 8/27 | 9/04 | 9/4 (*5) | 10/01 |
| 8404+ | 8/23/91 | 8/27 | 9/04 | 9/4 (*5) | 10/01 |
| 8405+ | 8/23/91 | 8/27 | 9/04 | 9/4 (*5) | 10/01 |
| 8406+ | 8/23/91 | 8/27 | 9/04 | 9/4 (*5) | 10/01 |
| 8407+ | 8/23/91 | 8/27 | 9/04 | 9/4 (*5) | 10/01 |
| 8408+ | 8/23/91 | 8/27 | 9/04 | 9/4 (*5) | 10/01 |
| 8409+ | 8/23/91 | 8/27 | 9/04 | 9/4 (*5) | 10/01 |
| 8410+ | 8/23/91 | 8/27 | 9/04 | 9/4 (*5) | 10/01 |
| 8410MS | 8/23/91 | 8/27 | 9/04 | | |
| 8410MSD | 8/23/91 | 8/27 | 9/04 | | |
| 8411+ | 8/23/91 | 8/27 | 9/04 | 9/4 (*5) | 10/01 |
| 8411MS | 8/23/91 | 8/27 | 9/04 | 9/4 (*5) | 10/01 |
| 8411MSD | 8/23/91 | 8/27 | 9/04 | 9/4 (*5) | 10/01 |
| 8412+ | 8/23/91 | 8/27 | 9/04 | 9/4 (*5) | 10/01 |
| 8413*** | 8/23/91 | 8/28 | 9/05 | 9/4 (*5) | 10/01 |
| 8414*** | 8/23/91 | 8/28 | 9/05 | 9/4 (*5) | 10/01 |
| 8415*** | 8/23/91 | 8/28 | 9/05 | 9/4 (*5) | 10/01 |
| 8469 | 8/23/91 | 8/27 | 9/05 | 9/4 (*5) | 10/01 |
| 8470 | 8/23/91 | 8/27 | 9/05 | 9/4 (*5) | 10/01 |
| 8471 | 8/23/91 | 8/27 | 9/05 | 9/4 (*5) | 10/01 |
| 8482+ | 8/23/91 | 8/27 | 9/04 | 9/4 (*5) | 10/01 |
| 8483+ | 8/23/91 | 8/27 | 9/04 | 9/4 (*5) | 10/01 |

Holding Time Summary

+ COC's provided as resubmission

- ** all analyses with exception of samples 8413, 8469, 8470, 8471, 8482 and 8483 were analyzed at dilution.
- *** dates taken from COC's included with package 8416.

III. GC/MS Tuning and Mass Calibration

The BFB and/or DFTPP performance results summaries were included for all samples, and were reported to be within specified criteria at the appropriate frequency.

Yes X No _____

Comments: In the original submisssion, calculation of the mass ratios for masses 177 / 176 for all tunes in the package (7/19, 9/4 and 9/5) were incorrect. Instead of 100%, these values should be 8.0%, 7.9% and 6.9%, respectively. The laboratory has provided the corrected Forms 5A for these dates.

IV. A. Instrument Calibration (Volatiles)

1. The instrument response factor (RRF) data summaries were reviewed for the initial and continuing calibrations. All information was present and reported on the required summary forms. Response factors met the required criteria for volatile analyses, thus no data have been qualified.

Yes ____ No _X_

Comments: The RRF values outside of data validation guideline specifications are listed below. All volatile compounds have been reviewed with a control limit of 0.050 being used as a minimum response factor. (NOTE: This procedure has been used by the reviewer in order to prevent the qualification of compounds that had acceptable response factors.) The following out-of-control calibration compound(s) have resulted in associated sample data being flagged as estimated (J or UJ) or in those instances where a response factor of <0.050 was reported the data for the compound has been rejected (R) if reported as undetected in the sample. All samples are affected.

| Other Compounds | Control Limit | Init. Cal. Date / RRF | |
|-----------------|------------------|--------------------------|------------|
| 2-butanone | 0.050 | 7-19 /0.049 | 9-5 /0.049 |

It is noted by the reviewer that 2-butanone has a minimum RRF of 0.010 according to SOW 3/90. While contractually compliant, a significant calibration problem is demonstrated and all 2-butanone results have been qualified per Functional Guidelines criteria.

2. The percent relative standard deviation (%RSD) for the initial calibrations and the percent difference (%D) for the continuing calibrations were reviewed. The %RSD and %D values reported met the data validation criteria (i.e., < 30 %RSD and < 25 %D) for volatile analyses, thus no data have been qualified.

Yes X No _____

Comments: No comments.

B. Instrument Calibration (Pesticide/PCB)

1. The percent relative standard deviation (%RSD) of the calibration factors in the initial calibration for the single component target compounds are all less than 30.0%. All appropriate information was provided and no more than two single component target compounds exceed 20.0 %RSD.

Yes X No

Comments: No comments.

2. The resolution of adjacent peaks, as specified in the method, were found to be greater than 60%. Compounds required to meet resolution criteria are indicated on Table 1-P.

Yes X No ____

Comments: No comments.

3. The percent difference (shown as RPD on Form 7D) for the calibration verifications of the PEM compounds were found to be less than 25%. All the appropriate information was provided.

Yes ____ No _X_

Comments: Those compounds which did not meet the specified criteria and qualifiers are summarized on Table 1-P. Samples 8411MS, 8411MSD and 8417 were not bracketed at the end of the analytical sequence on 10/06/91, DB-1701. No calibration summary data was provided for the required PEM standard.

4. The pesticide calibration verifications of the Individual Mixes A and B had percent differences (shown as RPD on Form 7E) of less than 25% for all compounds. All of the appropriate information was provided.

Yes ____ No _X_

Comments: Those compounds which did not meet the specified criteria and qualifiers are summarized on Table 1-P. All pesticide/PCB data is qualified on the basis of holding times, and no additional qualifiers have been applied.

All retention times for all compounds for the PEM, INDA and INDB solutions met required criteria.

Yes ____ No _X_

5.

Comments: The retention times for tetrachloro-m-xylene (TCX) and decachlorobiphenyl did not meet the specified criteria as stated in the SOW. This deficiency for the continuing calibration standards is considered to be non-compliant with SOW-3/90. No additional qualifiers were applied to the sample data.

6. The breakdown of 4,4'-DDT and endrin was less than 20% for all PEM analyses, and the combined breakdown was less than 30%.

Yes ____ No _X_

Comments: The following breakdown criteria were not met:

| | | 00 | Break | down | Affected |
|------------------------|--------|----------|--------|-----------|---------------------------------------------------------------------------------------------|
| <u>Calibration</u> | Column | 4,4'-DDT | Endrin | Combined | Samples |
| Initial, 09/27/91 | DB-608 | -/- | -/- | 30.8 | all |
| Continuing 09/30/91 | DB-608 | -/- | -/- | 32.5/41.0 | 8469, 8470, 8471, 8482, 8483, 8401DL, 8402DL, 8403DL, 8404DL, 8405DL, 8406DL |

(Revised 12/91)

8

| <u>Calibration</u> | Column | 4,4'-DDT | <u>Endrin</u> | down Combined | Affected <u>Samples</u> |
|---------------------|---------|----------|---------------|------------------|----------------------------|
| Initial 10/02/91 | DB-1701 | -/- : | 30.6/32.6 | 30.6/35.2 | all |
| Continuing | DB-1701 | -/- | /62.8 | /62.8 | all |

No additional qualifiers have been applied to the sample data on the basis of DDT or endrin breakdown.

7. The florisil cartridge check and when applicable, the GPC calibration were found to be within specified criteria.

Yes X No

Comments: No comments.

8. The retention times for the surrogates were within criteria for every sample.

Yes ____ No _X_

Comments: An asterisk (*) on the following table indicates that the surrogate retention time was outside the established retention time windows. The reviewer considers this deficiency to be non-compliant with 3/90 SOW specifications. No additional qualifiers have been applied.

Y

Form C-N

| Sample No. | TCX 1 | TCX 2 | DCB 1 | DCB 2 |
|------------|-------|-------|-------|-------|
| 8401DL | | * | | * |
| 8402DL | | * | | * |
| 8403DL | | * | | |
| 8404DL | | * | | |
| 8405DL | | * | | |
| 8406DL | | | | * |
| 8407DL | | * | | |
| 8408DL | | * | - | |
| 8409DL | | * | | |
| 8410DL | | * | | 11 |
| 8411DL | | | | |
| 8411MS | | * | | |
| 8411MSD | | * | | |
| 8412DL | | * | | * |
| 8413 | | | | * |
| 8414DL | | * | | |
| 8415DL | | * | | * |
| 8469 | | * | * | * |
| 8470 | | * | * | * |
| 8471 | | * | * | * |
| 8482 | | * | * | * |
| 8483 | | * | * | * |
| PBLK1 | | * | * | * |

(Revised 12/91)

10

V. <u>Blanks</u>

A. Method Blank - The blank analyses summaries were reviewed. The frequency of method blank extractions and analysis and the contaminants reported in blank samples were all within specified limits.

Yes ____ No _X_

Comments: Contaminant quantities reported in the laboratory preparation blanks are listed below. Associated samples which have been flagged "U" due to the blank contaminants are also shown.

| Blank ID | Compound | (µq/kq) | Samples |
|--------------|---------------------|---------|---------|
| VBLK1, VBLK2 | methylene chloride | 7,8 | all |
| VBLK1 | unknown (RT = 21.2) | 3 | * |
| VBLK1 | unknown (RT = 22.9) | 6 | * |

- * Indeterminable since retention times were reported to tenths rather than hundredths.
- B. Trip Blank The associated trip/travel blank(s) contained contaminants which affected samples in the package.

Yes ____ No ____ Not Identified _____

Comments: No trip blank was included with this package.

C. Other Blanks - No other types of blanks have been identified in the data package.

VI. Surrogate and System Monitoring Compound Recovery

The surrogate and system monitoring compound recovery summaries were reviewed. The recoveries were all reported to be within specified CLP QC criteria.

Yes ____ No _X_

Comments:

- 1. Samples reported to have surrogate recoveries outside specified CLP criteria are summarized on the attached Tables 1 and 2. Data flags, when necessary, are indicated on Table 2.
- 2. The reviewer has included the pesticide/PCB method blank on Table 2. The recovery for decachlorobiphenyl (330%) in the method blank (PBLK1) is considered by the reviewe, to be indicative of a serious problem.

VII. Blank Spike - Laboratory Control Sample(s)

A. Blank spike analyses (i.e., method blanks spiked with surrogates for volatiles and semivolatiles) were performed with each sample batch in the data package and were reported to be within laboratory control limits or within CLP established control limits.

Yes X No _____

Comments:

- 1. The compounds used for the Pesticide/PCB blank spike were the matrix spike compounds. Laboratory control limits have been applied by the reviewer.
- 2. The blank spike for volatile analysis was spiked with the matrix spike compounds. Matrix spike control limits have been applied by the reviewer.

B. Laboratory control charts were provided in the package for the spike compounds.

Yes No X

Comments: Laboratory control charts provided for the volatile LCS were for volatile surrogate compounds, not TCL's.

VIII. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

The matrix spike and matrix spike duplicate recovery summary data were reviewed. The spiking procedures were performed and met all recommended QC specifications.

Yes ____ No _X_

Comments:

- 1. Sample 8410 was used for VOA MS/MSD. Sample 8411 was used for Pesticide/PCB MS/MSD.
- 2. The following spike analytes were reported to be outside limits; however no additional qualifiers were applied:

| Analyte | % Recovery <u>MS / MSD</u> | RPD | Control Limits <u>% Rec. / RPD</u> |
|----------|-------------------------------|-----|---------------------------------------|
| endrin | 147 / 109 | 29 | 42-139 / 45 |
| dieldrin | 104 / 164 | 45 | 31-134 / 38 |
| 4,4'-DDT | 180 / 164 | 9 | 23-134 / 50 |

IX. Additional Comments

- 1. It was noted by the reviewer that CRDL's have not been adjusted to SOW 3/90 levels for most VOA compounds.
- 2. The Form 4 blank summary incorrectly showed samples associated with VBLK1 as being with VBLK2 and vice versa.

- 3. The internal standard (IS3) for sample 8408 was lower than the required control limits. Since this analytical value is not part of the NEESA validation criteria, no action has been taken by the reviewer.
- 4. Several contract requirements were not met by the laboratory for the Pesticide/PCB analysis. These deficiencies are noted in the following sections: Section IV.B.4, Section IV.B.6, Section IV.B.7, and Section VI.
- 5. The laboratory reported the higher of the two values from the two pesticide/PCB analysis columns. This procedure is specifically not allowed as stated in the 3/90 SOW.
- 6. No "C" flags were used by the laboratory to indicate whether GC/MS confirmational analyses were performed for the pesticide/PCB values that were sufficiently high for GC/MS detection.

EXPLANATION OF ORGANICS DATA FLAGS

For the purposes of this data review document the following code letters and associated definitions are provided:

- U The material was analyzed for, but was not detected. The associated numerical value is the estimated detection limit.
- R Quality Control indicates that data is not usable (i.e., compound may or may not be present). Resampling and re-analysis would be necessary to determine the presence or absence of the analyte in the sample.
- J The associated numerical value is an estimated quantity because quality control criteria were not met or because the amount detected is below the detection limits required by analytical Statement of Work. The laboratory uses this flag in the latter situation.
- B The laboratory uses this flag when the reported analyte was also found in the method blank. Data validation guidelines do not specify the use of this flag.
- JN Tentative identification of a compound at an estimated concentration. Resampling and re-analysis would be necessary for verification.



SILVER SPRING CHICAGO DENVER DETROIT GRAND RAPIDS

C.C.J.M.

FILE

MEMORANDUM

TO:

FROM:

Jamie Bruton, URS/Seattle COPY Roger Simon, Jeralyn Guthrie, Richard Cheatham, CCJM/Denver

DATE:

December 5, 1991

DOCUMENT NO:

SUBJECT:

Volatile Organics Tuning Problems for CTO-051

Per our conversation of 12/5/91, please find herein a detailed description of tuning problems found with all volatile organics analyses performed at Eureka Laboratories for CTO-051. These data packages are considered "on hold" until these issues have been resolved. Data packages have been identified by TDCN numbers and SDG.

- 1. For all CTO-051 data packages with volatile organics analyses (SDG 8449/TDCN 3001421, SDG 8484/TDCN 301210, SDG 8401/TDCN 3001436 and SDG 8416/TDCN 3001439), the values reported for the percent relative abundance of masses 177/176 were incorrectly reported as 100% on the Form V Tuning Summaries. This appeared to be a computer error since calculation of this ratio by the reviewer resulted in acceptable tunes. The laboratory should provide corrected summary forms.
- 2. In SDG 8484/TDCN 3001210, the relative abundance for masses 176/174 was reported and found by the reviewer to be 119.4%. Since there is no expanded criteria for this critical ratio, all data will have to be qualified as unusable (R); raw data to verify the values reported on the Form V Tuning Summary were not included with the Level C data package, so it could not be determined whether the reported ratio was a transcription problem with the base mass percentages reported for m/z 174 and 176, software problem or something else. Please indicate if a calculation/transcription problem existed and provide a corrected summary form or the correct values for masses 176 and 174.

If you should have any questions, please do not hesitate to call us at (303) 987-2928.

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cc: URS / Navy Clean PF C.C. JOHNSON & MALHOTRA, P.C.

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I. SDG NARRATIVE

 Laboratory Name: Eureka Laboratories, Inc. Lab Certification Number: E765
 SDG Number: 8401
 Purchase Order Number: AN-91-P-0019
 Contract Task Order Number: 0051
 NEESA QA/QC Level C
 Analysis: Initial
 Sample No.: 20

URS TDM 3001436

A. Sample Description/Analytical Description

| <u>Client</u> ID | <u>Lab ID</u> | Date Sampled | Date Received | Matrix | Analysis/Method |
|--------------------------------------|-------------------------------------------------------------------------|----------------------------------------------------------------------|----------------------------------------------------------|--------------------------------------|-----------------------------------------------------------------------------------|
| 8401 | 9108213-11A | 08/23/91 | 08/27/91 | Soil | VOA/3-90 CLP SOW P/PCBs/3-90 CLP SOW |
| 8402 8403 8404 8405 8406 | 9108214-12A 9108214-13A 9108214-14A 9108214-15A 9108214-16A | 08/23/91 08/23/91 08/23/91 08/23/91 08/23/91 | 08/27/91 08/27/91 08/27/91 08/27/91 08/27/91 | Soil Soil Soil Soil Soil | Same as above Same as above Same as above Same as above Same as above |
| 8407 8408 8409 8410 8411 | 9108214-17A 9108214-18A 9108214-19A 9108214-20A 9108214-21A | 08/23/91 08/23/91 08/23/91 08/23/91 08/23/91 | 08/27/91 08/27/91 08/27/91 08/27/91 08/27/91 | Soil Soil Soil Soil Soil | Same as above Same as above Same as above Same as above Same as above |
| 8412 8413 8414 8415 | 9108214-22A 9108219-1A 9108219-2A 9108219-3A | 08/23/91 08/23/91 08/23/91 08/23/91 08/23/91 | 08/27/91 08/28/91 08/28/91 08/28/91 | Soil Soil Soil Soil | Same as above Same as above Same as above Same as above |
| 8469 8470 8471 8482 8483 | 9108213-21A 9108213-22A 9108213-23A 9108214-8A 9108214-9A | 08/23/91 08/23/91 08/23/91 08/23/91 08/23/91 08/23/91 | 08/27/91 08/27/91 08/27/91 08/27/91 08/27/91 | Soil Soil Soil Soil Soil | Same as above Same as above Same as above Same as above Same as above |

B. Sample Receipt

Samples were received in two delivery batches on August 27 and 28, 1991. Samples were in good condition. Sample receipt condition, sample receipt temperature, and method of shipment are noted in the sample receipt check list and DHL air bill. There were no observed problems or discrepancies among Chain-of-custody forms, sample containers, and contract requirements in ELI Order Numbers 91-08-213, 91-08-214, and 91-08-219.

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C. Quality Control Report

1. Volatile Analysis by 3/90 CLP SOW

Method Blank

Mythylene Chloride, a common laboratory introduced contaminant, was found in the method blank as well as in the sample. The concentration of Methylene Chloride found in the method blanks was 7 and 8 ppb (ug/Kg) as compared to 11-18 ppb (ug/Kg) detected in the samples. Therefore, if the blank is subtracted from the sample, the real concentration of Methylene Chloride in the samples would be below the detection limit.

Internal Standard

The area count of internal standard (Chlorobenzene-d5) is out of the control limit for Sample No. 8408. However, the area counts of other internal standards are within the control limits.

Completeness

All analytical and QA/QC data are within the control and detection limits and meet the 95% completeness criteria.

2. Pesticide/PCB by 3/90 CLP SOW

Higher CRQL for Sample No. 8401, 8402, 8403, 8404, 8405, 8406, 8407, 8408, 8409, 8410, 8411, 8412, 8414, and 8415 is due to high analyte concentration.

Analysis Data Sheet

PCB concentration values presented on Form I Pest were different than the PCB concentration values calculated in the manual worksheet. This is due to (1) Telecation Software used the Response Factor for the 0.1 ppm standards of the Aroclors analyzed in the initial calibration. (2) ELI manual worksheet used the response factors for 2 ppm standards of the Aroclors which were analyzed after the sample analyses and used for confirmation per 3/90 CLP SOW.

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Chromatogram

Due to the absence of auto scaling capability in the gas chromatograph (GC) used for the analysis, the following criteria for acceptance of chromatograms per 3/90 CLP SOW cannot be met:

- i. Chromatogram peaks for initial calibration standard mixtures A and B at display are required to be less than 100% of full scale.
- ii. Chromatogram peaks for multi-component analytes at display are required to be greater than 25%.

DDT and Endrin % Breakdown

The % breakdown of combined Endrin and DDT for PEMO2 (Performance Evalutation Mixture #2), PEMO8, and PEM10 from the first column analysis exceeded the limit by 0.8%, 2.5%, and 11% respectively. The % combined breakdown for PEMO1, PEMO2, and PEMO8 from the second column analysis exceeded the limit by 0.6%, 5.2%, and 32.8%.

The % breakdown of Endrin for PEMO1, PEMO2, PEMO4, PEMO6, and PEMO8 from the 2nd column analysis exceeded the limit by 10.6%, 12.6%, 1.4%, 7.8%, and 42.8%. The % breakdown of 4-4'-DDT for PEM10 from the 1st column analysis exceeded the limit by 1.2%.

Calibration Verification

There is a total of fifteen continuing calibration verification (CCV) reported in this package. These CCVs were run after the initial calibration and throughout the analytical sequence.

RPD value of gamma-BHC (Lindane) for PEM10 (Performance Evaluation Mixture #10) from the 1st column analysis, beta-BHC for PEM 04 and alpha-BHC for PEM02 from the 2nd column analysis exceeded the control limit by a margin of 1.1%, 1.1%, and 8.9%.

RPD value of Endrin and DDT for PEM08 from the 2nd column analysis exceeded the control limit by 24.7% and 1.1%.

RPD value of Endosulfan II, Endosulfan sulfate, Endrin Ketone and Endrin Aldehyde for INDAM 05 (Individual Standard Mixture A medium level #5) from the 2nd column analysis exceeded the QC limits by a margin of 1%, 3%, 4%, and 1%.

RPD value of Endrin and DCB for INDAM07 and INDAM09 from the 2nd column analysis exceeded the QC limits by 1% & 30%, and 18% & 5% respectively.

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2nd Column . Confirmation:

DB-17 instead of DB-1701 is used for the second column confirmation for this analysis.

Surrogate Retention Time Window

DCB was slightly outside the Surrogate Retention Time (RT) window in seven analyses for the 1st column analysis. TCX and DCB were slightly ouside the RT window in thirty six and twenty eight analyses respectively for the 2nd column analysis.

Surrogate Recovery

The % recoveries of DCB for Sample Nos. 8411 MS/MSD, 8413, 8469, 8471, 8482, 8483, and PBLK1 from the 2nd column analysis were high due to over integration caused by raised baseline. If peak height is used for the calculation, the spike % recoveries would be within the control limit. The DCB recoveries were out of the advisory limit for Sample No. 8401DL, 8402DL 8403DL, 8404DL, 8405DL, 8406DL, 8407DL, 8408DL, 8409DL, 8410DL, 8411DL, 8412DL, 8414DL, and 8415DL due to high analyte concentrations and dilutions.

Pesticides Identification Summary

A difference of greater than 25% between the first and second column was detected for PCB Aroclors. Per 3/90 CLP SOW, the lower of the two values is to be reported on Form I and flagged with a "P". However, due to constraints of the Telecation software, the higher of the two values was reported on Form I.

Form X is used to summarize the positive analytes, their concentration and % difference for Sample Nos. 8482, 8407DL, and 8402DL.

Matrix Spike and Matrix Spike Duplicate

The % spike recoveries of Endrin and DDT for Sample No. 8411 MS and the % spike recoveries of Dieldrin and DDT for Sample No. 8411 MSD from the 1st column analysis were not within control limits. However, the % spike recoveries of these analytes for the same sample from the 2nd column analysis were 57% & 70% for 8411 MS, and 92% & 73% for 8411 MSD, respectively, which are within the control limits. The high % recoveries was due to over integration caused by the raised baseline. The % recoveries for 8411 MS/MSD presented on form 3F are the higher of the two values. Therefore, the data is still valid.

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Completeness

All analytical and QA/QC data are within the control and detection limits and meet the 95% completeness criteria.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Director or his designee, as verified by the following signature.

Shao-Pin Yo, Ph.D.

Laboratory Director

TABLE 1 (3/90, OLMO1.8)

VOA Qualifier Summary Calibrations, Blanks, Holding Time, System Monitoring Compound, Internal Standards

| ate Analyzed: 9/4/a | | 0 | | | Time | | | ds:(† | | | |
|-------------------------------------------------|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-------------|--------|--------|------|---------|------|-------|----|
| | | Sample | | | ut | | MCs | | | erna | ÷ |
| | | Identif | ler: | Ar | A11 | 1 | 2 | 3 | 11 | 2 | |
| | | 8401 | | | | | | | | | |
| | | 8402 | | | | | | | | | Г |
| nstrument ID: VOA 2 | ` | 8403 | | | | 1 | | | 1 | 1 | t |
| iscialencity. Von | | 3404 | | | | | | | | | ┢ |
| | | Contraction of the local division of the loc | | | | | | | | | ╀ |
| | | 8404 | | | | | | | | | L |
| | | - 8405 | | | | | | | | | |
| | | 8406 | | | | | | | | | |
| ethod Blank ID: VAtk2 | = VBLRI | 3407 | | | | | | | | | Γ |
| Data: glata Tima: | 44.55 | 3408 | | | | | | | 1 | 1 | t |
| Date: $\frac{915fg}{914/41}$ Time: | 10 55 | 3400 | | - | | | | | | | t |
| 9/4/41 2 | | | | | | | | | 1 | 1 | L |
| | ICal Date: _ | 7/19 | CCal Time: 9 | 14 | 7:3 | 0 | | | ł | | |
| * RRF must be ≥ .010 | l In | itial Cal. | Contin | uing Cal. | 1 | | 1 | | | T | - |
| 1000 10000 000 000 000 000 | MIN RRF | 2/2RSD | RRF | 1 20 | BL | anks | | Qualifi | iers | Inter | m |
| COMPOUND: | RRF < MIN | >20.5 | < MIN | >25 | Method | Trip | | (+/-) | | Stan | ta |
| Chloromethane | * | | | | | | | | | 1 | |
| Bromomethane | .100 | | | | | | - | | | _ | |
| Vinyl Chloride | .100 | | L | | | L | _ | | | _ | |
| Chloroethane | * | | | | | ļ | | | | _ | |
| Methylene Chloride | * | | | | \$7 | | | UT | | _ | |
| Acetone | * | | | | | | | | | - 1 | |
| Carbon Disulfide | | | | | | | | | | - | |
| 1,1-Dichlorcethene | .100 | | | | + | | | | | - | |
| 1,1-Dichloroethane 1,2-Dichloroethane(total) | * | | | | | | 1 | | | - | |
| | .200 | | | 1 | | 1 | - | | | - | |
| 1,2-Dichloroethane | .100 | | 1 | | | | | | | - | |
| 2-Butanone | * 0.040 |) | 1 | | | | | R | | | |
| 1,1,1-Trichloroethane | . 100 | | | | | | | | | 2 | |
| Carbon Tetrachloride | .100 | | | | | | | | | _ | |
| Branodichloramethane | .200 | | | | | | | | | _ | |
| 1,2-Dichloropropane | * | | | | | | | | | - | |
| cis-1,3-Dichloropropene | .200 | | | | | | | | | - | |
| Trichloroethene | .300 | | | | | | | | | - | |
| | .100 | | | | | | | | | - | |
| Benzene | .500 | | | | | | | | | - | |
| trans-1,3-Dichloropropene | | | | | 1 | | | | | - | |
| | .100 | | | 1 | 1 | 1 | | | | - | |
| 4-Methyl-2-Pentanone | * | | | | | | | | | 3 | - |
| 2-Hexanone | * | | | | | | | | | | |
| Tetrachloroethene | .200 | | | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | | | | | | | | | | _ | |
| | .400 | | | | | | _ | | | _ | |
| | .500 | | | | | | - | | | - | |
| Ethylbenzene | .100 | | | | | | | | | - | |
| | .300 | | | | | | | | | - | |
| | * | | | | | | | | | 3 | _ |
| | .200 | | | | | | | | | 3 | |
| | * | | 1 | | | 1 | | | | | |
| The protocold end end | | Blank Tent | atively Ider | tified Com | aunds | 4 | _ | | | | - |
| Blank IDReported as: | | | | ug/kg or ug | | Qualit | iers | | | | |
| | | | 2 | 3 ugl | | | 5 | | | | |
| VBLKI Unknow | | 7.1 | 6 | 5 1041 | Ka | | 5 | | | | |

TABLE 1 (3/90, OLMO1.8) (cont.) VOA Qualifier Summary

Calibrations, Blanks, Holding Time, System Monitoring Compound, Internal Standards

| Date Analyzed: 9/4/4 | | Hold | Time | Star | ndarr | ds:(t | ,1; | ++=<1 | 10%) |
|---------------------------------------------------------------------------------------|-----------------------|------|------|------|-------|-------|---------------|-------|------|
| 1/4/4/ | Sample | Out | | . : | SMCs | | Internal (IS) | | |
| | Identifier: | Ar | All | 1 | 2 | 3 | 1 | 2 | 3 |
| | 8410 | | | | | | | | |
| | Byloms | | | | | | | | |
| Instrument ID: | 8410 MSD | | | | | | | | |
| Instrument ID: VOA2 | 3411 | | | | | | | | |
| | 8412 | | | | | | | | |
| | 8432 | | | | | | | | |
| | 8483 | | | | | | | | |
| Method Blank ID: VBLKI | | | | | | | | | |
| Method Blank ID: \sqrt{BLK} Date: $\frac{9}{4}\frac{4}{4}$ Time: $\frac{305}{5}$ | | | | | | | | | |
| | | | | | | | | | |
| ICal Date: | 7/19 CCal Time: 9/ | 4 | 7:30 | 2 | | | • | | 1 |

Date: ------_ Time: ______ 1 20

| * RRF must be ≥ .010 | | Initia | al Cal. | Contin | uing Cal. | _ | | | |
|---------------------------|-------|--------|---------|--------|-----------|--------|------|------------|----------|
| esystem Manitor Compaund | MIN | RRF | XRSD | RRF | 20 | Bla | nks | Qualifiers | Internal |
| COMPOLIND: | RRF | < MIN | >20.5 | < MIN | >25 | Method | Trip | (+/-) | Standard |
| Chloromethane | * | | | | | | | | 1 |
| Bromomethane | .100 | | | | | | | | |
| Vinyl Chloride | . 100 | | | | | | | | |
| Chloroethane | * | | | | | | | | |
| Methylene Chloride | * | | | | | 87 | | UT | |
| Acetone | * | | | | | | | | |
| Carbon Disulfide | * | | | 1 | | | | | |
| 1,1-Dichloroethene | .100 | | | | | | | | |
| 1,1-Dichloroethane | .200 | | | | | | | - | |
| 1.2-Dichloroethene(total) | * | | 1 | | | | | | |
| Chloroform | .200 | | | | | | | | |
| 1.2-Dichloroethane | .100 | | | | | | | | |
| 2-Butanone | * | 0.049 | | | | | | R | v |
| 1,1,1-Trichloroethane | . 100 | | | | | | | | 2 |
| Carbon Tetrachloride | .100 | | | | | | , | | |
| Brandichloramethane | .200 | | | | | | | | |
| 1,2-Dichloropropane | * | | | | | | | | |
| cis-1,3-Dichloropropene | .200 | | | | | | | | |
| Trichloroethene | .300 | | | | | | | | |
| Dibranchloranethane | .100 | | | | | | | | |
| 1,1,2-Trichloroethane | .100 | | | | | | | | |
| Benzene | .500 | | | | 1 | | | | |
| trans-1,3-Dichloropropene | .100 | | | | | | | | |
| Branoform | .100 | | | | | | | | |
| 4-Methyl-2-Pentanone | * | | | | | | | | 3 |
| 2-Hexanone | * | | | 1 | | | | | |
| Tetrachloroethene | .200 | | | | | | | | _ |
| 1,1,2,2-Tetrachioroethane | .500 | | | | 1 | | | | |
| Toluane | .400 | | | | | | | | |
| Chlorobenzene | .500 | | | | | | | | _ |
| Ethylbenzene | . 100 | | | | | | | | |
| Styrene | .300 | | | | | | | | |
| Xylene (total) | .300 | | | 1 | 1 | | | | |
| TOTOCIA | * | | | 1 | 1 | | | | 3 |
| Brampfluorobenzene o | .200 | | | | | | | | 3 |
| 1,2-Dichloroethane-d4 a | * | | | | | | | | 1 |

Blank ID Reported as:
> Blank Tentatively Identified Compounds RT (µg/kg or µg/L)

Qualifiers

TABLE 1 (3/90, OLMO1.8) VOA Qualifier Summary

VOA Qualifier Summary Calibrations, Blanks, Holding Time, System Monitoring Compound, Internal Standards

| Analyzed: 9/4/0 | £1 | | 12 | | Hold Time | | Standards: (†, 1; | | | | | |
|----------------------------------------------------------------------|---------|-------|-----------|---------------|------------|--------|-------------------|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|--------|---|
| 11.1 | Dalipte | | | | | ut | | SMCs | The supervised in the supervis | Interna | | Ļ |
| | | | Identif: | ier: | Ar | All | 1 | 2 | 3 | 1 | 2 | |
| | | | 8413 | | | | | | | | | Γ |
| | | 1 | 8414 | | 1 | | | | | | | F |
| ment TD: 14 0 | 0 | | 8415 | / | | | | | | | | F |
| rument ID: Von | 1 | | | | | | | | | | | ┢ |
| | | | 8469 | | | | | | | | | L |
| | | | 8470 | > | | | | | | | | L |
| | | 1 | 847 | 1 | | | | | | | | |
| | | | | | | | | | | | | Г |
| nod Blank ID: $VBLK$ Date: $\frac{1}{9/9}$ Time: $\frac{9}{5}$ | Z | | | | 1 | | | | | | | t |
| IOU BIAIK ID. Vou | | - | | | | | | | | | | ┢ |
| Date: 11me: | -6-0 | 3 | | | | | | | | | | ⊢ |
| 9/5/91 | 10. | 55 | | | | | | | | | | L |
| | | ICal | | CCal Time: | | | | | | | | |
| | | Date: | | _ 11me: | | | | | | | | |
| * RRF must be ≥ .010 | - | | ial Cal. | | uing Cal. | - | | 1 | | | 1 | |
| *System Manitor Compound | | RRF | XRSD | RRF | | | anks | _ | Qualifiers | | Intern | |
| COMPOUND: | RRF | < MIN | >20.5 | < MIN | >25 | Method | Trip | | (+/-) | | Stand | b |
| Chloromethane | * | | | | | | | | | | - 1 | |
| Bronomethane | .100 | | | | | | | | | | - | |
| Vinyl Chloride | .100 | | | | | | | | | | - | |
| Chloroethane | * | | | | | ~ | | | 11- | | - | |
| Methylene Chloride | * | | | | | 8 | | | UJ | | - | |
| Acetone | * | | | | | | | | | | - | |
| Carbon Disulfide | * | | | | | | | | | | - | |
| 1,1-Dichloroethene | .100 | | | | | | | _ | | | - | |
| 1,1-Dichloroethane | .200 | | | | | | | | | | - | |
| 1,2-Dichloroethene(total) | * | | | | | | | | | | - | |
| Chloroform | .200 | | | | | | | | | | - | |
| 1,2-Dichloroethane | .100 | 0.049 | | | | | | _ | 12 | | - ! | |
| 2-Butanone | .100 | 0.041 | | 0.049 | | | | | | | - 2 | _ |
| 1,1,1-Trichloroethane Carbon Tetrachloride | .100 | | | 1 | | | | | | | | |
| Branodichloramethane | .200 | | - | | | | | | | | - | |
| 1,2-Dichloropropane | * | | | | | | | | | | - | |
| cis-1,3-Dichloropropene | .200 | | | | | | | | | | - | |
| Trichloroethene | .300 | | | | | | | | | | - | |
| Dibranochloramethane | .100 | | 1 | 1 | | 1 | | | | | - | |
| 1,1,2-Trichloroethane | .100 | | 1 | | | 1 | 1 | | | | - | |
| Benzene | .500 | | | | | | | | | | - | |
| trans-1,3-Dichloropropene | | | | | | | | | | | | |
| Branoform | .100 | | | | | | | | | | • | |
| 4-Methyl-2-Pentanone | * | | | | | | | | | | 3 | |
| 2-Hexanone | * | | | | | | | | | | | |
| Tetrachloroethene | .200 | | | | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | | | | | | | | | | | | |
| Toluene | .400 | | | | | | | | | | | |
| Chlorobenzene | .500 | | | | | | | | | | | |
| Ethylbenzene | .100 | | | | | | | | | | | |
| Styrene | .300 | | | | | | | | | | | |
| Xylene (total) | .300 | | | | | | 1 | | | | | _ |
| Toluene-dB * | | | | | | | | | | | 3 | |
| Bramofluorobenzene a | | | | | | | | | | | 3 | |
| 1,2-Dichloroethane-d4 @ | * | | | | | | | | | | 1 | - |
| 14 | | | Blank Ten | tatively Iden | | | | | | | | |
| | | | | | | - /1 . | Onli | | | | | |
| Blank ID Reported as: | : | | | RT (| ug/kg or m | | QUALT | fiers | | | | |

Street, Street

TABLE 1 - P Pesticide/PCB Qualifier Summary

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s): 10/01 /41

Instrument ID: HP 5890

Method Blank ID(s): PI BLK OS AGALOSAKA PBLCOSExtract Date(s): O9/09/09/09/

| | | | Fime Surr. | | | | Standard(s) After | | | | | | | |
|-------------|-----|------|------------|-----|------------------|----|-------------------|---|---|---|---|--|--|--|
| Sample | | at | Rec. (%) | | Sample Analysis: | | | | | | | | | |
| Identifier: | Ext | Ahal | TCX | DCB | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | | |
| 8469 | | | | | | X | | | | | | | | |
| 8470 | | | | | | X | | | | | | | | |
| 5471 | | | ¥ | | | X | | T | | T | T | | | |
| 6452 | | | 4 | | | X | | | | | | | | |
| 8483 | | | | | | 1. | | 1 | | 1 | T | | | |
| 840106 | | | | | | 1. | | 1 | | 1 | T | | | |
| BY OF DL | | | 10% | 1 | | 1. | | | | 1 | | | | |
| 8403 L'L | | | | 1 | | A | | 1 | | | | | | |
| 8405 171 | | | | 1 | | X | | | | | T | | | |
| 840606 | | | | 4 | | X | | | | 1 | T | | | |
| 84040L | | | | + | | X | | | | | - | | | |

| 1 | 9/22/91 | | | Calibrati | | | | | | and the second sec |
|---------------------------|---------------------------------|------|---------|-----------|----------|-------|------|-----|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 08-608 or | Initial Continuing: RPD > 25% * | | | | | | | | | |
| Equivalent | *RSD>20 | PEN | INDS | | INDS | PEN | INDS | PEN | | |
| | 1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Blank | |
| Cont.Cal.Date, Month→ | Day | | 10/1 KI | 10/1/41 | | | | | Conc. | Qualifiers |
| COMPOUND | Time+ | 2103 | diz | HO 2103 | | | | | | (+/-) |
| alpha-BHC | | | | | 1997 - M | | | | | 14 A. 199 |
| beta-BHC | | | | | | | | | | |
| del ta-BHC | | | | | | | | | | |
| gamma-8HC (Lindane) | | | | 26.1 | | | | | | J-C-/- |
| Heptachlor | | | | | | | | | | |
| Aldrin | | | | | | | | | | |
| Heptachlor epoxide | | | | | | | | | | |
| Endosulfan I 🔶 | | | | | | | | | | |
| Dieldrin § | - S. | | | | | | | | | |
| 4,41-DDE § | 1 | | 1 | | | | | | | 1 |
| Endrin | | | 1 | | | | | | | 1 |
| Endosufan II | | | 1 | | | | | | | 1 |
| 4.41-000 | | | 1 | | | | | | | 1 |
| Endosufan sulfate | | | i | | | | | | | |
| 4.41-00T | | | Ì | | | | | | | 1 |
| Methoxychlor * | | | i | | | | | | | |
| Endrin Ketone a | | | 1 | | | | | | | 1 |
| Endrin Aldehyde | | | 1 | | | | | | | 1 |
| alpha-Chlordane | | | 1 | | | | | | | |
| ganma-Chlordane 🔶 | | - | 1 | | | | | | | 1 |
| Toxaphene | | | 1 | | | | | | | 1 |
| Aroclor-1016 | The Reversives | | 1 | | | | | | | |
| Aroclor-1221 | | | 1 | | | | | | | 1 |
| Aroctor-1232 | | | 1 | | | | | | | 1 |
| Aroclor-1242 | | | 1 | 1 | | | | | | |
| Aroclor-1248 | | | 1 | 1 | | | | | | 1 |
| Aroclor-1254 | | | 1 | | | | | | | 1 |
| Aroctor-1260 | | | | | | | | | | |
| Surrogates - %RSD > 30% | A Street | 0. | monte 6 | PDs must | also he | < 25% | | | | |
| Tetrachloro-m-Xylene(TCX) | | | I | | 4130 00 | | 1 | | and of the second line of | |
| Decachlorobiphenyl (DCB) | | 1 Cr | | | | | | | ST | + |

* <u>Validation Criteria:</u> Compound Detected Compound Undetected

 Quantitation Column

 RPD% < 25%</td>
 and

 RPD% < 25%</td>
 or

Confirmation Column RPD < 25% RPD < 25%

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s): 10/c1/4

Instrument ID: HP 5890

Method Blank ID(s): fTbikogExtract Date(s): 09/09/9/9

| Sample | | Time | Sur Rec. | Standard(s) After Sample Analysis: | | | | | | | |
|------------------|-----|------|-------------|---------------------------------------|---|-----|---|------|---|---|---|
| Identifier: | Ext | Anal | TCX | DCB | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 840706 | | | | 1 | | | X | | T | | |
| 840802 | | | 1 | | | | X | | | | |
| BYOGOL | | 1 | 36 . | | | 100 | X | 1.12 | T | | |
| 84090L 84100L | | | 1 | 1 | | | X | | 1 | | T |
| 841100 | | | 1 | 1 | | | X | | | T | |
| 641204 | | | 1 | 1 | | | X | | | | |
| 8413 | | | | | | | X | | T | | |
| BYIY OL | | | | 1 | | | X | | | | |
| 841506 | | | 10) | † | | | X | | | | |
| 8411 ms | | | 4 | 1 | | | X | | | | |

ector Resolved in Initial Resolution Check

♦≥60% Resolved _____

| | 9/22/91 | | | Calibrati | | | | | | |
|---------------------------|---------------------------------------|------|----------|-----------|----------|-------|------|-----|-----------|-----------------------|
| 08-608 or | Initial | | | inuing: R | PD > 25% | ζ * | 1.11 | | | 1. 1. 1. 1. |
| Equivalent | 7RSD>20 | PEM | INDs | | INDS | PEN | INDS | PEN | | |
| | 1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Blank | |
| Cont.Cal.Date, Month+ | Day+ | | | 10/181 | | | | | Conc. | Qualifier |
| COMPOUND 4 | Time+ | 2103 | OK? | 2105 | | | | | No. Carlo | (+/-) |
| alpha-BHC | | | | | | | | | | |
| beta-BHC | | | | | | | | | | |
| delta-BHC | 1.1.1 | | | | | | | | | |
| gamma-8HC (Lindane) | | | | 26,1 | | | 1.20 | | | J-C./- |
| Heptachlor | | | | | | | | | 1 | |
| Aldrin | · · · · · · · · · · · · · · · · · · · | | | | | | | | | |
| Heptachlor epoxide | 1 18 | | | | | | | | | |
| Endosulfan I 🔶 | | | | | | | | | | |
| Dieldrin § | | | | | | | | | | |
| 4,41-DDE § | | | | | | | | | | |
| Endrin | | | | | | | | | | |
| Endosufan II | | - | | | | | | | | |
| 4.4'-000 | | | | | | | | | | |
| Endosufan suifate | | | | | | | | | | |
| 4,41-00T | | | | | | | | | | |
| Methoxychlor & | | | | | | | | | | |
| Endrin Ketone 🔹 | | | | | | | | | | |
| Endrin Aldehyde | | | | | | | | | | |
| alpha-Chlordane | | | | | | | | | | |
| gamma-Chlordane + | and a state of | | | | | | | | | |
| Toxaphene | | | | | | | | | | |
| Aroclor-1016 | Sector State | | | | | | | | | |
| Aroclor-1221 | | | | | | | | | | |
| Arocior-1232 | | | | | | | | | | |
| Aroclor-1242 | | | | | | | | | | |
| Aroclor-1248 | | | 1.2 | | | | | | | |
| Aroclor-1254 | | | | | | | | | | |
| Aroclor-1260 | | - | | | | | | | | |
| Surrogates - XRSD > 30% | | Sur | rogate R | PDs must | also be | 1 25% | | | | States and the states |
| Tetrachloro-m-Xylene(TOK) | | | 1 | | | | 1 | | | |
| Decachlorobiphenyl (DCB) | 100 | RT | 1 | | | | | | ET | |

* Validation Criteria: **Compound Detected** Compound Undetected

| Quantitation Colum |
|--------------------|
| RP0% < 25% |
| RPD% < 25% |

and

or

Confirmation Column RPD < 25% RPD < 25%

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s):

Instrument ID:

HPSOGO

Method Blank ID(s): *PIELE OF* Extract Date(s): <u>07/84/51</u>

| Sample | Hold | iTime .t | Sur Rec. | . (%) | Standard(s) After Sample Analysis: 1 2 3 4 5 6 7 | | | | | | | |
|-----------------------|------|-------------|-------------|-------|--------------------------------------------------------|---|---|---|---|---|----------|--|
| Sample Identifier: | Ext | Anal | TCX | DCB | 1 | 2 | 3 | 4 | 5 | 6 | 7 | |
| 8411 1451) | | | 4 | | | | X | | | | 1.1 | |
| | | | | | | 2 | | | | | | |
| | | | | | | | - | | - | 1 | - | |
| | - | | | | | | - | - | - | - | | |
| | - | | | | | - | - | - | - | - | + | |
| | | | | | | | | | - | - | + | |
| | | | | | | | | | - | - | + | |
| | | | | | | | - | - | - | - | - | |
| | | | | | | | - | - | - | | \vdash | |

| | 9/27/91 | | | Calibrati | mes | | | | | |
|---------------------------|----------------|-------|-----------|-----------|---------|-------|------|-----|----------------------------|-------------------------------------|
| NO 108 | Initial | 1 | | inuing: R | | * | | | | |
| D8-608 or | %RSD>20 | PEM | | | | PEN | INDS | PEN | | |
| Equivalent | 1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Blank | |
| Cont.Cal.Date, Month→ | Day | | | 10/,141 | -4 | | | | Conc. | Qualifiers |
| COMPOUNDI | Time+ | 210 3 | 0907 | | | | | | COL La | (+/-) |
| alpha-BHC | Timev | 1010 | 0703 | 6105 | | | | | | |
| beta-BHC | | | | | | | | 1 | | |
| del ta-BHC | | | | | | | | | | |
| gamma-BHC (Lindane) | | - | | 26.1 | | | | | | J-C/- |
| Heptachlor | | | | 6.4. 1 | | | | | | - L'U LI |
| Aldrin | | - | | | | | | | | |
| Heptachlor epoxide | | • | | | | | | | | |
| Endosulfan I 🔶 | | | | | | | | | | |
| Dieldrin § | | | | | | | | | | |
| 4,4'-DDE § | | | | | | | | | | |
| Endrin | | | | | | | | | | |
| Endosufan II | | | | | | | | | | |
| 4.4'-000 | | | | | | | | | | |
| Endosufan sulfate | | - | | | | | | | | |
| 4,41-00T | | | | | | | | | | |
| Methoxychlor * | | | 1 | | | | | | | |
| Endrin Ketone a | | | 1 | | | | | | | |
| Endrin Aldehyde | | | | | | | | | | |
| alpha-Chlordane | | | | | | | | | | |
| gamma-Chlordane 🔶 | | | 1 | | | | | | | |
| Toxaphene | | | | | | | | | | |
| Aroclor-1016 | | | | | | | | | | |
| Aroclor-1221 | | | 1 | | | | | | | |
| Aroclor-1232 | | | 1 | | | | | | | |
| Aroclor-1242 | and the second | | 1 | | | | | | | |
| Aroclor-1248 | | | | | | | | | | |
| Aroclor-1254 | | | | | | | | | | |
| Aroclor-1260 | | | 1 | | | | | | | |
| Surrogates - %RSD > 30% | | 0. | romate P | PDs must | alsoha | < 25% | | | | |
| Tetrachloro-m-Xylene(TCX) | | | I Ugate K | I | atso be | 2 00 | 1 | | and a second second second | and the second second second second |
| Decachlorobiphenyl (DCB) | | ET | | | | | | | ÊT | |

* <u>Validation Criteria:</u> Compound Detected Compound Undetected
 Quantitation Column

 RP0% < 25%</td>
 and

 RP0% < 25%</td>
 or

Confirmation Column RPD < 25% RPD < 25%

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s): 10/06/41

Instrument ID: VAL 6000

Method Blank ID(s): fT_{6LK07} P_{5LK1} p_{5KK05} Extract Date(s): $0q/0q/q_1$

| Sample | | iTime It Anal | | Standard(s) After Sample Analysis: | | | | | | | |
|-------------|------|---------------------|-----|---------------------------------------|-----|---|-----|---|---|---|----|
| Identifier: | Ext | Anal | TCX | DCB | 1 | 2 | 3 | 4 | 5 | 6 | 17 |
| 8469 | | | | 4 | | | X | | | Ť | Ť |
| 5470 | 1.00 | | | | | | X | | | | T |
| 5482 | | | + | | | | X | | | | 1 |
| 8483 | | | | 1 | | | X | 1 | | 1 | T |
| 8401 DL | | | | Ŷ | | | X | | | | T |
| E402 DL | | | d | 1 | 1.2 | | 1.1 | X | | | T |
| 8403 DL | | | | 4 | | | | X | | | |
| 840402 | | | | 7 | | | | X | | | Γ |
| BYOS DL | | | | 1 | | | | X | | | |
| SUCTOR HAA | | | | 1 | | | | K | | | T |

| ∞±60% Resolved | ~ | 4>60% | Resolved | 0 |
|------------------|---|-------|----------|---|
| in Initial Resol | | | | |

| DB-1701 or Equivalent_ <u>DF</u> - 17 Cont.Cal.Date, Month→ ; 2 | Initial XRSD>20 1 Day+ | PEN 1 | Cont I INDs | inuing: | 000 x 253 | | | | the second se | 1 Contraction of the local division of the l |
|-----------------------------------------------------------------------|---------------------------------|----------|----------------|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-----------|-----|------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Cont.Cal.Date, Honth→ 10 | L Day+ | | I TUDA | | | | - | | | |
| Cont.Cal.Date, Honth→ 10 | Day | 1 | | | and the second division of the second divisio | PEH | INDS | PEM | | |
| | | | 2 | 3 | 4 | 5 | 6 | 7 | Blank | |
| | | - | 05 | 0.6 | Dis | | | 6 | Conc. | Qualifiers |
| COMPOUNDI | Time+ | - | 1:24 | 0613 | 1714 | | | | | (+/-) |
| alpha-BHC | | | | | | | | | | |
| beta-BHC | | | 1. 19 | | | | | | | 1 |
| del ta-BHC | 3 | - | | | | | | | | |
| gemma-BHC (Lindane) | | | | | | | | | and the second | |
| Heptachlor | | 1.0 | | | | | | | | |
| Aldrin | | | 1 | S. 1 | | | | | | |
| Heptachlor epoxide | 7 | | | 14 C | | | | 1 | 1. N. A. | |
| Endosulfan I 🔶 | 64 | | 1.00 | | | | | | 18 | |
| Dieldrin | | | | | | | | | | |
| 4,41-DDE | | | | | | 1.4 | | | | |
| Endrin | | | 26.0 | 59.7 | 53.0 | | | | | 5-01- |
| Endosufan II | | | 1 | | | | | | | |
| 4.4'-000 | | | 1 | | | | | | | |
| Endosufan sulfate 🌣 | | | 1 | 1 | | | | | | |
| 4,4'-DOT | | | 1 | 26.1 | | | | | | T-C/- |
| Nethoxychlor a | | | 1 | | | | | | | |
| Endrin Ketone | | | | | | | | | | |
| Endrin Aldehyde | | | 1 | | | | | | | |
| alpha-Chlordane | 5 6.4 | | 1 | | | | | | | |
| gamma-Chlordane 🔶 | Problem St. | | 1 | | | | 1.1 | | | |
| Toxaphene | | | 1 | | | | | | | |
| Aroclor-1016 | | | | | | | | | | |
| Aroclor-1221 | | | 1 | - | | | | | | |
| Aroctor-1232 | | 11 | 1 | | | | | | | |
| Aroclor-1242 | | | | | | | | | | |
| Aroclor-1248 | The state of the | | | | 1 | | | | | |
| Araciar-1254 | | | | | | | | | | |
| Aroclor-1260 | | | 1 | | | | | | | |
| Surrogates - %RSD > 30% | | 0. | rogate R | | al co bo | < 25Y | | | | |
| Tetrachloro-m-Xylene(TCX) | | Ju | L LT | | also be | 2 04 | | | ET | |
| Decachlorobiphenyl (DC8) | | | ICT | ET. | ET. | | | | Lr | |
| Cauntor compreny (008) | | _ | | | | | | | L | |
| Validation Origania | 0 | | | | 30 | | | | | |
| Validation Criteria: | Quantita | | | | Confirmet | | <u>un</u> | | | |
| Compound Detected | | x < 25 | | and | 2020.00 | < 25% | | | | |
| Compound Undetected | RPI | x < 25 | 6 | or | RPD | < 25% | | | | |

(3/90, 0LH01.2)

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s): 10/06/91

Instrument ID: VAE 6000

Method Blank ID(s): PIGLECE PGLEI

Extract Date(s): 04/04/4

| Sample | _0 | iTime .t | Rec | Standard(s) After Sample Analysis; | | | | | | | |
|-------------|-----|-------------|-----|---------------------------------------|---|---|----|---|---|---|---|
| Identifier: | Ext | Anal | TCX | DCB | 1 | 2 | 31 | 4 | 5 | 6 | 7 |
| 34060L | | | | 4 | | | X | X | | | T |
| RYDE DE AKA | | | | 1 | | | k | X | | 1 | T |
| 843206 | | | | 1 | | | X | X | | | T |
| 840306 | | | 1 | 4 | | | V | X | | 1 | T |
| 540106 | | | * | 1 | | | k | X | | 1 | |
| 911000 | | | | 4 | | | K | X | | | |
| 841102 | | | | 1 | | | K | X | | 1 | |
| 341206 | | | | 1(1) | | | K | X | | | Τ |
| 8413 | | | | 4 | | | K | X | | | |
| 8414DL | | | | 1(?) | | | X | X | | | |

| / | 10/02/91 | | | Calibrat | ime | | | | | |
|--------------------------|--------------------|-----|------|----------|-----------|-------|------|-----|-----------------------|------------|
| 08-1701 or 0 17 | Initial | 1 | | | RPD > 25% | * | | | | |
| 5quivalent <u>DB-17</u> | 2RSD>20 | PEN | INDS | | I INDS | PEM | INDS | PEM | | |
| | 1 | 1 1 | 2 | 3 | 4 | 5 | 6 | 7 | Blank | |
| Cont.Cal.Date, Month / | Day | - | 05 | 06 | 06 | | | | Conc. | Qualifiers |
| COMPOUND1 | Time+ | - | 1825 | 0613 | 1714 | | | | ui L. | (+/-) |
| lpha-BHC | 1 | | 1001 | 1000 | 1111 | | | | | (4/-) |
| eta-BHC | | | 1 | | | | | | | |
| ielta-BHC | | | 1 | 1 | | | | | | |
| jamma-BHC (Lindane) | | | | 1 | | | | | | |
| leptachlor | | | | 1 | | | | | | |
| ldrin | | | 1 | | | | | | and the second second | |
| leptachlor epoxide | | | | 1 | | | | | | |
| indosulfan I 🔶 | | | 1 | 1 | | | | | | |
| ieldrin | | | | | | | | | | |
| 41-0DE | | | | 1 | | | | | | |
| Indrin | | | 20.0 | 597 | 53.0 | | | | | 5-01- |
| indosufan II | | | | | | | | | | |
| 4'-000 | | | | | | | | | | |
| indosufan sulfate # | | | | | | | | | | |
| ,4'-DDT | 197 | | | 26.1 | | | | | | 5-01- |
| lethoxychlor # | | | | | | | | | | |
| ndrin Ketone | | | | | | | | | | |
| ndrin Aldehyde | | | | | | | | | | |
| lpha-Chlordane | | | | | | | | | | |
| amma-Chilordiane 🔶 | | | | | | | | | | |
| oxaphene | ·*+,*+. • | | | | | | | | | |
| roctor-1016 | a state of the | | | | | | | | | |
| roclor-1221 | · · · · · · | | | | | | | | | |
| roclor-1232 | and States and | | 1 | | | | | | | |
| roclor-1242 | Charles and the ch | | | | | | | | | |
| roclor-1248 | 14 M 16 M | | | | | | | | | |
| roclor-1254 | | - | | | | | | | | |
| roclor-1260 | | - | | | | | | | | |
| urrogates - %RSD > 30% | | 9ur | | | also be | ≤ 25% | | | | |
| etrachloro-m-Xylene(TCX) | | - | | CT | | | | | ET | |
| ecachlorobiphenyl (DCB) | | - | 6 RT | , RF | LT | | | | LT | |

(3/90, OLMO1.2)

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s): 10/06/4/

Instrument ID: VAE 6000

Method Blank ID(s): PTELEOE PELEI FEBLEOG Extract Date(s): bg/cg/gg

| | | Time | | 2 2 | Standard(s) After Sample Analysis: | | | | | | | | |
|-------------|-----|-----------|-------|-------|---------------------------------------|------|-----|----------|-----|------------|----------|--|--|
| Sample | | <u>it</u> | Rec | . (%) | Sa | amp. | lei | Ana | lys | <u>is:</u> | | | |
| Identifier: | Ext | Anal | TCX | DCB | 1 | 2 | 34 | 4 | 5 | 6 | 7 | | |
| 8415 DL | | | 4 | 1 | | | X | X | | | | | |
| 8411 MS | | | 4 | | NOI | IE | | * | | | | | |
| 8411 MSO | | | 4 | + | NO | JE | | X | | | | | |
| 8417 (8421) | | | AOK | | NO | NE | | X | | | | | |
| | | | 1.5.1 | | | | | \vdash | - | + | \vdash | | |
| | | | | | | | | \vdash | - | | + | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | 17 | | | | |

AKA

| 08-1701 or | 3/27/41 H | - 11 | | Cal ibrat | | | | | | |
|--------------------------------|----------------------------------------|----------|----------|-----------|------------|----------|------|---|-------|------------|
| Be-1701 or Equivalent 06-17 | Initial | | | | 1890 > 257 | | | | | |
| Equivalent UD 14 | ************************************** | PEM 1 | INDS | PEH 3 | INDS 4 | PEH 5 | INDS | 7 | Blank | |
| Cont.Cal.Date, Month / | Day+ | | 2 | 06 | 06 | | 6 | | Conc. | Qualifiers |
| CONFOLNDI | Time+ | | | 0613 | | | | | | (+/-) |
| alpha-BHC | 1.11.2 | | 1 cicco | Cal - | - | | | - | | 1 |
| beta-BHC | | | 1 | | | | | | | |
| del ta-BHC | | | 1 | | | | | | | |
| gamma-BHC (Lindane) | | | 1 | | | | - | | 1 | |
| leptachlor | | | 1 | | | | | | | |
| Aldrin | | | 1 | | | | | | | |
| leptachlor epoxide | | | 1 | | | | | - | | |
| Endosulfan I 🔶 | | | 1 | | | | | | | |
| Dieldrin | | | 1 | | | | | | | |
| 4,41-DDE | | | 1 | | | | | | | |
| Endrin | | | 26.0 | 597 | 53.0 | | | | | J-C /- |
| Endosufan II | | | 1 | 27.1 | 1.2 | | | | | 1.1 |
| 4.41-000 | | | | | | | | | | 1 |
| Endosufan sulfate # | | | 1 | | | | | | | |
| 4,41-DOT | | - | 1 | 26.1 | | | | | | 7-1-1- |
| Hethoxychlor # | | | 1 | Elu | 1 | | | | | |
| Endrin Ketone | | | | | | | | | | |
| Endrin Aldehyde | | | 1 | | 1 | | | | | |
| alpha-Chlordane | | | | | 1 | | | | | |
| gamma-Chlordane 🔶 | | | 1 | | | | | | | |
| Toxaphene | Constant Sectors in the | | 1 | | | | | | | |
| Aroclor-1016 | | | 1 | | | | | | | |
| Aroclor-1221 | | | 1 | | | | | | | |
| Aroclor-1232 | | | | 1 | | | | | | |
| Aroclor-1242 | | | | 1 | | | | | | |
| Aroclor-1248 | | | | 1 | | | | | | |
| Araclar-1254 | | | | 1 | | | | | | |
| Aroclor-1260 | | | | | | | | | | |
| Surrogates - %RSD > 30% | | 9.0 | rogate R | PDs must | also be | \$ 25% | | | | |
| Tetrachloro-m-Xylene(TCX) | | | 1 6- | 1 R | LLT | | 1 | | LT | |
| Decachlorobiphenyl (DCB) | 1 | | Et | .CT | 1 it | | | | PT | |

| Quantitation Column | | Confirmation Column |
|---------------------|-----|---------------------|
| R90% < 25% | and | R90 < 25% |
| RP0% < 25% | or | RPD < 25% |

Compound Detected Compound Undetected

| TABLE | 2 | - | SURROGATE | RECOVERIES | SOW | Rev. | OLM01.8, | 3/90 | Page | 1 of | 3 |
|-------|---|---|-----------|------------|-----|------|----------|------|------|------|---|
|-------|---|---|-----------|------------|-----|------|----------|------|------|------|---|

| VOA FRACTION | dII OK | | | | | |
|-----------------------------------------------------------------------------|----------|----------|----------|----------|-------------------|---------------|
| A. Sample Numbers | Intro IX | | | | | |
| B. Surrogate(s) outside QC limits (show XR) | s1 s2 s3 | S1 S2 S3 | s1 s2 s3 | s1 s2 s3 | 51 S2 S3 | \$1 \$2 \$3 |
| C. Compound less than 10%? (Y/N) | | | | | | |
| D. Initial Analysis Qualifiers | | | | | | |
| E. Reanalysis required? (Y/N) | | | | | | |
| If blank, were associated samples reanalyzed? (Y/N) | | | | | | |
| F. Sample Number for reanalysis. | | | | | | |
| G. Reanalysis surrogates outside limits (show % R) | | | | | | |
| H. Reanalysis qualifiers. | | | | | | |
| | | | | | NOTE: The circled | sample number |

| QC Limits (AR) | 3011 | WATER | |
|------------------------------------------------------------|----------------------|------------------|--|
| VOA S1 = Toluene-d8 | 84 - 138 59 - 113 | 88-110 86-115 | |
| VOA S2 = Bromofluorobenzene | 70-121 | 76-114 | |
| <pre>VOA \$3 = 1,2-Dichloroethane-d4 A:\SURROG-1.WK3</pre> | 70-121 | 70-114 | |

NOTE: The circled sample number is the analysis/reanalysis recommended for use.

.

- SURROGATE RECOVERIES SOW Rev. OLMO1.8, 3/90 Page 3 of 3

| ACID FRACTION | | | | | | | | | | | | | | | | | | | / | | | | 1 |
|--------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|------------------------------------|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|-------------------|--------------------|----------------|-----------------|-----------|---------------------|---------|-----|-----------------|-------------|-------|--------------------------|----------------------------|------------------------------|--------------------------|--------------|---------|----------|
| le Numbers | | | | | | | | | | | | | | | | | | ~ | | | 1 65 1 | 64 | S7 |
| ogate(s) outside imits (show XR) ound less than 10%? (Y/N) | \$4 \$5 | \$6 | \$7 | \$4 | \$5 | \$6 | s7 | \$4 | \$5 | \$6 | \$7 | \$4 | \$5 | \$6 | \$7 | 54 | \$5 | \$6 | \$7 | | \$5 | \$6 | |
| alysis required? (Y/N) blank, were associated ples reanalyzed? (Y/N) | | | | | | | | | | 8 | | ~ | | _ | | | | | | | | | |
| tat Analysis Qualifiers | | | | | | | | - | | / | | | | | | | | | | | | | |
| ble Number for reanalysis. Nalysis surrogates outside its (show % R) | | | | | | | | | Î | | | | | 1 | | | | | | | | | <u> </u> |
| extraction required? (Y/N) blank, were associated sples re-extracted? (Y/N) | | | | | / | | | | | | | | | | | | | | 7 | | | | |
| ble number for re-extract. Extraction outside limits SW X R) | | | | | | | | | | 1 | | | | 1 | | 1 | | | | | | | <u> </u> |
| nalysis qualifiers. | | | | | | | | | | | | | | | | | | | | | | | |
| harrysis quartifierer | 1 | | | 1 | | | | 1 | | | | 1 | | | | | | | | | | | |
| QC Limits (XR) = Phenol-d6 = 2-Ftuorophenol = 2-Chlorophenol = 2-Chlorophenol-d4 | SOIL 24-113 25-121 20-130 (a | dvisory | γ) | WATER 10-110 21-110 10-22 33-110 | } | visory | () | | | | | 1 | | | | Note: | The of the a recon | circle analys mmende | ed samp iis/rea ed for | le nun nalysi use. | ber is | i | |
| QC Limits (XR) | 24-113 16-122 20-130 (a | | | 19-118 | (adv | | | | 611 | | | | Счр | | 7, | | | | | | | | |
| QC Limits (XR) = Phenol-d6 = 2-FtVorophenol = 2-Chlorophenol = 2-Chlorophenol-d4 PESTICIDE FRACTION | | | | 19-118 | (adv | visory Z D | | | 540 | 3 | DL. | - | E40 | 4 D | 12 | | | 5 10 | NL | 8 | 9 <i>6</i> 6 | WL | |
| QC Limits (XR) = Phenol-d6 = 2-Ftuorophenol = 2-Chlorophenol-d4 PESTICIDE FRACTION ple Numbers | 24-113 16-122 20-130 (a | / DL | | 10-118 10-118 10-127 33-170 | (adv 840 | <u>z r</u> |)L 52 | | | 200.6 | 151.5 | S1 | | 422. 4 | 2 (180.1 | | 705 | - 20 53 241.3 | 7L 2 584! | | 9 <i>6</i> 6 | 1)C | 729 |
| QC Limits (XR) = Phenol-d6 = 2-Filorophenol = 2-Chlorophenol-d4 PESTICIDE FRACTION ple Numbers limits exceeded (show XR) | 24-113 10-130 (m | / DL | 63 | 10-118 10-118 10-127 33-170 | (ach | <u>z r</u> |)L 52 1/217 | | | 200.6 | 52 | | | 5 | 2 (180.1 | | 705 | - 20 53 241.3 | 12 | 8 | 9 <i>6</i> 6 | IK_ | 729 |
| QC Limits (XR) = Phenol-d6 = 2-FtVorophenol = 2.6-Tribromophenol = 2.6-Tribromophenol = 2.6-Tribromophenol-d4 | $\frac{34-13}{10-130}$ | / DL - [6 - [6 J-(0 | 63 | 20-11(20-11) 20-11(33-11) 5: 0 (1 - - - - - - - - - - - - - - - - - - | (adv 840, 145.0 1. 1. 1. 1. 1. 1. 58 | 2 K 303./ 1 | 52 (217 2) / | WATER 68-15 | 1 8 {ac | Jone J | 52 151.9 -C/ | S1 | | 422. 4 1 J-0 | 2 (180.1 | | 705 | - 20 53 241.3 | 7L 2 584! | 8 | 9 <i>6</i> 6 | 1)C | 729 |

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| ACID FRACTION | | | | | | | | | | | | | | | | | | | | / | | | | |
|-----------------------------------------------------------------------------------------------------|--------|---------------------|--------|------|-------------------------------------|-------|----------------|---------|-------|-------|------------------|-----|----|------|------|------|-------|---------|---------|---------|---------|-------------|------|------|
| Sample Numbers | | | | | | | | | | | | | | 1 65 | 1 64 | \$7 | | 1-55 | 1 56 | S7 | | 55 | 56 | 1 S7 |
| Surrogate(s) outside OC limits (show %R) | 54 | \$5 | S6 | \$7 | \$4 | \$5 | \$6 | S7 | \$4 | s5 | \$6 | S7 | s4 | \$5 | \$6 | | | [| | | | | | |
| Compound less than 10%? (Y/N) | | | 1 | I | | I | 1 | 1 | | 1 | 1 | 1 | | 1 | 2 | 1 | | 1 | 1 | 1 | | 1 | 1 | |
| Reanalysis required? (Y/N) | | | | | | | | | | | | | | | | | | | | | | | | |
| If blank, were associated samples reanalyzed? (Y/N) Inicial Analysis Qualifiers | | | | | | | | | | | | _ | | | | | | | | | | | | |
| | | | | | | | | | | / | | | | | | | - | | | | | | | |
| Sample Number for reanalysis. Reanalysis surrogates outside limits (show % R) | | | | 1 | | | | | | Í | | | | 1 | | | | | | | | | | |
| Re-extraction required? (Y/N) | | | | | | / | | | | | | | | | | | | | | | | | | |
| If blank, were associated samples re-extracted? (Y/N) | | | | | | | | | | | | | | | | | | | | | | | | |
| Sample number for re-extract. | | | | / | | | | | | | | | | | | | | | | | | | | |
| Re-extraction outside limits (show % R) | | | T | | | | | | | | | | | | | | _ | | | | | | | |
| Reanalysis qualifiers. | | | | | | | | 19 1 | | | | | | | | | | | | | 1 | | | |
| QC Limits (32) | so | IL | | | WATER | | | | | | | | | | | | Note: | The the | circl | ed sam | analysi | ber is s | | |
| d S4 = Phenol-d6 d S5 = 2-Fluorophenol d S6 = 24,6-Tripromophenol d S7 = 2-Chlorophenol-d4 | 24- | 113 221 30 (a | adviso | ry) | 10-110 21-110 10-23 33-110 | (ad | visory | () | | | | | | | | | | rec | ommeric | ied for | use. | | | |
| PESTICIDE FRACTION | | | | | | | | | | | | | | | | | | | | | | | | |
| Sample Numbers | | 34 | 071 | DL | 1 | 2 | 340-3 | DL | | 540 | 1 0 | 2 | | 84, | 0 | OL | | 84 | 1/ 0 | 12 | 1_2 | 3411 | MS | |
| | s1 | | \$ | 2 | st | | \$ | 52 | S | l | S | 2 | S | 1 | 1 | s2 | ST | 1, | \$ | 52 | S | | Sa | 2 |
| QC limits exceeded (show %R) | - | 1 - | 146 | 1568 | 277 | 156 | - | 421 | 38.9 | 38.0 | - | 729 | | - | 428 | 1240 | - | 1- | 168 | 323 | 47 | 158 | 32 | 1- |
| Qualifier, if applied. | | | 13-0 | :/- | 2- | c/- | 1- | 5-C/_ | 72 | .[- | 1-7-1 | :/- | - | | | c/- | | | I-J-(| c/ | J-C | 1- | 12-9 | [- |
| Limits (%R) | | | | | | : | SOIL | | WATER | | | , i | | | | | | | | | | | | |
| sticide \$1 = Tetrachloro-m-xy sticide \$2 = Decachlorobiphen | lene { | ICX) | | | 28 | - 158 | (advi (advi | sory} | 88-15 | } {ad | visory visory | } | | | | | | | | | | | | |
| SHELL SURROG-2.WK3 | | | | | | | | | | | | | | | | | | | | | | | | |

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ACID FRACTION

| ACTO TRACTION | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------------------------------------------------------------------------------------------------------|---------|----------------------|--------|-----|--------------------------------------|-----|------------------|-------|-------|-------------|------------------|-----------|---|-------|------|-----|----|-------|-----|--------|---------|---------|------------|------|-----|
| Sample Numbers | | | | | | | 1 64 | S7 | | \$5 | \$6 | s7 | | 1 \$5 | | 6 1 | s7 | | S5 | 1 \$6 | S7 | | s5 | \$6 | S7 |
| Surrogate(s) outside GC limits (show XR) | \$4 | S5 - | S6 | S7 | \$4 | \$5 | \$6 | 51 | | | 30 | <i>31</i> | | | | | | | | | | | | ļ | |
| Compound less than 10%? (Y/N) | | I | 1 | 1 | | l | 1 | 1 | _ | 1 | 1 | 1 | | 1 | 1 | 1 | | | 1 | 1 | 1 | | 1 | 1 | 1 |
| Reanalysis required? (Y/N) | | | | | | | | | | | | | | | | | | | | | | | | | |
| If blank, were associated samples reanalyzed? (Y/N) | | | | | | | | | - | | * | | | | | | | | | | | | | | |
| Initial Analysis Qualifiers | | | | | | | | | - | | | | | | | | | | | | | | | | |
| Sample Number for reanalysis. | | | | | | | | | | | | | | | | | | | | | | . | | | |
| Reanalysis surrogates outside limits (show X R) | | | | | | | | | | | | | | | | | | | | 1 | | | | | |
| Re-extraction required? (Y/N) | | | | | | | | | | | | | | | | | | | | | | | | | |
| If blank, were associated samples re-extracted? (Y/N) | | | | | | | | | | | | ĺ. | | | | | | | | | | | | | |
| Sample number for re-extract. | | | | | | | | | | | | | | | | | | | | | | . | | | |
| Re-extraction outside limits (show % R) | | | | | | | | | | | | | | | 1 | | | | | | 1 | _ | | 1 | 1 |
| Reanalysis qualifiers. | | | | | | | | | | | | | | | | | | | | | | 1 | | | |
| QC Limits (%R) | so | | | | WATER | | | | | | | | | | | | | Note: | The | anal | ed sam | analysi | ber i s | 6 | |
| id \$4 = Phenol-d6 id \$3 = 2-fluorophenol id \$6 = 2-fluorophenol id \$7 = 2-Chlorophenol-d4 | 24- | 113 121 130 (4 | adviso | -y) | 10-110 21-110 10-123 33-110 | (ad | visory |) | | | | | | | | | | | rec | ommerk | aed for | use. | | | |
| PESTICIDE FRACTION | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sample Numbers | 1 9 | 3411 | MSD | | | 84 | 12 00 | L | | 541 | 3 | | | 84 | 1/4 | DL | | | 841 | 50 | L | 8 | 769 | | |
| | 51 | | 5 | | S1 | | 5 | | S | | s | 2 | s | 1 | | S2 | > | S1 | | | 52 | St | 1 | | 2 |
| QC limits exceeded (show %R) | 23.0 | 55 | 39 | 168 | 152 | - | 235 | ? | - | - | 31 | (199 | - | | - 2. | 24 | : | 0 | 23 | 640 | 972 | | 1- | + | 237 |
| Qualifier, if applied. | J-C | /- | J-C | /- | 5-1 | :/- | 15-1 | c/- | | | J-(| :/- | | | 1 | -C/ | 1_ | FR |) | 17- | 4- | | | 17-(| 1- |
| Limits (%R) | | | | | | | 01L | | WATER | | | | | | | | | 2 | | | | | | | |
| <pre>sticide \$1 = Tetrachloro-m-xy sticide \$2 = Decachlorobipher</pre> | vlene (| DCB | | | 28 | 138 | (advis (advis | sory} | 88-15 | } {ad ad | visory visory | 3 | | | | | | | | | | | | | |

\SHELL\SURROG-2.WK3

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ACID FRACTION

| ALID FRACTION | | | | | | | | | | | | | | | | | | | | | | | | 1 |
|----------------------------------------------------------------------------------------------|------|-------------------|---------|-----|--------------------------------------|------|---------|----|-----|-----|-----|-----|-----|-----|------|------|-------|------|--------|--------------------|--------|------------|-------|------|
| ample Numbers | | | | | | | | | | | | | | | 1.66 | 1 67 | | 1 05 | 1 64 | 1 67 | | S5 | I \$6 | 1 S7 |
| urrogate(s) outside C limits (show %R) | S4 | \$ 5 | S6 | \$7 | \$4 | \$5 | \$6 | S7 | \$4 | \$5 | \$6 | \$7 | \$4 | \$5 | \$6 | \$7 | \$4 | \$5 | \$6 | S7 | 54 | | 50 | 51 |
| compound less than 10%? (Y/N) | | | | 1 | | | 1 | 1 | | 1 | 1 | | | | 1 | 1 | | | 1 | 1 | | | 1 | |
| leanalysis required? (Y/N) | | | | | | | | | | | | | | | | | | | | | | | | |
| If blank, were associated samples reanalyzed? (Y/N) | | | | | | | | | | | | | | | | | | | | | | | | |
| nicial Analysis Qualifiers | | | | | | | | | | | | | | | | | | | _ | | | | | |
| ample Number for reanalysis. | | | | | | | | | | | | | | | | | | | | | | | | |
| leanalysis surrogates outside imits (show % R) | | | | | | | | | | | | | | | | | | | I | 1 | | | 1 | 1 |
| Re-extraction required? (Y/N) | | | | | | | | | | | | | | | | | | | | | | | | |
| If blank, were associated samples re-extracted? (Y/N) | | | | | - | | | | | | | | | | | | | | | | | | | |
| Sample number for re-extract. | | | | | | | | | | | | | | | | | | | | | | | | |
| e-extraction outside limits show % R) | | | | | | | | | | | | | | | | | 2 | | | | | | | |
| Reanalysis qualifiers. | | | | | | | | | | | | | | | | | 1 | | | | | | | |
| QC Limits (%R) | SOI | | | | WATER | | | | | | | | | | | | Note: | The | analy | ed samp sis/rea | nalysi | ber i s | S | |
| S4 = Phenol-d6 S5 = 2-Fluorophenol S6 = 3.4.6-Tribromophenol S7 = 2-Chlorophenol-d4 | 24-1 | 13 21 30 (a | idvisoi | ry) | 10-110 21-110 10-123 33-110 | (adv | visory) | | | | | | | | | | | rec | ommend | ed for | use. | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| PESTICIDE FRACTION | | | | | | | | | | 6 | | | | | | | | Ω - | | | | | | |
| Sample Numbers | | 1470 | D | | _ | 8 | 471 | | | 84 | 18Z | | | 31 | 183 | | | PG | LEI | | | | | |
| | \$1 | | S | 2 | S1 | | S2 | | S | 1 | S | 2 | \$1 | , | S2 | 10.7 | \$1 | 1- | S | 2772 | S1 | | Sa | 2 |

330 - - 192 aC limits exceeded (show %R) 36 32 -1-57 ----J-C/-Qualifier, if applied. J-C/-T-T-1º1-WATER Limits (%R) SOIL

ticide \$1 = Tetrachloro-m-xylene (TCX) ticide \$2 = Decachlorobiphenyl (DCB) SHELL\SURROG-2.WK3

60-150 (advisory) 60-150 (advisory) 60-150 (advisory) 60-150 (advisory)



Project Name: 'TO 51

RECEIVED DEC 3 0 1991 AS/ST/DV

SILVER SPRING CHICAGO DENVER DETROIT GRAND RAPIDS

DOCUMENT NO.: 069NCODS.RVW

ORGANICS DATA REVIEW SUMMARY - NEESA LEVEL C

| Case No. | 0051 | URS TDON . | 3001439 | Project No | CIO-0051 |
|--------------|------------------|---------------|---------------|--------------|-----------|
| | St. Lawrence Is | | | Project Name | N.E. Cape |
| Contract Ial | boratoryEu | reka Laborat | ories, Inc. | | |
| Sample Deli | very Group (SDG) | 8416 | Sampling Date | (Month/Year) | 8/91 |
| Sample Matr | ix19 |) low level s | oils | | |
| Type of Ana | lyses Volati | le Organics, | Pesticide/PCB | (see page 2) |) |

| Data Reviewer | Roger Simon/Alan Ala | ai | _ Date _ | 12/28/91 |
|-----------------|---------------------------|--------------|-------------|------------|
| | Jeralyn Guthrie | | | 12/28/91 |
| | y Richard Cheatham | | | 12/28/91 |
| Telephone logs/ | correspondence attached? | Yes <u>X</u> | No | Not Appl. |
| Laboratory case | e narrative attached? | Yes <u>X</u> | No | Not Avail |
| Required delive | erables provided? | Yes | No <u>X</u> | Not Appl. |
| Airbill enclose | ed? | Yes <u>X</u> | No | Not Avail. |
| CLP SOW used by | y laboratory for analysis | 3/90 | | |

Remarks: <u>Report is based on resubmissions (rec'd 12/19/91)</u> and is considerd to be final.

Note:

- -- The Level C Data Validation Guidelines as specified by NEESA in the Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Restoration Program, NEESA 20.2-047B, June, 1988, the EPA's Functional Guidelines for Organics Analyses and method specific references have been used by the data reviewer as a basis for reviewing the data and applying flags, except as specifically noted in review comments.
- -- Please see data flagging definitions on the last page of this report.

(Revised 12/91) C.C. JOHNSON & MALHOTRA, P.C. 215 UNION BOULEVARD, SUITE 215 • LAKEWOOD, COLORADO 80228 • (303) 987-2928

| Sample <u>Number</u> | Sample <u>Matrix</u> | VOA | Pest/PCB | |
|-------------------------|-------------------------|-----|----------|---|
| | | | | |
| 8416 | soil | Х | х | |
| 8417 | soil | Х | X | |
| 8418 | soil | Х | х | - |
| 8427 | soil | Х | x | |
| 8428 | soil | х | х | |
| 8429 | soil | Х | х | |
| 8430 | soil | Х | х | |
| 8431 | soil | Х | х | |
| 8432 | soil | х | х | |
| 8433 | soil | х | х | |
| 8434 | soil | х | х | |
| 8435 | soil | Х | х | |
| 8436 | soil | Х | х | |
| 8443 | soil | | x | |
| 8444 | soil | | х | |
| 8445 | soil | | х | |
| 8446 | soil | | x | |
| 8447 | soil | Х | х | |
| 8448 | soil ad next page) | х | x | |

(continued next page)

4

X = Analysis has been provided for validation.

0 = Analysis was requested per the Chain of Custody, however, no data was received for validation.

- = Analysis was not requested per the Chain of Custody or required to meet criteria.

| (continued | from page 2) | | | |
|-------------------------|-------------------------|------|----------|------|
| Sample <u>Number</u> | Sample <u>Matrix</u> | VOA | Pest/PCB | |
| Intellacer_ | The of the | 1041 | | |
| 8433MS | soil | х | | |
| | | | | |
| 8433MSD | soil | Х | | |
| 8429MS | soil | | X | |
| 8429MSD | soil | | х | |
| | | | | |
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X = Analysis has been provided for validation.

0 = Analysis was requested per the Chain of Custody, however, no data was received for validation.

- = Analysis was not requested per the Chain of Custody or required to meet criteria.

I. Deliverables

All data deliverables as specified for NEESA Level C quality control were found in the package.

Yes ____ No _X_

Comments: The following Level C Data Deliverables Checklist shows the Forms and data found in the package.

LEVEL C DELIVERABLES COMPLETENESS CHECKLIST - ORGANICS

KEY

- X Included in package
- 0 Not included and/or Not available
- NA Not applicable or Not required
- RS Provided as resubmission

X Method blank spikes with each batch

- X/O Control chart developed by lab
- X/O Sample results Form 1 or spreadsheet
 - X/O CLP data flags used by laboratory
 - X Sample chromatograms and mass spectra
- X Holding times (sampling, prep and analysis dates provided)
- X System monitoring Compounds (SMC) and Surrogate recoveries Form 2
- X Matrix spike/matrix spike duplicate (MS/MSD) Form 3 (MS/MSD is to be 1
- per 20 samples of similar matrix)
- X Method blank summary Form 4
- X Report form for method blank results (Form 1 or spreadsheet) X GC/MS tuning - Form 5
- X Initial calibration data and Resolution Summary Form 6
- X Continuing calibration data and Verification Summary Form 7
- X Internal standard area summary and Analytical Sequence Form 8
- X Pesticide Florisil Cartridge Check and GPC Calibration Form 9

II. Holding Times

Samples were extracted and analyzed within holding times specified by the NEESA data validation guidelines or SW846 holding time requirements. See the following table for a summarization of sample holding times.

Yes ____ No _X_

Comments: An asterisk and number in parentheses indicate a sample fraction outside holding time specifications and the number of days exceeded based on the date sampled. Sample data for any fraction exceeding holding time specifications are flagged as estimated (J or UJ).

Holding Time Summary

| Sample | Sampling | | VOA | Pesti | cide |
|----------|----------|------|----------|----------|----------|
| Number | Date | VISR | Analysis | Extract | Analysis |
| | | | | | |
| 8416 | 8/23/91 | 8/28 | 9/7 (*1) | | |
| 8417 | 8/23/91 | 8/28 | 9/7 (*1) | 9/4 (*5) | 9/30 |
| 8418 | 8/23/91 | 8/28 | 9/7 (*1) | 9/4 (*5) | 9/30 |
| 8427 | 8/23/91 | 8/28 | 9/7 (*1) | 9/4 (*5) | 9/30 |
| 8428 | 8/23/91 | 8/28 | 9/7 (*1) | 9/4 (*5) | 9/30 |
| 8429 | 8/23/91 | 8/28 | 9/7 (*1) | 9/4 (*5) | 9/30 |
| 8429 MS | | | х | | |
| 8429 MSD | | | Х | | |
| 8430 | 8/23/91 | 8/28 | 9/7 (*1) | 9/4 (*5) | 9/30 |
| 8431 | 8/23/91 | 8/28 | 9/7 (*1) | 9/4 (*5) | 9/30 |
| 8432 | 8/23/91 | 8/28 | 9/7 (*1) | 9/4 (*5) | 10/2 |
| 8433 | 8/23/91 | 8/28 | 9/7 (*1) | 9/4 (*5) | 10/2 |
| 8433 MS | , , | , | | X | Х |
| 8433 MSD | | | | X | Х |
| 8434 | 8/23/91 | 8/28 | 9/7 (*1) | 9/4 (*5) | 10/2 |
| 8435 | 8/23/91 | 8/26 | 9/7 (*1) | 9/4 (*5) | 10/2 |
| 8436 | 8/23/91 | 8/26 | 9/7 (*1) | 9/4 (*5) | 10/2 |
| 8443 | 8/23/91 | 8/28 | | 9/4 (*5) | 10/2 |
| 8444 | 8/23/91 | 8/28 | | 9/4 (*5) | 10/2 |
| 8445 | 8/23/91 | 8/28 | | 9/4 (*5) | 10/2 |
| 8446 | 8/23/91 | 8/28 | | 9/4 (*5) | 10/2 |
| 8447 | 8/23/91 | 8/28 | 9/7 (*1) | 9/4 (*5) | 10/2 |
| 8448 | 8/23/91 | 8/28 | | | |
| 8416 DL | 8/23/91 | 8/28 | | 9/4 (*5) | 9/30 |
| 8448 DL | 8/23/91 | 8/28 | | 9/4 (*5) | 10/2 |

X - indicates MS/MSD analysis was performed

III. GC/MS Tuning and Mass Calibration

The BFB and/or DFTPP performance results summaries were included for all samples, and were reported to be within specified criteria at the appropriate frequency.

Yes X No ____

Comments: In the original submission the ratios for masses 177/176 were calculated incorrectly for both the initial tune on 7/19/91 and the continuing tune on 9/7/91. Instead of 100% as reported by the laboratory they should be 8.0% and 6.8% respectively. The laboratory has provided corrected Forms 5A as resubmissions.

IV. A. Instrument Calibration (Volatiles)

1. The instrument response factor (RRF) data summaries were reviewed for the initial and continuing calibrations. All information was present and reported on the required summary forms. Response factors met the required criteria for volatile analyses, thus no data have been qualified.

Yes ____ No _X_

Comments: The RRF values outside of data validation guideline specifications are listed below. All volatile compounds have been reviewed with a control limit of 0.050 being used as a minimum response factor. (NOTE: This procedure has been used by the reviewer in order to prevent the qualification of compounds that had acceptable response factors.) The following out-of-control calibration compound(s) have resulted in associated sample data being flagged as estimated (J or UJ) or in those instances where a response factor of <0.050 was reported the data for the compound has been rejected (R) if reported as undetected in the sample. All samples have been affected.

| Other compounds | Control | Init. Cal. | Cont. Cal. |
|-----------------|---------|------------|------------|
| | Limit | Date / RRF | Date / RRF |
| 2-butanone | 0.050 | 7-19/0.049 | 9-7/0.046 |

It is noted by the reviewer that 2-butanone has a minimum RRF of 0.010 according to the SOW 3/90. While contractually compliant, a significant calibration problem is demonstrated and all 2-butanone results have been qualified per Functional Guidelines criteria.

2. The percent relative standard deviation (%RSD) for the initial calibrations and the percent difference (%D) for the continuing calibrations were reviewed. The %RSD and %D values reported met the data validation criteria (i.e., < 30 %RSD and < 25 %D) for volatile analyses, thus no data have been qualified.

Yes X No _____

Comments: No comments.

B. Instrument Calibration (Pesticide/PCB)

1. The percent relative standard deviation (%RSD) of the calibration factors in the initial calibration for the single component target compounds are all less than 30.0%. All appropriate information was provided and no more than two single component target compounds exceed 20.0 %RSD.

Yes <u>No X</u>

Comments: The compliant and non-compliant %RSD values found to be above 20% are summarized on the attached Table 1-P. A data validation specification of 20% RSD for any compound identified, has been applied for the column used in quantifying the sample result(s).

2. The resolution of adjacent peaks, as specified in the method, were found to be greater than 60%. Compounds required to meet resolution criteria are indicated on Table 1-P.

Yes X No _____

Comments: No comments.

3. The percent difference (shown as RPD on Form 7D) for the calibration verifications of the PEM compounds were found to be less than 25%. All the appropriate information was provided.

Yes No X

Comments: Those compounds which did not meet the specified criteria and qualifiers are summarized on Table 1-P.

4. The pesticide calibration verifications of the Individual Mixes A and B had percent differences (shown as RPD on Form 7E) of less than 25% for all compounds. All of the appropriate information was provided.

Yes No X

Comments: Those compounds which did not meet the specified criteria and qualifiers are summarized on Table 1-P.

5. All retention times for all compounds for the PEM, INDA and INDB solutions met required criteria.

Yes No X

Comments: The retention times for a majority of compounds analyzed on the DB-17 column did not meet the specified criteria as stated in the SOW. In addition, all surrogate retention times for calibration verification standards must be within retention time windows established in the initial calibration. In many instances, this criteria was not met. The reviewer considers this deficiency to be non-compliant with SOW 3/90. All data is qualified due to holding times and no additional qualifiers have been added to the sample data on the basis of retention time problems.

6. The breakdown of 4,4'-DDT and endrin was less than 20% for all PEM analyses.

Yes No X

Comments: The following breakdown criteria was not met:

| | | | % Break | down | |
|---------------------------|--------|-----|---------|----------|----------------------------------------|
| <u>Calibration</u> | Column | DDT | Endrin | Combined | Affected Samples |
| Initial, 09/27/91 | DB-608 | | | 30.8 | All |
| Initial, 10/3/91 | DB-17 | | 30.6 | 30.6 | All |
| Verification, 09/30/91 | DB-608 | | | 32.5 | 8428DL, 8429, 8430, 8431, 8416DL |

8

| | | | % Break | down | |
|---------------------------|---------------|-----|---------|----------|------------------|
| <u>Calibration</u> | <u>Column</u> | DDT | Endrin | Combined | Affected Samples |
| Verification, 10/01/91 | DB-608 | | 23.4 | 40.9 | 8432, 8433 |
| Verification 10/05/91 | DB-17 | | 77.8 | | All |

No additional qualifiers have been assigned to the data.

8. The florisil cartridge check and when applicable, the GPC calibration were found to be within specified criteria.

Yes X No ____

Comments: No comments.

9. The retention times for the surrogates were within criteria for every sample.

Yes ____ No _X_

Comments: An asterisk (*) on the following table indicates that the surrogate retention time was outside the established retention time windows. The reviewer has considered these sample analyses as non-compliant; however, no further qualifiers have been applied.

Form C-N

 L_{i}

| Sample No. | TCX 1 | TCX 2 | DCB 1 | DCB 2 |
|------------|-------|-------|-------|-------|
| 8416DL | | * | * | * |
| 8417 | | * | | * |
| 8418 | | * | | * |
| 8427 | | * | | * |
| 8428DL | | * | | * |
| 8429 | | * | * | * |
| 8430 | | * | * | * |
| 8431 | | * | * | * |
| 8432 | | * | | * |
| 8433 | | * | | * |
| 8433MS | | * | | * |
| 8433MSD | | * | | * |
| 8434 | | * | | * |
| 8435 | | * | | * |
| 8436 | | * | | * |
| 8443 | | * | | . * |
| 8444DL | * | * | * | * |
| 8445 | | * | | * |
| 8446 | | * | | * |
| 8447 | | * | | * |
| 8448DL | | * | | * |
| PBLK1 | | * | | * |
| | | | | |

. (Revised 12/91)

10

V. Blanks

A. Method Blank - The blank analyses summaries were reviewed. The frequency of method blank extractions and analysis and the contaminants reported in blank samples were all within specified limits.

Yes ____ No _X_

Comments: Contaminant quantities reported in the laboratory preparation blanks are listed below. Associated samples which have been flagged "UJ" due to the blank contaminants are also shown.

| <u>Blank ID</u> | Compound | Amount | Affected Samples |
|-----------------|-----------------------|----------|---------------------|
| VBLK1 | methylene chloride | 6 Jμg/kg | all |
| VBLK1 | unknown - RI=22.8 min | 4. μg/kg | none |

B. Trip Blank - The associated trip/travel blank(s) contained contaminants which affected samples in the package.

Yes _____ No ____ Not Identified _____

Comments: No trip blanks were included in this data package.

C. Other Blanks - No other types of blanks have been identified in the data package.

VI. Surrogate Recovery

The surrogate recovery summaries were reviewed. The recoveries were all reported to be within specified CLP QC criteria.

Yes ____ No _X_

Comments: Samples reported to have surrogate recoveries outside specified CLP criteria are summarized on the attached Tables 1 and 2. Data flags, when necessary, are indicated on Table 2.

VII. Blank Spike - Laboratory Control Sample(s)

A. Blank spike analyses (i.e., method blanks spiked with surrogates for volatiles and semivolatiles) were performed with each sample batch in the data package and were reported to be within laboratory control limits or within CLP established control limits.

Yes X No _____

Comments: The blank spikes for for both volatile and pesticide/PCB analyses were spiked with the matrix spike compounds. Matrix spike control limits were applied by the reviewer for the volatile analysis.

B. Laboratory control charts were provided in the package for blank spike compounds.

Yes ____ No _X_

Comments: Control charts provided by the laboratory for the VOA analysis were for surrogates not LCS/blank spike results.

VIII. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

The matrix spike and matrix spike duplicate recovery summary data were reviewed. The spiking procedures were performed and met all recommended QC specifications.

Yes X No ____

Comments: Sample 8429 was used for MS/MSD for volatile organics analysis. Sample 8433 was used for Pesticide/PCB MS/MSD.

IX. Additional Comments

- 1. It was noted by the reviewer that CRQL's have not been adjusted to SOW 3/90 levels for most VOA compounds.
- 2. No volatile organics analysis results were found for Sample 8448. Although it is indicated as requiring this analysis on the Chain of Custody and the Case Narrative.
- 3. Several contract requirements were not met by the laboratory for the Pesticide/PCB analysis. These deficiencies are noted in the following sections: Section IV.B.4, Section IV.B.6, Section IV.B.7 and Section IV.B.9.
- 4. The laboratory reported the higher of the two values from the two columns for the Pesticide/PCB analyses. This procedure is specifically not allowed as stated in the 3/90 SOW.
- 5. GC/MS confirmation was not indicated by the laboratory for the following samples 8416DL, 8417, 8418, 8427, 8428DL, 8443 and 8445. The laboratory did not flag positive hits in these samples with a "C".

EXPLANATION OF ORGANICS DATA FLAGS

For the purposes of this data review document the following code letters and associated definitions are provided:

- U The material was analyzed for, but was not detected. The associated numerical value is the estimated detection limit.
- R Quality Control indicates that data is not usable (i.e., compound may or may not be present). Resampling and re-analysis would be necessary to determine the presence or absence of the analyte in the sample.
- J The associated numerical value is an estimated quantity because quality control criteria were not met or because the amount detected is below the detection limits required by analytical Statement of Work. The laboratory uses this flag in the latter situation.
- B The laboratory uses this flag when the reported analyte was also found in the method blank. Data validation guidelines do not specify the use of this flag.
- JN Tentative identification of a compound at an estimated concentration. Resampling and re-analysis would be necessary for verification.



SILVER SPRING CHICAGO DENVER DETROIT GRAND RAPIDS

C.C.J.M.

FILE

MEMORANDUM

TO:

Jamie Bruton, URS/Seattle COPY Roger Simon, Jeralyn Guthrie, Richard Cheatham, CCJM/Denver

DATE:

FROM:

December 5, 1991

072 INCRAI.MEM

DOCUMENT NO:

SUBJECT:

Volatile Organics Tuning Problems for CTO-051

Per our conversation of 12/5/91, please find herein a detailed description of tuning problems found with all volatile organics analyses performed at Eureka Laboratories for CTO-051. These data packages are considered "on hold" until these issues have been resolved. Data packages have been identified by TDCN numbers and SDG.

- 1. For all CTO-051 data packages with volatile organics analyses (SDG 8449/TDCN 3001421, SDG 8484/TDCN 301210, SDG 8401/TDCN 3001436 and SDG 8416/TDCN 3001439), the values reported for the percent relative abundance of masses 177/176 were incorrectly reported as 100% on the Form V Tuning Summaries. This appeared to be a computer error since calculation of this ratio by the reviewer resulted in acceptable tunes. The laboratory should provide corrected summary forms.
- 2. In SDG 8484/TDCN 3001210, the relative abundance for masses 176/174 was reported and found by the reviewer to be 119.4%. Since there is no expanded criteria for this critical ratio, all data will have to be qualified as unusable (R); raw data to verify the values reported on the Form V Tuning Summary were not included with the Level C data package, so it could not be determined whether the reported ratio was a transcription problem with the base mass percentages reported for m/z 174 and 176, software problem or something else. Please indicate if a calculation/transcription problem existed and provide a corrected summary form or the correct values for masses 176 and 174.

If you should have any questions, please do not hesitate to call us at (303) 987-2928.

URS / Navy Clean PF C.C. JOHNSON & MALHOTRA, P.C. CC: 215 LINION ROLLI EVARD SUITE 215 . LAKEWOOD, COLORADO 80228 . (303) 987-2928

| | | PAC | - Date | Page | SION 12 |
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| SUBJECT: RESUBMIT | | Volatil | e Analysie | s bu | Eureka |
| Laborator | | TO - SI | J |) | |
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| | ile | Sincerely Yours, | | | |

a.

I. SDG NARRATIVE

Laboratory Name: Eureka Laboratories, Inc. 'Lab Certification Number: E765 SDG Number: 8416 Purchase Order Number: AN-91-P-0019 Contract Task Order Number: 0051 NEESA QA/QC Level C Analysis: Initial Sample No.: 19

A. Sample Description/Analytical Description

| <u>Client</u> ID | Lab ID | Date Sampled | <u>Date</u> Received | <u>Matrix</u> | Analysis/Method |
|----------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 8416 | 9108219-4A | 08/23/91 | 08/28/91 | Soil | VOA/3-90 CLP SOW |
| 8417 8418 8427 8428 8429 8430 8431 8432 8433 8434 8435 8436 8435 8436 8443 8445 8445 8446 | 9108219-5A 9108219-6A 9108219-15A 9108219-16A 9108219-18A 9108219-20A 9108219-20A 9108219-22A 9108219-23A 9108219-25A 9108219-25A 9108219-33A 9108219-35A 9108219-35A | 08/23/91 08/23/91 08/23/91 08/23/91 08/23/91 08/23/91 08/23/91 08/23/91 08/23/91 08/23/91 08/23/91 08/23/91 08/23/91 08/23/91 08/23/91 08/23/91 | 08/28/91 08/28/91 08/28/91 08/28/91 08/28/91 08/28/91 08/28/91 08/28/91 08/28/91 08/28/91 08/28/91 08/28/91 08/28/91 08/28/91 08/28/91 08/28/91 | Soil Soil Soil Soil Soil Soil Soil Soil | P/PCBs/3-90 CLP SOW Same as above Same as above P/PCBs/3-90 CLP SOW P/PCBs/3-90 CLP SOW P/PCBs/3-90 CLP SOW |
| 8447 | 9108219-37A | 08/23/91 | 08/28/91 | Soil | VOA/3-90 CLP SOW P/PCBs/3-90 CLP SOW |
| 8448 | 9108219-38A | 08/23/91 | 08/28/91 | Soil | VOA/3-90 CLP SOW P/PCBs/3-90 CLP SOW |

B. Sample Receipt

Samples were received in one delivery batch on August 28, 1991. Samples were in good condition. Sample receipt condition, sample receipt temperature, and method of shipment are noted in the sample receipt check list and DHL air bill. There were no observed problems or discrepancies among Chain-of-custody forms, sample containers, and contract requirements in ELI Order Number 91-08-219.

URS TDM 3001439

SDG Narrative SDG 8416 Page 2 of 4

C. Quality Control Report

Volatile Analysis by 3/90 CLP SOW

Method Blank

Mythylene Chloride, a common laboratory introduced contaminant, was found in the method blank as well as in the sample. The concentration of Methylene Chloride found in the method blank was 6 ppb (ug/Kg) as compared to 7-8 ppb (ug/Kg) detected in the samples. Therefore, if the blank is subtracted from the sample, the real concentration of Methylene Chloride in the samples would be below the detection limit.

Completeness

All analytical and QA/QC data are within the control and detection limits and meet the 95% completeness criteria.

Pesticide/PCB by 3/90 CLP SOW

Higher CRQL for Sample No. 8416, 8428, 8444, and 8448 is due to high analyte concentration.

Analysis Data Sheet

PCB concentration values presented on Form I Pest were different than the PCB concentration values calculated in the manual worksheet. This is due to (1) Telecation Software used the Response Factor for the 0.1 ppm standards of the Aroclors analyzed in the initial calibration. (2) ELI manual worksheet used the response factors for 2 ppm standards of the Aroclors which were analyzed after the sample analyses and used for confirmation per 3/90 CLP SOW.

Chromatogram

Due to the absence of auto scaling capability in the gas chromatograph (GC) used for the analysis, the following criteria for acceptance of chromatograms per 3/90 CLP SOW cannot be met:

- i. Chromatogram peaks for initial calibration standard mixtures A and B at display are required to be less than 100% of full scale.
- ii. Chromatogram peaks for multi-component analytes at display are required to be greater than 25%.

SDG Narrative SDG 8416 Page 3 of 4

DDT and Endrin % Breakdown

The % breakdown of combined Endrin and DDT for PEMO2 (Performance Evalutation Mixture #2), PEMO8, PEMIO, and PEMI2 from the first column analysis exceeded the limit by 0.8%, 2.5%, 11%, and 10.9% respectively. The % combined breakdown for PEMO1 and PEMO2 from the second column analysis exceeded the limit by 0.6% and 5.2%.

The % breakdown of Endrin for PEMO1, PEMO2, PEMO4, PEMO6, and PEM12 from the 2nd column analysis exceeded the limit by 10.6%, 12.6%, 1.4%, 7.8%, and 3.4%. The % breakdown of 4-4'-DDT for PEM10 from the 1st column analysis exceeded the limit by 1.2%.

Calibration Verification

There is a total of seventeen continuing calibration verification (CCV) reported in this package. These CCVs were run after the initial calibration and throughout the analytical sequence.

RPD value of gamma-BHC (Lindane) for PEM10 (Performance Evaluation Mixture #10) from the 1st column analysis, beta-BHC for PEM 04 and alpha-BHC for PEM02 from the 2nd column analysis exceeded the control limit by a margin of 1.1%, 1.1%, and 8.9%.

RPD value of Endosulfan II, Endosulfan sulfate, Endrin Ketone and Endrin Aldehyde for INDAM 05 (Individual Standard Mixture A medium level #5) from the 2nd column analysis exceeded the QC limits by a margin of 1%, 3%, 4%, and 1%.

RPD value of Endrin and DCB for INDAM07 from the 2nd column analysis exceeded the QC limits by 1% and 15% respectively.

2nd Column Confirmation:

DB-17 instead of DB-1701 is used for the second column confirmation for this analysis.

Surrogate Retention Time Window

DCB was slightly outside the Surrogate Retention Time (RT) window in eight analyses for the 1st column analysis. TCX and DCB were slightly ouside the RT window in twenty nine and thirty three analyses respectively for the 2nd column analysis.

SDG Narrative SDG 8416 Page 4 of 4

Surrogate Recovery

The % recoveries of DCB for Sample Nos. 8429, 8431, 8432, 8433, 8433 MSD, 8435, 8436, 8443, 8446, and 8447 from the 2nd column analysis were high due to over integration caused by raised baseline. If peak height is used for the calculation, the spike % recoveries would be within the control limit. The DCB and TCX recoveries were out of the advisory limit for Sample No. 8416DL, 8428DL, 8444DL, and 8448DL due to high analyte concentrations and dilutions.

The % recoveries of TCX for Sample No. 8418, 8427, 8432, 8433, 8434, 8435, 8436, and 8445 were slightly outside the advisory QC limit. The % recovery of TCX for Sample No. 8447 was low due to water bath temperature too high during the concentration step of sample preparation.

Pesticides Identification Summary

A difference of greater than 25% between the first and second column detected for PCB Aroclors. Per 3/90 CLP SOW, the lower of the two was values is to be reported on Form I and flagged with a "P". However, due to constraints of the Telecation software, the higher of the two values was reported on Form I.

Form X is used to summarize the positive analytes, their concentration and % difference for Sample Nos. 8443 and 8416DL.

Completeness

All analytical and QA/QC data are within the control and detection limits and meet the 95% completeness criteria.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Director or his designee, as verified by the following signature.

Shao-Pin Yo, Ph.D.

Laboratory Director

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TABLE 1 (3/90, OLMO1.8) VOA Qualifier Summary

Calibrations, Blanks, Holding Time, System Monitoring Compound, Internal Standards

Hold Time Standards: $(\uparrow,\downarrow;\downarrow\downarrow=<10\%)$ Date Analyzed: SMCs (Internal (IS) Sample Out 9/7/91 1 A11 2 2 Identifier: Ar 3 1 3 8416 8417 Instrument ID: VOA2 3418 3427-3423 8429 8429 ms Method Blank ID: VBLICT 8424 MSD 8430 Date:_____ Time:_ 8431

ICal 9:13 600 14:24 CCal

VBLK1

Jaknown

7:04 Date: 7/19/91 Time: 9/17/91

* RRF must be ≥ .010 Initial Cal. Continuing Cal. Qualifiers Internal RRF Blanks RRF %RSD D MIN #System Monitor Compound Standard >25 Method | Trip (+/-) RRF < MIN >20.5 < MIN COMPOUND: * Chloromethane .100 Bronomethane .100 Vinyl Chloride * Chloroethane UJ 65 Methylene Chloride * * Acetone * Carbon Disulfide . 100 1,1-Dichloroethene .200 1,1-Dichloroethane * 1,2-Dichloroethene(total) 200 Chloroform 1,2-Dichloroethane .100 R * 0.049 0.046 2-Butanone 2 1,1,1-Trichloroethane .100 .100 Carbon Tetrachloride 200 Branodichloramethane * 1,2-Dichloropropane 200 cis-1,3-Dichloropropene .300 Trichloroethene .100 Dibramochloramethane .100 1,1,2-Trichloroethane .500 Benzene .100 trans-1,3-Dichloropropene .100 Branoform 3 4-Methyl-2-Pentanone * * 2-Hexanone .200 Tetrachloroethene 1,1,2,2-Tetrachloroethane .500 .400 Toluene Chlorobenzene .500 .100 Ethylbenzene .300 Styrene .300 Xylene (total) 3 4 4 Toluene-dB a .200 3 Bramofluorobenzene 1,2-Dichloroethane-d4 ai * Blank Tentatively Identified Cospounds Qualifiers RT (µg/kg or µg/L) Reported as: Blank ID 4 uglkg UJB

22.8

TABLE 1 (3/90, OLMO1.8) VOA Qualifier Summary

Calibrations, Blanks, Holding Time, System Monitoring Compound, Internal Standards

Date Analyzed: 9/7/9Hold Time Standards: $(\uparrow,\downarrow;\downarrow\downarrow=<10\%)$ Sample Out SMCs Internal (IS) A11 Identifier: Ar 1 2 3 1 2 3 8432 8433 Instrument ID: VOA 2_ 8434 8435 8436 3447 Method Blank ID: VBUL Date: _____ Time: 9:13 und 94:24 OCal ICal

Date: 7/19/91 Time: 9/7/91 7:04

| * RRF must be ≥ .010 | | Initi | al Cal. | Contin | uing Cal. | _ | | | |
|---------------------------|------|----------------------------------------------------------------------------------------------------------------|-----------|--------------|-------------|--------|---------|------------|---------|
| #System Monitor Compound | MIN | RRF | %RSD | RRF | 20 | Blanks | | Qualifiers | Interna |
| COMPOUND: | RRF | < MIN | >20.5 | < MIN | >8 | Method | Trip | (+/-) | Standar |
| Chloramethane | * | | | | | | | | 1 |
| Bromomethane | .100 | | | | | | | | |
| Vinyl Chloride | .100 | | | | | | | | |
| Chloroethane | * | | | 12 | | | | | |
| Methylene Chloride | * | | | | | 65 | | 5 | |
| Acetone | * | | | | | | | | |
| Carbon Disulfide | * | | | | | | | | |
| 1,1-Dichloroethene | .100 | | | | | | | | |
| 1,1-Dichloroethane | .200 | | | | | | | | |
| 1,2-Dichloroethene(total) | * | | | | | | | | |
| Chloroform | .200 | | | | 1 | | | | |
| 1,2-Dichloroethane | .100 | | | | | | | | |
| 2-Butanone | * | 0.049 | | 0.046 | | | | R | |
| 1,1,1-Trichloroethane | .100 | | | | | | | | 2 |
| Carbon Tetrachloride | .100 | | | | 1 | | | | |
| Branodichloramethane | .200 | | | | | | | | |
| 1,2-Dichloropropane | * | | | | Ì | | | | |
| cis-1,3-Dichloropropene | .200 | C | | | | | | | |
| Trichloroethene | .300 | | | | | | | | |
| Dibranochloramethane | .100 | | | | 1 | | | | |
| 1,1,2-Trichloroethane | .100 | | | | 1 | | | | |
| Benzene | .500 | | | | 1 | | | | |
| | .100 | | | | 1 | | * | | |
| Branoform | .100 | | | | 1 | | | | Ť. |
| 4-Methyl-2-Pentanone | * | | 1 | | 1 | | | | 3 |
| 2-Hexanone | * | | | | 1 | | | | - I ī |
| Tetrachloroethene | .200 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | .500 | | | | 1 | 1 | | | |
| Toluene | .400 | | | | 1 | 1 | | | |
| Chlorobenzene | .500 | | | | 1 | | | | - |
| Ethylbenzene | .100 | | | | | | | | - |
| Styrene | .300 | | | | | | 1 | | |
| Xylene (total) | .300 | the second s | | | | 1 | | | - |
| Toluene-dB * | | | | | 1 | | | | 3 |
| | .200 | | | | | 1 | | | 3 |
| | * | | 1 | | 1 | | 1 | | 1 |
| | | | Riank Ten | tatively Ide | ntified Com | munds | | | |
| Blank ID Reported as | : | | DOM 101 | | (µg/kg or µ | | Qualifi | | |
| LK1 Unknown | • | | 22 | . 3 | 4 uglle | ٩ | U J | | |

VBLKI Unknown

Calibrations, Method Blank, Holding Time, Surrogate Recovery

| analysis Date(s): 09/3 | 0/9/-10/0 | 3/41 5 | ample | | | | iTime nt | | r. . (%) | | | dan le / | | | | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|-----------------|-------------------------|------------------------------------------|-----------------------------|----------------|-------------|-----|-------------|------|----------------------|-------------|---------------|----------|----|--------------|
| | | I | denti | fier: | | Ext | Anal | TCX | DCB | 1 | 2 | 3 | 4 | 5 | 6 | 17 |
| Instrument ID: HP 52 | 890 | 1 | 841. | 7 | | | | | | | X | | | | | Т |
| | | - | 8418 | | | | | | | | X | - | | - | - | + |
| | | - | 842 | | | | | | | - | X | | | - | | + |
| | | - | | | | | | | | | $\overline{\Lambda}$ | | - | | | ╇ |
| Method Blank ID(s): | | - | 3478 | -UC | | | | | | | | X | - | - | - | + |
| PELKI | | | 847.9 | | | | | | | | - | X | | | | |
| FULFI | | | 8430 | | | | | | | | | X | | | | Τ |
| Extract Date(s): | | - | 9430 8431 | | | | | | | | | X | | | 1 | T |
| | | - | 8416 1 | 21 | | | | | | | 1 | 10 | X | | - | t |
| 09/04/91 | | - | 8432 | | | | | - | | - | | | ~ | - | - | \mathbf{k} |
| 01101111 | | | | | | | | | | | | | | - | te | t |
| | | 1_ | 8433 | | | | | | | | | | | | X | 1 |
| *260% Resolved X +260% | Resolved | §≥60% | Resolve | 4/ | | | | | 1 | | | | | | | |
| in Initial Resolution Check | Resolved χ $\frac{1}{27/9}$ | <u>\$>60</u> | / | | ions: | | | | | | | | | | | |
| ≪±60% Resolved <u>×</u> ♦≥60% <u>in Initial Resolution Check</u> DB-608 or | | §≥60% | | Calibrati | | χ * | | | | | | | | | | |
| in Initial Resolution Check | 9/27/91 | §>60% | Cont INDs | Calibrati inuing: R PBM | | PEN | INDs | | | | | | | | | |
| In Initial Resolution Check DB-608 or Equivalent | 9/27/9(Initial 2RSD>20 | | Cont INDs 2 | Calibrati inuing: R PEM 3 | 890 > 257 INDS 4 | PEN 5 | 6 | 7 | - 6 | lank | | | | | | |
| In Initial Resolution Check DB-608 or Equivalent Cont.Cal.Date, Month+ C | 9 Day | рем 1 29 | Cont INDs 2 30 | Calibrati inuing: R PEM 3 30 | 890 > 25 1NDs 4 0/ | PEN 5 6/ | 6 02 | 7 | | | | | ifie | 8 | | |
| In Initial Resolution Check DB-608 or Equivalent <u>Cont.Cal.Date</u> , Month+ C ¹ COMPOLIDI | 9/27/9(Initial 2RSD>20 | | Cont INDs 2 | Calibrati inuing: R PEM 3 30 | 890 > 257 INDS 4 | PEN 5 6/ | 6 02 | 7 | | lank | | | lifie +/-) | 8 | | |
| In Initial Resolution Check DB-608 or Equivalent Cont.Cal.Date, Month+ C COMPOUND1 _alpha-BHC | 9 Day | рем 1 29 | Cont INDs 2 30 | Calibrati inuing: R PEM 3 30 | 890 > 25 1NDs 4 0/ | PEN 5 6/ | 6 02 | 7 | | lank | | | | 8 | | |
| In Initial Resolution Check DB-608 or Equivalent Cont.Cal.Date, Month+ C COMPOUND1 alpha-BHC beta-BHC | 9 Day | рем 1 29 | Cont INDs 2 30 | Calibrati inuing: R PEM 3 30 | 890 > 25 1NDs 4 0/ | PEN 5 6/ | 6 02 | 7 | | lank | | | | 8 | | |
| in Initial Resolution Check DB-608 or Equivalent <u>Cont.Cal.Date</u> , Month+ (7) <u>COMPCUND1</u> alpha-BHC <u>beta-BHC</u> <u>delta-BHC</u> | 9 Day | рем 1 29 | Cont INDs 2 30 | Calibrati inuing: R PEM 3 30 | 890 > 25 1NDs 4 0/ | PEN 5 6/ | 6 02 | 7 | | lank | | | | 8 | | |
| in Initial Resolution Check DB-608 or Equivalent <u>Cont.Cal.Date</u> , Month+ (7) <u>COMPCUND1</u> alpha-BHC <u>beta-BHC</u> <u>delta-BHC</u> <u>gamma-BHC</u> (Lindane) | 9 Day | рем 1 29 | Cont INDs 2 30 | Calibrati inuing: R PEM 3 30 | 890 > 25 1NDs 4 0/ | PEN 5 6/ | 6 02 | 7 | | lank | | | | 3 | | |
| in Initial Resolution Check DB-608 or Equivalent <u>Cont.Cal.Date</u> , Month+ (7) <u>COMPOLND1</u> alpha-BHC <u>beta-BHC</u> <u>delta-BHC</u> <u>germe-BHC (Lindane)</u> Heptachlor | 9 Day | рем 1 29 | Cont INDs 2 30 | Calibrati inuing: R PEM 3 30 | 890 > 25 1NDs 4 0/ | PEN 5 6/ | 6 02 | 7 | | lank | | | | 8 | | |
| in Initial Resolution Check DB-608 or Equivalent <u>Cont.Cal.Date</u> , Month+ (7) <u>COMPOLND1</u> <u>alpha-BHC</u> <u>beta-BHC</u> <u>delta-BHC</u> <u>germa-BHC (Lindane)</u> <u>Heptachlor</u> <u>Alchin</u> | 9 Day | рем 1 29 | Cont INDs 2 30 | Calibrati inuing: R PEM 3 30 | 890 > 25 1NDs 4 0/ | PEN 5 6/ | 6 02 | 7 | | lank | | | | 3 | | |
| in Initial Resolution Check DB-608 or Equivalent <u>Cont.Cal.Date</u> , Month→ ()' <u>COMPOLNDJ</u> alpha-BHC <u>delta-BHC</u> <u>gamme-BHC (Lindane)</u> <u>Heptachlor</u> <u>Aldrin</u> <u>Heptachlor epoxide</u> | 9/27/9(Initial \$7\$\$0>20 ↓ 0ay* Time* | рем 1 29 | Cont INDs 2 30 | Calibrati inuing: R PEM 3 30 | 890 > 25 1NDs 4 0/ | PEN 5 6/ | 6 02 | 7 | | lank | | | (+/-) | 8 | | |
| in Initial Resolution Check DB-608 or Equivalent <u>Cont.Cal.Date</u> , Month+ (7) <u>COMPOLND1</u> <u>alpha-BHC</u> <u>beta-BHC</u> <u>delta-BHC</u> <u>germa-BHC (Lindane)</u> <u>Heptachlor</u> <u>Alchin</u> | 9 Day | рем 1 29 | Cont INDs 2 30 | Calibrati inuing: R PEM 3 30 | 890 > 25 1NDs 4 0/ | PEN 5 6/ | 6 02 | 7 | | lank | | | (+/-) | 8 | | |
| in Initial Resolution Check DB-608 or Equivalent <u>Cont.Cal.Date</u> , Month→ ()' <u>COMPOLNDI</u> alpha-BHC <u>delta-BHC</u> <u>gamma-BHC (Lindane)</u> <u>Heptachlor</u> <u>Aldrin</u> <u>Heptachlor epoxide</u> <u>Endosulfan 1</u> ◆ | 9/27/9(Initial \$7\$\$0>20 ↓ 0ay* Time* | рем 1 29 | Cont INDs 2 30 | Calibrati inuing: R PEM 3 30 | 890 > 25 1NDs 4 0/ | PEN 5 6/ | 6 02 | 7 | | lank | | | (+/-) | 8 | | |
| in Initial Resolution Check DB-608 or Equivalent Cont.Cal.Date, Month→ ()' COMPOUND1 alpha-BHC delta-BHC gamma-BHC (Lindane) Heptachlor Aldrin Heptachlor epoxide Endosulfan 1 ◆ Dieldrin § | 9/27/9(Initial \$7\$\$0>20 ↓ 0ay* Time* | рем 1 29 | Cont INDs 2 30 | Calibrati inuing: R PEM 3 30 | 890 > 25 1NDs 4 0/ | PEN 5 6/ | 6 02 | 7 | | lank | | | (+/-) | <u>8</u> | | |

Surrogate RPDs must also be ≤ 25%

Confirmation Column

RPD < 25%

RPD < 25%

 Decachiorobiphenyt
 (DCB)
 £T

 * Validation Criteria:
 Quantitation Column

 Compound Detected
 RP0% < 25%</td>
 and

 Compound Undetected
 RP0% < 25%</td>
 or

Endosufan II 4,4'-000 Endosufan sulfate 4,4'-00T Methoxychlor

Endrin Ketone

 Toxaphene

 Aroctor-1016

 Aroctor-1221

 Aroctor-1232

 Aroctor-1242

 Aroctor-1248

 Aroctor-1254

 Aroctor-1254

Endrin Aldehyde alpha-Chlordane gamma-Chlordane .

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Surrogates - %RSD > 30% Tetrachioro-m-Xylene(TCK)

CT

Calibrations, Method Blank, Holding Time, Surrogate Recovery

| 09/24/91 Analysis Date(s): 09/30/91 10/01/91-10/03/91 Instrument ID: HP 5890 | 1 | HoldTime | Surr. | Standard(s) After |
|---------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------|-------------------|
| 09/30/91 | Sample <u>Identifier:</u> <u>3434</u> | Out | Rec. (%) | |
| 10/01/41-10/03/41 | Identifier: | Ext Anal | TCX DCB | 1 2 3 4 5 6 7 |
| Instrument ID: 10 1700 | 3434 | | | |
| HP 5890 | | | | |
| | 9436 | + | | |
| Method Blank ID(s): | 84 43 | | | λ |
| FELKI | 84 45 | | | |
| | 9446 9447 | | | |
| Extract Date(s): | distant and and an in the second se | | | |
| 09/04/91 | 8448 00 | | | |
| | SUUUUL | | 00 | NON'E X |
| | 8433 MS | | | NINE |
| | 9433 MS0 | | | NONE |

*250% Resolved X #250% Resolved X \$260% Resolved X

1

| DB-608 or Equivalent | Calibrations: | | | | | | | | | |
|---------------------------|---------------------------------|------|----------|----------|---------|-------|------|------|-------|-----------------|
| | Initial Continuing: RPD > 25% * | | | | | | | | | |
| | <u>%RSD>20</u> ↓ | PEN | INDS | PEM | INDS | PEN | INDS | PEM | | |
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Blank | |
| | -10 Day | 29 | 30 | 0430 | | 07 | 02 | 02 | Conc. | Qualifiers |
| COMPOUND1 | Time+ | 2124 | 0:17 | 2103 | CEIT | 2105 | 0737 | 2023 | | (+/-) |
| alpha-BHC | | | | | | | | | | |
| beta-BHC | | | | · · | | | | | | |
| delta-BHC | | | | 1 | | | | | | |
| gamma-BHC (Lindane) | | | | | | | | | | |
| Heptachlor | 1.0 | | | | | | | | | |
| Aldrin | | | | | | | | | | |
| Heptachlor epoxide | | | | | | | | | | |
| Endosulfan I 🔶 | 20.5 | | | | | | | | | J-C/- |
| Dieldrin § | | | | | | | | | | |
| 4,4'-DDE § | | | | | | | | | | |
| Endrin | | | | | | | | | | |
| Endosufan II | | | | | | | | | | |
| 4,4'-DDD | | | | | | | | | | |
| Endosufan sulfate | | | | | | | | | | |
| 4,41-DDT | | | | | | | | | | |
| Methoxychlor * | | | | | | | | | | |
| Endrin Ketone 🔹 | | | | | | | | | | |
| Endrin Aldehyde | | | | | | | | | | |
| alpha-Chlordane | | | | | | | | | | |
| gamma-Chlordane 🔶 | | | | | | | | | | |
| Toxaphene | The second second | | | | | | | | | |
| Aroclor-1016 | | | 1 | | | | | | | |
| Aroclor-1221 | | | 1 | | | | | | | |
| Aroclor-1232 | | | | | | | | | | |
| Aroclor-1242 | | | | | | | | 1 | | |
| Aroclor-1248 | | | 1 | | | | 1 | | | |
| Aroclor-1254 | | | | | | | 1 | 1 | | |
| Aroclor-1260 | | | | | | | | | | |
| Surrogates - %RSD > 30% | | Su | rogate R | PDs must | also be | < 25% | | | | 1 Carlot States |
| Tetrachloro-m-Xylene(TCX) | | | 1 | 1 | 1 | 1 | 1 | 1 | | |
| Decachlorobiphenyl (DCB) | | | | RT | | | 1 | | RT | |

 * Validation Criteria:
 Quantitation Column
 Confirmation Column

 Compound Detected
 RPD% < 25%</td>
 and
 RPD < 25%</td>

 Compound Undetected
 RPD% < 25%</td>
 or
 RPD < 25%</td>

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s): 10/04/41-10/06/41

Instrument ID: VARIAN 6000

Method Blank ID(s): PBLE

Extract Date(s):

| Comple | HoldTime Out | | Sur | C. | Standard(s) After Sample Analysis: | | | | | | |
|-----------------------|-----------------|------|-----|-------|---------------------------------------|---|---|---|---|---|---|
| Sampre | | | Rec | . (5) | | | | | | | |
| Sample Identifier: | Ext | Anal | TCX | DCB | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8416 CC | | | | | | X | 1 | | T | | Τ |
| 8417 | | | | | | X | | | | | |
| 8418 | | | | | | X | | | 1 | 1 | T |
| 8427 | | 10 | | | | X | | | | 1 | T |
| 5428 CL | | | | | | x | | | | | |
| 8479 | | | | | | X | | | | | T |
| 1970 843C | | | | | | X | | | | | Τ |
| 2431 | | | | | | X | | | | | Γ |
| 843Z | | | | | | X | | | | | |
| 8432 | | | | | | x | | | | | T |

∞260% Resolved______ ♦260% Resolved_____ in Initial Resolution Check

| DB-1701 or <u>06-17</u> Equivalent_06-17 | <u>10/03/4/</u> Calibrations: | | | | | | | | | |
|----------------------------------------------------|-------------------------------|-------------------------|-----------|----------|---------|----------|------|-----|-------|------------|
| | Initial | Continuing: RPD > 25% * | | | | | | | | |
| | %RSD>20 | PEN | INDs 2 | PEM 3 | INDS | PEM 5 | INDS | PEM | | |
| | 1 | 1 | | | 4 | | 6 | 7 | Blank | |
| Cont.Cal.Date, Month+ /c | Day+ | 04 | 近 | | | | | | Conc. | Qualifiers |
| COMPOUND | Time+ | 0527 | 1829 | | | | | | | (+/-) |
| alpha-BHC | | | | | | | | | | |
| beta-BHC | 20.2 | 26.6 | | | 10- | | | | | T-C /- |
| del ta-BHC | | | | | | | | | 4 | |
| gamma-BHC (Lindane) | | | | | | | | | | |
| Heptachion | | | | | | | | | | |
| Aldrin | | | | | | - | | | | |
| Heptachlor epoxide | | 1 | | | | | | | | |
| Endosulfan I 🔶 | | | | | | | | | | |
| Dieldrin | | | | | | | | | | 1 |
| 4.41-DDE | | | | | | | | | | |
| Endrin | 21.4 | 38.1 | 26.0 | | | | | | | |
| Endosufan II | | | 1 | | | | | | | |
| 4.41-000 | | | | | | | | | | |
| Endosufan sul fate # | 26.0 | | | | | | | | | 5-01- |
| 4,41-DOT | | | | | | | | | | |
| Methoxychlor * | | | | | | | | | | |
| Endrin Ketone | 37.4 | | | | | | | | | 5-01- |
| Endrin Aldehyde | 26.0 | | | | | | | | | J-C /- |
| alpha-Chlordane | 60.0 | | | | | | | | | -1-0/- |
| garma-Chlordane 🔶 | | | | | | | | | | |
| Toxaphene | House and some statements | | | | | | | | | |
| Aroclor-1016 | | | | | | | | | | |
| Aroclor-1221 | Server and | - | | | | | | | | |
| Aroclor-1232 | | | | | | | | | | |
| Aroclor-1242 | the second | | | | | | | | | |
| Aroclor-1248 | | | | | | | | | | |
| Aroclor-1240 | | | | | | | | | | |
| Aroclor-1260 | | | | | | | | | | |
| | | | | | alaa b | 1 201 | | | - | |
| Surrogates - %RSD > 30% | | 12T | rogate RP | us must | also be | 50% | | | | |
| Tetrachloro-m-Xylene(TCX) | ~ | RT | 140 00 | | | | | | | |
| Decachlorobiphenyl (DCB) | | KP | 40 RT | | | | | | | |

* <u>Validation Criteria:</u> Compound Detected Compound Undetected
 Quantitation Column

 RPD% < 25%</td>
 and

 RPD% < 25%</td>
 or

Confirmation Column RPD < 25% RPD < 25%

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s): 10 /04/41 -

Instrument ID: 14KIAN 6000

Method Blank ID(s): PBLEI

Extract Date(s): C9/04/04

| Sample | | iTime It | Rec | . (%) | S | tand | | | | | r |
|-------------|-----|-------------|-----|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|---|---|---|---|----------|
| Identifier: | Ext | Anal | TCX | DCB | 1 | | 3 | | 5 | | 7 |
| 4434 | | | 1 | | | X | | | | | T |
| 8435 | | | | | | Y | | | | 1 | |
| 0436 | | | | | | Y | | 1 | - | 1 | \vdash |
| 8443 | | | | | | x | | - | | - | \vdash |
| 9,4440L | | | C | 0 | N. | WE | | - | | + | \vdash |
| 5445 | | | 1 | | NO | | | 1 | | | 1 |
| 8.446 | | | | | of the local division in which the local division in which the local division in the loc | WE | | 1 | | 1 | |
| 6447 | | | | | NI | WV: | | 1 | - | 1 | 1 |
| 844800 | | | | | Ne | VE | | | | | |
| Ry 33 ms | | | | | NIA | - | | 1 | - | | 1 |
| 9433 Mic | | | | | NIN | | | | | | - |

| 0250% Resolved X 0250% | | X | | | | | | | | |
|--------------------------------|---------|-------|----------|-----------|-----------|-------|------|-----|-------|------------|
| in Initial Resolution Check | 1 | , | | | | | | | | |
| | 10/03F | 11 | | Cal ibrat | ione: | | | | | · · · - |
| 08-1701 or 17 | Initial | 1 | | | 890 > 25% | * | | | | |
| D8-1701 or p6-17 Equivalent | 2RSD>20 | PEM | INDS | | | PEM | INDS | PEM | | |
| | 1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Blank | |
| Cont.Cal.Date, Month+ / | O Day | 05 | 05 | | | | | | Conc. | Qualifiers |
| COMPOUND I | Time+ | 0517. | 1829 | | | | | | | (+/-) |
| alpha-BHC | 1 | | | | | | | | | (4/-) |
| beta-BHC | 20.2 | 24.6 | | | | | | | | J-C/- |
| del ta-BHC | | | | | | | | | 1 | |
| gamma-BHC (Lindane) | | | | | | | | | | |
| Heptachlor | | | | | | | | | | |
| Aldrin | | | | | | | | | | |
| Heptachlor epoxide | | | | | | | | | | |
| Endosulfan I 🔶 | | | | | | | | | | |
| Dieldrin | | | | | | | | | | |
| 4,41-DDE | | | | - | | | | | | |
| Endrin | 21.4 | 38.1 | 26.0 | | | | | | | 7-0 - |
| Endosufan II | | | 1 | | | | | | | 7-0 |
| 4.41-000 | | | | | | | | | | |
| Endosufan sulfate # | 7.6.0 | | NO 570 | | | | | | | |
| 4.41-00T | | | 110 7.17 | | | | | | | J-C/- |
| Methoxychlor * | | | | | | | | | | |
| Endrin Ketone | 37.4 | | | | | | | | | 1 21 |
| Endrin Aldehyde | 260 | | | | | | | _ | | -1-c/- |
| alpha-Chlordane | | | | | | | | | | J-01- |
| gamma-Chlordane + | | | | | | | | | | |
| Toxaphene | | | | | | | | | | |
| Aroctor-1016 | | | | | | | | | | |
| Aroctor-1221 | | | | | | | | | | |
| Aroctor-1232 | | - | | | | | | | | |
| Aroclor-1242 | | | | | | | | | | |
| Aroclor-1248 | | | | | | | | | | |
| Aroclor-1254 | | | | | | | | | | |
| Aroclor-1260 | | - | | | | | | | | |
| Surrogates - XRSD > 30% | | 00 | ogate RP | De met | aloo bo | < 35V | | | | |
| Tetrachloro-m-Xylene(TCK) | - | RT | Jace 101 | US MUST | atso be | 206 | 1 | | | |
| Decachlorobiphenyl (DCB) | - | ET | HURT | | | | | | | |
| (UCD) | | E/ | TURI | | | | | | | |

* <u>Validation Criteria:</u> Compound Detected Compound Undetected

 Quantitation Column

 RP0% < 25%</td>
 and

 RP0% < 25%</td>
 or

TABLE 2 - SURROGATE RECOVERIES SOW Rev. OLMO1.8, 3/90 Page 1 of 3

| VOA FRACTION | AN OK | | | | | |
|-----------------------------------------------------------------------------|------------|----------|----------|----------|-------------------|---------------|
| A. Sample Numbers | | | | | | |
| B. Surrogate(s) outside QC limits (show XR) | s1 s2 s3 | S1 S2 S3 | S1 S2 S3 | s1 s2 s3 | S1 S2 S3 | \$1 S2 S3 |
| C. Compound less than 10%? (Y/N) | | | | | | |
| D. Initial Analysis Qualifiers | - | | | | | |
| E. Reanalysis required? (Y/N) | | | | | | |
| If blank, were associated samples reanalyzed? (Y/N) | | | | | | - |
| F. Sample Number for reanalysis. | | | | | | |
| G. Reanalysis surrogates outside limits (show % R) | | | | | | |
| H. Reanalysis qualifiers. | | | | | | |
| QC Limits (%R) | SOIL WATER | | | | NOTE: The circled | sample number |

| VOA | \$1 | - | Toluene-d8 | 84-138 | 88-110 |
|------|-----|----|-----------------------|--------|--------|
| | | | Bromofluorobenzene | 59-113 | 86-115 |
| | | | 1,2-Dichloroethane-d4 | 70-121 | 76-114 |
| A:\! | SUR | RO | G-1.WK3 | | |

NOTE: The circled sample number is the analysis/reanalysis recommended for use.

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- SURROGATE RECOVERIES SOW Rev. OLMO1.8, 3/90 Page 3 of 3

| ACID FRACTION | | | | | | | | | | | | | | | | | | _ | 1 | | | 1 |
|-------------------------------------------------------------------------------------------------------|---------------------------------------------------|---------------------|------------------------------------------|------|-------------------------|--------------|-----------------|------------|------------------|-----|-------|-------|----|----------|----------|--------------------|--------|------------------------------|----------------------------|-------------|------------|----------|
| Le Numbers | | | | | | | | | | \$7 | \$4 I | \$5 I | 56 | 57 | S4 | \$5 | I \$6 | \$7 | S4 | \$5 | S 6 | \$7 |
| vgete(s) outside imits (show XR) xund less than 10%? (Y/N) | \$4 \$5 | \$6 \$7 | \$4 | \$5 | \$6 | \$7 | \$4 | \$5 | \$6 | s/ | | 3.7 | | | | | | | | | | |
| alysis required? (Y/N) blank, were associated bles feanalyzed? (Y/N) tat Analysis Qualifiers | | | | | | \geq | XX | _ | | | | | | | | | | | | | | |
| Le Number for reanalysis. alysis surrogates outside ts (show X R) | | | | ľ | | | | | \wedge | l | | | | | | | | I | | | | <u> </u> |
| xtraction required? (Y/N) blank, were associated ples re-extracted? (Y/N) | | | | | | | | | | | | | | | | | | | | | | |
| le number for re-extract. xtraction outside limits w X R) | | | | | | | | | I | | | | | <u> </u> | <u> </u> | | 1 | | | | | |
| alysis qualifiers. | | | | | | | | | | | | | | | 1 | | | | 1 | | | |
| QC Limits (%R) = Phenol-dó = 2-Fluorophenol = 2 & 6-Tribromophenol = 2 & Chlorophenol-d4 | SOIL 24-113 25-121 10-122 20-130 (add | visory) | WATE 10-11 21-11 10-12 33-11 | | vísory) | | | | | | | | | | Note: | The the reco | circle | ed same sis/rel ed for | ole num analysi use. | ber is s | | |
| PESTICIDE FRACTION | | | | 8417 | | | | 84 | 112 | | . ś | 421 | Z | | 1 6 | -117 | ŧрС | | | 842 | 4 | |
| le Numbers | 841600 | - | - | 8117 | - | 1 | _ | 0 11 | 0 | | | | | | | | | | | - | | |
| imits exceeded (show %R) | s1 0 /53,9 | 52 244 /- | s | 1 | S2 | 2 | \$1 48.6 | | 37.1 | 1 | - | 58,8 | sa | 2 | | 154.4 | 192, | 1(?) | | | 1 | 146 |
| ifier, if applied. | J-5/R-5 | 7-5/- | | | 1 | | JE | 1- | 15-0 | 1- | J-(| :/ | 1 | | 7-5 | 1- | 17- | 5/- | | | 2-5 | s/- |
| its (XR) ide S1 = Tetrachloro-m-xy ide S2 = Decachlorobiphen | · · · · · · · · · · · · · · · · · · · | 1 | 6 | | OIL (advis (advis | ory} ory} | WATER 88-158 | (ad (ad | visory visory | 3 | | | | | - | | | | | | | |

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- SURROGATE RECOVERIES SOW Rev. OLHO1.8, 3/90 Page 3 of 3 cont

| ACID FRACTION | | | | | | | | | | | | | | | | | | | | _ | | | | |
|--------------------------------------------------------------------------------------------------------------------------------------------|-------------------|----------------------|--------|-----|-------------------------------------|-----|------------------|------|----------------|-------|----------|-----|-------------|--------------|------|-----|-----------|--------|------------|--------|---------|--------|-------|-------|
| ale Numbers | | | | | | | | | | | | | | | | | | | | | | \$5 | 56 | 1 \$7 |
| ogate(s) outside imits (show AR) | 54 | \$5 | \$6 | \$7 | \$4 | \$5 | \$6 | \$7 | \$4 | \$5 | \$6 | \$7 | \$4 | \$5 | \$6 | \$7 | 54 | 55 | \$6 | \$7 | \$4 | 35 | 50 | |
| bound less than 10%? (YAN) | | | 1 | 1 | | | 1 | 1 | | 1 | 1 | 1 | | | | 1 | 1 | 1 | | 1 | | 1 | | 1 |
| halysis required? (Y/N) blank, were associated nples reanalyzed? (Y/N) ctat Anatysis qualifiers | | | | | | | | | | | / | / | | | | | | | | | | | | |
| ble Number for reanalysis. Dalysis surrogates outside its (show X R) | | | | | | | 5 | ľ | | | 1 | | | | 1 | | | | | | | | | |
| extraction required? (Y/N) blank, were associated mples re-extracted? (Y/N) | | | | | _ | / | | | | | | | | | | | | | | | | | | |
| ple number for re-extract. extraction outside limits ow % R) | | 1 | 1 | 1 | | I | | | | 1 | | | | \leftarrow | L | 1 | | | | 1 | | | | 1 |
| nalysis qualifiers. | | | | | | | | | | | | | 1 | | | | | | | | 1 | | | |
| QC Limits (XR) | \$0 | IL | | | WATER | | | | | | | | | | | | Note: | The ci | ircle | d same | le nur | ber is | | |
| <pre>% = Phenol - 06 = 2-El Vorophenol % = 2.4 6-Tribromophenol 7 = 2.4 6-Tribromophenol 7 = 2.4 for the phenol - 04</pre> | 24- 20- 20- | 113 121 130 (a | dvisor | ·γ) | 10-110 21-10 10-123 33-110 | (ad | visory |) | | | | | | | | | | recom | mende | d for | use. | | | |
| PESTICIDE FRACTION | | | | | | | | | ъ | | | | | _ | | | | | 2 10 1 | | | (71- | - | |
| ple Numbers | 1 8 | 543 | 0 | | 1 4 | 543 | 1 | | 18 | 543 | 2 | | | 843 | 3 | | 8 | 433 | 5 195 | | | \$43 | 5145 | 0 |
| limits exceeded (show XR) | \$1 | | 52 | 2 | S1 | | 44.7 | | s 53 | | si 44 | 162 | \$1 32/3 | 36 | 4/1 | 165 | 51 | -7 | \$2 42/ | / | S | | 41 | 171 |
| lifier, if applied. | | | | | | | Tra | .1- | J-9 | :/- | 17-5 | /- | J-5 | 1- | 5-51 | /_ | 3-5/ | - k | J-5, | /- | | | 17-5, | /- |
| nits (%R) | 1 | | | | | S | OIL | | WATER | | | | | | | | | | | | | | | |
| ide \$1 = Tetrachloro-m-xy ide \$2 = Decachlorobiphen LLL\SURROG-2.WK3 | iyl { | ICX} | | | 88 | 158 | (advis (advis | ory} | <u> 88-15</u> | 0 (ad | visory | } | | | | | | | | | | | | |

2 - SURROGATE RECOVERIES SOW Rev. OLM01.8, 3/90 Page 3 of 3

| ACID FRACTION | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------------------------------------------------------------------------------------|------------|-------------|-------|-----|--------------------------------------|------------------|------------------|------|--------|-------|------------------|-------------|-----|-----|------|-----|-------|-----|--------|-------------------------------|--------|-------|-------|----|
| mple Numbers | | | | | | | | | | | 1.00 | 1 07 | | \$5 | | s7 | 54 | \$5 | 1 S6 | s7 | | \$5 | 1 \$6 | S7 |
| rrogate(s) outside limits (show-XR) | S4 | \$5 | \$6 | \$7 | \$4 | S5 | \$6 | \$7 | \$4 | \$5 | \$6 | \$7 | \$4 | | \$6 | 31 | | | | | | | | |
| mpound less than 10%? (Y/N) | | | 1 | 1 | | | I | 1 | | 1 | 1 | 1 | | | T | 1 | | 1 | 1 | 1 | _ | 1 | 1 | |
| analysis required? (Y/N) | | | | - | | | | | | | | / | | | | | | | | | | | | |
| f blank, were associated amples reanalyzed? (Y/N) | ~ | | | | | | | | | / | / | | | | | | | | | | | | | |
| itiat Analysis Qualifiers | | | / | | | | | | | | | | | | | | . | | | | _ | | | |
| mple Number for reanalysis. analysis surrogates outside mits (show % R) | | | | 1 | | \triangleright | \triangleleft | Í | | | | | | | 1 | | | | | | | Ι | 1 | 1 |
| -extraction required? (Y/N) | | | | | | | _ | | | | | | | | | | • | | | | | | | |
| f blank, were associated amples re-extracted? (Y/N) | | | / | / | | | | | | ~ | <u> </u> | | | | | | | | | | | | | |
| mple number for re-extract. -extraction outside limits how % R) | | Y. | | | | | 1 | | | | 1 | | | | +_ | L | | | | | | | 1 | 1 |
| analysis qualifiers. | | | | | | | | | | | | | | | | | | - | | | 1 | | | |
| QC Limits (%R) | SO | IL | | | WATER | | | | | | | | | | | | Note: | Ib | e circ | ted sar ysis/re ded for | mple n | umber | s | ÷ |
| S4 = Phenol-ds S5 = 2-fluopophenol S5 = 2, 6-Tripromophenol S7 = 2-chlorophenol-d4 | 24- | | dviso | ry) | 10-110 21-110 10-123 33-110 | (adv | /isory) |) | | | | | | | | | | rei | commen | ded for | r use. | 515 | | |
| PESTICIDE FRACTION | | | | | | | | | | | | | | | | | | | | | | | | |
| umple Numbers | 8 | -43 | 4 | | | 54. | 75 | | 18 | 434 | 5 | | | 844 | 3 | | | 54 | 441 | 16 | _ | 844 | 15 | |
| ; limits exceeded (show %R) | 51 57/2 | | s: | 2 | \$1 47/3 | 17 | S2 34 | 1 | 57.6 | | 43. | 2 5/12.2 | S1 | | 1 | 186 | | 0 | 0 | / | 38 | | 5 ZB. | 4/ |
| ualifier, if applied. | T-S/ | - | J.T. | 5/- | J-S | /- | 17- | 5/- | -: j | s/- | 17-5 | /- | | | 1 J- | 5/- | 7-5/ | R-S | 1J | 5/R-1 | 5]] | -5/- | 17-1 | 54 |
| imits (%R) | | | | / | 1 | s | OIL | A: | WATER | | | | | | | | | | | | | | | |
| icide \$1 = Tetrachloro-m-xy icide \$2 = Decachlorobiphen | ylene { | TCX) DCB | | | 88 | 158 | (advis (advis | ory} | 88-158 |) (ad | visory visory | 3 | | | | | | | | | | | | |

. .

HELL \SURROG-2.WK3

| ACID FRACTION | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------------------------------------------------------------------------------------------|-------|----------------------|--------|-----------|-------------------------------------|-------------------|----------------|----------------|--------|-----------------|------------------|-------|---------|-----|------|-----|---------|------|----------|-----------------------------|---------|---------------|-------|-------|
| Sample Numbers | | | | | | | | | | | | | | | | | | | | 1 | | 1 65 | S6 | I \$7 |
| Surrogate(s) outside GC limits (show XR) | \$4 | s5 | \$6 | \$7 | \$4 | \$5 | \$6 | S7 | \$4 | \$5 | \$6 | S7 | \$4 | \$5 | \$6 | \$7 | \$4 | S5 | \$6 | \$7 | \$4 | \$5 | | |
| Compound less than 10%? (Y/N) | | 1 | 1 | 1 | | 1 | 1 | I | | I | 1 | 1 | | 1 | 1 | 1 | | 1 | 1 | 1 | | 1 | 1 | 1 |
| Reanalysis required? (Y/N) | | | | | | | | | | | | | | | | _ | - | | | | | | | |
| If blank, were associated samples reanalyzed? (Y/N) Initial Analysis Qualifiers | | | | | - | | | | - | | | | - | | | | | | | | | | | |
| Sample Number for reanalysis. | | | | | | | | | | | / | ····· | | | | | | | | | | | | |
| Reanalysis surrogates outside limits (show % R) | | | | | | | | | \geq | \triangleleft | + | | | | | | | | | | | | | |
| Re-extraction required? (Y/N) | | | | | | | | | | | | | | | | | | | | | | | | |
| If blank, were associated samples re-extracted? (Y/N) | | | | | | | | | | .e | | | | | | | | ~ | | | | | | |
| Sample number for re-extract. | | | | / | | | | | . | | | | | | | | | | | • • • • • • • • | | | | ····· |
| Re-extraction outside limits (show % R) | | | T | | | | | | | | | | - | | | | | | | | | | | |
| Reanalysis qualifiers. | | | | | | | | | | | | | | | | | 1 | | | | 1 | | | |
| QC Limits (%R) | | IL | | | WATER | | | | | | | | | | | | Note: | The | circl | ed sam sis/rea ed for | analysi | nber is is | | |
| id S4 = Phenol-d6 id S5 = 2-Fluorophenol id S7 = 2-Chlorophenol id S7 = 2-Chlorophenol-d4 | 24- | 113 121 130 (4 | adviso | ry) | 10-11(21-11) 10-12 33-11(|) (ac | dvisory | () | | | | | | | | | | reco | ommerica | ed for | use. | | | |
| PESTICIDE FRACTION | | | | | | | | | | | | | | | | | | | | | | | | |
| | . 2 | 44 | / | | | F | 447 | Z | 15 | -44 | 80 | 1 | i. | | PBL, | EI | 1 | | | | 1 | | | |
| Sample Numbers | | 172 | | | | | | | | | | | - | | | - | | | IS | 2 | | 1 | 1 \$2 | , |
| QC limits exceeded (show %R) | S1 | | s | 2 /186 | 5.3 | 1 <i> 4,</i> 3 | | 1/229 | S | 10 | 761. | 9/0 | S | 1 | | 2 | S1 | | ° | د | | • | | |
| Qualifier, if applied. | | | 17- | | J-9 | 5/- | - | s/- | J-5 | R-S | 1.7.5 | R-S | | | | | | | | | | | 1 | |
| Limits (%R) | | | | | | | SOIL | | WATER | | 1 | | | | | | | | | | | | | |
| <pre>sticide \$1 = Tetrachloro-m-xy sticide \$2 = Decachlorobiphen \\$KELL\\$URROG-2.WK3</pre> | nyl (| DCB | | | 88 | - 158 | (advi (advi | sory) sory) | 88-15 | } {ad ad | visory visory | } | | | | | | | | | | | | |

3LE 2 - SURROGATE RECOVERIES SOW Rev. OLM01.8, 3/90 Page 3 of 3

| · (29 | RECEIV DEC 3 0 URS Technical Document Control Tupe: 20 TDCN: 2002260 Project Compers 20510 Project Name: 270 11 | 1991 | DOCUMENT | SILVER SPI CHIC DEN DET GRAND RA F NO.: 074NCODS.RV | CAGO NVEI ROI APID: |
|-------|--------------------------------------------------------------------------------------------------------------------------------|----------|-------------|---------------------------------------------------------------------------|------------------------------|
| | ORGANICS DATA REVIEW SUMMARY | - NEESA | LEVEL | с | |
| | Case No URS TDCN URS TDCN 300 | 01424 | _ Project | No. <u>CIO-051</u> | |
| | Site Name <u>Saint Lawrence Island, Alaska</u> | | _ Project | Name <u>N.E. Cape</u> | _ |
| | Contract Laboratory <u>Eureka Laboratories</u> | s, Inc. | | | _ |
| | Sample Delivery Group (SDG) <u>8419</u> Samp | pling Da | te (Month | n/Year) <u>8/91</u> | _ |
| | Sample Matrix 10 wipes | | | | - |
| | Type of Analyses/Special Request <u>Pesticid</u> | de/PCB | (see page | 2) | - |
| | 26 | | | 12/28/91 | _ |
| | Telephone logs/correspondence attached? Yes | 1 | No <u>X</u> | Not Appl. | |
| | Laboratory case narrative attached? Yes | <u> </u> | No | Not Avail | |
| | Required deliverables provided? Yes | 1 | No | Not Appl. | |
| | Airbill enclosed? Yes | <u> </u> | No | Not Avail | |
| | CLP SOW used by laboratory for analysis3 | 3/90, RE | V OLMO1.8 | 3 | _ |

Note:

- The Level C Data Validation Guidelines as specified by NEESA in the Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Restoration Program, NEESA 20.2-047B, June, 1988, The EPA's Functional Guidelines for Organics Validation and project specific references have been used by the data reviewer as a basis for reviewing the data and applying flags, except as specifically noted in review comments.

-- Please see data flagging definitions on the last page of this report.

(Revised 12/91) C.C. JOHNSON & MALHOTRA, P.C. 215 UNION BOULEVARD, SUITE 215 • LAKEWOOD, COLORADO 80228 • (303) 987-2928

| Sample <u>Number</u> | Sample <u>Matrix</u> | Pest/PCB | |
|-------------------------|-------------------------|----------|--|
| 8419 | wipes | X | |
| 8420 | wipes | Х | |
| 8421 | wipes | х | |
| 8422 | wipes | Х | |
| 8437 | wipes | Х | |
| 8438 | wipes | Х | |
| 8472 | wipes | Х | |
| 8473 | wipes | Х | |
| 8474 | wipes | Х | |
| 8475 | wipes | Х | |
| | | | |
| | | | |
| | | | |
| | | | |
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| | | | |
| | | | |

X = Analysis has been provided for validation.

0 = Analysis was requested per the Chain of Custody, however, no data was received for validation.

- = Analysis was not requested per the Chain of Custody or required to meet criteria.

1.

4

I. <u>Deliverables</u>

1,

All data deliverables as specified for NEESA Level C quality control were found in the package.

Yes ____ No _X_

Comments: The following Level C Data Deliverables Checklist shows the Forms and data found in the package.

LEVEL C DELIVERABLES COMPLETENESS CHECKLIST - ORGANICS

KEY

- X Included in package
- 0 Not included and/or Not available
- <u>NA</u> Not applicable or Not required

RS Provided as resubmission

- X Method blank spikes with each batch
 - X Control chart developed by lab
- X _____ Sample results Form 1 or spreadsheet
 - O CLP data flags used by laboratory
 - X Sample chromatograms and mass spectra
- X Holding times (sampling, prep and analysis dates provided)
- X Surrogate recoveries Form 2
- X Matrix spike/matrix spike duplicate (MS/MSD) Form 3 (MS/MSD is to be 1 per 20 samples of similar matrix)
- X Method blank summary Form 4
- X Report form for method blank results (Form 1 or spreadsheet) NA GC/MS tuning - Form 5
- X Initial calibration data and Resolution Summary Form 6
- X Continuing calibration data and Verification Summary Form 7
- X Internal standard area summary and analytical sequence Form 8
- X Pesticide Florisil Cartridge Check and GPC Calibration

II. Holding Times

Samples were extracted and analyzed within holding times specified by the NEESA data validation guidelines. See the following table for a summarization of sample holding times.

Yes ____ No _X_

Comments: An asterisk and number in parentheses indicate a sample fraction outside holding time specifications and the number of days exceeded based on the date sampled. Sample data for any fraction exceeding holding time specifications are flagged as estimated (J or UJ).

Holding Time Summary

| Sample | Sampling | | Pestic | cide |
|---------|----------|------|------------|----------|
| Number | Date | VISR | Extract | Analysis |
| 8419 DL | 8/23/91 | 8/28 | 09/04 *(5) | 10/02 |
| 8420 | 8/23/91 | 8/28 | 09/04 *(5) | 09/30 |
| 8421 | 8/23/91 | 8/28 | 09/04 *(5) | 09/30 |
| 8422 DL | 8/23/91 | 8/28 | 09/04 *(5) | 09/30 |
| 8437 | 8/23/91 | 8/28 | 09/04 *(5) | 09/30 |
| 8438 | 8/23/91 | 8/28 | 09/04 *(5) | 09/30 |
| 8472 | 8/23/91 | 8/27 | 09/04 *(5) | 09/29 |
| 8473 | 8/23/91 | 8/27 | 09/04 *(5) | 09/29 |
| 8474 | 8/23/91 | 8/27 | 09/04 *(5) | 09/29 |
| 8475 | 8/23/91 | 8/27 | 09/04 *(5) | 09/29 |

III. Instrument Calibration (Pesticide/PCB)

A. The percent relative standard deviation (%RSD) of the calibration factors in the initial calibration for the single component target compounds are all less than 30.0%. All appropriate information was provided and no more than two single component target compounds exceed 20.0 %RSD.

Yes X No ____

Comments: The compliant %RSD values found to be above 20% are summarized on the attached Table 1-P. A data validation specification of 20% RSD for any compound identified, has been applied for the column used in quantifying the sample result(s).

(Revised 12/91)

4

B. The resolution of adjacent peaks, as specified in the method, were found to be greater than 60%. Compounds required to meet resolution criteria are indicated on Table 1-P.

Yes X No ____

Comments: No comments.

C. The percent difference (shown as RPD on Form 7D) for the calibration verifications of the PEM compounds were found to be less than 25%. All the appropriate information was provided.

Yes No X

Comments: Those compounds which did not meet the specified criteria and qualifiers are summarized on Table 1-P

D. The pesticide calibration verifications of the Individual Mixes A and B had percent differences (shown as RPD on Form 7E) of less than 25% for all compounds. All of the appropriate information was provided.

Yes No X

Comments: Those compounds which did not meet the specified criteria and qualifiers are summarized on Table 1-P. Sample 8419DL was not bracketed with Individual Mixes A and B on the DB-17 column, 10/04/91.

E. All retention times for all compounds for the PEM, INDA and INDB solutions met required criteria.

Yes ____ No _X_

Comments:

- 1. The retention times for a majority of compounds analyzed on the DB-17 column did not meet the specified criteria as stated in the SOW. No additional qualifiers were applied to the sample data since all samples are qualified on the basis of holding times.
- 2. In many instances, the surrogate retention times were not within the established retention time windows for the calibration verification standards. The reviewer considers this deficiency to be non-compliant with SOW 3/90.

(Revised 12/91)

F. The breakdown of 4,4'-DDT and endrin was less than 20% for all PEM analyses.

Yes ____ No _X_

ł

Comments: The following % Breakdown criteria were not met:

| <u>Calibration</u> | <u>Column</u> | DDT | <u>% Breakdo</u> <u>Endrin</u> | wn Combined | Affected Samples |
|---------------------------|---------------|------|-----------------------------------|----------------|----------------------------------------------------------|
| Initial, 10/02/91 | DB-17 | | 30.1 | | all |
| Verification, 09/30/91 | DB-608 | | | 32.5 | 8474, 8475, 8420, 8421, 8437, 8438, 8422DL, 8419DL |
| Verification, 10/01/91 | DB-608 | 21.0 | | 41.0 | 8419DL |

No additional qualifiers have been added to the sample data on the basis of DDT or Endrin breakdown.

G. The florisil cartridge check and when applicable, the GPC calibration were found to be within specified criteria.

Yes X No ____

Comments: All samples were Florisil and GPC cleaned.

(Revised 12/91)

H. The retention times for the surrogates were within criteria for every sample.

Yes ____ No _X_

1

Comments: An asterisk of the following table indicates surrogate retention times outside (*) the established retention time windows:

| Sample No. | TCX 1 | TCX 2 | DCB 1 | DCB 2 |
|------------|-------|-------|-------|-------|
| 8419DL | | * | | * |
| 8420 | | * | | * |
| 8421 | | * | | * |
| 8422DL | | * | * | * |
| 8437 | | * | | * |
| 8438 | | * | | * |
| 8472 | | * | | * |
| 8473 | | * | | * |
| 8474 | | * | | * |
| 8475 | | * | | * |
| MS | | * | | * |
| MSD | | * | | * |
| PBLK1 | | * | | * |

Form C-N

- IV. <u>Blanks</u>
 - A. Method Blank The blank analyses summaries were reviewed. The frequency of method blank extractions and analysis and the contaminants reported in blank samples were all within specified limits.

Yes X No ____

Comments: No comments.

B. Trip Blank - The associated trip/travel blank(s) contained contaminants which affected samples in the package.

Yes ____ No ____ Not Identified _X_

Comments: No trip blanks were provided in this data package.

C. Other Blanks - No other types of blanks have been identified in the data package.

V. Surrogate Recovery

The surrogate recovery summaries were reviewed. The recoveries were all reported to be within specified CLP QC criteria.

Yes ____ No _X_

Comments: Samples reported to have surrogate recoveries outside specified CLP criteria are summarized on the attached Tables 1 and 2. Data flags, when necessary, are indicated on Table 2.

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VI. Blank Spike - Laboratory Control Sample(s)

A. Blank spike analyses (i.e., method blanks spiked with surrogates for volatiles and semivolatiles) were performed with each sample batch in the data package and were reported to be within laboratory control limits or within CLP established control limits.

Yes X No _____

Comments: The compounds used for the Pesticide/PCB blank spike were the matrix spike compounds, (gamma-EHC, Heptachlor, Aldrin, Dieldrin, Endrin and 4,4'-DDT)..

B. Laboratory control charts were provided in the package for the spike compounds and the limits specified by the control charts were used for review.

Yes X No ____

Comments: The following spike analytes were reported to be outside control limits:

| Spike Compound | % Recovery | Control Limits % Recovery |
|----------------|------------|---------------------------|
| Aldrin | 125 | 45 - 116 |
| Dieldrin | 132 | 50 - 130 |

No additional qualifiers have been applied to any samples on the basis of blank spike recoveries.

VII. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

The matrix spike and matrix spike duplicate recovery summary data were reviewed. The spiking procedures were performed and met all recommended QC specifications.

Yes ____ No _X_

Comments: No matrix spike and matrix spike duplicate results were found to be included in this data package.

VIII. Additional Comments

- 1. Several contract requirements were not met by the laboratory for the pesticide/PCB analyses. These deficiencies were noted in the following sections: Section III. Items D, E, F and H.
- 2. No "C" flags were shown by the lab in the data to indicate GC/MS confirmation. This indicates the probability that the GC/MS confirmation was not performed on any samples which have sufficiently high positive results.
- 3. The laboratory has reported the higher value from the two columns rather than the lower of the two values as specified by the 3/90 SOW.

Form C-N

EXPLANATION OF ORGANICS DATA FLAGS

For the purposes of this data review document the following code letters and associated definitions are provided:

- U The material was analyzed for, but was not detected. The associated numerical value is the estimated detection limit.
- R Quality Control indicates that data is not usable (i.e., compound may or may not be present). Resampling and re-analysis would be necessary to determine the presence or absence of the analyte in the sample.
- J The associated numerical value is an estimated quantity because quality control criteria were not met or because the amount detected is below the detection limits required by analytical Statement of Work. The laboratory uses this flag in the latter situation.
- B The laboratory uses this flag when the reported analyte was also found in the method blank. Data validation guidelines do not specify the use of this flag.
- JN Tentative identification of a compound at an estimated concentration. Resampling and re-analysis would be necessary for verification.

(Revised 12/91)

| EEDERAL. | IESTIONS? CALL 800-238-5355 TOLL FREE | AIRBILL PACKAGE TRACKING NUMB | 1420753 | 1250 |
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CASE NARRATIVE

CT0-0051

CTO-0051 consists of approximately 102 soil samples, 40 water samples, 14 concrete chips, and 10 wipe samples from Saint Lawrence Island, Alaska. Samples are to be analyzed by 3/90 CLP SOW for VOA and Pesticide/PCBs.

As of 9/25/91 a total of 6 SDG was received by Eureka Laboratories Inc. They are 8449, 8419, 8423, 8484, 8416, and 8401.

Details for sample description/analytical description, sample conditions, and quality control for rreceived samples are presented in the SDG Narratives.

I. SDG NARRATIVE

Laboratory Name: Eureka Laboratories, Inc. Lab Certification Number: E765 SDG Number: 8419 Purchase Order Number: AN-91-P-0019 Contract Task Order Number: 0051 NEESA QA/QC Level C Analysis: Initial Sample No.: 10

A. Sample Description/Analytical Description

| <u>Client</u> | <u>Lab</u> <u>ID</u> | Date Sampled | <u>Date</u> Received | <u>Matrix</u> | Analysis/Method |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 8419 8420 8421 8422 8437 8438 8472 8473 8473 8474 8475 | 9108219-7A 9108219-8A 9108219-9A 9108219-10A 9108219-27A 9108219-28A 9108213-25A 9108213-25A 9108213-26A 9108213-27A | 08/23/91 08/23/91 08/23/91 08/23/91 08/23/91 08/23/91 08/23/91 08/23/91 08/23/91 | 08/28/91 08/28/91 08/28/91 08/28/91 08/28/91 08/28/91 08/27/91 08/27/91 08/27/91 08/27/91 | Wipe Wipe Wipe Wipe Wipe Wipe Wipe Wipe | P/PCBs/3-90 CLP SOW Same as above Same as above |

B. Sample Receipt

Samples were received in two delivery batches on August 27 & 28, 1991. Samples were in good condition. Sample receipt conditions, sample receipt temperature, and method of shipment are noted in the sample receipt check list and DHL air bills. There were no observed problems or discrepancies among Chain-of-custody forms, sample containers, and contract requirements in ELI Order Numbers 91-08-213 and 91-08-219.

C. Quality Control Report

Pesticide/PCB by 3/90 CLP SOW

Analysis Data Sheet

PCB concentration values presented on Form I Pest were different than the PCB concentration values calculated in the manual worksheet. This is due to (1) Telecation Software used the Response Factors of the Aroclors standards (0.1 ppm) analyzed in the initial calibration for the quantification. (2) ELI manual worksheet used the response factors of a higher concentration of Aroclor standards (2 ppm) which were analyzed after the sample run and used for confirmation per 3/90 CLP SOW.

Sample No. 8422 was analyzed at a dilution factor of 20 and a dilution factor of 1 by 1st column and 2nd column respectively. The concentration values reported on Form I was from the 1st column analysis.

SDG Narrative SDG 8419 Page 2 of 4

Chromatogram

Due to the absence of auto scaling capability in the gas chromatograph (GC) used for the analysis, the following criteria for acceptance of chromatograms per 3/90 CLP SOW cannot be met:

- i. Chromatogram peaks for initial calibration standard mixtures A and B at display are required to be less than 100% of full scale.
- ii. Chromatogram peaks for multi-component analytes at display are required to be greater than 25%.

DDT and Endrin % Breakdown

The % breakdown of combined Endrin and DDT for PEMO2 (Performance Evalutation Mixture #2), PEMO8, and PEMI0 from the first column analysis exceeded the limit by 8%, 2.5%, and 11% respectively.

The % combined breakdown for PEMO1 from the second column analysis exceeded the limit by 0.6%.

Calibration Verification

There is a total of fifteen continuing calibration verification (CCV) reported in this package. These CCVs were run after the initial calibration and throughout the analytical sequence as required by CLP protocol.

RPD value of gamma-BHC (Lindane) and beta-BHC for PEM 10 (Performance Evaluation Mixture #10) and PEM 04 exceeded the control limit by a margin of 1.1% and 8.9%.

RPD value of Endosulfan II, Endosulfan sulfate, Endrin Ketone and Endrin Aldehyde for INDAM 03 (Individual Standard Mixture A medium level #3) and INDAM 05 exceeded the QC limits.

2nd Column Confirmation:

DB-17 instead of DB-1701 is used for the second column confirmation for this analysis.

Surrogate Retention Time Window

DCB was slightly outside the Surrogate Retention Time (RT) window in three analyses for the first column analysis. DCB and TCX were slightly ouside the RT window in twenty one and twenty two analyses respectively for the 2nd column analysis.

SDG Narrative SDG 8419 Page 3 of 4

Surrogate Recovery

The % recovery of TCX for Sample No. 8438, 8473, 8474, and PBLK1 were out of the advisory QC limit. The % recoveries of DCB for Sample No. 8421 is high due to matrix interference. The DCB recoveries were out of the advisory limit for Sample No. 8419 DL, and 8422 DL, due to dilutions.

Pesticides Identification Summary

A difference of greater than 25% between the first and second column was detected for PCB Aroclors. Per 3/90 CLP SOW, the lower of the two values is to be reported on Form I and flagged with a "P". However, due to constraints of the Telecation software, the higher of the two values was reported on Form I without P flag.

Form X is used to summarize the positive analytes, their concentration and % difference for Sample Nos. 8420, 8421, 8437, 8438, and 8475.

Spike and Spike Duplicate:

The % Recovery and % RPD of Heptachlor for Reagent Spike and Reagent Spike Duplicate exceeded the QC limit by a margin of 5% and 1% respectively.

No matrix spike or matrix spike duplicate were analyzed due to insufficient sample provided.

CRQL and Reporting Units

CRQL for wipe samples is 0.051 - 5.1 ug/wipe or 51 - 5100 ng/wipe. The unit in the hard copy reports for SDG 8419 is ng/wipe, however, the unit in the disc deliverables remains as ug/Kg because it cannot be corrected due to the limitation of the Telecation software.

Completeness

All analytical and QA/QC data are within the control and detection limits and meet the 95% completeness criteria.

SDG Narrative SDG 8419 Page 4 of 4

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Director or his designee, as verified by the following signature.

'...

Shao-Pin Yo, Ph.D. Laboratory Director

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s): 09/28/99 - 10/02/91

ł

Instrument ID: HP 5890

Method Blank ID(s):

Extract Date(s): 09/04/40

| | Hold | Time | | | S | tan | dan | d(s |) A | fte | r |
|--------------------------------------|------|------|------|-------|---|-----|-----|-----|-----|-----|---|
| Sample | | rt. | Rec. | . (%) | S | amp | le | Ana | lys | is: | |
| Identifier: M5 (RENGENT) | Ext | Anal | TCX | DCB | 1 | | 3 | | | 6 | |
| MS (REAGENT) | | | | | | X | | | | | |
| MSO (REAGENT) | | | | | | | X | | | | |
| 9472 9473 | | - | | | | | X | | | | |
| 9473 | | | | | | | X | | | | T |
| 8474 | | | | | | | | X | | | T |
| 8475 | | | | | | | | X | | | T |
| 8420 | | | | | | | | X | | | |
| 8421 | | | | | | | | X | | | |
| 8474 8475 8420 8421 8437 | | | | | | | | X | | | |
| 8438 | | | | | | | | X | | | |

se60% Resolved \$260% Resolved \$260% Resolved

| | 09/27/91 | | Contraction of the local division of the loc | Calibrat | The second se | ¥ * | | | | |
|---------------------------|-----------------------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-----------------------------------------------------------------------------------------------------------------|----------|-----------|----------|-------|------------|
| D8-608 or | Initial | | the second second second | | RPO > 25 | | 1 | 1 0004 | 1. | |
| Equivalent | <u>\$\$\$50>20</u> | PEM | INDs 2 | PEM 3 | INDs 4 | PEM 5 | INDs 6 | PEM 7 | Blank | |
| Cont Cal Data Mantha A | Day | 23 | 29 | 29 | 30 | 30 | N | 01 | Conc. | Qualifiers |
| Cont.Cal.Date, Month 9 | Time | 2053 | 0810 | 2047 | | 2021 | 017 | 2020 | | (+/-) |
| COMPOUND & | 1 Inter | 6033 | Very | 1-077 | V | -001 | V | 10000 | | (4/-) |
| alpha-BHC | | V | | 6 | 10 | | | | | |
| beta-BHC | | | | | | | | | | |
| delta-BHC | | | | | | | | 26.1 | | 45/- |
| gamma-8HC (Lindane) | | | | | | 1 | | 60,1 | | 1001 |
| Heptachlor | | | | | | | | | | |
| Aldrin | | | | | | | | | | |
| Heptachlor epoxide | 20.5 | - | | | | | | | | 1.1-1 |
| Endosulfan I 🔶 | 60.5 | | | | | | | | | UJ/- |
| Dieldrin § | | | | | | | | | | |
| 4,41-DOE § | | | | | | | | | | |
| Endrin | | | | | | | | | | |
| Endosufan II | | | | | | | | | | |
| 4,4'-000 | | | | | | | | | | |
| Endosufan sulfate | | | | | L | | | | ļ | |
| 4,41-0DT | | | | | | | | | | |
| Methoxychlor * | | | 1 | | | | | | | |
| Endrin Ketone * | | | | | | | | | | |
| Endrin Aldehyde | | | | | | | | | | |
| alpha-Chlordane | | | | | | | | - | | |
| gamma-Chlordane 🔶 | 1.1.2 By B | | | | | | | | | |
| Toxaphene | | | | | | | | | | |
| Aroclor-1016 | • | | | | | | | | | |
| Aroclor-1221 | | | | 1 | | | | | | |
| Aroclor-1232 | and had to | 1 | | | | | | | | |
| Aroctor-1242 | | | | | | | | | | |
| Aroclor-1248 | | | | | | | | | | |
| Aroclor-1254 | | | | | | | | | | |
| Aroctor-1260 | | | | | | | | | | |
| Surrogates - %RSD > 30% | | Sur | rogate F | POs musi | t also be | 1 5 25% | | | | |
| Tetrachloro-m-Xylene(TCK) | 100 C 10 C | | | 1 | 1 | 1 | 1 | 1 | | |
| Decachlorobiphenyl (DCB) | 1 | | 25.0 | 1 | BT | 1 | | 1 | | |

* <u>Validation Criteria:</u> Compound Detected Compound Undetected
 Quantitation Column

 RPD% < 25%</td>
 and

 RPD% < 25%</td>
 or

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s): 09/23/91-10/02/91

Instrument ID: HP 5890

Method Blank ID(s):

Extract Date(s): 69/04/91

| Sample Identifier: 842200 84700 | Hold | Time It Anal | Sur Rec. | :. . (%) | S | tan ampi | lan le i | l(s) Ana |) A lys | fte is: | c |
|---------------------------------------------|------|--------------------|-------------|-------------|---|-------------|-------------|-------------|------------|------------|-----------|
| Identifier: | Ext | Anal | TCX | DCB | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 842206 | | | | | | | | | | X | |
| BYANL | | | | | N | NE | | | | | |
| | | | | | | 1.1 | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| Manual Concerns in the second second second | | | | | | | | | - | 1 | |
| | | | | | | | - | | | 1 | |
| | | | 1 | | | - | - | | | 1 | |
| | | | | | - | - | | - | | 1 | \square |

*260% Resolved _____ \$260% Resolved _____ \$260% Resolved ______

| ./ | 09/27AI | | | Calibra | | | | | | |
|---------------------------|--------------------|------|----------|---------|-----------|------|------|------|----------------|-----------------------|
| DB-608 or | Initial | | | | RPO > 25 | | 1 | | and the second | and the second second |
| Equivalent | 2RSD>20 | PEM | INDS | | INDS | | INDS | PEN | | 1.2. m. 1. 1. 1. |
| | 1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Blank | |
| Cont.Cal.Date, Month+ C | 7 Day | 28 | 29 | 29 | 30 | 30 | 01 | 01 | Conc. | Quelifiers |
| COMPOUND | Time+ | 7033 | 0219 | 2047 | 0517 | 2021 | 0617 | 2020 | | (+/-) |
| alpha-BHC | 1 | V | 1- | - | | | | | | |
| beta-BHC | | | 1 | | - | | | | | |
| delta-BHC | | | 1 | | | | | | | |
| gamma-8HC (Lindane) | | | | | - | | | 26.1 | | UJ-/- |
| Heptachlor | | | 1 | | | | | | | |
| Aldrin | | | | | | | | | | |
| Heptachlor epoxide | | | | | | | | | | |
| Endosulfan I 🔶 | 20.5 | | | | | | | | | u.J/- |
| Dieldrin § | | | | | | | | | | |
| 4.4'-DDE § | | | | | | | | | | |
| Endrin | | | | | | | | 1 | | |
| Endosufan II | | | | | | | | | | |
| 4.4'-000 | | | | | | | | | | |
| Endosufan sulfate | | 1 | | | | | | | | |
| 4.4'-DDT | | | | | | | | | | 1 |
| Methoxychlor * | | | I | | | | | | | |
| Endrin Ketone 🔹 | | | | | | | | | | |
| Endrin Aldehyde | | | I | | | | | | | |
| alpha-Chlordane | | | | | | | | | | |
| gamma-Chlordane 🔶 | 1. Sec. 1. Sec. 1. | | | | | | | | | |
| Toxaphene | Section Section | | | | | | | | | |
| Aroctor-1016 | | | | | | | | | | |
| Aroclor-1221 | | | | | | | | | | |
| Aroclor-1232 | | | | | | | | | | |
| Aroclor-1242 | | | | | | | | | | |
| Aroctor-1248 | | | | | | | | | | |
| Aroclor-1254 | | | | | | | | | | |
| Aroclor-1260 | | | | | | | | | | |
| Surrogates - %RSD > 30% | 14 · · · · · | Su | rogate f | PDs mus | t also be | 1 5% | | | | |
| Tetrachloro-m-Xylene(TCK) | | | 1 | 1 | 1 | 1 | 1 | | | |
| Decachlorobiphenyl (DCB) | | | 25.0 | 1 | | | | 1 | | |

* <u>Validation Criteria:</u> Compound Detected Compound Undetected
 Quantitation Column

 RPD% < 25%</td>
 and

 RPD% < 25%</td>
 or

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s):

ł

Instrument ID: VARIAN 6000

Method Blank ID(s): PRILLI

Extract Date(s): 09/04/91

| Sample Identifier: | | Time nt Anal | | | Standard(s) After Sample Analysis: | | | | | | | |
|-----------------------|-----|--------------------|-----|-----|---------------------------------------|---|---|---|---|---|---|--|
| Identifier: | Ext | Anal | TCX | DCB | 1 | 2 | 3 | 4 | 5 | 6 | 7 | |
| 8472 | | | | | | X | | | | | | |
| 9473 | | | | | | X | | | | | | |
| 8474 | | | | | | X | | T | | T | T | |
| 9425 | | | | | | X | | T | | 1 | T | |
| 3419 DL | | | | | | V | | 1 | | 1 | 1 | |
| 3420 | | | | | | x | | 1 | | T | T | |
| 3420 Q421 8422 | | | | | | r | | | | 1 | 1 | |
| 8422 | | | | | | x | | 1 | | | T | |
| 8437 | | | | | | X | | | | T | 1 | |
| 0438 | | | | | | X | | | | | T | |

| n Initial Resolution Check | 10/102/91 | AKA | c | alibrat | ions: | | | | ····· | - esta |
|----------------------------|---------------------|------|----------|-----------|-----------|-------|------|-----|---------|-----------------|
| DB-1701 or | Initial | | Conti | inuina: I | 890 > 25% | : * | | | Sec. 20 | Parts 1 April 1 |
| Equivalent DB-17 | *RSD>20 | PEM | INDS | | INDS | PEM | INDs | PEM | | |
| | 1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Blank | |
| Cont.Cal.Date, Month 10 | Day+ | 04 | 04 | | | | | | Conc. | Qualifier |
| COMPOUND | Time+ | 0445 | 1708 | | | | | | | (+/-) |
| alpha-BHC | | | | | | | | | | |
| beta-BHC | 20.3 | 33.9 | | | 6 | | | | | UJ1- |
| del ta-BHC | | | | | | | | | | / |
| gamma-BHC (Lindane) | | | 1.42 | | | | | | | |
| Heptachlor | | | 2 | | | | | | | |
| Aldrin | | | | | | | | | | |
| Heptachlor epoxide | | 4 | | | | | | | | |
| Endosulfan I 🔶 | | | | ALC: N | | | | | | |
| Dieldrin | | | | | | | | | | |
| 4,41-DDE | | | | | | | | | | |
| Endrin | 21.4 | | | | | | | | | UST- |
| Endosufan II | | | 26.D | | | | | | 1 | / |
| 4.41-000 | | | | | | | | | | |
| Endosufan sulfate 🏶 | 26.0 | | 28.0 | | | | | | | UJ/- |
| 4.41-DOT | | | | | | | | | | · · · · |
| Methoxychion * | 11-4 | | | | | | | | | 1 |
| Endrin Ketone | 34.27 | | 29.0 | | | | | | | 1151- |
| Endrin Aldehyde | 26,0 | | 26.0 | | | | | | | 1.51- |
| alpha-Chlordane | | | | | | | | | | |
| gamma-Chlordane 🔶 | | | | | | | | | | |
| Toxaphene | | | | | | | | | | |
| Aroclor-1016 | | | | | | | | | | |
| Arocior-1221 | | | | | | | | | | |
| Aroclor-1232 | State of the second | | | | | | | | | |
| Aroclor-1242 | | | | | | | | | | |
| Aroclor-1248 | | | | | | | | | | |
| Aroclor-1254 | | | | | | | | | | |
| Arocior-1260 | | | | | | | | | | |
| Surrogates - %RSD > 30% | | Sur | rogate R | Os must | also be | ≤ 25% | | | | |
| Tetrachloro-m-Xylene(TCK) | | | | | | | | | | |
| Decachlorobiphenyl (DCB) | | | | | | | | | | |

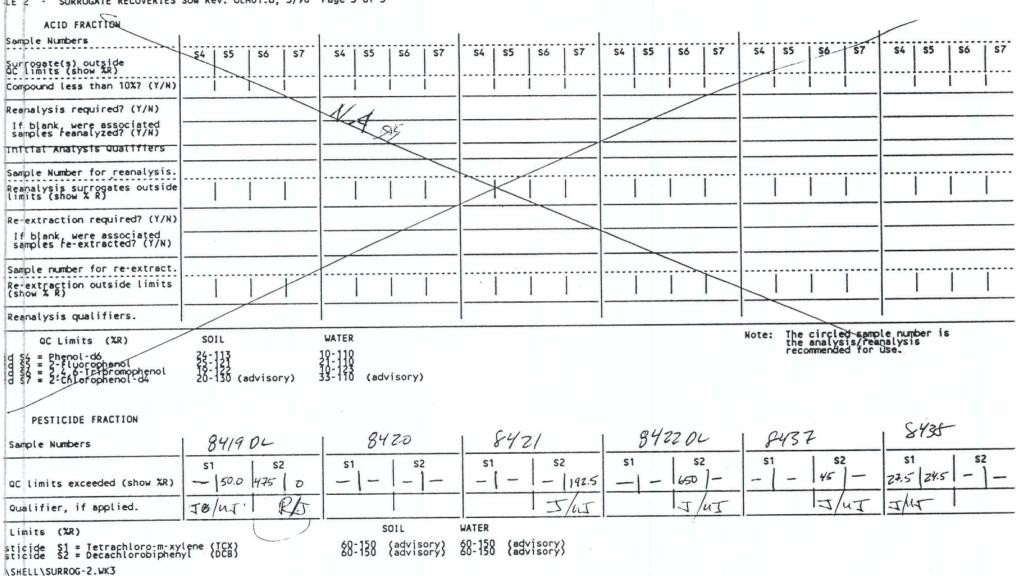
* <u>Validation Criteria:</u> Compound Detected Compound Undetected
 Quantitation Column

 RPDX < 25%</td>
 and

 RPDX < 25%</td>
 or

ABLE 2 - SURROGATE RECOVERIES SOW Rev. OLM01.8, 3/90 Page 3 of 3

| ACID FRACTION Sample Numbers | 1 | | | | | | | | . | | | | | | / | | | | | | | | | |
|------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|------------------------|---------|---------|-----------------------------------------------|---------------------|--------|---------|---|---------------------|---------|-----|-----|-------------------|---------|------------|---------|--------------------|--------------------------|----------------------------|----------------------------|--------------|---------|---------------------|
| Surrogate(s) outside QC limits (show XR) . Compound less than 10%7 (Y/N) | 54 | \$5 | \$6 | \$7 | \$4 | \$5 | S6 | \$7 | | \$5 | \$6 | \$7 | \$4 | 85 | \$6 | \$7 | \$4 | s5 | \$6 | \$7 | \$4 | \$5 | \$6 | s7 |
| Reanalysis required? (Y/N) If blank, were associated samples reanalyzed? (Y/N) Initial Analysis Qualifiers | | | | | K | × × | ×. | | | / | | | | | | | | | | | | | | |
| . Sample Number for reanalysis. . Reanalysis surrogates outside limits (show % R) | | | ••••• | | | | V | | | L | 1 | | | | | | | | | 1 | - | | | |
| Re-extraction required? (Y/N) If blank, were associated samples re-extracted? (Y/N) | | | | / | | | | | | | | ~ | | | | | | | | | | | | |
| Sample number for re-extract. Re-extraction outside limits (show % R) | | / | | 1 | | | | | | 1 | | | | | | \uparrow | | | | | - | 1 | | |
| . Reanalysis qualifiers. | / | | | | | | | | | | | | | | | | | | _ | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| QC Limits (XR) scid S4 = Phenol-d6 scid S5 = 2 - Fluorophenol scid S7 = 2 - Chlorophenol-d4 | soi 24-1 20-1 | L 13 21 30 (a | dvisor | ry) | WATER 10-110 21-110 10-121 33-110 | } | visory |) | | | | | | | | ō | Note: | The the reco | circle analy mmend | ed sam sis/re ed for | ple nur analysi use. | nber is s | | |
| | | | | ry) | 39:118 | } | |) | _ | 84. | | | | Ş4 | 175 | | Note: | | s (le | cagent, |) | MSI | | <i>.t</i>) |
| PESTICIDE FRACTION A. Sample Numbers B. QC limits exceeded (show XR) | | 13 21 30 (a | | | 10-11(33-11) 33-11) 37-5 | (ad) 84 35.0 | 73 | * | - | | si | 2 - | | <i>F</i> 4 1 - | /75 | 2 | Note: | m | | eagent | 1 | MSI | | *) - |
| PESTICIDE FRACTION | 24-1 10- 20- | 13 52 30 (a) | 72. | 2 | 10-11 10-12 33-110 | (ad) 84 35.0 | 73 | 2 | - | 1 32.5 / UT | si | , | | - Fy 1 - | | 2 | - | m | s (R | eagent |) | MSI | | |



LE 2 - SURROGATE RECOVERIES SOW Rev. OLNO1.8, 3/90 Page 3 of 3

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s):

Instrument ID: VARIAN 6000

Method Blank ID(s):

Extract Date(s): 04/04/9

| Sample | | iTime It Anal | | | Standard(s) After Sample Analysis: | | | | | | | |
|-----------------------|-----|---------------------|-----|-----|---------------------------------------|---|---|---|---|---|---|--|
| Sample Identifier: | Ext | Anal | TCX | DCB | 1 | 2 | 3 | 4 | 5 | 6 | 7 | |
| msl | | | | | | X | | | | | | |
| MED | | | | | | X | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
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| | - | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

©260% Resolved_____ ♦≥60% Resolved_____ in Initial Resolution Check

| | 10/02/41 Calibrations: | | | | | | an an an tha the T | | | |
|----------------------------------------|------------------------------------------|------|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|--------|-----------------------|-----|-------|------------|
| DB-1701 or Equivalent_ <u>0B-17</u> | Initial Continuing: RPD > 25% * | | | | | 1111 2 | | | | |
| Equivalent 08-17 | *#SD>20 | PEM | INDS | and the second se | INDS | PEM | INDS | PEN | 1.11 | 14 |
| 6 | 1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Blank | 11 A. |
| Cont.Cal.Date, Month→ /0 | Day | 04 | 04 | | | | | | Conc. | Qualifiers |
| COMPOUNDI | Time+ | 0445 | 1708 | | | | | | | (+/-) |
| alpha-BHC | | | | | | | | | | |
| beta-BHC | 20.2 | 33.9 | | | 1.00 | | | | | INT/- |
| del ta-BHC | | | | | | | | | | |
| gamma-BHC (Lindane) | | 1.12 | | | | | | | | |
| Heptachlor | | 8.2 | | | | | | | | |
| Aldrin | | | | | | | | | | |
| Heptachlor epoxide | | | | | | | | | | |
| Endosulfan I 🔶 | | | 1 | | | | | | | |
| Dieldrin | | | | | | | | | | |
| 4.41-DDE | | | | | | | | | | |
| Endrin | 21.4 | | | | | | | | | UTH |
| Endosufan II | | | 1 | | | | | | 1 | |
| 4.41-000 | | | | | | | | | | |
| Endosufan sulfate # | 26.0 | | | | | | | | | UNT /- |
| 4.4'-DOT | | | | | | | | | | 1 / |
| Methoxychlor * | | - | 1 | | | | | | | |
| Endrin Ketone | 37.7 | | 1 | | | | | | | UN/- |
| Endrin Aldehyde | 26,0 | | 1 | | | | | | | 111/- |
| alpha-Chlordane | | | | | | | | | | |
| gamma-Chlordane 🔶 | | | 1 | | | | | | | |
| Toxaphene | | | | | | | | | | 1 |
| Aroclor-1016 | | | 1 | | | | | | | |
| Aroclor-1221 | | | | | | | | | | |
| Aroclor-1232 | C. C | | 1 | | | | | | | |
| Aroclor-1242 | | | | | | | | | | 1 |
| Aroclor-1248 | | | 1 | | | | | | | 1 |
| Aroclor-1254 | | | | | | | | | | |
| Arocior-1260 | | | 1 | | | | | | | |
| Surrogates - %RSD > 30% | | 91 | Togate R | PDs must | also be | < 25% | | | | |
| Tetrachloro-m-Xylene(TCX) | V | ET. | | | 1 1 | | 1 | | FT | 1 |
| Decachlorobiphenyl (DCB) | 1 | 177 | Er | | | | | | PT | |

* <u>Validation Criteria:</u> Compound Detected Compound Undetected

| Quantitation Column | |
|---------------------|-----|
| RPD% < 25% | and |
| RPD% < 25% | or |

•

L

RECEIVED DEC 3 0 1991 AS/ST/DV

SILVER SPRING CHICAGO DENVER DETROIT GRAND RAPIDS

DOCUMENT NO .: 073NCODS .RVW

ORGANICS DATA REVIEW SUMMARY - NEESA LEVEL C

| Case No | 0051 | _ URS TDON | 3001434 | Project N | o. <u>CIO-0051</u> |
|-------------|----------------------|---------------|------------|---------------|----------------------|
| Site Name _ | St. Lawrence Is | land, AK | | Project Na | ame <u>N.E. Cape</u> |
| Contract La | boratory <u>E</u> | ireka Laborat | ories | | |
| Sample Deli | very Group (SDG) | 8423 | Sampling D | ate (Month/Ye | ear) <u>8/91</u> |
| Sample Matr | rix Co | oncrete Chips | | | |
| Type of Ana | lyses <u>Pestici</u> | de/PCB (see | page 2) | | |

| Data Reviewer | At For | | | 12/0/2 | |
|---------------------|----------------------|--------------|-------------|------------|--|
| Data Reviewer | Alan Alai | | _ Date _ | 12/28/91 | |
| | Jeralyn Guthrie | | Date | 12/28/91 | |
| CCJM Approval by | Richard Cheatham | | | 12/28/91 | |
| | | | | / / | |
| Telephone logs/corr | espondence attached? | Yes | NO <u>X</u> | NOT APPI. | |
| Laboratory case nar | rative attached? | Yes X | No | Not Avail. | |
| Required deliverabl | es provided? | Yes | No X | Not Appl. | |
| Airbill enclosed? | | Yes <u>X</u> | No | Not Avail. | |
| CLP SOW used by lab | oratory for analysis | 3/90 | | | |

Note:

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Cas Cochaical Socument Concroi

Type: 90 FDCN: 0002260

Project Number: 30510

Project Name: CTO-11

- The Level C Data Validation Guidelines as specified by NEESA in the Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Restoration Program, NEESA 20.2-047B, June, 1988, have been used by the data reviewer as a basis for reviewing the data and applying flags, except as specifically noted in review comments.
- -- Please see data flagging definitions on the last page of this report.

(Revised 12/91) C.C. JOHNSON & MALHOTRA, P.C. 215 UNION BOULEVARD, SUITE 215 • LAKEWOOD, COLORADO 80228 • (303) 987-2928

| Sample <u>Number</u> | Sample <u>Matrix</u> | Pest/PCB | |
|-------------------------|--------------------------------------------------|----------|--|
| 84232425 | (8423, 8424, 8425 - COMPOSITE) concrete chips | x | |
| 8477 | concrete chips | х | |
| 8480 | concrete chips | Х | |
| 8426 | concrete chips | Х | |
| 8440 | concrete chips | х | |
| 8442 | concrete chips | Х | |
| 8478 | concrete chips | Х | |
| 8481 | concrete chips | Х | |
| 8439 | concrete chips | Х | |
| 8441 | concrete chips | Х | |
| 8476 | concrete chips | Х | |
| 8479 | concrete chips | Х | |
| | | r. | |
| | | | |
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X = Analysis has been provided for validation.

- 0 = Analysis was requested per the Chain of Custody, however, no data was received for validation.
- = Analysis was not requested per the Chain of Custody or required to meet criteria.

(Revised 12/91)

1.

Deliverables

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I.

All data deliverables as specified for NEESA Level C quality control were found in the package.

Yes ____ No _X_

Comments: The following Level C Data Deliverables Checklist shows the Forms and data found in the package.

LEVEL C DELIVERABLES COMPLETENESS CHECKLIST - ORGANICS

KEY

- X Included in package
- O Not included and/or Not available
- NA Not applicable or Not required

RS Provided as resubmission

- X Method blank spikes with each batch
 - X Control chart developed by lab
 - X Sample results Form 1 or spreadsheet
 - O CLP data flags used by laboratory
 - NA Sample chromatograms and mass spectra
 - X Holding times (sampling, prep and analysis dates provided)
 - X System Monitoring Compounds (SMC) and Surrogate recoveries Form 2
- 0 Matrix spike/matrix spike duplicate (MS/MSD) Form 3 (MS/MSD is to be 1
- per 20 samples of similar matrix)
- X Method blank summary Form 4

X Report form for method blank results (Form 1 or spreadsheet) NA GC/MS tuning - Form 5

- X Initial calibration data and Resolution Summary Form 6
- X Continuing calibration data and Verification Summary Form 7
- X Internal standard area summary and analytical sequence Form 8
- X Pesticide Florisil Cartridge Check and GPC calibration

II. Holding Times

Samples were extracted and analyzed within holding times specified by the NEESA data validation guidelines. See the following table for a summarization of sample holding times.

Yes ____ No _X_

Comments: An asterisk and number in parentheses indicate a sample fraction outside holding time specifications and the number of days exceeded based on the date sampled. Sample data for any fraction exceeding holding time specifications are flagged as estimated (J or UJ).

Holding Time Summary

| Sample | Sampling | | Pesticide |
|----------|------------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Number | Date | VISR | Extract Analysis |
| | | | and the second se |
| 84232425 | DL 8/23/91 | 8/28 | 09/04*(5) 10/02 |
| 8426 DL | 8/23/91 | 8/28 | 09/04*(5) 10/02 |
| 8439 | 8/23/91 | 8/28 | 09/04*(5) 09/29 |
| 8440 | 8/23/91 | 8/28 | 09/04*(5) 09/29 |
| 8441 | 8/23/91 | 8/28 | 09/04*(5) 09/29 |
| 8442 DL | 8/23/91 | 8/28 | 09/04*(5) 10/02 |
| 8476 DL | 8/23/91 | 8/27 | 09/04*(5) 09/30 |
| 8477 DL | 8/23/91 | 8/27 | 09/04*(5) 09/30 |
| 8478 DL | 8/23/91 | 8/27 | 09/04*(5) 09/30 |
| 8479 DL | 8/23/91 | 8/27 | 09/04*(5) 09/30 |
| 8480 DL | 8/23/91 | 8/27 | 09/04*(5) 09/30 |
| 8479 DL | 8/23/91 | 8/27 | 09/04*(5) 09/30 |

II. Instrument Calibration (Pesticide/PCB)

1. The percent relative standard deviation (%RSD) of the calibration factors in the initial calibration for the single component target compounds are all less than 30.0%. All appropriate information was provided and no more than two single component target compounds exceed 20.0 %RSD.

Yes ____ No _X___

Comments: The compliant and non-compliant %RSD values found to be above 20% are summarized on the attached Table 1-P. A data validation specification of 20% RSD for any compound identified, has been applied for the column used in quantifying the sample result(s).

(Revised 12/91)

2. The resolution of adjacent peaks, as specified in the method, were found to be greater than 60%. Compounds required to meet resolution criteria are indicated on Table 1-P.

Yes X No ____

Comments: No comments.

3. The percent difference (shown as RPD on Form 7D) for the calibration verifications of the PEM compounds were found to be less than 25%. All the appropriate information was provided.

Yes ____ No _X_

Comments: Those compounds which did not meet the specified criteria and qualifiers are summarized on Table 1-P.

4. The pesticide calibration verifications of the Individual Mixes A and B had percent differences (shown as RPD on Form 7E) of less than 25% for all compounds. All of the appropriate information was provided.

Yes ____ No _X_

Comments: Those compounds which did not meet the specified criteria dn qualifiers are summarized on Table 1-P.

5. All retention times for all compounds for the PEM, INDA and INDB solutions met required criteria.

Yes No X

Comments: The retention times for all target analytes and surrogates on the D6-17 column did not meet the specified criteria as stated in the SOW. This deficiency is considered to be non-compliant as specified in the 3/90 SOW. No additional qualifiers were assigned to the sample data. 6.

The breakdown of 4,4'-DDT and endrin was less than 20% for all PEM analyses.

Yes <u>No X</u>

Comments: The following % breakdown criteria were not met:

| | | | % Break | down | |
|--------------------------------|--------|------|---------|-----------------|----------------------------|
| <u>Calibration, Date, Time</u> | Column | DDT | Endrin | <u>Combined</u> | <u>Affected</u> Samples |
| Init., 09/27/91, 2219 | DB-608 | 16.2 | 14.6 | 30.8 | All |
| Verif., 10/01/91, 2020 | DB-608 | 21.2 | 19.8 | 41.0 | 84232425DL |
| Init., 10/02/91, 1901 | DB-17 | 0 | 30.6 | 30.6 | All |
| Init., 10/02/91, 0522 | DB-17 | 2.6 | 32.6 | 35.2 | All |
| Verif., 10/04/91, 0445 | DB-17 | - | 21.4 | - | MS, MSD |
| Verif., 10/05/91, 0446 | DB-17 | - | 27.8 | - | All |

No additional qualifiers have been assigned on the basis of DDT or Endrin % breakdown.

7. The florisil cartridge check and when applicable, the GPC calibration were found to be within specified criteria.

Yes X No ____

Comments: No comments.

8. The retention times for the surrogates were within criteria for every sample.

Yes ____ No _X

Comments: An asterisk(*) on the following table indicates the retention time was outside of the established retention time window.

Form C-N

| Sample No. | TCX 1 | TCX 2 | DCB 1 | DCB 2 |
|------------|-------|-------|-------|-------|
| 84232425DL | D | D | D | D |
| 8426DL | D | D | D | D |
| 8439 | | * | | * |
| 8440 | | * . | | * |
| 8441 | | * | | * |
| 8442DL | D | D | D | D |
| 8476DL | | * | | * |
| 8477DL | | * | | * |
| 8478DL | | * | | * |
| 8479DL | | * | | * |
| 8480DL | | * | | * |
| 8481DL | | * | | * |
| MS | | * | | * |
| MSD | | * | | * |
| PBLKL | | * | | * |
| | | | | |
| | | | | |
| | | | | |

D = surrogate diluted out

(Revised 12/91)

4

1

III. Blanks

4

A. Method Blank - The blank analyses summaries were reviewed. The frequency of method blank extractions and analysis and the contaminants reported in blank samples were all within specified limits.

Yes X No _____

Comments: No contaminants were reported for this data package.

B. Trip Blank - The associated trip/travel blank(s) contained contaminants which affected samples in the package.

Yes _____ No ____ Not Identified _____

Comments: No trip blanks were reported in this data package.

C. Other Blanks - No other types of blanks have been identified in the data package.

IV. Surrogate Recovery

The surrogate recovery summaries were reviewed. The recoveries were all reported to be within specified CLP QC criteria.

Yes No X

Comments: Samples reported to have surrogate recoveries outside specified CLP criteria are summarized on the attached Tables 1 and 2. Data flags, when necessary, are indicated on Table 2.

V. <u>Blank Spike - Laboratory Control Sample(s)</u>

A. Blank spike analyses (i.e., method blanks spiked with surrogates for volatiles and semivolatiles) were performed with each sample batch in the data package and were reported to be within laboratory control limits or within CLP established control limits.

Yes ____ No _X_

Comments:

- 1. The compounds used for the Pesticide/PCB blank spike were the matrix spike compounds.
- 2. The following spike analytes were reported to be outside control limits based on the laboratory control charts:

| Spike Compound | % Recovery | <u>Control Limits % Recovery</u> |
|----------------|------------|----------------------------------|
| Aldrin | 126 | 45 - 114 |

No additional qualifiers were applied based on blank spike recoveries.

B. Laboratory control charts provided in the package.

Yes X No _____

Comments: No comments.

VI. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

The matrix spike and matrix spike duplicate recovery summary data were reviewed. The spiking procedures were performed and met all recommended QC specifications.

Yes No X

Comments: No MS/MSD analyses were reported for this data package.

VII. Additional Comments

1. The laboratory did not meet several contract requirements. They are indicated in the above sections as follows:

| Sec. | III. | A.6 |
|------|------|-----|
| Sec. | III. | A.7 |
| Sec. | III. | A.9 |
| Sec. | VIII | |

- 2. The reviewer was unable to assess whether the laboratory performed GC/MS confirmation for positive hits that were sufficiently high. No "C" flag was applied to the data by the laboratory.
- 3. The laboratory reported the higher of the two results from the two columns. This procedure is specifically not allowed as stated in 3/90 SOW.

Form C-N

EXPLANATION OF ORGANICS DATA FLAGS

For the purposes of this data review document the following code letters and associated definitions are provided:

- U The material was analyzed for, but was not detected. The associated numerical value is the estimated detection limit.
- R Quality Control indicates that data is not usable (i.e., compound may or may not be present). Resampling and re-analysis would be necessary to determine the presence or absence of the analyte in the sample.
- J The associated numerical value is an estimated quantity because quality control criteria were not met or because the amount detected is below the detection limits required by analytical Statement of Work. The laboratory uses this flag in the latter situation.

B - The laboratory uses this flag when the reported analyte was also found in the method blank. Data validation guidelines do not specify the use of this flag.

JN - Tentative identification of a compound at an estimated concentration. Resampling and re-analysis would be necessary for verification.

11

I. SDG NARRATIVE

Laboratory Name: Eureka Laboratories, Inc. Lab Certification Number: E765 SDG Number: 8423 Purchase Order Number: AN-91-P-0019 Contract Task Order Number: 0051 NEESA QA/QC Level C Analysis: Initial Sample No.: 14

A. Sample Description/Analytical Description

| <u>Client</u> ID | Lab ID | Date Sampled | <u>Date</u> Received | Matrix | Analysis/Method |
|-------------------------|-------------------------|-----------------|-------------------------|--------|---------------------|
| 8423, 8424, 8425- | 9108219-11A, 12A,13A | 08/23/91 | 08/28/91 | Chips | P/PCBs/3-90 CLP SOW |
| Composite | 2 | | | | |
| 8426 | 9108219-14A | 08/23/91 | 08/28/91 | Chips | Same as above |
| 8439 | 9108219-29A | 08/23/91 | 08/28/91 | Chips | Same as above |
| 8440 | 9108219-30A | 08/23/91 | 08/28/91 | Chips | Same as above |
| 8441 | 9108219-31A | 08/23/91 | 08/28/91 | Chips | Same as above |
| 8442 | 9108219-32A | 08/23/91 | 08/28/91 | Chips | Same as above |
| -8476 | 9108214-1A | 08/23/91 | 08/27/91 | Chips | Same as above |
| 8477 | 9108214-2A | 08/23/91 | 08/27/91 | Chips | Same as above |
| 8478 | 9108214-3A | 08/23/91 | 08/27/91 | Chips | Same as above |
| 8479 | 9108214-4A | 08/23/91 | 08/27/91 | Chips | Same as above |
| 8480 | 9108214-5A | 08/23/91 | 08/27/91 | Chips | Same as above |
| 8481 | 9108214-6A | 08/23/91 | 08/27/91 | Chips | Same as above |

B. Sample Receipt

Samples were received in two delivery batches on August 27 & 28, 1991. Samples were in good condition. Sample receipt conditions, sample receipt temperature, and method of shipment are noted in the sample receipt check list and DHL air bills. There were no observed problems or discrepancies among Chain-of-custody forms, sample containers, and contract requirements in ELI Order Number 91-08-214. For Order Numbers 91-08-219, the following problem was observed:

1. ELI Order Number 91-08-219:

Sample volume for Sample Numbers 8423, 8424, and 8425 is not sufficient for P/PCBs-CLP analysis and percent moisture determination.

A memo was faxed by URS with an authorized signature to instruct ELI to composite these three samples and analyze as one.

SDG Narrative SDG 8423 Page 2 of 4

C. Quality Control Report

Pesticide/PCB by 3/90 CLP SOW

Sample Matrix and CRQL

Sample matrix for this SDG was concrete chip, containing high concentration of petroleum hydrocarbon products. Samples were extracted according to Pesticide/PCB 3/90 CLP SOW and subsequently followed by GPC and florisil cartridge clean up.

The petroleum product, however, remains in the sample extract despite the clean up procedures, and constitutes severe matrix interference. Samples were initially analyzed without dilution and found to be beyond quantitation range except for Sample Nos. 8439, 8440, and 8441. All other samples were then reanalyzed at a dilution factor of 20 or 500. High CRQL for Sample No. 8426, 8476, 8477, 8478, 8479, and 8480 is due to matrix interference. Higher CRQL for Sample No. 8423 and 8442 is due to high analyte concentration.

Analysis Data Sheet

PCB concentration values presented on Form I Pest were different than the PCB concentration values calculated in the manual worksheet. This is due to (1) Telecation Software used the Response Factor for the 0.1 ppm standards of the Aroclors analyzed in the initial calibration. (2) ELI manual worksheet used the response factors for 2 ppm standards of the Aroclors which were analyzed after the sample analyses and used for confirmation per 3/90 CLP SOW.

Chromatogram

Due to the absence of auto scaling capability in the gas chromatograph (GC) used for the analysis, the following criteria for acceptance of chromatograms per 3/90 CLP SOW cannot be met:

- i. Chromatogram peaks for initial calibration standard mixtures A and B at display are required to be less than 100% of full scale.
- ii. Chromatogram peaks for multi-component analytes at display are required to be greater than 25%.

DDT and Endrin % Breakdown

The % breakdown of combined Endrin and DDT for PEMO2 (Performance Evalutation Mixture #2), PEMO8, and PEMIO from the first column analysis exceeded the limit by 8%, 2.5%, and 11% respectively.

SDG Narrative SDG 8423 Page 3 of 4

The % combined breakdown for PEM01 and PEM02 from the second column analysis exceeded the limit by 0.6% and 5.2%. The % breakdown of Endrin for PEM01, PEM02, PEM04, and PEM06 from the 2nd column analysis exceeded the limit by 10.6%, 12.6%, 1.4%, and 7.8%. The % breakdown of 4-4'-DDT for PEM10 from the 1st column analysis exceeded the limit by 1.2%.

Calibration Verification

There is a total of fifteen continuing calibration verification (CCV) reported in this package. These CCVs were run after the initial calibration and throughout the analytical sequence.

RPD value of gamma-BHC (Lindane) and beta-BHC for PEM 10 (Performance Evaluation Mixture #10) and PEM 04 exceeded the control limit by a margin of 1.1% and 8.9%.

RPD value of Endosulfan II, Endosulfan sulfate, Endrin Ketone and Endrin Aldehyde for INDAM 03 (Individual Standard Mixture A medium level #3) and INDAM 05 exceeded the QC limits.

2nd Column Confirmation:

DB-17 instead of DB-1701 is used for the second column confirmation for this analysis.

Surrogate Retention Time Window

TCX and DCB was slightly outside the Surrogate Retention Time (RT) window in three and five analyses respectively for the 1st column analysis. TCX and DCB were slightly ouside the RT window in eighteen and eighteen analyses respectively for the 2nd column analysis.

Surrogate Recovery

The % recoveries of DCB for Sample Nos. 8439, 8440, and 8441 were high due to matrix interference. The DCB recoveries were out of the advisory limit for Sample No. 8426 DL, 8423, 2425 DL, 8442 DL, 8476 DL, 8477 DL, 8478 DL, 8479 DL, 8480 DL, and 8481 DL due to dilutions.

Pesticides Identification Summary

A difference of greater than 25% between the first and second column was detected for PCB Aroclors. Per 3/90 CLP SOW, the lower of the two values is to be reported on Form I and flagged with a "P". However, due to constraints of the Telecation software, the higher of the two values was reported on Form I.

SDG Narrative SDG 8423 Page 4 of 4

Form X is used to summarize the positive analytes, their concentration and % difference for Sample Nos. 84232425DL, 8440, and 8442DL.

Spike and Spike Duplicate:

The % Recovery and % RPD of Heptachlor for Reagent Spike and Reagent. Spike Duplicate exceeded the QC limit by a margin of 5% and 1% respectively.

Sample No. 8477 MS/MSD were extracted and analyzed, but unable to be quantified due to matrix interference.

Completeness

All analytical and QA/QC data are within the control and detection limits and meet the 95% completeness criteria.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Director or his designee, as verified by the following signature.

augukator Shao-Pin Yo, Ph.D./

Laboratory Director

| EEDERAL. | IESTIONS? CALL 800-238-5355 TOLL | FREE. | | AIRBILL PACKAGE TRACKING NUMBER | 142 | 0753250 |
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Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s): 09/27/91 - 10/01/91 Instrument ID: HP 5890

Method Blank ID(s): PBLK!

Extract Date(s): 09/04/91

| | Hold | Time | | | Standard(s) After | | | | | | | | |
|---------------|------|-----------|------|-------|-------------------|---|---|---|---|---|---|--|--|
| Sample | | <u>it</u> | Rec. | . (%) | Sample Analysis: | | | | | | | | |
| Identifier: | Ext | Anal | TCX | DCB | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | |
| MS (READENT) | X | ALL | | | | × | | | | | | | |
| 8439 | X | | | | | | X | | | | | | |
| 8440 | X | | | | | | X | | | | | | |
| 8441 | X | | | | | | X | | | | | | |
| MON (REAGENT) | | | | | | | X | | | | | | |
| 8476 OL | X | | | | | | | | X | | | | |
| 9479 OL | X | | | | | | | | X | | | | |
| 9480 DL | X | | | | | | | | X | | | | |
| BYFIDL | X | | | | | 3 | | | X | | | | |
| SUTTOL | X | | | | | | | | X | | | | |

| #260% Resolved | ♦≥60% Resolved_ | §>60% Resolved | ~ |
|-----------------------|-----------------|----------------|---|
| in Initial Resolution | Check | | |

| | | 09/27/0 | <i>s</i> 1 | | Calibrat | | | | | | |
|-------------------------|-----|----------|------------|------|-----------|----------|---------|------|------|-------|------------|
| DB-608 or | | Initial | | Cont | inuing: I | 890 > 25 | % * | | | | |
| Equivalent | | %RSD>20 | PEM | INDS | PEM | INDS | PEM | INDS | PEM | | |
| | | 1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Blank | |
| Cont.Cal.Date, Month→ | 09 | Day | 123 | 129 | 129 | 20 | 30 | 01 | 01 | Conc. | Qualifiers |
| COMPOUNDI | Ĺ | Time+ | 2053 | 0819 | 12047 | 0917 | 2021 | 0817 | 2103 | | (+/-) |
| alpha-BHC | | | 1 | 1V | V | V | V | | ~ | | |
| beta-BHC | | | | | | | | | | | |
| delta-BHC | | | - | | | | | 1 | | | |
| gamma-BHC (Lindane) | | | | | | | | | | | |
| Heptachlor | | | | | | 1 | | | | | |
| Aldrin | | | | 1 | | | | | | | |
| Heptachlor epoxide | | | | | | | | | | | |
| Endosulfan I 🔶 | | 20.5 | | | | | | 1 | | | |
| Dieldrin § | | | | | | | | | | | |
| 4,4'-DDE § | | | | | | | | | | | |
| Endrin | | | | | | | | | | | |
| Endosufan II | | | | | | | | | | | |
| 4,41-000 | | | | | | | | | | | |
| Endosufan sulfate | | | | | | | | | | | |
| 4,41-DOT | | | | | | | | | | | |
| Methoxychlor * | | | | | | | | | | | |
| Endrin Ketone 🏾 🕫 | | | | | | | | | | | |
| Endrin Aldehyde | | | | | | | | | | | |
| alpha-Chlordane | | | | | | | | | | | |
| gamma-Chlordane 🔶 | | K. B. M. | | | | | | | | | |
| Toxaphene | | | | | | | | | | | |
| Aroctor-1016 | | | | | | | | | | | |
| Aroclor-1221 | | | | | | | | | | | |
| Aroctor-1232 | | | | | | | | | | | |
| Aroclor-1242 | | | | | | | | | | | |
| Aroclor-1248 | | | | | | | 1 | | | | |
| Aroclor-1254 | _ 1 | | | | | | | | | | |
| Aroctor-1260 | | | | | | | | | | | |
| Surrogates - %RSD > 300 | X | | Sur | | PDs must | also be | × 1 25% | / | | | |
| Tetrachloro-m-Xylene(T | | V | | 10 | | V | IV | | | | |
| Decachlorobiphenyl (D | CB) | | 10 | | 10 | | RT | | | | |

* <u>Validation Criteria:</u> Compound Detected Compound Undetected Quantitation Column RPD% < 25% RPD% < 25%

and

or

Confirmation Column RPD < 25% - Acc

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s): 09/27/91- 10/01/91 Instrument ID: HP 5890 Method Blank ID(s): PBLK/

Extract Date(s): 09/04/91

| Sample | | iTime It | Sur Rec. | | | | | d(s) Anai | | | r | |
|---------------------------|-----|-------------|-------------|-----|---|-----|-----|--------------|----|----|----|----------------|
| Identifier: | Ext | Anal | TCX | DCB | 1 | 2 | 3 | 4 | 5 | 6 | 7 | |
| Identifier: 84232425DC | X | | | | 1 | ION | IE | | | | | |
| 844200 | X | | | | A | ON1 | ¥L. | 01 | T | OF | 12 | HOUR |
| 3426 DL | X | | | | 1 | DNI | ¥1 | 0 | 1T | 06 | 12 | HOUR. HOUR. |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| - | | | | | | | | | | - | | |
| | | | | | | | | | | - | - | |
| | | | | | | | | | - | - | - | |
| | | | | | | | | | | | - | |

♦≥60% Resolved _____ ∞260% Resolved in Initial Resolution Check

| ~ | 09/27/0 | 71 | | alibrati | | | | | | |
|---------------------------|---------------------|-----|-----------|----------|-----------|-------|------|-----|---------------|------------|
| D8-608 or | Initial | | | | 890 > 257 | | | | | |
| Equivalent | %RSD>20 | PEM | INDS | PEM | INDS | PEM | INDS | PEM | | |
| | 1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Blank | |
| Cont.Cal.Date, Month 09 | Day | | | | | | | | Conc. | Qualifiers |
| COMPOUND | Time+ | | | | | | | | | (+/-) |
| alpha-BHC | | | | | | | | | | |
| beta-BHC | | | | | | | | | | |
| delta-BHC | | | 1.1 | | | | | | | |
| gamma-BHC (Lindane) | | | | | | | | | | |
| Heptachlor | | | | | | | | | | |
| Aldrin | | | | | | | | | | |
| Heptachlor epoxide | | | | | | | | | | |
| Endosulfan I 🔶 | 20.5 | | | | | | | | | |
| Dieldrin § | | | | | | | | | | |
| 4,4'-DDE § | | | | | | | | | | |
| Endrin | | | | | | | | | | |
| Endosufan II | | | | | | | | | | |
| 4,4'-000 | | | | | | | | | | |
| Endosufan sulfate | | | | | | | | | | |
| 4.4'-DDT | | | | | | | | | | |
| Methoxychion * | | | | | | | | | | |
| Endrin Ketone * | | | | | | | | | | |
| Endrin Aldehyde | | | | | | | | | | |
| alpha-Chlordane | | | | | | | | | | |
| gamma-Chlordane + | 1. P. A. | | | | | | | | 1 | 1 |
| Toxaphene | | | | | | | | | | |
| Aroclor-1016 | States of the state | | | | | | | | | |
| Aroclor-1221 | Constant of the | | | | | | | | | 1 |
| Aroclor-1232 | | | | | | | | | | |
| Aroclor-1242 | | | | | | | | | | 1 |
| Aroclor-1248 | | | | | | | 1 | | | |
| Aroclor-1254 | | | | | | | | | | |
| Aroctor-1260 | The second second | | | | | | | | 1 | |
| Surrogates - %RSD > 30% | | 9 m | rogate Rf | Ds must | also be | < 25% | | | Conserved the | |
| Tetrachloro-m-Xylene(TCX) | V | | | S TRAJE | 1 | | 1 | 1 | | |
| Decachlorobiphenyl (DCB) | | 1 | | | | | | | 1 | |

* Validation Criteria: Compound Detected Compound Undetected

Quantitation Column RP0% < 25% RP0% < 25%

and

or

Confirmation Column RPD < 25%

RPD < 25%

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s): 10/04/41- 10/05/91

Instrument ID: VARIAN 6100

Method Blank ID(s): PBLK/ Extract Date(s): 09/04/91

| | Hold | Time | Sur | Surr. Standard(s) | | | | | | | | | |
|--------------|------|----------|-----|-------------------|------------------|---|-------------|---|---|---|---|--|--|
| Sample | | rt | Rec | . (%) | Sample Analysis: | | | | | | | | |
| Identifier: | Ext | Anal | TCX | DCB | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | |
| MS (REAGENT) | | | | | | X | | | | - | | | |
| MSO(REAGENT) | | | | | | X | | | | | | | |
| 8476 DL | X | | | | | | X | | | | | | |
| 847706 | X | | | | | | X | | | | | | |
| 84780L | X | | | | | | $ \lambda $ | | | | | | |
| 8479106 | X | | | | | | X | | | | | | |
| 843006 | X | | | | | | X | | | | | | |
| 84BIOL | X | | | | | | X | | | | | | |
| 84232425 DL | X | | | | | | X | | | | | | |
| 9426 DL | X | diam'r d | | | | | X | | | | | | |

| ∞±60% Resolved | ♦≥60% Resolved |
|------------------|----------------|
| in Initial Resol | tion Check |

| In Initiat Resolution Cleak | 10/03/9 | / | | Calibrati | ons: | | | | | |
|--------------------------------|-------------|------|----------|-----------|---------|--------------|------|-----|------------|------------|
| DB-1701 00 | Initial | 1 | | inuing: R | | * | | | | |
| DB-1701 or Equivalent_0B-17 | %RSD>20 | PEM | INDS | PEM | INDS | PEM | INDS | PEM | States and | |
| | 1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Blank | |
| Cont.Cal.Date, Month /0 | Day | ay | 24 | 05 | | | | | Conc. | Qualifiers |
| COMPOUND1 | Time+ | 0445 | 1708 | 0446 | | | | | | (+/-) |
| alpha-BHC | | | | | | | | | | |
| beta-BHC | 20.2 | 33.9 | | 28.6 | | | | | | |
| delta-BHC | | | | | | | | | | |
| gamma-BHC (Lindane) | | | | | | | | | | |
| Heptachlor | | | | | | | | | | |
| Aldrin | | | | | | | | | | |
| Heptachlor epoxide | | | | | | | | | | |
| Endosulfan I 🔶 | | | | | | | | | | |
| Dieldrin | | | | | | | | | | |
| 4,41-DDE | | | | | | | | | | |
| Endrin | 21.4 | | 26.0 | 38.1 | | | | | | |
| Endosufan II | | | 78.0 | | | | | | | |
| 4,41-DDD | | | 29.0 | | | | | | | |
| Endosufan sulfate * | 26.0 | | 126.0 | | | | | | | |
| 4,4'-DDT | 1.1 | | | | | | | | 1 | |
| Methaxychlor * | | | | | | | | | | |
| Endrin Ketone | 34.Z | | | | | | | | | |
| Endrin Aldehyde | 26.0 | | | | | | | | | |
| alpha-Chlordane | | _ | | | | | | | | |
| gamma-Chlordane 🔶 | | | | | | | | | | |
| Toxaphene | | | | | | | | | | |
| Arocior-1016 | | | | | | | | | | |
| Arocior-1221 | | | | | | | | | | |
| Aroctor-1232 | | | | | | | | | | |
| Aroctor-1242 | | | | | | | | | | |
| Aroctor-1248 | | | | | | | | | | |
| Aroclor-1254 | | | | | | | | | | |
| Aroctor-1260 | | | | | | | | | | |
| Surrogates - %RSD > 30% | Suma reason | Sur | rogate R | PDs must | also be | <u>≤ 25%</u> | | | | |
| Tetrachloro-m-Xylene(TCX) | V | KT. | | IRT | | | | | | |
| Decachlorobiphenyl (DCB) | - | R | 1 PT | ET | | | | | | |

* Validation Criteria: Quantitation Column Confirmation Colum RPD < 25% RPD% < 25% and Compound Detected RPD% < 25% RPD < 25% Compound Undetected or

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s): 10/04/41 - 10/05/41 Instrument ID: VARIAN 6000 Method Blank ID(s): PBLK/

Extract Date(s): 09/04/9/

HoldTime Surr. Standard(s) After Sample Out Rec. (%) Sample Analysis: Identifier: Ext Anal TCX DCB 1 5 6 7 2 3 4 8439 X 8440 1 8441 84420L X X

*250% Resolved______

| | 10/03 | 191 | | Calibrati | ons. | | | | | |
|---------------------------|---------|------|----------|-----------|---------|-------|------|-----|-------|------------|
| DB-1701 or | Initial | 1 | | inuing: R | | * | | | | |
| DB-1701 or DB-17- | %RSD>20 | PEM | INDS | PEMI | INDS | PEM | INDS | PEM | | |
| | 1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Blank | |
| Cont.Cal.Date, Month / (| 2 Day | 04 | 04 | 05 | 1 | | | | Conc. | Qualifiers |
| COMPOUNDI | Time+ | 0445 | | 0446 | | | | | | (+/-) |
| alpha-BHC | | 1 | | | | | | | 1 | |
| beta-BHC | 20.2 | 33.9 | | 28.9 | | | | | | |
| delta-BHC | | | | | | | | | | |
| gamma-BHC (Lindane) | | | | | | | | | | |
| Heptachlor | | | | | | | | | | |
| Aldrin | | | | | | | | | | |
| Heptachlor epoxide | | | | | | | | | | |
| Endosulfan I 🔶 | | | | | | | | | | |
| Dieldrin | | | | | | | | | | |
| 4,41-DDE | | | | | | | | | | |
| Endrin | 71.4 | | 26.0 | 38.1 | | | | | | |
| Endosufan II | | | 28.0 | | | | | | | |
| 4,41-000 | | | 29.0 | | | | | | | |
| Endosufan sulfate 🏶 | 26.0 | | 760 | | | | | | | |
| 4,4'-DDT | | | | | | | | | | |
| Methoxychlor * | | | | | | | | | | |
| Endrin Ketone | 34.7 | | | | | | | | | |
| Endrin Aldehyde | 260 | | | | | | | | | 1 |
| alpha-Chlordane | | | | | | s | | | | |
| gamma-Chlordane 🔶 | i ada | | 1 | | | | | | | 1 |
| Toxaphene | | | | | | | | | | |
| Aroclor-1016 | ··· | | | | | | | | | |
| Aroclor-1221 | | | | | | | | | | |
| Aroclor-1232 | | | | | | | | | | |
| Aroclor-1242 | | | | | | | | | | |
| Aroctor-1248 | | | | | | | | | | |
| Aroctor-1254 | | | | | | | | | | |
| Aroclor-1260 | | | | | | | | | | |
| Surrogates - %RSD > 30% | | Sur | rogate R | PDs must | also be | ≤ 25% | | | | 21 - A.A. |
| Tetrachloro-m-Xylene(TCK) | V | er | | FT | | | | - | | |
| Decachlorobiphenyl (DCB) | V | RT. | RT | RT | | | | | | |

| * Validation Criteria: | Quantitation Column | | Confirmation Column |
|------------------------|---------------------|-----|---------------------|
| Compound Detected | RPD% < 25% | and | RPD < 25% |
| Compound Undetected | RPD% < 25% | or | RPD < 25% |

E 2 - SURROGATE RECOVERIES SOW Rev. OLM01.8, 3/90 Page 3 of 3

| ACID FRACTION | | | | | | | | | | | | | | | | | | | | | | / | | |
|----------------------------------------------------------------------------------------------------------|---------|-------------------|----------------|-----|--------------------------------------|-------|----------------|----------------|-------|----------------------|------------------|-----|---------|------|-----|------|----------|------|---------|------------------------------|-------------------|--------|------|----------|
| ample Numbers | | | | | | | | | | | | | | 1.05 | | 1.67 | | \$5 | S6 | 1 87 | S4 1 | S5 | \$6 | S7 |
| Surrogate(s) outside | S4 | s5 | ^{\$6} | \$7 | \$4 | \$5 | \$6 | S7 | \$4 | s5 | \$6 | \$7 | \$4 | \$5 | \$6 | \$7 | 54 | | 30 | T. | | | | |
| compound less than 10%? (YAN) | | | 1 | 1 | | I | 1 | 1 | | 1 | 1 | I | | 1 | 1 | 1 | - | 1 | 1 | 1 : | | | | |
| leanalysis required? (Y/N) If blank, were associated samples reanalyzed? (Y/N) | ~ | | | | | | | | | | | | | > | _ | | | | | | | | | |
| nitial Analysis Qualifiers | | | | | - | | | | | | | / | 1 | | | | | | | | | | | |
| Sample Number for reanalysis. Reanalysis surrogates outside Imits (show % R) | | | | | | | | | > | $\overline{\langle}$ | | | | | | | | | | 1 | | | | |
| e-extraction required? (Y/N) | | | | | | | / | | | | | | 4 | | | | | | | | | | | |
| If blank, were associated samples re-extracted? (Y/N) | | | | | | | | | | | | | | | | | | | | | | | | |
| Sample number for re-extract. Re-extraction outside limits (show % R) | | | 1 | 1 | | | | | | | | | | | | | <u> </u> | + | | | | | | <u> </u> |
| Reanalysis qualifiers. | | | | | | | | | 1 | | | | 1 | | | | 1 | | | | 1 | | | |
| QC Limits (XR) | SO | | | | WATER | | | | | | | | | | | | Note: | The | circl | ed samp sis/rea ed for | le numi nalysi | ber is | | |
| s = phenol-do s = 2-fluorophenol s = 2-fluorophenol s = 2-fluorophenol s = 2-fluorophenol-d4 | 24- | 13 21 30 (a | adviso | ry) | 10-110 21-110 10-123 33-110 | (ad | visory | y) | | | | | | | | | | recc | Annerka | | 036. | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| PESTICIDE FRACTION | | | | | | | | | | | | | | | | | | 6 | | | (| 311.1 | - 11 | |
| Sample Numbers | 1 84 | 2324 | 1250 | N | 18 | -421 | GOL | - | 1 | 843 | 39 | | | 344 | 0 | | | 84 | 11 | | 2 | 3442 | eve | - |
| | S1 | | \$ | 2 | 51 | | 1 : | s2 | s | 1 | s | 2 | s | 1 | 1 : | s2 | \$1 | 1 | \$ | 2 | S1 | | Sa | |
| QC limits exceeded (show %R) | |) | | D | | Ø | | D | - | 1- | 203 | 1- | - | 1- | - | 1170 | -1 | /- | 1-1 | 2.92 | |) | |) |
| Qualifier, if applied. | | | 1 | 2 | _ | | | | | | 15-5 | /- | | | 2 | -5/- | | | 12 | -5/- | | | 1 | |
| Limits (%R) | | | | | | : | SOIL | | WATER | | | | | | | | | | | | | | | |
| ticide \$1 = Tetrachloro-m-xy ticide \$2 = Decachlorobiphen SHELL\SURROG-2.WK3 | ilene { | TCX) DCB) | | | \$8 | - 138 | (advi (advi | sory) sory) | 88-15 | 0 (ad 0 (ad | visory visory | 3 | | | | | | | | | | | | |

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LE 2 - SURROGATE RECOVERIES SOW Rev. OLM01.8, 3/90 Page 3 of 3

| ACID FRACTION | | | | | | | | | | | | | | | | | | | | | | | | 1 |
|-----------------------------------------------------------------------------------------------------------|---------|-------------------|-------|----------|-------------------------------------|----------|------------------|-------|-------|-----|------------------|----|----|-------|-------|----------|-------|------|-------|----------------|---------|-------------|-----------|-------|
| Sample Numbers | | | | | | | | | | | I \$6 | S7 | | 1 \$5 | 1 \$6 | \$7 | | حكار | 1 56 | 1 S7 | 54 | \$5 | S6 | 1 S7 |
| Surrogate(s) outside OC limits (show XR) | \$4 | \$5 | s6 | \$7 | \$4 | \$5 | s6 | \$7 | \$4 | \$5 | | | | | | 1 | | [| ļ | | | | | |
| Compound less than 10%? (Y/N) | | | 1 | 1 | | 1 | 1 | 1 | | 1 | 1 | 1 | - | | 7 | 1 | | 1 | 1 | 1 | | 1 | | |
| Reanalysis required? (T/H) | | | | | | | | | | | | | | | | | | | | | | | | |
| If blank, were associated samples feanalyzed? (Y/N) | | | | | | | | | | | | | | | | | | | 64 | | | | | |
| Initial Analysis Qualifiers | | ~ | | | | | | | 2 | | | | | | | | | | | | | | | |
| Sample Number for reanalysis. | | | | <u> </u> | | | | ····· | | | | | | | | | . | | 1 | | | I | I | ····· |
| Reanalysis surrogates outside limits (show % R) | | | | | | \succ | 1 | | | | 1 | | | | | | - | | | 1 | | 1 | 1 | |
| Re-extraction required? (Y/N) | | | | | | | | | | | | | | | | | _ | | | | | | | |
| If blank, were associated samples re-extracted? (Y/N) | | | / | | | | | | | | | | | | | | | | | | | | | |
| Sample number for re-extract. | | / | | | | | | | | | | | | | | | . | | | | . | ····· | 1 | |
| Re-extraction outside limits (show % R) | | | | | | | | | | | | | | | | + | | 1 | 1 | 1 | | 1 | 1 | 1 |
| Reanalysis qualifiers. | | | | | | | | | | | | | | | | | | | > | | 1 | | | |
| QC Limits (XR) | SO | | | | WATER | | | | | | | | | | | | Note: | The | analy | sis/relied for | analysi | ber it s | | |
| id S4 = Phenol d6 id S5 = 2-1 Locophenol id S7 = 2-4 6-Tripromophenol id S7 = 2-6 florophenol-d4 | 24- | 13 21 30 (a | dviso | ry) | 10-110 21-110 10-12 33-110 |) (ad | visory |) | | | | | | | | | | 100 | | | | | | |
| | | | | | | | | | | | | | | | A | 104 | | | | | | | | |
| PESTICIDE FRACTION | | pin | n n | / | | 94 | 771 | 21 | | S | 478 | nc | 1 | 84. | 789 | nd NC | 1 8 | 480 | 000 | - | 18 | 481 | nc | |
| Sample Numbers | | 894 | 60 | | | | | | | | | | | | | \$2 | | | | 32 | | | 1 5 | |
| QC limits exceeded (show %R) | S1 | 0 | 650 | 2 | s | 1- | ? | 188 | S. | 19 | 5 Hat? | 0 | 0 | /0 | 5 | 22/0 | | 10 | 608 | , | -/ | 0 | 213/ | 0 |
| Qualifier, if applied. | 5-51 | R | J-5 | R | | | J-G | ;/- | 5- | SR | 1 7-9 | R | J- | S/R | 4- | S/R | J-5 | R | 1-S | IR_ | J-5 | 1R | t-s | R |
| Limits (%R) | | | | | - | | SOIL | | WATER | 1 | | | | | | | | | | | | | | |
| <pre>sticide \$1 = Tetrachloro-m-xy sticide \$2 = Decachlorobipher</pre> | ylene { | TCX } | | | 88 | 3=158 | (advis (advis | sory) | 88:15 | | visory visory | } | | | | | | | | | | | | |
| \SHELL\SURROG-2.WK3 | | | | | | | | | | | | | | | | | | | | | | | | |

E 2 - SURROGATE RECOVERIES SOW Rev. OLMO1.8, 3/90 Page 3 of 3

ACID FRACTION ample Numbers \$7 **S7** \$4 | \$5 \$6 **S7** S4 | S5 \$6 **S**5 **S6 S7** 54 \$5 \$6 \$7 \$4 **S**5 \$6 \$7 S4 | S5 \$6 \$4 ur (ogate(s) outside C limits (show XR) 1 1 iompound less than 10%? (Y/N) eanalysis required? (Y/N) If blank, were associated samples reanalyzed? (Y/N) nitial Analysis qualifiers ample Number for reanalysis. eanalysis surrogates outside imits (show % R) te-extraction required? (Y/N) If blank, were associated samples Fe-extracted? (Y/N) sample number for re-extract. te-extraction outside limits (show % R) leanalysis qualifiers. The circled sample number is the analysis/reanalysis recommended for use. Note: WATER SOIL QC Limits (%R) 10-110 10-110 10-123 S4 = Phenol-d6 S5 = 2-Fluorophenol S6 = 2.4.6-Tripromophenol S7 = 2.6hlorophenol-d4 24 - 113 28 - 121 28 - 130 (advisory) (advisory) PESTICIDE FRACTION PBLKI MS MSD Sample Numbers **S2 s**2 \$1 **s**2 \$1 \$1 s2 \$1 **S**2 **S**2 \$1 \$1 ## 41 QC limits exceeded (show %R) + -1--1-_ - 1 -_ Qualifier, if applied. WATER SOIL Limits (%R) 88-158 (advisory) (advisory) ticide \$1 = Tetrachloro-m-xylene (TCX) ticide \$2 = Decachlorobiphenyl (DCB) \$8-158

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SHELL\SURROG-2.WK3

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DEC 3 0 1991 AS/ST/DV

Troj of Tumper, 105;6 Project Vame: 170 -1

TOCIL: 2002201

SILVER SPRING CHICAGO DENVER DETROIT GRAND RAPIDS

DOCUMENT NO .: 070NCODS.RVW

ORGANICS DATA REVIEW SUMMARY - NEESA LEVEL C

| Case No. 0051 URS TDCN | 3001421 | _ Projec | t No | CIO-0051 | | | | |
|--------------------------------------------------------------------------------|-------------|----------|----------|-----------|--|--|--|--|
| Site Name <u>St. Lawrence Island, AK</u> | | _ Projec | t Name _ | N.E. Cape | | | | |
| Contract Laboratory Eureka Laborat | ories, Inc. | | | | | | | |
| Sample Delivery Group (SDG) <u>8449</u> Sampling Date (Month/Year) <u>8/91</u> | | | | | | | | |
| Sample Matrix 20 low level soils | | | | | | | | |
| Type of Analyses <u>Volatile Organics, Pesticide/PCB (see page 2)</u> | | | | | | | | |
| Data Reviewer Roger Simon/Alan Al QA Review by Jeralyn Guthrie | ai | Date _ | 12/28/ | 121 | | | | |
| QA Review by Jeralyn Guthrie | | _ Date _ | 12/28/ | 191 | | | | |
| CCJM Approval by <u>Richard Cheathan</u> | - | Date _ | 12/28 | /91 | | | | |
| Telephone logs/correspondence attached? | | | | | | | | |
| Laboratory case narrative attached? | Yes X | No | Not Ava | il | | | | |
| Required deliverables provided? | Yes | No X | Not App | 1 | | | | |
| Airbill enclosed? | Yes X | No | Not Ava | il | | | | |
| CLP SOW used by laboratory for analysis | 3/90 | ŝ | | | | | | |

Remarks: Report is based on resubmission (rec'd 12/19/91) and is considered to be final.

Note:

- The Level C Data Validation Guidelines as specified by NEESA in the Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Restoration Program, NEESA 20.2-047B, June, 1988, the EPA's Functional Guidelines for Organic Analyses and Method Specific References have been used by the date reviewer as a basis for reviewing the data and applying flags, except as specifically noted in review comments.

-- Please see data flagging definitions on the last page of this report.

(Revised 12/91) C.C. JOHNSON & MALHOTRA, P.C. 215 UNION BOULEVARD, SUITE 215 • LAKEWOOD, COLORADO 80228 • (303) 987-2928

| Sample <u>Number</u> | Sample <u>Matrix</u> | VOA | Pest/PCB | |
|-------------------------|-------------------------|-----|----------|--|
| | | | | |
| 8449 | soil | Х | Х | |
| 8450 | soil | X | х | |
| 8451 | soil | Х | Х | |
| 8452 | soil | х | х | |
| 8453 | soil | Х | Х | |
| 8454 | soil | X | х | |
| 8455 | soil | Х | х | |
| 8456 | soil | Х | х | |
| 8457 | soil | x | х | |
| 8458 | soil | Х | Х | |
| 8459 | soil | Х | х | |
| 8460 | soil | Х | х | |
| 8461 | soil | Х | Х | |
| 8462 | soil | Х | Х | |
| 8463 | soil | Х | Х | |
| 8464 | soil | Х | Х | |
| 8465 | soil | Х | X | |
| 8466 | soil | Х | X | |
| 8467 | soil | Х | X | |
| (cont | inued next page) | | | |

.

X = Analysis has been provided for validation.

0 = Analysis was requested per the Chain of Custody, however, no data was received for validation.

- = Analysis was not requested per the Chain of Custody or required to meet criteria.

| (continu Sample <u>Number</u> | ed from page 2) Sample <u>Matrix</u> | <u>VOA</u> | Pest/PCB |
|-------------------------------------|--------------------------------------------|------------|----------|
| 8468 | soil | Х | Х |
| 8453MS | soil | Х | |
| 8453MSD | soil | Х | |
| 8466MS | soil | | Х |
| 8466msd | soil | | Х |
| | · . | | |
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X = Analysis has been provided for validation.

- 0 = Analysis was requested per the Chain of Custody, however, no data was received for validation.
- = Analysis was not requested per the Chain of Custody or required to meet criteria.

I. <u>Deliverables</u>

All data deliverables as specified for NEESA Level C quality control were found in the package.

Yes No X

Comments: The following Level C Data Deliverables Checklist shows the Forms and data found in the package.

LEVEL C DELIVERABLES COMPLETENESS CHECKLIST - ORGANICS

KEY

- X Included in package
- O Not included and/or Not available
- NA Not applicable or Not required

RS Provided as resubmission

- X Method blank spikes with each batch
- X/O Control chart developed by lab
- X Sample results Form 1 or spreadsheet
 - X/O CLP data flags used by laboratory
 - X Sample chromatograms and mass spectra
- X/RS Holding times (sampling, prep and analysis dates provided)
- X System Monitoring Compounds (SMC) and Surrogate recoveries Form 2
- X Matrix spike/matrix spike duplicate (MS/MSD) Form 3 (MS/MSD is to be 1 per 20 samples of similar matrix)
 - X Method blank summary Form 4
- <u>X</u> Report form for method blank results (Form 1 or spreadsheet) X/RS GC/MS tuning - Form 5
- X Initial calibration data and Resolution Summary, Form 6
- X Continuing calibration data and Verification Summary Form 7
- X Internal standard area summary and Analytical Sequence Form 8
- X Pesticide Florisil Cartridge Check and GPC Calibration Form 9

II. Holding Times

Samples were extracted and analyzed within holding times specified by the NEESA data validation guidelines or SW846 holding time requirements. See the following table for a summarization of sample holding times.

Yes <u>No X</u>

Comments: An asterisk and number in parentheses indicate a sample fraction outside holding time specifications and the number of days exceeded based on the date sampled. Sample data for any fraction exceeding holding time specifications are flagged as estimated (J or UJ).

Holding Time Summary

| Sample | Sampling | | VOA | Pest | icide |
|---------|----------|------|----------|----------|----------|
| Number | Date | VISR | Analysis | Extract | Analysis |
| | | | | | |
| 8449** | 8/23/91 | 8/27 | 9/06 | 9/4 (*5) | 9/28 |
| 8450 | 8/23/91 | 8/27 | 9/06 | 9/4 (*5) | 9/28 |
| 8451** | 8/23/91 | 8/27 | 9/06 | 9/4 (*5) | 9/28 |
| 8452 | 8/23/91 | 8/27 | 9/06 | 9/4 (*5) | 9/28 |
| 8453 | 8/23/91 | 8/27 | 9/06 | 9/4 (*5) | 9/28 |
| 8453MS | | | Х | | |
| 8453MSD | | | Х | | |
| 8454** | 8/23/91 | 8/27 | 9/06 | 9/4 (*5) | 9/28 |
| 8455 | 8/23/91 | 8/27 | 9/06 | 9/4 (*5) | 9/28 |
| 8456 | 8/23/91 | 8/27 | 9/06 | 9/4 (*5) | 9/28 |
| 8457 | 8/23/91 | 8/27 | 9/06 | 9/4 (*5) | 9/28 |
| 8458 | 8/23/91 | 8/27 | 9/06 | 9/4 (*5) | 9/28 |
| 8459 | 8/23/91 | 8/27 | 9/06 | 9/4 (*5) | 9/28 |
| 8460 | 8/23/91 | 8/27 | 9/06 | 9/4 (*5) | 9/28 |
| 8461 | 8/23/91 | 8/27 | 9/06 | 9/4 (*5) | 9/28 |
| 8462 | 8/23/91 | 8/27 | 9/06 | 9/4 (*5) | 9/28 |
| 8463 | 8/23/91 | 8/27 | 9/06 | 9/4 (*5) | 9/28 |
| 8464 | 8/23/91 | 8/27 | 9/06 | 9/4 (*5) | 9/28 |
| 8465 | 8/23/91 | 8/27 | 9/05 | 9/4 (*5) | 9/28 |
| 8466 | 8/23/91 | 8/27 | 9/05 | 9/4 (*5) | 9/28 |
| 8466MS | | | | Х | Х |
| 8466MSD | | | | Х | х |
| 8467 | 8/23/91 | 8/27 | 9/05 | 9/4 (*5) | 9/28 |
| 8468 | 8/23/91 | 8/27 | 9/05 | 9/4 (*5) | 9/28 |
| | | | | | |

** analyzed at dilution for Pest/PCB analysis. Form I's labeled with "DL".

III. GC/MS Tuning and Mass Calibration

The BFB and/or DFTPP performance results summaries were included for all samples, and were reported to be within specified criteria at the appropriate frequency.

Yes X No ____

Comments: In the original submission the ratios for masses 177/176 were calculated incorrectly for all tunes. Instead of 100%, the initial (7/19) and continuing (9/5 and 9/6) tune ratios should be 8.0%, 6.9% and 7.0% respectively. The laboratory has provided the corrected Forms 5A as resubmissions.

IV. A. Instrument Calibration (Volatiles)

1. The instrument response factor (RRF) data summaries were reviewed for the initial and continuing calibrations. All information was present and reported on the required summary forms. Response factors met the required criteria for volatile analyses, thus no data have been qualified.

Yes No X

Comments: The RRF values outside of data validation guideline specifications for the SPCC's are listed below. All volatile compounds have been reviewed with a control limit of 0.050 being used as a minimum response factor. (NOTE: This procedure has been used by the reviewer in order to prevent the qualification of compounds that had acceptable response factors.) The following out-of-control calibration compound(s) have resulted in associated sample data being flagged as estimated (J or UJ) or in those instances where a response factor of <0.050 was reported the data for the compound has been rejected (R) if reported as undetected in the sample. All samples have been affected.

| Other compounds | | Init. Cal. Date / RRF | | |
|-----------------|-------|--------------------------|-----------|-----------|
| 2-butanone | 0.050 | 7-19/0.049 | 9-5/0.049 | 9-6/0.044 |

It was noted by the reviewer that 2-butanone has a minimum RRF of 0.010 according to the SOW 3/90. While contractually compliant, a significant calibration problem is demonstrated and all 2-butanone results have been qualified per Functional Guidelines criteria.

Form C-N

2. The percent relative standard deviation (%RSD) for the initial calibrations and the percent difference (%D) for the continuing calibrations were reviewed. The %RSD and %D values reported met the data validation criteria (i.e., < 30 %RSD and < 25 %D) for volatile analyses, thus no data have been qualified.

Yes X No _____

Comments: No comments.

B. Instrument Calibration (Pesticide/PCB)

1. The percent relative standard deviation (%RSD) of the calibration factors in the initial calibration for the single component target compounds are all less than 30.0%. All appropriate information was provided and no more than two single component target compounds exceed 20.0 %RSD.

Yes ____ No _X_

Comments: The compliant and non-compliant %RSD values found to be above 20% are summarized on the attached Table 1-P. A data validation specification of 20% RSD for any compound identified, has been applied for the column used in quantifying the sample result(s).

2. The resolution of adjacent peaks, as specified in the method, were found to be greater than 60%. Compounds required to meet resolution criteria are indicated on Table 1-P.

Yes X No _____

Comments: No comments.

3. The percent difference (shown as RPD on Form 7D) for the calibration verifications of the PEM compounds were found to be less than 25%. All the appropriate information was provided.

Yes ____ No _X_

Comments: Those compounds which did not meet the specified criteria and qualifiers are summarized on Table 1-P.

4. The pesticide calibration verifications of the Individual Mixes A and B had percent differences (shown as RPD on Form 7E) of less than 25% for all compounds. All of the appropriate information was provided.

Yes <u>No X</u>

Comments: Those compounds which did not meet the specified criteria and qualifiers are summarized on Table 1-P.

5. All retention times for all compounds for the PEM, INDA and INDB solutions met required criteria.

Yes ____ No _X_

Comments: The retention times for alpha EHC, beta-EHC, gamma-EHC, endrin, 4,4'-DDT, methoxychlor, heptachlor, tetrachlorom-xylene (INDA an B surrogate), aldrin, heptachlor, endrin, aldehyde, alpha-chlorodane, gamma-chlorodane, decachlorobiphenyl (IND B, surrogate) did not meet the specified criteria for the DB-17 column analysis as stated in the SOW. This deficiency is considered to be non-compliant as specified in the 3/90 SOW. However, no additional qualifiers have been applied to any sample data.

6. The breakdown of 4,4'-DDT and endrin was less than 20% for all PEM analyses.

Yes ____ No _X_

Comments: The following standard analyses did not meet the % breakdown criteria.

| | _ | % Brea | kdown | |
|-------------------------------------|----------|--------|----------|------------------------------------------------------------------------------|
| Calibration Colu | imn DDT | Endrin | Combined | Affected Samples |
| Initial DB-1 10/02/91, 1901 | L7 | 30.6 | 30.6 | All |
| Initial DB-1 10/03/91, 0522 | 17 | 32.6 | 35.2 | All |
| Verification DB-6 09/27/91, 2219 | 508 16.2 | 14.6 | 30.8 | 8449DL, 8450, 8452, 8452,8453, 8454DL, 8455, 8456, 8457, 8458, 8459 |

Form C-N

All pesticide/PCB data is qualified on the basis of holding times and no additional qualifiers have been applied to the data based on the % breakdown of DDT or Endrin.

7. The florisil cartridge check and, when applicable, the GPC calibration were found to be within specified criteria.

Yes X No ____

Comments: No comments.

8. The retention times for the surrogates were within criteria for every sample.

Yes ____ No _X__

Comments: An asterisk (*) on the following table indicates that the retention time was not within established retention time windows. No additional qualifiers have been applied to the sample data based on this non-compliancy.

Form C-N

| Sample No. | TCX 1 | TCX 2 | DCB 1 | DCB 2 |
|------------|-------|-------|-------|-------|
| OOMS | | | | |
| OOMSD | | | | |
| 8449DL | | | | * |
| 8450 | | | | * |
| 8451DL | | * | | |
| 8452 | | * | | * |
| 8453 | | * | | * |
| 8454DL | | | | * |
| 8455 | | * | | * |
| 8456 | | * | | |
| 8457 | | * | | * |
| 8458 | | * | | * |
| 8459 | | * | | * |
| 8460 | | * | | * |
| 8461 | | * | | * |
| 8462 | | * | | * |
| 8463 | | * | | * |
| 8464 | | * | | * |
| 8465 | | * | | * |
| 8466 | | * | | * |
| 8466MS | | * | | * |
| 8466MSD | | * | | |
| 8467 | | * | | * |
| 8468 | | * | | |
| PBLK1 | | | | |

V. <u>Blanks</u>

A. Method Blank - The blank analyses summaries were reviewed. The frequency of method blank extractions and analysis and the contaminants reported in blank samples were all within specified limits.

Yes ____ No _X_

Comments: Contaminant quantities reported in the laboratory preparation blanks are listed below. Associated samples which have been flagged "U" due to the blank contaminants are also shown.

| <u>Blank ID</u> | Analyte | Amount (µg/kg) | Associated Samples |
|-----------------|--------------------|-------------------|-----------------------|
| VBLK1, VBLK2 | methylene chloride | 8,6 | all |

B. Trip Blank - The associated trip/travel blank(s) contained contaminants which affected samples in the package.

Yes ____ No ____ Not Identified _____

Comments: No trip blanks were found in this data package.

C. Other Blanks - No other types of blanks have been identified in the data package.

VI. Surrogate and System Monitoring Compound (SMC) Recovery

The surrogate and System Monitoring Compound (SMC) recovery summaries were reviewed. The recoveries were all reported to be within specified CLP QC criteria.

Yes No X

Comments: Samples reported to have surrogate recoveries outside specified CLP criteria are summarized on the attached Tables 1 and 2. Data flags, when necessary, are indicated on Table 2.

VII. Blank Spike - Laboratory Control Sample(s)

A. Blank spike analyses (i.e., method blanks spiked with surrogates for volatiles and semivolatiles) were performed with each sample batch in the data package and were reported to be within laboratory control limits or within CLP established control limits.

Yes X No ____

Comments:

- 1. The compounds used for the Pesticide/PCB blank spike were matrix spike compounds.
- 2. The reagent spike for volatile analysis was spiked with the matrix spike compounds. Matrix spike control limits were applied by the reviewer.
- B. Laboratory control charts for LCS analysis were provided in the package for the spike compounds.

Yes ____ No _X__

Comments:

- 1. The pesticide/PCB control charts provided for the LCS analysis were used for review.
- 2. The volatile control charts provided with the data package were for system monitoring compounds (SMC) analysis instead of LCS analysis. The CLP limits were used for the review of the volatile analysis.

VIII. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

The matrix spike and matrix spike duplicate recovery summary data were reviewed. The spiking procedures were performed and met all recommended OC specifications.

Yes ____ No _X_

Comments:

- 1. Sample 8453 was used for volatile MS/MSD. Sample 8466 was used for Pesticide/PCB MS/MSD.
- 2. The following spike analytes were reported to be outside limits:

| Analyte | % Recovery MS / MSD | RPD | Control Limits <u>% Rec. / RPD</u> |
|------------|------------------------|-----|---------------------------------------|
| heptachlor | 76 / 49 | 43 | 35 - 130 / 31 |
| aldrin | 84 / 53 | 45 | 34 - 132 / 43 |

3. No additional qualifiers have been applied to any sample results on the basis of MS/MSD recoveries or RPD values.

IX. Additional Comments

- 1. It was noted by the reviewer that CRDL's have not been adjusted to SOW 3/90 levels for most VOA compounds.
- 2. Several contract requirements were not met as indicated in the following sections: Section IV.B.1., IV.B.5, IV.B.6., IV.B.8.
- 3. The laboratory did not flag pesticide/PCB results which were sufficiently high in concentration with a "C" indicating GC/MS confirmation. The reviewer was unable to determine that the requirements as stated in the 3/90 SOW were met with regard to GC/MS confirmation analysis of Pesticide/PCB positive hits.
- 4. As addressed in the laboratory case narrative, the higher of the two columns analyses was reported for the Pesticide/PCB Form I's. This procedure is specifically non-compliant as stated in the 3/90 SOW.
- 5. The case narrative/certification statement was not signed by the laboratory director or a designee.

EXPLANATION OF ORGANICS DATA FLAGS

For the purposes of this data review document the following code letters and associated definitions are provided:

- U The material was analyzed for, but was not detected. The associated numerical value is the estimated detection limit.
- R Quality Control indicates that data is not usable (i.e., compound may or may not be present). Resampling and re-analysis would be necessary to determine the presence or absence of the analyte in the sample.
- J The associated numerical value is an estimated quantity because quality control criteria were not met or because the amount detected is below the detection limits required by analytical Statement of Work. The laboratory uses this flag in the latter situation.
- B The laboratory uses this flag when the reported analyte was also found in the method blank. Data validation guidelines do not specify the use of this flag.
- JN Tentative identification of a compound at an estimated concentration. Resampling and re-analysis would be necessary for verification.



SILVER SPRING CHICAGO DENVER DETROIT GRAND RAPIDS

MEMORANDUM

C.C.J.M. FILE COPY

TO:

FROM:

Jamie Bruton, URS/Seattle COPY Roger Simon, Jeralyn Guthrie, Richard Cheatham, CCJM/Denver

DATE:

December 5, 1991

DOCUMENT NO:

072 INCRAI. MEM

1ªjsla

SUBJECT:

Volatile Organics Tuning Problems for CTO-051

Per our conversation of 12/5/91, please find herein a detailed description of tuning problems found with all volatile organics analyses performed at Eureka Laboratories for CTO-051. These data packages are considered "on hold" until these issues have been resolved. Data packages have been identified by TDCN numbers and SDG.

- 1. For all CTO-051 data packages with volatile organics analyses (SDG 8449/TDCN 3001421, SDG 8484/TDCN 301210, SDG 8401/TDCN 3001436 and SDG 8416/TDCN 3001439), the values reported for the percent relative abundance of masses 177/176 were incorrectly reported as 100% on the Form V Tuning Summaries. This appeared to be a computer error since calculation of this ratio by the reviewer resulted in acceptable tunes. The laboratory should provide corrected summary forms.
- In SDG 8484/TDCN 3001210, the relative abundance for masses 2. 176/174 was reported and found by the reviewer to be 119.4%. Since there is no expanded criteria for this critical ratio, all data will have to be qualified as unusable (R); raw data to verify the values reported on the Form V Tuning Summary were not included with the Level C data package, so it could determined whether the reported ratio was а not be transcription problem with the base mass percentages reported for m/z 174 and 176, software problem or something else. Please indicate if a calculation/transcription problem existed and provide a corrected summary form or the correct values for masses 176 and 174.

If you should have any questions, please do not hesitate to call us at (303) 987-2928.

CC: URS / Navy Clean PF

| URS MEMORANDUM | RESUBMISSION 12/11 |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------|
| TO: CCJM | URS Consultants, Inc. |
| | ECEIVED 1100 Olive Way, Suite 200 |
| ake wood, CO 80228 | Seattle, Washington 98101-1832 |
| | BY: Amalytical Support Activities |
| ATTENTION: Rolf-Reindt Geralyn Guthrie | PHONE: C FAX: (206) 623-1800 (206) 233-9570 |
| | Volatile Analysis by Eureka |
| Please find the above referen volatile analysis. They are and are as follows: | ced resubmitted form I for for four (4) separate 506 numbers |
| 1. Eureka 506: 8401. | URS TDCN: 3001436 |
| 2. EWYERA 5DG: 8416 3. EWYERA 5DG: 8449- | UPS TDCN: 300 1439 [201 0 1991 UPS TDCN: 300 1421 |
| 4. Eurelia 506: 8484 | UBS TOCN: 300 1210 RECEIVED |
| If you have any questions, | please feel free to call any time. |
| | |

1. SDG NARRATIVE

Laboratory Name: Eureka Laboratories, Inc. 'Lab Certification Number: E765 SDG Number: 8449 Purchase Order Number: AN-91-P-0019 Contract Task Order Number: 0051 NEESA QA/QC Level C Analysis: Initial Sample No.: 20

A. Sample Description/Analytical Description

| <u>Client</u> <u>ID</u> | Lab ID | Date Sampled | <u>Date</u> Received | Matrix | Analysis/Method |
|------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 8449 | 9108213-1A | 08/23/91 | 08/27/91 | Soil | VOA/3-90 CLP SOW P/PCBs/3-90 CLP SOW |
| 8450 8451 8452 8453 8454 8455 8456 8455 8459 8460 8461 8462 8463 8464 8465 8466 | 9108213-2A 9108213-3A 9108213-3A 9108213-5A 9108213-5A 9108213-6A 9108213-7A 9108213-7A 9108213-10A 9108213-10A 9108213-12A 9108213-13A 9108213-15A 9108213-15A 9108213-16A 9108213-17A | 08/23/91 08/23/91 08/23/91 08/23/91 08/23/91 08/23/91 08/23/91 08/23/91 08/23/91 08/23/91 08/23/91 08/23/91 08/23/91 08/23/91 08/23/91 08/23/91 | 08/27/91 08/27/91 08/27/91 08/27/91 08/27/91 08/27/91 08/27/91 08/27/91 08/27/91 08/27/91 08/27/91 08/27/91 08/27/91 08/27/91 08/27/91 08/27/91 | Soil Soil Soil Soil Soil Soil Soil Soil | P/PCBs/3-90 CLP SOW Same as above Same as above |
| 8467 8468 | 9108213-19A 9108213-20A | 08/23/91 08/23/91 | 08/27/91 08/27/91 | Soil Soil | Same as above Same as above |

B. Sample Receipt

Samples were received in one delivery batch on August 27, 1991. Samples were in good condition. Sample receipt conditions, sample receipt temperature, and method of shipment are noted in the sample receipt check list and DHL air bill. There were no observed problems or discrepancies among Chain-of-custody forms, sample containers, and contract requirements in ELI Order Number 91-08-213.

C. Quality Control Report

1. Volatile Analysis by 3/90 CLP SOW

SDG Narrative SDG 8449 Page 2 of 4

Method Blank

Methylene chloride, a common laboratory introduced contaminant, was found in the method blanks, as well as in the samples. The concentration of Methylene Chloride found in the method blanks were 6 and 8 ug/l (ppb) as compared to the 8 - 30 ug/L (ppb) detected in the samples. In such an event, Methylene chloride is not identified as positive analyte in the samples when the contamination is taken into consideration.

Completeness

All analytical and QA/QC data are within the control and detection limits and meet the 95% completeness criteria.

Pesticide/PCB by 3/90 CLP SOW

Analysis Data Sheet

PCB concentration values presented on Form I Pest were different than the PCB concentration values calculated in the manual worksheet. This is due to (I) Telecation Software used the Response Factors of the Aroclors standards analyzed in the intial calibration for the quantification. (II) ELI manual worksheet used the response factors of a higher concentration of Aroclor standards which were analyzed after the sample run and used for quantification per 3/90 CLP SOW.

Chromatogram

Due to the absence of auto scaling capability in the gas chromatograph (GC) used for the analysis, the following criteria for acceptance of chromatograms per 3/90 CLP SOW cannot be met:

- i. Chromatogram peaks for initial calibration standard mixtures A and B at display are required to be less than 100% of full scale.
- ii. Chromatogram peaks for multi-component analytes at display are required to be greater than 25%.

DDT and Endrin % Breakdown

The % breakdown of combined Endrin and DDT for PEMO2 (Performance Evalutation Mixture #2) from the first column analysis exceeded the limit by 8%. The % combined breakdown for PEMO8 and PEMIO exceeded the limit by 2.5% and 11% respectively.

The % combined breakdown for PEMO1 from the second column analysis exceeded the limit by 0.6%.

SDG Narrative SDG 8449 Page 3 of 4

Calibration Verification

There is a total of eight continuing calibration verification (CCV) reported in this package. These CCVs were run after the initial calibration and throughout the analytical sequence as required by CLP protocol.

RPD value (26.1) for gamma-BHC (Lindane) for one of the form VII Pest-I exceeded the control limit (25) by a margin of 1.1%.

2nd Column Confirmation:

DB-17 instead of DB-1701 is used for the second column confirmation for this analysis.

Surrogate Retention Time Window

DCB was slightly outside the Surrogate Retention Time (RT) window in two analyses for the first column analysis. DCB and TCX were slightly ouside the RT window in twenty three and twenty one analyses respectively for the 2nd column analysis.

Surrogate Recovery

The % recovery of TCX for Sample No. 8457, 8465, 8466 MS/MSD, 8468, and PBLK1 were out of the advisory QC limit. The % recoveries of DCB for Sample No. 8453, 8459 were high due to matrix interference. The DCB recoveries were out of the advisory limit for Sample No. 8449 DL, 8451 DL, and 8454 DL, due to dilutions.

Pesticides Identification Summary

A difference of greater than 25% between the first and second column was detected for PCB Aroclors. Per 3/90 CLP SOW, the lower of the two values is to be reported on Form I and flagged with a "P". However, due to constraints of the Telecation software, the higher of the two values was reported on Form I without P flag.

Form X is used to summarize the positive analytes, their concentration and % difference for Sample Nos. 8468, 8466, 8464, 8463, 8461, 8459, 8455, 8453, 8452, 8450.

Matrix Spike and Matrix Spike Duplicate:

The % RPD of Heptachlor, Aldrin, and Lindane for 8466 MS and 8466 MSD exceeded the QC limit by a margin of 12%, 2%, and 1%, respectively.

Completeness

All analytical and QA/QC data are within the control and detection limits and meet the 95% completeness criteria.

SDG Narrative SDG 8449 Page 4 of 4

-

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Director or his designee, as verified by the following signature.

٠.

Shao-Pin Yo, Ph.D. Laboratory Director

| EEPER | 3 | ESTIONS? CALL 800-238-5355 TOL | L FREE. | | AIRBILL PACKAGE TRACKING NUMBER | 14207 | 53250 |
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| 12 FEDEX PAK • 13 FEDEX BOX | 56 FEDEX LETTER * 52 FEDEX PAK * 53 FEDEX BOX 54 FEDEX TUBE | 3 DELIVER SATURDAY (Lura charge) 3 (that available to a tochnore) 4 DANGEROUS GOODS (Entra charge) 5 6 DRY ICE Lbs | Total Total | NA | City Received By. | State Zip | Other 2 Total Charges |
| Economy Two-Day (Dervery by securd business dayr) 30 ECONOMY | Government Overnight (Resced to allowed aers on) 46 GOVT 41 GOVT 41 GOVT 41 ACCAGE | 7 DOTHER SPECIAL SERVICE 8 9 SATURDAY PICK-UP 9 1644 (Dec.(p)) | | rgeable Weight) | X Date/Time Received | FedEx Employee Number | REVISION DATE 6/91 PART #137204 FXEM 9/91 FORMAT #099 |
| Freight (I/C Exe Large of Phy (VERNIGHT 70 COVERNIGHT ** (Contineor resentaninguest) † Devery commettent may be later in some areas | Service package own 150 bs J BO TWO-DAY FREIGHT ** *Declared value Limit \$100 **Call for delivery schedue | 10 | 2 On-Call Stop | | Release Signature: FedEx Emp. No. | Date/Tim | • 1990-91 F.F.C. PRINTED IN- |

TABLE 1 (3/90, OLM01.8)

VOA Qualifier Summary Calibrations, Blanks, Holding Time, System Monitoring Compound, Internal Standards

| Date Analyzed: 9/6 | | | | | Hold | Time | | | ds:(t | | | |
|--------------------------|------|---------|----------|----------------------------------------------------------------------------------------------------------------|-----------|-----------|------|------|---------|-----|-------------|-------|
| 11- | | 1 | Sample | | 0 | <u>it</u> | ! | SMCs | | Int | Internal (I | |
| | | | Identifi | ier: | Ar | A11 | 1 | 2 | 3 | 1 | 2 | 3 |
| | | | 8457 | | | | | | | | | |
| | | | 8458 | | | | | | | | | |
| Instrument ID: Voa2 | | | 3459 | | 1 | | | | | 1 | | |
| The difference in Voa2 | | | 3460 | > | | | | | | | | |
| | | | 3461 | the second s | 1 | | 1 | | | | | |
| | | | 3462 | | 1 | | 1 | | 1 | | | |
| | | | 346 | | 1 | | | | | | | |
| Method Blank ID: VBLK | 1 | | 346 | | 1 | | 1 | | 1 | 1 | | |
| Date: 9/4 Time | . 7% | 17 | | | 1 | | | | | | | |
| Date: 110 Ille | • | | | | 1 | | | | | | | |
| | | ICal | | CCal | 1 | | | | | | II | |
| | | Date: 7 | 119/91 | Time: | 9/6 | | | | | | | |
| | | | | - | | | | | | | | |
| * RRF must be ≥ .010 | | | ial Cal. | | uing Cal. | | | | | | | |
| oSystem Manitor Compaund | | RRF | XRSD | RRF | 20 | | anks | | Qualifi | | _ Inter | |
| COMPOUND: | RRF | < MIN | >20.5 | < MIN | >8 | Hethod | Trip | | (+/-) | | Stand | NO NO |
| Chloromethane | | | | | | | | | | | - | |

| Method | Blank | ID: | VBLK/ | |
|--------|---------|-----|-------|--|
| | te: 9/6 | | Time: | |

| * RRF m_st be ≥ .010 | | | l Cal. | | ing Cal. | | | | |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-------|-----------|----------------|------------|--------|------|------------|---------|
| #System Monitor Compaund | | RRF | XRSD | RRF | 20 | | anks | Qualifiers | Interna |
| COMPOUND: | RRF | < MIN | >20.5 | < MIN | >8 | Method | Trip | (+/-) | Standar |
| Chloromethane | * | | | | | | | | -1 1 |
| Granomethane | .100 | | | | | | | | |
| linyl Chloride | . 100 | | | 1 | | | | | _ |
| hloroethane | * | | | | | 1 | | | _ |
| Aethylene Chloride | * | | | | | 65 | | UJ | |
| Acetone | * | | | | | | | | |
| Carbon Disulfide | * | | | | | | | | |
| 1,1-Dichloroethene | . 100 | | | | | 1 | | | _ |
| 1,1-Dichloroethane | .200 | | | | | 1 | | | _ |
| 1,2-Dichloroethene(total) | | | | | | | | | |
| Chloroform | .200 | | | | | | | | |
| 1.2-Dichloroethane | . 100 | | | | | | | | |
| 2-Butanone | * | 0.049 | | 0.044 | | 1 | | R | |
| 1,1,1-Trichloroethane | . 100 | | | | | | | | 2 |
| Carton Tetrachloride | .100 | | | | | | | | |
| Brandichloramethane | .200 | | | | | | | | |
| 1,2-Dichloropropene | * | | | | | | | | |
| cis-1,3-Dichloropropre | .200 | - | | | | | | | |
| Trichloroethene | .300 | | | | | | | | |
| Dibramochloramethane | .100 | | | | | | | | |
| 1,1,2-Trichloroethane | 1.100 | | | | | | | | |
| Benzene | 1.500 | | | | | | | | |
| trans-1,3-Dichloropropene | . 100 | | | | | , | | | |
| Branoform | 1.100 | | | | | | 1 | | |
| 4-Methyl-2-Pentanone | 1 * | | 1 | | | | | | 3 |
| 2-Hexanone | | | | | | | | | |
| Tetrachloroethene | .200 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | .500 | | | | | | 1 | | |
| Toluene | 1.400 | | 1 | | | | | | |
| Chlorobanzane | 1.500 | | | | | | | | |
| Ethylbanzene | . 100 | | | - | | | | | |
| Styrene | . 300 | | 1 | | | | | | _ |
| Xylene (total) | 1.300 | | | | | | | | |
| | 1 * | | | 1 | | | | | 3 |
| | .200 | | | | | | | | 3 |
| where the second s | * | 1 | | | | | | | 1 |
| | | • | Blank Ter | statively Iden | tified Com | pounds | | | |

TABLE 1 (3/90, OLMO1.8)

VOA Qualifier Summary

Calibrations, Blanks, Holding Time, System Monitoring Compound, Internal Standards

| Date Analyzed: 9/6 | | Hold | Time | Star | ndar | ls:(† | , l ; l | +=<1 | 0%) |
|------------------------|-----------------------|------|------|-------|------|-------|---------------|------|-----|
| .' - 1/6 | Sample | 0 | it | . ~ 5 | SMCs | | Internal (IS) | | |
| | Identifier: | Ar | A11 | 1 | 2 | 3 | 1 | 2 | 3 |
| | 8444 | | | | | | | | |
| | 8450 | | | | | | | | |
| Instrument ID: VOA2 | 8451 | | | | | | | | |
| V 078 | 8452 | | | | | | | | |
| | 8453 | | | | | | | | |
| | 8453 MS | | | | | | | 4 | |
| | 3453 MSD | | | 1 | | | | | |
| Method Blank ID: VBLK1 | 8454 | | | N | | | | | |
| Date: 9/6 Time: 7:42 | 8455 | | | | | | | | |
| | 3456 | | | | | | | | |
| ICal Date: | 7/19 CCal Time: 7/ | 6 | | | | | | | |

| * RRF must be ≥ .010 | | Initi | al Cal. | Contin | uing Cal. | | | | |
|---------------------------|-------|-------|---------|--------|-----------|--------|------|------------|----------|
| | MIN | RRF | XRSD | RRF | 20 | BL | anks | Qualifiers | Internal |
| COMPOUND: | RRF | < MIN | >20.5 | < MIN | >25 | Method | Trip | (+/-) | Standard |
| Chloromethane | * | | | | | | | | 1 1 |
| Bromonethane | .100 | | | | | | | | |
| Vinyl Chloride | .100 | | | | | | | | |
| Chloroethane | * | | | 1 | | | | | |
| Methylene Chloride | * | | 1 | | | 65 | | VJ | |
| Acetone | * | | | 1 | | | | | |
| Carbon Disulfide | * | | | | | | | | |
| 1.1-Dichloroethene | .100 | 4 | | | | | | | _i i |
| 1,1-Dichlorcethane | .200 | | | | | | | | |
| 1,2-Dichloroethene(total) | * | | | | | | | | |
| Chloroform | .200 | | | | | | | | |
| 1.2-Dichloroethane | . 100 | | | | | | | - 16 | |
| 2-Butanone | * | 0.049 | | 1 | | | × | R | |
| 1,1,1-Trichloroethane | . 100 | | 1 | 1 | | | | | 2 |
| Carbon Tetrachloride | .100 | | | | | | | | |
| Brandichloramethane | .200 | | | | | | | | |
| 1,2-Dichloropropene | * | | | | | | | | |
| cis-1,3-Dichloropropene | .200 | | | | | | | | |
| Trichloroethene | .300 | | | | | | | | |
| Dibranochloramethane | .100 | | | | | | | | |
| 1,1,2-Trichloroethane | . 100 | | | | | | | | |
| Benzene | .500 | | | | | | | - | |
| trans-1,3-Dichloropropene | .100 | | | | 5 | | | | |
| Branoform | 1.100 | | | | | | | | |
| 4-Methyl-2-Pentanone | * | | | | | 1 | | | 3 |
| 2-Hexanone | * | | | | | | | | |
| Tetrachloroethene | .200 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | .500 | | | | | | | | |
| Toluene | .400 | | | | 1 | | | | |
| Chlorobenzene | .500 | 1 | | | | | | | |
| Ethylbenzene | . 100 | | | | | | | | |
| Styrene | .300 | | | | | | | | |
| Xylene (total) | .300 | | | | | | | | |
| Toluene-dB a | * | | | | | | | | 3 |
| Bramofluorobenzene o | .200 | | | | | | | | 3 |
| 1.2-Dichloroethane-d4 a | * | | | | | | | | 1 |

Blank ID Reported as:

Blank Tentatively Identified Corpounds RT (µg/kg or µg/L)

Qualifiers

TABLE 1 (3/90, OLMO1.8)

VOA Qualifier Summary

Calibrations, Blanks, Holding Time, System Monitoring Compound, Internal Standards

| Date | Analyzed: | al | - |
|------|-----------|-----|---|
| | | -11 | 3 |

Instrument ID: VOA2

Method Blank ID: VBLK2 Date: 2/5____ Time: 16:35

| Sample | | Time .t | Star | ndarr SMCs | ds:(t | 1; 11 = <10 | | | | |
|-----------------------|----|------------|------|---------------|-------|-------------|---|---|--|--|
| Sample Identifier: | Ar | | | 2 | 3 | 1 | 2 | 3 | | |
| 8465 | | | | | | | | | | |
| 3466 | 1 | | | | | | | | | |
| 3467 | | | | | | | | | | |
| 3463 | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

ICal CCal Date: 7/19/91 Time: 9/5/91 16:03

| * RRF must be ≥ .010 | 1 1 | | al Cal. | | uing Cal. | | | | |
|---------------------------|-------|-------|-----------|-------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|------------|---------|
| #System Manitor Compaund | MIN | RRF | XRSD | RRF | 20 | Commission of the local division of the loca | anks | Qualifiers | Interna |
| COMPOUND: | RRF | < MIN | >20.5 | < MIN | 1 >8 | Hethod | Trip | (+/-) | Standar |
| Chloromethane | - | | | | | | | | _ 1 |
| Branamethane | . 100 | | | | | | | | |
| Vinyl Chloride | . 100 | | | | | | | | |
| Chloroethane | * | | | | | | | | |
| Methylene Chloride | * | | | 1 | 1 | 85 | | UJ | |
| Acetone | - | | | | | | | | |
| Carbon Disulfide | * | | | | | | | | |
| 1,1-Dichloroethene | .100 | | | | | | | | |
| 1,1-Dichloroethane | .200 | | 1 | | | | | | |
| 1.2-Dichloroethene(total) | | | 1 | | | | | | |
| Chloroform | .200 | | | | | | | | |
| 1,2-Dichloroethane | 1.100 | | | | 1 | | | | |
| 2-Butanone | * | 0.049 | | 0.049 | | | | R | |
| 1,1,1-Trichloroethane | .100 | | | | 1 | | | 1 | 2 |
| Carbon Tetrachloride | ,100 | | 1 | | 1 | | | | |
| Branchichloratethane | 1.200 | | 1 | 1 | 1 | | | | |
| 1,2-Dichloroprograme | * | | 1 | 1 | 1 | | | | |
| cis-1,3-Dichloropropone | .200 | | 1 | 1 | 1 | | | | |
| Trichlorcethene | .300 | | 1 | | 1 | | | | |
| Dibranochloramethane | 1,100 | | 1 | 1 | 1 | | | | |
| 1,1,2-Trichloroethane | . 100 | | 1 | | 1 | İ | | | |
| Benzene | .500 | | | | | 1 | 1 | | |
| trans-1,3-Dichloropropene | | | | | | 1 | | | |
| Branoform | .100 | | 1 | | 1 | 1 | 1 | | |
| 4-Methyl-2-Pentanone | 1 * | | 1 | 1 | 1 | 1 | 1 | | 3 |
| 2-Hexanone | 1 8 | | | | 1 | 1 | | | |
| Tetrachloroethene | .200 | | | | | 1 | 1 | | - |
| 1,1,2,2-Tetrachluroethane | | | | | | 1 | | | - |
| Tolucne | .400 | | | | | 1 | | | - |
| Chlorobanzane | 1.500 | | | | | | | | - |
| Ethylbarzane | .100 | | | | | 1 | 1 | | - |
| | .300 | | | | 1 | 1 | | | - |
| Styrene (total) | .300 | | | | | 1 | 1 | | - |
| Xylene (total) | * 10 | | | | | | | | 3 |
| | - | | | | | | | | 3 |
| | | | | | | 1 | 1 | | |
| 1,2-Dichloroethane-d4 | * 10 | | Blank Ten | | | - | | | |

Blank ID Reported as: RIK2

2

22.9

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s): 09/28/91 - 05/29/91 HoldTime Surr. Standard(s) After Sample Analysis: Out Rec. (%) Sample 5 6 7 Ext Anal TCX DCB 1 2 3 4 Identifier: X Instrument ID: HP 5890 3449 OL × 3450 X 3452 8453 x Method Blank ID(s): 945406 x PBLK1 9455 x Extract Date(s): 09/04/91 8456 x 8457 x 8453 X x 3459

| n Initial Resolution Check | 09/22/9 | / | | Calibrat | | | | | | ale that is a second and a second | |
|----------------------------|----------------|------|----------|----------|----------|-------|------|-----|---------|-----------------------------------------------------------------------------------------------------------------|--|
| D8-608 or | Initial | 1 | Cont | inuing: | RPD > 25 | % * | | | State & | N. 1960. 200 | |
| Equivalent | *RSD>20 | PEM | INDS | | INDS | | INDS | PEM | | | |
| | L | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Blank | 1 | |
| Cont.Cal.Date, Month 09 | Day | 27 | 28 | 25 | 29 | 29 | | | Conc. | Qualifiers | |
| COMPOUNDI | Time+ | 2219 | 1006 | 2114 | 0819 | 2122 | | | | (+/-) | |
| alcha-BHC | | | V | | V | | | | | | |
| beta-BHC | | | | | | | | | - | | |
| delta-BHC | | | | | | | | | | | |
| gamma-BHC (Lindane) | | | | | | | | | | | |
| Heptachlor | | | | | | | | - | | | |
| Aldrin | | | | | | | | | | | |
| Heptachlor epoxide | | | | | | | | | | | |
| Endosulfan I 🔶 | 20.5 | | 1 | | | | | | | 5-0/- | |
| Dieldrin § | | | | | | | | | | | |
| 4,41-DDE § | | | | | | | | | | | |
| Endrin | | | | | | | | | | | |
| Endosufan II | | | | | | | | | | | |
| 4,4'-000 | | | | | | | | | | | |
| Endosufan sulfate | | | | | | | | | 1 | | |
| 4,41-DDT | | | | | | | | | | | |
| Methoxychlor * | | | | | | | | | | | |
| Endrin Ketone 🔹 | | | | | | | | | | | |
| Endrin Aldehyde | | | | | | | | | | | |
| alpha-Chlordane | | | | | | | | | | | |
| gamma-Chlordane 🔶 | | | | | | | | | | | |
| Toxaphene | | | | | | | | | | | |
| Aroctor-1016 | a at the start | | | | | | | | | | |
| Aroclor-1221 | | | | | | | | | | | |
| Aroclor-1232 | | | | | | | | | | | |
| Aroclor-1242 | | | | | | | | | | | |
| Aroclor-1248 | | | | | | | | | | | |
| Aroclor-1254 | | | | | | | | | | | |
| Aroclor-1260 | | | | | | | | | | | |
| Surrogates - XRSD > 30% | | Su | rogate f | PDs mus | t also b | ≥ 25% | | | | | |
| Tetrachloro-m-Xylene(TCK) | | | | | 1 | | | | | | |
| Decachlorobiphenyl (DCB) | | | | | | | | | | | |

 * Validation Criteria:
 Quantitation Column
 Confirmation Column

 Compound Detected
 RPD% < 25%</td>
 and
 RPD < 25%</td>

 Compound Undetected
 RPD% < 25%</td>
 or
 RPD < 25%</td>

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s):

09/28/91-09/29/91

Instrument ID: HP 5390

Method Blank ID(s): PRUE

Extract Date(s): 09/04/6/

| | Hold | Time | | | Standard(s) After | | | | | | | |
|--------------|------|-----------|----------|-----|-------------------|---|---|---|---|---|---|--|
| Sample | 0 | <u>rt</u> | Rec. (%) | | Sample Analysis: | | | | | | | |
| Identifier: | Ext | Anal | TCX | DCB | 1 | 2 | 3 | 4 | 5 | 6 | 7 | |
| 8761 | | | | | | | X | | | | | |
| 8462 | | | | | | | X | | | | | |
| 8463 | | | | | | | x | | | | | |
| 8464 | | | | | | | X | | | | | |
| 5:465 | | | | | | | x | | | | | |
| 6466 | | | | | | | X | | | | | |
| 646L 846Z | | | | | | | X | | | | | |
| 8468 | | | | | | | X | | | | | |
| 84510L | | | | | | | X | | | | | |
| 8466 ms | | | | | | | X | | | | | |

| | 09/27/91 | | | Calibrat | | | | | 1 4 4 | | |
|---------------------------|---------------|------|-----------|----------|-----------|------------|-----------|-----|------------------------------------------|------------|--|
| DB-608 or | Initial | 1 | Cont | inuing: | RPD > 25 | % * | | | - 20 20 | 教师学生 | |
| Equivalent | 2RSD>20 | PEM | INDS | PEM | INDS | PEN | INDS | PEN | an a | | |
| | 1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Blank | | |
| Cont.Cal.Date, Month+ 09 | Day | 27 | 28 | 28 | 29 | 29 | | | Conc. | Quelifiers | |
| COMPOUND 1 | Time+ | 2219 | 1006 | 2114 | 08.9 | 2129 | - 11 - 21 | | | (+/-) | |
| alpha-BHC | | / | | 11 | / | | | | | | |
| beta-BHC | | | | | | | | | | | |
| delta-BHC | | | | | | | | | | | |
| gamma-BHC (Lindane) | | | | | | | | | | 1 | |
| Heptachlor | | | | | | | | | | | |
| Aldrin | | | | | | | | | | | |
| Heptachlor epoxide | | | | | | | | | | | |
| Endosulfan I 🔶 | 7.0.5 | | | | | | | | | J-C/- | |
| Dieldrin § | | | | | | | | | | | |
| 4.41-DDE § | | | | | | | | | | | |
| Endrin | | | | | | | | | | | |
| Endosufan II | | | | | | | | | | | |
| 4,4'-000 | | | | | | | | | | | |
| Endosufan sulfate | | | | | | | | | | | |
| 4.4'-COT | | | | | | | | | | | |
| Methoxychlor # | | | | | | | | | | | |
| Endrin Ketone * | | | | | | | | | | | |
| Endrin Aldehyde | | | | | | | | | | | |
| alpha-Chlordane | | | | | | | | | | | |
| gamme-Chlordane 🔶 | | | | | | | | | | | |
| Toxaphene | 1 | | | | | | | | | | |
| Aroclor-1016 | | | | | | | | | | | |
| Aroclor-1221 | to a straight | | | | | | | | | | |
| Aroclor-1232 | | | | 1 | | | | | | | |
| Aroclor-1242 | | | | | | | | | | | |
| Aroclor-1248 | | | | | | | | | | | |
| Aractor-1254 | | | | | | | | | | | |
| Aroctor-1260 | | | | | | | | | | | |
| Surrogates - %RSD > 30% | 10 10 19 | Su | rrogate I | PDs must | t also be | 1 5% | | | | | |
| Tetrachloro-m-Xylene(TCK) | | | 1 | 1 | 1 | 1 | | | | | |
| Decachlorobiphenyl (DCB) | 1 | | | | 1 | 1 | | | | | |

 * Validation Criteria:
 Quantitation Colum
 Confirmation Colum

 Compound Detected
 RP0% < 25%</td>
 and
 RP0 < 25%</td>

 Compound Undetected
 RP0% < 25%</td>
 or
 RP0 < 25%</td>

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s): 09/28/91-09

ł

Instrument ID: HP 5890

Method Blank ID(s): PBCEI Extract Date(s): ig/cy/gi

| | | | | S | Standard(s) After Sample Analysis: 1 2 3 4 5 6 χ | | | | | |
|--|------------|-----|----------|---|----------------------------------------------------------------|-------------------|-----------------------|-------------------------|----------------------------|-------------------------------|
| | Ext Anal 7 | | DCB | | | 3 | 4 | 5 | | 7 |
| | | | | | | X | | | | |
| | | | | | | | X | | | |
| | | | | | | | | X | | |
| | | | | | | | | | | - |
| | | | | | | | - | | | |
| | | | | | <u> </u> | | - | | | - |
| | | | | | | - | - | - | - | - |
| | | | | | | | - | | - | - |
| | | | | | - | - | - | - | - | - |
| | 0 | Out | Out Rec. | | Out Rec. (%) Si | Out Rec. (%) Samp | Out Rec. (%) Sample i | Out Rec. (%) Sample Ana | Out Rec. (%) Sample Analys | Out Rec. (%) Sample Analysis: |

| | | | | | 1 | | | | | |
|---------------------------|----------------|-------|----------|-----------------------------------------------------------------------------------------------------------------|---------|-------|------|-----|------------|------------------------|
| | | | | Calibrati | | | | | | |
| DB-608 or | Initial | | | inuing: A | | | | | | |
| Equivalent | %RSD>20 | PEM | INDS | the second se | | PEN | INDS | PEM | | |
| | 1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Blank | |
| Cont.Cal.Date, Month+ | Day | 27 | 28 | 28 | 2.8 | 29 | | | Conc. | Qualifiers |
| COMPOUND | Time+ | 12219 | | 2.114 | | | | | | (+/-) |
| alpha-BHC | | 1 | V | V | V | ~ | | | in and the | |
| beta-BHC | | | | | | | | | | - internet and a state |
| delta-BHC | | | | | | | | | | |
| gamma-BHC (Lindane) | | | | | | | | | | |
| Heptachlor | | | | | | | | | | |
| Aldrin | | | | | - | | | | | |
| Heptachlor epoxide | | | | | | | | | | |
| Endosulfan I 🔶 | 20.5 | | | | | | | | | J-C/- |
| Dieldrin § | | | 1 | | | | | | | |
| 4,4'-DDE § | | | | | | | | | | |
| Endrin | | | | | | | | | | |
| Endosufan II | | | | | | | | - | | |
| 4,41-000 | | | | 1 | | | | | | |
| Endosufan sulfate | | | | | | | | | | |
| 4,41-DOT | | | | | | | | | | |
| Methoxychlor * | | | | | | | | | | |
| Endrin Ketone 🏾 🌣 | | | | | | | | | | |
| Endrin Aldehyde | | | | | | | | | | |
| alpha-Chlordane | | | | | | | | | | |
| gamma-Chlordane 🔶 | | | | | | | | | | |
| Toxaphene | | | | | | | | | | |
| Aroclor-1016 | | | | | | | | | | |
| Aroctor-1221 | | | | | | | | | | |
| Aroclor-1232 | | | | L | | | | | | |
| Aroclor-1242 | | | | | | | | | | |
| Aroclor-1248 | | | | | | | | | | |
| Aroclor-1254 | a designed and | | | | | | | | | |
| Aroclor-1260 | | | | | | | | | | |
| Surrogates - %RSD > 30% | | Su | rogate R | PDs must | also be | ≤ 25% | | | | |
| Tetrachloro-m-Xylene(TCX) | | | | | | | | | | |
| Decachlorobiphenyl (DCB) | | | | | | | | | | |

| Ħ | Validation Criteria: | Quantitation column | | Confirmation Colum |
|---|----------------------|---------------------|-----|--------------------|
| | Compound Detected | RP0% < 25% | and | RPD < 25% |
| | Corpound Undetected | RPD% < 25% | or | RPD < 25% |

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s):

10/03/91 - 10/04/91

Instrument ID: VARIAN 6000

Method Blank ID(s): PELE

Extract Date(s):

| Sample | | Time It Anal | | | S | tan | lar le | d(s Ana |) A lys | After sis: 67 | | |
|-----------------------|-----|--------------------|-----|-----|---|-----|-----------|------------|------------|---------------------|-----------|--|
| Identifier: 84490L | Ext | Anal | TCX | DCB | 1 | 2 | 3 | 4 | 5 | 6 | 7 | |
| 84490L | | | | | | X | | T | T | | | |
| 8450 | | | | | | X | | 1 | T | 1 | \square | |
| 84510L | | | | | | X | | 1 | | | | |
| 8452 | | | | | | X | | 1 | | 1 | \square | |
| 8453 | | | | | | X | | | | | | |
| 845406 | | | | | | X | | | 1 | | Τ | |
| 8455 | | | | | | X | | | | | | |
| 8456 | | | | | N | NE | 1 | | | | | |
| 5457 | | | | | | 17 | | | | | | |
| 8458 | | | | | | G | | | | | | |

| | | | / | - | | - |
|----|---------|--------|-------|-------|----------|---|
| 2 | 0% Reso | lved | - | *260% | Resolved | |
| in | Initial | Resolu | ution | Chec | ĸ | |
| | | | | | | |

| | 09/2 10 | 103/41 | | | | | | | | |
|--------------------------------|---------|--------|----------|---------|----------|-------|------|-----|-------|-------------------|
| DB-1701 or Equivalent_0B-17 | Initial | | Conti | | 80 > 25% | * | | | | 2. 2. 1 |
| Equivalent UB-17 | %RSD>20 | PEN | INDS | PEM | INDS | PEM | INDS | PEM | | the second second |
| | 1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Blank | 1.1 1 |
| Cont.Cal.Date, Month+ 10 | Day | 03 | 15 | | | | | | Conc | Qualifiers |
| COMPOUND | Time+ | | 1707 | | | 8 | | | | (+/-) |
| alpha-BHC | | 26.1 | | | | | | | | J-C./- |
| beta-BHC | 20.2 | | | | | | | | | J-C/- |
| del ta-BHC | | | | | | | | | | 11 |
| genme-BHC (Lindene) | | | | | | | | | | |
| Heptachlor | | | | | | | | | | |
| Aldrin | | | | | | | | | | |
| Heptachlor epoxide | | | | | | | | | | |
| Endosulfan I 🔶 | | | | | | | | | | |
| Dieldrin | | | | | | | | | | |
| 4.4'-DDE | | | | | | | | | | |
| Endrin | 21.4 | | | | | | | | | J-C/- |
| Endosufan II | | | 33.0 | | | | | | | J-C/- |
| 4.41-000 | | | | | | | | | | |
| Endosufan sulfate # | 26.0 | | 33.0 | | | | | | | J-C/- |
| 4.4'-DOT | | | | | | | | | | |
| Methoxychion # | | | | | | | | | | |
| Endrin Ketone | 34.7 | | | | | | | | | J-C/- |
| Endrin Aldehyde | 76.0 | | NONE. | | | | | | | T-C/- |
| alpha-Chlordane | | | | | | | | | | |
| gamma-Chlordane 🔶 | 1.30 | | | | | | | | | |
| Toxaphene | | | | | | | | | | |
| Aroclor-1016 | - | | | | | | | | | |
| Aroclor-1221 | | | | | | | | | | |
| Aroclor-1232 | | | | | | | | | | |
| Aroclor-1242 | | | | | | | | | | |
| Aroclor-1248 | | | | | 1 | | | | | |
| Aroclor-1254 | | | | | | | | | | |
| Aroclor-1260 | | | | | | | | | | |
| Surrogates - %RSD > 30% | | 90 | rogate R | Ds must | also be | < 25% | | | | |
| Tetrachloro-m-Xylene(TCX) | | | I R.T | | 1 | | 1 | P | RT | 1 |
| Decachlorobiphenyl (DCB) | | RT | 1 | | 1 | | | | | |

* <u>Validation Criteria:</u> Compound Detected Compound Undetected
 Quantitation Column

 RPDX < 25%</td>
 and

 RPDX < 25%</td>
 or

Confirmation Column RPD < 25% RPD < 25%

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s):

10/03/91-10/04/91

Instrument ID: VARIAN 6100

Method Blank ID(s): FBLKI

Extract Date(s): 04/04/04

| | Hold | Time | Sur | r. | Standard(s) After | | | | | | r | | | |
|-----------------------|------|------------|-----|-------|-------------------|----------------|----|-----|-----|-----|---|--|--|--|
| Sample | _0 | <u>it</u> | Rec | . (%) | Sa | amp | le | Ana | lys | is: | | | | |
| Sample Identifier: | Ext | rt Anal | TCX | DCB | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | | |
| 8459 | | | | | | INN | | | | | | | | |
| 8460 | | | | | | 1 | | | | | T | | | |
| 8461 | | | | | | \overline{T} | | | | | T | | | |
| 8462 | | | | | | 1 | | | | | T | | | |
| 5463 | | | | | | V | | | | | | | | |
| 5464 | | | | | | | | | | | | | | |
| 5465 | | | | | | | | | | | | | | |
| 8466 | | | | | | | | | | | T | | | |
| 8467 | | | | | | | | | | | T | | | |
| \$465 | | | | | + | | | | | | | | | |

| L | |
|--------------------|----------------|
| 9260% Resolved | ♦≥60% Resolved |
| in Initial Resolut | ion Check |

| | 10/03/ | <i>a1</i> | the second s | alibrati | | | | | the formation and the second sec | |
|--------------------------------|---------------|-----------|----------------------------------------------------------------------------------------------------------------|----------|----------|-------|------|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| DB-1701 or Equivalent DB-17 | Initial | | | | 80 > 25% | | | d | Second? | |
| Equivalent 1/3-1+ | *RSD>20 | PEN | INDS | PEN | INDS | PEH | INDS | PEM | | Section 24 |
| | 1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Blank | |
| Cont.Cal.Date, Month+ | Day | 03 | 03 | | | | | | Conc. | Qualifiers |
| COMPOUND | Time+ | 0522 | 1707 | | | | | | | (+/-) J-C/- |
| alpha-BHC | | 26.1 | | | | | | | | |
| beta-BHC | 20.2- | | | | | | | | | J-C/- |
| del ta-BHC | | | | | | | | | | |
| germa-BHC (Lindane) | | | | | | | | 1.1.1.1 | | |
| Heptachlor | | | | | | | | | | |
| Aldrin | | | | | | | | | | 1 |
| Heptachlor epoxide | | | | | | | | | | |
| Endosulfan I 🔶 | | | | | | | | | | |
| Dieldrin | | | | | | | | | | |
| 4,41-DDE | | | | | | | | | | |
| Endrin | 2.1.4 | | | | | | | | | J-C/- |
| Endosufan II | | | 33.0 | | | | | | | J-C/- |
| 4.41-000 | | | | | | | | | 1 | |
| Endosufan sulfate @ | 26.0 | | 380 | | | | | | | J-C./- |
| 4.41-00T | | | | | | | | | 1 | |
| Methoxychlor a | | | | | | | | | 1 | |
| Endrin Ketone | 34.7 | | | | | | | | 1 | T-C/- |
| Endrin Aldehyde | 26.0 | | WONE | | | | | | 1 | T-C/- |
| alpha-Chlordane | | | | | | | | | 1 | |
| gamma-Chlordane 🔶 | de la la | | | | | | | | 1 | |
| Toxaphene | Provide State | | | | | | | | | |
| Aroclor-1016 | | | | | | | | | 1 | |
| Aroctor-1221 | | | | | | | | | | |
| Aroclor-1232 | 2.4 | | | | | | | | | |
| Aroclor-1242 | | | | | | | | | | |
| Arocior-1248 | | | 1 | | | | | | | |
| Aroclor-1254 | | | 1 | | | | | | | |
| Arocior-1260 | | | | | | | | | | |
| Surrogates - XRSD > 30% | - | 9.0 | rogate R | Ds mist | also be | < 25% | | | | |
| Tetrachloro-m-Xylene(TCX) | | | 1 PT | | 1 | 1 204 | | | RT | 1 |
| Decachlorobiphenyl (DCB) | | RT | 1 | | | | | | | |

| Validation Criteria: | Quentitation Column | | Confirmation Column |
|----------------------|---------------------|-----|---------------------|
| Compound Detected | RPD% < 25% | and | RPD < 25% |
| Compound Undetected | RP0% < 25% | or | RPD < 25% |

Calibrations, Method Blank, Holding Time, Surrogate Recovery

Analysis Date(s):

10/03/41 - 10/04/91 Instrument ID: VAPIAN 6000

Method Blank ID(s): PBLK/

Extract Date(s): C9/04/91

| Sample | | | Surr. Standard(s) Rec.(%) Sample Analy TCX DCB 1 2 3 4 5 | | | | |) A | After | | | |
|-------------|-----|------|--------------------------------------------------------------------------------------------------|-----|---|-----|---|-----|-------|----------|----------|--|
| Identifier: | Ext | Anal | TCX | DCB | 1 | 2 | 3 | 4 | 15 | 5 6 7 | | |
| 8466M50 | | | | | | UN. | | | | | | |
| 8466150 | | | | | | 4 | | | | | | |
| | _ | | | | | | | | | | 1 | |
| | | | | | | | _ | | - | \vdash | \vdash | |
| | | | | | | - | - | | - | + | \vdash | |
| | | | | | - | - | - | - | - | \vdash | + | |
| | | | | | | | - | - | - | - | + | |
| | | | | | | | | | - | 1 | - | |
| | | | | | | | | | | | - | |

| ~ | Calibrations: | | | | | | | | | $\mathcal{T}_{i} \in \mathcal{T}_{i} := \mathcal{T}_{i}$ |
|--------------------------------|---------------|------|----------|-----------|-----------|--------|------|-----|-----------|----------------------------------------------------------|
| 08-1701 or Equivalent_0B-17 | Initial | | Conti | inuing: 1 | 890 > 25% | ٤ * | | | • • • • | |
| Equivalent 00-17 | ***SD>20 | PEH | INDS | PEM | INDS | PEM | INDS | PEM | ett, ett. | |
| | Ļ | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Blank | |
| Cont.Cal.Date, Month /0 | Day | 03 | US | | | | | | Conc. | Qualifiers |
| COMPOUND 4 | Time↔ | 0522 | 1707 | | | | | | | (+/-) |
| alpha-BHC | | 26.1 | | | | | | | | J-c/- |
| beta-BHC | 20.2 | | | | | | | | - | J-C/- |
| del ta-BHC | X ALA | | | | | | | | | |
| germa-BHC (Lindane) | | | | | | | | | | |
| Heptachlor | | | | | | | | | | |
| Aldrin | | | | | | | | | | |
| Heptachlor epoxide | | | | | | | | | | |
| Endosulfan I 🔶 | | | | | | | | | | |
| Dieldrin | | | | | | | | | | |
| 4,4'-DDE | | | | | | | | | | |
| Endrin | 71.4 | | | | | | | | | J-C/- |
| Endosufan II | | | 33.0 | | | | | | | J-C/- |
| 4.4'-000 | | | | | | | | | | |
| Endosufan sulfate * | 26.0 | | 38.0 | | | | | | | 5-01- |
| 4.4'-DOT | | | | | | | | · | | |
| Methoxychlor * | | | | | | | | | | |
| Endrin Ketone | 34.7 | | | | | | | | | T-C/- |
| Endrin Aldehyde | 26.0 | | NONE | | | | | | | T-C/- |
| alpha-Chlordane | | | | | | | | | | ., |
| gamma-Chlordane 🔶 | | | | | | | | | | |
| Toxaphene | | | | | | | | | | |
| Aroctor-1016 | · · · · | | | | | | | | | |
| Aroclor-1221 | 14 | | | | | | | | | |
| Aroctor-1232 | | | | | | | | | | |
| Aroclor-1242 | | | | | | | | | | |
| Aroclor-1248 | | | | | | | | | | |
| Aroclor-1254 | | | | | | | | | | |
| Aroclor-1260 | | | | | | | | | | |
| Surrogates - XRSD > 30% | | Sur | rogate R | Ds must | also be | \$ 25% | | | | |
| Tetrachloro-m-Xylene(TCK) | | | ET | | 1 | | | | et | 1 |
| Decachlorobiphenyl (DCB) | | RT | | | | | | | | |

 * Validation Criteria:
 Quantitation Column
 Confirmation Column

 Compound Detected
 RPD% < 25%</td>
 and
 RPD < 25%</td>

 Compound Undetected
 RPD% < 25%</td>
 or
 RPD < 25%</td>

TABLE 2 - SURROGATE RECOVERIES SOW Rev. OLMO1.8, 3/90 Page 1 of 3/

| VOA FRACTION | 11 OK | | | | | |
|-------------------------------------------------------------------------------------------|------------|----------|----------|----------|--------------------------------------|-------------|
| A. Sample Numbers | In Cry | | | | | |
| B. Surrogate(s) outside QC limits (show %R) | s1 s2 s3 | S1 S2 S3 | s1 s2 s3 | s1 s2 s3 | s1 s2 s3 | \$1 \$2 \$3 |
| C. Compound less than 10%? (Y/N) | | | | | | |
| D. Initial Analysis Qualifiers | | | | | | |
| E. Reanalysis required? (Y/N) o If blank, were associated samples reanalyzed? (Y/N) | | | | | | |
| F. Sample Number for reanalysis. | | | | | | |
| G. Reanalysis surrogates outside limits (show % R) | | | | | | |
| H. Reanalysis qualifiers. | | | | | | |
| QC Limits (XR) | SOIL WATER | 7 | | | NOTE: The circled is the analysis/re | analysis |

VOA S1 = Toluene-d8 VOA S2 = Bromofluorobenzene VOA S3 = 1,2-Dichloroethane-d4 A:\SURROG-1.WK3 84-138 88-110 59-113 86-115 70-121 76-114 recommended for use.

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LE 2 - SURROGATE RECOVERIES SOW Rev. OLM01.8, 3/90 Page \$ of \$

| ACID FRACTION | | | | | | | | | | | | | i | | | | 1 | | | 1 | | | | |
|---------------------------------------------------------------------------------------------------------------|-------------------------|------------|------------|-----|--------|-----------------|---------------------------|------------|------------|---------|-------|----------|----|------|--------------|-----|-------|-----|-----------|------------------------------|----------------|--------------------|-------|----------|
| Sample Numbers | S4 S | 5 1 | S 6 | S7 | | 1 S5 | 1 \$6 | S7 | | 1 \$5 | 1 \$6 | S7 | S4 | \$5 | \$6 | \$7 | \$4 | S5 | 56 | S7 | \$4 | S5 | \$6 | 1 Si |
| Surrogate(s) outside OC limits (show %R) | | <u> </u> | | | | | | | | ļ | ļ | ļ | | | | | | | | | | | | |
| Compound less than 10%? (Y/N) | 1 | I | | 1 | | 1 | 1 | 1 | | 1 | 1 | <u> </u> | | | | 1 | | | | | | | | |
| Reanalysis required? (Y/N) | | | | | | | | | | | | | | _ | | | | | | | | | | |
| If blank, were associated samples reanalyzed? (Y/N) | | | | | | | | | | | | / | | | | | | | | | | | | |
| Initial Analysis Qualifiers | | | | | | | | | | | / | | | | | | | | | | | | | |
| Sample Number for reanalysis. Reanalysis surrogates outside limits (show % R) | | | | | | 1 | | | | Î | | | | | | 1 | | | | | | | ••••• | 1 |
| Re-extraction required? (Y/N) | | | | | | | | / | | | | | | | | | | | | | | | | |
| If blank, were associated samples re-extracted? (Y/N) | | | | | | / | | | | | | | | | | | | | | | | | | |
| Sample number for re-extract. Re-extraction outside limits (show % R) | | | | 1 | | 1 | | | | Ī | | 1 . | | | 1 | 1 | | | | 1 | | | | Τ |
| | | | | 1 | - | 1 | 1 | 1 | - | | | | | | | · | | | | | | | | |
| Reanalysis qualifiers. | | | | | 1 | | | | 1 | | | | 1 | | | | | | - i - a l | | | ne ie | | |
| QC Limits (XR) | SOIL | _ | | | WATER | 2 | | | | | | | | | | | Note: | the | analy | ed samp sis/rea ed for | nalysi use. | \$ | | |
| d c/ + Dhenol-do | 24-11 | 2 | | | 21-11 | ş | dvisor | V) | | | | | | | | | | | | | | <i>1k</i> 4 | | |
| id \$4 = Phenol-d6 d \$5 = 2-Fluorophenol d \$7 = 2.4.6-Trlbromophenol d \$7 = 2.6hlorophenol-d4 | 24-11 | 2 0 (ad | visor | ry) | 33-110 |) (a | 411301 | ,, | | | | | | | | | | | | | 1 | PP 1 | | |
| d ss = 2-Fluorophenol d ss = 2.4 6-Tribromophenol d s7 = 2-Chlorophenol-d4 | 25-12 10-12 20-13 |) (ad | lvisor | ry) | 33-110 |) (a | | | | | | | | | | | | | | | ~ | (P) | 1 | |
| PESTICIDE FRACTION | | | | | | | | | | 6 | | | | Carl | <i>(</i> - 2 | | | 840 | 2 | | | | / | |
| | | | lvisor | | | sile | | | | 845 | 5100 | ć | 1 | Sil | 52- | | | 845 | 3 | | | 454 | / | |
| PESTICIDE FRACTION | | | | 4 | | sile | 57) | s2 , | | | 5100 | | | | | 52 | | | | 2 | 51 | 454 | J si | 2 |
| PESTICIDE FRACTION Sample Numbers | 8 | 149 | S C C | 2 | _ | sile | 57) | s2 / | | | | | | | | | | | | / | 51 | 454 | si | 2 |
| PESTICIDE FRACTION Sample Numbers QC limits exceeded (show %R) | 8 | 149 | S C C | 2 | _ | sile | 57) | s2 / | | | | 2/ | | | | \$2 | | | \$ | 160 | 51 | 454 | | |
| PESTICIDE FRACTION Sample Numbers QC limits exceeded (show %R) Qualifier, if applied. | 8 | 149 | S C C | 2 | _ | sile | 57) 445 | s2 / | s | 1 /_ | | 2/ | | | | \$2 | | | \$ | 160 | 51 | 454 | | |
| PESTICIDE FRACTION Sample Numbers QC limits exceeded (show %R) Qualifier, if applied. Limits (%R) | <u>S1</u> -/+ | - | S C C | 2 | s | 84/4 1 /- | 57) 195 501L | s2 5.4/ | S WATER | 1 / | / | 2/166 | | | | \$2 | | | \$ | 160 | 51 | 454 | | |
| PESTICIDE FRACTION Sample Numbers QC limits exceeded (show %R) Qualifier, if applied. | <u>S1</u> -/+ | - | S C C | 2 | s | sile | 57) 195 501L | s2 / | s | 1 / | | 2/166 | | | | \$2 | | | \$ | 160 | 51 | 454 | | |

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- SURROGATE RECOVERIES SOW Rev. OLMO1.8, 3/90 Page 3 of 3 ILE 2

| ACID FRACTION | | | | | | | | | | | | | 1 | | | | 1 / | | | | | | | |
|---------------------------------------------------------------------------------------------------------------------|--------------|---------------|----------------|----------|----------------------------------|----------|------------------------|----------------|----------------|-----|-------|------------|----------|-----|-----|------------------|---------|-----------|---------|-------------------------------|------------------|-------------|------|-----|
| Sample Numbers Surlogate(s) outside dC (imits (show %R) | \$4 | S5 | ^{\$6} | \$7 | \$4 | \$5 | \$6 | \$7 | \$4 | \$5 | \$6 | \$7 | \$4 | \$5 | \$6 | \$7 | \$4 | s5 | \$6 | \$7 | \$4 | S5 | \$6 | \$7 |
| Compound less than 10%? (Y/N) | | i | 1 | 1 | | 1 | 1 | 1 | | 1 | 1 | 1 | | 1 | 1 | <u> </u> | | 1 | 1 | <u> </u> | | | 1 | 1 |
| Reanalysis required? (Y/N) If blank, were associated samples reanalyzed? (Y/N) Initial Analysis Qualifiers | | | | | - | | | | | | | | | | | | | | | | | | | |
| Semple Number for reanalysis. Reanalysis surrogates outside limits (show X R) | | | | 1 | . | | | | | | 1 | | | | | | | | | | | | | |
| Re-extraction required? (Y/N) If blank, were associated samples re-extracted? (Y/N) | | | | | - | | | | | | | | | | | | | | | | | | | |
| Sample number for re-extract. Re-extraction outside limits (show % R) | | 1 | | | | | | | | I | | - | | | | | | | | | | | | |
| Reanalysis qualifiers. | | | | | | | | | | | | | 1 | | | | 1 | | | | 1 | | | |
| QC Limits (XR) | | DIL | | | WATER | | | | | | | | | | | | Note | : The the | analy | ed samp sis/rea led for | le num nalysi | ber is s | 1 | |
| d S4 = Phenol-dó d S5 = 2-fluorophenol d S6 = 2 4 6-Tribromphenol d S7 = 2 chlorophenol-d4 | 20 | | (adviso | ory) | 10-11 21-11 10-12 33-11 |) (ac | lvisory | () | | | | | | | | | | rec | onmeria | | use. | | | |
| PESTICIDE FRACTION | | - ic | -, (- | | | Cu | 1 1-1 | | | Cil | 57- | | | 54 | F | | | 84 | -61 | | | 546 | 3 | |
| Sample Numbers | 8 | 545 | 5 | | _ | 57 | 56 | | _ | 89 | 3 7- | | - | | | | | | | | | | | |
| QC limits exceeded (show %R) | s | 1 /- | | s2 /- | s | 1 /_ | | s2 7/- | 5 76.5/ | 1 | 44. | 52 4/- | s' _/ | , | 45 | 52 3/- | s -/ | 1 | | 1/183 | _/- | - | 46.2 | 2/- |
| Qualifier, if applied. | | | | | | | | | | | 1 | | | | 1 | | | | 1 | | | | 1 | |
| Limits (%R) sticide \$1 = Tetrachloro-m-x) sticide \$2 = Decachlorobipher \SHELL\SURROG-2.WK3 | vlene iyl | {ICX {DCB} | | | \$8 | 3= 158 | SOIL {advi {advi | sory) sory) | WATER 88-15 | | visor | <i>}</i> } | | | | | | | | | | | | |

| ILE 2 - SURROGATE RECOVERIES | SOW Rev. OLM01.8, 3/90 | Page \$ of \$ | | | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|------------------------------------------------|-------------------------------------------------|-----------------|---------------------------------------------------------------|---------------------------|
| ACID FRACTION | | 1 | I | 1 | T | |
| Semple Numbers Surrogate(s) outside OC limits (show XR) | \$4 \$5 \$6 \$7 | \$4 \$5 \$6 \$7 | \$4 \$5 \$6 \$7 | \$4 \$5 \$6 \$7 | \$4 \$5 \$6 \$7 | \$4 \$5 \$6 \$7 |
| Compound less than 10%? (Y/N) | 1 1 1 | | | | | |
| Reanalysis required? (Y/N) If blank, were associated samples reanalyzed? (Y/N) Initial Analysis Qualifiers | | | | | | |
| Sample Number for reanalysis. Reanalysis surrogates outside limits (show % R) | | | | | | <u> </u> |
| Re-extraction required? (Y/N) If blank, were associated samples re-extracted? (Y/N) | | | | | | |
| Sample number for re-extract. Re-extraction outside limits (show % R) | | - | | | | |
| Reanalysis qualifiers. | | | | | | 1 |
| QC Limits (XR) | SOIL | WATER | | | Note: The circled samp the analysis/rea recommended for | ole number is inalysis |
| d S4 = Phenol-do S5 = 2-fluorophenol d S5 = 2.4.6-Tribromophenol d S7 = 2.6.6-Tribromophenol d S7 = 2.6.6.000000000000000000000000000000000 | 24-113 25-121 20-120 (advisory) | 10-110 10-123 33-110 (advisory) | | | reconnended for | |
| | | | | | | |
| PESTICIDE FRACTION | 8461 | \$462 | 8463 | 8464 | 8465 | 8466 |
| Sample Numbers QC limits exceeded (show %R) | s1 s2 -/- 43.2/- | S1 S2 -//- | s1 s2 -/- 40:1/- | s1 s2 -//- | 51 52 45.9/44.1 5/- | s1 s2 -//- |
| Qualifier, if applied. | | | | | / | |
| Limits (%R) sticide \$1 = Tetrachloro-m-xy sticide \$2 = Decachlorobiphen \SHELL\SURROG-2.WK3 | lene (TCX) yl (DCB) | SOIL 60-150 (advisory) 60-150 (advisory) | WATER 60-150 (advisory) 60-150 (advisory) | | | • |

ABLE 2 - SURROGATE RECOVERIES SOW Rev. OLMO1.8, 3/90 Page \$ of \$

| | ACID FRACTION | | | | | | | | | | | | | | | | | | | | | | | | |
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| | Sample Numbers | | | | | | | | | | | | | | | | | | | | | c/ 1 | | 64 | |
| Contraction of the second seco | Surrogate(s) outside OC limits (show %R) | 54 | s5 | \$6 | \$7 | \$4 | \$5 | \$6 | S7 | | \$5 | \$6 | \$7 | \$4 | \$5 | \$6 | \$7 | - 54 | \$5 | \$6 | \$7 | \$4 | \$5 | \$6 | S |
| | Compound less than 10%? (Y/N) | | | 1 | 1 | | 1 | 1 | 1 | | 1 | 1 | - | | | | | | | 1 | | | | | |
| | Reanalysis required? (Y/N) | | | | | | | | | | / | | | | | | | | | | | | | | |
| 0 | If blank, were associated samples reanalyzed? (Y/N) | | | | | | | | | 2 | | | | | | | | | | | | | | | |
| | initial Analysis Qualifiers | | | | | | | | / | | | | | | | | | | | | | | | | |
| | Sample Number for reanalysis. | | | | | | | | | . | | | | | | | | | | | | | | | |
| Construction of the owner of the owner of the owner of the owner owner owner owner owner owner owner owner owner | Reanalysis surrogates outside limits (show X R) | | | | | 1 | ť | | | _ | | | | | | | | | | | | | | | |
| | Re-extraction required? (Y/N) | | | / | | | | | | | | | | | | | | | | | | | | | |
| 0 | If blank, were associated samples re-extracted? (Y/N) | | / | | | | | | | | | | | | | | | | | | | | | | |
| | Sample number for re-extract | | | | | . | | | 1 | | 1 | | | ; | | | | | 1 | 1 | ····· | ••••• | | 1 | i |
| • | Re-extraction outside limits (show % R) | | | 1 | 1 | | I | 1 | 1 | | 1 | 1 | ľ | | | 1 | 1 | | 1 | 1 | | | 1 | 1 | - |
| | Reanalysis qualifiers. | | | | | | | | | | | | | | | | | | | . | | | | | |
| | OC Limits (XR) | so | | | | WATER | | | | | | | | | | | | Note: | the | analys | d sampl is/rear d for u | alysi | S S | | |
| 0000 | id S4 = Phenol-d6 19 S4 = 2-Flyorophenol 19 S6 = 2-S 6-Tripromophenol 19 S7 = 2-Chlorophenol-d4 | 24- | 113 121 130 (a | adviso | ry) | 10-110 21-110 10-23 33-110 | (ad | visory |) | | | | | | | | | | reco | amenae | | 56. | | | |
| A COLORADO | | | | | | | | | | | | | | | | | | | | | | | | | |
| | PESTICIDE FRACTION | - | | | | | <i>.</i> . | | | | | | | | | | | | | | | 0 | | 10400 | 15 |
| | Sample Numbers | 184 | <i>i</i> 66 | ms | | _ | 5-16 | 6 misi | 0 | _ | | Stil | | | 46 | | | | | . K. (| | | LSP | | |
| | QC limits exceeded (show %R) | s1 51.0 | 1428 | | 3/- | S1 17.8/ | 18.3 | 36.1 | | 59.6 | , | 52.5 | | \$1 46.11 | 43.0 | 49.2 | | S1 27.5 | 1 | S2 3.5 | 182.5 | s1 / | 0 | 52 44.3 | 1/2 |
| | Qualifier, if applied. | | | | | | | | | _ | | 1 | | | | 1 | | | | 1 | | | | 1 | |
| c | Limits (%R) | | | | | | \$ | SOIL | | WATER | | | | | | | | | | | | | | | |
| ee | sticide \$1 = Tetrachloro-m-xy sticide \$2 = Decachlorobiphen | lene { | TCX) DCB | | | \$8 | - 158 | (advis (advis | ory} | 88-15 | adv adv | (isory) | | | | | | | | | | | | | |

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A: \SHELL \SURROG-2.WK3

LE 2 - SURROGATE RECOVERIES SOW Rev. OLMO1.8, 3/90 Page 3 of 3

| ACID FRACTION | | | | | 1 | | | | 1 | | | | 1 | | | | r. | | | 1 | | | | |
|-------------------------------------------------------------------------------------------------------------------------|-------------------|-------|----------------|----------|-------------------------------------------|-------|------------------------|----------------|----------------|----|------------------|-----|---------|-----|-----|-----|---------|--------------------|----------------------------|---------------------------|--------------------------|-------------|-----|---|
| Sample Numbers Surrogate(s) outside QC limits (show XR) | S 4 | \$5 | ^{\$6} | \$7 | \$4 | S5 | S6 | S7 | \$4 | s5 | \$6 | \$7 | \$4 | \$5 | \$6 | \$7 | \$4 | \$5 | \$6 | \$7 | \$4 | \$5 | \$6 | s |
| Compound less than 10%? (Y/N) | | | 1 | 1 | | 1 | 1 | 1 | | 1 | 1 | 1 | I | | 1 | 1 | | 1 | 1 | | | 1 | 1 | 1 |
| Reanalysis required? (Y/N) If blank, were associated samples reanalyzed? (Y/N) Initial Analysis Qualifiers | | | | | - | | | | | | | | | | | | | | | | | | | |
| Sample Number for reanalysis. Reanalysis surrogates outside imits (show % R) | | | | | | | | | | | | | | | | | | | | | | | | |
| Re-extraction required? (Y/N) If blank, were associated samples re-extracted? (Y/N) | | | | • | _ | | | | - | | | | | | | | | | | | | | | |
| Sample number for re-extract. Re-extraction outside limits (show % R) | | | | | · | | | | | 1 | | | | | 1 | | | | | | | | | |
| Reanalysis qualifiers. | | | | × | l | | | | 1 | | | | | | | | | | | | 1 | | | |
| QC Limits (%R) id S4 = Phenol-d6 id S5 = 2-Fluorophenol S5 = 2.4 S-Tribromophenol id S7 = 2*Chlorophenol-d4 | \$0 24- 20- | 113 | adviso | ory) | WATER 10-11 10-11 10-12 33-11 | | visory | ·) | | | | | | | | | Note: | The the reco | circle analys mmende | d samp is/rea d for | le num nalysi use. | ber in S | E | |
| PESTICIDE FRACTION | | | 10 | | | | | | | | | | | | | | | | | | 1 | | | |
| . Sample Numbers | 5 | 1.50 | IKE | Altin T | _ | | | | _ | | | | | _ | | | | | | | | | | 2 |
| QC limits exceeded (show %R) | s1 | 10 | _ | 52 10 | s | 1 | | 2 | S | 1 | s | 2 | \$1 | | s | 2 | | 1 | s | 2 1 | S1 | | | 2 |
| . Qualifier, if applied. | | | I | | | | | | | | 1 | | | | I | | | | 1 | | | | 1 | |
| C Limits (%R) esticide \$1 = Tetrachloro-m-xy esticide \$2 = Decachlorobipher | ilene (| TCX } | | | \$8 | 3=158 | SOIL {advi {advi | sory) sory) | WATER 88-15 | | visory visory | } | | | | | | | | | | | | |

SHELL \SURROG-2. WK3



Project Mumber: 20510 2 Alere Mane: 270-51

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RECEIVED SILVER SPRING CHICAGO DEC 3 0 1991 DENVER AS/ST/DV DETROIT GRAND RAPIDS

DOCUMENT NO .: 067NCODS.RVW

ORGANICS DATA REVIEW SUMMARY - NEESA LEVEL C

| Case No. 0051 URS TDCN | <u>3001210</u> Project No. <u>CTO-051</u> |
|---------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| Site Name <u>St. Lawrence Island, AK</u> | Project Name <u>N.E. Cape</u> |
| Contract Laboratory Eureka Laborato | ories, Inc. |
| Sample Delivery Group (SDG) <u>8484</u> | Sampling Date (Month/Year) <u>8/91</u> |
| Sample Matrix5 low waters | - |
| Type of Analyses Volatiles (see page | 2) |
| Data Reviewer <u>Roger Simon</u> QA Review by <u>Jeralyn Guthrie</u> CCJM Approval by <u>Richard Cheatham</u> | Date $\frac{12/28/91}{Date \frac{12/28/91}{Date \frac{12/28/91}{Date \frac{12/28/91}{Date \frac{12/28/91}{Date \frac{12/28}{91}}}$ |
| Telephone logs/correspondence attached? | |
| Laboratory case narrative attached? | Yes X No Not Avail. |
| Required deliverables provided? | Yes NoX_ Not Appl |
| Airbill enclosed? | Yes X No Not Avail. |
| CLP SOW used by laboratory for analysis | s <u>3/90</u> |
| hered on monibuider | ions (model 12/19/91) and is consider |

Remarks: <u>Report is based on resubmissions (rec'd 12/19/91)</u> and is considered final.

Note:

The Level C Data Validation Guidelines as specified by NEESA in the Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Restoration Program, NEESA 20.2-047B, June, 1988, the EPA's Functional Guidelines for Organic Analyses and method specific references have been used by the data reviewer as a basis for reviewing the data and applying flags, except as specifically noted in review comments.

-- Please see data flagging definitions on the last page of this report.

(Revised 12/91) C.C. JOHNSON & MALHOTRA, P.C. 215 UNION BOULEVARD, SUITE 215 • LAKEWOOD, COLORADO 80228 • (303) 987-2928

| Sample <u>Number</u> | Sample <u>Matrix</u> | VOA | |
|-------------------------|-------------------------|---------------------------------------|--|
| Number | Mactin | | |
| 8484 | water | Х | |
| 0404 | | | |
| 8485 | water | Х | |
| 8486 | water | Х | |
| 8487 | water | X | |
| 8488 | water | Х | |
| 8484MS | water | Х | |
| 8484MSD | water | Х | |
| 9 n | | | |
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X = Analysis has been provided for validation.

- 0 = Analysis was requested per the Chain of Custody, however, no data was received for validation.
- = Analysis was not requested per the Chain of Custody or required to meet criteria.

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Deliverables I.

All data deliverables as specified for NEESA Level C quality control were found in the package.

Yes No X

Comments: The following Level C Data Deliverables Checklist shows the Forms and data found in the package.

LEVEL C DELIVERABLES COMPLETENESS CHECKLIST - ORGANICS

KEY

X Included in package

0 Not included and/or Not available

NA Not applicable or Not required

RS Provided as resubmission

- X Method blank spikes with each batch
 - X/O Control chart developed by lab
- X Sample results Form 1 or spreadsheet X CLP data flags used by laboratory

 - X Sample chromatograms and mass spectra
- RS Holding times (sampling, prep and analysis dates provided)
- X Surrogate recoveries Form 2
- X Matrix spike/matrix spike duplicate (MS/MSD) Form 3 (MS/MSD is to be 1 per 20 samples of similar matrix)
- X Method blank summary Form 4
- X Report form for method blank results (Form 1 or spreadsheet) X GC/MS tuning - Form 5
- X Initial calibration data, GC/MS Form 6
- NA Pesticide/PCB calibration standards summary Form 8D (listed as Form 9 on NEESA Table 7.6)
- X Continuing calibration data, GC/MS Form 7
- X Internal standard area summary, GC/MS Form 8A, 8B, or 8C
- NA Pesticide/PCB continuing calibration data Form 9

NA Pesticide/PCB 2nd column confirmation - chromatograms

(Revised 12/91)

II. Holding Times

Samples were extracted and analyzed within holding times specified by the NEESA data validation guidelines. See the following table for a summarization of sample holding times.

Yes X No _____

Comments:

| Sample <u>Number</u> | Sampling Date | VOZ <u>VISR</u> <u>Analy</u> | - |
|-----------------------------|------------------|---------------------------------|----------------|
| 8484 8484 MS 8484 MSD | 8/23/91 | 8/27 | 8/29 X X |
| 8485 | 8/23/91 | 8/28 | 8/29 |
| 8486 | 8/24/91 | 8/27 | 8/29 |
| 8487 | 8/24/91 | 8/27 | 8/29 |
| 8488 | 8/23/91 | 8/28 | 8/29 |

Holding Time Summary

X - indicates MS/MSD was performed

Chain of Custody records were provided as a resubmission.

III. GC/MS Tuning and Mass Calibration

The BFB and/or DFTPP performance results summaries were included for all samples, and were reported to be within specified criteria at the appropriate frequency.

Yes No X

Comments:

1. In the original submission the value reported for the relative absorbance determined at 8:15 on 7/19/91 for mass 177 relative to mass 176 was incorrectly reported as 100%. It should have been 8.1% (ratio of 7.2 to 89.6 for masses 177/176). The laboratory has provided the corrected Form 5A as a resubmission.

(Revised 12/91).

2. In the original data package for the instrument tune on 8/29/91 at 14:19 the relative abundance for masses 176/174 was reported as 119.4% which was outside of tuning control limits. The laboratory has provided a new Form 5A as a resubmission showing the tune for that date to be within control limits. No data has been qualified on this basis.

IV. A. Instrument Calibration (Volatiles)

1. The instrument response factor (RRF) data summaries were reviewed for the initial and continuing calibrations. All information was present and reported on the required summary forms. Response factors met the required criteria for volatile analyses, thus no data have been qualified.

Yes ____ No _X_

Comments: Although within the SOW criteria (Min RRF = 0.010), 2-butanone had a min. RRF of 0.049. Volatile compounds have been reviewed with a control limit of 0.050 being used as a minimum response factor. While contractually complicant, a calibration problem is demonstrated and all 2-butanone results have been qualified per Functional Guidelines criteria.

2. The percent relative standard deviation (%RSD) for the initial calibrations and the percent difference (%D) for the continuing calibrations were reviewed for all compounds. The %RSD and %D values reported met the data validation criteria (i.e., < 30 %RSD and < 25 %D) for volatile analyses, thus no data have been qualified.

| Yes | Х | No | |
|-----|---|----|--|
| | | | |

Comments: No comments.

V. <u>Blanks</u>

A. Method Blank - The blank analyses summaries were reviewed. The frequency of method blank extractions and analysis and the contaminants reported in blank samples were all within specified limits.

Yes No X

Comments: Contaminant quantities reported in the laboratory preparation blanks are listed below. Associated samples which have been flagged "UU" due to the blank contaminants are shown below.

| | | Amount | Associated |
|----------|--------------------|-------------|-----------------|
| Blank ID | Compound | $(\mu q/L)$ | Samples |
| VBLK | methylene chloride | 11 | all except 8485 |

B. Trip Blank - The associated trip/travel blank(s) contained contaminants which affected samples in the package.

Yes _____ No _ X Not Identified _____

Comments: All samples in this SDG were identified as trip blanks. Contaminants reported in these trip blanks typically included methylene chloride, chloroform and an occasional unknown TIC.

C. Other Blanks - No other types of blanks have been identified in the data package.

VI. <u>Surrogate Recovery</u>

The surrogate recovery summaries were reviewed. The recoveries were all reported to be within specified CLP QC criteria.

Yes X No ____

Comments: No comments.

VII. Blank Spike - Laboratory Control Sample(s)

A. Blank spike analyses (i.e., method blanks spiked with surrogates for volatiles and semivolatiles) were performed with each sample batch in the data package and were reported to be within laboratory control limits or within CLP established control limits.

ł

Yes X No ____

Comments:

- 1. All recoveries for non-surrogate compounds found in the blank spike/blank spike duplicate were calculated incorrectly by the laboratory. For example, a spike with a sample value of 0 μ g/L, a spike value of 53 μ g/L and a true value of 50 μ g/L for the spike added, was reported by the laboratory as a recovery of 90% instead of 106%.
- 2. The blank spike was spiked with the matrix spike compounds, so the matrix spike control limits were applied by the reviewer for assessment purposes.
- B. Laboratory control charts were provided in the package and the limits specified by the control charts were used for review.

Yes ____ No _X_

Comments: The control charts provided with the data package were for surrogate compounds instead of the compounds found in the blank spike, thus were not used for review.

VIII. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

The matrix spike and matrix spike duplicate recovery summary data were reviewed. The spiking procedures were performed and met all recommended QC specifications.

Yes X No _____

Comments: Sample 8484 was used for MS/MSD.

IX. Additional Comments

- 1. All internal standards showed acceptable performance.
- 2. It was noted by the reviewer that CRQL's have not been adjusted to SOW 3/90 levels for most VOA compounds.

Form C-N

EXPLANATION OF ORGANICS DATA FLAGS

For the purposes of this data review document the following code letters and associated definitions are provided:

- U The material was analyzed for, but was not detected. The associated numerical value is the estimated detection limit.
- R Quality Control indicates that data is not usable (i.e., compound may or may not be present). Resampling and re-analysis would be necessary to determine the presence or absence of the analyte in the sample.
- J The associated numerical value is an estimated quantity because quality control criteria were not met or because the amount detected is below the detection limits required by analytical Statement of Work. The laboratory uses this flag in the latter situation.
- B The laboratory uses this flag when the reported analyte was also found in the method blank. Data validation guidelines do not specify the use of this flag.
- JN Tentative identification of a compound at an estimated concentration. Resampling and re-analysis would be necessary for verification.

| EEDERAL. | IESTIONS? CALL 800-238-5355 TOL | L FREE. | AIRBILL PACKAGE TRACKING NUMBE | 14287 | 53250 |
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I. SDG NARRATIVE

Laboratory Name: Eureka Laboratories, Inc. Lab Certification Number: E765 SDG Number: 8484 Purchase Order Number: AN-91-P-0019 Contract Task Order Number: 0051 NEESA QA/QC Level C Analysis: Initial Sample Numbers: 5

A. Sample Description/Analytical Description

| <u>Client</u> ID | <u>Lab</u> <u>ID</u> | <u>Date</u> Sampled | <u>Date</u> Received | <u>Matrix</u> | Analysis/Method |
|---------------------|----------------------|------------------------|-------------------------|---------------|------------------|
| 8484 | 9108214-1A | 08/23/91 | 08/27/91 | Water | VOA/3-90 CLP SOW |
| 8485 | 9108219-2A | 08/23/91 | 08/28/91 | Water | Same as above |
| 8486 | 9108214-3A | 08/24/91 | 08/27/91 | Water | Same as above |
| 8487 | 9108214-4A | 08/24/91 | 08/27/91 | Water | Same as above |
| 8488 | 9108219-4A | 08/23/91 | 08/28/91 | Water | Same as above |

B. Sample Receipt

Samples were received in two delivery batch on August 27 & 28, 1991. Samples were in good condition. Sample receipt conditions, sample receipt temperature, and method of shipment are noted in the sample receipt check list and DHL air bills. For Order Numbers 91-08-214 and 91-08-219, the following discrepancy is observed:

For several samples, "Trip" was indicated as the analysis on the Chainof-Custody forms.

A memo was faxed to ELI by URS with approved signature to clarify that all samples with the "Trip" analysis should be analyzed for V-CLP only.

C. Quality Control Report

Method Blank

Methylene Chloride, a common laboratory introduced contaminant, was found in the method blank as well as in the samples. The concentration of Methylene Chloride found in the method blank was 11 ug/L (ppb) as compared to 5 ug/L (ppb) detected in Samples Nos. 8484, 8486, 8487, and 8488.

QC Chromatograms

QC Chromatograms for all samples as well as the blank are presented in this package. Calibration chromatograms and QC chromatograms are not pesented in this package but will be available for checking if a problem arises or during on-site audits.

SDG Narrative SDG 8484 Page 2 of 2

3. Deliverable

Level C data package is presented for this SDG per contract requirement.

Completeness

All analytical and QA/QC data are within the control and detection limits and meet the 95% completeness criteria.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Director or his designee, as verified by the following signature.

Shao-Pin Yo, Ph.D. Laboratory Director



SILVER SPRING CHICAGO DENVER DETROIT GRAND RAPIDS

MEMORANDUM

C.C.J.M. FILE COPY

TO:

FROM:

Jamie Bruton, URS/Seattle COPY Roger Simon, Jeralyn Guthrie, Richard Cheatham, CCJM/Denver

DATE:

December 5, 1991

DOCUMENT NO:

SUBJECT:

Volatile Organics Tuning Problems for CTO-051

Per our conversation of 12/5/91, please find herein a detailed description of tuning problems found with all volatile organics analyses performed at Eureka Laboratories for CTO-051. These data packages are considered "on hold" until these issues have been resolved. Data packages have been identified by TDCN numbers and SDG.

- 1. For all CTO-051 data packages with volatile organics analyses (SDG 8449/TDCN 3001421, SDG 8484/TDCN 301210, SDG 8401/TDCN 3001436 and SDG 8416/TDCN 3001439), the values reported for the percent relative abundance of masses 177/176 were incorrectly reported as 100% on the Form V Tuning Summaries. This appeared to be a computer error since calculation of this ratio by the reviewer resulted in acceptable tunes. The laboratory should provide corrected summary forms.
- 2. In SDG 8484/TDCN 3001210, the relative abundance for masses 176/174 was reported and found by the reviewer to be 119.4%. Since there is no expanded criteria for this critical ratio, all data will have to be qualified as unusable (R); raw data to verify the values reported on the Form V Tuning Summary were not included with the Level C data package, so it could not be determined whether the reported ratio was a transcription problem with the base mass percentages reported for m/z 174 and 176, software problem or something else. Please indicate if a calculation/transcription problem existed and provide a corrected summary form or the correct values for masses 176 and 174.

If you should have any questions, please do not hesitate to call us at (303) 987-2928.

cc: URS / Navy Clean PF C.C. JOHNSON & MALHOTRA, P.C.

| 12-18-91 |
|-------------------------------------------------------|
| URS Consultants, Inc. |
| 1100 Olive Way, Suite 200 |
| Seattle, Washington 98101-1832 |
| utical Support Activities |
| (206) 623-1800 FAX: (206) 233-9570 |
| atile Analysis by Eureka |
| |
| resubmitted Form I for our (4) separate 506 number |
| C.C.J.M. |
| TDCN: 3001436 TDCN: 3001439 |
| TDC.N: 3001421 |
| TOCN: 300 1210 RECEIVED |
| E feel free to call any time |
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VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK RESUBMISSION 12/19/91 April Lab Name: EUREKA LABS Contract:URS WA Lab Code:000001 Case No.: 0051 SAS No.:PR215A SDG No.:8484 Lab File ID:GE573 BFB Injection Date: 7/19/91 Instrument ID: VOA2 BFB Injection Time:0815 GC Column:DB-624 ID: 0.53 (mm) Heated Purge: (Y/N) N **% RELATIVE** m/e ION ABUNDANCE CRITERIA ABUNDANCE ---------50 8.0 - 40.0% of mass 95 20.2 75 30.0 - 66.0% of mass 9549.5 Base peak, 100% relative abundance 5.0 - 9.0% of mass 95 95 100.0 96 6.8 Less than 2.0% of mass 174 173 0.0(0.0)1174 50.0 - 120.0% of mass 95 91.6 175 4.0 - 9.0% of mass 174 7.3(8.0)1 93.0 - 101.0% of mass 174 97.8)1176 89.6(177 5.0 - 9.0% of mass 176 7.21 8.0)2 2-Value is % mass 176 1-Value is % mass 174 THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, AND MSD, BLANKS AND STANDARDS: EPA LAB LAB DATE TIME SAMPLE NO. SAMPLE ID FILE ID ANALYZED ANALYZED which these party limits which there is -----GE574 **GE574** 01 VSTD050 7/19/91 0841 7/19/91 7/19/91 **GE575 GE575** VSTD010 0913 02 **GE577** VSTD020 **GE577** 03 1023 7/19/91 VSTD100 **GE580 GE580** 1206 04 VSTD200 **GE584 GE584** 7/19/91 1424 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 URS Technical Document Control 00063 3002096 TDCN: Type: 61Project Number: 30510 Project Name: CTO-51

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK BROMOFLUOROBENZENE (BFB)

RESUBMISSION 12/19/91 Contract:URS WA Lab Name: EUREKA LABS Case No.: 0051 SAS No.:PR215A SDG No.:8484 Lab Code:000001 BFB Injection Date: 8/29/91 Lab File ID:GE965 BFB Injection Time: 1419 Instrument ID:VOA2 Heated Purge: (Y/N) N GC Column:DB-624 ID: 0.53 (mm)

| | m/e | ION ABUNDANCE CRITERIA | <pre>% RELATIVE ABUNDANCE</pre> |
|---|-----|------------------------------------|------------------------------------|
| | | | *************** |
| | 50 | 8.0 - 40.0% of mass 95 | 22.3 |
| | 75 | 30.0 - 66.0% of mass 95 | 52.5 |
| | 95 | Base peak, 100% relative abundance | 100.0 |
| | 96 | 5.0 - 9.0% of mass 95 | 7.6 |
| _ | 173 | Less than 2.0% of mass 174 | 0.0(0.0)1 |
| | 174 | 50.0 - 120.0% of mass 95 | 81.5 |
| | 175 | 4.0 - 9.0% of mass 174 | 7.0(8.6)1 |
| | 176 | 93.0 - 101.0% of mass 174 | 79.3 (97.3)1 |
| | 177 | 5.0 - 9.0% of mass 176 | 5.1(6.4)2 |
| | | | |

1-Value is % mass 174

2-Value is % mass 176

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

| | EPA | LAB | LAB | DATE | TIME |
|----|------------|-------------|---------|----------|------------|
| | SAMPLE NO. | SAMPLE ID | FILE ID | ANALYZED | ANALYZED |
| | | | | | ********** |
| 01 | VSTD050 | GE969 | GE969 | 8/29/91 | 1457 |
| 02 | VBLK | 9108214-30A | GE970 | 8/29/91 | 1529 |
| 03 | RS | 9108214-34A | GE971 | 8/29/91 | 1601 |
| 04 | RSD | 9108214-35A | GE972 | 8/29/91 | 1633 |
| 05 | 8484 | 9108214-23A | GE973 | 8/29/91 | 1707 |
| 06 | 8484MS | 9108214-32A | GE974 | 8/29/91 | 1739 |
| 07 | 8484MSD | 9108214-33A | GE975 | 8/29/91 | 1818 |
| 08 | 8486 | 9108214-07A | GE976 | 8/29/91 | 1851 |
| 09 | 8487 | 9108214-10A | GE977 | 8/29/91 | 1924 |
| 10 | 8485 | 9108219-17A | GE982 | 8/29/91 | 2206 |
| 11 | 8488 | 9108219-21A | GE983 | 8/29/91 | 2230 |
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TABLE 1 (3/90, OLM01.8)

VOA Qualifier Summary

Calibrations, Blanks, Holding Time, System Monitoring Compound, Internal Standards

Hold Time Standards: $(\uparrow,\downarrow;\downarrow\downarrow=<10\%)$ Date Analyzed: 1 1 SMCs Internal (IS) Sample Out 1 3/29/91 A11 2 Identifier: Ar 1 3 1 2 3 8484 3434 ms 9484 MSD Instrument ID: 3435 3436 3487 3438 Method Blank ID: VBLK Date: 8/29/91 Time: ccal B/29/91 ICal :4119/91 Time: 14:57 Date: 9.13

| * RRF must be \geq .010 | | the second se | al Cal. | | ruing Cal. | | | | |
|---------------------------|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|-------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|------------|----------|
| *System Monitor Compound | MIN | RRF | XRSD | RRF | 20 | the state of the s | anks | Qualifiers | Interna |
| COMPOUND: | RRF | < MIN | >20.5 | < MIN | >25 | Method | Trip | (+/-) | Standar |
| Chloromethane | * | | | 1 | | | | | 1 1 |
| Bromomethane | .100 | | | | | | | | |
| Vinyl Chloride | .100 | | | | | | | | |
| Chloroethane | * | | | 1 | | | | | . |
| Methylene Chloride | * | 19.00 | | | | 11 | | 55/43 | |
| Acetone | * | | | | | | | | |
| Carbon Disulfide | * | | | | | | | | |
| 1,1-Dichloroethene | .100 | | | | | | | | |
| 1,1-Dichloroethane | .200 | | | | | 1 | | | |
| 1,2-Dichloroethene(total) | * | | | | | | | | |
| Chloroform | ,200 | | | | | | | | |
| 1,2-Dichloroethane | .100 | | | | | | - | | |
| 2-Butanone | * | 0.049 | | | | | | JJR | v |
| 1,1,1-Trichloroethane | .100 | | | | | | | | 2 |
| Carbon Tetrachloride | ,100 | | | - | | | | | |
| Branodichloramethane | .200 | 1 | | | | | | | |
| 1,2-Dichloropropane | * | | | | | | | | |
| cis-1,3-Dichloropropene | .200 | | | | | | | | |
| Trichloroethene | .300 | | | | | | | | |
| Dibramochloramethane | ,100 | | | | | | | | |
| 1,1,2-Trichloroethane | .100 | | | | | | | | |
| Benzene | .500 | | | | | | | | |
| trans-1,3-Dichloropropene | .100 | | | | | | | | |
| Brampform | 1.100 | | | | | | | | • |
| 4-Methyl-2-Pentanone | * | 1 | | | | | | | 3 |
| 2-Hexanone | * | | | | | | | | |
| Tetrachloroethene | .200 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | .500 | | | | | | | | |
| Toluene | .400 | | | 1 | | 1 | | | |
| Chlorobenzene | .500 | | 1 | | 1 | 1 | | | |
| Ethylbenzene | .100 | | | | | | | | |
| Styrene | .300 | the second s | | | | | | | |
| Xylene (total) | .300 | and the second division of the second divisio | 1 | | | 1 | | | * |
| Toluene-d8 * | | | 1 | | | | 1 | | 3 |
| Bramofluorobenzene a | .200 | | | | | | | | 3 |
| 1.2-Dichloroethane-d4 a | | 1 | 1 | | 1 | | | | 1 1 |

Blank ID

Reported as:

RT (µg/kg or µg/L)

Qualifiers

5A VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK BROMOFLUOROBENZENE (BFB)

Lab Name: EUREKA LABS

Contract:URS WA

Lab Code:000001 Case No.: 0051 SAS No.: PR215A SDG No.: 8484

Lab File ID:GE965

Instrument ID: VOA2

GC Column:DB-624 ID: 0.53 (mm)

Heated Purge: (Y/N) N

BFB Injection Date: 8/29/91

BFB Injection Time: 1419

| m/e | ION ABUNDANCE CRITERIA | <pre>% RELATIVE ABUNDANCE</pre> |
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| 177 | 5.0 - 9.0% of mass 176 | 6.5(100.0)2 |
| | | ~ 6,7 |
| | 1-Value is & mass 174 2-Value is & mas | 176 |

-value 15 % mass 1/4

Value 15 % mass 176

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

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