

NAVY INSTALLATION RESTORATION PROGRAM

LABORATORY WORK PLAN FOR REMEDIAL INVESTIGATION/FEASIBILITY STUDY
FOR NAVY INSTALLATIONS IN SAN DIEGO,
CALIFORNIA AREA

Prepared By
IT Corporation

Submitted By
Hazardous Waste Remedial Actions Programs
Oak Ridge National Laboratory

Operated By
Martin Marietta Energy Systems, Inc.

For The
U.S. Department of Energy
Under Contract No. DE-AC05-84OR21400

Submitted To
Naval Energy and Environmental Support Activity (NEESA)
Port Hueneme, California
Under Interagency Agreement No. 40-1759-86

June 1987

JUL 24 1987



July 23, 1987

Chuck Swinney
Martin Marietta Energy Systems, Inc.
P. O. Box Y
FEDC Building
Oak Ridge, TN 37831

Dear Chuck:

Subject: **Final Laboratory Work Plan**
General Order 12B-97382C, Task Order X-03
IT Project Number 409415.16 (AIT-004)

Attached are eight copies of the Final Laboratory Work Plan which incorporates the comments received by ORNL. NEESA did not have any further comments, which was brought to our attention on May 29, 1987.

The revisions made to this work plan are in response to comments and agreements made during a meeting held on April 13, 1987, with Hal Davidson, ORNL, and Mitzie Miller, ORGDP. The major revision was the deletion of the laboratory-specific QA Manual from this work plan. The decision to remove the QA plan from the work plan was based on the fact that Mitzie had already reviewed the QA plan for the laboratory approval process. Also, it was decided that laboratory standard methods are already included in the laboratory-specific QA Manual, and there was no need to duplicate them in the work plan.

This final version will be updated periodically to reflect the approved analytical services which will be provided for each installation. These updates will basically be a copy of the analytical methods provided in each approved VSWP along with the anticipated delivery dates of the samples to the laboratory. This information will be included in Appendix B.

It should be noted that Steve Jones has left the company and Ken Faust has taken over his responsibilities. Ken will now be the laboratory coordinator at the Cerritos laboratory.

If you have any questions, please do not hesitate to call.

Sincerely,

Michael N. Sturdevant
Deputy Project Manager

sk

Attachment

OAK RIDGE NATIONAL LABORATORY

OPERATED BY MARTIN MARIETTA ENERGY SYSTEMS, INC.

POST OFFICE BOX Y
OAK RIDGE, TENNESSEE 37831

July 24, 1987

Mr. Jeff Hendrix
Project Manager
NEESA
Code 112E
Port Hueneme, California 93043

Dear Jeff:

Laboratory Work Plan for Naval Installations in the San Diego,
California Area.

Attached for your information and file are four copies of the subject Work Plan. This plan will be a "living" document throughout the life of this project. Each time IT Corp. issues an approved Verification Step Work Plan, the sampling schedule for that plan will be incorporated into this plan. The new pages, to be inserted in Appendix B, will be issued with the approved VSWP.

Should you have any questions, please feel free to call me at 615-574-6434 or FTS 624-5434.

Sincerely,



C. S. Swinney
Project Manager

CSS:rmh

Attachment

cc: B. S. Combs
P. J. Franco
M. N. Sturdevant, IT Corp.
CSS

cc/att: M. S. Miller
File

TABLE OF CONTENTS

	<u>PAGE</u>
1.0 INTRODUCTION	1
2.0 LABORATORY QUALITY ASSURANCE PROGRAM	3
3.0 SAMPLE PROCESSING	4
4.0 REPORTS	6
4.1 Laboratory QA/QC Progress Reports	6
4.2 Draft QA/QC Reports	6
4.3 Final QA/QC Report	7

APPENDICES

- A. SUMMARY OF ITAS - CERRITOS, CALIFORNIA LABORATORY QA/QC PROGRAM
- B. NUMBER, TYPES, AND DATES OF SAMPLES COLLECTED FOR (OR TO BE COLLECTED) NAVY IR PROGRAM
- C. LABORATORY ORGANIZATION CHARTS

1.0 INTRODUCTION

The purpose of this Laboratory Work Plan is to facilitate the implementation of the requirements of the Oak Ridge National Laboratory Statement of Work for Verification Step Work Plans to Support Confirmation Studies at Naval Bases in the San Diego, California Area, September 29, 1986 and applicable regulatory and NEESA requirements (NEESA 20.2 - 047). Also the purpose of this plan is to identify internal means for control and review so that the work performed by IT Analytical Services meets Navy Installation Restoration (IR) Program requirements.

This Laboratory Work Plan provides guidance which will be followed for conducting Remedial Investigation/Feasibility Study analysis under the IR Program for Naval Bases in the San Diego, California area.

The Navy IR Program was developed by the Navy to identify and control environmental contamination from past use and disposal of hazardous substances. The Navy IR Program consists of three phases: Initial Assessment Study, Remedial Investigation/Feasibility Study (RI/FS), and Remedial Action.

An Initial Assessment Study was conducted at six naval bases in the San Diego, California area. Remedial Investigation/Feasibility Studies were recommended for 18 sites at six naval bases:

- Naval Station
- Naval Amphibious Base
- Outlying Landing Field
- Marine Corps Recruit Depot
- Naval Training Center
- Point Loma Complex.

The Naval Energy and Environmental Support Activity (NEESA) oversees the direction and performance of the Navy IR investigations. The Oak Ridge National Laboratory (ORNL), operated by Martin Marietta Energy Systems, Inc., provides technical support to NEESA for the Navy IR Program. IT Corporation (IT) was contracted by Martin Marietta Energy Systems, Inc. under Task Order X-03 to General Order 12B-97382C to develop a work plan for the Verification Step of the RI/FS.

Analytical services will be provided by the IT Analytical Services (ITAS) laboratory in Cerritos, California (located approximately 130 miles north of San Diego). The Cerritos laboratory is certified by the California Department of Health Services as both a drinking water and hazardous waste analytical laboratory. The Cerritos laboratory has been approved by NEESA to conduct sample analyses for the Navy at the San Diego sites.

Address and contact for the IT Analytical Services laboratory in Cerritos is:

IT Analytical Services
17605 Fabrica Way
Cerritos, California 90701
Contact: Ken Faust, Laboratory Coordinator
or
Guy Sylvester, Quality Assurance/Quality
Control Coordinator
Phone: (213) 921-9831
(714) 523-9200

Additional analytical services will be provided by IT Analytical Services laboratory in Knoxville. The Knoxville laboratory will perform polychlorinated dibenzofurans and dioxin analysis on samples split and sent from the Cerritos laboratory. Navy approval of the Knoxville laboratory by NEESA is currently pending. Address and contact for the IT Analytical Services laboratory in Knoxville is:

IT Analytical Services
304 Directors Drive
Knoxville, Tennessee 37923
Contact: Bruce Wagner, Laboratory Coordinator
or
Linda Pocratsky, Quality Assurance/Quality
Control Coordinator
Phone: (615) 588-6401

2.0 LABORATORY QUALITY ASSURANCE PROGRAM

The ITAS laboratories operate from two quality assurance manuals, a corporate and a laboratory specific quality assurance (QA) manual. A summary of the ITAS-Cerritos laboratory quality assurance/quality control (QA/QC) program is included in Appendix A.

The overall QA/QC program for the Navy projects is being directed according to the IT Engineering Sciences Quality Assurance (ITES QA) Manual. This manual is supplemented by a Field QA/QC Plan, which is provided in each Verification Step Work Plan. The ITES QA manual addresses all aspects of a project which affect the quality of the end products.

As part of the overall QA/QC program, the laboratory QA program governs the QA procedures which will be followed from sample receipt at the laboratory through data validation and data reporting. All of the IT QA manuals have been submitted to the ORNL project manager for his project files.

3.0 SAMPLE PROCESSING

Samples will be processed according to the procedures discussed in the laboratory QA manuals. Holding times will be as stated in the laboratory specific QA manual unless otherwise specified.

Samples will be preserved at the time they are collected. While awaiting shipment and while en-route, samples will be stored on ice in coolers. Coolers will be either delivered by IT field personnel or shipped by a next-day delivery service to the laboratory. Notification of shipment, including airbill number, will be phoned to the laboratory either at the end of business the day the samples are shipped or, if a later shipment is made, by 9:00 a.m. the following day. A Chain-of-Custody Record and Request for Analysis will accompany the samples from time of collection to receipt in the laboratory.

The number and types of samples to be acquired in the field and sent to the laboratory will be addressed in each Verification Step Work Plan (VSWP). Also, the VSWP will include a schedule for the anticipated time of performing analytical services. As the type, number, and dates of collection of these samples are determined for each installation, they will be incorporated into Appendix B of this document.

When each authorization to proceed with field investigation is granted by ORNL/NEESA, Appendix B will be updated with the laboratory's anticipated dates for receiving samples from that installation.

Data and sample analysis information (i.e., raw data, sample lists, chain-of-custody and request-for-analysis information, work sheets, chart paper, calibration charts, data validation, and extraction notes) will be kept in a job envelope assigned to the samples as received by the laboratory. This job envelope will be archived in a special file under the same project for future reference. QC charts, instruments maintenance, analyst sample run logs, analyst sample preparation notebooks, EPA methods, standard procedures, and calibration preparation procedures will be kept with the instruments in each respective group. GC/MS and GC data will be stored on disk or tape for archival purposes.

A Laboratory Coordinator will coordinate project activities pertaining to laboratory analyses. In addition, the ITAS laboratory-specific QA/QC Coordinator will oversee laboratory QA/QC activities.

The overall laboratory QA/QC program is the responsibility of the ITAS QA/QC Director. Laboratory organization charts are included in Appendix C.

4.0 REPORTS

4.1 LABORATORY QA/QC PROGRESS REPORT

Copies of the progress report, summarizing Navy IR sampling and analysis activities of the previous month, will be submitted to ORNL by the seventh working day of each month. This report will contain at least the following information:

- Work Accomplished During the Reporting Period - includes number, types, and locations of samples, controls and standards; identity of samples. Sufficient information will be provided to reflect level of activity and QC performance.
- Navy QC Data Produced During the Reporting Period - includes a copy of each QC chart containing one or more new data point(s). The objective is to reflect QC performance in the context of earlier trends.
- Events Affecting Laboratory Practices - includes discussions of any QC difficulties, particularly out-of-control episodes; descriptions of, and justification for, significant changes in the QA/QC manual. In addition, any problems with analytical procedures or methods will be discussed with an indication of corrective actions taken. If the use of any new methods is contemplated, a discussion of the method and documentation of its validity will be included.
- Work Forecast for Next Reporting Period - includes number and types of Navy IR samples expected, any changes in overall workload affecting analytical equipment, projections for equipment downtime and other estimates of factors that may affect the activity level.

4.2 DRAFT QA/QC REPORT

When all Navy IR sampling and analysis is completed, a report summarizing the effort will be prepared by the Laboratory Coordinator. This report will be submitted as a draft within 60 calendar days after the analysis of the last Navy IR sample. Eight copies will be submitted to ORNL. This report will be a compilation of all monthly laboratory QA/QC and will contain, at a minimum, the following:

- Foreword - signed by the Laboratory Director, any supervising chemists and the Laboratory Coordinator.
- Executive Summary.
- Table of Contents.

- Introduction - indication of the sites from which samples were acquired, the period during which sampling and analysis occurred, and the objectives of the QA/QC plan with respect to these activities.
- QA/QC Plan Changes - indication of procedural modifications or policy changes made in the plan and when those changes were implemented. The objective of this section will provide a complete understanding of QA/QC as it was undertaken at any point during the contract.
- QA/QC Performance and Trends - summary of QA/QC results for each procedure over the time of the contract. This section includes a discussion of persistent or troublesome QC problems as well as any anomalies or unexpected observations. Also any out-of-control episodes and corrective actions taken will be included.
- Archive Inventory - indication of where the following materials are stored: raw data, QC charts, corrective action logs, sample lists, chain-of-custody information, notebooks, work sheets, chart paper, system output, and calibration charts.

4.3 FINAL QA/QC REPORT

The final QA/QC Report will incorporate comments received from the review of the draft QA/QC Report. Eight copies of this report will be submitted within 30 calendar days of receiving comments.

APPENDIX A

SUMMARY OF ITAS-CERRITOS, CALIFORNIA LABORATORY
QA/QC PROGRAM

ITAS - Cerritos operates from two quality assurance manuals, a corporate and a laboratory specific QA manual. These manuals detail all QA/QC protocols, procedures, and methods. The following is a brief look at the total laboratory QA program.

I. Sample Receipt, Initiation of Testing, and Disposal

ITAS - Cerritos receives hazardous waste samples whose matrices include soil/solids, liquids, sludges, etc. Upon receipt of samples into the laboratory, the following is done:

- 1) Samples are examined for damage, checked for proper preservatives, or preservatives are added as required by analysis protocols.
- 2) Chain of custody, request for analysis, and sample identification is completed.
- 3) Samples are placed in the proper storage environment.
- 4) Testing program is defined, acceptable holding times determined, and samples are logged into sample stream.

Whenever samples are received damaged due to leaky or broken containers or where improper sample preservation has occurred, laboratory management is notified immediately. The customer is informed of any damaged samples, discrepancies in sample identification, and questions about analysis routines immediately after sample receipt. Samples are held three months before properly disposing unless otherwise specified.

II. Calibration Practices

Written procedures have been developed by ITAS - Cerritos within the requirements of its QA manual for all instruments and equipment subject to calibration. Whenever possible, recognized procedures, such as those published by USEPA and APHA, have been adopted. If established procedures are not available, a procedure has been developed for each instrument considering the type of analysis, stability characteristics of the instrument, required accuracy, and the effect of operator error on the quantities measured.

Calibration procedures, as a minimum, include equipment to be calibrated, reference standards used for calibration, calibration techniques and sequential actions, acceptable performance tolerances, frequency of calibration, and calibration documentation format. A log book is kept indicating the source of the standard, lot number of the standard, when the standard was received and opened, what compounds are to be included, and a page number for the preparation of the calibration standard. In addition, consecutive analytical runs are documented in a log book at each instrument with references to the calibration log book whenever a standard is run.

Instrument log books maintained in the laboratory include at a minimum: date of analysis, initials of person performing analysis, sample/calibrator/reference number, and observations about the sample (dilution, detector, specific GC conditions, etc.). Notebooks present in the laboratory are: Extraction lab notebooks, GC analysis logs, GC/MS analysis logs, GC maintenance logs, GC/MS maintenance logs, refrigerator temperature logs, analytical balance logs, freezer temperature logs, inorganics lab logs, inorganics maintenance logs, miscellaneous lab logs, miscellaneous lab maintenance, and conductivity logs.

III. Preventive Maintenance

ITAS - Cerritos has developed an in-depth program for preventive maintenance. The preventive maintenance program is an organized program of routine actions taken to

maintain proper instrument and equipment performance in order to minimize failures during use. The more simplified operations are performed by the chemists and technicians. The more difficult and intricate maintenance operations are scheduled and organized by the laboratory facility and equipment manager.

All maintenance operations are documented in a maintenance log book kept with each instrument or group. Maintenance routines are instrument specific and their frequency is determined by experience and by recommendations of the instrument manufacturers.

IV. Analysis of Quality Control Samples

Samples are routinely added to the normal laboratory sample stream to demonstrate that the laboratory is operating within prescribed requirements for accuracy and precision. These QC samples take the form of reagent blanks, duplicates, check standards surrogate standards, matrix spikes, blind replicates, and/or reference standards.

A reagent blank is a sample free of analytes that is used to verify that method interferences caused by contaminants in solvents, reagents, glassware, and other sample processing hardware are known and minimized. ITAS - Cerritos performs a reagent blank with each group of samples.

Duplicate and matrix spike analyses are performed to evaluate the precision of an analysis. ITAS - Cerritos analyzes duplicates and spikes at least 5% of the time and more frequently (usually 10% of the time) when the method or certifications require it. Results of the duplicate analyses are used to determine the relative percent difference between replicate samples. Matrix spikes evaluate the effect the sample matrix has upon analytical methodology. The percent recovery for the respective compound will then be calculated. If the percent recovery falls outside of established quality control limits, the samples are reanalyzed.

Surrogate standard determinations are performed by ITAS - Cerritos whenever an extraction technique is applied to a sample (EPA methods 601/8010, 602/8020, 608/8080, 624/8240, 625/8270, etc.). All samples and blanks are fortified with surrogate spiking compounds before purging or extraction to monitor preparation and analysis of samples.

ITAS - Cerritos participates in several performance evaluation studies as well as produces its own sets of blind samples for analysis. The following is a list of several performance evaluation studies that ITAS - Cerritos participates:

- WSPE (Water Supply Performance Evaluation) USEPA - Cincinnati
- WPPE (Water Pollution Performance Evaluation) USEPA - Cincinnati
- EPA Contract Laboratory Program: Quaterly Blind Spikes USEPA - Las Vegas
- DOHS (Department of Health Services) California State Drinking Water and Hazardous Waste Certification
- NIOSH-PAT (Proficiency Analytical Testing) required for AIHA certification

V. Nonconformances and Corrective Action

A nonconformance is any event which is beyond the limits established for laboratory operation. Nonconformances can be due to data which outlie accepted bounds for accuracy and precision, improper equipment calibration or maintenance, or improper data verification. Whenever a nonconformance situation or an out-of-control situation occurs, the analytical testing is halted until the nonconformance has been corrected. All data collected during an out-of-control situation is reanalyzed. The Group Leader responsible for the instrument involved in a nonconformance situation is responsible for identifying the source of the nonconformance and initiating corrective action.

Completion of corrective action is evidenced by data returning to prescribed acceptance limits. Nonconformances which do not readily result in an observed impact on data quality are reported immediately to the customer and a memo is entered in the project file. Events such as improper sample storage temperature, improper sample preservation, leaky containers or improper sample documentation fall into this category.

VI. Quality Assurance/Control Audits

Quality assurance audits of the lab are performed monthly by the ITAS - Cerritos QA Coordinator. In addition, quarterly audits are performed by the corporate QA Coordinator and an annual audit is performed by the EPA. The ITAS - Cerritos laboratory has been audited by the Army, the Navy, and the States of California and New Jersey as a hazardous waste laboratory.

VII. Analytical Procedures

The following references are relied upon routinely for protocols, QC procedures, calibrations, and methodologies when analyzing hazardous waste samples at ITAS - Cerritos:

- 1) Standard Methods for the Examination of Water and Wastewater (APHA), 16th edition, 1985.
- 2) Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, SW-846, 2nd edition, 1982.
- 3) Methods for Chemical Analysis of Water and Wastes, EPA 600/3-83-020, 3rd edition, 1983.
- 4) Methods for Organic Chemical Analysis of Municipal and Industrial Waste Water, EPA 600/4-82-057, 1982.
- 5) Annual Books of ASTM Standards

APPENDIX B

NUMBER, TYPES, AND DATES OF SAMPLES
COLLECTED (OR TO BE COLLECTED) FOR
NAVY IR PROGRAM

APPENDIX B
NUMBER, TYPES, AND DATES OF SAMPLES
COLLECTED FOR (OR TO BE COLLECTED)
NAVY IR PROGRAM

LABORATORY WORK PLAN FOR
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
FOR NAVY INSTALLATIONS

THE ABOVE IDENTIFIED APPENDIX IS NOT
AVAILABLE.

EXTENSIVE RESEARCH WAS PERFORMED BY
SOUTHWEST DIVISION TO LOCATE THIS
APPENDIX. THIS PAGE HAS BEEN INSERTED AS
A PLACEHOLDER AND WILL BE REPLACED
SHOULD THE MISSING ITEM BE LOCATED.

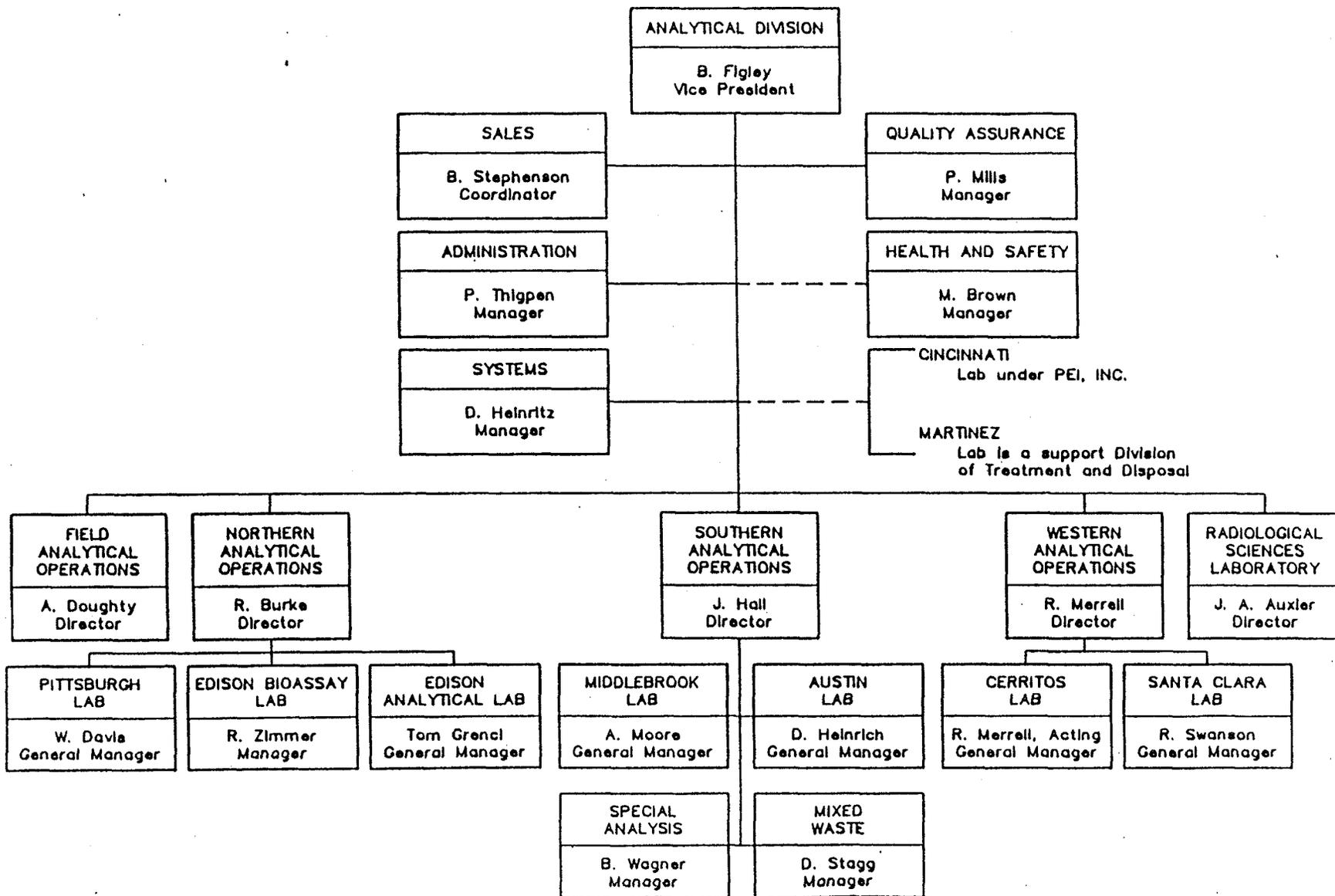
QUESTIONS MAY BE DIRECTED TO:

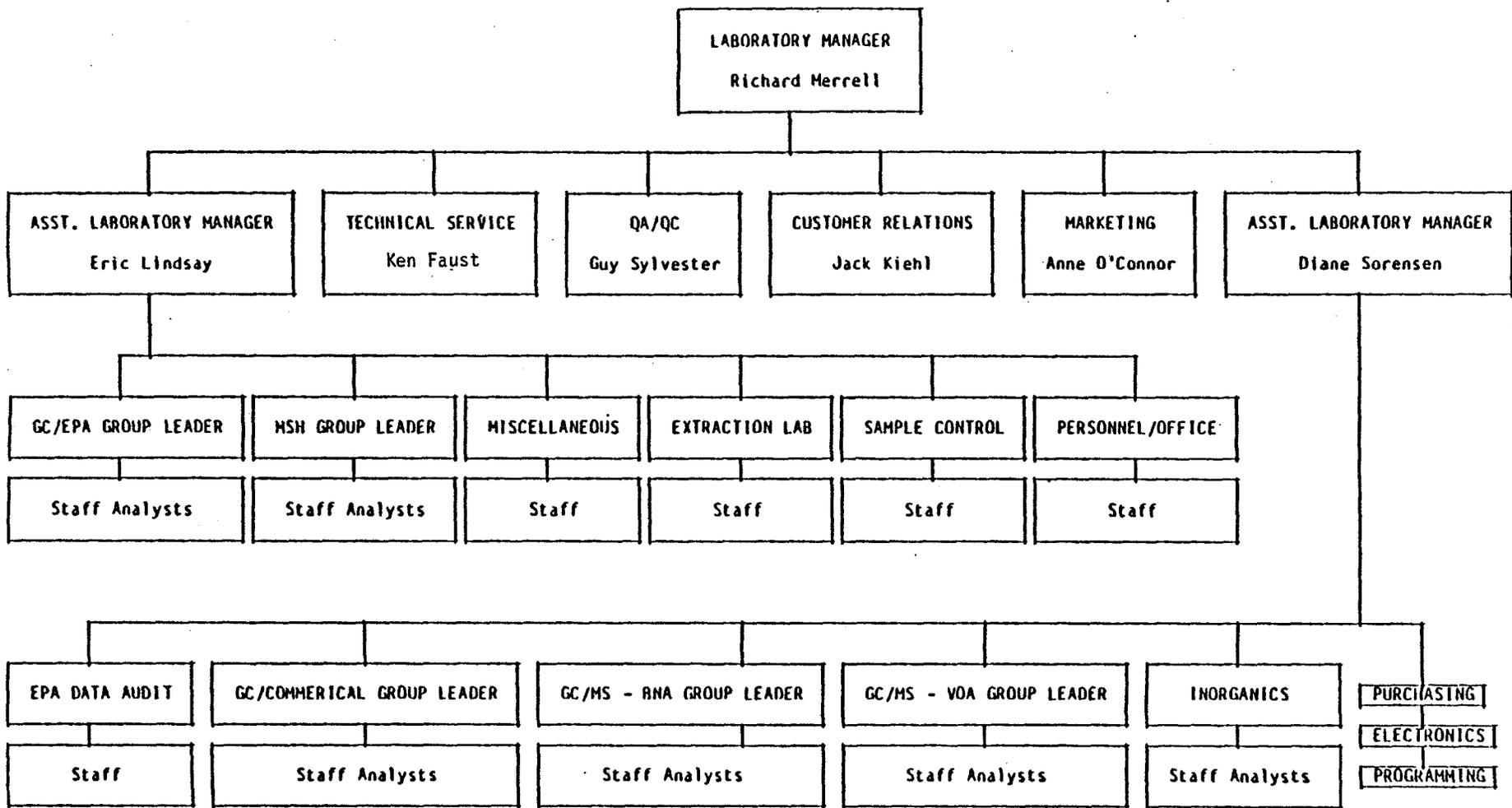
DIANE C. SILVA
RECORDS MANAGEMENT SPECIALIST
SOUTHWEST DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
1220 PACIFIC HIGHWAY
SAN DIEGO, CA 92132

TELEPHONE: (619) 532-3676

APPENDIX C

LABORATORY ORGANIZATION CHARTS





ORGANIZATIONAL CHART

ITAS - CERRITOS

ORGANIZATIONAL CHART
 IT Analytical Services - Knoxville

Jack R. Hall, Laboratory Director

