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**INSTALLATION RESTORATION PROGRAM
PHASE II—CONFIRMATION/QUANTIFICATION
STAGE 2
VOLUME II**

**APPENDICES
(A — U)**

**FINAL REPORT FOR:
TYNDALL AIR FORCE BASE
FLORIDA**

**TACTICAL AIR COMMAND
LANGLEY AIR FORCE BASE, VIRGINIA 23665**

AUGUST 1988

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**Prepared by:
ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
P.O. BOX ESE
GAINESVILLE, FLORIDA 32602-3052**

**U.S. AIR FORCE CONTRACT NO. F33615-84-D-4401, DELIVERY ORDER NO.14
ESE PROJECT NO. 86-378**

**Prepared for:
U.S. AIR FORCE TECHNICAL PROGRAM MANAGER
1Lt. DALE DIETZEL
U.S. AIR FORCE OCCUPATIONAL & ENVIRONMENTAL
HEALTH LABORATORY (USAFOEHL)
TECHNICAL SERVICES DIVISION (TS)
BROOKS AIR FORCE BASE, TEXAS 78235-5501**

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NOTICE

This report has been prepared for the United States Air Force by Environmental Science and Engineering, Inc. (ESE) for the purpose of aiding in the implementation of the Air Force Installation Restoration Program. It is not an endorsement of any product. The views expressed herein are those of the contractor and do not necessarily reflect the official views of the publishing agency, the United States Air Force, or the Department of Defense.

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APPENDIX A
RESUMES OF KEY PROJECT PERSONNEL

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Availability Codes	
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JOHN D. BONDS, Ph.D.
Senior Scientist/Project Manager

ESE PROFESSIONAL RESUME

SPECIALIZATION

Project Management, Atmospheric Chemistry, Water Chemistry, Industrial Hygiene, Quality Assurance, Hazardous Waste

RECENT EXPERIENCE

Initial Assessment for Hazardous Wastes at Army Installations, Team Leader--Comprehensive study at 48 Army installations to determine both past and present history with respect to the use of hazardous substances, quantities used, disposal methods and disposal sites. Also includes a current assessment of safety practices and compliance with regulations.

Initial Assessment Studies for the United States Air Force, Team Leader--Comprehensive studies at 2 Air Force bases to determine both past and present history with regard to the use and disposal of toxic and hazardous materials. Conducted in accordance with the Department of Defense Installation Restoration Program policies.

Initial Assessment Studies for the Naval Energy and Environmental Support Activity, Team Leader--Evaluating 2 Naval installations with regard to past hazardous waste generation, storage, treatment, and disposal practices. Investigations include records review, aerial and ground site surveys, employee interviews, and limited sampling and analysis including geophysical techniques. Determine extent of contamination at former disposal/spill sites, potential for contaminant migration, and potential effects on human health and the environment.

Phase II Confirmation Studies to Determine the Presence and Migration of Hazardous Wastes from Military Installations, Team Leader--Five comprehensive field studies to determine the actual sites where hazardous substances were used, their current concentrations in soils, surface waters and groundwater, and an assessment of the quantities which may migrate from the installation. The study also included recommendations for decontamination operations.

Determination of Hazardous Chemicals in Landfills, Project Manager--Several studies in which field sampling techniques and laboratory methods were developed to determine the existence and concentrations of explosive gases generated by landfill operations, priority pollutants escaping to the atmosphere and contaminating the groundwater.

Preparation of Quality Assurance Guidelines for EPA Project Officers, Project Manager--Preparation of QA guidelines for use by EPA project officers in selecting contractors for projects requiring sampling and analysis. Also included guidelines for quality assurance audits of the field sampling and analysis portion of any awarded contract. EPA publication 600/9-79-046 entitled Quality Assurance Guidelines for IERL-Ci Project Officers was produced under this project.

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J.D. BONDS, Ph.D.

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Air Compliance Testing of Industrial Sources, Project Manager--Various projects involving compliance testing at petroleum refineries, Kraft pulp mills, power plants, iron and aluminum smelting operations, and various other industries.

Ambient Air Monitoring, Project Manager--Various projects to determine ambient air concentrations of sulfur oxides, particulates, nitrogen oxides, carbon monoxide, photochemical oxidants, priority pollutant organics, and hydrocarbons.

EDUCATION

Ph.D. 1969 Analytical Chemistry University of Alabama
B.S. 1963 Chemistry University of Alabama
U.S. EPA Air Pollution Training Institute: Quality Assurance for Air
Pollution Measurement Systems--workshop graduate (1977)

ASSOCIATIONS

American Chemical Society
American Industrial Hygiene Association
Air Pollution Control Association

REPORTS AND PUBLICATIONS

More than 50 reports and publications on Installation Assessments, source air emissions, hazardous materials and quality assurance.

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03/19/85

RANDY L. SCHULZE, M.S.
Environmental Scientist

ESE

PROFESSIONAL RESUME

SPECIALIZATION

Hazardous Waste Investigations, Aquatic Impact Assessment, Fisheries and Invertebrate Response to Resource Utilization, Aquatic Chemistry

RECENT EXPERIENCE

Hazardous Waste Records Search, Naval Air Station, Adak, Alaska, Task Manager--Project involved evaluation of past and present hazardous waste disposal practices on Naval Air Station Adak in Adak, Alaska. Responsible for evaluation of disposal practices for wastes from laboratories and medical facilities. Also contributed to final report.

Environmental Assessment of Titan Vehicle Launch Facility, Task Manager--Conducted analysis of ground water and surface water quality and quantity at Cape Canaveral Air Force Station. Also evaluated water quality and biological impacts associated with the reactivation of a Titan T34D/7 vehicle launch facility. Responsibilities included background data evaluation, impact analysis, and report preparation.

Cyanide Contamination Assessment, Staff Scientist--Assisted in evaluation of ground water and surface water contamination by cyanide from a photographic laboratory. Responsibilities included review of methodology and field sampling procedures, and evaluation of data to determine extent of contamination.

AMAX Pine Level Phosphate Mine, Environmental Impact Statement, Task Manager--Evaluated baseline water quality data and potential impacts associated with effluent discharge from a phosphate mining operation. Responsibilities included analysis of water quality data and significance of impacts. Also assisted in write-up of water quality section for final EIS document.

Evaluation of Toxicity of Inorganics in Leachate from Landfill, Project Manager--Evaluated chemical properties of a landfill leachate for toxicity to fish species. Responsibilities included project management, client interaction, and review of analytical data.

MX Missile Environmental Impact Study, Aquatic Ecologist--Evaluated likely impacts on aquatic environments associated with the deployment of the MX missile system. Responsibilities included review of existing ecological data and evaluation of likely impacts due to the project.

Dredge and Fill Permitting, Project Manager--Responsible for development of dredge and fill permit applications for federal and state agencies. Responsibilities included developing mitigation plans and permit applications, representing the interests of the client to the agencies, and coordinating client interaction.

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R.L. Schulze, M.S.
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Predictive Water Quality Modeling Study of Major Reservoir in Texas, Project Manager--Conducted predictive modeling study to assess future water quality and trophic state conditions for a reservoir under construction. Major nutrients, major ions, heavy metals and pesticide loading rates were calculated. Responsibilities included statistical data analysis, interpretation, and report preparation.

Continued Monitoring of Water Quality in Big Slough and Horse Creek Phosphate Mine Area, Aquatic Chemist--Conducted continued water quality monitoring and data analysis of surface water and ground water quality in creeks in Big Slough and Horse Creek Basins. Responsibilities included data analysis, interpretation, and report preparation.

Evaluation of the Effects of Shoreline Development on Benthic Invertebrate Communities, Task Manager--Evaluated the response by benthic invertebrate communities to varying degrees of shoreline development along finger canals.

EDUCATION

M.S.	1980	Environmental Engineering	University of Florida
B.S.	1976	Biology	University of South Florida

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02/17/86

WILLIAM G. ELLIOTT, B.S.
Associate Geologist

ESE

PROFESSIONAL RESUME

SPECIALIZATION

Geophysics, Stratigraphy, Engineering Geology, Hydrogeology, Ground Water Monitoring and Evaluation, Sampling Techniques.

RECENT EXPERIENCE

Adcom Wire Company, Jacksonville, Florida, Project Manager--Work included ground water contamination assessment and evaluation of remedial alternatives. Supervised chemical stabilization of contaminated soil, and developed and executed method involving EP Toxicity Test to isolate and neutralize lead contamination in soils of waste lagoon. Achieved closure of lagoon in accordance with RCRA, and managed negotiation of consent order with state regulatory agency.

Initial Assessment Study, U.S. Navy NEESA - NACIP, Team Geologist--Conducted initial assessment study of naval installations in Texas and Louisiana. Identified and evaluated potential sources of ground water/surface water contamination. Ranked sites for confirmation study using variation of MITRE model, and made recommendation for Phase II study of geohydrology of various sites.

Remedial Investigation, U.S. Army Toxic and Hazardous Materials Agency, Louisiana Army Ammunition Plant, Task Geologist--Developed geotechnical plan for remedial investigation. Evaluated site geohydrology and stratigraphy, and defined the extent and level of ground water contamination and impact on adjacent areas from disposal of explosive wastes at the four study sites.

Ground Water Contamination Study, Seymour Recycling, Seymour, Indiana, Project Geophysicist--Conducted downhole geophysical logging and aquifer evaluation testing at a former hazardous waste management facility. Performed aquifer characterization tests and borehole geophysics to evaluate migration potential of ground water contaminants at an uncontrolled hazardous wastesite.

Confirmation Study, U.S. Air Force IRP, Tyndall AFB, Panama City, Florida, Project Geologist--Developed technical operations plan for Phase II ground water and surface water confirmation study.

Contamination Assessment, Confidential Client, Project Geologist--Developed field sampling plan and site-specific methods for investigation of volatile organic contaminants (xylene) in unsaturated soils at an industrial site in Puerto Rico.

Ground Water Contamination Assessment, U.S. Army Toxic and Hazardous Materials Agency, Sharpe Army Depot, Stockton, California, Project Geologist/Geophysicist--During contamination assessment, supervised the installation of deep monitor wells and contaminant recovery wells,

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performed downhole geophysical logging of monitor wells, and conducted aquifer tests.

Water Contamination Study, Polk County, Florida, Project Hydrogeologist--Investigated contamination of drinking water wells near Loughman, Florida. Responsibilities included supervising monitor well installation, aquifer testing, field sampling, contamination assessment report preparation, and recommendations for remedial actions.

U.S. Army Toxic and Hazardous Materials Agency, Vint Hill Farms Station, Virginia, Project Geologist/Geophysicist--During installation assessment, performed downhole geophysical logging and field sampling of monitor wells. Performed ground water and surface water sampling as part of the confirmation study.

Engineering Analyses, U.S. Navy, O.I.C.C. Trident, Kings Bay, Georgia, Project Geologist--Performed sedimentological and engineering analyses of channel sediments, calculated design constraints for dredged material containment area, and projected biological and water quality impacts from maintenance dredging of a submarine turning basin.

Land Survey, U.S. Navy, O.I.C.C. Trident, Kings Bay, Georgia, Project Geologist--Performed land survey to determine lateral and vertical extent of contamination of salt marsh by dredged material spill, collected and analyzed sediment cores to determine sediment source. Prepared field maps and graphics.

Carolina Galvanizing Corporation, Aberdeen, North Carolina, Project Geophysicist/Geologist--Performed computer modeling of ground water contaminant plume migration using water quality data. Also modeled pumping and treating of ground water to reduce levels of contaminants below applicable standards.

EDUCATION

	1982	Graduate courses in Geology	University of Florida
B.S.	1981	Geology	University of Florida

PROFESSIONAL ASSOCIATIONS

Geological Society of America
Southeastern Geological Society
American Water Resources Association

CERTIFICATIONS

1984--Certification of Training for Hazardous Waste Site Investigations.

1985--Certification of Training for Radiation Safety During Borehole Geophysical Logging.

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MARK J. JORDANA, M.S.
Geologist

ESE PROFESSIONAL RESUME

SPECIALIZATION

Hydrogeology, Coastal Plain Stratigraphy, Marine and Terrestrial Contamination Assessments, Ground Water Monitoring and Evaluation, Geophysical Surveying

RECENT EXPERIENCE

Contamination Assessment, Amoco Facility, Port Everglades, FL, Field Team Leader and Co-Author--Conducted soil sampling survey across a 10-acre site to delineate the extent of contamination from waste oil reclamation and tank bottom discharge practices. One-hundred and six soil samples collected; analyses included volatile organics, priority pollutant metals, and polychlorinated biphenyls. Results used to assist client with the location of future construction plans on the property.

Contamination Assessment, Gulf Oil Company Service Station, Gainesville, FL, Project Manager--Coordinated and conducted field effort to install monitor wells, collect ground water samples, and conduct slug tests to evaluate aquifer characteristics. Analytical results from ground water samples were used to evaluate the extent of contamination and prepare recommendations for remedial action; senior author of final report.

Phase II Contamination Assessment, Camp Lejeune Marine Corps Base, Jacksonville, NC, Field Geologist--Conducted surface geophysical and subsurface geohydrologic investigations as part of the Department of Defense Installation Restoration Program (DOD-IRP). Work included soil-gas surveying; monitor well installation; and surface water, sediment, soil, and ground water sampling in an effort to identify and quantify the source and extent of specific contaminant occurrences.

Contamination Assessment of Ground Water at Martin Marietta Facility, Ocala, FL, Team Member--Produced computer maps of contaminant plume concentrations for volatile organics and various metals which occur in ground water underlying the site.

Phase II Contamination Assessment, Tyndall Air Force Base, Panama City, FL, Project Geologist/Field Team Leader--Performed surface geophysical and subsurface geohydrologic investigations as part of the DOD-IRP. Field work included electromagnetic conductivity surveying; monitor well installation; and surface water, sediment, soil, and ground water sampling in an effort to identify and quantify the source and extent of specific contaminant occurrences.

Contamination Assessment of Ground Water at General Electric Facility, Daytona Beach, FL, Team Member--Co-author of report which utilized soil-gas and ground water chemistry data to delineate the concentration and extent of a hydrogen cyanide contamination plume underlying the site.

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Contamination Assessment at Container Corporation of America Facility, Jacksonville, FL, Project Geologist/Field Team Leader--Work included electromagnetic conductivity surveying; soil sampling; and field and laboratory analysis for polycyclic aromatic hydrocarbons, cyanides, sulfides and volatile organics to delineate the extent of contamination produced by tank bottom discharge from a coal gasification facility previously located at the site. Senior author of final report.

Naturally Occurring Radioactivity in Ground Water Study, Project Manager and Senior Author--Key researcher for a study on the natural occurrence of radionuclides in ground water nationwide. This work, conducted for the U.S. Environmental Protection Agency (EPA); classified the relative risk of occurrence of uranium, radium-226, and radon for each of 3073 counties nationwide.

Contamination Assessment of Ground Water at Stoller Chemical Company Facility, Charleston, SC, Project Geologist/Field Team Leader--Work included aquifer testing to determine geohydrologic parameters at the site and monitor well installation and sampling to determine the extent and concentration of the contaminant plume in the subsurface. Co-authored final report, which was submitted to the S.C. Department of Health and Environmental Control (DHEC).

Wastewater Characterization Study, Savannah River Plant, Aiken, SC, Field Team Leader--Performed wastewater sampling at the Department of Energy's Savannah River Plant F and H area treblers. This project involved the design, installation, and sampling of flow-proportional, integrated samplers at both treblers. Samples were collected, packaged, and shipped off-plant to an analytical lab daily.

Regional Stratigraphic Analysis, Savannah River Plant, Aiken, SC, Project Geologist/Field Team Leader and Senior Author--Developed a data base of subsurface control for the off-plant region adjacent to the Savannah River Plant. The data base included geophysical well logs and auger descriptions from more than 500 locations in five counties of southwestern South Carolina. Constructed four cross-sections delineating the regional subsurface stratigraphy of the region.

Education

M.S.	1984	Geology	University of South Carolina
B.A.	1982	Geology	University of North Carolina at Wilmington

Continuing Education

Defining Formation Characteristics Using Well Logs, given by Schlumberger Educational Services, December, 1985.
REM III (Superfund) Health and Safety Training Seminar, November 1986

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PROFESSIONAL RESUME

DAVE W. KNOTHE
Staff Scientist/Project Manager

SPECIALIZATION

Project Management, Field and Laboratory Operations Management,
Hazardous Waste, Environmental Health/Industrial Hygiene Project
Coordination and Analytical Chemistry

RECENT EXPERIENCE

Confirmation Surveys for the U.S. Air Force Installation/Restoration Program, Task Manager—Analytical support and coordination of Stage I Investigations at Cape Canaveral Air Force Base as part of a task order contract to design and implement IRP Phase II Confirmation Surveys for OEHL. Surface waters, ground waters, soil borings and sediments are being sampled and analyzed for various screening parameters including total organic carbon (TOC), total organic halogens (TOX), phenols, oil and grease, pH, specific conductance, PCBs, and selected metals and pesticides. This study will include a characterization of the extent of contamination, contaminant migration modeling, risk assessment and evaluation of various remedial measures.

Contamination Survey, Longhorn Army Ammunition Plant, Marshall, Texas, Environmental Protection Systems, Inc., Project Chemist--Technical responsibilities included site inventory, analyses of ground water, surface water, soil and sediment sampling for priority pollutants and explosives. A ranking scheme was developed and engineering report with recommendations was prepared.

Contamination Survey, Lone Star Army Ammunition Plant, Texarkana, Texas, Environmental Protection Systems Systems, Inc., Project Chemist--Specific responsibilities included a site inventory, analyses of ground water, surface water, soil and sediment sampling for priority pollutants and explosives.

Water Quality Management Studies of Coffeerville, Reservoir, Tombigbee Waterway, Alabama, Environmental Protection Systems, Inc., Field and Laboratory Support Chemist--Sampling and analysis of water, sediments and organisms from 25+ stations in the Coffeerville Reservoir and the Tombigbee River and preparation of a report on the conditions and the effects of industrial discharges and dewatering at the Coffeerville Dam on water quality.

Monitoring Well/Lysimeter Sampling Program, Redstone Arsenal, Alabama, Environmental Protections Systems, Inc., Project Manager--Duties included development of a ground water monitoring program for quality assessment.

Hazardous Waste Stream Characterization, Pensacola Naval Air Station, Florida, Environmental Protection Systems, Inc. Project Manager--Analytical responsibility involved development of a statistically representative sampling program for wastewater sampling at the Naval Air Station.

D.W. Knothe

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Environmental Audit Program for a Marine Terminal Facility and Land Disposal Operation, Mississippi, Environmental Protection Systems, Inc., Project Manager—Involved with the design and implementation of a comprehensive audit program for an industrial site receiving miscellaneous drilling fluids.

Industrial Hygiene Surveys for Local, State and Federal Governments, Environmental Protection Systems, Inc., Project Manager--Industrial Hygiene Surveys for a wide range of hazardous materials.

EDUCATION

B.S.	1979	Chemistry	University of West Florida
B.S.	1977	Biology	University of West Florida

PROFESSIONAL AFFILIATION

The American Chemical Society
American Industrial Hygiene Association
The American Board of Industrial Hygiene (IHIT)

PUBLICATIONS

Knothe, D. 1982. Rapid Extraction of Explosives from Water for HPLC.
In: Baker - 10 SPE Applications Guide, Vol. 1, J.T. Baker Chemical Co., Phillipsburg, NJ, p. 30.

Sanfilippo, R.D., McGriff, E.C., Knothe, D.W. and Jacobs, L. 1983.
Longhorn Army Ammunition Plant Contamination Survey. Report Thiokol No. 16651 U.S. Army Toxic and Hazardous Agency, Aberdeen Proving Grounds, Maryland.

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03/26/87

DILMA M. HALE, Ph.D.
Senior Associate Scientist

ESE PROFESSIONAL RESUME

SPECIALIZATION

Inorganic Analysis; Atomic Absorption and Stripping Voltammetry,
Organic Residue Analysis, Pesticide Residue and Environmental Fate;
Gas Chromatography, Fluorometry

RECENT EXPERIENCE

Contamination Assessment of Hazardous Sites, Florida Department of Environment Regulation, Laboratory Coordinator--Scheduled sampling, analysis, and data reporting for hazardous sites, including:
(1) Tri-City Oil site, Temple Terrace, Florida,--emergency analysis of soils and water contaminated by spills and leaks from storage tanks; (2) Peak Oil, Inc.,--sampling and analysis to delineate contamination from an oil recycling company; and (3) City of Belleview, Florida--analysis of samples contaminated by a leaking underground storage tank.

Water/Soil/Sludge Process Waste Treatment, Treatment Technology, Laboratory Coordinator--Responsibilities included monitoring project budget and schedule, and data management. Coordinated the total laboratory effort in the analysis and evaluation of lagoon sediments contaminated with munition compounds, including the determination of nitroaromatic compounds (TNT, 2,4-DNT and 2,6-DNT, RDX) and trace metals (Cd, Pb, Cr, Hg) in core sediments and leachates.

Kinetic Studies of 1,1-Dimethylhydrazine (UDMH), USATHAMA, Project Chemist--Investigated the stability and kinetics of the degradation of 1,1-dimethylhydrazine by high performance liquid chromatography (HPLC). Helped prepare final report for Army methods development project for U.S. Army Toxic and Hazardous Materials Agency.

Florida Department of Environmental Regulation, Emergency Overload and Response, Project Manager--Scheduled the sampling, analyses and data reporting for 18 tasks.

Methods of Treatment of Drinking Water, Project Chemist--Study included aeration and adsorption for pesticide removal. Report prepared for the Office of Drinking Water.

RTP Treatability Study, Laboratory Coordinator--Assessed the applicability of treatment processes to pesticide waste streams. Studied the effect of pH on the hydrolysis of prometon, linuron, methamyl, and 2,4-D. Also investigated the effect of chemical oxidants and carried out kinetic studies.

Florida Acid Deposition Study, Project Chemist--Investigated the effects of acid deposition on materials.

Pesticides Best Available Technology, Project Chemist--Prepared summary tables of pesticide and priority pollutant methods, wrote technical sections of major reports, edited and provided technical direction for reports to the U.S. Environmental Protection Agency.

Test Procedures for Pesticides in Effluents, Principal Investigator--Developed methods for the analysis of certain organochlorine and organotin pesticides using gas chromatography and atomic absorption spectrophotometry. Wrote project final report for U.S. Environmental Protection Agency.

Research Associate, University of New Hampshire, 1979 to 1980.

Involved in Anodic stripping voltammetric studies of Cd and Pb; conducted investigations of Cu-fulvic acid interactions, and Pb; investigations of Cu-fulvic acid interactions, and interferences by Ca, by ion-selective electrodes and ASV for University of New Hampshire.

Postdoctoral Research Associate, Carleton University, Ottawa, Canada, 1977 to 1978.

Studies included U(IV)- and U(VI)-organic acid interactions, by dialysis, ultrafiltration and gel filtration chromatography, using fluorometric determination for U; performed analysis of trace metals in a sea-water matrix using graphite furnace atomic absorption spectrometry.

Postdoctoral fellow, Institute of Environmental Science, University of Southern Mississippi, 1976 to 1977.

Investigated the fate of pentachlorophenol and its degradation products by GC and GC-MS. Developed analytical method involving derivatization with diazomethane to form the methyl esters and analysis by gas chromatography.

EDUCATION

Ph.D.	1976	Inorganic Environmental Chemistry	University of South Florida
M.S.	1971	Inorganic Chemistry	University of South Florida
B.A.	1968	Chemistry	College of Notre Dame

ASSOCIATIONS

American Chemical Society
Sigma Xi

PUBLICATIONS

Publications on Inorganic Chemistry, Residue Analysis, Trace Metals, and X-ray Crystallography

WILLIAM COULOMBE, B.S.
Quality Assurance Supervisor

ESE PROFESSIONAL RESUME

SPECIALIZATION

Quality Assurance (QA), Water Quality, Ambient Air Monitoring

RECENT EXPERIENCE

Effluent Study, Chevron U.S.A. Inc., Project Quality Assurance Supervisor--Study conducted at four port terminals in Florida. Responsible for preparation and implementation of the project QA plan.

Confirmation Studies, U.S. NAVY Laboratory Quality Assurance Coordinator--Environmental monitoring to assess contamination at sites in Puerto Rico and Charleston, South Carolina. Responsible for overseeing proficiency testing, coordinating on-site QA/QC inspections, establishing QC procedures, processing control charts, monitoring compliance with the laboratory QA/QC plan, and preparing monthly QA/QC reports.

Pure Compound and Effluent Toxicity Tests, GLP Quality Assurance Unit, Quality Assurance Supervisor--Quality assurance supervisor for aquatic bioassay toxicity tests including static and flow-through tests, acute and chronic. Responsible for auditing tests and review of all final reports.

Detroit River Plume Study, Project Quality Assurance Supervisor--Performed water quality, dye study, bioassay testing for the City of Detroit. Responsible for preparation and implementation of the project QA plan.

Environmental Contamination Assessments and Preconstruction Survey, Project Quality Assurance--Survey performed for the Florida Department of Environment Regulation. Responsible for implementing the QA plan, including field and laboratory audits, and data validation.

Remedial Investigation/Feasibility Study, State of New Jersey, Project Quality Assurance Supervisor--Study conducted in Hudson County New Jersey. Responsible for preparation and implementation of the project QA plan.

Presurvey For Phase II Stage 2 Installation Restoration Program, Project Quality Assurance Supervisor--Environmental monitoring to assess contamination at Tyndall Air Force Base and Panama City, Florida. Responsible for preparation and implementation of the project QA plan.

Contamination Assessment, Lockhaven, Pennsylvania, Project Quality Assurance Supervisor--Environmental monitoring and a hazardous waste site closure study conducted for American Chemical and Color Corporation, Lockhaven, Pennsylvania. Responsible for preparation and implementation of the project QA plan.

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10/28/86

W. Coulombe, B.S.

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Analytical Services for a Pilot-Plant Testing Program to Evaluate the Effectiveness of Activated Carbon Adsorption Technology, Project Quality Assurance Supervisor—Analyses were performed for the U.S. Environmental Protection Agency using a mobile laboratory at the site of the pilot plant. Responsible for implementing the QA plan, conducting a field audit at the mobile laboratory, and data validation.

Pilot Study to Assess the Applicability of Treatment Processes to Pesticide Waste Streams, Project Quality Assurance Supervisor—Research and development study conducted for the U.S. Environmental Protection Agency. Responsible for implementing the project QA plan, conducting laboratory audits and data validation.

Determination of Organic Compounds Contributions to COD of Waste Effluent, Project Quality Assurance Supervisor—Research and development study on effluent from a pharmaceutical plant conducted for the U.S. Environmental Protection Agency. Responsible for implementing the project QA plan, conducting laboratory audits, and data validation.

Remedial Investigation/Feasibility Study, Confidential Client, Project Quality Assurance Supervisor—Surveys performed for the Florida Department of Environmental Regulation. Responsible for implementing the QA plan, including field and laboratory audits and data validation.

Landfill Environmental Monitoring Program, Project Quality Assurance Supervisor—Ground water and soil monitoring and analysis performed for the Alachua County Department of Environmental Services, Gainesville, Florida. Responsible for preparation and implementation of the project QA plan.

Contamination Assessment, Florida Power Corporation, Project Quality Assurance Supervisor—Study conducted in St. Petersburg, Florida. Responsible for preparation and implementation of the project QA plan.

EDUCATION

B.S.	1975	Zoology	University of Florida

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KAREN T. BROWN, B.S.
Associate Scientist
Quality Assurance

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PROFESSIONAL RESUME

SPECIALIZATION

Quality Assurance, Laboratory Analysis, Analytical Coordination,
Data Handling, Trace Metals Analysis, Gas Chromatography,
Atomic/Emission Spectroscopy

RECENT EXPERIENCE

Specific experience includes data validation, QA audits, writing QA plans and reports; one year working experience in gas chromatography; atomic emission spectroscopy, with two years work experience in ICAPAES and DCPAES; and one year work experience in furnace and flame AA.

Associate Scientist, Quality Assurance (QA), (August 1986 to Present)--Responsible for data validation of many types of chemical and biological analyses; preparation of project QA plans and reports. Ultimate responsibility is to assure ESE data is of the highest quality.

Gate Lands, Project QA Supervisor--Feasibility study conducted in Jacksonville, Florida. Responsible for preparation and implementation of the project QA plan.

Installation Restoration Project, Phase II, Wake Island Air Field, Project QA Supervisor--Responsible for preparation and implementation of project QA plan.

Asbestos QA Plan--Responsible for preparation of ESE's generic asbestos QA plan.

Confirmation Studies, U.S. Navy--Environmental monitoring to assess contamination at sites in Puerto Rico and Charleston, South Carolina. Responsible for processing control charts, monitoring compliance with the laboratory QA/QC plan, and preparing monthly QA/QC reports.

Florida Acid Deposition Study, QA Supervisor--Responsible for introducing performance evaluation samples for field and lab analysts; and reporting results.

Acute Toxicity Studies, Chevron U.S.A., Inc., Project Quality Assurance Supervisor--Responsible for implementation of the project QA plan.

Toxicology QA Plan-- Responsible for updating ESE's generic toxicology QA plan.

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K.T. BROWN, B.S.

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Associate Scientist, Group Leader, Atomic Spectroscopy (January 1985 to August 1986)—Responsible for scheduling metals analysis and supervising five laboratory technicians. Knowledgeable in trace element analysis and data reduction of a wide range of sample matrices by AA and ICAP spectrophotometric techniques.

Rocky Mountain Arsenal, Environmental Program--Responsible for scheduling metals analysis, data evaluation, and analysis of samples by AA and ICAP Spectrophotometric techniques.

Florida/Maryland Acid Deposition Study—Responsible for trace metals portion of multi-year study investigating acid rain. Analyses performed using ICAPES and Flame Atomic Emission Spectroscopy.

St. Johns River Power Park Bioassay Test Program—Responsible for scheduling metals analysis, data evaluation, and analysis of samples by AA and ICAP spectrophotometric techniques. Developed oyster tissue digestion procedure for the analysis of copper.

Sharpe Army Depot Environmental Program—Determined quantitatively As and Se by Furnace AA.

Westvaco-St. Johns Department, Lake City, Florida, Quality Control Chemist (February 1984 to January 1985)—Supervised QC Lab. Responsible for quality of raw materials and finished resin. Analyzed aliphatic and aromatic compounds by GC. Trained laboratory testers and technicians for routine physical testing of samples. Held monthly QA meetings.

Florida Citrus Commission, Gainesville, Florida, Student Lab Technician (May 1981 to August 1983)—Research project objective was to establish a criterion for distinguishing the geographical origin of orange juice by its mineral content. Responsible for analysis of orange juice for its trace metal content by DCPAES, AA, and ICAPAES. Also, responsible for data reduction and sample preparation.

EDUCATION

B.S.	1983	Chemistry	University of Florida

D-MR1AF.2/KTB.2
01/16/87

PATRICK A. RHOADS, B.A.
Chief Technician

ESE PROFESSIONAL RESUME

SPECIALIZATION

Aquatic Toxicity Testing, Aquatic and Terrestrial Ecology, Hazardous Waste Field Sampling--Ground Water, Soils, Sediments, Industrial Wastewater, and Storm Water Runoff

RECENT EXPERIENCE

Omnivest Remedial Study, Project Team Member--Involved drilling survey effort to determine the extent of contamination by unknown chemicals throughout a closed landfill. Responsible for field preparation, core sampling, sample preparation and shipping, and decontamination of equipment and personnel.

Phoenix Nike Site Pump Test, USATHAMA, Project Team Member--Work consisted of pump test to determine hydrogeology of project area to estimate extent of possible contamination onsite and offsite. Responsible for field preparation, monitor well sampling, sample shipment, and around-the-clock equipment monitoring.

Sampling Effort, Madison County, Florida, Project Team Member--Team member of a sampling survey of drums containing unknown chemicals found at the Madison County landfill. Responsible for field preparation, sampling, and decontamination.

USATHAMA Demonstration of Air Stripping Technology, Project Team Member--Pilot demonstration of air stripping technology for the treatment of ground water contaminated with trichloroethylene. Responsible for breakdown, repair, and maintenance of the air stripper system. Loading, transporting, and delivery of same to Sharpe Army Depot, CA. Set up and test the system and sampling during the pilot demonstration.

Organic Chemical Industry Study for EPA/EGD, Project Team Member--Development of BAT (1984) Effluent Guidelines Limitations for the organic chemicals industry. Responsible for field preparation, industrial wastewater sampling, sample preservation and shipping.

Ardmore Farms Remedial Study, Project Team Member--Survey effort to determine the extent of oil contamination in the sediments of a storm water runoff pond. Responsible for field preparation, surface water, and sediment core sampling and sample preparation.

NAVFAC Camp Le Jeune Confirmation Study, Project Team Member--Confirmation study of possible ground water contamination at Camp Le Jeune M.C.B., N.C. Responsible for ground water, soil, surface water, and sediment sampling, sample preparation and shipping.

D-MR1MS.2/PAR-HAZ.1
11/01/85

P.A. RHOADS
Page 2

Storm Water Runoff Study, Confidential Client. Project Team Member--
Confirmation study of contamination in storm water runoff for a
confidential client in Gainesville, Florida. Responsible for storm
water sampling and sample preparation.

Pharmaceutical Chemical Industry Study for EPA/EGD, Project Team
Member--Development work for BCT. Effluent Guidelines Limitations
for the pharmaceutical industry. Responsible for field preparation,
industrial wastewater sampling, sample preservation, and shipping.

EDUCATION

BA	1975	Zoology	University of South Florida
Graduate Studies		Limnology	University of Florida
Hazardous Training Course			ESE

D-MR1MS.2/PAR.2
11/01/85

JOHN R. MAXWELL, B.A.
Ecologist

ESE PROFESSIONAL RESUME

SPECIALIZATION

Biota Sampling for Hazardous Waste Assessment,
Wildlife Resource Inventories, Vegetation Wildlife Habitat Mapping,
Computer-Oriented Data Reduction, Photographic
Documentation and Interpretation

RECENT EXPERIENCE

Field Team Leader, Aerial Photography Review and Biological Sample Collection--Toxic chemical deactivation project at Alabama Army Ammunition Plant, conducted for USATHAMA. Responsible for collection of mammalian, avian and vegetation samples for chemical analysis. Also collected soil, sediment, and ground and surface water samples.

Army Installation Restoration Project, West Virginia Ordnance Works, Team Member--Collected soil, stream and lake sediment, and water samples. Performed lab analysis for nitroaromatic compounds in soils.

Two Proposed Phosphate Mines in South Florida, Field Team Leader--Collected mammal and vegetation samples for laboratory analysis of radiation and Florida levels.

Ecological Survey of Proposed Power Plant, Site in Maryland, Field Team Leader--Conducted small and medium mammal trapping program to determine population estimates.

Aerial Photography Review, Aerial Survey, Small Mammal Trapping, and Endangered Species Survey--Surveys were conducted for siting a 300-MW coal-fired power plant in southern New Jersey.

EDUCATION

B.A.	1975	Biology	Trenton State College

D-MR1MS.2/JRM-MIL-HZ.1
09/24/85

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APPENDIX B

ANALYTICAL DATA FOR STATE OF FLORIDA PRIMARY AND SECONDARY
DRINKING WATER STANDARDS FOR TYNDALL AFB SUPPLY WELLS

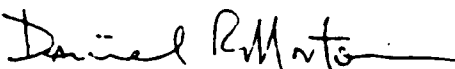
USAF HOSPITAL TYNDALL (TAC)

Tyndall Air Force Base, Florida

DRINKING WATER INVENTORY

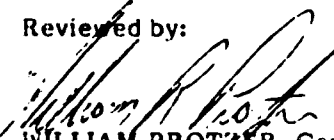
JANUARY 1984

Prepared by:



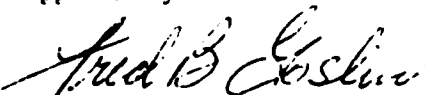
DANIEL R. MORTON, 1LT, USAF BSC
Chief, Bioenvironmental Engineering

Reviewed by:



WILLIAM PROTZER, Capt, USAF, MC, FS
Chief, Aeromedical Services

Approved by:



FREDERICK GOSLIN, Colonel, USAF, MC, FS
Commander

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DRINKING WATER ANALYSES RESULTS

SUBSTANCE & EPA STANDARD FOR PUBLIC- COMMUNITY WATER SYSTEMS	BASE WATER SUPPLY - BAY COUNTY	WELL #1 AFESC Pavements Bldg 9705	WELL #2 Communications Bldg 722	WELL #2A Drone Launch Bldg 8523
Free Available Chlorine ^{0.2} mg/L	0.5mg/L	0.6mg/L		0.8mg/L
Fluoride 1.8mg/L	regulated ^{DEMWW} ±	3.4, 3.6, 3.95, 3.8*		1.35, 1.4, 1.85, 1.6*
pH 6.5 - 8.5	7.6	7.7		7.5
Coliform Bacteria <4/100ml	<1/100ml	<1/100ml		<1/100ml
Arsenic 0.5mg/L	<10µg/L	<10µg/L		<10µg/L
Barium 1.0mg/L	<1000µg/L	<200µg/L		<1000µg/L
Cadmium 0.01mg/L	<10µg/L	<10µg/L		<10µg/L
Chromium 0.05mg/L	<50µg/L	<50µg/L		<50µg/L
Lead 0.05mg/L	<20µg/L	<20µg/L		<20µg/L
Mercury 0.002mg/L	<2µg/L	<2µg/L		<2µg/L
Nitrate (N) 10.0mg/L	<0.1mg/L	<0.1mg/L		<0.1mg/L
Selenium 0.01mg/L	<10µg/L	<10µg/L		<10µg/L
Silver 0.05mg/L	<10µg/L	<10µg/L		<10µg/L
Endrin 0.0002mg/L	<0.02µg/L	<0.2µg/L		<0.02µg/L
Lindane 0.004mg/L	<0.01µg/L	<0.1µg/L		<0.01µg/L
Methoxychlor 0.1mg/L	<0.2µg/L	<0.2µg/L		<0.20µg/L
Toxaphene 0.005mg/L	<1.0µg/L	<1.0µg/L		<1.0µg/L
2, 4-D 0.1mg/L	<0.02µg/L	<0.06µg/L		<0.06µg/L
2, 4, 5,-TP 0.01mg/L	<0.06µg/L	<0.06µg/L		<0.06µg/L
Total Trihalomethanes ^{0.1} mg/L	<100µg/L	N/A		N/A
Turbidity 1TU	<1 TU	<1 TU		<1 TU
Radium 226 & 228 5pCi/L	<5pCi/L	<5pCi/L		<5pCi/L
Gross Alpha 15pCi/L	<1pCi/L	<1pCi/L		<1pCi/L
Chloride 250mg/L	2.2mg/L	<20mg/L		20mg/L
Color 15 color units	7 units	<5 units		10 units
Copper 1mg/L	<20µg/L	<20µg/L		<20µg/L
Corrosivity none	+2.26LI	-0.67LI		-0.83LI
Foaming Agents 0.5mg/L	<.1mg/L	<.1mg/L		<.1mg/L
Iron 0.3mg/L	<0.1mg/L	0.2mg/L		0.166mg/L
Manganese 0.05mg/L	<50µg/L	<50µg/L		<50µg/L
Odor #3 Threshold Odor	None Detected	None		None
Sulfate 250mg/L	18mg/L	16mg/L		1mg/L
TDS 500mg/L	87mg/L	257mg/L		239mg/L
Zinc 5mg/L	233µg/L	<50µg/L		<50µg/L
Sodium 160mg/L**	4.8mg/L	34.4mg/L		12.3mg/L

±Ambient Fluoride from Bay Co. supplier - level maintained 0.9-1.2 (by CE) in base supply lines

*Indicates Repeat Samples

**State Standard - Primary

B-3

Attachment 5

DRINKING WATER ANALYSES RESULTS

Page 2 of 5

SUBSTANCE & EPA STANDARD FOR PUBLIC- COMMUNITY WATER SYSTEMS	WELL #3 DRONE CONTROL -CLOSED- Bldg 8510	WELL #4 COMMISSARY STORAGE-CLOSED- Bldg 1502	WELL #4A AMMO STORAGE Bldg 7001	WELL #5 2021 COMM Bldg 652
Free Available Chlorine 0.2 mg/L			0.2mg/L	0.8mg/L
Fluoride 1.8mg/L			2.6, 3.0, 2.8, 2.75 *	1.4mg/L
pH 6.5 - 8.5			7.7	6.9
Coliform Bacteria <4/100ml			<1/100ml	<1/100ml
Arsenic 0.05mg/L			<10µg/L	<10µg/L
Barium 1.0mg/L			<1000µg/L	<200µg/L
Cadmium 0.01mg/L			<10µg/L	<10µg/L
Chromium 0.05mg/L			<50µg/L	<50µg/L
Lead 0.05mg/L			<20µg/L	<20µg/L
Mercury 0.002mg/L			<2µg/L	<1µg/L
Nitrate (N) 10.0mg/L			0.3mg/L	<0.1mg/L
Selenium 0.01mg/L			<10µg/L	<10µg/L
Silver 0.05mg/L			<10µg/L	<10µg/L
Endrin 0.0002mg/L			<0.02µg/L	<0.02µg/L
Lindane 0.004mg/L			<0.01µg/L	<0.01µg/L
Methoxychlor 0.1mg/L			<0.20µg/L	<0.20µg/L
Toxaphene 0.005mg/L			<1.0µg/L	<1.0µg/L
2, 4-D 0.1mg/L			<0.06µg/L	<0.06µg/L
2, 4, 5,-TP 0.01mg/L			<0.06µg/L	<0.06µg/L
Total Trihalomethanes 0.1 mg/L			N/A	N/A
Turbidity 1 TU			3.3 TU	<1 TU
Radium 226 & 228 5pCi/L			<5pCi/L	<5pCi/L
Gross Alpha 15pCi/L			3 ± 2pCi/L	2 ± 1pCi/L
Chloride 250mg/L			100mg/L	120mg/L
Color 15 color units			<5 units	10 units
Copper 1mg/L			<20µg/L	23µg/L
Corrosivity None			-0.5LI	-0.45LI
Foaming Agents 0.5mg/L			<1mg/L	0.45mg/L
Iron 0.3mg/L			1.766mg/L	0.487/0.543 *
Manganese 0.05mg/L			<50µg/L	<50µg/L
Odor #3 Threshold Odor			None	None
Sulfate 250mg/L			89mg/L	22mg/L
TDS 500mg/L			636mg/L	444mg/L
Zinc 5mg/L			<0.50mg/L	<50µg/L
Sodium 160mg/L			143.2mg/L	27.7mg/L

*Indicates Repeat Samples

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Attachment 5

DRINKING WATER ANALYSES RESULTS

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SUBSTANCE & EPA STANDARD FOR PUBLIC- COMMUNITY WATER SYSTEMS	WELL #5A SALVAGE @ Bldg 6033	WELL #6 WHERRY HOUSING Bldg 2675	WELL #6A POL AREA @ Bldg 6055	WELL #7 FORMER COLD STORAGE Bldg 250
Free Available Chlorine ^{0.2} mg/L	0	0	2.7mg/L	0
Fluoride 1.8mg/L	1.8mg/L	1.4mg/L	0.4mg/L	7mg/L #
pH 6.5 - 8.5	7.8	8.2	6.8	7.1
Coliform Bacteria <4/100ml	<1/100ml	<1/100ml	<1/100ml	<1/100ml
Arsenic 0.05mg/L	<10µg/L	<10µg/L	<10µg/L	<10µg/L
Barium 1.0mg/L	<1000µg/L	<200µg/L	<1000µg/L	<200µg/L
Cadmium 0.01mg/L	<10µg/L	<10µg/L	<10µg/L	<10µg/L
Chromium 0.05mg/L	<50µg/L	<50µg/L	<50µg/L	<50µg/L
Lead 0.05mg/L	<20µg/L	<20µg/L	<20µg/L	<20µg/L
Mercury 0.002mg/L	<2µg/L	<1µg/L	<2µg/L	<1µg/L
Nitrate (N) 10.0mg/L	<0.1mg/L	<0.1mg/L	<0.1mg/L	<0.1mg/L
Selenium 0.01mg/L	<10µg/L	<10µg/L	<10µg/L	0.01µg/L
Silver 0.05mg/L	<10µg/L	<10µg/L	<10µg/L	0.05µg/L
Endrin 0.0002mg/L	<0.02µg/L	<0.02µg/L	<0.02µg/L	<0.02µg/L
Lindane 0.004mg/L	<0.01µg/L	<0.01µg/L	<0.01µg/L	<0.01µg/L
Methoxychlor 0.1mg/L	<0.20µg/L	<0.20µg/L	<0.20µg/L	<0.20µg/L
Toxaphene 0.005mg/L	<1.0µg/L	<1.0µg/L	<1.0µg/L	<1.0µg/L
2, 4-D 0.1mg/L	<0.06µg/L	<0.06µg/L	<0.06µg/L	<0.06µg/L
2, 4, 5,-TP 0.01mg/L	<0.06µg/L	<0.06µg/L	<0.06µg/L	<0.06µg/L
Total Trihalomethanes ^{0.1} µg/L	N/A	N/A	N/A	N/A
Turbidity 1 TU	<1 TU	<1 TU	4 TU	1 TU
Radium 226 & 228 5pCi/L	<5pCi/L	<5pCi/L	<5pCi/L	<5pCi/L
Gross Alpha 15pCi/L	2 ± 1.0pCi/L	2 ± 1.0pCi/L	1 ± 1.0pCi/L	2 ± 1.0pCi/L
Chloride 250mg/L	104mg/L	120mg/L	20mg/L	184mg/L
Color 15 color units	5 units	10 units	10 units	<5 units
Copper 1mg/L	<20µg/L	<20µg/L	<20µg/L	<20µg/L
Corrosivity None	+78LI	-0.5LI	-0.86LI	-1.30LI
Foaming Agents 0.5mg/L	<.1mg/L	<.1mg/L	<.1mg/L	<.1mg/L
Iron 0.3mg/L	0.586mg/L	0.396mg/L	1.608mg/L	<0.1mg/L
Manganese 0.05mg/L	<50µg/L	<50µg/L	<50µg/L	<50µg/L
Odor #3 Threshold Odor	None	None	None	None
Sulfate 250mg/L	29mg/L	30mg/L	1mg/L	83mg/L
TDS 500mg/L	401mg/L	480mg/L	253mg/L	624mg/L
Zinc 5mg/L	175µg/L	<50µg/L	87µg/L	30.1µg/L
Sodium 160mg/L	81.6mg/L	38.2mg/L	49.3mg/L	93.2mg/L

#One Sample Only - Pump Failure has prevented follow-up re-sampling

@Inactive as of 30 January 1984 according to DEMWW

DRINKING WATER ANALYSES RESULTS

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SUBSTANCE & EPA STANDARD FOR PUBLIC- COMMUNITY WATER SYSTEMS	WELL #7A BOY SCOUT AREA Bldg 3003	WELL #8 GOLF COURSE Bldg 3029	WELL #9 DRONE MAINTENANCE Bldg 9308	WELL #10 POL AREA Bldg 6065
Free Available Chlorine ^{0.2} mg/L	0	1.0mg/L	0.2mg/L	0.2mg/L
Fluoride 1.8mg/L	0.7mg/L	0.9mg/L	1.6mg/L	1.2mg/L
pH 6.5 - 8.5	7.7 units	7.7	7.5	7.5
Coliform Bacteria <4/100ml	<1/100ml	<1/100ml	<1/100ml	<1/100ml
Arsenic 0.05mg/L	<10µg/L	<10µg/L	<10µg/L	<10µg/L
Barium 1.0mg/L	<200µg/L	<1000µg/L	<1000µg/L	<200µg/L
Cadmium 0.01mg/L	<10µg/L	<10µg/L	<10µg/L	<10µg/L
Chromium 0.05mg/L	<50µg/L	<50µg/L	<50µg/L	<10µg/L
Lead 0.05mg/L	<20µg/L	<20µg/L	<20µg/L	<20µg/L
Mercury 0.002mg/L	<1µg/L	<2µg/L	<2µg/L	<1µg/L
Nitrate (N) 10.0mg/L	<0.1mg/L	<0.1mg/L	<0.1mg/L	<0.1mg/L
Selenium 0.01mg/L	<10µg/L	<10µg/L	<10µg/L	<10µg/L
Silver 0.05mg/L	<10µg/L	<10µg/L	<10µg/L	<10µg/L
Endrin 0.0002mg/L	<.02µg/L	<0.02µg/L	<0.02µg/L	<0.02µg/L
Lindane 0.004mg/L	<.01µg/L	<0.01µg/L	<0.01µg/L	<0.01µg/L
Methoxychlor 0.1mg/L	<.20µg/L	<0.20µg/L	<0.20µg/L	<0.20µg/L
Toxaphene 0.005mg/L	<1.0µg/L	<1.0µg/L	<1.0µg/L	<1.0µg/L
2, 4-D 0.1mg/L	<0.06µg/L	<0.06µg/L	<0.06µg/L	<0.06µg/L
2, 4, 5,-TP 0.01mg/L	<0.06µg/L	<0.06µg/L	<0.06µg/L	<0.06µg/L
Total Trinalomethanes ^{0.1} µg/L	N/A	N/A	N/A	N/A
Turbidity 1 TU	<1 TU	1 TU	1 TU	2 TU
Radium 226 & 228 5pCi/L	<5pCi/L	<5pCi/L	<5pCi/L	<5pCi/L
Gross Alpha 15pCi/L	3 ± 1pCi/L	2 ± 2pCi/L	3 ± 2pCi/L	4 ± 2pCi/L
Chloride 250mg/L	48mg/L	140mg/L	184mg/L	112mg/L
Color 15 color units	10 units	<5 units	<5 units	5 units
Copper 1mg/L	<20µg/L	<20µg/L	<20µg/L	<20µg/L
Corrosivity None	-0.5LI	-0.4LI	-0.83LI	-0.63LI
Foaming Agents 0.5mg/L	<0.1mg/L	0.1mg/L	<0.1mg/L	<0.1mg/L
Iron 0.3mg/L	0.421mg/L	0.187mg/L	0.296mg/L	0.224mg/L
Manganese 0.05mg/L	<50µg/L	<50µg/L	<50µg/L	<50µg/L
Odor #3 Threshold Odor	None	None	None	None
Sulfate 250mg/L	38mg/L	68mg/L	40mg/L	32mg/L
TDS 500mg/L	221mg/L	185mg/L	363mg/L	480mg/L
Zinc 5mg/L	157µg/L	<50µg/L	<50µg/L	<50µg/L
Sodium 100mg/L	35.4mg/L	72.6mg/L	106.2mg/L	73.2mg/L

DRINKING WATER ANALYSES RESULTS

Page 5 of 5

SUBSTANCE & EPA STANDARD FOR PUBLIC- COMMUNITY WATER SYSTEMS	WELL #11 ALERT FACILITY Bldg 106	WELL #12 PRIME BEEF Bldg 93XX		
Free Available Chlorine ^{0.2} mg/L	0.8mg/L	0		
Fluoride 1.8mg/L	2.4mg/L	2.8mg/L		
pH 6.5 - 8.5	7.6	7.8		
Coliform Bacteria <4/100ml	<1/100ml	<1/100ml		
Arsenic 0.05mg/L	<10µg/L	<10µg/L		
Barium 1.0mg/L	<1000µg/L	<500µg/L		
Cadmium 0.01mg/L	<10µg/L	<10µg/L		
Chromium 0.05mg/L	<50µg/L	<10µg/L		
Lead 0.05mg/L	<20µg/L	<20µg/L		
Mercury 0.002mg/L	<2µg/L	<2µg/L		
Nitrate (N) 10.0mg/L	<0.1mg/L	<0.1mg/L		
Selenium 0.01mg/L	<10µg/L	<10µg/L		
Silver 0.05mg/L	<10µg/L	<10µg/L		
Endrin 0.0002mg/L	<0.02µg/L	<0.02µg/L		
Lindane 0.004mg/L	<0.01µg/L	<0.01µg/L		
Methoxychlor 0.1mg/L	<0.20µg/L	<0.20µg/L		
Toxaphene 0.005mg/L	<1.0µg/L	<1.0µg/L		
2, 4-D 0.1mg/L	<0.06µg/L	<0.06µg/L		
2, 4, 5,-TP 0.01mg/L	<0.06µg/L	<0.06µg/L		
Total Trihalomethanes ^{0.1} mg/L	N/A	N/A		
Turbidity 1 TU	1 TU	8 TU		
Radium 226 & 228 5pCi/L	<5pCi/L	<5pCi/L		
Gross Alpha 15pCi/L	4 ± 2pCi/L	<1pCi/L		
Chloride 250mg/L	259mg/L	48mg/L		
Color 15 color units	10 units	5 units		
Copper 1mg/L	47µg/L	<20µg/L		
Corrosivity None	-0.1LI	#		
Foaming Agents 0.5mg/L	<0.1mg/L	#		
Iron 0.3mg/L	0.62mg/L	0.449mg/L		
Manganese 0.05mg/L	<50µg/L	<50µg/L		
Odor #3 Threshold Odor	None	None		
Sulfate 250mg/L	36mg/L	5mg/L		
TDS 500mg/L	879mg/L	304mg/L		
Zinc 5mg/L	<50µg/L	77µg/L		
Sodium 160mg/L	221mg/L	37mg/L		

Pump broken at this time; unable to collect samples. 9 December 1983

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APPENDIX C
SCOPE OF WORK AS OUTLINED BY OEHL

16 APR 1986

INSTALLATION RESTORATION PROGRAM
PHASE II - QUANTIFICATION (STAGE 2)
TYNDALL AFB, FLORIDA

I. DESCRIPTION OF WORK

The overall objective of the Phase II investigation is to define the magnitude, extent, direction and rate of movement of identified contaminants. A series of staged field investigations may be required to meet this objective. The contractor shall recommend any additional investigations required beyond this stage (Stage 2), including an estimate of costs.

The purpose of this task is to undertake a field investigation at Tyndall AFB FL (1) to determine the magnitude of contamination and the potential for migration of contaminants in the various environmental media; and (2) to identify potential environmental consequences and health risks of migrating pollutants based on State or Federal standards for those contaminants.

The Phase I and Phase II Stage 1 IRP Reports (mailed under separate cover) incorporated the background, description and previous work for the sites in this task, (except Zone 11, a new site). To accomplish this survey effort, the contractor shall take the following actions:

A. General

1. Well and Boring Installation

a. All groundwater monitoring wells shall be in accordance with the U.S. EPA Publication 330/9-S1-002, NEIC Manual for Groundwater/Subsurface Investigations at Hazardous Waste Sites for monitoring well installation.

b. All drilling, development, purging, sampling and analytical methods must conform to State requirements. The contractor shall notify the state regulatory personnel as to the start date of field operations (drilling and sampling). This notification must be made as far in advance as possible.

c. Wells shall be of sufficient depth to collect samples representative of aquifer quality and to intercept contaminants if they are present. Wells drilled to intercept floating contaminants shall be screened approximately two feet above the groundwater elevation, where possible.

d. Wells shall be installed upgradient and/or downgradient of sites, as addressed in Item IB. If groundwater gradients are not clearly known at any site, sufficient 2 inch piezometers shall be used to determine the gradient, before monitoring wells are emplaced.

e. The contractor shall monitor all drilling operations with an OVA or similar instrument to identify potential generation of hazardous and/or toxic materials. In addition, the contractor shall monitor drill cuttings for discoloration and odor. During drilling operations, if soil cuttings are suspected to be hazardous (based on OVA measurements, odors, or discoloration), the contractor shall place them in new, contractor-supplied containers and test

them as specified in IA1g. All investigation-derived hazardous wastes, including any contaminated well development/purging water, shall be containerized for disposal by Tyndall AFB personnel. Results of this monitoring shall be included in the drilling logs.

f. Monitoring wells shall be installed using the following specifications:

(1) All new wells and borings shall be drilled using appropriate techniques. The contractor's on-site geologist shall select the drilling technique based on local geology and shall prepare drilling logs for all wells installed. Hollow-stem auger shall be used where applicable.

(2) Each well shall be constructed of 4-inch diameter Schedule 40 PVC casing except where otherwise specified. Each well shall be provided with a minimum of 10 feet of Schedule 40 mill slot screen the same diameter as the casing. Screens shall be installed to intercept the groundwater surface, with approximately two feet of screen above the water level where possible. Flush-joint threaded fittings shall be used exclusively (no glued fittings). Screens shall be capped at the bottom. The exact length of screen and slot size of screen shall be determined by the contractor's on-site geologist.

(3) Each well shall be sand packed with 8-12 mesh silica from the bottom of the well to the top of the screen. A bentonite seal, 1 foot minimum, shall be emplaced above the sand pack. Type I Portland cement grout shall be emplaced from the top of the bentonite to the ground surface.

(4) The well casing shall be cut off to provide a two- to three-foot stick-up, and a solid cap installed on the casing. A steel guard pipe four feet long shall be placed over the exposed casing and seated in the cement. A locking lid with lock shall be installed on the guard pipe. Steel guard posts, three-inch diameter and six feet long, shall be installed at three points around the well head. Casings shall be provided with vent/drain holes. A concrete pad shall be placed around each well and shall be sloped to drain away from the casing.

(5) Each well installed in a traffic area or any other area specified by the Tyndall AFB Point of Contact (POC) shall be installed with a flush completion. The PVC casing must be cut off below ground surface, a locking cap with lock provided, and a flat cover installed over the well head. No guard posts shall be installed around flush-completion wells.

(6) Each well shall be developed as soon as practical after completion by airlift, pumping, or bailing until the discharge water is clear and free of sediment to the fullest extent possible.

(7) The drilling rig and tools shall receive thorough initial cleaning and be decontaminated after each borehole. As a minimum, drill bits shall be steam cleaned, washed with clean water, and allowed to dry after each borehole is installed. Drilling shall proceed from the "least" to the "most" contaminated areas, if possible.

g. All cuttings shall be removed and the general area cleaned following the completion of each well and boring. Only those drill cuttings suspected as being a hazardous waste (based on discoloration, odor, or organic vapor detection instrument) shall be properly containerized (according to local civil engineering office requirements) by the contractor for eventual government disposal. The suspected hazardous waste shall be tested by the contractor for EP Toxicity. A maximum of ten EP Toxicity tests shall be performed. The contractor is not responsible for ultimate disposal of the drill cuttings. Disposal will be conducted by base personnel.

h. All wells shall be surveyed after installation is complete. Elevations shall be determined to the nearest 0.01 foot by surveying from the nearest USCGS or USGS benchmark. Horizontal location shall be determined to an accuracy of 1.0 foot. This information shall be recorded on the site maps.

i. Any borehole not completed as a monitoring well shall be abandoned by grouting from bottom to top with bentonite-cement grout. The contractor shall also evaluate all monitoring wells installed in IRP Phase II Stage 1 at Tyndall AFB and recommend the well abandonment technique to be used as each well is abandoned in the future. The abandonment of completed monitoring wells is not a part of this study.

j. The contractor shall install a maximum of 17 wells. Total footage shall not exceed 300 linear feet (including screens).

k. The exact location and number of monitor wells for each site shall be determined in the field by the contractor in consultation with the USAFOEHL and Tyndall AFB POCs. The approximate locations and recommended number of wells for sites under investigation are given in the site specific sections of the task.

2. Sampling, analysis and data collection shall be conducted as follows:

a. Water levels shall be measured at all monitoring wells as feet below the ground surface or below the top of casing elevation to the nearest 0.01 feet. Report in terms of mean sea level. Measure static water levels in wells prior to sampling at time of well development.

b. Wells shall be purged prior to sampling. Purging will be complete when three well volumes of water have been displaced or when the pH, temperature, specific conductance, color, and odor of the discharge are noted to stabilize. Conduct purging operations using a submersible pump where possible. Conduct all sampling using a PVC bailer. Any deviation from these procedures must be reported and explained in the monthly, draft and final reports.

T. C. Flow

c. Soil samples shall be obtained from hollow-stem drilling operations through the use of split-spoon samplers. Samples shall be collected every five feet for visual classification.

d. Surface water/sediment samples are specified at several sites. One surface water sample and one sediment sample shall be obtained at each sample location specified. Samples shall be obtained so as to not cause cross-contamination; obtain downstream samples first, and obtain the water sample at each location before the sediment sample.

e. All sampling equipment, including components of sampling interface, shall be decontaminated prior to use, between samples, and between sampling locations to avoid cross-contamination. Sampling equipment and interface shall be thoroughly washed with a laboratory-grade detergent followed by clean water, solvent (methanol) and distilled water rinses. Sufficient time shall be allowed for the solvent to evaporate and the equipment to dry completely. The monofilament line or steel wire used to lower bailers into the well shall be dedicated to each well or discarded after each use. The calibrated water level indicator for measuring well volume and fluid elevation must be decontaminated before use in each well.

f. Locations where surface water or sediment samples are taken, or where soil exploratory borings are drilled shall be marked with a permanent marker, and the location marked on a project map of the site.

g. All water samples collected shall be analyzed on site by the contractor for pH, temperature, and specific conductance. Sampling, maximum holding time, and preservation of samples shall strictly comply with the following references: Standard Methods for the Examination of Water and Wastewater, 15th Ed. (1980), pp. 35-42; ASTM, Section 11, Water and Environmental Technology; Methods for Organic Chemical Analysis of Municipal Waters and Wastes, EPA Manual 600/4-82-057; and Methods for Chemical Analysis of Waters and Wastes, EPA Manual 600/4-79-020, pp. xiii to xix (1983). All chemical analyses (water and solid) shall meet the required limits of detection for the applicable EPA method identified in Attachment 1. Summarize sampling methods used, detection levels, and holding times in a table included in the Appendix of the draft and final reports.

h. The contractor shall split all water and soil samples. One set of samples shall be analyzed by the contractor and the other set of samples shall be delivered immediately (the same collection day) to the Tyndall AFB POC. The Tyndall POC will select 10% of the split samples for subsequent shipment and analysis and deliver them to the contractor within 24 hours of receipt. The contractor shall supply all packing and shipping materials for the Tyndall POC's use in packaging the split samples. The contractor shall accept from the Tyndall POC the packaged samples for immediate shipment (within 24 hours) through overnight delivery to:

USAFCEHL/SA
Bldg 140
Brooks AFB TX 78237-5501

The samples sent to the USAFCEHL/SA shall be accompanied by the following information:

- (1) Purpose of sample (analyte)
- (2) Installation name (base)
- (3) Sample number (on containers)
- (4) Source/location of sample
- (5) Contract task numbers and title of project
- (6) Method of collection (bailer, suction pump, air-lift pump, etc.)
- (7) Volumes removed before sample taken
- (8) Special conditions (use of surrogate standard, special nonstandard preservations, etc.)
- (9) Preservatives used

Forward this information with each sample by properly completing an AF Form 2752 (copy of form and instruction on proper completion mailed under separate cover). In addition, copies of field logs documenting sample collection should accompany the samples.

Maintain chain-of-custody records for all samples, field blanks, and quality control duplicates.

i. The contractor shall collect and analyze an additional 10% of all samples, for each parameter, for field quality control purposes, as indicated in Attachment 1. Include internal quality control data (lab blanks, lab spikes, and lab duplicates) in the report, as well as field quality control data.

j. For those methods which employ gas chromatography (GC) as the analytical technique (i.e., E601, E602, E608, SW8010, SW8020, etc.), positive identification is required for all analytes having concentrations higher than the Method Detection Limit (MDL); confirm positive concentrations by second-column GC. Analytes which cannot be confirmed shall be reported as "Not Detected" in the body of the report. Include the results of all second-column GC confirmational analyses in the report appendix along with other raw analytical data.

Base the quantification of confirmed analytes upon first-column analysis. The maximum number of second-column confirmational analyses shall not exceed fifty percent (50%) of actual number of field samples to include field QA/QC samples. The total number of samples for each GC method listed in Attachment 1 includes this allowance.

k. All raw data including QA/QC data and standards shall be archived at the prime contractor's laboratory for a period of not less than five years. Upon request, these data shall be supplied to the USAFOEHL.

3. Health and Safety

The contractor shall comply with USAF, OSHA, EPA, State and local health and safety regulations regarding the proposed work effort. Use EPA guidelines for designating the appropriate levels of protection at study sites. Prepare a written Health and Safety Plan for the proposed work effort and coordinate it directly with applicable regulatory agencies. Provide an information copy of the Health and Safety Plan to the USAFOEHL prior to commencing field operations (i.e., drilling and sampling).

B. In addition to items delineated in A above, conduct the following specific actions at sites specified on Tyndall AFB:

1. Zone 2 (Lynn Haven DFSP)

a. Install two monitoring wells, each approximately 15 feet deep, to replace previously installed wells LH-2-6 and LH 2-5.

b. Collect one surface water/sediment sample from the drainage ditch below the oil/water separator.

c. Collect one groundwater sample from each of the five existing and two new monitoring wells at the Zone.

d. Analyze each sample collected (seven groundwater and one surface water/sediment) for purgeable organics, petroleum hydrocarbons and lead.

2. Zone 5 (Small Arms Repair Area)

a. Collect one groundwater sample from each of the three existing monitoring wells at the Zone.

b. Analyze each sample collected for purgeable organics, acid extractable organics, and priority pollutant metals scan.

3. Zone 6 (Highway 98 Fire Training Area)

a. Install one upgradient monitoring well near the entrance to the site. Install one downgradient monitoring well, approximately 400 feet east of existing well T6-2. Each well shall be approximately 10 feet deep.

b. Obtain one groundwater sample from each well at the Zone, the three existing wells plus the two new wells. Analyze each sample (five total) for purgeable organics, acid extractable organics, petroleum hydrocarbons and lead.

4. Zone 7 (Southeast Runway Extension Burial Site)

a. Collect one groundwater sample from each of the three existing monitoring wells at the Zone. Collect one water sample from base well No. 11 at the Alert Facility.

d. Analyze each sample collected (4 total) for purgeable organics, base/neutral and acid extractable organics, and priority pollutants metals scan.

5. Zone 8 ("6000" Area Landfill)

a. Conduct a geophysical survey in the Zone, utilizing magnetometer techniques to define the extent of the landfill. Conduct a second geophysical survey using bulk ground conductivity techniques to attempt to define any leachate plume.

b. Based upon the results of the geophysical surveys, install one upgradient and one downgradient monitoring well at the Zone. Each well shall be approximately 15 feet deep.

c. Collect one groundwater sample from each well at the Zone, well T8-1 (existing) and the two new wells. Analyze each sample collected (three total) for purgeable organics, base/neutral and acid extractable organics, and priority pollutant metals scan.

6. Zone 9 (POL Area B)

a. Install one upgradient monitoring well, approximately 200 feet southwest of Tank 514. Install one downgradient monitoring well on the south side of Florida Avenue near the facility entrance. Each well shall be approximately 20 feet deep.

b. Collect one groundwater sample from each well at the Zone, wells 9-1 and 9-2 (existing) and the two new wells. Analyze each sample (four total) for purgeable organics, EDB, petroleum hydrocarbons and lead.

7. Zone 10 (Shellbank Fire Training Area)

a. Install one groundwater monitoring well upgradient of the site and two wells downgradient (between the site and Shoal Point Bayou). Each well shall be approximately 15 feet deep.

b. Collect one groundwater sample from each well at the Zone (three total) and analyze for purgeable organics, acid extractable organics, petroleum hydrocarbons and lead.

8. Zone 3 (POL Area A)

a. Install one upgradient groundwater monitoring well outside the facility fence to the west of the storage tanks. Install two downgradient monitoring wells within the fenced area between the tanks and Shoal Point Bayou. Each well shall be approximately 15 feet deep.

b. Collect one groundwater sample from each well at the Zone, the four existing wells and the three new wells. Analyze each sample (seven total) for purgeable organics, EDB, petroleum hydrocarbons and lead.

9. Zone 11 (Active Fire Training Area)

- a. Install one upgradient monitoring well and two downgradient monitoring wells at the Zone. Each well shall be approximately 15 feet deep.
- b. Emplace three soil borings in areas of visible soil contamination. Each boring shall be approximately 10 feet deep with split-spoon samples collected at 5-foot intervals. Select one soil sample per boring for analysis as specified below.
- c. Collect two sets of surface water/sediment samples, one upstream of the oil/water separator and one at the effluent point.
- d. Collect one groundwater sample from each monitoring well at the Zone.
- e. Analyze each sample specified above (three soil, two surface water/sediment and three groundwater) for purgeable organics, acid extractable organics, petroleum hydrocarbons and lead.

C. Data Review

1. Tabulate field and analytical laboratory results, including field and laboratory parameters and QA/QC data, and incorporate them into the monthly R&D Status Reports. Forward them to the USAFOEHL for review as soon as they become available as specified in Item VI below. Field and laboratory parameters shall include times and dates of sample collection, extraction and analysis.
2. Upon completion of all analyses, tabulate and incorporate all results into an Informal Technical Information Report (Atch 1, Seq 3 as specified in Item VI below) and forward the report to USAFOEHL for review.
3. Data/results, generated throughout this undertaking, indicating a possibility of health risk (for example, contaminated drinking water aquifer) shall be reported immediately via telephone to the USAFOEHL program manager. Follow the telephone notification with a written notice and lab raw data (e.g. chromatograms, etc.) within three days.

D. Reporting

1. Technical Field Operations Plan: The contractor shall develop a Technical Field Operations Plan based upon the technical requirements for the proposed work effort. This plan shall be explicit with regards to field procedures. Include, but do not limit the plan to, field decontamination operations, sampling protocol, QA/QC field and laboratory procedures, field schedule, etc. A guideline for the plan is provided under separate cover. The plan shall be submitted before field operations begin, but no later than three weeks after date of contract award. Ten copies of the plan shall be submitted, as specified in Sequence 20, Item VI.
2. A draft report delineating all findings of this field investigation shall be prepared and forwarded to the USAFOEHL (as specified in Sequence 4,

Item VI below) for Air Force review and comment. This report shall include a discussion of the regional/site specific hydrogeology, well and boring logs, data from water level surveys, geophysical surveys, groundwater surface and gradient maps, water quality, sediment and soil analysis results, available geohydrologic cross sections, and laboratory and field quality assurance/quality control information. The report shall follow the USAFOEHL supplied format (mailed under separate cover). The format is an integral part of this delivery order.

3. Results, conclusions and recommendations concerning the sites listed in this task which were produced in the technical report(s) of the previous staged work of IRP Phase II (mailed under separate cover), shall be used in the data reduction to plot any trends and arrive at the conclusions and recommendations of this effort's technical report (Sequence 4, Item VI below). The technical report of this effort shall be accomplished so that the report will reflect the combined up-to-date trend of each of the IRP Phase II sites listed herein.

4. The results section of the report shall include water, sediment and soil analyses results, field quality control sample data, internal laboratory control data (lab blanks, lab spikes, and lab duplicates), and laboratory quality assurance procedures. Provide second column confirmation results and include which columns were used, the conditions, and retention times. Summarize the specific collection techniques, analytical method, holding time, and limit of detection for each analyte (Standard Methods, EPA, etc.).

5. The recommendation section shall address each site and list sites by categories. Category I shall consist of sites where no further action (including remedial action) is required. Data for these sites are considered sufficient to rule out significant public health or environmental hazards. Category II sites are those requiring additional monitoring or work to quantify or further assess the extent of current or future contamination. Category III sites are sites that will require remedial actions (ready for IRP Phase III or IV actions). Recommendations for Category III sites shall include any possible influence on sites in Categories I and/or II due to their connection to the same hydrological system. Any dependency between sites in different categories shall be clearly stated. The contractor shall include a list of candidate remedial action alternatives including Long Term Monitoring (LTM) as remedial action and corresponding rationale, that, as a minimum, should be considered in selecting the remedial action for a given site. The list shall encompass alternatives that could potentially attain applicable environmental standards. For contaminants that do not have standards, the contractor may use EPA recommended safe levels for noncarcinogens (Health Advisory or Suggested-No-Adverse-Response Levels). If not specifically requested, comprehensive cost or technical analyses of alternatives shall not be included. However, in those situations where field survey data indicate immediate corrective action is necessary, the contractor shall present specific, detailed recommendations. For each category above, the contractor shall summarize the results of field data, environmental or regulatory criteria, or other pertinent information supporting conclusions and recommendations.

6. For those sites in need of additional Phase II effort, identify specific requirements for future monitoring needed to determine the magnitude, extent, and rate and direction of movement of detected contaminants. Identify potential environmental consequences of discovered contamination, where known. Provide estimates of costs by line items for any additional investigation beyond this stage along with estimates of time required to accomplish the investigation. Only the cost requirement of Sequence No 2 need be submitted as requested in paragraph VI below.

E. Meetings

The contractor's project leader shall attend two meetings to take place at times to be specified by the USAFOEHL. The meetings shall take place at Tyndall AFB for a duration of one day each.

II. SITE LOCATION AND DATES

Tyndall AFB FL
Date to be established

III. BASE SUPPORT

A. The Base Point of Contact (POC) will receive from the contractor the split samples and then select 10% of them, package them, and then deliver them back to the contractor within 24 hours for subsequent overnight shipment to USAFOEHL as stated in paragraph IA2h.

B. Base personnel will assign the disposal points within the installation of all hazardous and nonhazardous drill cuttings, contaminated groundwater, and contaminated sampling equipment.

C. Base personnel will designate an equipment staging area.

D. Base personnel will mark underground utilities where required.

E. Base personnel will designate an equipment decontamination area.

F. The base will provide space for trailer with access to telephone and electrical service.

IV. GOVERNMENT FURNISHED PROPERTY: None

V. GOVERNMENT POINTS OF CONTACT

1. USAFOEHL Monitor
Dee Ann Sanders
USAFOEHL/TS
Brooks AFB TX 78235-5501
AV 240-2158
(512) 536-2158

2. Base Monitor
1Lt William Shelton
USAF Hosp Tyndall/SGPB
Tyndall AFB FL 32-03-5300
AV 970-4474
(904) 253-4474

3. MAJCOM Monitor
Col Jerry Dougherty
Hq TAC/SGPB
Langley AFB VA 23665-5001
AV 432-3322
(804) 764-3322

Extractables - EPA Methods 625 and 8270

Base/Neutral Extractables

Acenaphthene
 Acenaphthylene
 Anthracene
 Aldrin
 Benzo(a)anthracene
 Benzo(b)fluoranthene
 Benzo(k)fluoranthene
 Benzo(a)pyrene
 Benzo(ghi)perylene
 Benzyl butyl phthalate
 b-BHC
 w-BHC
 Bis(2-chloroethyl)ether
 Bis(2-chloroethoxy)methane
 Bis(2-ethylhexyl)phthalate
 Bis(2-chloroisopropyl)ether
 4-Bromophenyl phenyl ether
 Chlordane
 2-Chloronaphthalene
 4-Chlorophenyl phenyl ether
 Chrysene
 4,4'-DDD
 4,4'-DDE
 4,4'-DDT
 Dibenzo(a,h)anthracene
 Di-n-butylphthalate
 1,3-Dichlorobenzene
 1,2-Dichlorobenzene
 1,4-Dichlorobenzene
 3,3'-Dichlorobenzidine
 Dieldrin
 Diethyl phthalate
 Dimethyl phthalate
 2,4-Dinitrotoluene
 2,6-Dinitrotoluene
 Di-n-octylphthalate
 Endosulfan sulfate
 Endrin aldehyde
 Fluoranthene
 Fluorene
 Heptachlor
 Heptachlor epoxide
 Hexachlorobenzene
 Hexachlorobutadiene
 Hexachloroethane
 Indeno(1,2,3-cd)pyrene
 Isophorone

Naphthalene
 Nitrobenzene
 N-Nitrosodi-n-propylamine
 PCB-1016
 PCB-1221
 PCB-1232
 PCB-1242
 PCB-1248
 PCB-1254
 PCB-1260
 Phenanthrene
 Pyrene
 Toxaphene
 1,2,4-Trichlorobenzene

Acid Extractables

4-Chloro-3-methylphenol
 2-Chlorophenol
 2,4-Dichlorophenol
 2,4-Dimethylphenol
 2,4-Dinitrophenol
 2-Methyl-4,6-dinitrophenol
 2-Nitrophenol
 4-Nitrophenol
 Pentachlorophenol
 Phenol
 2,4,6-Trichlorophenol

Purgeable Organic Compounds - EPA Methods 601-602, 8010-8020, and 8240.

Benzene	trans-1,2-Dichloroethene
Bromodichloromethane	1,2-Dichloropropane
Bromoform	cis-1,3-Dichloropropene
Bromomethane	trans-1,3-Dichloropropene
Carbon tetrachloride	Ethyl benzene
Chlorobenzene	Methylene chloride
Chloroethane	1,1,2,2-Tetrachloroethane
2-Chloroethylvinyl ether	Tetrachloroethene
Chloroform	Toluene
Chloromethane	1,1,1-Trichloroethane
Dibromochloromethane	1,1,2-Trichloroethane
1,2-Dichlorobenzene	Trichloroethene (TCE)
1,3-Dichlorobenzene	Trichlorofluoromethane
1,4-Dichlorobenzene	Vinyl chloride
1,1-Dichloroethane	ortho, meta and para xylene
1,2-Dichloroethane	(8020 only)
1,1-Dichloroethene	

Acid Extractables (E604)

4-Chloro-3-methylphenol
2-Chlorophenol
2,4-Dichlorophenol
2,4-Dimethylphenol
2,4-Dinitrophenol
2-Methyl-4,6-dinitrophenol
2-Nitrophenol
4-Nitrophenol
Pentachlorophenol
Phenol
2,4,6-Trichlorophenol

^fMetals scan in water shall consist of an ICP scan for priority pollutant and other metals using E200.7 as follows:

<u>Element</u>	<u>Estimated Detection Limit, mg/l</u>
Aluminum	0.050
Arsenic	0.060
Antimony	0.035
Barium	0.002
Beryllium	0.001
Boron	0.010
Cadmium	0.008
Calcium	0.045
Chromium	0.001
Cobalt	0.006
Copper	0.001
Iron	0.008
Lead	0.050
Magnesium	0.035
Manganese	0.002
Molybdenum	0.008
Nickel	0.010
Potassium	0.050
Selenium	0.090
Silica (SiO ₂)	0.060
Silver	0.007
Sodium	0.030
Thallium	0.10
Vanadium	0.008
Zinc	0.003

plus method E245.1 for mercury, with a detection limit of 0.0002 mg/l. Report all results as mg/l.

^gEP Toxicity in soil (contaminated drill cuttings) shall be determined using procedures specified in SW-846, Test Methods for Evaluating Solid Wastes, 2nd Ed.

^hTotal number of samples includes second-column confirmation on 50% of field samples (to include the field QC samples).

^aMethod references are as follows:

"E" Methods: E100 through E500 Methods
(Water Only) Methods for Chemical Analysis of Water and Wastes,
EPA Manual 600/4-79-020 (USEPA, 1983)

E600 Series Methods
Methods for Organic Chemical Analysis of Municipal and
Industrial Wastewater
USEPA
Federal Register, Vol 49, No 209, 26 Oct 1984

E200.7 Method
Inductively Coupled Plasma-Atomic Emission Spectrometer
Method for Trace Element Analysis of Water and Wastes
USEPA
Federal Register, Vol 49, No 209, 26 Oct 1984

"SW" Methods: Test Methods for Evaluating Solid Waste, Physical/Chemical
Methods, SW-846, 2nd Edition (USEPA, 1984)

^bPurgeable aromatic compounds shall be analyzed using method SW8020 at Zones 3 and 9 (fuel spill areas), so that xylene can be included among the analytes. All other analyses for purgeable aromatics shall be by method E602.

^cDetection limits for all parameters analyzed by GC shall be as stated in the respective methods. Report results for organics in water as ug/l; in soil as mg/kg. Positive identification is required for all analytes having concentrations higher than the method detection limit; confirm positive concentrations by second-column GC. Analytes which cannot be confirmed shall be reported as "Not Detected" in the body of the report. Include the results of both first and second-column data in the appendix of the report. Base the quantification of confirmed analytes upon the first-column analysis.

^dDetection limits for all parameters analyzed by GC/MS shall be as stated in the respective methods. Report results for organics in water as ug/l; in soil as mg/kg.

^eReport results for metals in water as mg/l; in soil as mg/kg. Report no more than two significant figures for any metals concentration.

ANALYTICAL METHODS, DETECTION LIMITS, AND NUMBER OF SAMPLES

WATER

<u>PARAMETER</u>	<u>METHOD^a</u>	<u>DETECTION LIMIT</u>	<u>NO. SAMPLES</u>	<u>QA</u>	<u>TOTAL SAMPLES</u>
Purgeable Organic Compounds	E601 602 E601 SW5030/ SW8020 ^b -	c	31 11	3 1	51 ^h 18 ^h
Base/Neutral and Acid Extractable Organic Compounds	E625	d	7	1	8
1,2-Dibromoethane (EDB)	E502.1	c	11	1	18 ^h
Acid Extractable Organics	E604	c	16	2	27 ^h
Petroleum Hydrocarbons	E418.1	100µg/l	32	3	35
Lead	E239.2	0.005 mg/l ^e	32	3	35
Priority Pollutant Metal Scan	E200.7 E245.1	f	10	1	11

SOILS

<u>PARAMETER</u>	<u>METHOD^a</u>	<u>DETECTION LIMIT</u>	<u>NO. SAMPLES</u>	<u>QA</u>	<u>TOTAL SAMPLES</u>
Purgeable Organic Compounds	SW5030/ SW8240	d	6	1	7
Petroleum Hydrocarbons	SW3550/ E418.1	100mg/kg	6	1	7
Lead (Pb)	SW3050/ SW7420	50mg/kg ^e	6	1	7
BP Toxicity	SW-846	g	10	1	11

Attachment 1

VI. In addition to sequence numbers 1, 5, and 11 in Attachment 1 to the contract, which are applicable to all orders, the sequence numbers listed below are applicable to this order. Also shown are data applicable to this order.

<u>Sequence No.</u>	<u>Para No.</u>	<u>Block 10</u>	<u>Block 11</u>	<u>Block 12</u>	<u>Block 13</u>	<u>Block 14</u>
20 (TOP)	ID	OTIME	86 JUN 30	86 JUL 1		10
7 (Health & Safety)	IA3	OTIME	86 JUN 30	86 JUL 1		3
3 (Prelim Data)	IC2	OTIME	**	**		3
2 (Cost)	ID6	OTIME	87JAN09	87OCT09		3
4 (Tech Report)	ID	ONE/R	86 DEC09	87 JAN09	87 OCT09	*
14		MONTHLY	86 JUL 9	86 JUL 10	***	3
15		MONTHLY	86 JUL 9	86 JUL 10	***	3

*Two draft reports (25 copies of each) and one final report (50 copies plus the original camera ready copy) are required. Incorporate Air Force comments into the second draft and final reports as specified by the USAFOEHL. Supply the USAFOEHL with a final copy of the first draft, second draft, and final reports for acceptance prior to distribution. Distribute remaining 24 copies of each draft report and 49 copies of the final report as specified by the USAFOEHL.

**Upon completion of the total analytical effort before submission of the first draft report.

***Submit monthly hereafter.

ANALYSES BY ZONE - TYNDALL AFB
WATER

SOLID

ANALYTE	ZONE 2	ZONE 5	ZONES 6	ZONE 7	ZONE 8	ZONE 9	ZONE 10	ZONE 3	ZONE 11	ZONE 2	ZONE 11
PURGEABLE ORGANICS (E601&602)	8	3	5	4	3		3		5		
PURGEABLE ORGANICS (E601&SW8020)						4		7			
PURGEABLE ORGANICS (SW8240)										1	5
BASE/NEUTRAL AND ACID EXTRACT- ABLE ORGANICS (E625)				4	3						
ACID EXTRACTABLE ORGANICS (E604)		3	5				3		5		
EDH						4		7			
PETROLEUM HYDROCARBONS	8		5			4	3	7	5	1	5
LEAD	8		5			4	3	7	5	1	5
PRIORITY POLLUTANT METAL SCAN		3		4	3						

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APPENDIX D
QUALITY ASSURANCE PLAN

QUALITY ASSURANCE REPORT
INSTALLATION RESTORATION PROGRAM
PHASE II, STAGE 2
TYNDALL AIR FORCE BASE, FLORIDA

Prepared for:

R. SCHULTZ
ESE Project Manager

Prepared by:

W. COULOMBE
ESE Project QA Supervisor

ESE. No. 86-378-0700-2140

March 1987

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1.0 INTRODUCTION

This report contains results of QA audits conducted during Phase II, Stage 2 activities conducted at Tyndall AFB, Florida. A QA supervisor was assigned to this project from ESE's independent QA Division to monitor the project from initiation to preparation of the final report. A simplified description of the distinction between QA and QC at ESE is as follows:

1. QC procedures comprise a portion of the total integrated QA program and are performed routinely by laboratory analysts/field personnel to obtain a prescribed standard of performance (e.g., calibration of instruments), and
2. QA procedures include a system of checks to verify the QC by an independent auditor (e.g., audit the calibration procedure).

A summary of the QA activities performed for the project is as follows:

1. Pre-sampling system audit;
2. Field audit;
3. Laboratory systems audit; and
4. Data validation of analytical field groups TYNDL1, TYNDL2, TYNDL3, TYNDL4, TYNDL5, TYNDL6, TYNDL7, and TYNDLS.

2.0 QUALITY ASSURANCE AUDITS

A pre-sampling systems audit was performed on Oct. 6, 1986, through a meeting with the project manager, laboratory coordinator, field team leader, and project QA supervisor. The Technical Operations Plan (TOP) was reviewed with these key project members to assure that the procedures described in the manual would be implemented.

A QA field audit was performed on Oct. 16, 1986 by the project QA supervisor. Ground water sampling was observed at the following wells:

<u>Well Designation</u>	<u>Sample No.</u>
T3-4	TYNDL6*4
T8-1	TYNDL5*5
T6-1	TYNDL4*1
T6-2	TYNDL4*2
T6-3	TYNDL4*3

Well development was observed at Well T6-5.

All observed field activities were consistent with TOP and standard ESE practice, with two exceptions:

1. The plan states that new monitoring wells will be allowed to equilibrate for no less than 14 days after well development (pg. 4-12). A 5-day minimum equilibration time was actually being used. According to the Site Geologist, the change was approved by the Air Force.
2. Field notes were being recorded in pencil during the ground water monitoring. The field team leader was informed that ink was required and the field crew immediately switched to using pen.

A laboratory systems audit was performed Jan. 23, 1987, to determine if the custody procedures from field to laboratory were consistent with the requirements of the TOP. Results of the review indicated acceptable custody documentation procedures. Standard custody procedures include the following activities.

The field team sampler or leader documents the sample fraction collected and time and date of collection onto a chain-of-custody logsheet, which is routed with the samples to the laboratory. The laboratory coordinator or designate checks in the samples and assures that all samples on the logsheet have been received. A QA Supervisor verifies that the chain-of-custody documentation and keypunching of sample site collection dates and times are correctly entered into the computer system.

3.0 QA DATA VALIDATION

QA data validation consists of the following:

1. Selection of a portion of the reported values at random and tracing through the raw data to assure that all calculations are free of errors, and the documentation of all raw data is adequate to support the reported values;
2. Verifying that all samples were analyzed within contract required holding times;
3. Verifying that instruments were properly calibrated;
4. Verifying that method blanks, standard matrix spike duplicates, sample matrix spikes, and references are analyzed at the required frequency and meet standard ESE acceptance criteria; and
5. Verify that the analytical methods employed were consistent with contract requirements.

As part of ESE's standard QC program, the following procedures are followed:

1. Samples are analyzed according to contract requirements;
2. Each analytical lot contains three standards and one calibration blank and has a correlation coefficient ≥ 0.995 except for GC/MS and ICAP analysis, where a one-point standardization is used;
3. Each analytical lot contains one control spike and replicate spike per 20 samples and one sample spike per 20 samples except for GC/MS analysis, where surrogate compounds are spiked into all samples, QC samples are analyzed, and a frequency of one control spike and sample spike per 20 samples are analyzed; and
4. Data reduction and reporting are free of errors, and reported values are supported by the raw data.

Field QA samples are part of the field sampling effort. Blind duplicate samples were collected at a frequency of 10 percent of all the samples

collected with the same matrix during a field effort. QA procedures employed for field QA samples were to assure that the duplicates were collected at the required frequency and to investigate discrepancies found in sample duplicates.

Tracing through the raw data (Item 1) revealed no calculation errors, and the reported values were adequately supported by the raw data. Instruments employed in the analyses were properly calibrated (Item 3) in accordance with EPA requirements and the analytical methods employed met contract requirements (Item 5).

Sample holding times (Item 2) were determined and compared to the current maximum holding times specified by EPA (see Table 3-1) (Federal Register, Vol. 49, No. 209, October 26, 1984, revised Vol. 50, No. 3, January 4, 1985). These EPA holding time requirements apply to water samples only; however, ESE uses the time as a goal for analysis of soil samples.

All water samples were analyzed within holding times except the volatile fraction (GC) of sample TYNDL6*8 had to be re-injected due to carry-over from a previous sample (see Table 3-2). The re-injection was performed 2 days after the 14-day holding time. Resampling was not warranted because additional data for this sample is available for sample TYNDL6*5 (a field duplicate) and the second column analysis (see Table 3-3), both run within holding times.

All soil samples were analyzed within the holding time goals except the petroleum hydrocarbon fraction for samples TYNDL7*1,*2 which exceeded the 28-day holding time by 1 day. EPTOX holding times were assessed by applying the water holding times to the leachate. All samples were analyzed within holding times except the herbicide fraction which exceeded the 7-day extraction holding time by 2 days.

Table 3-1. EPA Holding Times for Parameters Analyzed During the Tyndall AFB Phase II Stage 2 Study

Parameter	EPA Holding Times
Hydrocarbons	28 days
Metals except Hg	6 months
Hg	28 days
624 compounds	14 days
601/602 compounds	14 days
625 compounds	7 days to extraction 40 days after extraction
EDB	14 days
608	7 days to extraction 40 days after extraction
Herbicides	7 days to extraction 40 days after extraction

Table 3-2. Holding Times for Tyndall Analytical Data

Sample Number(s)	Parameters(s)	Collection Date	Extraction Date	Analysis Date	No. of Days
TYNDL1*1	hydrocarbons	10/15/86	—	11/12/86	28
TYNDL1*1	Pb	10/15/86	—	11/25/86	41
TYNDL1*1	SW 8240	10/15/86	—	10/23/86	8
TYNDL1*2,3	hydrocarbons	10/16/86	—	11/12/86	27
TYNDL1*2	Pb	10/16/86	—	11/25/86	40
TYNDL1*2,3	SW 8240	10/16/86	—	10/24/86	8
TYNDL1*3	Pb	10/16/86	—	01/22/87	98
TYNDL2*1-4,9	601/602	10/14/86	—	10/21/86	7
TYNDL2*1-4,9	hydrocarbons	10/14/86	—	10/29/86	15
TYNDL2*1-3,9	Pb	10/14/86	—	11/25/86	42
TYNDL2*4	Pb	10/14/86	—	10/29/86	15
TYNDL2*5,7,8	601/602	10/22/86	—	10/29/86	7
TYNDL2*5,7,8	hydrocarbons	10/22/86	—	11/06/86	15
TYNDL2*5,7,8	Pb	10/22/86	—	11/25/86	34
TYNDL3*1-4	601/602	10/13/86	—	10/22/86	9
TYNDL3*1-4	604	10/13/86	10/15/86	10/20/86	2/7
TYNDL3*1-4	ICAP Batch 34962	10/13/86	—	11/23/86	41
TYNDL3*1-4	ICAP Batch 35477	10/13/86	—	01/14/87	92
TYNDL3*1-4	Hg	10/13/86	—	10/30/86	17
TYNDL4*14,15	601/602	10/14/86	—	10/23/86	9
TYNDL4*14,15	604	10/14/86	10/20/86	11/04/86	6/15
TYNDL4*14,15	hydrocarbons	10/14/86	—	10/28/86	14
TYNDL4*14,15	Pb	10/14/86	—	11/25/86	42
TYNDL4*1-3	601/602	10/16/86	—	10/27/86	11
TYNDL4*1-3	604	10/16/86	10/20/86	11/04/86	4/15
TYNDL4*1-3	hydrocarbons	10/16/86	—	10/29/86	13
TYNDL4*1-3	Pb	10/16/86	—	11/25/86	40
TYNDL4*7-13	601/602	10/20/86	—	10/28/86	8
TYNDL4*7-13	604	10/20/86	10/24/86	11/06/86	4/13
TYNDL4*7-13	hydrocarbons	10/20/86	—	10/24/86	4
TYNDL4*7-13	Pb	10/20/86	—	11/25/86	36
TYNDL4*4,5	601/602	10/21/86	—	10/29/86	8
TYNDL4*4,5	604	10/21/86	10/24/86	11/06/86	3/12
TYNDL4*4,5	hydrocarbons	10/21/86	—	10/26/86	5
TYNDL4*4,5	Pb	10/21/86	—	11/25/86	35

Table 3-2. Holding Times for Tyndall Analytical Data (Continued, Page 2 of 3)

Sample Number(s)	Parameters(s)	Collection Date	Extraction Date	Analysis Date	No. of Days
TYNDL5*9,2	601/602	10/09/86	—	10/21/86	12
TYNDL5*9,2	625	10/09/86	10/10/86	11/06/86	1/27
TYNDL5*9,2	ICAP Batch 34962	10/09/86	—	11/23/86	45
TYNDL5*9,2	Hg	10/09/86	—	11/05/86	27
TYNDL5*9,2	As, Be	10/09/86	—	01/14/87	93
TYNDL5*1,3,4	601/602	10/10/86	—	10/21/86	11
TYNDL5*1,3,4	625	10/10/86	10/10/86	11/06/86	0/26
TYNDL5*1,3,4	ICAP Batch 34962	10/10/86	—	11/23/86	44
TYNDL5*1,3,4	Hg	10/10/86	—	11/05/86	26
TYNDL5*1,3,4	As, Be	10/10/86	—	01/14/87	96
TYNDL5*5	601/602	10/16/86	—	10/27/86	11
TYNDL5*5	625	10/16/86	10/21/86	11/10/86	5/20
TYNDL5*5	ICAP	10/16/86	—	02/23/87	129
TYNDL5*5	Hg	10/16/86	—	11/12/86	27
TYNDL5*6,8	601/602	10/17/86	—	10/27/86	10
TYNDL5*6,8	625	10/27/86	10/21/86	11/10/86	4/19
TYNDL5*6,8	ICAP	10/17/86	—	02/23/87	128
TYNDL5*6,8	Hg	10/17/86	—	11/12/86	26
TYNDL5*7	601/602	10/23/86	—	11/01/86	9
TYNDL5*7	625	10/23/86	10/27/86	11/09/86	4/13
TYNDL5*7	ICAP	10/23/86	—	12/01/86	39
TYNDL5*7	Hg	10/23/86	—	11/19/86	27
TYNDL6*9,10	601/602	10/13/86	—	10/22/86 (neat) 10/27/86 (diluted)	14
TYNDL6*9	hydrocarbons	10/13/86	—	10/22/86	9
TYNDL6*10	hydrocarbons	10/13/86	—	10/30/86	17
TYNDL6*9,10	EDB	10/13/86	—	10/27/86	14
TYNDL6*9,10	Pb	10/13/86	—	11/25/86	43
TYNDL6*1-3	601/602	10/15/86	—	10/27/86	12
TYNDL6*1-3	hydrocarbons	10/15/86	—	10/30/86	15
TYNDL6*1-3	EDB	10/15/86	—	10/27/86	12
TYNDL6*1,2	Pb	10/15/86	—	11/25/86	41
TYNDL6*3	Pb	10/15/86	—	12/12/86	58
TYNDL6*4	601/602	10/16/86	—	10/27/86	11
TYNDL6*4	hydrocarbons	10/16/86	—	10/30/86	14
TYNDL6*4	EDB	10/16/86	—	10/27/86	11
TYNDL6*4	Pb	10/16/86	—	11/25/86	57
TYNDL6*5,6	601/602	10/17/86	—	10/30/86	13
TYNDL6*8	601/602	10/17/86	—	11/01/86 (neat) 11/02/86 (repeat)	15* 16*

Table 3-2. Holding Times for Tyndall Analytical Data (Continued, Page 3 of 3)

Sample Number(s)	Parameters(s)	Collection Date	Extraction Date	Analysis Date	No. of Days
TYNDL6*5,6,8	hydrocarbons	10/17/86	—	10/30/86	13
TYNDL6*5,6,8	EDB	10/17/86	—	10/27/86	10
TYNDL6*5,6,8	Pb	10/17/86	—	11/25/86	56
TYNDL6*11,12	601/602	10/21/86	—	10/29/86	8
TYNDL6*11,12	hydrocarbons	10/21/86	—	11/06/86	16
TYNDL6*11,12	EDB	10/21/86	—	10/27/86	6
TYNDL6*11,12	Pb	10/21/86	—	11/25/86	35
TYNDL6*7	601/602	10/23/86	—	11/01/86	9
TYNDL6*7	hydrocarbons	10/23/86	—	11/06/86	7
TYNDL6*7	Pb	10/23/86	—	12/12/86	50
TYNDL7*1-3	hydrocarbons	10/14/86	—	11/12/86	29†
TYNDL7*1-3	Pb	10/14/86	—	11/25/86	42
TYNDL7*1-3	SW 8240	10/14/86	—	10/22/86	8
EP TOX Extraction					
TYNDLS*1,2	608	10/14/86	10/16/86	10/20/86	2/4
TYNDLS*1,2	herbicides	10/14/86	10/23/86	11/02/86	9/10†
TYNDLS*1,2	ICAP	10/14/86	—	11/24/86	41
TYNDLS*1,2	Hg	10/14/86	—	10/30/86	16
TYNDLS*1,2	Se	10/14/86	—	12/09/86	56
TYNDLS*3	608	10/21/86	10/28/86	11/28/86	7/31
TYNDLS*3	herbicides	10/21/86	10/23/86	11/11/86	2/19
TYNDLS*3	ICAP	10/21/86	—	11/24/86	34
TYNDLS*3	Hg	10/21/86	—	10/30/86	9
TYNDLS*3	Se	10/21/86	—	12/09/86	49
TYNDLS*3	As	10/21/86	—	11/17/86	27
TYNDLS*1,2	As	10/14/86	—	11/17/86	34

*Exceeds EPA holding time.

†Exceeds ESE imposed holding time goal.

Source: ESE, 1987.

Table 3-3. Holding Times for First and Second Column Gas Chromatograph
Data for Tyndall AFB

Sample Number	Collection Date	First Column Analysis Date	No. of Days	Second Column Analysis Date	No. of Days
TYNDL 2*4	10/14/86	10/21/86	7	10/28/86	14
TYNDL 2*7	10/22/86	10/24/86	7	10/30/86	8
TYNDL 2*8	10/22/86	10/24/86	7	10/31/86	9
TYNDL 2*9	10/14/86	10/21/86	7	10/28/86	14
TYNDL 3*3	10/13/86	10/22/86	9	10/27/86	14
TYNDL 3*4	10/13/86	10/22/86	9	10/27/86	14
TYNDL 4*2	10/16/86	10/27/86	11	10/29/86	13
TYNDL 4*3	10/16/86	10/27/86	11	10/29/86	13
TYNDL 4*4	10/21/86	10/29/86	8	10/31/86	10
TYNDL 4*5	10/21/86	10/29/86	8	10/31/86	10
TYNDL 4*8	10/20/86	10/28/86	8	10/31/86	11
TYNDL 4*10	10/20/86	10/28/86	8	10/30/86	10
TYNDL 4*11	10/20/86	10/28/86	8	10/30/86	10
TYNDL 4*13	10/20/86	10/28/86	8	10/30/86	10
TYNDL 4*14	10/14/86	10/23/86	9	10/28/86	14
TYNDL 4*15	10/14/86	10/23/86	9	10/31/86	17*
TYNDL 5*4	10/10/86	10/21/86	11	10/27/86	17*
TYNDL 5*5	10/16/86	10/27/86	11	10/29/86	13
TYNDL 5*7	10/23/86	11/01/86	9	10/31/86	8
TYNDL 5*9	10/09/86	10/21/86	12	10/27/86	18*
TYNDL 6*2	10/15/86	10/27/86	12	10/29/86	14
TYNDL 6*5	10/17/86	10/30/86	13	10/29/86	12
TYNDL 6*6	10/17/86	10/30/86	13	10/29/86	12
TYNDL 6*7	10/23/86	11/01/86	9	10/31/86	8
TYNDL 6*8	10/17/86	11/02/86	16*	10/29/86	12
TYNDL 6*9	10/13/86	10/27/86	14	10/27/86	14
TYNDL 6*10	10/13/86	10/27/86	14	10/27/86	14
TYNDL 6*11	10/21/86	10/29/86	8	10/31/86	10
TYNDL 6*12	10/21/86	10/29/86	8	10/31/86	10

*Exceeds holding time.

Source: ESE, 1987.

Standard matrix (deionized water/standard soil) spikes are used to assess the precision and accuracy of the analytical measurement system (Item 4). ESE's standard acceptance criteria (Table 3-4) were used for each parameter analyzed. All standard matrix spikes were within the criteria. Internal laboratory QC results are included in Appendix Q of this report.

Sample matrix spikes are run to determine if there is a matrix interference. All sample matrix spikes met the acceptance criteria with the following exceptions:

<u>Sample No.</u>	<u>Parameter</u>	<u>Recovery</u>
TYNDL4*1	Lead	133
TYNDL4*4	Lead	131
TYNDL2*9	Petroleum Hydrocarbons	22

The control spikes associated with these samples were acceptable indicating that the analytical system was in control and the recoveries outside the criteria are due to a matrix interference.

Table 3-4. Precision and Accuracy Criteria

Parameter	Method Criteria	
	Precision (Max RPD)	Accuracy (% Recovery)
<u>Soil</u>		
Petroleum Hydrocarbons	20	70 - 125
Lead	20	80 - 120
<u>Volatiles (GCMS)</u>		
Toluene-D(8)	--	50 - 160
Bromofluorobenzene	--	50 - 160
1,2-Dichloroethane	--	50 - 160
<u>Water Volatiles (GC)</u>		
Carbon Tetrachloride	31	55 - 131
1,1-Dichloroethane	30	57 - 121
1,2-Dichloroethane	27	63 - 135
1,1,1-Trichloroethane	32	53 - 125
Ethylbenzene	35	48 - 144
Toluene	29	59 - 135
Xylene	30	56 - 134
Petroleum Hydrocarbons	20	70 - 125
<u>Phenolic Compounds</u>		
4-Chl'-3-Meth'Phenol	41	39 - 130
2,4-Dinitrophenol	53	28 - 128
Pentachlorophenol	34	48 - 122
Phenol	47	33 - 130

Table 3-4. Precision and Accuracy Criteria (Continued, Page 2 of 2).

Parameter	Method Criteria	
	Precision (Max RPD)	Accuracy (% Recovery)
2-Chlorophenol	34	49 - 130
Pentachlorophenol	34	48 - 122
<u>Metals</u>	20	80 - 120
<u>Base Neutral/Acids (GCMS)</u>		
Nitrobenzene-D(5)	39	41 - 119
2-Fluorobiphenyl	37	44 - 118
Naphthalene-D(8)	50	30 - 120
Phenol-D(5)	80	15 - 103
2-Fluorophenol	67	20 - 140

Notes:

$$\text{Relative Percent Difference (RPD)} = \frac{\frac{|R_1 - R_2|}{(R_1 + R_2)}}{2} \times 100$$

R_1 and R_2 = Concentration at Replicate Control Spike 1 and 2, respectively.

$$90 \text{ Recovery} = 100 \times \frac{[(\text{spike sample conc.})(\text{sample} + \text{spike vol.}) - (\text{sample vol.})(\text{sample conc.})]}{(\text{spike conc.})(\text{spike volume})}$$

Source: ESE, 1987.

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APPENDIX E
PROJECT SAFETY PLAN

INSTALLATION RESTORATION PROGRAM
PHASE II, STAGE 2
PROJECT SAFETY PLAN
TYNDALL AIR FORCE BASE, FLORIDA

Prepared for:

OCCUPATIONAL AND ENVIRONMENTAL HEALTH LABORATORY
Brooks Air Force Base, Texas

Prepared by:

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
Gainesville, Florida

ESE No. 86-373

September 1986

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1.0 POLICY AND RESPONSIBILITY

The purpose of this safety plan is to protect individuals and the environment during Installation Restoration Program (IRP) Phase II, Stage 2 site investigative activities at Tyndall Air Force Base (AFB). This plan includes preventive and protective measures against health hazards, fire and explosion hazards, and mechanical hazards which may exist or occur during field and laboratory activities.

It is the policy of the corporate management of Environmental Science and Engineering, Inc. (ESE) that an effective health and safety program be implemented for this project at Tyndall AFB to protect individuals and the environment. Each and every individual at the site must regard and conduct himself as a member of the "safety team" and adhere to the prescribed site safety plan to ensure his own safety as well as that of his fellow workers and the public.

A key element of this plan is the reliance upon the "buddy system" for all site activities at all times. This system requires that all activities at the site be conducted using a minimum of 2-person teams.

Overall responsibility for safety during the site investigative activities rests with the Project Manager. His responsibilities include:

1. Preparing an effective site and laboratory safety plan for the project,
2. Categorizing the project staff as to the levels of potential exposure to dangerous levels of hazardous materials,
3. Assuring that adequate and appropriate safety training and equipment are available for project personnel,
4. Arranging for medical examinations for specified project personnel, and
5. Designating a Site Safety Supervisor.

The responsibilities of the Site Safety Supervisor include:

1. Implementing all safety procedures and operations onsite;
2. Updating equipment or procedures based upon new information gathered during the site inspection;
3. Upgrading or downgrading the levels of personnel protection based upon site observations (downgrading requires the approval of the Project Manager);
4. Determining and posting locations and routes to medical facilities, including poison control centers and arranging emergency transportation to medical facilities (as required);
5. Notifying (as required) local public emergency officers (i.e., police and fire department) of the nature of the team's operations, and making emergency telephone numbers available to all team members;
6. Assuring that at least one member of the field team is available to stay behind and notify emergency services if the Site Safety Supervisor must enter an area of maximum hazard or only entering this area after he has notified emergency services (police department);
7. Observing work party members for symptoms of exposure or stress; and
8. Arranging for the availability of emergency medical care and first aid, as necessary onsite.

The Site Safety Supervisor has the ultimate responsibility to stop any operation that threatens the health or safety of the team or surrounding populace or causes significant adverse impact to the environment.

The responsibilities of the Field Team Leader include:

1. Assuring and enforcing compliance with the Project Safety Plan,

2. Controlling site entry of unauthorized personnel or coordinating with United States Air Force (USAF) authorities to limit site access,
3. Coordinating site activities such that they may be performed in an efficient and safe manner consistent with the Project Safety Plan,
4. Enforcing the "buddy system" onsite, and
5. Assuring the ready access and availability of all safety equipment.

The responsibilities of all personnel onsite include:

1. Complying with all aspects of the Project Safety Plan, including strict adherence to the "buddy system;"
2. Obeying the orders of the Field Team Leader and the Site Safety Supervisor; and
3. Notifying the Field Team Leader or Site Safety Supervisor of hazardous or potentially hazardous incidents or working situations.

2.0 SITE CHARACTERIZATION AND SPECIFIC SAFETY PLAN

Descriptive detail on Tyndall AFB is given in Table 2-1. The various procedures and precautions that will be followed in assuring preservation of health and safety during all site activities are presented in the plan. The recommended safety precautions and procedures presented are based on a thorough evaluation of the literature and an assessment of the potential hazards at the site, including:

1. The types of materials present at the site,
2. The physical description of the site,
3. The routes of potential exposure,
4. The anticipated levels of hazardous materials present,
5. The acceptable levels of exposure as prescribed by the Occupational Safety and Health Administration (OSHA) and EPA,
6. The duration of potential exposure, and
7. The mitigation of potential exposure by existing routine laboratory and field safety practices.

Guidance for the determination of the hazard potential of chemical compounds was obtained from the following sources:

Identification and Listing of Hazardous Waste, 40 CFR, Part 261.
Dangerous Properties of Industrial Materials, 5th Ed., N. Irving Sax, 1979.

Threshold Limit Values to Chemical Substances and Physical Agents in the Workroom Environment, ACGIH, 1984.

Table 2-1. Site Safety Plan

General Information

Site: Tyndall AFB

Location: Panama City, Florida

Field Work Tasks: Geographical Survey
Installation of Monitoring Wells
Surveying Well Locations
Surface Water and Sediment Sampling
Ground Water Sampling
Soil Sampling

Work Date (Planned): October 1986

Site Characteristics: Tyndall AFB can be described as a low hazard area. Although expected air concentrations are low, personnel should be careful about skin contact with waters and sediments.

Status: Active Air Force Base

Known Chemical Hazards Onsite: Organics, Heavy Metals, Phenolics

Characteristics of Waste Onsite:

States: Liquid and Solid

Hazards: Corrosive, Ignitable, Volatile, Toxic, Unknown

Hazard Evaluation: Level D protection is required unless air monitoring reveals any appreciable air levels of organics during the preliminary survey. Due to the presence of petroleum products, care should be exercised in walking near site areas to prevent injury or contamination. Air monitoring for airborne organics will be conducted on a daily basis during well drilling and sampling activities.

Personal Protective Equipment: Many different job functions are involved in this investigation. Each job presents a special set of circumstances with varying personal protection equipment (PPE) needs. The following narrative describes the specific PPE for each operation.

1. Well Drilling

- a. Hard hats will be worn at all times in the vicinity of the drilling rig.
- b. Goggles or safety glasses will be worn at all times.
- c. Safety shoes will be worn in the vicinity of the rig.

Table 2-1. Site Safety Plan (Continued, Page 2 of 4)

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- d. Gloves will be worn to protect hands from cables, etc. These gloves should fit tightly to avoid getting caught in machinery.
 - e. No loose-fitting clothing or free long hair is permitted near the rig.
 - f. Hands will be kept out of the way of moving parts of the machinery when drilling is in progress.
 - g. Daily inspection of all ropes, cables, bolts, and moving parts of the rig is mandatory.
 - h. A first aid kit and fire extinguisher will be available at all times.
 - i. Rubber gloves will be worn during well development to avoid direct contact with contaminated water.
 - j. Organic vapor respirators (half-mask, air-purifying type) are to be issued to all personnel participating in drilling operations. These respirators are to be immediately accessible to each person at all well sites.
 - k. Fresh cartridges shall be placed in organic vapor masks as needed. The guidelines regarding frequency of change of canisters shall be strictly observed. Cartridges should be changed when odors become noticeable or breathing resistance becomes significant.
 - l. The water supply available for drilling use shall be maintained in a ready state to wash down any personnel receiving significant accidental exposure to gases or vapors emanating from the ground.
 - m. One self-contained breathing apparatus (SCBA) unit shall be immediately available for emergency use during well drilling operations in areas of greatest potential contamination.
 - n. All crews will consist of at least two persons.
 - o. There will be no smoking except in the command post area or inside vehicles. In no case will smoking materials or matches be disposed of onsite except in proper ashtrays.
 - p. No drilling will occur during impending electrical storms.
 - q. Cotton coveralls or disposable Tyvek® suits or equivalent should be worn at all times during drilling operations.
2. Surface Water and Ground Water Sampling
- a. Surface water and ground water sampling involve the handling of water containing unknown amounts of chemical contaminants. Safety glasses and safety shoes are to be worn at all times.
 - b. Organic vapor air-purifying respirators of the half-mask type must be available if needed. Disposable Tyvek®, chemically resistant outer clothes will be worn to minimize body contact with contaminated water.

Table 2-1. Site Safety Plan (Continued, Page 3 of 4)

-
- c. If strong odors of organics are detected, the respirator should be worn as a precautionary measure.
 - d. Impermeable gloves will be worn to prevent skin contact whenever handling the waste samples.
 - e. Collectable samples must be closed to the atmosphere as soon as practical to lessen inhalation hazards.
 - f. This sampling job requires Level D protection, and more detail is provided in a later section.
3. Soil/Sludge/Sediment Sampling
- a. Soils, sludges, and sediments may be sources of concentrated toxic heavy metals. Care must be taken to prevent skin contact.
 - b. Additional precautions are similar to the section on surface water sampling.
 - c. All soil, sludge, and sediment sampling requires Level D protection.

WORK SCHEDULE LIMITATIONS

- 1. All work will be completed in daylight hours only.

Surveillance Equipment and Materials: Explosimeter, photoionization detector, various vapor and gas detector tubes and hand pumps, personal sampling pumps with organic vapor adsorption tubes, Century OVA

Decontamination Procedures:

- 1. Wash and rinse with approved water source at station located strategically between sites and command post.

Emergency Precautions:

Acute Exposure Symptoms

First Aid

Chemical splash to skin
Chemical splash to eyes
Unconsciousness--vapor
inhalation

10- to 15-minute water flush, evaluate
15-minute water flush, evaluate
Remove affected individual to clean
area, administer cardiopulmonary
resuscitation (CPR), artificial
respiration, or oxygen, as necessary,
and evaluate.

Table 2-1. Site Safety Plan (Continued, Page 4 of 4)

EQUIPMENT CHECKOUT

SCBA	<u>X</u>	Cylinders	<u> </u>
Air-Purifying Respirator	<u>X</u>	Cartridges	<u>X</u>
Explosimeter Vapor Detector	<u> </u>	Eye Wash Kit	<u> </u>
O ₂ Indicator	<u> </u>	First Aid Kit	<u>X</u>
Air Sample Pump and Tubes	<u> </u>	Drinking Water Supply	<u>X</u>
Radiation Survey Meter	<u> </u>	Personal Clothing	<u>X</u>
Radiation Contamination Meter	<u> </u>	Decontamination Materials	<u>X</u>
Other: Fire Extinguishers, Scram Emergency Escape Unit			<u>X</u>

Approved by: _____

Source: ESE, 1985.

3.0 CONTINGENCY PLANS

3.1 FIRE CONTROL

Flammable materials are known to be stored at some sites. No smoking will be allowed in these areas. Fire extinguishers (10 #ABC), buckets, and shovels will be available at drilling sites and at the command post for use on small fires. The Site Safety Supervisor will post the telephone number of the nearest fire station and local law enforcement agencies in case of a major fire emergency.

3.2 SPILL CONTROL

The chances of a chemical spill are minimal at this site. In the event a drum ruptures and its contents spill, the Site Safety Supervisor and Field Team Leader will be notified immediately. The important factors are that no personnel are overexposed to vapors, gases, or mists, and that the liquid does not ignite. Waste spillage must not be allowed to contaminate any local water source. Small dikes will be erected to contain spills, if necessary, until proper disposal can be completed. Subsequent to cleanup activities, the Site Safety Supervisor will survey the area to ensure that no toxic or explosive vapors remain.

3.3. ACCIDENTS AND ACCIDENT REPORTING

All accidents must be reported to the Site Safety Supervisor immediately. Prompt reporting is essential to the prevention of future incidents in addition to the well being of the affected individual or individuals. The Site Safety Supervisor will notify the Project Manager of any serious accidents. The Site Safety Supervisor or other key members of the field team will be trained in first aid and cardiopulmonary resuscitation (CPR). First aid will be administered to affected personnel under the direction of the Site Safety Supervisor. For serious accidents, the nearest ambulance service will be contacted for transport of injured personnel to the local hospital. The Site Safety Supervisor will have established contact and liaison with medical authorities at a nearby medical facility whose personnel will be knowledgeable of the activities of the field team. Telephone numbers and addresses of ambulance and medical services will be posted onsite.

4 .0 AIR MONITORING

An air monitoring program is paramount to the well being of onsite and offsite personnel. A preliminary survey will be made prior to the initiation of any site work. This survey will be conducted with a Century Organic Vapor detector, an explosimeter, and a radiation survey meter. Once this survey has been completed, adjustments to the types of personal protective equipment needed may be necessary.

In addition to this preliminary site survey, air monitoring may be continued on at least a daily basis and more often, if onsite conditions proved unstable during the field activities. Well drilling operations will be monitored several times during the drilling activities to assure that the level of personnel protection is adequate. Based on this survey, the level of protection may be upgraded. The Site Safety Supervisor will be present in the vicinity of all hazardous operations to make on-the-spot measurements as necessary. Long-term personal air monitoring will be performed only if survey instruments show significant [greater than 30 parts per million (ppm) total organic vapor] air levels for sustained periods. This equipment will be available at the site for use. All air monitoring results will be recorded and will become part of the permanent record.

5.0 PERSONAL PROTECTIVE EQUIPMENT LEVELS

5.1 PERSONAL PROTECTIVE EQUIPMENT--LEVEL A

1. Open-circuit, pressure-demand, self-contained breathing apparatus (SCBA);
2. Totally encapsulated suit;
3. Gloves, inner (surgical type);
4. Gloves, outer, chemical protective;
5. Boots, chemical protective, steel toe and shank; and
6. Booties, chemical protective.

Criteria

1. Sites known to contain hazards which:
 - a. Require the highest level of respiratory protection (as stated above),
 - b. Will cause illness as a result of personal exposure,
 - c. Permit a reasonable determination that personal exposure could occur to any part of the body; or
2. Sites for which the Project Manager and/or Site Safety Supervisor make a reasonable determination that, based on the lack of information to the contrary, the site may be described as stated directly above.

5.2 PERSONAL PROTECTIVE EQUIPMENT--LEVEL B

1. Open-circuit, pressure-demand SCBA;
2. Chemical protective
 - a. Overalls and long-sleeved jacket, or
 - b. Coveralls;
3. Gloves, inner (surgical type);
4. Gloves, outer, chemical protective;
5. Boots, chemical protective, steel toe and shank; and
6. Booties, chemical protective.

Criteria

1. Sites known to contain hazards which contain the highest level of respiratory protection as stated above and which:
 - a. Will cause illness as a result of personal exposure,
 - b. Permit a reasonable determination that personal exposure could occur to any part of the body not covered by Level 3 protective clothing is unlikely; and
2. Sites for which the Project Manager and/or Site Safety Supervisor make a reasonable determination that, based on the lack of information to the contrary, the site may be described as stated directly above.

5.3 PERSONAL PROTECTIVE CLOTHING--LEVEL C

1. Full face-piece air purifying respirator;
2. Emergency escape oxygen pack (carried);
3. Chemical protective
 - a. Overalls and long-sleeved jacket, or
 - b. Coveralls;
4. Gloves, inner (surgical type);
5. Gloves, outer, chemical protective;
6. Boots, chemical protective, steel toe and shank; and
7. Booties, chemical protective.

Criteria

1. Sites known to contain hazards which:
 - a. Do not require a level of respiratory protection greater than the level afforded by air-purifying respirators (nominal protection of 10) as stated above,
 - b. Will cause illness as a result of personal exposure, or
 - c. Permit a reasonable determination that personal exposure areas of the body not covered by Level C protective clothing is unlikely; and

2. Sites for which the Project Manager and/or Site Safety Supervisor make a reasonable determination that, based on the lack of information to the contrary, the site may be described as stated directly above.

5 .4 PERSONAL PROTECTIVE EQUIPMENT--LEVEL D

1. Coveralls, cotton;
2. Boots/shoes, safety;
3. Safety glasses;
4. Hard hat with optional face shield; and
5. Air-purifying respirator (readily available).

Criteria

Sites where the Project Manager and/or Site Safety Supervisor make a reasonable determination that hazards due to exposure to hazardous materials are unlikely.

5 .5. ADDITIONAL PERSONAL PROTECTION

In addition to personal protective equipment, field personnel having duties on or near the hazard site should have ready access to:

1. A fully stocked, industrial-size, first aid kit;
2. An eyewash kit;
3. At least 3 gallons (gal) of potable water in a pressurized container to permit decontamination in event of accidental skin or eye contact with chemicals;
4. Field instrumentation (Geiger counter, oxygen meters, explosion meters, pH meters, photoionization meters, etc.); and
5. Litmus paper.

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APPENDIX F

MONITOR WELL BORING LOGS AND CONSTRUCTION DATA

APPENDIX F
MONITOR WELL CONSTRUCTION SUMMARY

Well Designation	Total Length (ft)	Screen Length (ft)	Screened Interval* (ft)	Casing Length† (ft)	Casing Interval* (ft)
LH2-8	21.2	15	-3.5 to -18.5	6.2	+2.2 to -3.5
LH2-9	22.2	15	-3.5 to -18.5	7.2	+3.2 to -3.5
T3-5	21.0	15	-3.0 to -18.0	6.0	+2.5 to -3.0
T3-6	21.0	15	-3.5 to -18.5	6.0	+2.0 to -3.5
T3-7	23.1	15	-4.0 to -19.0	8.1	+3.6 to -4.0
T6-4	21.2	15	-3.5 to -18.5	6.2	+2.2 to -3.5
T6-5	22.7	15	-4.0 to -19.0	7.7	+3.2 to -4.0
T8-3	20.0	15	-2.0 to -17.0	5.0	+2.5 to -2.0
T8-4	22.8	15	-3.5 to -18.5	7.8	+3.8 to -3.5
T9-3	22.3	15	-4.0 to -19.0	7.3	+2.3 to -4.0
T9-4	21.2	15	-3.0 to -18.0	6.2	+2.2 to -3.0
T10-1	23.3	15	-4.5 to -19.5	8.3	+3.3 to -4.5
T10-2	22.6	15	-4.3 to -19.3	7.6	+2.6 to -4.3
T10-3	22.2	15	-4.5 to -19.5	7.2	+2.2 to -4.5
T11-1	22.3	15	-4.5 to -19.5	7.2	+2.3 to -4.5
T11-2	22.2	15	-4.0 to -19.0	7.2	+2.2 to -4.0
T11-3	22.2	15	-3.5 to -18.5	7.2	+2.2 to -3.5
TOTALS	373.5	255.0		118.5	

Note: Monitor well construction summaries for wells installed during the Phase II, Stage I investigation are included in Thiess et al., 1984.

*Screened interval and cased interval referenced to ground level.

†Casing length also includes bottom plug as well as casing interval listed.

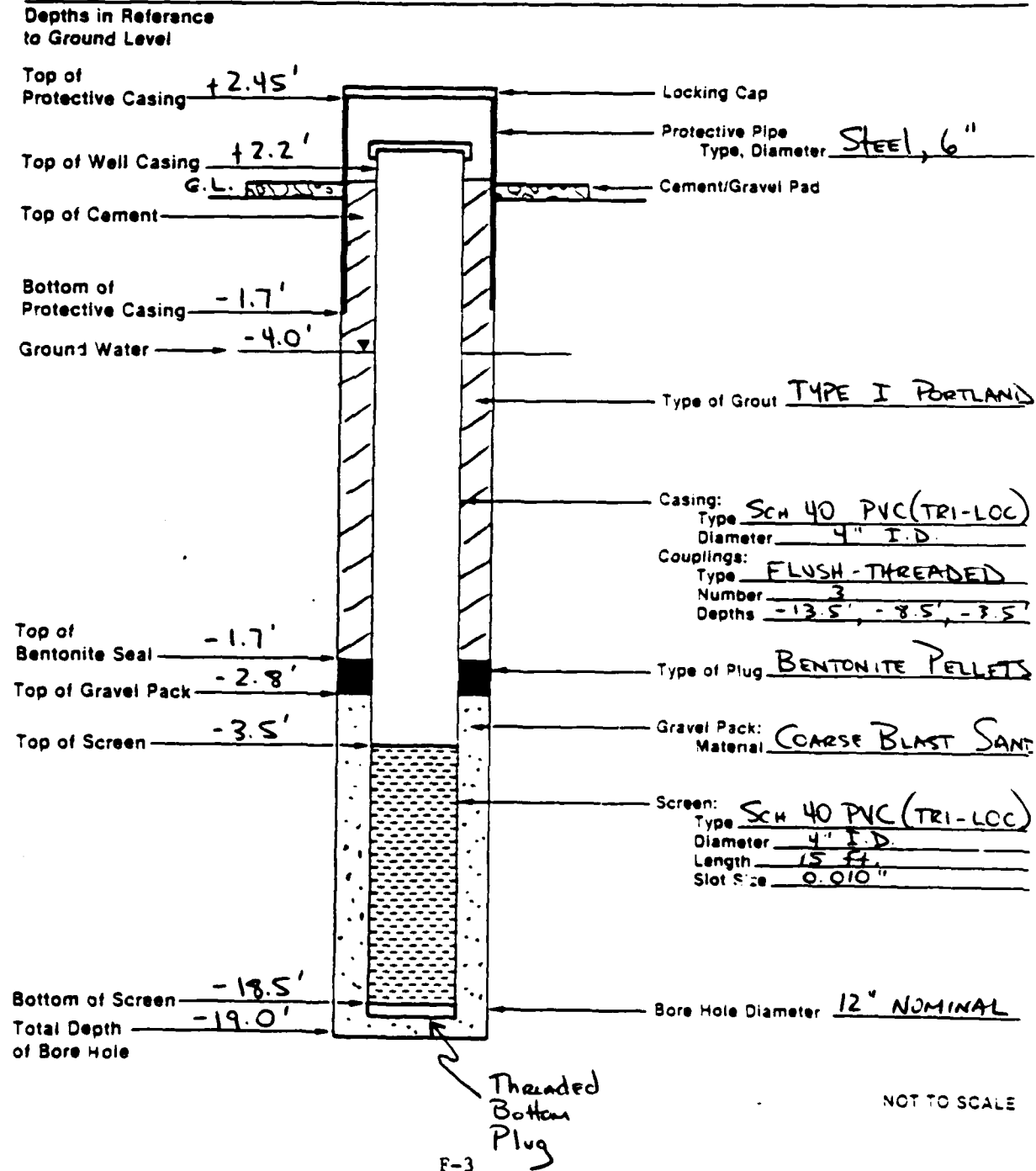
Source: ESE, 1987.

Boring No. LH2-8 Location Coordinates N 455,523.7
 Hole Size 12" NOMINAL Slot 0.010" E 1,631,897.7
 Screen Length 15' Mat'l Sch 40 PVC Filter Materials Coarse Blast Sand
 Diameter 4" I.D. Grout Type Type I Portland
 Casing Length 6.2' Mat'l Sch 40 PVC Development Centrifugal Pump - 175'
 Diameter 4" I.D. Static Water Level +2.68' MSL (10/22)
 Date Start 10/10/86 Finish 10/15/86 Top of Well Elevation +8.83' MSL
 Contractor ESE Driller PAT Thomas Drill Type HOLLOW STEM AUGER

Depth (feet)	Sample Length	Lithology, Color	Sketch of Construction	Standard Penetration Blow Count
0.0-1.5	18"	SP, Sand, fine-to-med. gr., poorly graded, lt. brownish gray 10YR6/2, not plastic, loose, dry, massive bedded	SEE Attached 	3 - 4 - 5
1.5-3.5	20"	SP, continuation of above to -2.5 ft., becomes SP, Sand, fine-to-med. gr., poorly graded, pale yellow 5Y8/3, not plastic, loose, moist, ~5 mm. thick organic rich horizons (dark gray 2.5Y3/0) throughout.		7 - 5 - 7 - 8
3.5-8.0	WT $\equiv$ 4'	SP, Sand, fine-to-med. gr., poorly graded, buff 10YR7/2, not plastic, loose to mod. dense, saturated below 4 ft.		
8.0-15.0		SM Sand, fine-to-coarse gr., ~15-20% silt, mod. graded, lt. brown 10YR6/1, not-to-sl. plastic, med. dense, saturated		
15.0-19.0		SM, Sand, fine-to-coarse gr., mod. graded, dark gray 5Y3/1, ~25% silt, sl. to v. plastic, dense, saturated		
19.0'		END OF BORING		

MONITOR WELL CONSTRUCTION

Logged By: JORDANA Client: DEHL - TYNDALL AFB
 Drilling Contractor: ESE Location: ZCNE # 2 - LYNN HAVEN FACILITY
 Driller's Name: PAUL THOMAS Job Number: 86378
 Well Number: LHZ-8 Date/Time: Start 10/10/86 Finish 10/15/86
 Comments (Lost circulation interval, Water level changes, Hole collapse interval, etc.):



10/10/86

- 1500 Move on site, set up and level rig
1505 Unload supplies; ASSEMBLE well casing and screen
1510 Open hole with 6" I.D. Hollow Stem Augers and retrievable plug, advance to 5 ft.

NOTE: Split spoon equipment non-functional;
split spooning will be conducted at
a later date immediately adjacent well

- 1520 Continue augering; advance to 15 ft.
1525 Continue augering; advance to 20 ft., terminate boring
Retrievable plug become detached, augers filled with
formation materials to -12 ft.; augers pulled from
hole, cleaned, plug reattached
1535 Augers reinserted into borehole, lower 10 ft. must be
redrilled

- 1550 Reach 20 ft. depth, terminate boring, well casing inserted
inside augers, same problem encountered (lower 3 ft.
of borehole filled with sand)

- 1600 Well pulled from borehole, augers pulled from borehole, new
plate attached to cutting end of auger, hole abandoned

- 1605 Augers disassembled, cleaned, new site selected

- 1630 Open new hole with 6" I.D. Hollow Stem Auger and
retrievable plug; advance to 10 ft.

- 1640 Augering continues, advance to 20 ft. terminate boring
Well set at -19 ft., augers pulled from borehole

- 1645 Added gravel pack; sounded at -2.8 ft. after
4 bags (400 lbs.) sand added

Added bentonite pellets; sounded at -1.7 ft. after
1 1/2 buckets (75 lbs) pellet added

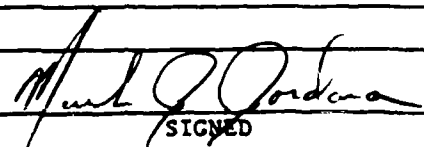
- 1650 Water added to facilitate swelling of bentonite
pellets

- 1655 Equipment disassembled and cleaned

- 1705 Depart site for day

10/15/86

DATE


SIGNED

Boring No. LH2-8 (con't)

SHEET 2 OF 2

10/15

0830 Move onto site, set up rig

0835 Drove split spoon from 0.0-1.5 ft. at site
immediately adjacent to previously emplaced
well LH2-8

0840 Drove split spoon from 1.5-3.5 ft.

0845 Dug holes for protective posts; protective cover
and posts grouted into place

0900 Depart from site

10/15/86
DATE

M. L. Jordan
SIGNED

SOURCE: Environmental Science and Engineering, Inc., 1986

Boring No. LH2-9 Location Coordinates N 456,019.6
Hole Size 12" NOMINAL Slot 0.010" E 1,631,532.8
Screen Length 15' Mat'l Sch 40 PVC Filter Materials Coarse Blast Sand
Diameter 4" I.D. Grout Type Type I Portland
Casing Length 7.2' Mat'l Sch 40 PVC Development Centrifugal Pump-200 GPM
Diameter 4" I.D. Static Water Level +1.60' MSL (10/22/86)
Date Start 10/10/86 Finish 10/15/86 Top of Well Elevation +7.80' MSL
Contractor ESE Driller PATHOMAS Drill Type Hollow Stem Auger

Depth (feet)	Sample Length	Lithology, Color	Sketch of Construction	Standard Penetration Blow Count
0.0-1.5	16"	<u>SM</u> Sand, fine-to-med. gr., -50% silt, poorly graded, dk. gray 10YR4/1 (top 6" soil horizon) grading to lt. gray-to-buff 10YR7/2 (lower 10"), not-to-sl. plastic, loose, moist	SEE ATTACHED 	3 - 3 - 6
1.5-3.5	18" WT $\equiv$ 3'	<u>SP</u> Sand, fine-to-med. gr., poorly graded, white 7.5YR8/0, not plastic, med. dense, moist to saturated, massive bedding		5 - 7 - 18 - 20
3.5-6.0		<u>SP</u> , Sand, continued from above		
6.0-8.5		<u>SM</u> Sand, fine gr., ~10% silt, poorly graded, lt. brown 10YR5/2, sl. plastic, med dense, saturated		
8.5-13.0'		<u>SM</u> Sand, fine gr., ~20-25 % silt, mod. graded, dk. brown 10YR2/2, sl. plastic-to-plastic, dense, saturated, HNU grading < 1 PPM (continued)		

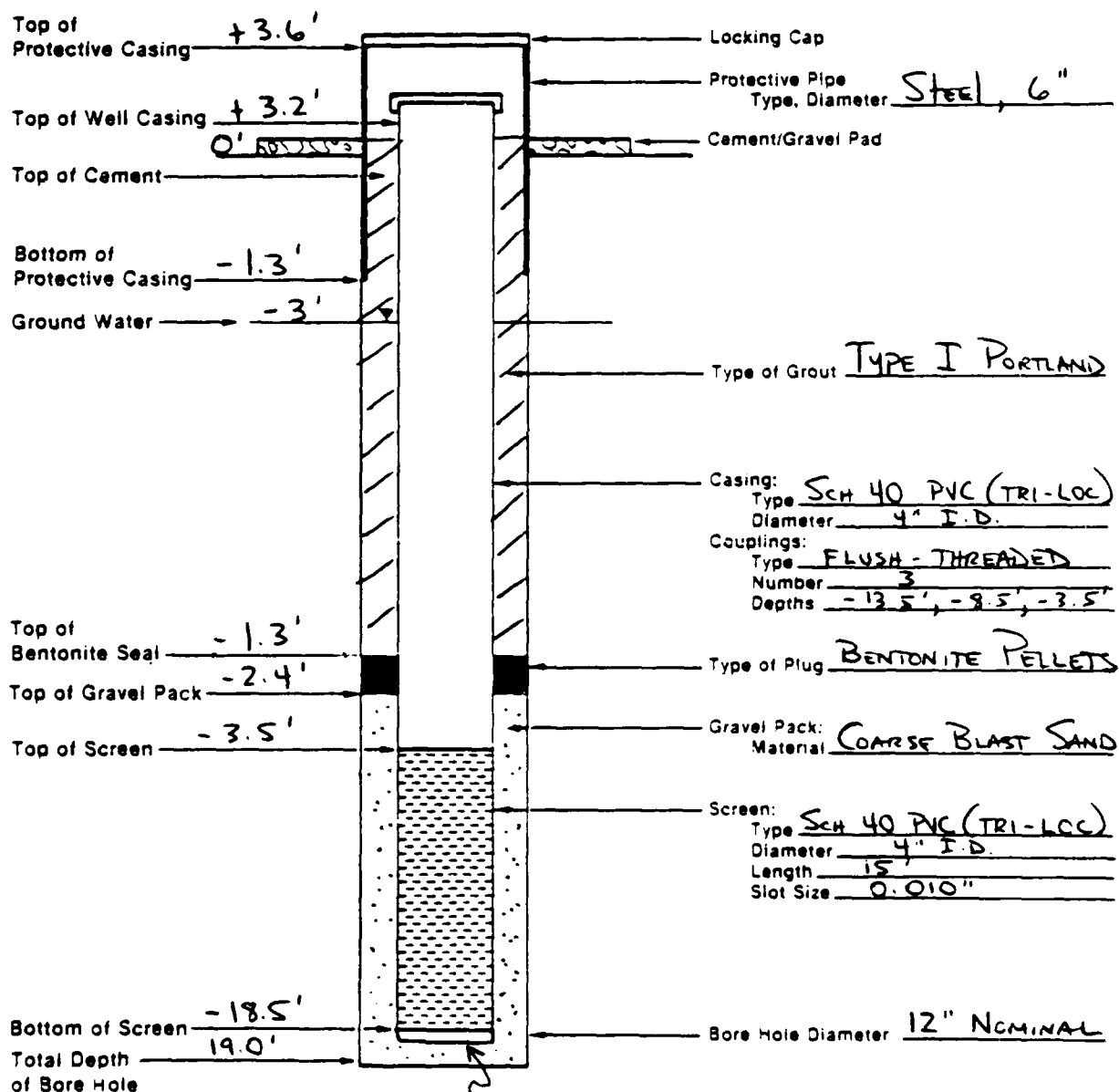
Boring No. LH2-9 (CONTINUED) Location Coordinates N 456,019.6
 Hole Size 12" NOMINAL Slot 0.010" E 1,631,532.8
 Screen Length 15' Mat'l Sch 40 PVC Filter Materials COARSE Blast Sand
 Diameter 4" I.D. Grout Type TYPE I Portland
 Casing Length 7.2' Mat'l Sch 40 PVC Development CENTRIFUGAL Pump
 Diameter 4" I.D. Static Water Level +1.60' MSL (10/22/86)
 Date Start 10/10/86 Finish 10/15/86 Top of Well Elevation +7.80' MSL
 Contractor ESE Driller PAT HARRIS Drill Type HOLLOW STEM AUGER

Depth (feet)	Sample	Lithology, Color	Sketch of Construction	Standard Penetration Blow Count
13.0-16.0		<u>SM</u> , Sand, fine gr., ~5% silt, poorly - to - mod. graded, buff 10YR6/2, sl. plastic, med dense, saturated		
16.0-18.0		<u>SM</u> , Sand, continuation of above, becomes ~10% silt, med. brown 5YR3/1		
18.0-19.0		<u>SM</u> , Sand, continuation of above, becomes ~20% silt, dark brown 10YR2/2		
19.0'		END OF BORING		

MONITOR WELL CONSTRUCTION

Logged By: JORDANA Client: OEHL - TYNDALL AFB
 Drilling Contractor: ESE Location: ZONE #2 - LYNN HAVEN FACILITY
 Driller's Name: PAUL THOMAS Job Number: 86378
 Well Number: LH2-9 Date/Time: Start 10/10/86 Finish 10/15/86
 Comments (Lost circulation interval, Water level changes, Hole collapse interval, etc.):

Depths in Reference to Ground Level



NOT TO SCALE

Boring No. LH2-9

SHEET 1 OF 1

10/10/86

- 1715 Move on site, set up and level rig
1720 Unload supplies, assemble well casing and screen
1725 Open hole with 6" I.D. Hollow Stem Auger
and retrievable plug, advance to 10 ft.
1730 Advance to 15 ft.; HNU reading negative at
-13 ft.
1735 Continue augering, advance to 20 ft., terminate
boring; well inserted inside augers
1740 Well set at -19 ft., augers pulled from
borehole; begin emplacing gravel pack
1745 Continue gravel pack emplacement, sounded at
-2.4 ft. after 4 bags (400 lbs) sand added
Added bentonite pellets; sounded at -1.3 ft.
after 1 1/2 buckets (75 lbs) pellets added
1750 Added water to facilitate swelling of bentonite
pellets, disassembled and cleaned equipment,
stored all equipment on rig for drill team
3-day layoff
1905 Depart site for day

10/15/86

- 0905 Move onto site, set up rig
0910 Drove split spoon from 0.0-1.5 ft. at site
immediately adjacent to previously emplaced
well LH2-9
0915 Drove split spoon from 1.5-3.5 ft.
0920 Dug holes for protective posts; protective
cover and posts grouted into place
0940 Depart from site

10/15/86
DATE


SIGNED

SOURCE: Environmental Science and Engineering, Inc., 1980

Boring No. T3-5 Location Coordinates N 398,638.6
Hole Size 12" Slot 0.010" E 1,655,804.1
Screen Length 15 ft. Mat'l SCH 40 PVC Filter Materials CAPAC BUNKET SAND
Diameter 4" I.D. Grout Type TYPE I PORTLAND
Casing Length 6.0 ft. Mat'l SCH 40 PVC Development CENTRIFUGAL PUMP-300 GPM
Diameter 4" I.D. Static Water Level +2.2' MSL (10/12/86)
Date Start 10/1/86 Finish 10/10/86 Top of Well Elevation +7.28' MSL
Contractor ESE Driller PAUL THOMAS Drill Type ROTOR STEEL ANCHOR

Depth (feet)	Sample # LENGTH	* Lithology, Color	Sketch of Construction	Standard Penetration Blow Count
0'-1.5'		SM/ML - FINE GRAINED SAND 1048 1/2 - WHITE ~10% SILT, POORLY GRADED NOT PLASTIC, LOOSE, DRY	SEE Attached	2-3-6
1.5'-3.5'	3' 	SM/ML - SAME AS @ 1.5' GRADES ABRUPTLY @ -2.5' TO: SP - POORLY GRADED MED. FINE SAND ~ 10% SILT 1042 1/4 - OK. 40 SCH. DRAIN GRADING BELOW WATER TABLETS EXTREMELY FINE GRAINED FLOWING SAND		5-3-3-5
20'		END OF BORING * Description of abandoned well hole appears 25 feet from installed well		

MONITOR WELL CONSTRUCTION

Logged By: ELLIOTT / JORDANA

Client: OEHL - TYNDALL AFB

Drilling Contractor: EDE

Location: ZONE #3 - POL AREA A

Driller's Name: PAUL THOMAS

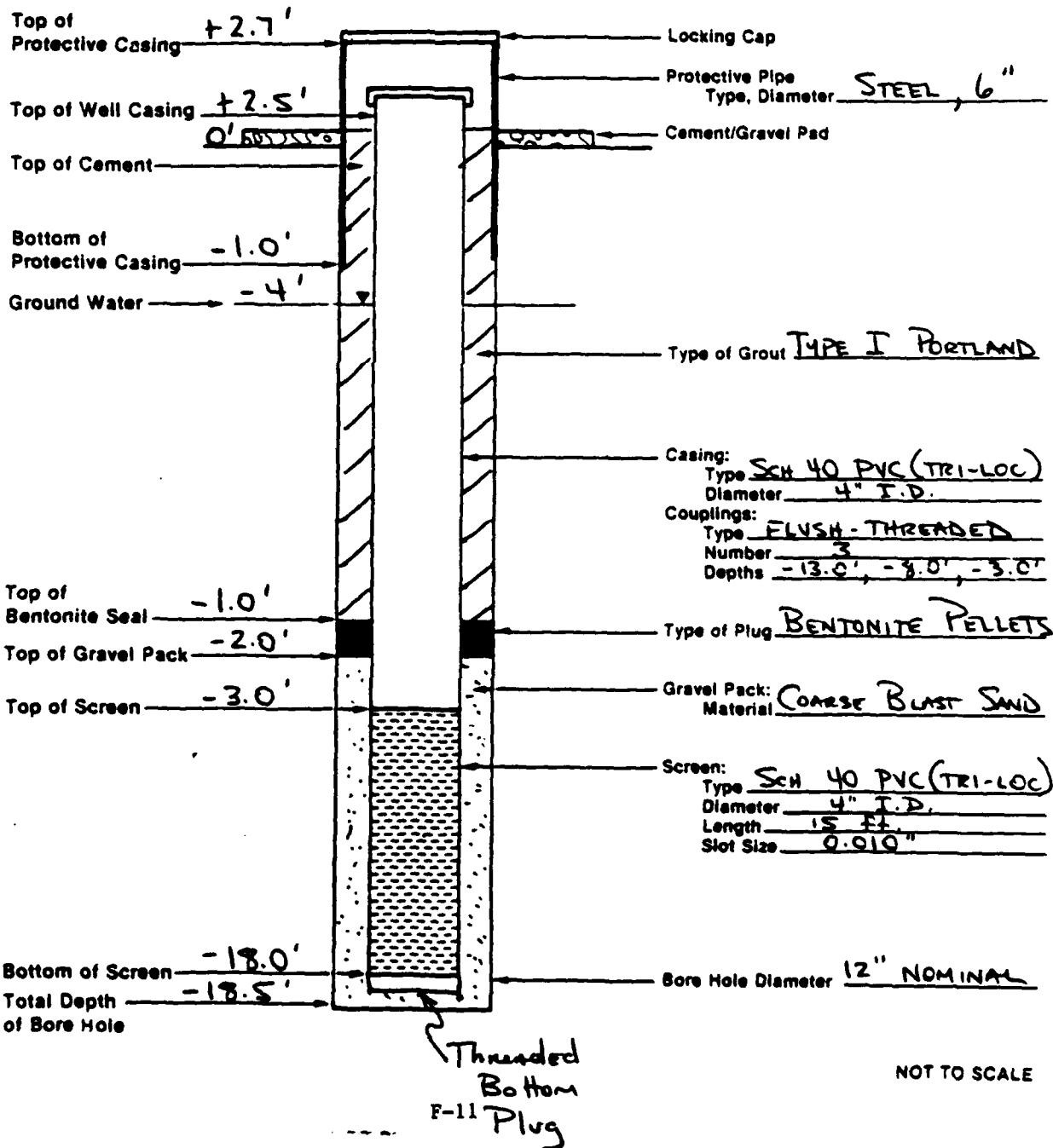
Job Number: 86378

Well Number: T3-S

Date/Time: Start 10/7/86 Finish 10/10/86

Comments (Lost circulation interval, Water level changes, Hole collapse interval, etc.):

Depths in Reference
to Ground Level



NOT TO SCALE

Boring No. T3-5

SHEET 1 OF 2

10/7/86

0700 LOADING SUPPLIES @ STORAGE AREA, GO TO SITE, CHECK IN (0740)
0800 PICKING UP DRUMS FROM CE
0815 ON SITE - SETTING UP RIG
0825 MOVE RIG - CLEAR NEW SITE
0835 SETTING UP, LEVEL RIG, UNLOAD
0845 DRIVE SPLIT SPIN FROM 0' TO 1.5'
0850 DRIVE SPLIT SPIN FROM 1.5' TO 3.5'
0855 OPEN HOLE W/ 6" I.D. HOLLOW STEM ANGER (HSA) + RETRIEVABLE BOTTOM PLUG
0905 ADVANCING TO 10' - WATER TABLE ~ -3'
0910 ADVANCING TO 15'
0915 ADVANCED TO 20 - END OF BORING
0920 ASSEMBLE PVC + SET INSIDE ANGER (15' SCREEN + 5' SOLID)
0925 PULL ANGERS W/ CASING UP TO -18', WAIT FOR BOTTOM TO FILL
0935 ATTEMPT TO SET CASING - PULL OUT BOTTOM PLUG + TRY TO PULL
ANGERS - WELL COMING UP TOO - HOLE ALREADY HEAVED - PUSHING PVC UP
0940 TRIP OUT - PULL PVC CASING
0950 BREAKING DOWN ANGERS - WE WILL RE-DRILL + OVERDRILL 5'
1000 RESTART - HOLE HEAVED TO -3' - ANGER THREAD STRIPPED
RE-TAP W/ TAP + DIE
1010 RESTART - ADVANCE HOLE TO +5'
1015 ADVANCE TO 15'
1020 RETURNED HOLE @ -22' (2' OVER)
1022 SETTING CASING IN HOLE - (15' SCREEN, 5' SOLID + 2.1' STICK UP)
1030 Casing SET @ -17.9' PULLING ANGERS + ADDING SAND
1040 CHECK 1120 LEVEL - WELL BLOCKED @ -15' - SAND - POSSIBLE BROKEN
1045 LEAVE SITE TO CALL PROJECT MANAGER - RE-DRILL? BOTTOM PLUG
1055 PROJ. MGR. SAYS PULL + RE-DRILL W/ ANGER IF POSSIBLE, HSA ROTARY OTHERWISE
1130 RETURNED TO SITE + CLEAN UP, PACK UP, PULL CASING OUT - CAP BROKEN
1145 PULL RIG OFF HOLE, SET UP ON NEW SITE ~20' OVER
1200 OPEN NEW HOLE, ADVANCE W/ 5' TO 20'
1215 INSTALL CASING - ANGERS FILLED W/ SAND TO -16' - CASING WON'T GO DOWN
1220 PULL CASING - INJECT - EXTREMELY FINE SAND FLOWING THROUGH SCREEN SLOTS
+ ANGER - CASING ALREADY FILLING UP INSIDE W/ SAND
1230 - SHUT DOWN - FILL BACK + RESOUP

10/7/86
DATE

SIGNED

SOURCE: Environmental Science and Engineering, Inc., 1980

10/10/96

1115 MOVE onto site, SELECT NEW WELL LOCATION, SET UP AND ERECT RIG
1120 INITIAL SUPPLIES AND EQUIPMENT ASSEMBLE WELL CASING AND SCREEN
1125 OPEN hole w/ 6" I.D. HIGH STEEL AUGER AND REMOVABLE
plug, ADVANCE to 5 ft.

1130 CONTINUE AUGERING, ADVANCE to 15 ft. - INT @ -6'

1135 ADVANCE to 20 ft. TERMINATE BORING

NOTE: All completion material (i.e. sand pack material) MOVED IMMEDIATELY adjacent to borehole to expedite SAND PACK emplacement (due to clean nature of FORMATION SANDS)

1140 Well cased inside AUGERS (15 ft. screen 5 ft. solid), AUGERS w/ CASING pulled up to 10 ft. REMOVED FROM SITE

- AUGERS REMOVED FROM borehole, well cased to 10 ft.

- SAND PACK IMMEDIATELY EMPLACED AND MIXED w/ FORMATION SANDS

- Sounded @ -2.0 ft. after 400 lbs. of sand

1150 Added bentonite pellets, sounded @ -1.0 ft. after 1 1/2 buckets

1155 Added water to facilitate sounding of screen to 2 ft

1200 Approx 4 ft of SAND MEMOURED inside of well casing

1205 Plug set up to do preliminary development in an attempt to REMOVE SAND inside well. Well cased to 20 ft. for 20 minutes - SAND REMOVED; no sand was removed

1230 HNU MEASUREMENTS taken @ well head, sand pump from 20 ft. SAND (hydrostatic method), and area where pumped material was discharged (all < 1000 readings)

1240 Was for protective deck over

1305 Posts and protective covers placed into place

1315 Site cleaned

1320 Depart from site

10/10/96DATE
F-13

SIGNED

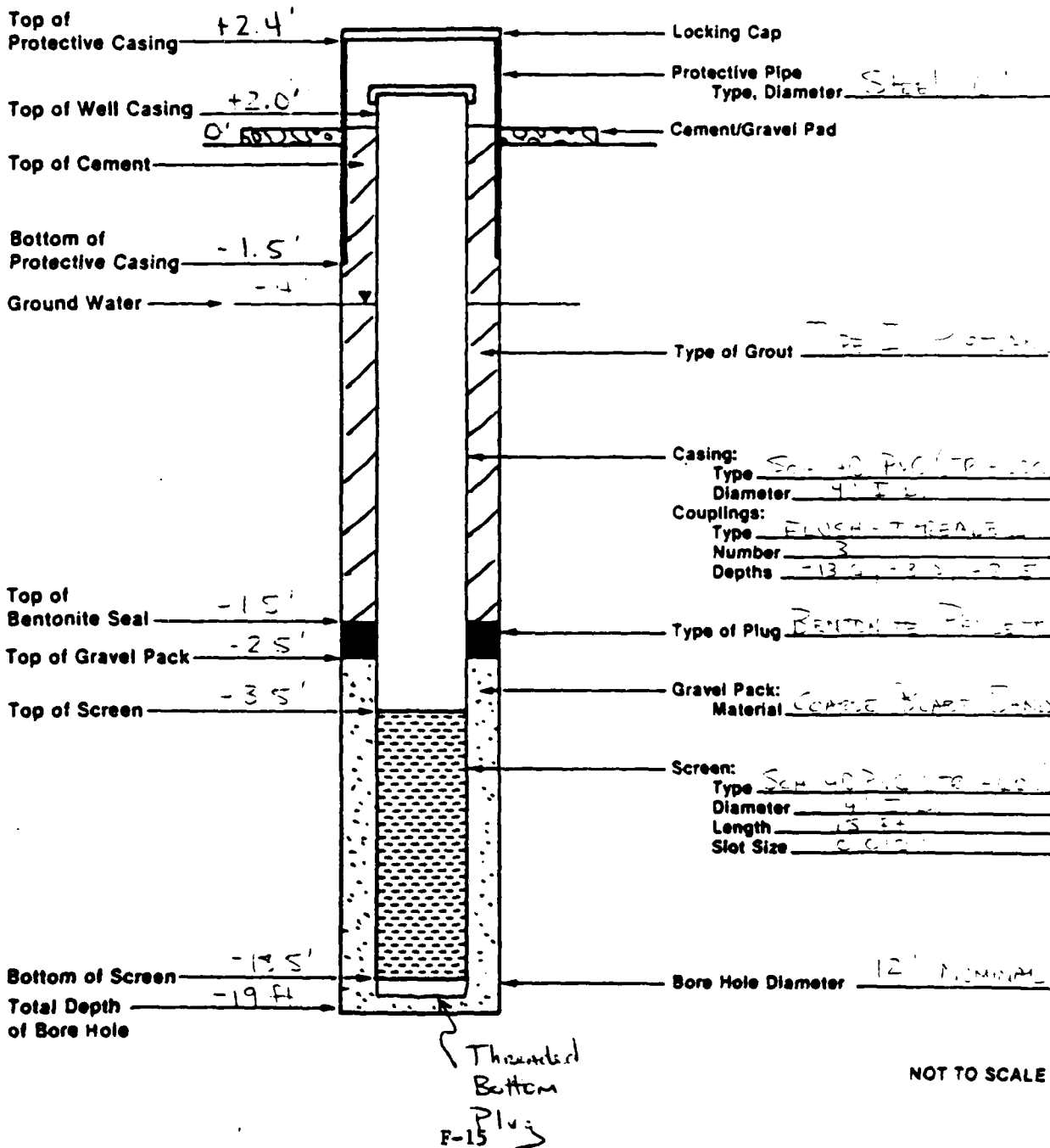
Boring No. T3-6 Location Coordinates N 398,456.4
Hole Size 12" Nominal Slot 0.010" E 1,655,773.5
Screen Length 15' Mat'l Sch 40 PVC Filter Materials Coarse Blast Sand
Diameter 4" I.D. Grout Type Type I Portland
Casing Length 6.0' Mat'l Sch 40 PVC Development Centrifugal Pump - 240 GPM
Diameter 4" I.D. Static Water Level +1.3' MSL (10/17/86)
Date Start 10/10/86 Finish 10/16/86 Top of Well Elevation +7.88' MSL
Contractor ESE Driller PATHWAYS Drill Type Hollow Stem Auger

Depth (feet)	Sample Length	Lithology, Color	Sketch of Construction	Standard Penetration Blow Count
0.0-1.5	14"	SM Sand, fine gr., ~10% silt, poorly graded, dk. gray 10YR4/1, not plastic, loose, dry, at -1.0 ft becomes: SP, Sand, fine gr., poorly graded, yellow 10YR7/8, not plastic, loose, dry	See Attached	3 - 4 - 7
1.5-3.5	16"	SP Sand, fine-to-med. gr., poorly graded, pale brown 10YR8/4, not plastic, loose-to-med. dense, moist-to-wet, massive bedding		6 - 7 - 7 - 9
3.5-16.0	WT  4'	SP Sand, fine gr., poorly graded, light gray 10YR7/2, not plastic, med. dense, wet-to-saturated below 4 ft.		
16.0-20.0		SP, Sand, fine gr., poorly graded, dk. grayish brown 2.5Y4/2, not plastic-to-sl. plastic, med. dense, saturated		
20.0		END OF BORING		

MONITOR WELL CONSTRUCTION

Logged By: JORDANA Client: CEHL - TYNDALL I-75
 Drilling Contractor: CEE Location: ZONE 3 - POL AREA A
 Driller's Name: PHIL THOMAS Job Number: 86372
 Well Number: TS-6 Date/Time: Start 10/01/94 Finish 10/16/94
 Comments (Lost circulation interval, Water level changes, Hole collapse interval, etc.):

Depths in Reference
 to Ground Level



NOT TO SCALE

Boring No.

T3-6

SHEET

1

OF

1

10/10/86

- 0945 Move onto site, clear area for work of underground obstructions
- 0910 Re moved onto site set up and leveled supplies and equipment situated
- 0920 Open hole with 1" ID 14" Stem Auger and Retractable Plug, advance to 15 ft. just below
- 0925 Advance to 15 ft.
- 0930 Advance to 20 ft., end of logging
- 0935 All completion materials (gravel sack bottom) positioned immediately adjacent to borehole in an attempt to prevent cementation
- 0940 Pull auger w/ casing up to 10 ft. and remove it from hole, no cuttings retrievable
- Well set at - 10 ft. below @ - 30 ft.
 - Sand sack added immediately, and sand seal -
- prevent hardening

NOTE: Due to pure sand / c. to cause nature of sand, collapse of borehole occurred mixing formation sands w/ sand sack material

- 0945 Sand sack sounded @ - 2.5 ft. after 3" hole
- 0950 Add gravelite pellet sounded @ - 1.5 ft. after 1 1/2" hole
- 0955 Added water to seal and well as 5" borehole w/
- 1000 Equipment cleaned and loaded to move off site
- 1010 Depart site

- 1245 Protective posts holes and sand and gravelite used to grouted into place
- 1300 Depart site for day

10/16/86

- 0940 Move on site, set up rig
- 0945 Drive split spoon (immediately adjacent well) from 0.0 - 1.5 ft., drive split spoon from 1.5 - 3.5 ft.
- 0955 Depart site

10/16/86

DATE



SIGNED

SOURCE: Environmental Science and Engineering, Inc., 1980

Boring No. T3-7 Location Coordinates N 398, 428.4
 Hole Size 12" Nominal Slot 0.010" E 1,655,200.9
 Screen Length 15' Mat'l Sch 40 PVC Filter Materials Coarse Blast Sand
 Diameter 4" I.D. Grout Type Type I Portland
 Casing Length 8.1' Mat'l Sch 40 PVC Development Centrifugal Pump - 175 GPM
 Diameter 4" I.D. Static Water Level +5.59' MSL (10/19/86)
 Date Start 10/15/86 Finish 10/16/86 Top of Well Elevation +13.26' MSL
 Contractor ESE Driller PAT Thomas Drill Type Hollow Stem Auger

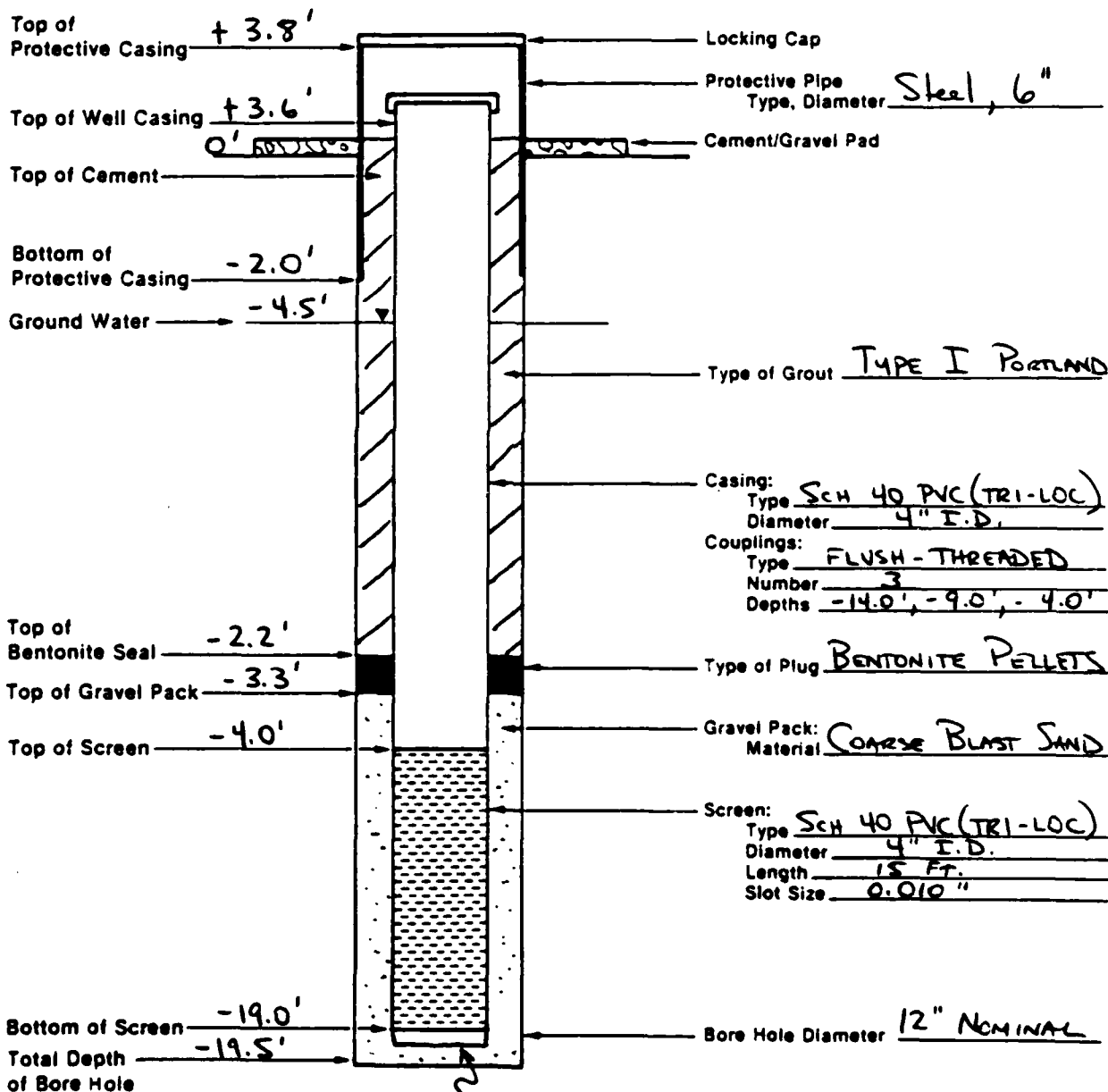
Depth (feet)	Sample Length	Lithology, Color	Sketch of Construction	Standard Penetration Blow Count
0.0-1.5	15"	<u>SP</u> , Sand, fine gr., poorly graded, white 10YR8/1, not plastic, loose, dry, massive bedding	<u>SEE</u> <u>ATTACHED</u>	2 - 3 - 5
1.5-3.5	24"	<u>SP</u> , Sand, continuation of above, at -2.3' becomes: <u>SM</u> , Sand, fine gr., ~5-10% silt, poorly graded, dk. brown 10YR3/3 from 2.3-3.0 ft., becomes lt. grayish brown 10YR7/2 from 3.0-3.5 ft., sl. plastic, med. dense, moist - to - wet		2 - 3 - 4 - 6
3.5-8.0	<u>WT</u>  4.5'	<u>SM</u> Sand, fine - to - coarse gr., ~10-15% silt, mod. graded, brown 7.5YR4/4, sl. plastic, loose - to - med. dense, moist - to - saturated below 4.5 ft.		
8.0-20.0		<u>SM</u> , Sand, fine - to - med. gr., ~15% silt, poorly graded, lt. brownish gray 10YR6/2, sl. plastic - to - plastic, med. dense, becomes gray 10YR5/1 from 15-20 ft.		
20.0		END OF BORING		

MONITOR WELL CONSTRUCTION

Logged By: JORDANA
 Drilling Contractor: ESE
 Driller's Name: PAUL THOMAS
 Well Number: 13-7
 Comments (Lost circulation interval, Water level changes, Hole collapse interval, etc.):

Client: OEHL - TYNDALL AFB
 Location: ZONE #3 - POL AREA A
 Job Number: 86378
 Date/Time: Start 10/15/86 Finish 10/16/86

Depths in Reference
to Ground Level



NOT TO SCALE

Boring No. T3-7

SHEET 1 OF 1

10/15

- 1600 Arrive on site, set up, level rig
1605 Unload equipment and supplies, prepare to drill
1610 Open hole w/ 6" ID Hollow Stem Auger and
retrievable plug, advance to 5 ft.
1615 Advanced to 15 ft.
1620 Advanced to 20 ft., terminated boring
Set well inside augers (15' screen, 5 ft. solid)
Popped out retrievable plug, well set @ -19.5 ft
pulled up augers
1625 Added gravel pack, sounded @ -3.3 ft after
400 lbs; added bentonite pellets,
sounded @ -22 ft. After 50 lbs
1630 Added water to facilitate swelling of bentonite
pellets; cleaned equipment and loaded it
back onto rig and supply truck
1645 Drillers prepare to travel to Quincy, FL to retrieve
operational split spoon apparatus; depart site for day

10/16

- 1010 Arrive on site, set up rig
1015 Drove split spoon (immediately adjacent to well)
from 0.0-1.5 ft.
1020 Drove split spoon from 1.5-3.5 ft.
1025 Dug holes for protective posts, grouted protective
cover and posts into place
1045 Departed site

10/16/86
DATE

[Signature]
SIGNED

SOURCE: Environmental Science and Engineering, Inc., 1980

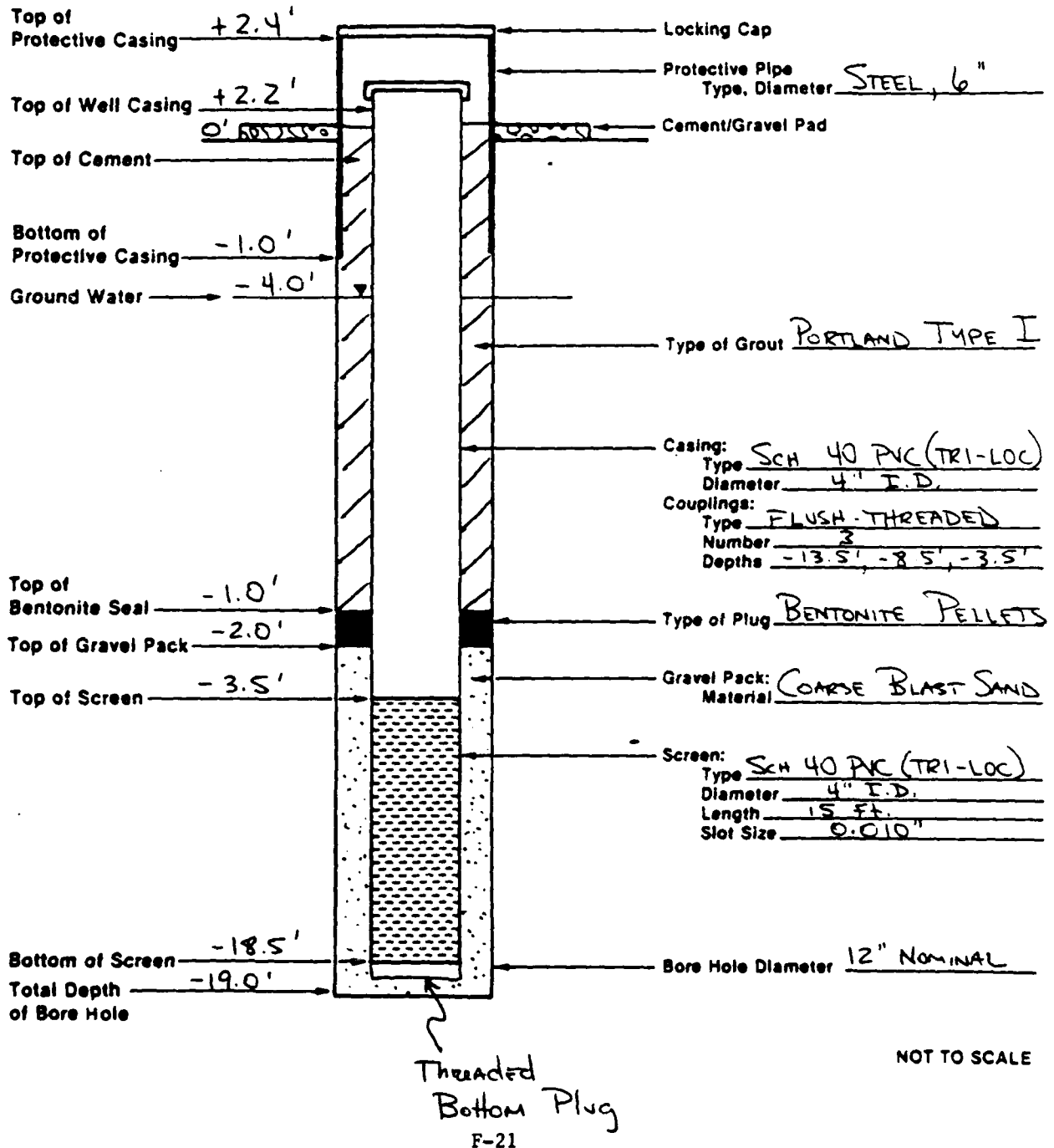
Boring No. <u>T6-4</u>	Location Coordinates <u>N 386,657.7</u>
HoIe Size <u>12"</u> Slot <u>0.010"</u>	<u>E 1,660,567.1</u>
Screen Length <u>15 ft</u> Mat'l <u>SCH 40 PVC</u>	Filter Materials <u>COARSE FINE SAND</u>
Diameter <u>4" I.D.</u>	Grout Type <u>TYPE I PORTLAND</u>
Casing Length <u>6.2 ft.</u> Mat'l <u>SCH 40 PVC</u>	Development <u>CENTRIFUGAL PUMP - 205 GAL</u>
Diameter <u>4" I.D.</u>	Static Water Level <u>+20.51' MSL (10/19/86)</u>
Date Start <u>10/3/86</u> Finish <u>10/4/86</u>	Top of Well Elevation <u>+26.22' MSL</u>
Contractor <u>ESSE</u> Driller <u>PALM THOMAS</u>	Drill Type <u>HYDRAULIC DOWN THE HOLE</u>

Depth (feet)	Sample	Lithology, Color	Sketch of Construction	Standard Penetration Blow Count
0.0 - 5'	Length 12"	<u>SM</u> , SAND, FINE-TO MED GR, ~10% SILT, ORIGIN @ SURFACE (SEE LOG 204) 10744, BEARING CASE NUMBER 10744, 10745 10746, 10747, 10748 10749, 10750, 10751 10752, 10753, 10754		5-8-10
15-30	0	<u>SM</u> , SAND, FINE-TO MED GR, FLOW-WEATHERED DARK ORANGE, 10755 10756, 10757, 10758 10759, 10760, 10761 10762, 10763, 10764	SEE <u>ATTACHED</u>	10-15-20
30-40	WT = 4"	<u>SM</u> , SAND, FINE-TO MED GR, ~10% SILT, DARK ORANGE, 10765, 10766 10767, 10768, 10769 10770, 10771, 10772 10773, 10774, 10775		
40-50		END OF BORING		

MONITOR WELL CONSTRUCTION

Logged By: JORDANA Client: OEHL - TYNDALL AFB
 Drilling Contractor: ESE Location: Zone # 6 - HWY 98 FTA
 Driller's Name: PAUL THOMAS Job Number: 86378
 Well Number: TG-4 Date/Time: Start 10/8/86 Finish 10/9/86
 Comments (Lost circulation interval, Water level changes, Hole collapse interval, etc.):

Depths in Reference to Ground Level



Boring No. TG-4

SHEET 1 OF 1

10/2/86

1345 - Move onto site, setup and level 20

1350 - Unload supplies and equipment

1405 - Drive split casing from 0-15 ft

1410 - Drive split casing from 15-35 ft

Opened hole w/ 6" T.D. to 35 ft from surface
and retrievable plug

1415 - Advanced to 10 ft; WT @ ~4 ft

1420 - Advanced to 20 ft, terminate boring

1425 - Set well inside of casing (15 ft from surface)

- Drilling w/ casing up to 10 ft
to bottom of casing = 2'

- Drilling retrievable plug to 10 ft

- Set plug @ 10 ft

1435 - Add some more gravel @ -3 ft from surface
the bags (500 lbs)

Add concrete to fill gravel @ -3 ft from surface
1 bucket (50 lbs)

1440 - Wash out to hole to surface
remove plugs

1445 - Equipment cleared and parked at surface
back holes dug

1500 - Depart from site

10/3/86

0930 - Protective casing and back holes dug
to 10 ft and 10 ft of casing (casing) dug
dug to 10 ft - casing not present

11/86

- Well reported by site geologist

DATE

SIGNED

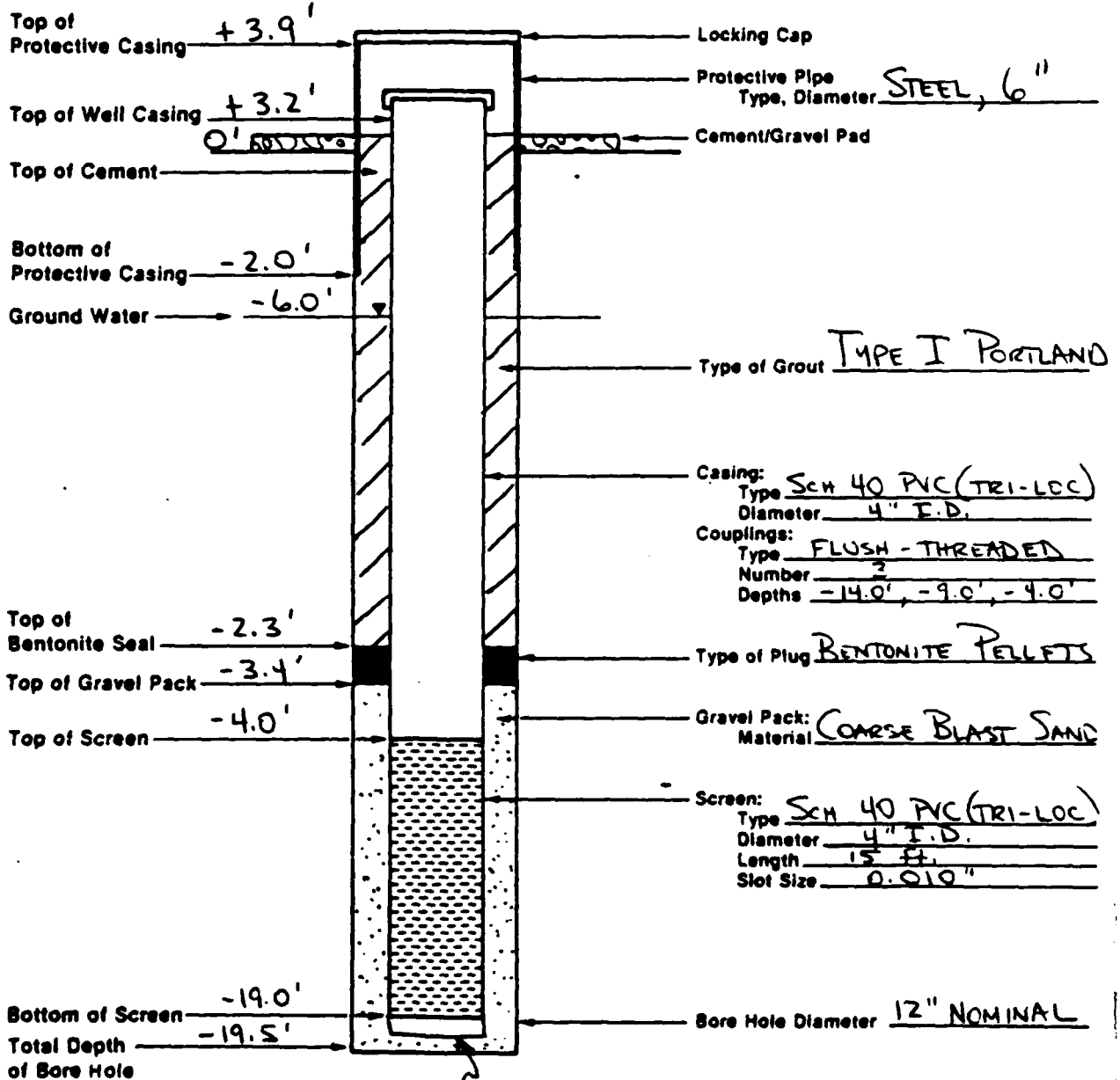
Boring No. T6-S Location Coordinates N 386, 272.4
 Hole Size 12" NOMINAL Slot 0.010" E 1,660, 197.6
 Screen Length 15' Mat'l Sch 40 PVC Filter Materials COARSE Blast Sand
 Diameter 4" I.D. Grout Type Type I Portland
 Casing Length 7.7' Mat'l Sch 40 PVC Development Centrifugal Pump - 300 GPM
 Diameter 4" I.D. Static Water Level +20.73' MSL (10/19/86)
 Date Start 10/8/86 Finish 10/16/86 Top of Well Elevation +29.37' MSL
 Contractor ESE Driller PATHOMAS Drill Type HOLLOW STEM AUGER

Depth (feet)	Sample Length	Lithology, Color	Sketch of Construction	Standard Penetration Blow Count
0.0-1.5	18"	SP, FILL, Sand, fine gr., poorly graded, white-to lt. gray 7.54R8/0, not plastic, loose, dry, HNU reading < 1 PPM	See Attached 	3 - 3 - 6
1.5-3.5	18"	SP, FILL, sand, continued as above, sharp contact at -2.5 ft. becomes: SM, Sand, fine gr., ~10% silt, brown at top 104R4/3 (soil horizon) becomes buff at base 104R6/3, not plastic, loose-to-med. dense, dry-to-slt. moist		4 - 4 - 4 - 8
3.5-20.0	WT  6'	SP, Sand, fine-to-med. gr., white 2.54R8/0 to -12 ft becomes dark brown 104R3/2 from -12 to -20 ft., poorly graded, not plastic, moist-to-saturated below -6 ft., med. dense		
20.0		END OF BORING.		

MONITOR WELL CONSTRUCTION

Logged By: JORDANA Client: OEHL - TYNDALL AFB
 Drilling Contractor: ESE Location: ZONE #6 - HWY 98 FTA
 Driller's Name: PAUL THOMAS Job Number: 86378
 Well Number: T6-S Date/Time: Start 10/2/86 Finish 10/16/86
 Comments (Lost circulation interval, Water level changes, Hole collapse interval, etc.):

Depths in Reference
to Ground Level



NOT TO SCALE

10/12/86

- 1510 Move on site, set-up and level rig
1515 UNLOAD SUPPLIES AND EQUIPMENT, ASSEMBLE SCUMMING RIG
1525 Drive split spoon from 0-15 ft
1530 Drive split spoon from 15-35 ft, can not get with
I.D. Hollow Stem Auger and retrievable plug
1535 Advanced Auger to 20 ft, WT @ -4 ft end of auger
1540 Set well inside of Auger (15 ft screen 5 ft of hole -
Augers removed from location - No sand -
- 20 ft
1545 Added gravel pack, sounded @ -35 ft, then 4 ft
(200 lbs) sand added
1550 Bentonite pellets added, sounding well not even -
Action 2 1/2 buckets (25 lbs) sand @ -35 ft
1600 1 SAND BAR, according to log, also setting
CAUSED SAND PACK AND BENTONITE TO DROP
1605 Drive and set grout pack well, grout
OVERBURNED debris to pull well out again -
1615 Depart site for the day

10/12/86

- 0900 Arrive on site, set-up rig
0905 Pull well from hole
0915 Grout borehole to surface
0925 Depart site

10/15/86

- 1215 Move onto site, set up and level rig
1240 Open hole with 6" I.D. Hollow Stem Auger and
retrievable plug; advance to 5 ft.
1245 Continue augering; advance to 10 ft.
1250 Continue augering; advance to 20 ft.; terminate boring
1255 Well set inside augers, lower 3 ft. of augers
filled with sand, preventing well from being set
at proper depth -

DATE
F-25

SIGNED

Boring No. TG-5 (CONTINUED)

SHEET 2 OF 2

1300 Pulled well up, pulled augers from borehole, disassembled and cleaned augers

1325 Re-entered borehole; advanced to 5 ft.

1330 CONTINUED AUGERING, advanced to 10 ft.

1335 CONTINUED AUGERING, advanced to 15 ft.

1340 CONTINUED AUGERING, advanced to 20 ft., terminated boring; well set inside augers at -19.5 ft.

1345 Augers pulled from hole; gravel pack added, sounded at -3.4 ft. after 3 1/2 bags (320 lbs) sand added

1350 Added bentonite pellets, sounded at -2.3 ft. after 1 1/2 buckets (75 lbs) of pellets added; water added to facilitate swelling of bentonite pellets

1355 Equipment disassembled and cleaned; stored for transport

1400 EP Toxicity sample taken from cuttings pile due to color and coloration of sediments

1410 Depart site for day

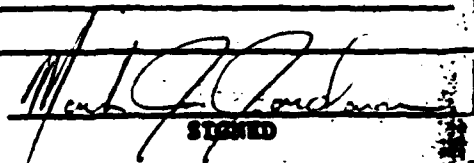
10/16/86

1135 Holes dug for protective posts; protective cover and posts grouted into place

1200 Depart site for day

10/16/86

DATE


SIGNED

SOURCE: Environmental Science and Engineering, Inc., 198

Boring No. T8-3 Location Coordinates N 397,666.7
 Hole Size 12" Slot 0.010" E 1,653,913.8
 Screen Length 15' Mat'l Sch 40 PVC Filter Materials COARSE BLAST SAND
 Diameter 4" I.D. Grout Type TYPE I PORTLAND
 Casing Length 5.0' Mat'l Sch 40 PVC Development CENTRIFUGAL PUMP - 173 GAL
 Diameter 4" I.D. Static Water Level +6.41' MSL (10/19/86)
 Date Start 10/7/86 Finish 10/9/86 Top of Well Elevation +10.34' MSL
 Contractor ESF Driller PAUL THOMAS Drill Type HOLLOW STEM AUGER

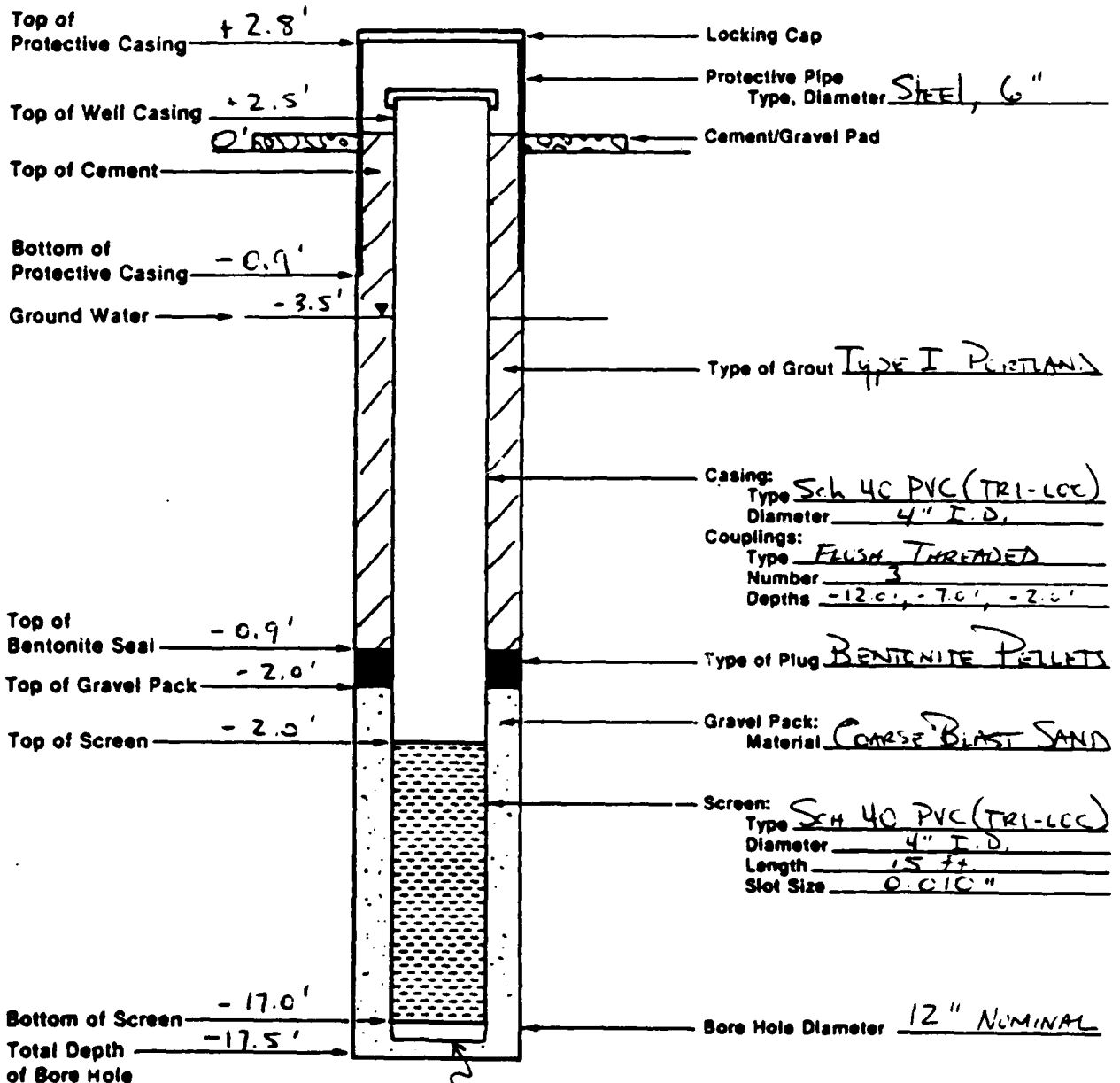
Depth (feet)	Sample	Lithology, Color	Sketch of Construction	Standard Penetration Blow Count
0'- 1.5'	2.1	SM - SILTY MED. FINE GRAINED SAND & SILT BLACK COLOR RESIDUE IN MATE. 2 BLACKEN GRAY (NO HAW RESPONSE) NOT PLASTIC, DENSE, COMPACT, MOIST	ATTACHED	3-4-6
1.5'- 3.5'	1.0	SM - SAME AS @ -1.5', SATURATED @ -3.5'		4-5-7-14
		SM - SAME - LEAST BLACK RESIDUE ON HANDS, NO HAW RESPONSE		
18'		END OF BORING		

P-27

MONITOR WELL CONSTRUCTION

Logged By: ELLIST Client: CEHL - Tyndall AFB
 Drilling Contractor: ESE Location: ZONE #3 - ECCC AREA LANDFILL
 Driller's Name: PAUL THOMAS Job Number: SG378
 Well Number: TR-3 Date/Time: Start 10/1/96 Finish 10/9/96
 Comments (Lost circulation interval, Water level changes, Hole collapse interval, etc.):

Depths in Reference to Ground Level



Threaded
 Bottom Plug
 F-28

NOT TO SCALE

Boring No. T8-3

SHEET 1 OF 1

10/7/86

1655 MOVE AUTO SITE, SET UP RIG
1700 LEAVING RIG
1705 UNLOAD SUPPLIES
1710 DRIVE SPLIT SPIN 0' TO 1.5'
1715 DRIVE SPLIT SPIN FROM 1.5' TO 3.5'
1720 OPEN HOLE W/ HSA + RETRIEVABLE PLUG
1725 ADVANCING TO 3'
1735 ADVANCING TO 15'
1740 ADVANCED TO 18' END OF BORING
1745 ASSEMBLING PIG IN WELL (15' SCREEN, 5' SOLID)
1750 PVC DOWN + SET @ -12', PULLING ANGERS - STICK UP = 2.8'
1800 ADDED SAND - SOUNDED @ -2' AFTER 4 RINGS
1805 ADDING BENTONITE PELLETS - SOUNDED @ -2.4' AFTER 2 SUCCESS, OUT OF PELLETS - NEED TO ADD MORE TO BRING UP TO - 3.0'
1815 PACKING UP, CLEANING ANGERS
1830 DEPART SITE FOR DAY

10/8/86

0705 Added 2/3 bucket bentonite pellets, sounded @ 0.9 ft.
0955 Post holes dug
1005 Departed site

10/9/86

Posts and protective casing grouted into place (performed by drillers independent of site geologist - time uncertain)
1610 - Well completion inspected by site geologist

10/9/86

DATE

F-29

SIGNED

SOURCE: Environmental Science and Engineering, Inc., 1980

Boring No. T8-4 Location Coordinates N 397,440.0
Hole Size 12" NOMINAL Slot 0.010" E 1,654,020.7
Screen Length 15 ft. Mat'l Sch. 40 PVC Filter Materials COARSE BLAST SAND
Diameter 4" I.D. Grout Type Type I PORTLAND
Casing Length 7.8 ft. Mat'l Sch. 40 PVC Development Centr. Fugal Pump - 215 GPM
Diameter 4" I.D. Static Water Level +7.53' MSL (10/15/86)
Date Start 10/9/86 Finish 10/16/86 Top of Well Elevation +14.24' MSL
Contractor ESE Driller PAUL THOMAS Drill Type Hollow Stem Auger

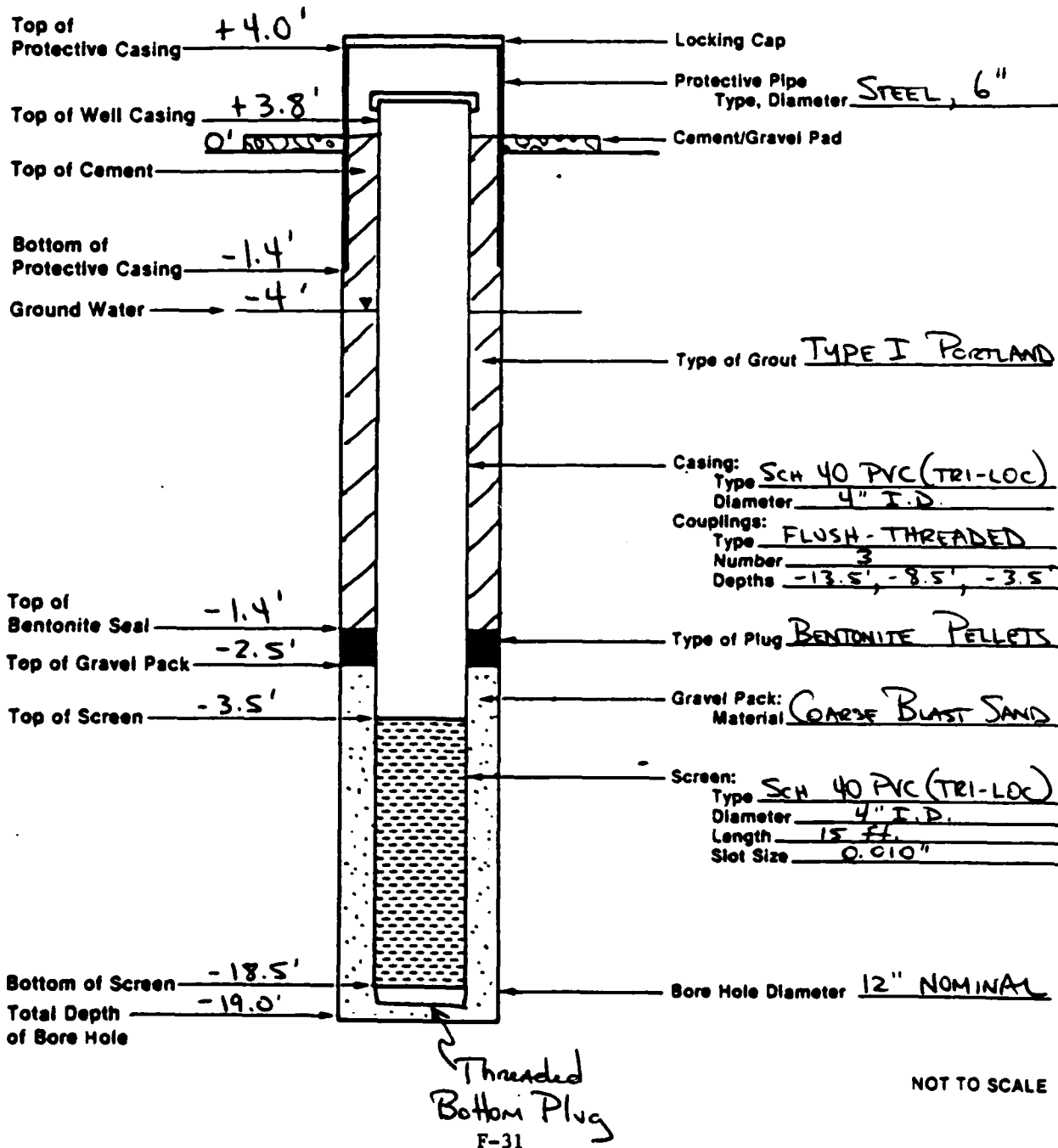
Depth (feet)	Sample Length	Lithology, Color	Sketch of Construction	Standard Penetration Blow Count
0.0-1.5'	18"	SP, SAND, Fine-to-med gr., poorly graded, lt. brown top 6" (silt horizon) 10YR6/4, becomes white 10YR8/1 lower 12", not plastic, loose, clay to sl. moist	SEE Attached	2-2-3
1.5-3.5'	24"	SP, Sand, fine gr., white 10YR8/1, poorly graded, not plastic, loose, slightly moist, massive bedding		3-7-7-10
3.5-9.0'	WT ∇ 40'	SP, continued as above, becomes saturated below 4'		
9.0-14.0'		SM, Sand, fine gr., ~25% silt, dark brown 5YR3/2, slightly plastic, saturated, HNU reading ~ 1 PPM (headsapce method)		
14-19'		SM, same as above becoming grayish brown 10YR5/2, reduced to ~10% silt at base of section		
19.5'		END OF BORING P-30		

MONITOR WELL CONSTRUCTION

Logged By: JORDANA Client: OEHL - TYNDALL AFB
 Drilling Contractor: ESE Location: ZONE #8 - 6000 AREA LANDFILL
 Driller's Name: PAUL THOMAS Job Number: 86378
 Well Number: T8-4 Date/Time: Start 10/9/86 Finish 10/16/86
 Comments (Lost circulation interval, Water level changes, Hole collapse interval, etc.):

Protective cover and posts stick-up relatively high due to
 obscurity of location in an attempt to avoid inadvertent damage

Depths in Reference
 to Ground Level



10/9/86

1620 Arrive at Zone 8 Area, Survey Area with Jordana, Schuler, Dietzel, and Hunter present

1715 Select site for location of well, drillers prepares to set up on site

1730 Drill rig becomes stuck in soft sand, must be raised on jacks and dug out.

1825 Drill rig set up on site

1830 Depart site for day

10/10/86

0645 Arrive on site, set up and level rig

0650 Unload supplies and equipment, assemble well casing and screen

0715 Drive split spoon from 0.0 - 1.5 ft.

0720 Drive split spoon from 1.5 - 3.5 ft.

0725 Open hole w/ 6" I.D. hollow stem auger and retrievable plug

Advanced to 5 ft; wt @ 4 ft.

0730 Advanced to 15 ft

0735 Advanced to 19.5 ft.; end of boring

0740 Set well inside of auger (15 ft. screen, 5 ft. solid)
- Pop out retrievable plug; pulled up auger
- Well set @ 19.5 ft.

0745 Added gravel pack; screened @ - 2.5 ft. after 350 lbs. gravel added (3 1/2 bags)

0750 Added bentonite pellets; screened @ - 1.4 ft. after 75 lbs pellets added (1 1/2 buckets)

0755 Water added to hole to facilitate swelling of bentonite pellets

0800 Equipment cleaned, site cleaned

0825 Depart site for day

10/16

1055 Posts and protective casing grouted into place

1120 Depart site

10/16/86

DATE
F-32

SIGNED

Boring No. T9-3 Location Coordinates N 390, 851.2
 Hole Size 12" NOMINAL Slot 0.010" E 1,655,686.1
 Screen Length 15' Mat'l Sch 40 PVC Filter Materials COARSE BLAST SAND
 Diameter 4" I.D. Grout Type TYPE I PORTLAND
 Casing Length 6.8' Mat'l Sch 40 PVC Development CENTRIFUGAL PUMP - 200 GAL
 Diameter 4" I.D. Static Water Level +20.00' MSL (10/19/86)
 Date Start 10/5/86 Finish 10/6/86 Top of Well Elevation +28.42' MSL
 Contractor ESE Driller PAUL THOMAS Drill Type HOLLOW STEM AUGER

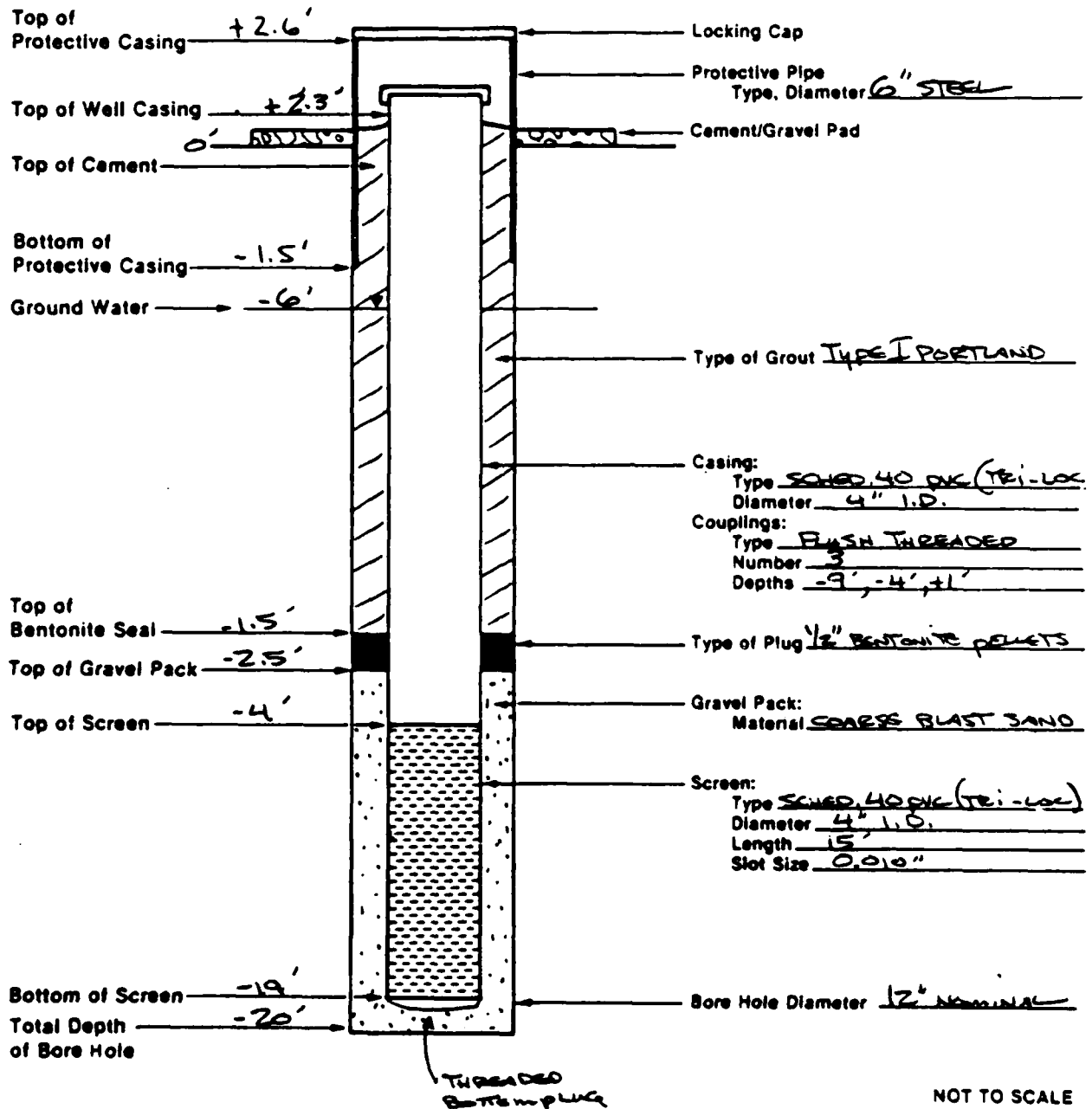
Depth (feet)	Sample	Lithology, Color	Sketch of Construction	Standard Penetration Blow Count
0' - 1.5'	1 0.5	SP - POORLY GRADED FINE GRAINED SAND 2.10 to 2.15 104% (2-1/2" LT. BROWNISH GRAY) NOT PLASTIC, LOOSE, DRY ORG. MAT'L. PRESENT RANDOMLY DISPERSED.	SEE ATTACHED SHEET	2-4-6
1.5' - 3.5'	2 1.0	SP - SAME AS @ 1.5', EXCEPT BECOMING MOIST TO V. MOIST BROWN WOOD FRAG. IN DRIVE SHOE		4-2-2-4
3.5' - 6'	3	SP - BECOMING SATURATED		
6' - 10' - 20'	4	SP - FINE GRAINED SAND - BLACK, IN AN OILY BLACK MATRIX, DENSE/ COHESIVE, S. PLASTIC, SATURATED W/ OILY BRIDGES. CENT SHEEN, w "OIL" ODOOR H ₁₄ : HEADSPACE OF SOIL SAMPLE AFTER 10 min = 8 ppm BACKGROUND ≈ 1 ppm		
-20'		— END OF BORING —		

F-33

MONITOR WELL CONSTRUCTION

Logged By: W. ELIOTT Client: CEHL/TYNDALL AFB
 Drilling Contractor: ESE Location: DOL AREA 500
 Driller's Name: PAUL THOMAS Job Number: 8-318
 Well Number: T9-3 Date/Time: Start 10/1/86 Finish 10/6/86
 Comments (Lost circulation interval, Water level changes, Hole collapse interval, etc.):

Depths in Reference to Ground Level



NOT TO SCALE

Boring No. T9-3

SHEET 1 OF 1

10/5/86

1050 SETTING RIG UP ON SITE

1100 DROVE 18" SPLIT SPOON FROM 0' TO 1.5', OPEN HOLE W/ HSA + BOTTOM CAP

1105 ADVANCING TO -5'

1110 ADVANCING TO 10' USUALLY CONTAMINATED HOW (HEAD SPACE ~ 50 ppm)

1115 ADVANCING TO 15' ALL MATRIX BACKGROUND ~ < 1 ppm

1120 ADVANCING TO 20' END OF BORING

1125 CASING DOWN + SET @ -19' PULLING AUGERS - 3.5' STICK UP

1130 ADDING SAND - SAMPLED @ -2.5'

1135 ADDING PELLET - SAMPLED @ -1.5'

1140 SAWING OFF CASING FOR 2.3' STICK UP

1145 WASHING OFF AUGERS W/ TSP + WATER

1200 BREAK FOR LUNCH

1645 COLLECTED CUTTINGS SAMPLE FOR EP TOX TEST -

SAMPLE # TYNDLS#1-SS 864490000 SITE 1

10/6/86

1000 SET PROTECTIVE POSTS + COVER, GROUT IN POSTS + WELL,
2'x2' PAD - USING #2 1/2 BAGS TYPE I PORTLAND

10/6/86
DATE

WGE
SIGNED

Boring No. T9-4 Location Coordinates N 391,122.9
E 1,655,803.4
 Hole Size 12" NOMINAL Slot 0.010"
 Screen Length 15' Mat'l SCH 40 PVC Filter Materials COARSE BLAST SAND
 Diameter 4" I.D. Grout Type TYPE I PORTLAND
 Casing Length 5.7' Mat'l SCH 40 PVC Development CENTRIFUGAL PUMP - 153 GAL
 Diameter 4" I.D. Static Water Level +15.10' MSL (10/19/96)
 Date Start 10/3/96 Finish 10/6/96 Top of Well Elevation +23.94' MSL
 Contractor ESE Driller PAUL THOMAS Drill Type HOLLOW STEM AUGER

Depth (feet)	Sample	Lithology, Color	Sketch of Construction	Standard Penetration Blow Count
0'-4'		SM/SP - FINE GRAINED SAND w/ ~10% SILT 54 5/1 - GRAY, NOT PLASTIC LOOSE, DRY	SEE ATTACHED SHEET	
4' - 20'	6.5'  -7'	SM/SP - OILY FINE GRAINED SAND BLACK - OIL MATRIX, SL. PLASTIC, DENSE, SATURATED, STRONG ODOOR — END OF BORING —		

MONITOR WELL CONSTRUCTION

Logged By: W. ELLIOT

Client: CEHL/TYNDALL AFB

Drilling Contractor: BSE

Location: POL AREA 500

Driller's Name: PAUL THOMAS

Job Number: PE-378

Well Number: T9-4

Date/Time: Start 10/5/86 Finish 10/6/86

Comments (Lost circulation interval, Water level changes, Hole collapse interval, etc.):

Depths in Reference
to Ground Level

Top of
Protective Casing +2.4'

Locking Cap

Top of Well Casing +2.2'

Protective Pipe
Type, Diameter STEEL, 6"

Top of Cement

Cement/Gravel Pad

Bottom of
Protective Casing -1.0'

Ground Water -7'

Type of Grout TYPE I PORTLAND

Casing:
Type SCH 40 PVC (TRI-LOC)
Diameter 4" I.D.

Couplings:
Type FLUSH THREADED
Number 2
Depths -8', -3'

Top of
Bentonite Seal -1'

Type of Plug 1/2" BENTONITE PELLETS

Top of Gravel Pack -2'

Gravel Pack:
Material COARSE BLAST SAND

Top of Screen -3'

Screen:
Type SCH 40 PVC (TRI-LOC)
Diameter 4" I.D.
Length 15'
Slot Size 0.010"

Bottom of Screen -18'
Total Depth
of Bore Hole (-20') -19'

Bore Hole Diameter 12" NOM. MAX

THREADED
BOTTOM PLUG

NOT TO SCALE

Boring No. T9-4

SHEET 1 OF 1

10/5/86

1520 SET UP RIG ON SITE, DIS W/ POSTHOLE DIGGER TO -5' - OILY SAND ~ -4'

1540 (COLLECTED EP TOXICITY SAMPLE T9H (T4M L5#2-55) (STRONG ODOR)
(@ -4' w/ SPLIT SPOON @ 15:45 HRS) (SS 44900002 STEP 2)

HmR READING: SAMPLE: 200 ppm HEADSPACE

BACKGROUND: 41 ppm

1545 OPEN HOLE W/ HSA + RETRIEVABLE PLUG, ADVANCE TO 5' - OILY CUTTINGS

1550 ADVANCE TO 10' - OILY SAND CUTTINGS

1555 ADVANCE TO 15' - OILY SAND CUTTINGS

1600 ADVANCE TO 20', PULL ANGER UP 1' OFF BOTTOM, SET CASING
IN ANGER W/ 15' SCREEN, 5' SOLID, ~~20' ANGER~~ STICK UP 20'

1610 SETTING CASING IN HOLE @ -18'

1620 ADDING SAND - SOUNDED @ -2' AFTER 4 1/2 BAGS

1625 ADDING BENTONITE PELLETS - SOUNDED @ -1' AFTER 1/2 PAIL

1630 ADDING H₂O TO PELLETS

1635 PACKING UP, WASHING ANGERS

1645 PULL OFF SITE

10/6/86

1100 INSTALL PROT. POSTS, LOCKING STEEL COVER + GROUT WELL + PARTS
IN PLACE

10/3/86
DATE

NSF

SIGNED

Boring No. T10-1 Location Coordinates N 396,724.9
 Hole Size 12" NOMINAL Slot 0.010" E 1,655,781.3
 Screen Length 15' Mat'l Sch 40 PVC Filter Materials COARSE BLAST SAND
 Diameter 4" I.D. Grout Type TYPE I PORTLAND
 Casing Length 8.3' Mat'l Sch 40 PVC Development CENTRIFUGAL PUMP - 147 GAL
 Diameter 4" I.D. Static Water Level + 3.96' MSL (10/19/86)
 Date Start 10/4/86 Finish 10/6/86 Top of Well Elevation + 14.13' MSL
 Contractor ESE Driller PAUL THOMAS Drill Type HOLLOW STEM AUGER

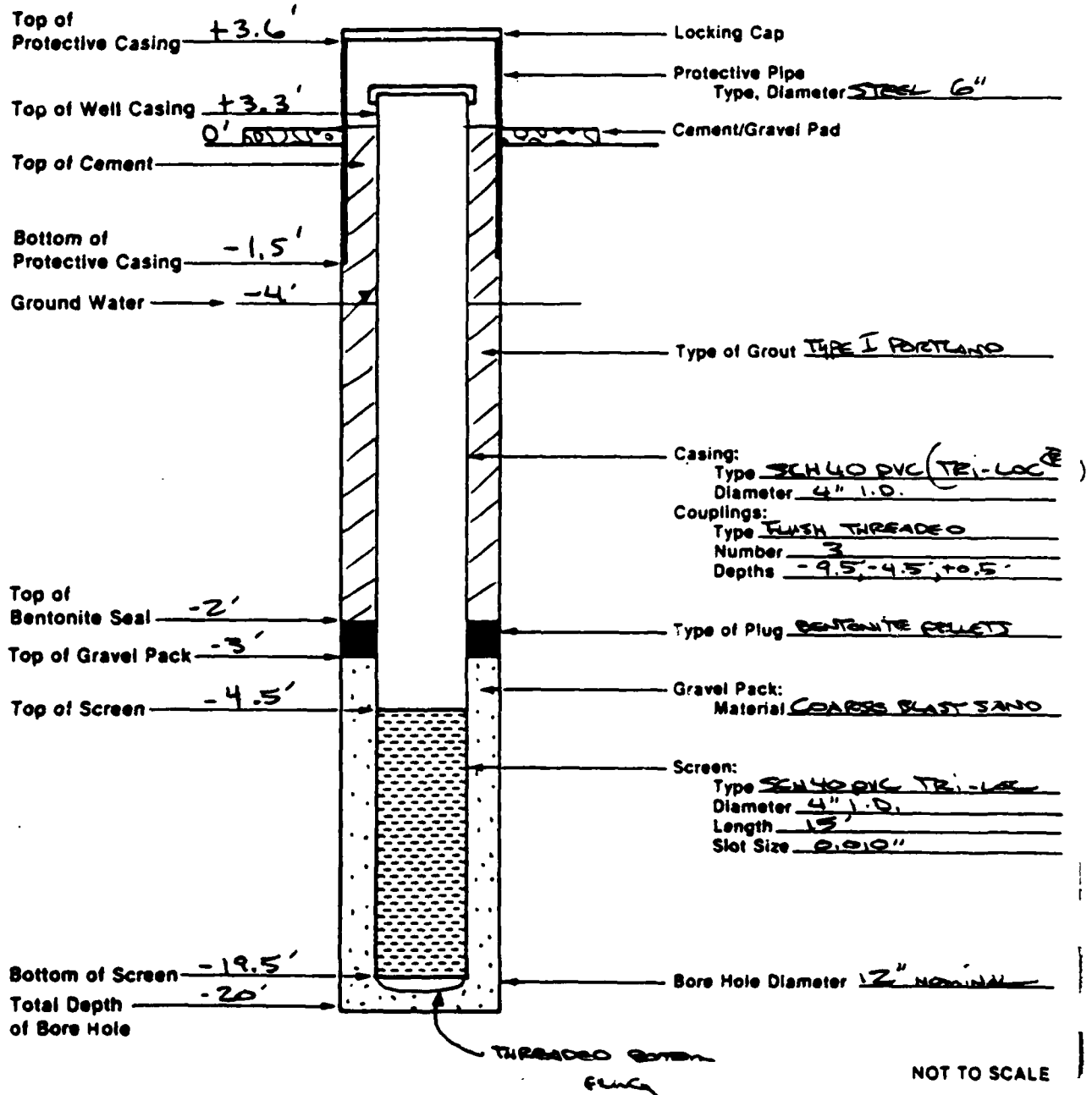
Depth (feet)	Sample	Lithology, Color USCS Munsell	Sketch of Construction	Standard Penetration Blow Count
0'- 1.5'	1 0.6'	OYSTER SHELL FILL MATERIAL - MAN-MADE	SEE ATTACHED SHEET	6-13-13
1.5'- 3.5'	2 1.5'	SP - MED. GRAINED SAND ~10% SILT, POORLY GRADED 104R 7/8 - YELLOW NOT PLASTIC, LOOSE TO COMPACT - MOIST		7-10-11-12
5'- 9'	3	SP - SAME AS @ 1.5-3.5'		
9'-	4	SM SILTY FINE GRAINED SAND 5 4/2 - OLIVE GRAY		
15'-	5	SM/ML SD/SD M/L, SILT + V. FINE GR. SAND 5 4/2 - OLIVE GRAY CL. PLASTIC CLAY, SATURATED		
20'-	6	ML SAME AS @ 15' END OF BORING		

F-39

MONITOR WELL CONSTRUCTION

Logged By: W. B. Burt Client: GEN. J. M. M. A. P. S.
 Drilling Contractor: ESE Location: SWELL GARDEN PTA
 Driller's Name: PAUL THOMAS Job Number: 86-378
 Well Number: T10-1 Date/Time: Start 10/4/86 Finish 10/6/86
 Comments (Lost circulation interval, Water level changes, Hole collapse interval, etc.):

Depths in Reference to Ground Level



NOT TO SCALE

Boring No. T10-1

SHEET 1 OF 1

10/4/82

1730 SETTING RIG UP ON SITE, UNLOADING
1740 DRAKE 18' SPLIT SPONG FROM 0' TO -1.5'
1745 DRAKE 24' SPLIT SPONG FROM 1.5' TO 3.5', ADVANCE TO 5' w/ HSA
1750 ADVANCE TO 10', AUGER STUCK ON KELLY HEAD
1755 ADVANCE TO 15'
1800 ADVANCE TO 20' - END OF BORING
1810 ASSEMBLE RIG, ATTEMPT TO SET CASING - WIRE HEAVED UP TO -9'
1815 TRIP OUT AUGER - BOTTOM CAP BENT, - REMOVE + REPAIR
1840 REGRILL STARTING @ -8' - REENTER + ADVANCE TO -10'
1845 ADVANCING TO 15'
1850
1855 ASSEMBLING PVC IN AUGERS - 15' SCREEN, 5' SOLID, 2.5' RISER
1900 PULL AUGERS - WELL SET @ - w/ 3' S.H.
1905 ADDING SAND - SOUNDED @ -3' AFTER 4 1/2 BAGS
1915 ADDING PORTLAND CEMENT - SOUNDED @ -2' AFTER 1 1/2 BAGS
1920 PACKING UP, ADD H₂O TO PORTS, SECURE RIG
1930 LEAVE SITE FOR DAY

S. 4 1/2 BAGS
Sp. 1 1/2 BAGS

10/4/82

1600 INSTALL STEEL PROTECTIVE POSTS, STEEL COVER + PAD, GROUT
WELL - 2 BAGS TYPE I PORTLAND

10/4/82

DATE
F-41

WGE

SIGNED

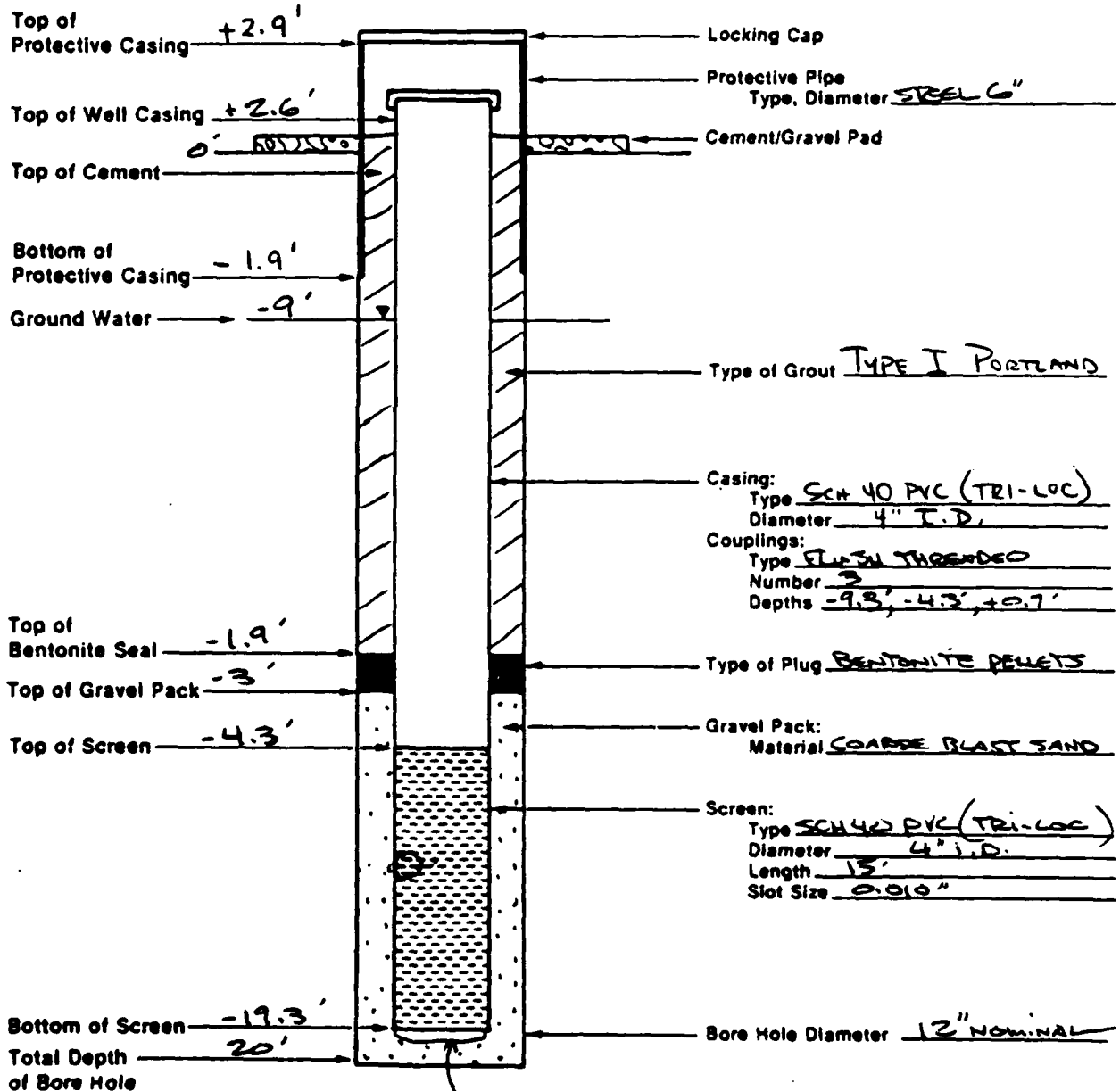
Boring No. T10-2 Location Coordinates N 396, 417.4
 Hole Size 12" NOMINAL Slot 0.010" E 1,655,868.2
 Screen Length 15' Mat'l SCH 40 PVC Filter Materials COARSE BLAST SAND
 Diameter 4" I.D. Grout Type TYPE I PORTLAND
 Casing Length 7.4' Mat'l SCH 40 PVC Development CENTRIFUGAL PUMP - 110 GAL
 Diameter 4" I.D. Static Water Level + 4.38' MSL (10/19/86)
 Date Start 10/5/86 Finish 10/6/86 Top of Well Elevation + 14.77' MSL
 Contractor ESE Driller PAUL THOMAS Drill Type HOLLOW STEM ANGER

Depth (feet)	Sample #	Length	Lithology, Color USCS Munsell	Sketch of Construction	Standard Penetration Blow Count
0'- 1.5'	1	0.7'	FILL - SMALL, ROCK FRAGS, CLAY FILL, GRAVEL CONCRETE FRAGS		37-35-50
1.5'- 3.5'	2	0.3'	FILL - TOP 0.1' - CONCRETE FRAGS. SP - BOTTOM 0.2' - MED. GRAINED POORLY GRADED SAND 10YR 7/8 - YELLOW NOT PLASTIC, LOOSE, MOIST TO SL. MOIST	SEE ATTACHED =	12-10-10-16
5'- 8.5'	3		SP - SAME AS @ 1.5'		
8.5'- 9.5'	4		SP/SM - SILTY MED. FINE GRAINED SAND ~10-15% SILT 10YR 4/2 - DARK GRAY/BROWN NOT PLASTIC, DENSE, V. MOIST, COHESIVE BECOMING SATURATED NEAR 9.5' + GRADING TO 10YR 3/1 - V. DK GRAY COLOR + INCR. PLASTICITY + MOISTURE, INCR. CLAY CONTENT		
15'- 20' 20'	-	-	END OF BORING F-42		

MONITOR WELL CONSTRUCTION

Logged By: W. ELIOTT Client: DAHL-TYNDALL AFB
 Drilling Contractor: FEE Location: SWELL PINE FTA
 Driller's Name: DAHL-TYNDALL Job Number: 26-378
 Well Number: TD-2 Date/Time: Start 10/5/86 Finish 10/6/86
 Comments (Lost circulation interval, Water level changes, Hole collapse interval, etc.):

Depths in Reference
 to Ground Level



Threaded
 Bottom Plug
 F-43

NOT TO SCALE

Boring No. T10-2

SHEET 1 OF 1

10/5/86

0815 LOADING SUPPLIES @ STORAGE BLDG
0830 SETTING UP RIG ON SITE, UNLOADING
0850 FUELING RIG UP, CLEANING EQUIP.
0920 DROVE 18" SPLIT SPOON FROM 0' TO -1.5'
0925 DROVE 24" SPLIT SPOON FROM 1.5' TO 3.5'
0930 SETTING UP LEAD EIGHT HOLLOW STEM AUGER (HSA) WITH DETACHABLE PLUG (4")
0935 OPEN HOLE + ADVANCE TO 5' - DRILLING THROUGH CONCRETE
0940 ADVANCING TO 10' - WATER TABLE - 9'
0945 ADVANCING TO 15'
0950 ADVANCING TO 20' - BOTTOM @ -20'
0955 ASSEMBLING PUG IN AUGER - 15' SCREEN, 5' SOLID, 2.5' RISER
1000 PUG CASING DOWN + SET @ -19.3' 3.2' STICK UP
1005 ADDING SAND - SOUNDED @ -3' AFTER 6 1/2 BAGS
1010 ADDING PELLETS - SOUNDED @ -1.9' AFTER 1 BUCKET
1015 SAWING OFF RISER FOR 20' STICK UP
WELL IS RECHARGING VERY SLOWLY
1030 PACK UP WASH OFF AUGERS
1040 LEAVE SITE

10/6/86

1700 - INSTALL PROT. PETS, STEEL COVER, PAD, + GROUT NEUL
W/ TYPE I PORTLAND (2 BAGS)

10/5/86

DATE

F-44

WGE

SIGNED

Boring No. T 10-3 Location Coordinates N 396, 173.0
 Hole Size 12" NOMINAL Slot 0.010" E 1,655, 573.1
 Screen Length 15' Mat'l SCH 40 PVC Filter Materials COARSE BLASTING SAND
 Diameter 4" I.D. Grout Type TYPE I PORTLAND
 Casing Length 7.2' Mat'l SCH 40 PVC Development CENTRIFUGAL PUMP - 180 GAL
 Diameter 4" I.D. Static Water Level +8.58' MSL (10/19/86)
 Date Start 10/4/86 Finish 10/6/86 Top of Well Elevation +13.35' MSL
 Contractor ESE Driller PAUL THOMAS Drill Type HOLLOW STEM AUGER

Depth (feet)	Sample	Lithology, Color	Sketch of Construction	Standard Penetration Blow Count
0' - 1.5'	1 15'	SP/SM - silty med. f. to v. fine gr. sand 10% silt by R.G. - 4. yellow brown not plastic, loose, dry to slightly moist	SEE ATTACHED SHEET	3/2/4
1.5' - 3.5'	2 20'	SP - med. gr. qtz sand - no fines by R.G. - white not plastic, loose, moist		5/6/6/9
4' - 5'		SP		
5' - 10'		SM - silty fine gr. sand 30% silt 2.5/3/2 - v. dk. grayish brown sl. plastic coarse, saturated		
10' - 15'		SM/ML		
15' - 20'		SM/ML - same as 15'		
20' - 20'		END OF BORING		

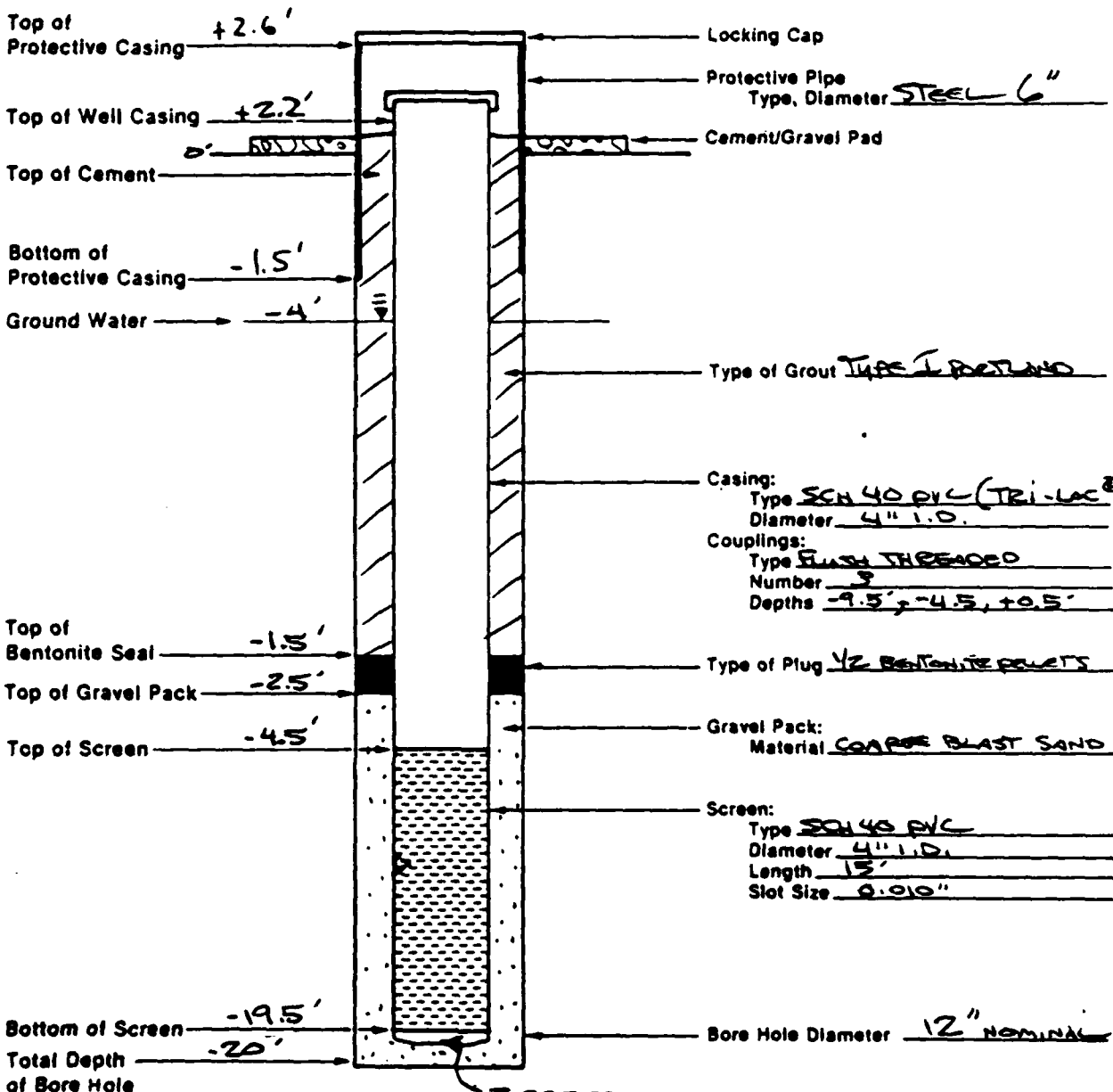
F-45

MONITOR WELL CONSTRUCTION

Logged By: W.G. ELLIOTT Client: TUNNALL AFB
 Drilling Contractor: SEE Location: SHELL BANK FIRETRAINING
 Driller's Name: PAUL THOMAS Job Number: 86-378
 Well Number: T10-3 Date/Time: Start 10/1/86 Finish 10/1/86
 Comments (Lost circulation interval, Water level changes, Hole collapse interval, etc.):

ATTACHED

Depths in Reference
to Ground Level



NOT TO SCALE

Boring No. T10-3

SHEET 1 OF 1

10/4/86

- 1500 SETTING RIG UP, UNPACKING TOOLS + SUPPLIES
1525 DRIVE 18" SPLIT SPIN 0.15' (NO HING)
1530 DRIVE 24" SCL. SPIN 1.5' TO 35' DEPTH (RESPONSE)
1535 SET UP HOLLOW STEM AUGER W/ RETRAIABLE BOTTOM PLUG (STEEL, 11/4" DIA) 6" ID
ADVANCE HOLE + ADVANCE TO 5' - MAKING A 11" HOLE
1540 ADVANCING TO 10'
1550 ADVANCING TO 15', ADVANCE TO 20' - BOTTOM -
1555 ASSEMBLE PVC + SST CASING IN HOLLOW STEM - 15' SCREEN, 7.5' BLANK (3P 12.5)
1600 SET WELL @ - 19.5' BAGS - 3.5' STICK UP, PULL AUGERS OUT
SANDING - HOLE COLLAPSED, SAND @ - 2.5' AFTER 1 1/2 BAGS
1610 ADDING BENTONITE PELLETS - SAND @ - 1.5' AFTER 1 1/2 BUCKETS
1620 CUT OFF PVC FOR 2.1' STICK UP
1630 PACKING UP, LOADING AUGER
1645 TAKE RIG TO WASH BACK TO DR. CON.

10/6/86

- 1500 - INSTALL PROT. POSTS, PAD + STEEL COVER - GROUT WELL
W/ TYPE I PORTLAND CEMENT (2 X 100 LB BAGS)

10/4/86

DATE

F-47

WSE

SIGNED

Boring No. T11-1 Location Coordinates N 391,709.8
E 1,662,222.5
 Hole Size 12" NOMINAL Slot 0.010"
 Screen Length 15' Mat'l SCH 40 PVC Filter Materials COARSE BLAST SAND
 Diameter 4" I.D. Grout Type TYPE I PORTLAND
 Casing Length 7.3' Mat'l SCH 40 PVC Development CENTRIFUGAL PUMP - 183 GAL
 Diameter 4" I.D. Static Water Level +6.95' MSL (10/19/86)
 Date Start 10/5/86 Finish 10/6/86 Top of Well Elevation +13.24' MSL
 Contractor ESE Driller PAUL THOMAS Drill Type HOLLOW STEM AUGER

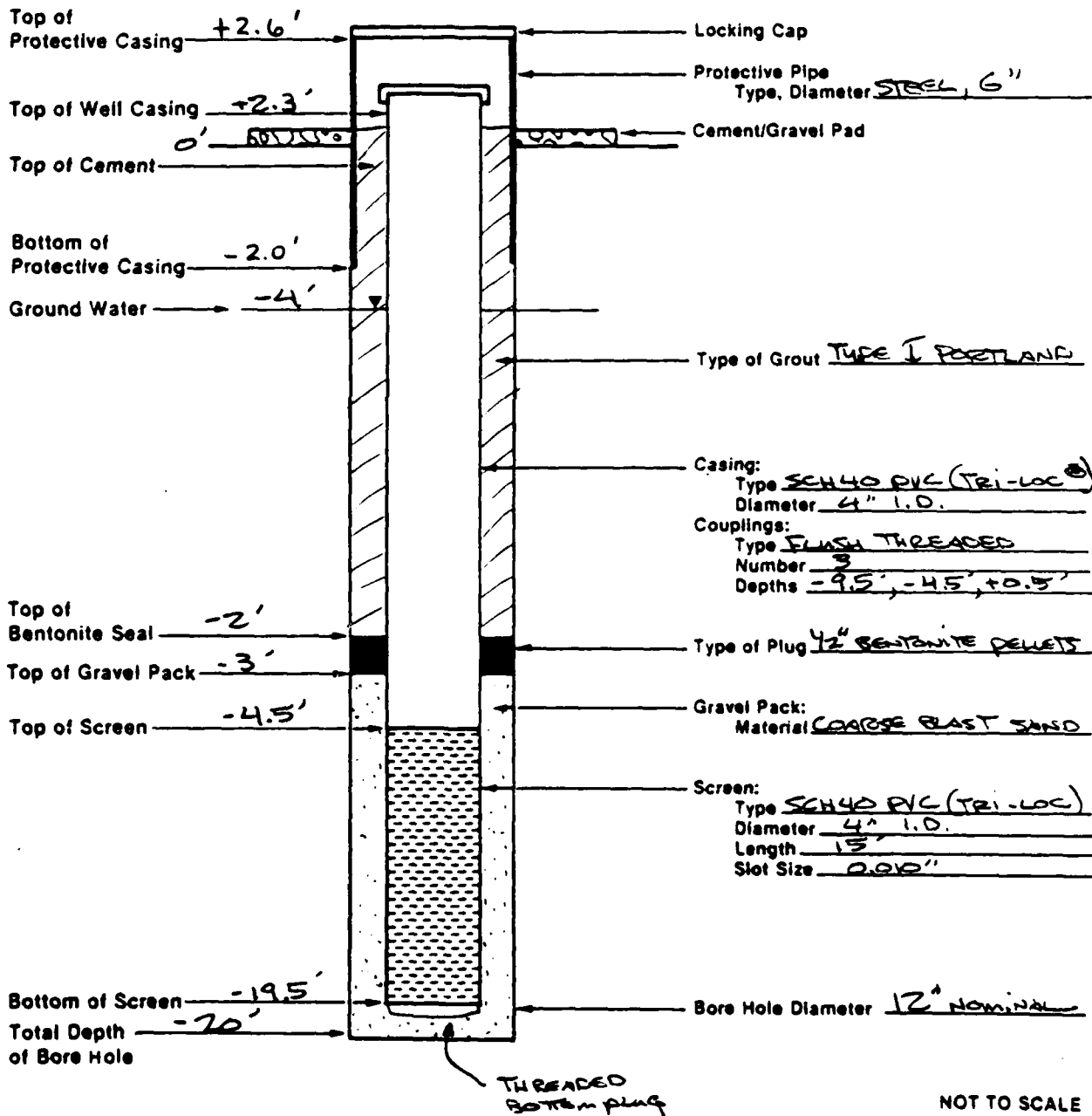
Depth (feet)	Sample	Lithology, Color	Sketch of Construction	Standard Penetration Blow Count
	2	LENGTH	USCF	DIMENSION
0'-1.5'	1 0.6	SP/SM - POORLY GRADED FINE GRAIN TO V. FINE GRAINED SAND - 4% LOSS + FINE ORGANIC MATERIAL 54.5% - GRAY - NOT PLASTIC, LOOSE TO DENSE, DRY	SEE ATTACHED SHEET	4-8-10
1.5'-3.5'	2 1.1	SP/SM SAME AS ABOVE, BECOMING MOIST TO VERY MOIST @ -3.5'		6-8-10-12
4'				
5'		SM - SAME AS ABOVE, EXCEPT COLOR IS 104.25% - BROWN		
10'				
15'				
20'		SM		
20'		- END OF BORING -		

F-48

MONITOR WELL CONSTRUCTION

Logged By: N. Blunt Client: OSUL / TYNDALL AFB
 Drilling Contractor: EE Location: ACTIVE FTA
 Driller's Name: PAUL THOMAS Job Number: 86-378
 Well Number: T11-1 Date/Time: Start 10/7/86 Finish 10/6/86
 Comments (Lost circulation interval, Water level changes, Hole collapse interval, etc.):

Depths in Reference to Ground Level



NOT TO SCALE

Boring No. T 11-1

SHEET 1 OF 1

10/5/86

1730 SETTING RIG UP ON SITE, UNLOADING
1745 DROVE 18" SPLIT SPOON FROM 0 TO 1.5'
1750 DROVE 24" SPOON FROM 1.5 TO 3.5', OPEN HOLE W/ HSA WITH PLUG
1755 ADVANCED TO 5', 10'
1800 ADVANCED TO 15', 20', ASSEMBLED PVC (15' SCREEN, 5' SOLID, 2.5' RISER)
1805 SET CASING IN HOLE TO - , DULL AUGERS
1807 ADDING SAND - SOUNDED @ -3' AFTER 3 BAGS STICK UP 2.5'
1810 ADDING BENTONITE PELLETS - SOUNDED @ -2' AFTER 1/2 BUCKET, ADD H₂O
1815 WASHING OFF AUGERS, PACKING UP EQUIP.

10/6/86

1740 INSTALLING PROTECTIVE POSTS + STEEL COVER, DAD -
GRAFT WELL W/ 2 BAGS TYPE I PORTLAND CEMENT

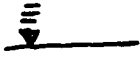
10/5/86

DATE
F-50

WGE

SIG: LD

Boring No. T11-2 Location Coordinates N 391, 511.3
Hole Size 12" NOMINAL Slot 0.010" E 1,662, 569.1
Screen Length 15' Mat'l Sch 40 PVC Filter Materials COARSE BLAST SAND
Diameter 4" I.D. Grout Type TYPE I PORTLAND
Casing Length 6.7' Mat'l Sch 40 PVC Development CENTRIFUGAL PUMP - 175 G
Diameter 4" I.D. Static Water Level + 4.35' MSL (10/19)
Date Start 10/5/86 Finish 10/17/86 Top of Well Elevation + 12.97' MSL
Contractor ESE Driller PAUL THOMAS Drill Type HOLLOW STEM AUGER

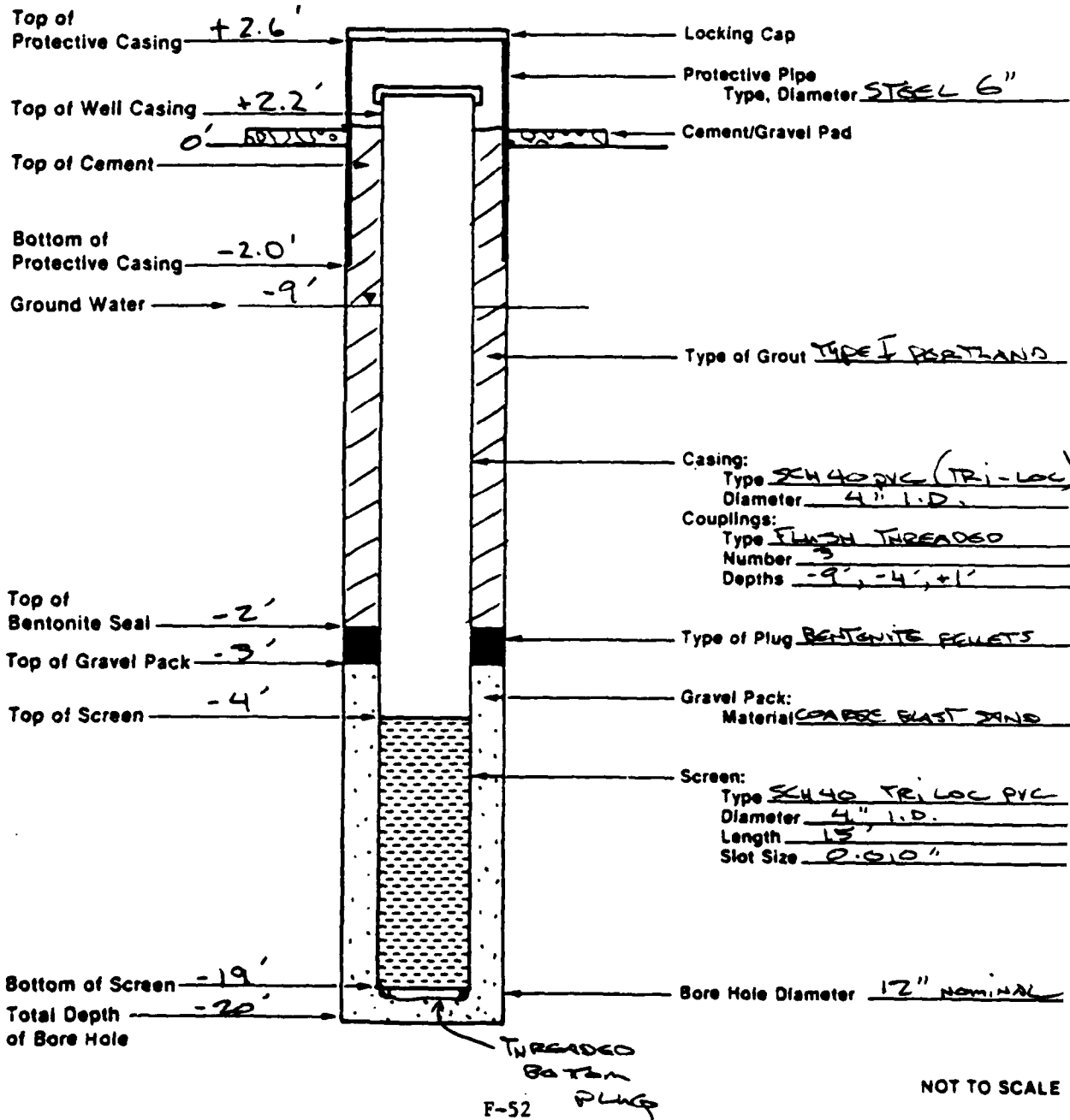
Depth (feet)	Sample LENGTH	Lithology, Color USCS <u>unconsolidated</u>	Sketch of Construction	Standard Penetration Blow Count
0'- 1.5'		Sm/Sp		4-5-6
1.5'- 3.5'		Sm/Sp	SEE Attached Sheet <u>2</u>	15-16-22-30
5'- 9'				
10'		<u>Sm</u>		
15'				
20'- 20'		<u>Sm</u> END OF BORING		

F-51

MONITOR WELL CONSTRUCTION

Logged By: W. ELLIOTT Client: OENL - TUNDALL AFB
 Drilling Contractor: ESE Location: ACTIVE FTA
 Driller's Name: PAUL THOMAS Job Number: 86-378
 Well Number: TII-2 Date/Time: Start 10/13/86 Finish 10/17/86
 Comments (Lost circulation interval, Water level changes, Hole collapse interval, etc.):

Depths in Reference to Ground Level



Boring No. T11-2

SHEET 1 OF 1

10/5/86

1830 SET RIG UP ON SITE, UNLOAD

1840 DRIVE SPT SPIN 0 TO 1.5', DRIVE 24" SPIN FROM 1.5 TO 3.5'

1845 OPEN HOLE W/ HSA WITH RETRIEVABLE BOTTOM PLUG (6" I.D.), ADVANCE TO 5'

1850 ADVANCE TO 10' WATER TABLE ~ 29'

1855 ADVANCE TO 15'

1900 ADVANCE TO 20' - INSTALL CASING (15' SCREEN, 5' SOLID, 2.5' RIGID)

1905 INSTALL SAND PACK + PULL AUGERS (@ - 3' AFTER 4 PASSES)

1910 INSTALL PELLET (@ - 2' AFTER 1/2 RIGID) 19' TO - 2.5' STICK UP

1920 BREAK AUGERS DOWN (SAVED ONE)

1925 CLEAN UP, PACK UP

1930 LEAVE SITE FOR DAY

10/7/86

1400 GROUTED WELL, INSTALLED STEEL COVER + POSTS

10/7/86
DATE

WGE

SIGNED

Boring No. T11-3 Location Coordinates N 391,396.2
Hole Size 12" NOMINAL Slot 0.010" E 1,662,629.7
Screen Length 15' Mat'l SCH 40 PVC Filter Materials COARSE BLAST SAND
Diameter 4" I.D. Grout Type TYPE I PORTLAND
Casing Length 6.2' Mat'l SCH 40 PVC Development CENTRIFUGAL PUMP - 184 GPM
Diameter 4" I.D. Static Water Level +2.58' MSL (10/19/86)
Date Start 10/1/86 Finish 10/1/86 Top of Well Elevation +8.43' MSL
Contractor ESE Driller PAUL THOMAS Drill Type CME HSA

Depth (feet)	Sample	Lithology, Color	Sketch of Construction	Standard Penetration Blow Count
0'- 1.5'	1 0.9	SM - POORLY GRADED SILTY SAND - ~10% SILT 10/26/83 - PALE BROWN NOT PLASTIC, LOTS OF CLAYS, DRY TO MOIST, THIN BLACK BEDS OF OILY RESIDUE RANDOMLY DISPERSED	SEE ATTACHED SHEET	6-8-10
1.5'- 3.5'	2 1.1 	SM - SAME AS @ 1.5', EXCEPT BECOMING SATURATED @ -3.5'		7-2-3-5
3.5' ↓ -20' END OF BORING		SM - SAME AS ABOVE		

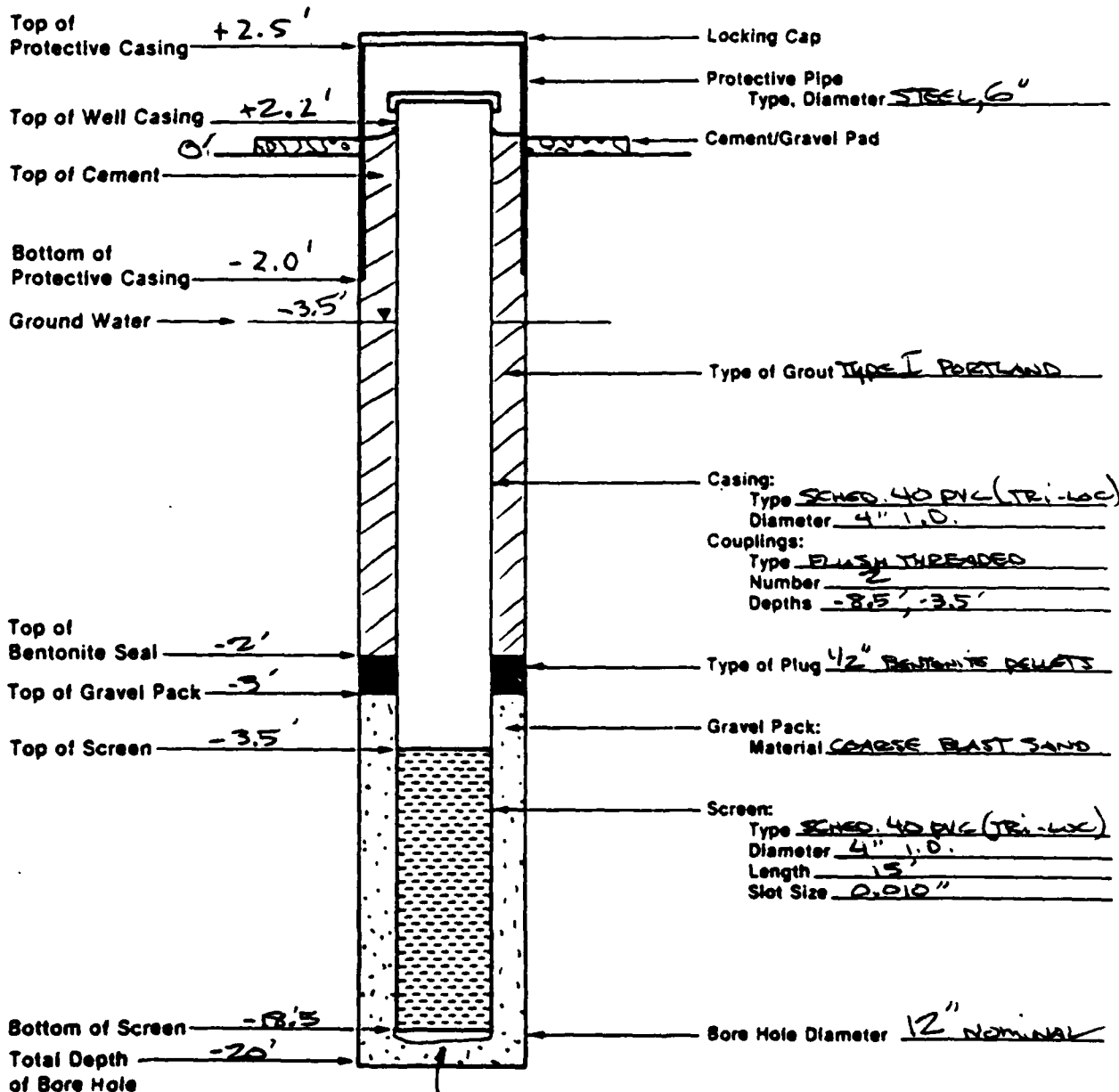
F-54

F-54

MONITOR WELL CONSTRUCTION

Logged By: W. ELLIOTT Client: CEHL / TUNDALL AFB
 Drilling Contractor: ESE Location: ACTIVE MTA
 Driller's Name: PAUL THOMAS Job Number: 06-378
 Well Number: 111-3 Date/Time: Start 10/7/96 Finish 10/7/96
 Comments (Lost circulation interval, Water level changes, Hole collapse interval, etc.):

Depths in Reference to Ground Level



THREADED BOTTOM PLUG 6

NOT TO SCALE

Boring No. T11-3

SHEET 1 OF 1

10/1/88

1400 - TAKE RIG TO FILL H₂O TANK + CALL FOR SUPPLIST
1440 MOVE TO SITE
1450 SET UP RIG, LEVEL, UNLOAD EQUIP + SUPPLIST
1500 DROVE 18" SPLIT SPIN FROM 0' TO 1.5'
1505 DROVE 24" SPLIT SPIN FROM 1.5' TO 3.5'
1510 ADVANCED TO 10'
1515 ADVANCED TO 20' BOTTOMED - END OF BORING
1520 ASSEMBLED PVC (13' SCREEN, 5' SOLID,) INSTALLED IN AUGER, PULLED
AUGER + PVC UP TO -18.5, 2' STICK UP
1530 PULLED AUGERS, BEGAN ADDING SAND - HOLE OPEN - SOUNDED @ -3' AFTER 8 BAGS
1540 ADDING BESTONITE PELLETS - SOUNDED @ -2' BAGS AFTER 1 BUCKET
1545 CLEANING OFF AUGERS - DIGGING HOLES FOR PROTECTIVE POSTS + PAD,
1600 MIXING GROUT, PACKING UP AUGER FLIGHTS
1610 POURING GROUT, SET COVER + POSTS
1630 CLEANING UP SITE, MOVE RIG OFF SITE

10/7/86

DATE

F-56

WGE

SIGNED

APPENDIX G
GEOPHYSICAL TRACING FOR ZONE 8

APPENDIX G
ELECTROMAGNETIC CONDUCTIVITY METHODS

An electromagnetic (EM) survey is a noncontact geophysical technique employing the use of two metallic coils and an electronics module. The transmitter coil is separated from the receiver coil by a specified distance. When energized, the transmitter coil induces circular eddy current loops into the earth, the magnitude of each current loop being a function of subsurface conditions. Each of these current loops generates a secondary magnetic field proportional to the value of the current flowing within the loop. A portion of this secondary magnetic field is intercepted by the receiver coil and results in an output voltage. The magnitude of this voltage is linearly related to the terrain (ground) conductivity (Evans, 1982). The units of conductivity measurements are millimhos per meter (mmhos/m).

Conductivities vary for different soil and rock types; thus, it is difficult to calibrate EM instruments to permit the determination of the absolute subsurface conductivity in unknown terrain. The subsurface is seldom uniform, more often being layered within the penetration depths of the instrument, further complicating calibration attempts. However, taking all of these factors into consideration, a qualitative reconnaissance of subsurface conditions can be conducted by noting the relative lateral changes along a traverse. An EM survey can be used as a rapid and effective method for evaluating subsurface characteristics and to infer the location and extent of potential subsurface contamination based on changes in the electric conductivity of the soils.

Elevated conductivity measurements can result from the presence of buried metal objects, making it essential that all locations with anomalous EM readings be cross-referenced with a magnetometer. A magnetometer detects perturbations in the geomagnetic field (for example, anomalies created by

buried ferromagnetic objects). The system utilized by Environmental Science and Engineering, Inc. (ESE), a fluxgate gradiometer, maintains the ability to sense vertical field gradients while remaining insensitive to horizontal gradient components (Evans, 1982). This allows the instrument to sense the vertical field of subsurface targets in the presence of horizontal interference targets such as steel fences.

APPENDIX G

Results of EM Survey at Area "6000" Landfill (Zone 8)

Location Destination	x-coordinate	y-coordinate	Specific Conductance (umhos/m)	Comments
1	146	82	0.5	
2	145	77	2.1	
3	144	72	0.7	
4	143	67	0.1	
5	142	62	0.0	
6	141	57	0.0	
7	141	53	0.0	
8	140	48	0.0	
9	139	43	0.0	
10	138	38	0.0	
11	134	34	0.0	
12	131	31	0.0	
13	127	27	0.0	
14	124	24	0.0	
15	120	20	0.0	
16	124	31	0.0	
17	121	35	0.0	
18	168	85	4.6	*Close to FLA AVE.
19	163	85	0.7	
20	158	85	1.0	
21	153	85	0.3	
22	148	85	1.5	
23	143	85	0.0	
24	138	85	0.0	
25	133	85	0.0	
26	128	85	0.2	
27	123	85	0.9	
28	118	85	1.0	
29	113	85	0.0	
30	108	85	2.2	
31	103	85	1.6	
32	98	85	1.0	
33	168	80	7.5	*Close to FLA AVE
34	163	80	1.3	
35	153	80	1.2	
36	148	80	1.5	
37	143	80	2.2	
38	133	80	0.0	
39	128	80	0.6	
40	123	80	0.4	

02/24/88

APPENDIX G

Results of EM Survey at Area "6000" Landfill (Zone 8) (Continued, Page 2 of 4)

Location Destination	x-coordinate	y-coordinate	Specific Conductance (mmhos/m)	Comments
41	118	80	0.1	
42	112	80	1.7	
43	109	77	9.0	*Evidence of
44	105	73	52.0	destroyed asphalt
45	101	70	14.0	road visible at
46	97	67	0.0	surface.
47	93	69	0.7	
48	88	70	5.2	*remnants of asphalt road
49	83	71	2.7	*measured=0.0 approx. 5 ft away
50	87	74	0.0	
51	91	76	0.0	
52	96	79	3.2	*measured=0.0 approx. 10 ft away
53	80	67	0.0	
54	77	63	0.0	
55	74	59	0.0	
56	70	61	0.0	
57	66	64	0.0	
58	62	67	0.0	
59	84	66	1.4	
60	85	61	0.0	
61	85	56	0.0	
62	86	51	0.0	
63	84	47	0.0	
64	82	42	0.3	*asphalt at surface
65	79	38	0.0	
66	77	34	0.0	
67	74	29	0.9	
68	71	29	0.0	
69	66	28	0.0	
70	64	33	0.0	
71	62	38	0.0	
72	61	43	0.0	
73	63	47	0.0	
74	66	51	0.0	
75	71	51	0.0	
76	76	51	0.0	
77	81	51	1.8	*metal debris at surface
78	66	24	0.0	
79	65	19	5.2	*wire bundles at surface
80	65	14	0.0	
81	64	09	0.0	

APPENDIX G

Results of EM Survey at Area "6000" Landfill (Zone 8) (Continued, Page 3 of 4)

Location Destination	x-coordinate	y-coordinate	Specific Conductance (mmhos/m)	Comments
82	64	04	0.0	
83	61	28	0.0	
84	56	28	0.0	
85	51	27	0.0	
86	48	27	0.0	
87	48	22	0.0	
88	49	17	0.0	
89	49	12	0.0	
90	49	32	0.0	
91	50	37	0.0	
92	50	42	3.4	*magnetometer detects metal
93	51	47	2.4	*metal at both sites
94	52	52	0.0	
95	46	27	0.0	
96	41	27	0.0	
97	37	28	0.0	
98	38	32	0.0	
99	39	37	0.0	
100	41	42	0.0	
101	38	46	0.2	
102	35	51	1.5	
103	33	55	2.7	
104	30	60	1.9	
105	28	64	2.3	
106	23	61	1.6	
107	19	59	2.0	
108	15	56	1.6	
109	10	54	1.0	
110	06	51	1.5	
111	21	68	1.8	
112	26	71	1.8	
113	32	74	1.3	
114	37	77	1.8	
115	42	80	1.9	
116	48	84	1.6	
117	53	87	0.2	
118	59	90	0.5	
119	65	93	0.7	
120	76	96	0.2	
121	81	96	0.1	
122	86	96	0.2	

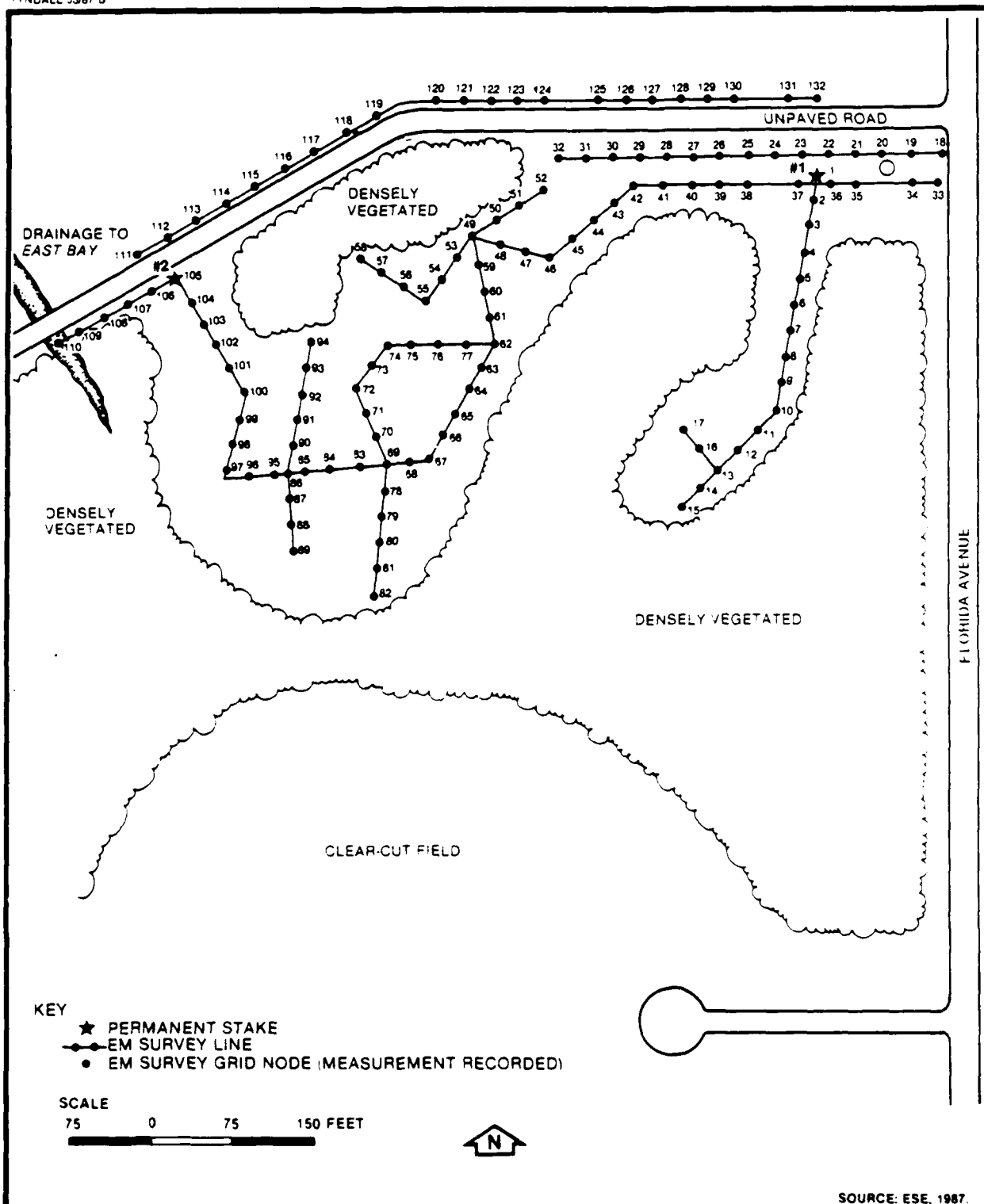
APPENDIX G

Results of EM Survey at Area "6000" Landfill (Zone 8) (Continued, Page 4 of 4)

Location			Specific Conductance	Comments
Destination	x-coordinate	y-coordinate	(mmhos/m)	
123	91	96	0.3	
124	96	96	0.2	
125	106	96	0.9	
126	111	96	1.4	
127	116	96	2.8	
128	121	96	2.7	
129	126	96	2.1	
130	131	96	0.0	
131	141	96	1.0	
132	146	96	3.9	

Note: Results of the magnetometer survey along with comments from field observations.

Source: ESE, 1988.



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APPENDIX H

PIEZOMETERS; MONITOR WELLS; SURFACE WATER, GROUND WATER,
SEDIMENT, AND SOIL SAMPLING LOCATIONS;
AND SAMPLE NUMBERING SYSTEM

APPENDIX H

PIEZOMETERS; MONITOR WELLS; SURFACE WATER, GROUND WATER, SEDIMENT, AND SOIL SAMPLING LOCATIONS; AND SAMPLE NUMBERING SYSTEM

LOCATION DESIGNATIONS

In an effort to maintain consistency with Stage 1 field work, ground water monitoring wells followed the same numbering system. The first characters of the well number represent the site location:

T = Tyndall AFB, and

LH = Lynn Haven DFSP.

The second digit is the zone number. The third digit is the specific well within the zone. Approximate well locations were designated in the Stage 2 scope of work (App. C) with some adjustments made in light of the piezometer water-level results. All well locations were staked and cleared for drilling through Base Civil Engineering prior to well installation. Both new and existing monitor well numbers and the ground water sampling site designations and corresponding sample numbers are presented in Table H-1.

The location designations for piezometers were selected by the Project Geologist based on the need for water-level data at a particular site. The first two characters for each piezometer number were PZ; the second digit is the zone number and the third digit is the specific piezometer within the zone. All piezometers were removed upon completion of the field work.

The sampling location designations for the sediment, surface water, and soil sampling sites were designated in the Stage 2 scope of work. The sediment and surface water sampling locations were strictly adhered to, whereas the soil sampling locations were modified at Zone 11 due to the

Table H-1. Monitor Well Numbers and Ground Water Sampling Zone Designations and Sample Numbers

Zone	Monitor Well #	Ground Water Sampling Site Designation	CLASS Sample Identification No.
2	1	GLH2-1	TYNDL2*1
2	2	GLH2-2	TYNDL2*2
2	3	GLH2-3	TYNDL2*3
2	4	GLH2-4	TYNDL2*4
2	7	GLH2-7	TYNDL2*5
*2	8	GLH2-8	TYNDL2*7
*2	9	GLH2-9	TYNDL2*8
3	1	GT3-1	TYNDL6*1
3	2	GT3-2	TYNDL6*2
3	3	GT3-3	TYNDL6*3
3	4	GT3-4	TYNDL6*4
*3	5	GT3-5	TYNDL6*5
*3	6	GT3-6	TYNDL6*6
*3	7	GT3-7	TYNDL6*7
5	1	GT5-1	TYNDL3*1
5	2	GT5-2	TYNDL3*2
5	3	GT5-3	TYNDL3*3
6	1	GT6-1	TYNDL4*1
6	2	GT6-2	TYNDL4*2
6	3	GT6-3	TYNDL4*3
*6	4	GT6-4	TYNDL4*4
*6	5	GT6-5	TYNDL4*5
7	1	GT7-1	TYNDL5*1
7	2	GT7-2	TYNDL5*2
7	3	GT7-3	TYNDL5*3
†7	--	BWT7-11	TYNDL5*9
8	1	GT8-1	TYNDL5*5
*8	3	GT8-3	TYNDL5*6
*8	4	GT8-4	TYNDL5*7
9	1	GT9-1	TYNDL6*9
9	2	GT9-2	TYNDL6*10
*9	3	GT9-3	TYNDL6*11
*9	4	GT9-4	TYNDL6*12

Table H-1. Monitor Well Numbers and Ground Water Sampling Zone
Designations and Sample Numbers (Continued, Page 2 of 2)

Zone	Monitor Well #	Ground Water Sampling Site Designation	CLASS Sample Identification No.
*10	1	GT10-1	TYNDL4*7
*10	2	GT10-2	TYNDL4*8
*10	3	GT10-3	TYNDL4*9
*11	1	GT11-1	TYNDL4*11
*11	2	GT11-2	TYNDL4*12
*11	3	GT11-3	TYNDL4*13

*Denotes new monitor well.

†Denotes base well No. 11.

Source: ESE, 1987.

existence of the non-penetrable concrete pad underlying the first training pit. The sediment, surface water, and soil sampling site designations and sample numbers are provided in Table H-2.

SAMPLE NUMBERING AND MANAGEMENT SYSTEM

CLASS SYSTEM

All water, soil, and sediment samples were tracked through ESE's Chemical Laboratory Analysis and Scheduling System (CLASS). Prior to the sampling trip, computer-generated sampling logsheets and sample container labels were provided by ESE's laboratory. Each sample was identified by a unique designation. An additional 1- or 2-digit alphanumeric code designated different sample fractions, with separate labels printed for each fraction. The sampling logsheets also served as chain-of-custody forms (see App. O). The sample designations were entered into the computer system prior to sampling to facilitate tracking of samples through analysis, QC review, and reporting of results. The unique sample identification designations are included in Tables H-1 and H-2.

GROUND WATER SAMPLE NUMBERING SYSTEM

Ground water samples were identified by an alphanumeric code as a station identification in addition to the unique sample designations (see Table H-1). This code appeared on all logsheets and sample labels, serving to identify the sample to those directly involved in the project. The first character "G" denotes a ground water sample; the next character(s) denotes the site location (T = Tyndall AFB; LH = Lynn Haven DFSP). The following character is the zone number, which is followed by the number of the specific well within the zone.

SURFACE WATER, SEDIMENT, AND SOIL SAMPLE NUMBERING SYSTEM

Each of these samples were identified by a code beginning with "SW" for surface water, "SD" for sediment, or "SO" for soil samples. This sample-type designation was followed by a site location code similar to the system used for ground water samples, with characters for facility (Tyndall AFB or Lynn Haven DFSP), zone, and specific site within the zone included in the code. These sampling site designations are presented in Table H-2.

Table H-2. Sediment, Surface Water, and Soil Sampling Zone Designation and Sediment Sample Numbers

Zone	Sediment/Surface Water/Soil Sampling Site Designation	CLASS Sample Identification No.
<u>Sediment</u>		
2	SDLH2-1	TYNDL7*3
11	SDT11-1	TYNDL7*1
11	SDT11-2	TYNDL7*2
<u>Surface Water</u>		
2	SWLH2-1	TYNDL2*9
11	SWT11-1	TYNDL4*14
11	SWT11-2	TYNDL4*15
<u>Soil</u>		
11	SOT11-1	TYNDL1*1
11	SOT11-2	TYNDL1*2
11	SOT11-3	TYNDL1*3

Source: ESE, 1987.

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APPENDIX I

ANALYTICAL DATA FOR BAY COUNTY WATER SUPPLY

City of Tallahassee
Water Quality Lab

Explanation of Report

The enclosed report(s) are for samples analyzed for one or more of the following synthetic organic chemical categories as designated in FAC 17-22

Purgeable
Acid Fraction
Base/Neutral
Pesticide

Purgeable For samples analyzed for the purgeable category, the individual compounds are listed in the report.
NPD - No Peaks Detected
BDL - Below Detection Limit

Acid Fraction Unless a specific compound is listed in these
Base/Neutral categories is found, only the category will be shown on the report with the designation NPD. If any compound which is a part of these categories is present a "+" will appear next to the category and compounds found will be shown on the report.

Pesticides This category is shown on the report as chlorinated Hydrocarbon Screen. Although shown as Chlorinated Hydrocarbons this report category includes the pesticides listed in 17-22. As with the Acid Fraction and Base/Neutral categories only those compounds found will be reported.

 * CITY OF TALLAHASSEE *
 * WATER QUALITY LAB *
 * 3805 Springhill Rd. *
 * Tallahassee, FL. 32304 *
 * ----- *
 * HRS Lab ID # - 51097 *
 * DER Lab ID # - EL0046 *

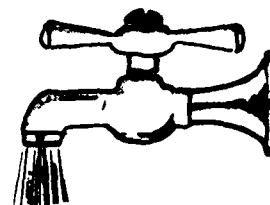
LAB LOG# - 28576
 STATION CODE - NA
 DESCRIPTION - BAY COUNTY WATER & WASTEWATER
 COLLECTED - 10/23/84 TIME COLLECTED - NR
 COLLECTED BY - NR
 SAMPLING METHOD - GRAB

PARAMETER	RESULT	UNITS	Det. Limit
CHLOROFORM	31.1	ug/l	.647
BROMODICHLOROMETHANE	12.5	ug/l	.099
DIBROMOCHLOROMETHANE	NPd	ug/l	.121
BROMOFORM	NPd	ug/l	.118
1,1,1-TRICHLOROETHANE	NPd	ug/l	0.12
TRICHLOROETHENE	NPd	ug/l	0.11
TETRACHLOROETHENE	NPd	ug/l	0.05
METHYLENECHLORIDE	BDL	ug/l	1.42
1,2-DICHLOROETHANE	NPd	ug/l	2.7
CARBON TETRACHLORIDE	NPd	ug/l	0.06
ETHYLENE DIBROMIDE (EDB)	NPd	ug/l	.007
CHLORINATED HYDROCARBON SCREEN	NPd	ug/l	-----
BASE NEUTRAL METHOD 625	NPd	ug/l	-----
ACID FRACTION METHOD 625	NPd	ug/L	-----
CHLOROBENZENE	NPd	ug/l	-----
1,1-DICHLOROETHANE	NPd	ug/l	-----
1,1-DICHLOROETHENE	NPd	ug/l	-----
trans-1,2-DICHLOROETHENE	NPd	ug/l	-----
1,1,2,2-TETRACHLOROETHANE	NPd	ug/l	-----
1,1,2-TRICHLOROETHANE	NPd	ug/l	-----
BROMOMETHANE	NPd	ug/l	5
CHLOROETHANE	NPd	ug/l	5
2-Chloroethylvinyl ether	NPd	ug/l	5
CHLOROMETHANE	NPd	ug/l	5
1,2-Dichlorobenzene	NPd	ug/l	10
1,3-Dichlorobenzene	NPd	ug/l	10
1,4-Dichlorobenzene	NPd	ug/l	10
DICHLORODIFLUOROMETHANE	NPd	ug/l	5
1,2-Dichloropropane	NPd	ug/l	5
cis-1,3-Dichloropropane	NPd	ug/l	5
trans-1,3-Dichloropropane	NPd	ug/l	5
TRICHLOROFLUOROMETHANE	NPd	ug/l	5
ETHYLBENZENE	NPd	ug/l	5
VINYLCHLORIDE	NPd	ug/l	5
XYLENE (ortho, meta, para)	NPd	ug/l	5
BENZENE	NPd	ug/l	-----
TOLUENE	NPd	ug/l	-----

the water spigot

WATER AND WASTEWATER ANALYSIS

5806 HIGHWAY 22
PANAMA CITY, FLORIDA 32404
(904) 871-1900 - 871-1901
Laboratory I.D. 81148



System Name: Bay County Water Plant

Address: 3400 Transmitter

Sample Site: sink inside lab

Date and Time Collected March 27, 1986 12:35 p.m. Collector Stacey Brown

Check One: 1. ☐ Community Public Water System 2. ☐ Non-Community Public Water System

Check One: 1. ☐ Ground Water 2. ☐ Surface Water

Check One: 1. ☐ Raw 2. ☐ Treated

PARAMETER	RESULT	PARAMETER	RESULT	PARAMETER	RESULT
Arsenic as As	*0.001	Chloride as Cl	12.5	Total Hardness as CaCO ₃	56
Barium as Ba	*0.10	Color*	3	Total Alkalinity as CaCO ₃	20
Cadmium as Cd	*0.001	Copper as Cu	0.013	N.C.H. as CaCO ₃	36
Chromium as Cr	*0.002	Corrosivity	-2.0	Bicarbonate as HCO ₃	12
Lead as Pb	0.004	Foaming Agents	*0.01	Calcium as Ca	15.4
Mercury as Hg	*0.001	Hydrogen Sulfide	-	Magnesium as Mg	1.4
Selenium as Se	*0.001	Iron as Fe	0.03	Carbon Dioxide as CO ₂	5.0
Silver as Ag	*0.001	Manganese as Mn	0.001	Bicarbonate as CaCO ₃	20
Nitrate as N	0.04	Odor*	0	Carbonate as CaCO ₃	0
Fluoride as F	0.06	pH*	7.0	Hydroxide as CaCO ₃	0
Turbidity, *NTU	1.0	Sulfate as SO ₄	24	Sodium as Na	4.4
		Total Solids	88		
Endrin	ND	Zinc as Zn	0.123	pHs*	
Lindane	ND			Stability Index* 2pHs-pH	
Methoxychlor	ND			Saturation Index* pH-pHs	
Toxaphene	ND				
2, 4-D	ND	*less than			
2, 4-5 TP Silvex	ND	ND none detected			
Trihalomethanes					

NOTE: *All results in mg/l except those denoted.
Analysis in accordance with Chapter 17-22 FAC,
Section 104-105.
Methods are those listed in Standard Methods For The
Examination of Water and Wastewater, 14th Edition, 1975.

Date and Time Received March 27, 1986 12:45 p.m. Date Reported Trish Jackson

Kintz 5/1

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APPENDIX J
PIEZOMETER WATER LEVELS

APPENDIX J

Table J-1. Piezometer Water-Level Measurements, September 30, 1986

Piezometer Designation	Top of Casing Elevation*	Depth to Water From TOC (ft)	Water-Table Elevation*
PZ6-1	21.24	4.34	16.90
PZ6-2	19.90	2.69	17.21
PZ8-1	10.79	4.20	6.59
PZ8-2	15.75	7.08	8.67
PZ9-3	27.64	6.72	20.92
PZ10-1	12.32	†	--
PZ10-2	13.43	8.20	5.23
PZ10-3	12.71	4.12	8.59
PZ11-1	12.18	4.37	7.81
PZ11-2	8.29	4.65	3.64
PZ11-3	8.82	5.00	3.82

*Elevations are given in feet relative to mean sea level.

†Dry to bottom of casing.

Source: ESE, 1987.

Table J-2. Piezometer Construction Summary

Well Designation	Total Length (ft)	Screen Length (ft)	Screened Interval* (ft)	Casing Length† (ft)	Casing Interval* (ft)
PZ6-1	13.0	5.0	-6.5 to -11.5	8.0	+1.5 to -6.5
PZ6-2	12.5	5.0	-6.0 to -11.0	7.5	+1.5 to -6.0
PZ8-1	13.6	10.0	-2.0 to -12.0	3.6	+1.6 to -2.0
PZ8-2	12.4	5.0	-4.5 to -9.5	7.4	+2.9 to -4.5
PZ9-3	18.0	10.0	-6.5 to -16.5	8.0	+1.5 to -6.5
PZ10-1	10.3	8.0	-0.5 to -8.5	2.3	+1.8 to -0.5
PZ10-2	17.3	10.0	-6.0 to -16.0	7.3	+1.3 to -6.0
PZ10-3	12.0	9.0	-1.5 to -10.5	3.0	+1.5 to -1.5
PZ11-1	11.3	10.0	-0.0 to -10.0	1.3	+1.3 to -0.0
PZ11-2	13.5	5.0	-7.0 to -12.0	8.5	+1.5 to -7.0
PZ11-3	<u>13.5</u>	<u>5.0</u>	-7.0 to -12.0	<u>8.5</u>	+1.5 to -7.0
TOTALS	147.4	82.0		65.4	

*Screened and cased intervals referenced to ground level.

Source: ESE, 1987.

APPENDIX K
MONITOR WELL WATER LEVELS

APPENDIX K
MONITOR WELL WATER LEVEL MEASUREMENTS

Well Designation	Date of Measurement	Top of Casing Elevation*	Depth to Water From Top of Casing (ft)	Water-Table Elevation*
LH2-1	10/22/86	10.1	6.41	3.7
LH2-2	10/22/86	6.8	4.90	1.9
LH2-3	10/22/86	6.6	5.11	1.5
LH2-4	10/22/86	7.8	6.03	1.8
LH2-7	10/22/86	8.5	5.61	2.9
LH2-8	10/22/86	8.83	6.15	2.68
LH2-9	10/22/86	7.80	6.20	1.60
T3-1	10/19/86	10.9	7.74	3.2
T3-2	10/19/86	8.9	6.53	2.4
T3-3	10/19/86	5.8	4.80	1.0
T3-4	10/19/86	7.8	5.11	2.7
T3-5†	10/17/86	7.28	6.10	1.18
T3-6†	10/17/86	7.88	6.55	1.33
T3-7	10/19/86	13.26	7.67	5.59
T5-1	10/19/86	13.6	8.98	4.6
T5-2	10/19/86	13.4	9.28	4.1
T5-3	10/19/86	12.6	7.97	4.6
T6-1	10/19/86	28.9	7.95	20.9
T6-2	10/19/86	24.6	4.70	19.9
T6-3	10/19/86	29.0	8.20	20.8
T6-4	10/19/86	26.22	5.71	20.51
T6-5	10/19/86	29.37	8.64	20.73
T7-1	**	13.3	—	—
T7-2	10/19/86	12.3	5.15	7.1
T7-3	10/19/86	10.9	4.10	6.8
T7-4	††	—	—	—
T8-1	10/19/86	15.7	7.03	8.7
T8-3	10/19/86	10.84	4.43	6.41
T8-4	10/19/86	14.24	6.71	7.53

APPENDIX K
MONITOR WELL WATER LEVEL MEASUREMENTS
(Continued, Page 2 of 2)

Well Designation	Date of Measurement	Top of Casing Elevation*	Depth to Water From Top of Casing (ft)	Water-Table Elevation*
T9-1	10/19/86	20.7	7.11	13.6
T9-2	10/19/86	22.6	6.65	15.9
T9-3	10/19/86	28.42	8.42	20.00
T9-4	10/19/86	23.94	8.84	15.10
T10-1	10/19/86	14.13	10.17	3.96
T10-2	10/19/86	14.77	10.39	4.38
T10-3	10/19/86	13.35	4.77	8.58
T11-1	10/19/86	13.24	6.29	6.95
T11-2	10/19/86	12.97	8.62	4.35
T11-3	10/19/86	8.43	5.85	2.58

*All elevations given in feet relative to mean sea level.

†Inaccessible—POL facility locked date of measurements.

**Inaccessible—well is on the flight line.

††Not a monitor well (Base Well No. 11).

Source: ESE, 1987.

APPENDIX L
MAP COORDINATES

D-USAF. 1/TYNP2-HTRAPP-L.1
03/30/87

APPENDIX L

COORDINATES AND TOP OF CASING ELEVATIONS FOR MONITOR WELLS INSTALLED DURING PHASE II, STAGE 1 AND 2 STUDIES AT TYNDALL AFB

Well Designation Number	UTM Coordinates		Elevation, Top of Casing (ft, msl)
	Northing	Easting	
*LH2-1	455765	1 629 479	10.9
*LH2-2	456030	1 629 600	6.8
*LH2-3	456024	1 630 191	6.6
*LH2-4	456019	1 630 806	7.8
*LH2-7	454821	1 630 885	8.5
†L.H. 2-8	455523.7162	1631897.6933	8.83
†L.H. 2-9	456019.5552	1631532.7703	7.80
*T3-1	398884	1655311	10.9
*T3-2	398863	1655474	8.9
*T3-3	398846	1655749	5.8
*T3-4	398124	1655575	7.8
†T.3-5	398638.5697	1655804.0827	7.28
†T.3-6	398456.3903	1655773.4899	7.88
†T.3-7	398428.4383	1655200.9359	13.26
*T5-1	398811	1654383	13.6
*T5-2	398955	1654358	13.4
*T5-3	398937	1654525	12.6
*T6-1	386396	1660116	28.9
*T6-2	386819	1660404	24.6
*T6-3	386328	1660440	29.0
†T.6-4	386657.7033	1660567.0850	26.22
†T.6-5	386272.4093	1660197.9984	29.37
*T7-1	387323	1663607	13.3
*T7-2	388044	1663875	12.3
*T7-3	387411	1664446	10.9

APPENDIX L

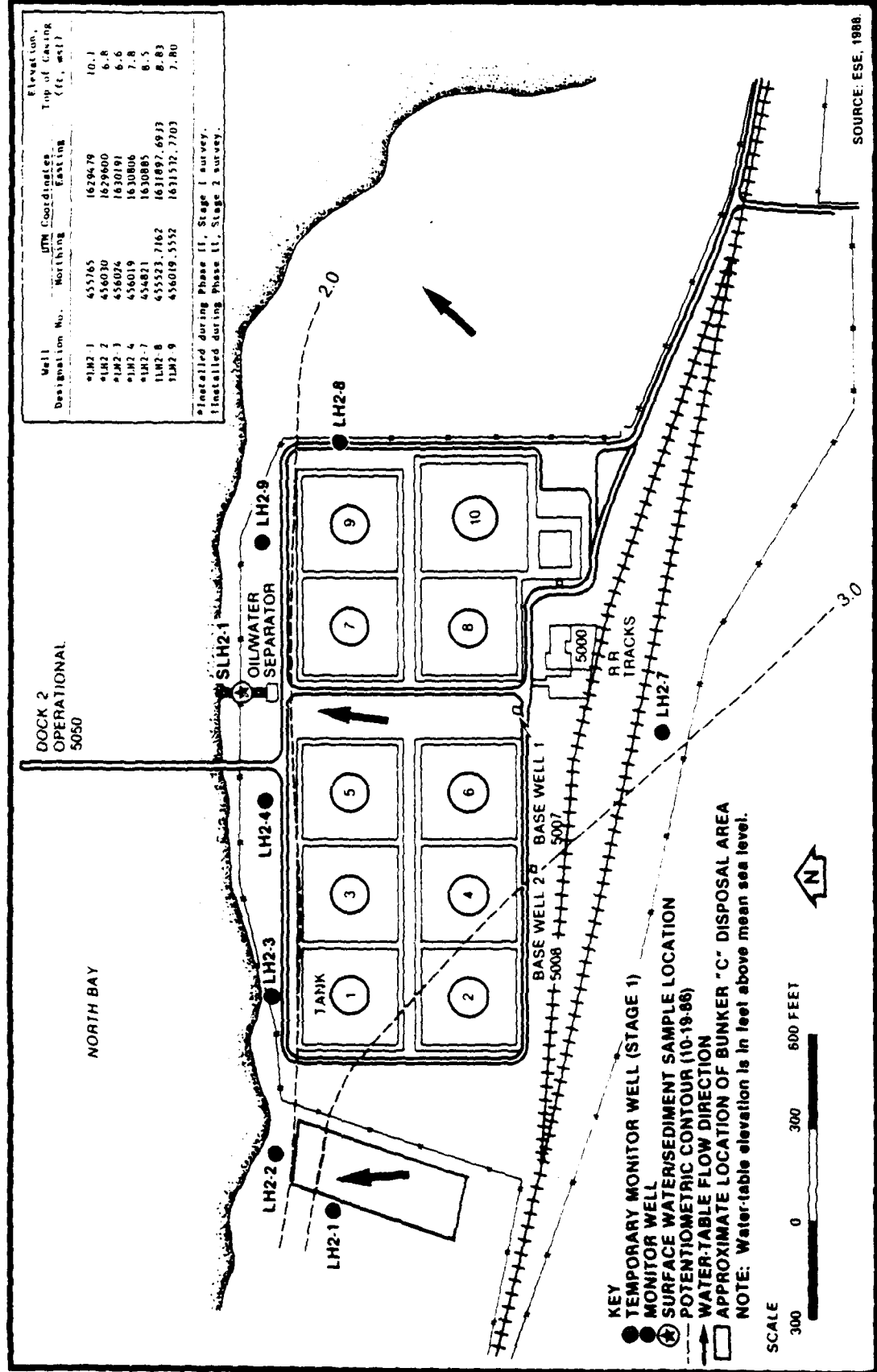
COORDINATES AND TOP OF CASING ELEVATIONS FOR MONITOR WELLS INSTALLED DURING PHASE II, STAGE 1 AND 2 STUDIES AT TYNDALL AFB
(Continued, Page 2 of 2)

Well Designation Number	UTM Coordinates		Elevation, Top of Casing (ft, msl)
	Northing	Easting	
*T 8-1	397780	1654564	15.7
† T 8-3	397666.6763	1653978.8123	10.84
† T 8-4	397440.0116	1654020.7259	14.24
* T 9-1	391171	1655892	20.7
* T 9-2	390885	1656017	22.6
† T 9-3	390851.1563	1655686.1104	28.42
† T 9-4	391122.8751	1655803.4411	23.94
† T 10-1	396724.8754	1655781.3198	14.13
† T 10-2	396417.4401	1655868.1802	14.77
† T 10-3	396173.0211	1655573.0608	13.35
† T 11-1	391709.8313	1662222.4961	13.24
† T 11-2	391511.2668	1662569.1190	12.97
† T 11-3	391396.9281	1662629.6801	8.43

* Installed during Phase II, Stage 1 of survey.

† Installed during Phase II, Stage 2 of survey.

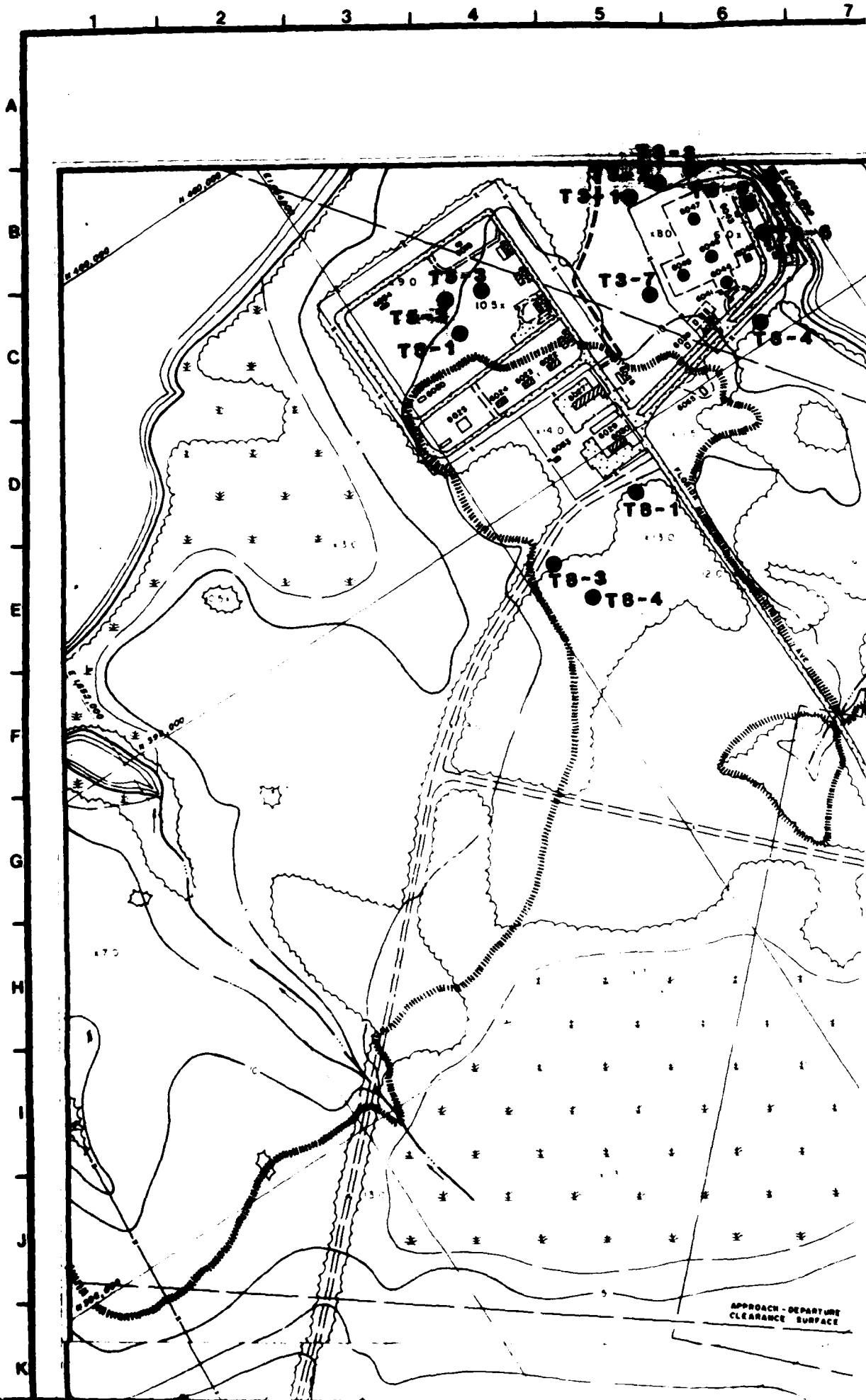
Sources: Thiess, et al., 1984.
ESE, 1987.

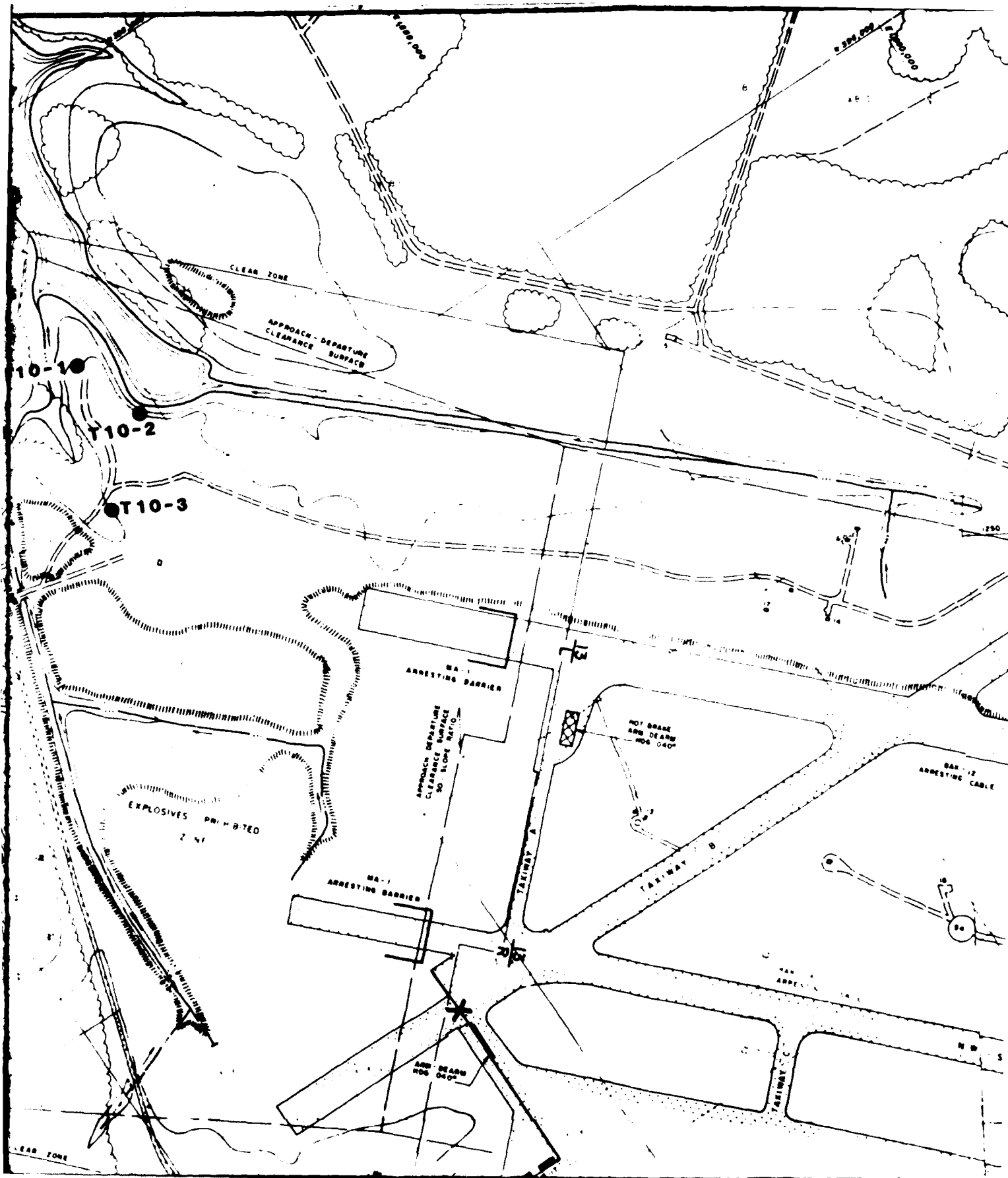


INSTALLATION RESTORATION PROGRAM Tyndall Air Force Base

Figure L-1
ZONE 2—LYNN HAVEN DFSP MONITOR WELL LOCATIONS

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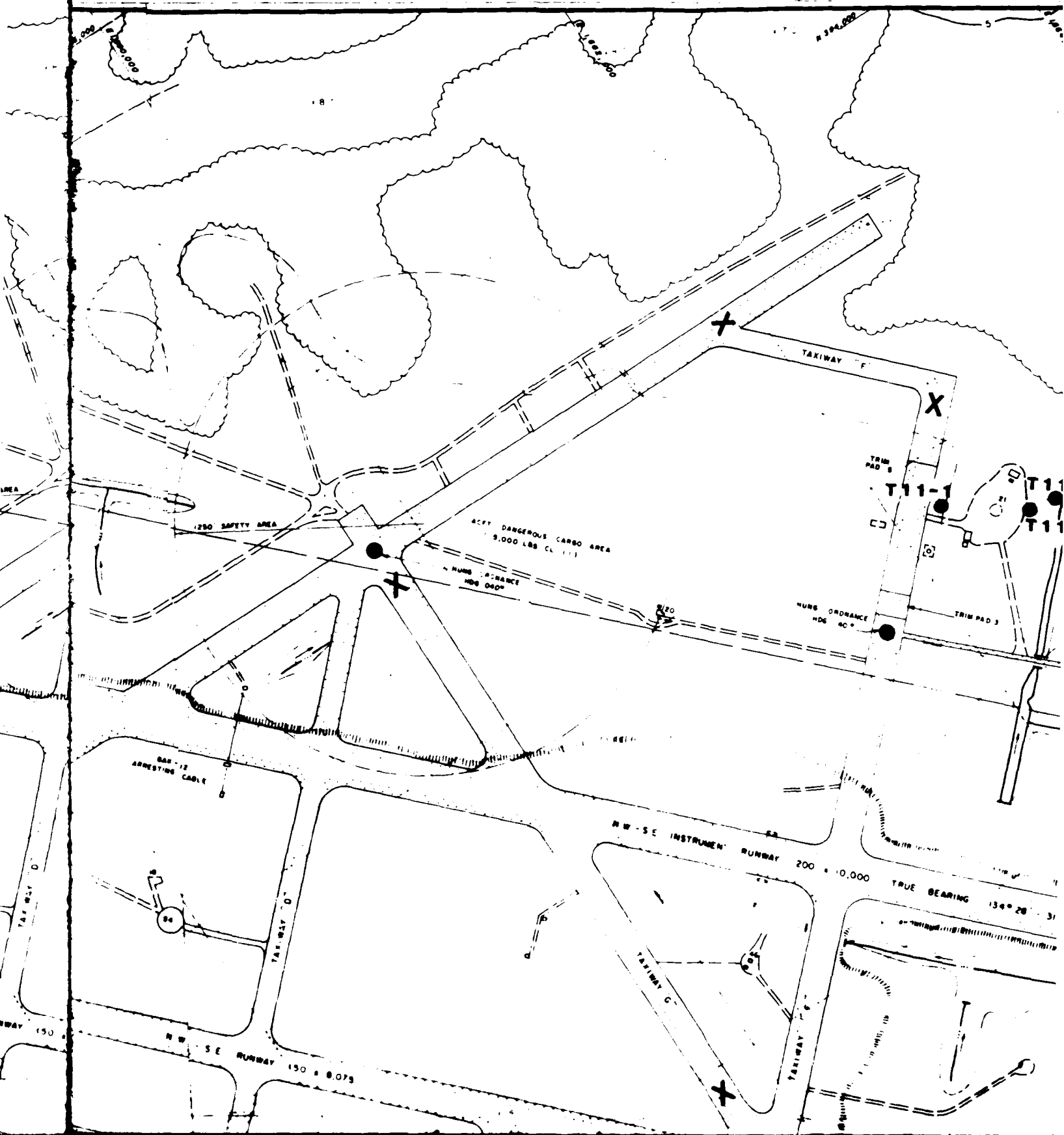
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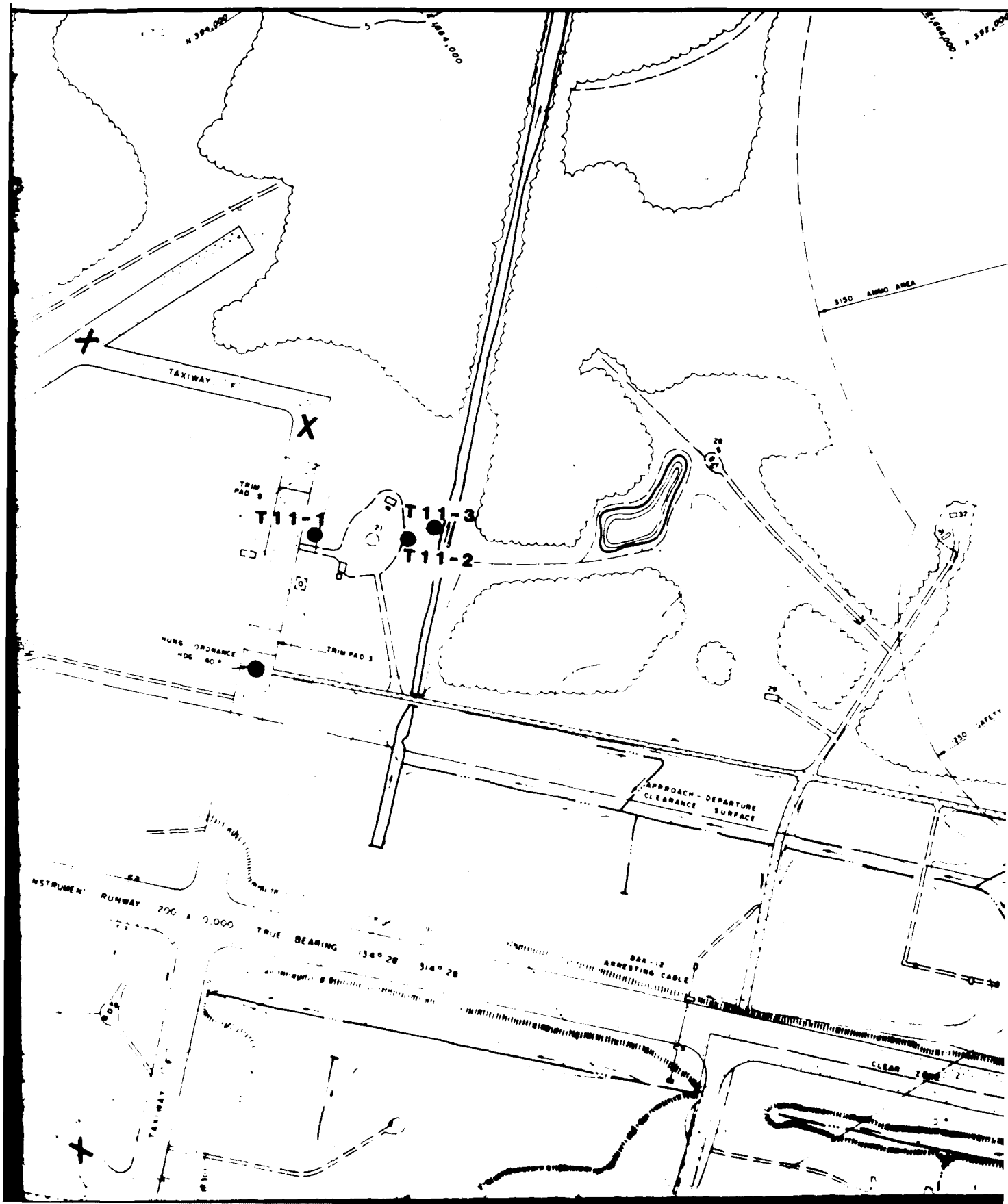
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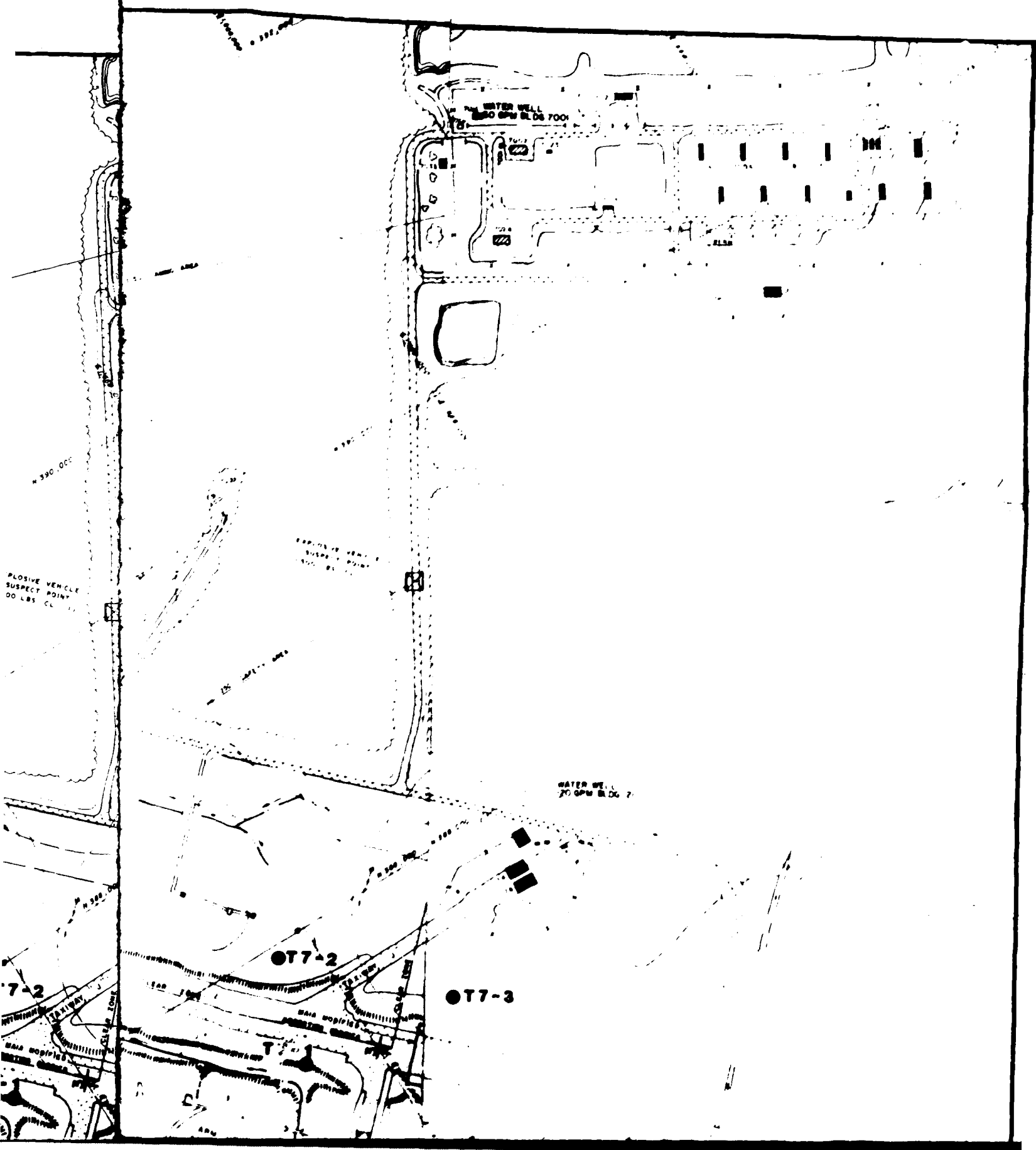
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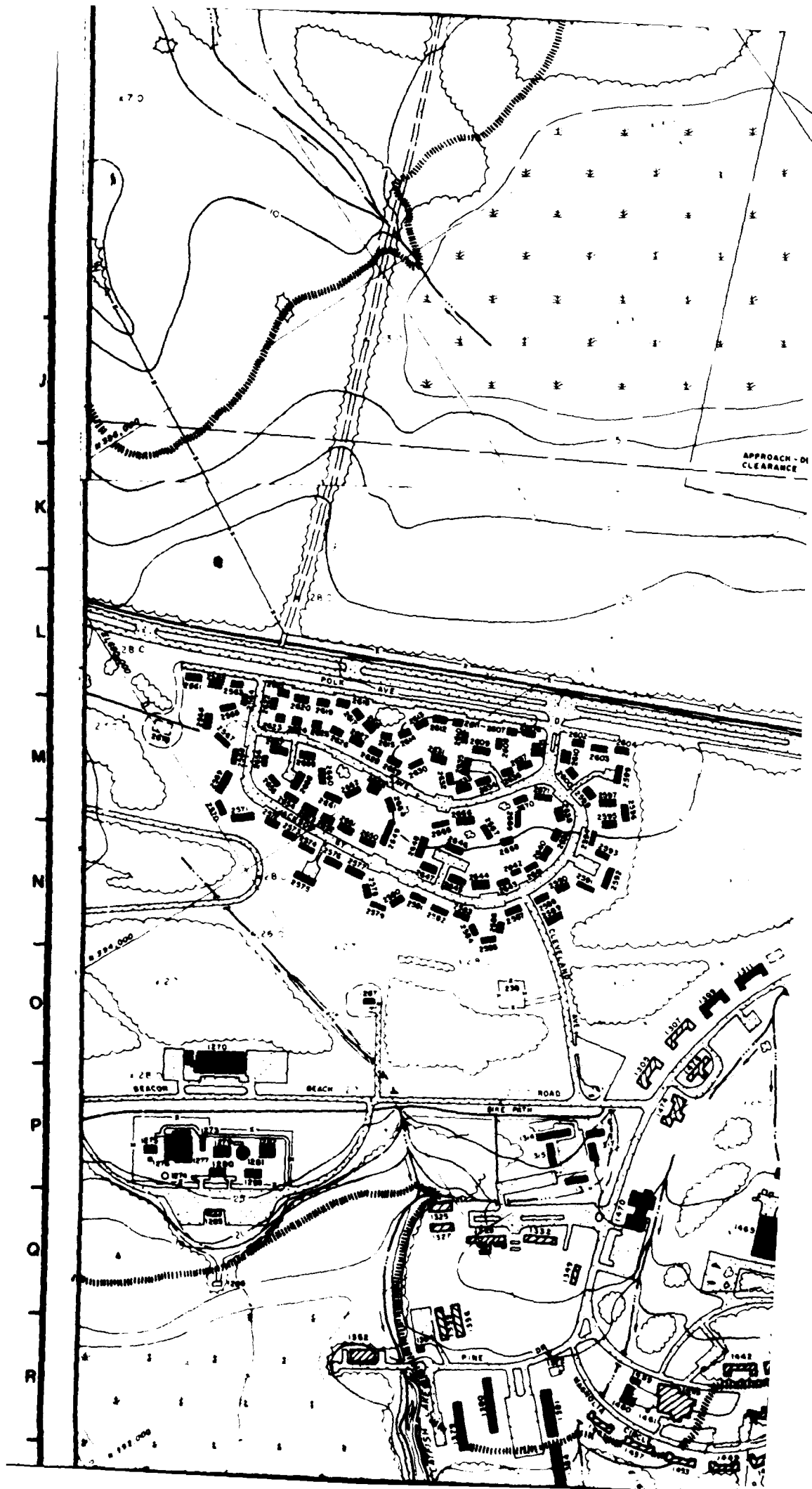
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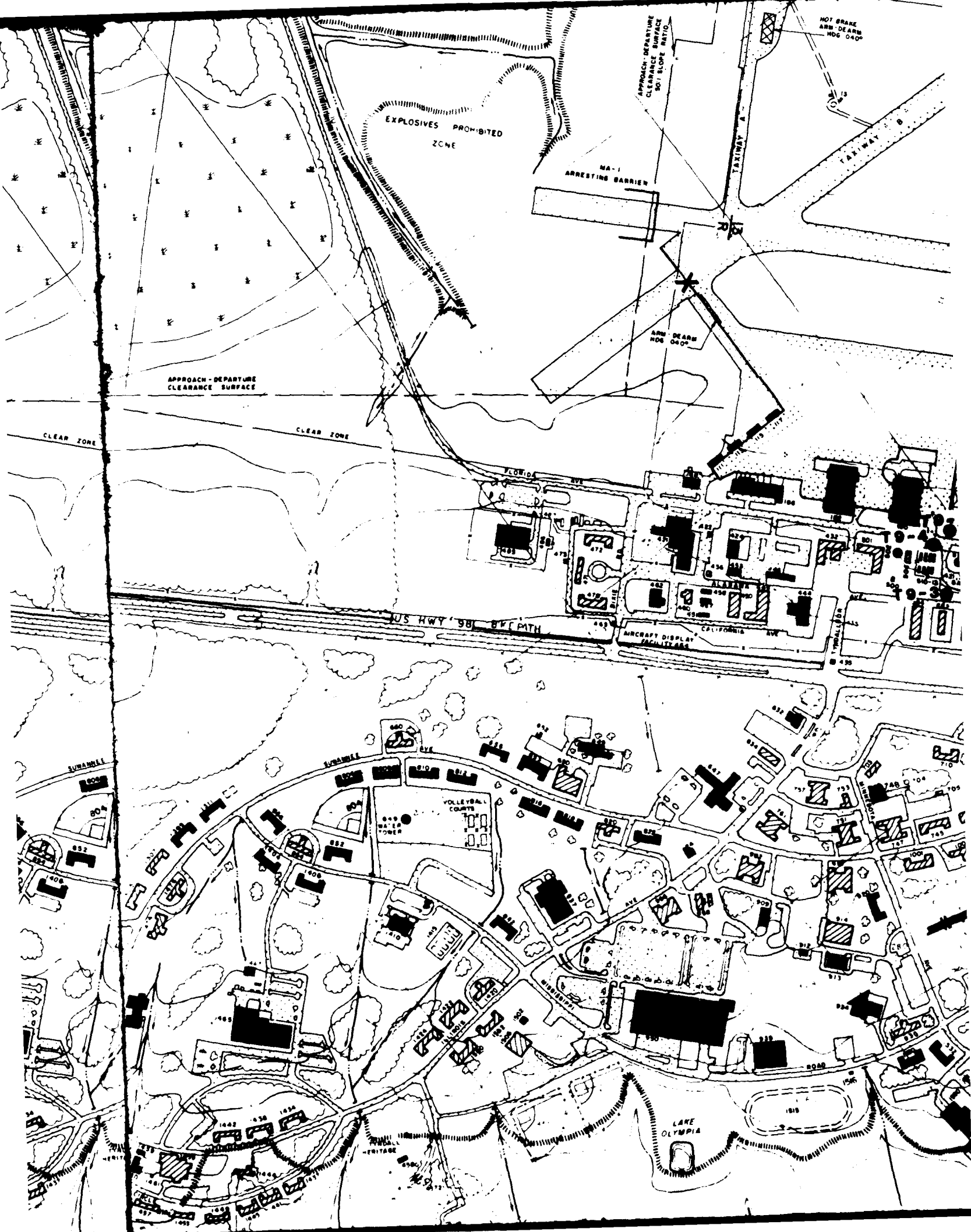
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NW-SE INSTRUMENT RUNWAY 200 x 10,000

TRUE BEARING 134° 28' 314° 28'

BAR-12 ARRESTING CABLE

ARRESTING BARRIER

APPROACH DEPARTURE SURFACE 30:1 SLOPE RATIO

APPROACH DEPARTURE SURFACE

HELIPAD 1

HELIPAD 2

HOT BRAKE AREA

TAXIWAY H

TAXIWAY I

T6-4
T6-20
T6-10
T6-5
T6-3

SEWAGE TREATMENT SPRAYFIELD

SEWAGE DISPOSAL PLANT FACILITY

SEWAGE FAC

POAD

POAD

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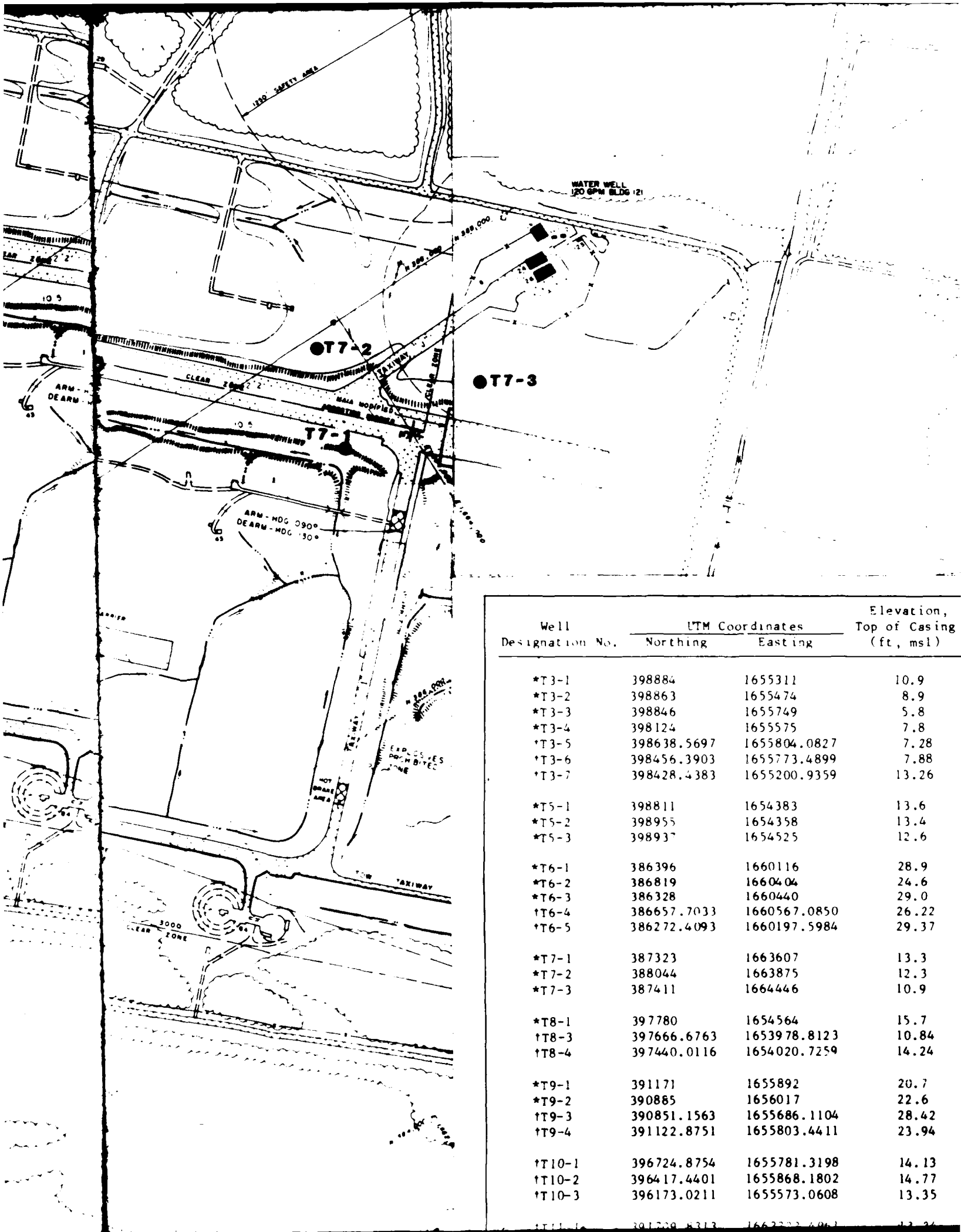
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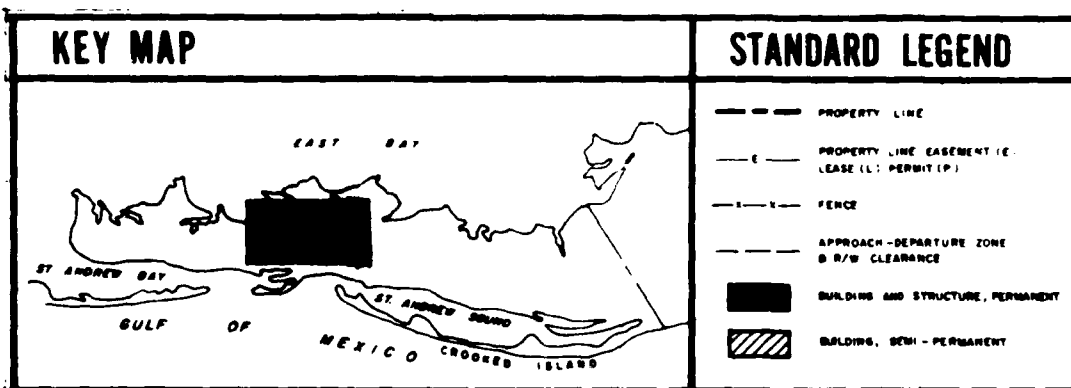
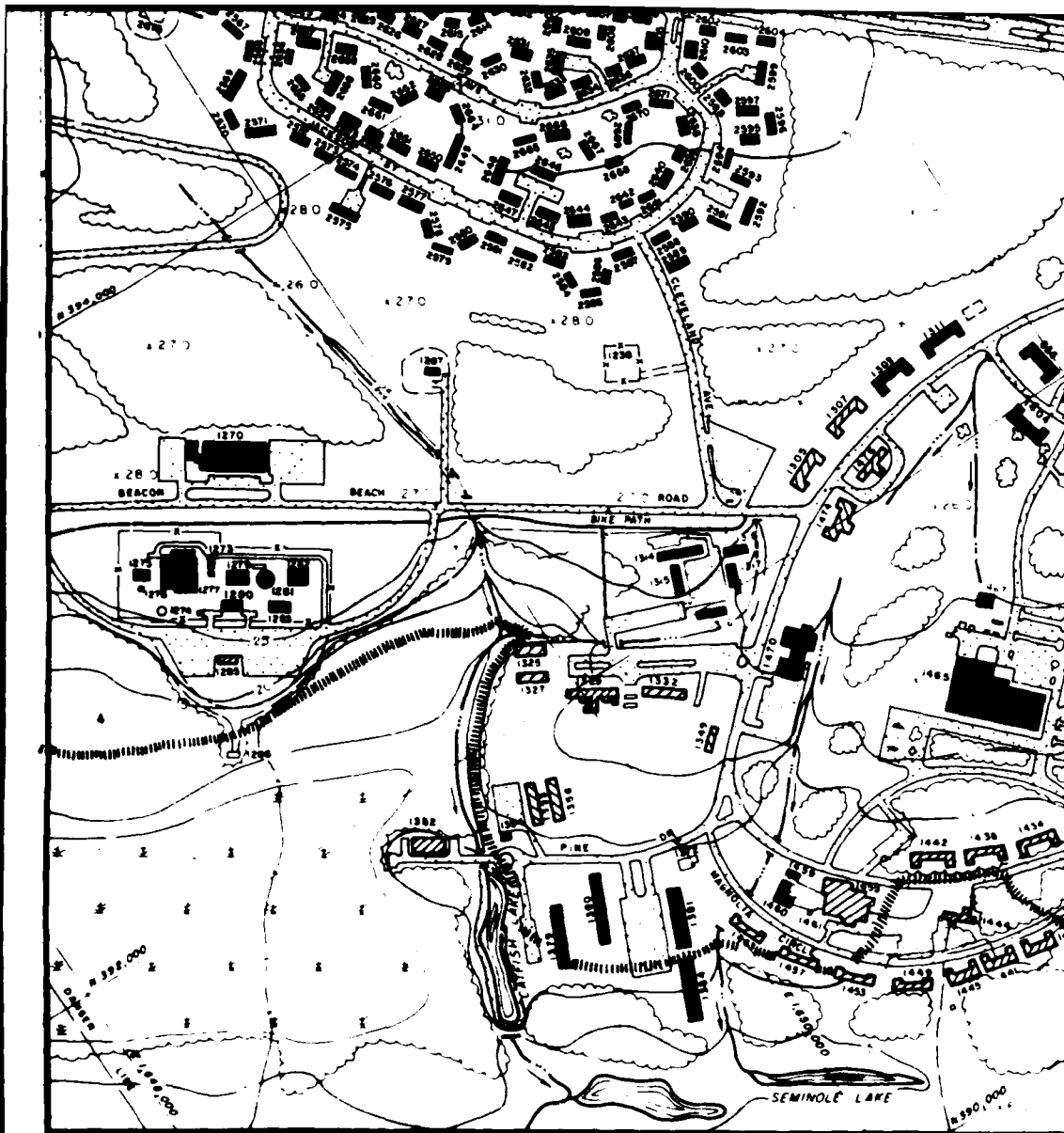
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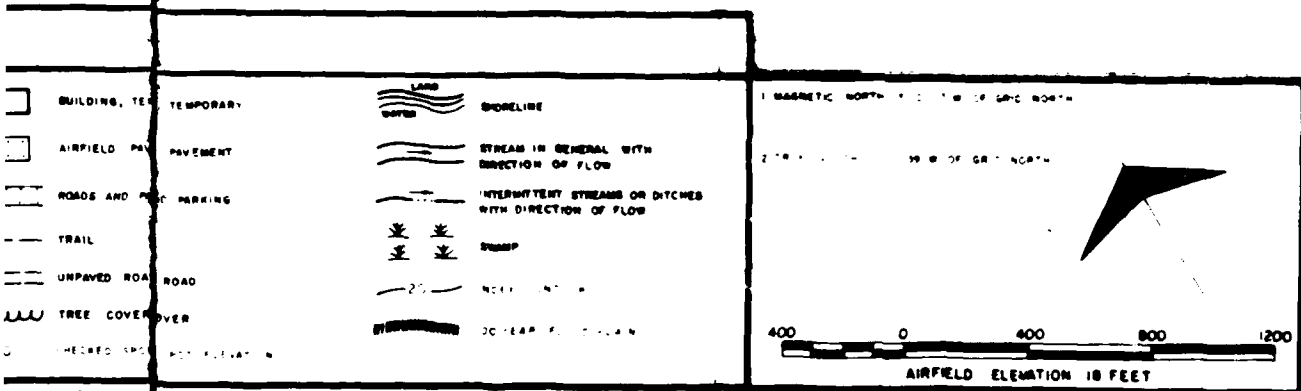
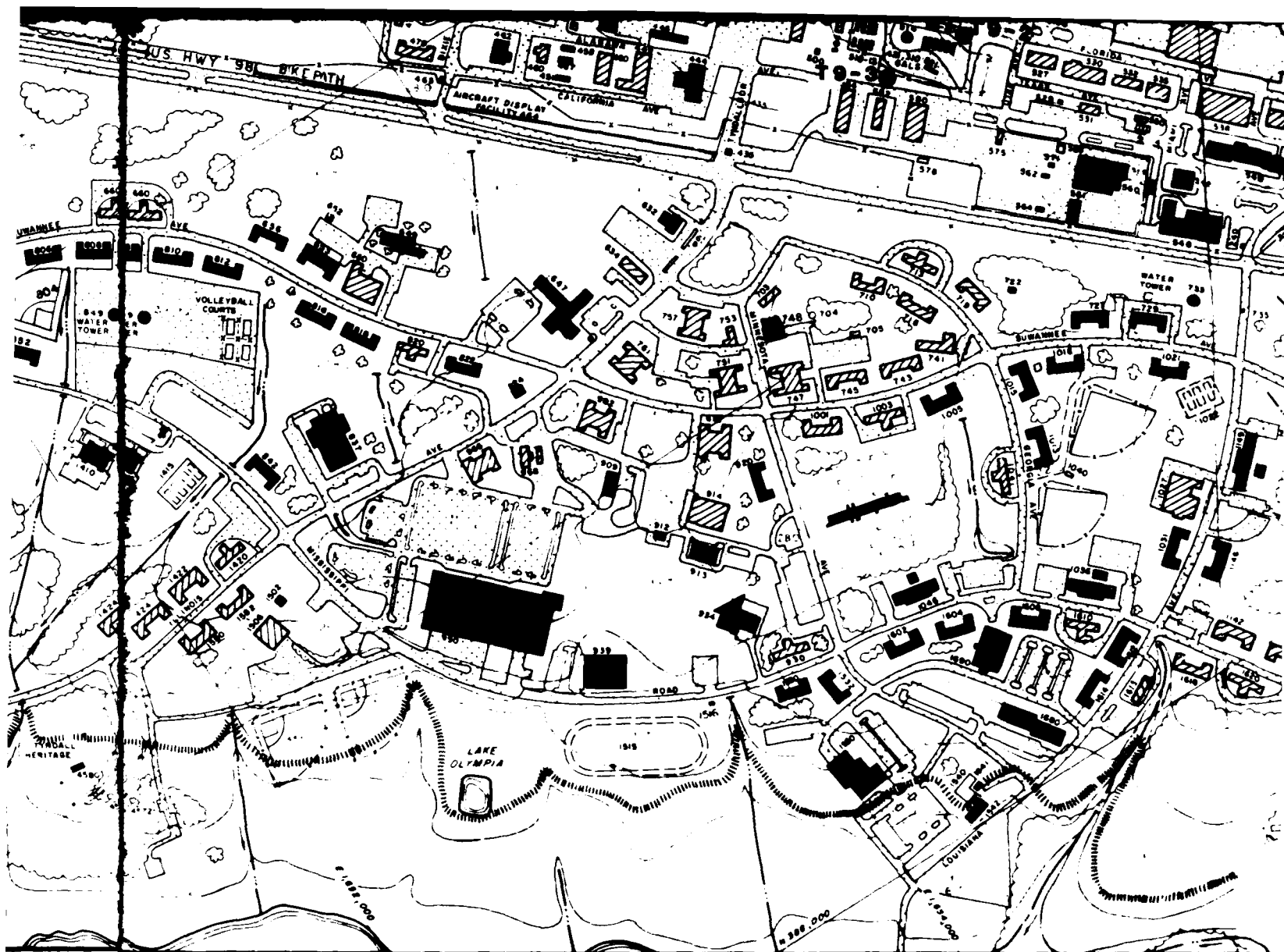
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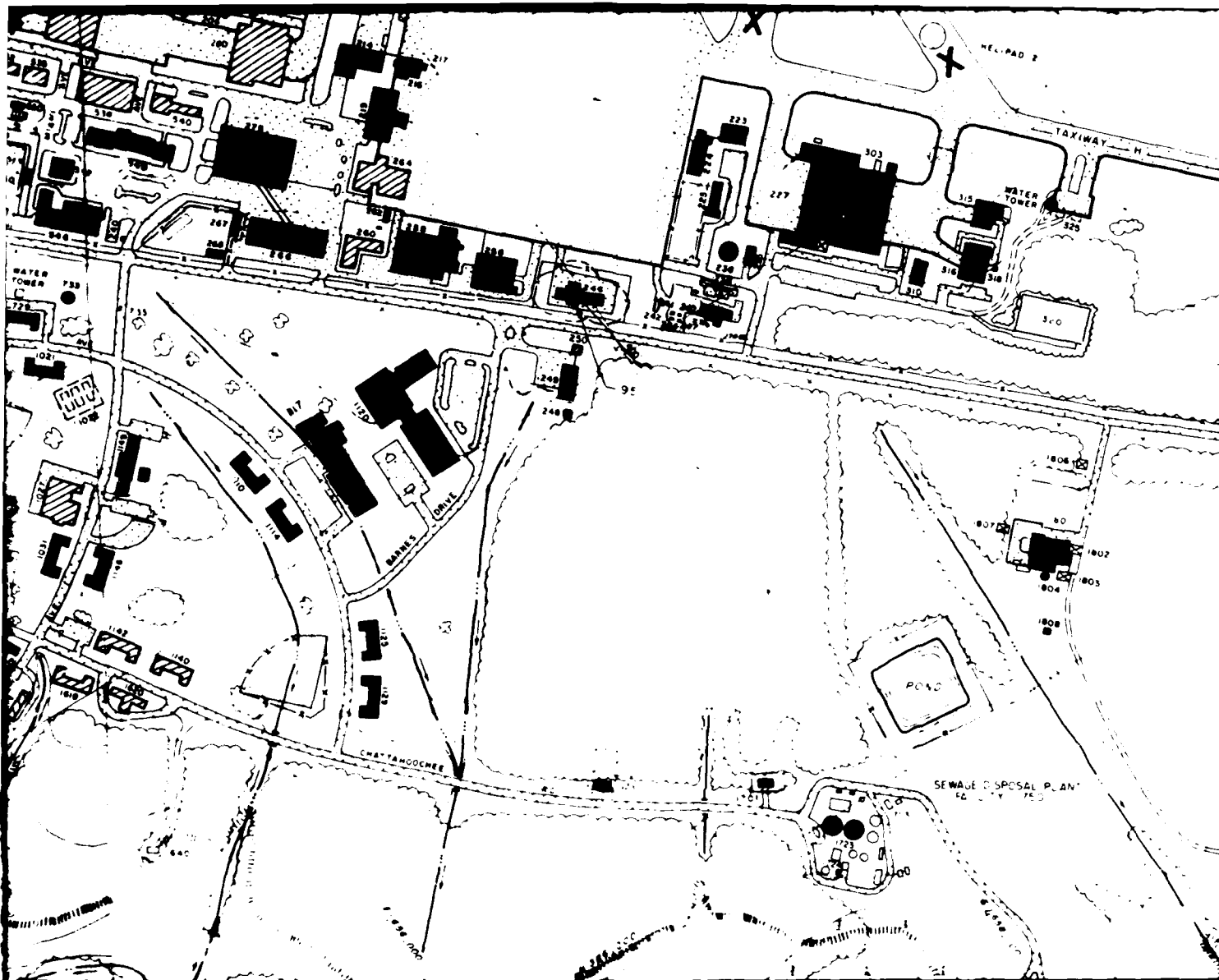
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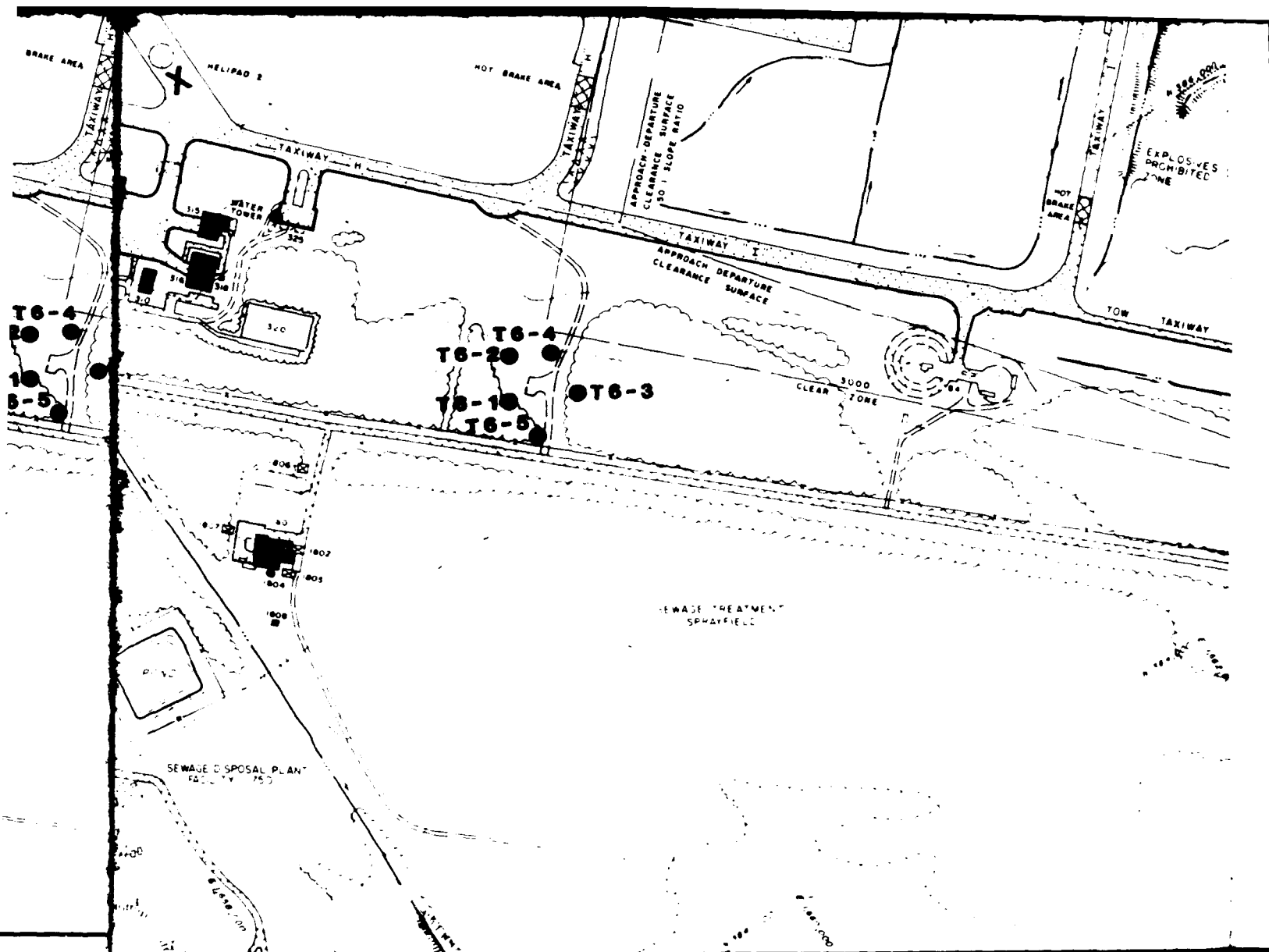


Well Designation No.	UTM Coordinates		Elevation, Top of Casing (ft, msl)
	Northing	Easting	
*T3-1	398884	1655311	10.9
*T3-2	398863	1655474	8.9
*T3-3	398846	1655749	5.8
*T3-4	398124	1655575	7.8
*T3-5	398638.5697	1655804.0827	7.28
*T3-6	398456.3903	1655773.4899	7.88
*T3-7	398428.4383	1655200.9359	13.26
*T5-1	398811	1654383	13.6
*T5-2	398955	1654358	13.4
*T5-3	398937	1654525	12.6
*T6-1	386396	1660116	28.9
*T6-2	386819	1660404	24.6
*T6-3	386328	1660440	29.0
*T6-4	386657.7033	1660567.0850	26.22
*T6-5	386272.4093	1660197.5984	29.37
*T7-1	387323	1663607	13.3
*T7-2	388044	1663875	12.3
*T7-3	387411	1664446	10.9
*T8-1	397780	1654564	15.7
*T8-3	397666.6763	1653978.8123	10.84
*T8-4	397440.0116	1654020.7259	14.24
*T9-1	391171	1655892	20.7
*T9-2	390885	1656017	22.6
*T9-3	390851.1563	1655686.1104	28.42
*T9-4	391122.8751	1655803.4411	23.94
*T10-1	396724.8754	1655781.3198	14.13
*T10-2	396417.4401	1655868.1802	14.77
*T10-3	396173.0211	1655573.0608	13.35
*T11-1	391209.8313	1662222.4961	12.26









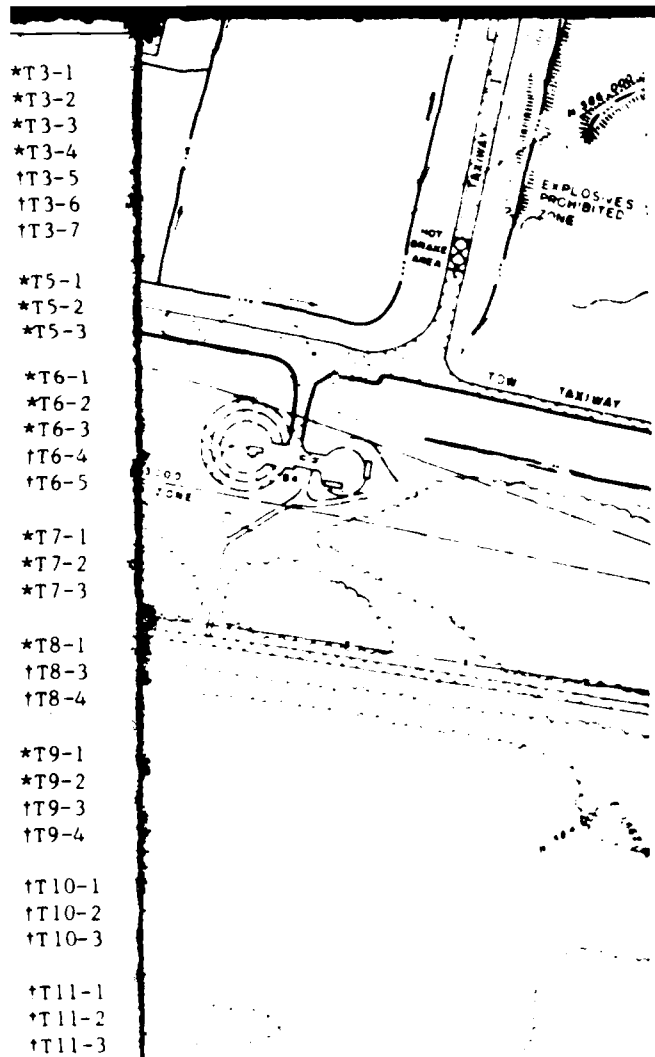
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Designation			
*T3-1	398884	1655311	10.9
*T3-2	398863	1655474	8.9
*T3-3	398846	1655749	5.8
*T3-4	398124	1655575	7.8
†T3-5	398638.5697	1655804.0827	7.28
†T3-6	398456.3903	1655773.4899	7.88
†T3-7	398428.4383	1655200.9359	13.26
*T5-1	398811	1654383	13.6
*T5-2	398955	1654358	13.4
*T5-3	398937	1654525	12.6
*T6-1	386396	1660116	28.9
*T6-2	386819	1660404	24.6
*T6-3	386328	1660440	29.0
†T6-4	386657.7033	1660567.0850	26.22
†T6-5	386272.4093	1660197.5984	29.37
*T7-1	387323	1663607	13.3
*T7-2	388044	1663875	12.3
*T7-3	387411	1664446	10.9
*T8-1	397780	1654564	15.7
†T8-3	397666.6763	1653978.8123	10.84
†T8-4	397440.0116	1654020.7259	14.24
*T9-1	391171	1655892	20.7
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†T9-3	390851.1563	1655686.1104	28.42
†T9-4	391122.8751	1655803.4411	23.94
†T10-1	396724.8754	1655781.3198	14.13
†T10-2	396417.4401	1655868.1802	14.77
†T10-3	396173.0211	1655573.0608	13.35
*T11-1	391709.8313	1662222.4961	13.24
*T11-2	391511.2668	1662569.1190	12.97
*T11-3	391396.9281	1662629.6801	8.43

*Installed during Phase II, Stage 1 survey.
†Installed during Phase II, Stage 2 survey.

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TYNDALL AIR FORCE BASE L - 2 MONITOR WELL LOCATIONS			
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ESE ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
AN RSC COMPANY

APPENDIX M
GROUND WATER SAMPLING LOGS

WELL SAMPLING DATA FORM

Well Number: 642-1 Date: 10/1/85 Time: 3:00
Boring Diameter: 6" Well Casing Diameter: 2"
Annular Space Length: 12.5 Stickup: 2.2

WATER LEVEL

Held: 7.00
Cut: 0.55
DTW: 6.45 Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 15.5
DTW Top of Casing: 6.45
Column of Water in Well: 9.05

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart) = .39
Column of Water or Length of A.S. (whichever is less) X 9.05
Volume of Annular Space = 3.5
Gallons per foot of Casing = 1.032
Column of Water X 9.05
Volume of Casing = 9.5
Total Volume (Volume of A.S. + Volume of Casing) = 13.0
Number of Volumes to be Evacuated X 3.75
Total Volume to be Evacuated = 48.75

Method of Purging (pump, bailer, etc.): Cent

FIELD ANALYSES

	Start	Mid	End
Time	<u>10:32</u>	<u>10:43</u>	<u>10:54</u>
pH	<u>5.9</u>	<u>5.5</u>	<u>5.7</u>
Conductivity	<u>42</u>	<u>138</u>	<u>123</u>
Temperature	<u>27.9</u>	<u>23.2</u>	<u>23</u>

Total Volume Purged: 48.75 30 gallons
Sample Time: 1:05 Sample Number: 10-24

FRACTIONS

B	C	CF	CL	F	H	M	N	NF
O	P	R	RP	RS	S	T	UP	Z

NOTES

Signed/Sampler: ALM Date: 10/1/85
Signed/Reviewer: BR Schaefer Date: 6/22/86

WELL SAMPLING DATA FORM

Well Number: LH2-2 Date: 10/14/86 Time: 08:35
Boring Diameter: 6 Well Casing Diameter: 2"
Annular Space Length: 12.5 Stickup: 1.2

WATER LEVEL

Held: 5.0
Cut: 0.6
DTW: 4.4 Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 15.5
DTW Top of Casing: 4.4
Column of Water in Well: 11.1

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart) = .39
Column of Water or Length of A.S. (whichever is less) X 11.1
Volume of Annular Space = 4.3
Gallons per foot of Casing = .1632
Column of Water X 11.1
Volume of Casing = 1.8
Total Volume (Volume of A.S. + Volume of Casing) = 6.1
Number of Volumes to be Evacuated X 3 → 5
Total Volume to be Evacuated = 18.4 → 30.7

Method of Purging (pump, bailer, etc.): CCMT

FIELD ANALYSES

	Start	Mid	End
Time	<u>10:12</u>	<u>10:41</u>	<u>11:05</u>
pH	<u>5.6</u>	<u>5.5</u>	<u>5.6</u>
Conductivity	<u>64</u>	<u>62</u>	<u>58</u>
Temperature	<u>25.7</u>	<u>26.4</u>	<u>26.5</u>

Total Volume Purged: 34 gallons
Sample Time: 11:25 Sample Number: 100-242

FRACTIONS

B	C	CF	CL	F	H	M	N	NF
O	P	R	RP	RS	S	T	UP	Z

NOTES

Signed/Sampler: [Signature] Date: 10/15/86
Signed/Reviewer: [Signature] Date: 10/27/86

WELL SAMPLING DATA FORM

Well Number: CH 2-3 Date: 12-1-85 Time: 11:35
Boring Diameter: 5 Well Casing Diameter: 2"
Annular Space Length: 12.5 Stickup: 2.7

WATER LEVEL

Held: 5.0
Cut: 1.0
DTW: 4.0 Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 16.0
DTW Top of Casing: 4.0
Column of Water in Well: 12.0

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart) = 3.9
Column of Water or Length of A.S. (whichever is less) X 12.0
Volume of Annular Space = 4.7
Gallons per foot of Casing = 1.33
Column of Water X 12.0
Volume of Casing = 2.0
Total Volume (Volume of A.S. + Volume of Casing) = 6.7
Number of Volumes to be Evacuated X 3.5
Total Volume to be Evacuated = 19.9 → 33.2

Method of Purging (pump, bailer, etc.): C.S.M.

FIELD ANALYSES

	Start	Mid	End
Time	<u>11:56</u>	<u>12:58</u>	<u>14:15</u>
pH	<u>6.3</u>	<u>6.9</u>	<u>7.0</u>
Conductivity	<u>237</u>	<u>362</u>	<u>352</u>
Temperature	<u>28.7</u>	<u>29.5</u>	<u>29.6</u>

Total Volume Purged: 20 gallons
Sample Time: 14.25 Sample Number: 702-243

FRACTIONS

B	C	CF	CL	F	H	M	N	NF
O	P	R	RP	RS	S	T	UP	Z

NOTES

Signed/Sampler: [Signature] Date: 12/1/85
Signed/Reviewer: [Signature] Date: 10/22/86

WELL SAMPLING DATA FORM

Well Number: 6-2-4 Date: 10/15/85 Time: 9
Boring Diameter: 5 Well Casing Diameter: 4
Annular Space Length: 12.5 Stickup: 2.7

WATER LEVEL

Held: 5.0
Cut: 1.1
DTW: 3.9 Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 12.0
DTW Top of Casing: 3.9
Column of Water in Well: 12.1

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart) = 3.9
Column of Water or Length of A.S. (whichever is less) X 2.1
Volume of Annular Space = 4.7
Gallons per foot of Casing = 12.22
Column of Water X 12.1
Volume of Casing = 2.0
Total Volume (Volume of A.S. + Volume of Casing) = 6.7
Number of Volumes to be Evacuated X 3.5
Total Volume to be Evacuated = 20.1 → 33.5

Method of Purging (pump, bailer, etc.): CNT

FIELD ANALYSES

	Start	Mid	End
Time	<u>12:04</u>	<u>12:48</u>	<u>14:02</u>
pH	<u>6.3</u>	<u>6.6</u>	<u>6.7</u>
Conductivity	<u>127</u>	<u>296</u>	<u>251</u>
Temperature	<u>26.8</u>	<u>28.0</u>	<u>28.5</u>

Total Volume Purged: 26 gallons

Sample Time: 14:10 Sample Number: TN-2-2

FRACTIONS

B	C	CF	CL	F	H	M	N	NP
O	P	R	RP	RS	S	T	UP	Z

NOTES

Signed/Sampler: [Signature] Date: 10/15/85
Signed/Reviewer: [Signature] Date: 10/22/85

WELL SAMPLING DATA FORM

Well Number: LH2-7 Date: 10-17-86 Time: 1400
Boring Diameter: 6" Well Casing Diameter: 2"
Annular Space Length: 11.2' Stickup: 1.4'

WATER LEVEL

Head: 7.00
Cut: 1.64
DTW: 5.36 Top of Casing

Not sampled
10/17

COLUMN OF WATER IN WELL

Casing Length: 13.40
DTW Top of Casing: 5.36
Column of Water in Well: 8.04

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart) = 0.31
Column of Water or Length of A.S. (whichever is less) X 8.04
Volume of Annular Space = 3.16
Gallons per foot of Casing = 0.1632
Column of Water X 8.04
Volume of Casing = 1.31
Total Volume (Volume of A.S. + Volume of Casing) = 4.47
Number of Volumes to be Evacuated X 3 - 5
Total Volume to be Evacuated = 13.4 - 22.3

Method of Purging (pump, bailer, etc.): Pump - not continuous

FIELD ANALYSES

	Start	Mid	End
Time	<u>1409 @ 5 gal</u>	<u>1415 @ 10 gal</u>	<u>1424 @ 25 gal</u>
pH	<u>5.5</u>	<u>5.6</u>	<u>5.7</u>
Conductivity	<u>251</u>	<u>238</u>	<u>237</u>
Temperature	<u>27.7</u>	<u>27.9</u>	<u>28.8</u>

Total Volume Purged: 25+10 gallons

Sample Time: 1315 (10/23) Sample Number: 2*5

FRACTIONS

B	C	CF	CL	F	H	M	N	NT
0	P	B	RP	RS	S	T	UP	Z

NOTE: VX3

Well partially re-purged due to delay between orig. purge date & sample date -

Signed/Sampler: [Signature]
Signed/Reviewer: [Signature]

Date: 10/22/86

10/22
Start End
1250 gal 1310
5.6 @ 10 gal
5.5
242 235
263 262
Total purg
10/22 = 4
gals

Hydrulab
#2

WELL SAMPLING DATA FORM

Well Number: LH2-8 Date: 10/22/86 Time: 1115
Boring Diameter: 12" Well Casing Diameter: 4" I.D.
Annular Space Length: 16.2' Stickup: 2.2'

WATER LEVEL

Head: -7.00'
Cut: 0.85'
DTW: -6.15' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 21.2'
DTW Top of Casing: -6.15'
Column of Water in Well: 15.05'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart) = 1.57
Column of Water or Length of A.S. (whichever is less) X 15.05
Volume of Annular Space = 23.6
Gallons per foot of Casing = 0.6528
Column of Water X 15.05
Volume of Casing = 9.8
Total Volume (Volume of A.S. + Volume of Casing) = 33.4
Number of Volumes to be Evacuated X 3-5
Total Volume to be Evacuated = 100.2-167

Method of Purging (pump, bailer, etc.): Continuous pumping

FIELD ANALYSES

	Start	Mid	End
Time	<u>1130 @ 5 gal</u>	<u>1153 @ 75 gal</u>	<u>1215 @ 150 gal</u>
pH	<u>6.2</u>	<u>6.0</u>	<u>6.0</u>
Conductivity	<u>281</u>	<u>310</u>	<u>330</u>
Temperature	<u>27.9</u>	<u>27.8</u>	<u>27.9</u>

Total Volume Purged: 150 gallons

Sample Time: 1230 Sample Number: 2 * 7

FRACTIONS

B	C	CF	CL	F	H	M	N	NF
<u>0</u>	<u>P</u>	<u>R</u>	<u>RP</u>	<u>RS</u>	<u>S</u>	<u>T</u>	<u>UP</u>	<u>Z</u>

NOTES

✓ X 3
Water quite clean after purging
Signed/Sampler: [Signature] Date: 10/22/86
Signed/Reviewer: [Signature] Date: 10/24/86

WELL SAMPLING DATA FORM

Well Number: LH2-9 Date: 10/22/86 Time: 0815
Boring Diameter: 12" Well Casing Diameter: 4" I.D.
Annular Space Length: 16.6' Stickup: 3.2'

WATER LEVEL

Head: - 7.00'
Cut: 0.80
DTW: - 6.20' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 22.2'
DTW Top of Casing: - 6.20'
Column of Water in Well: 16.0

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart) = 1.57
Column of Water or Length of A.S. (whichever is less) x 16.0
Volume of Annular Space = 25.1
Gallons per foot of Casing = 0.6528
Column of Water x 16.0
Volume of Casing = 10.4
Total Volume (Volume of A.S. + Volume of Casing) = 35.5
Number of Volumes to be Evacuated x 3 - 5
Total Volume to be Evacuated = 106.5 - 177.5

Method of Purging (pump, bailer, etc.): Pumping (discontinuous)

FIELD ANALYSES

	Start	Mid	End
Time	<u>0840 @ 5 gyl.</u>	<u>0937 @ 10 GAL</u>	<u>1033 @ 175 GAL</u>
pH	<u>5.7</u>	<u>5.7</u>	<u>5.7</u>
Conductivity	<u>265</u>	<u>285</u>	<u>293</u>
Temperature	<u>23.2</u>	<u>25.2</u>	<u>25.8</u>

Total Volume Purged: 175 gallons
Sample Time: 11:10 Sample Number: 2*8 / 2*6

FRACTIONS

B	C	CF	CL	F	H	M	N	NE	Z
<u>0'</u>	<u>P</u>	<u>B</u>	<u>RP</u>	<u>RS</u>	<u>S</u>	<u>T</u>	<u>UP</u>	<u>Z</u>	<u>VX3</u>

NOTES

GA N and 0 fractions sampled here

Signed/Sampler: [Signature]

Signed/Reviewer: [Signature]

Date: 10/22/86

Date: 10/28/86

Sent to
Brucks

WELL SAMPLING DATA FORM

Well Number: 3-1 Date: 10/15/85 Time: 0920
Boring Diameter: 5" Well Casing Diameter: 2"
Annular Space Length: 9.3 Stickup: 2.7

WATER LEVEL

Held: 8.0
Cut: .6
DTW: 7.4 Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 14.0
DTW Top of Casing: 7.4
Column of Water in Well: 6.6

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart) = .39
Column of Water or Length of A.S. (whichever is less) X 5.3
Volume of Annular Space = 2.6
Gallons per foot of Casing = .1632
Column of Water X 6.6
Volume of Casing = 1.1
Total Volume (Volume of A.S. + Volume of Casing) = 9.7
Number of Volumes to be Evacuated X 3 → 5
Total Volume to be Evacuated = 11.0 → 18.3

Method of Purging (pump, bailer, etc.): CGMT

FIELD ANALYSIS

	Start	Mid	End
Time	<u>0957</u>	<u>10:06</u>	<u>10:17</u>
pH	<u>6.3</u>	<u>6.0</u>	<u>6.0</u>
Conductivity	<u>184</u>	<u>147</u>	<u>144</u>
Temperature	<u>24.8</u>	<u>26.4</u>	<u>26.7</u>

Total Volume Purged: 30 gallons

Sample Time: 10:50 Sample Number: TYUDL 6 + 1

FRACTIONS

B	C	CF	CL	F	H	M	N	NF
O	P	R	RP	RS	S	T	UP	Z

NOTES

Signed/Sampler: RM Date: 10/15/85
Signed/Reviewer: R. J. [Signature] Date: 10/22/85

WELL SAMPLING DATA FORM

Well Number: T3-2 Date: 10/11/85 Time: 09:37
Boring Diameter: 6" Well Casing Diameter: 2"
Annular Space Length: 7.3 Stickup: 2.7

WATER LEVEL

Held: 7.0
Cur: .9
DTW: 6.1 Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 17.0
DTW Top of Casing: 6.1
Column of Water in Well: 7.9

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart) = .37
Column of Water or Length of A.S. (whichever is less) X 7.9
Volume of Annular Space = 3.1
Gallons per foot of Casing = .1332
Column of Water X 7.9
Volume of Casing = 1.3
Total Volume (Volume of A.S. + Volume of Casing) = 4.4
Number of Volumes to be Evacuated X 3 → 5
Total Volume to be Evacuated = 13.1 → 21.9

Method of Purging (pump, bailer, etc.): LCMT

FIELD ANALYSES

	Start	Mid	End
Time	<u>10:05</u>	<u>10:31</u>	<u>10:50</u>
pH	<u>6.0</u>	<u>6.0</u>	<u>6.0</u>
Conductivity	<u>178</u>	<u>168</u>	<u>167</u>
Temperature	<u>26.6</u>	<u>26.2</u>	<u>26.1</u>

Total Volume Purged: 50 gallons

Sample Time: 11:10 Sample Number: TVUDL 3*

FRACTIONS

B	C	CF	CL	F	H	M	N	NF
O	P	R	RP	RS	S	T	UP	Z

NOTES

Signed/Sampler: J2M
Signed/Reviewer: JR 12/2/85

Date: 12/15/85
Date: 12/2/85

WELL SAMPLING DATA FORM

Well Number: T3-3 Date: 10/15/86 Time: 11:29
Boring Diameter: 6" Well Casing Diameter: 2"
Annular Space Length: 8.3 Stickup: 3.7

WATER LEVEL

Held: 5.0
Cur: 1.1
DTW: 3.9 Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 13.0
DTW Top of Casing: 3.9
Column of Water in Well: 9.1

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart) = .39
Column of Water or Length of A.S. (whichever is less) X 8.3
Volume of Annular Space = 3.2
Gallons per foot of Casing = 1.632
Column of Water X 9.1
Volume of Casing = 1.5
Total Volume (Volume of A.S. + Volume of Casing) = 4.7
Number of Volumes to be Evacuated X 3.5
Total Volume to be Evacuated = 14.2 → 23.0

Method of Purging (pump, bailer, etc.):

FIELD ANALYSES

	Start	Mid	End
Time	<u>11:39</u>	<u>11:41</u>	<u>11:44</u>
pH	<u>6.1</u>	<u>6.2</u>	<u>6.2</u>
Conductivity	<u>195</u>	<u>178</u>	<u>183</u>
Temperature	<u>25.0</u>	<u>25.2</u>	<u>25.2</u>

Total Volume Purged: 50+ gallons

Sample Time: 11:55 Sample Number: TNDYL 6#3

FRACTIONS

B C CF CL F H M N NF
O P R RP RS S T UP Z

NOTES

OK + GRB-156 TO BR-156
VF3 + ED PR 10/16 one bailer full of sample had red color sediment in top, bottom of bailer sample while center of sample was clear.

Signed/Sampler: [Signature] Date: 10/15/86
Signed/Reviewer: [Signature] Date: 10/22/86

WELL SAMPLING DATA FORM

Well Number: 13-4 Date: 10/15/85 Time: 12:33
Boring Diameter: 6" Well Casing Diameter: 2"
Annular Space Length: 8.3 Stickup: 2.7

WATER LEVEL

Head: 6.0
Cuc: .9
DTW: 5.1 Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 13.0
DTW Top of Casing: 5.1
Column of Water in Well: 7.9

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart) = 3.9
Column of Water or Length of A.S. (whichever is less) X 7.9
Volume of Annular Space = 3.1
Gallons per foot of Casing = 1.3
Column of Water X 7.9
Volume of Casing = 1.3
Total Volume (Volume of A.S. + Volume of Casing) = 4.4
Number of Volumes to be Evacuated X 3 → 5
Total Volume to be Evacuated = 13.1 → 21.9

Method of Purging (pump, bailer, etc.): _____

FIELD ANALYSES

	Start	Mid	End
Time	<u>12:45</u>	<u>15:10</u>	<u>16:25</u>
pH	<u>6.8</u>	<u>6.8</u>	<u>6.6</u>
Conductivity	<u>393</u>	<u>318</u>	<u>320</u>
Temperature	<u>30.1</u>	<u>25.7</u>	<u>25.8</u>

Total Volume Purged: 140 gallons

Sample Time: 10/16/85 Sample Number: TLDYL 644

FRACTIONS

S C CL F H M N NF
P R RP RS S T UP Z

NOTES

VX3 + ED

Signed/Sampler: [Signature]
Signed/Reviewer: [Signature]

Date: 10/16/85
Date: 10/22/85

WELL SAMPLING DATA FORM

Well Number: T3-5 Date: 10/17/86 Time: 1115
Boring Diameter: 12" Well Casing Diameter: 4" I.D.
Annular Space Length: 14.8' Stickup: ~~2.1'~~ 2.1'

WATER LEVEL

Head: 7.04
Cuc: 0.90
DTW: 6.10 Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 20.5'
DTW Top of Casing: 6.1
Column of Water in Well: 14.4

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart) = 1.57
Column of Water or Length of A.S. (whichever is less) X 14.4
Volume of Annular Space = 22.61
Gallons per foot of Casing = .6328
Column of Water X 14.4
Volume of Casing = 9.4
Total Volume (Volume of A.S. + Volume of Casing) = 32.0
Number of Volumes to be Evacuated X 3-5
Total Volume to be Evacuated = 96-160

Method of Purging (pump, bailer, etc.): Continuous pumping

FIELD ANALYSES

	Start	Mid	End
Time	<u>1120 @ 5 gal.</u>	<u>1132 @ 80 gal</u>	<u>1144 @ 160 gal</u>
pH	<u>6.5</u>	<u>6.2</u>	<u>6.1</u>
Conductivity	<u>334</u>	<u>309</u>	<u>308</u>
Temperature	<u>26.0</u>	<u>26.5</u>	<u>26.6</u>

Total Volume Purged: 170 gallons 6 * 8 → QA
Sample Time: 1145 Sample Number: 6 * 5

FRACTIONS

B	C	CF	CL	F	H	H	(H')	NP
(O)	P	B	BP	BS	S	T	UP	Z

NOTES: V X 3 + ED

QA TAKEN HERE - complete set

Signed/Sampler: [Signature]
Signed/Reviewer: [Signature]

Date: 10/17/86
Date: 10/22/86

WELL SAMPLING DATA FORM

Well Number: T3-6 Date: 10/17/86 Time: 1210
Boring Diameter: 12" Well Casing Diameter: 4" I.D.
Annular Space Length: 16.5' Stickup: ~~2.0'~~ 1.9'

WATER LEVEL

Head: 7.00
Cut: 0.45
DTW: 6.55 Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 20.90
DTW Top of Casing: 6.55
Column of Water in Well: 14.35

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart) = 1.57
Column of Water or Length of A.S. (whichever is less) X 14.35
Volume of Annular Space = 22.53
Gallons per foot of Casing = .6528
Column of Water X 14.35
Volume of Casing = 9.37
Total Volume (Volume of A.S. + Volume of Casing) = 31.9
Number of Volumes to be Evacuated X 3 - 5
Total Volume to be Evacuated = 95.7 - 159.5

Method of Purging (pump, bailer, etc.): Continuous pumping

FIELD ANALYSES

	Start	Mid	End
Time	<u>1214 @ 5 gal</u>	<u>1218 @ 80 gal</u>	<u>1222 @ 160 gal</u>
pH	<u>6.4</u>	<u>6.4</u>	<u>6.4</u>
Conductivity	<u>276</u>	<u>325</u>	<u>330</u>
Temperature	<u>27.2</u>	<u>27.1</u>	<u>27.0</u>

Total Volume Purged: 165 gal gallons

Sample Time: 1230 Sample Number: 6 * 6

FRACTIONS

B	C	CF	CL	F	H	M	W	NF
<u>(O)</u>	<u>+</u>	<u>+</u>	<u>RF</u>	<u>RS</u>	<u>S</u>	<u>T</u>	<u>UP</u>	<u>Z</u>

NOTES VX3 + ED

Signed/Sampler:

Signed/Reviewer:

Date:

Date:

WELL SAMPLING DATA FORM

Well Number: T3-7 Date: 10/23/86 Time: 1045
Boring Diameter: 12" Well Casing Diameter: 4" I.D.
Annular Space Length: 16.2' Stickup: 3.6'

WATER LEVEL

Head: -9.00'
Cut: 1.25'
DTW: -7.75' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 23.1'
DTW Top of Casing: 7.75'
Column of Water in Well: 15.35'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart) = 1.57
Column of Water or Length of A.S. (whichever is less) x 15.35
Volume of Annular Space = 24.1
Gallons per foot of Casing = 0.6528
Column of Water x 15.35
Volume of Casing = 10.0
Total Volume (Volume of A.S. + Volume of Casing) = 34.1
Number of Volumes to be Evacuated x 3 - 5
Total Volume to be Evacuated = 1023 - 170.5

Method of Purging (pump, bailer, etc.): Discontinuous pumping

FIELD ANALYSES

	Start	Mid	End
Time	<u>1055 @ 5 gal</u>	<u>1140 @ 55 gal</u>	<u>1215 @ 100 gal</u>
pH	<u>5.4</u>	<u>5.3</u>	<u>5.4</u>
Conductivity	<u>077</u>	<u>072</u>	<u>074</u>
Temperature	<u>24.9</u>	<u>26.5</u>	<u>26.4</u>

Total Volume Purged: 100 gallons

Sample Time: 1220 Sample Number: 6*7

FRACTIONS

B	C	CF	CL	F	R	M	(N)	NF
(O)	P	B	RP	RS	S	T	UP	Z

NOTES

VOA X3 + ED

Signed/Sampler: [Signature]

Date: 10/23/86

Signed/Reviewer: [Signature]

Date: 10/29/86

WELL SAMPLING DATA FORM

Well Number: TS-1 Date: 10/13/86 Time: 09:05
Boring Diameter: 6" Well Casing Diameter: 2"
Annular Space Length: 10.8' Stickup: 2.7

WATER LEVEL

Head: 10.0'
Cut: 1.2'
DTW: 8.8' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 18.0'
DTW Top of Casing: 8.8'
Column of Water in Well: 9.2'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	0.39
Column of Water or Length of A.S. (whichever is less)	X	9.2
Volume of Annular Space	=	3.6
Gallons per foot of Casing	=	1.632
Column of Water	X	9.2
Volume of Casing	=	1.5
Total Volume (Volume of A.S. + Volume of Casing)	=	5.1
Number of Volumes to be Evacuated	X	3 → 5
Total Volume to be Evacuated	=	15.3 → 25.4

Method of Purging (pump, bailer, etc.): CGM & 2000

FIELD ANALYSES	Start	Mid	End
Time	09:30	09:52	09:58 10:05
pH	6.6	6.2	6.3 6.2
Conductivity	91	95	95 93
Temperature	26.2	27.0	26.7 26.3

Total Volume Purged: 50 gallons
Sample Time: 11:10 Sample Number: TMDL 341 -

FRACTIONS

B	C	CF	CL	F	H	M	N	NF
O	P	R	RF	RS	S	T	UP	Z

NOTES

CTW #0 APPROX

Signed/Sampler: [Signature]
Signed/Reviewer: [Signature]

Date: 10/13/86
Date: 10/21/86

WELL SAMPLING DATA FORM

Well Number: TS-2 Date: 10/13/85 Time: 09:43
Boring Diameter: 6" Well Casing Diameter: 2"
Annular Space Length: 10.8 Stickup: 2.7'

WATER LEVEL

Head: 10.0
Cut: 1.05
DTW: 8.95 Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 18.0'
DTW Top of Casing: 8.95
Column of Water in Well: 9.05

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart) = 0.39
Column of Water or Length of A.S. (whichever is less) X 9.05
Volume of Annular Space = 3.5
Gallons per foot of Casing = 1.632
Column of Water X 9.05
Volume of Casing = 1.5
Total Volume (Volume of A.S. + Volume of Casing) = 5.0
Number of Volumes to be Evacuated X 3.75
Total Volume to be Evacuated = 15.25

Method of Purging (pump, bailer, etc.): PERMEABLE

FIELD ANALYSES

	Start	Mid	End
Time	<u>10:22</u>	<u>10:27</u>	<u>10:40</u>
pH	<u>6.2</u>	<u>6.0</u>	<u>6.0</u>
Conductivity	<u>107</u>	<u>105</u>	<u>105</u>
Temperature	<u>27.9</u>	<u>26.3</u>	<u>27.0</u>

Total Volume Purged: 60 gallons
Sample Time: 11:35 Sample Number: TYNDL 342-

FRACTIONS

B	C	CF	CL	F	H	M	N	NF
O	P	R	RP	RS	S	T	UP	Z

NOTES

Signed/Sampler: [Signature] Date: 10/13/85
Signed/Reviewer: [Signature] Date: 10/24/85

WELL SAMPLING DATA FORM

Well Number: TS-3 Date: 12/13/85 Time: 10:20
Boring Diameter: 6 Well Casing Diameter: 1
Annular Space Length: 10.8' Stickup: 2.7'

WATER LEVEL

Held: 9.0'
Cut: 1.0'
DTW: 8.0' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 18'
DTW Top of Casing: 8.0'
Column of Water in Well: 10.0'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart) = 0.39
Column of Water or Length of A.S. (whichever is less) X 10.0'
Volume of Annular Space = 3.9
Gallons per foot of Casing = 1.632
Column of Water X 10.0'
Volume of Casing = 1.6
Total Volume (Volume of A.S. + Volume of Casing) = 5.5
Number of Volumes to be Evacuated X 3 → 5
Total Volume to be Evacuated = 16.6 → 27.7

Method of Purging (pump bailer, etc.): 160'

FIELD ANALYSES

	Start	Mid	End
Time	<u>10:46</u>	<u>10:51</u>	<u>10:57</u>
pH	<u>6.3</u>	<u>6.4</u>	<u>6.4</u>
Conductivity	<u>568</u>	<u>572</u>	<u>581</u>
Temperature	<u>26.9</u>	<u>26.6</u>	<u>26.6</u>

Total Volume Purged: 100 gallons
Sample Time: 12:00 Sample Number: TYHOL 3#3-20A

FRACTIONS

B	C	CP	CL	F	H	M	N	NP
O	P	R	RP	RS	S	T	UP	Z

NOTES

W-DR-1111
TO BUREAU + JH

Signed/Sampler: J. C. M. Date: 12/13/85
Signed/Reviewer: [Signature] Date: 12/23/86

WELL SAMPLING DATA FORM

Well Number: T6-1 Date: 10-16-86 Time: 1315
Boring Diameter: 6" Well Casing Diameter: 2" I.D.
Annular Space Length: 16.1' Stickup: + 2.7'

WATER LEVEL

Held: 9.00
Cut: 1.02
DTW: 7.98 Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 21.90'
DTW Top of Casing: 7.98
Column of Water in Well: 13.82

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart) = 0.39
Column of Water or Length of A.S. (whichever is less) X 13.82
Volume of Annular Space = 5.39
Gallons per foot of Casing = 0.1632
Column of Water X 13.82
Volume of Casing = 2.26
Total Volume (Volume of A.S. + Volume of Casing) = 7.65
Number of Volumes to be Evacuated X 3 - 5
Total Volume to be Evacuated = 23.0 - 38.25

Method of Purging (pump, bailer, etc.): Pumped continuously

FIELD ANALYSES

	Start	Mid	End
Time	<u>1322</u>	<u>1326 @ 20 gal</u>	<u>1332 @ 41 gal.</u>
pH	<u>6.0</u>	<u>5.9</u>	<u>6.0</u>
Conductivity	<u>110</u>	<u>94</u>	<u>92</u>
Temperature	<u>23.1</u>	<u>23.5</u>	<u>23.7</u>

Total Volume Purged: 41 gal. gallons

Sample Time: 1400 Sample Number: 4 * 1

FRACTIONS

B	C	CF	CL	F	H	M	N	NF
(O)	P	R	RP	RS	S	T	UP	Z

NOTES: V x 3 (W)

Signed/Sampler: [Signature]

Signed/Reviewer: [Signature]

Date: 10/16/86

Date: 10/27/86

WELL SAMPLING DATA FORM

Well Number: T6-2 Date: 10/16/86 Time: 1510
Boring Diameter: 6" ~~3~~ Well Casing Diameter: 28" I.D.
Annular Space Length: 16.0' Stickup: +2.5'

WATER LEVEL

Held: ~~16.0~~ 4.7'
Cut: ~~4.7~~ 0.1'
DTW: ~~4.6~~ 4.6' Top of Casing

T6-3 measurements
excessively recorded
here (scratched out set)

COLUMN OF WATER IN WELL

Casing Length: ~~23~~ 23'
DTW Top of Casing: ~~4.6~~ 4.6'
Column of Water in Well: ~~18.4~~ 18.4'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart) = 0.39
Column of Water or Length of A.S. (whichever is less) X 16.0
Volume of Annular Space = 6.24
Gallons per foot of Casing = 0.1632
Column of Water X 18.4
Volume of Casing = 3.0
Total Volume (Volume of A.S. + Volume of Casing) = 9.24
Number of Volumes to be Evacuated X 3 - 5
Total Volume to be Evacuated = 27.7 - 46.2

Method of Purging (pump, bailer, etc.): Continuous pumping

FIELD ANALYSES

	10 gal Start	Mid	End
Time	<u>1513 @ 10 gal</u>	<u>1521 @ 40 gal</u>	<u>1530 @ 80 gal</u>
pH	<u>5.0</u>	<u>4.8</u>	<u>4.8</u>
Conductivity	<u>67</u>	<u>62</u>	<u>61</u>
Temperature	<u>23.4</u>	<u>23.7</u>	<u>23.8</u>

Total Volume Purged: 80 gal. gallons

Sample Time: 1540 Sample Number: 4 # 2

FRACTIONS

B	C	CF	CL	F	H	M	<u>N</u>	NF
<u>0</u>	P	R	RF	RS	S	T	UP	Z

NOTES

V x 3 W

Signed/Sampler: [Signature]

Signed/Reviewer: [Signature]

Date: 10/16/86

Date: 10/23/86

WELL SAMPLING DATA FORM

Well Number: TC-3 Date: 10/16/86 Time: 1415
Boring Diameter: 6.2" I.D. Well Casing Diameter: 8.2" I.D.
Annular Space Length: 15.8' Stickup: 2.7'

WATER LEVEL

Head: 10.0'
Cut: 1.9'
DTW: 8.1' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 23'
DTW Top of Casing: 8.1'
Column of Water in Well: 14.9'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart) = 0.39
Column of Water or Length of A.S. (whichever is less) x 14.9
Volume of Annular Space = 5.81
Gallons per foot of Casing = 0.1632
Column of Water x 14.9
Volume of Casing = 2.43
Total Volume (Volume of A.S. + Volume of Casing) = 8.24
Number of Volumes to be Evacuated x 3 - 5
Total Volume to be Evacuated = 24.7 - 41.2

Method of Purging (pump, bailer, etc.): Continuous pumping

FIELD ANALYSES

	Start	Mid	End
Time	<u>1435</u>	<u>1441 @ 21 gal</u>	<u>1445 @ 75 gal</u>
pH	<u>6.0</u>	<u>5.9</u>	<u>5.9</u>
Conductivity	<u>302</u>	<u>311</u>	<u>302</u>
Temperature	<u>26.2</u>	<u>23.7</u>	<u>23.5</u>

Total Volume Purged: 75 gal gallons

Sample Time: 1505 Sample Number: 4 #3

FRACTIONS

B	C	CF	CL	F	H	M	(N)	NP
(O)	P	R	RP	RS	S	T	UP	Z

NOTES: 4x3 W

Signed/Sampler: [Signature]

Signed/Reviewer: [Signature]

Date: 10/16/86

Date: 10/22/86

WELL SAMPLING DATA FORM

Well Number: T6-4 Date: 10/21/86 Time: 0810
Boring Diameter: 12" Well Casing Diameter: 4" I.D.
Annular Space Length: 17' Stickup: 2.2'

WATER LEVEL

Held: -7.00'
Cut: -1.00'
DTW: -6.00' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 21.2
DTW Top of Casing: -6.00'
Column of Water in Well: 15.2'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart) = 1.57
Column of Water or Length of A.S. (whichever is less) X 15.2
Volume of Annular Space = 23.9
Gallons per foot of Casing = .6528
Column of Water X 15.2
Volume of Casing = 9.9
Total Volume (Volume of A.S. + Volume of Casing) = 33.8
Number of Volumes to be Evacuated X 3 - 5
Total Volume to be Evacuated = 101.4 - 169

Method of Purging (pump, bailer, etc.): Continuous pumping

FIELD ANALYSES

	Start	Mid	End
Time	<u>0938 @ 10 gal</u>	<u>0919 @ 85 GAL</u>	<u>0950 @ 150 gal</u>
pH	<u>6.1</u>	<u>5.9</u>	<u>6.2</u>
Conductivity	<u>268</u>	<u>355</u>	<u>379</u>
Temperature	<u>23.9</u>	<u>25.4</u>	<u>26.9</u>

Total Volume Purged: 150 gallons

Sample Time: 1000 Sample Number: 4*4 / 4*6

FRACTIONS

B C CF CL F E H N NF
P B BP BS S T UP Z

NOTES QA Samples taken here [O and N fractions only - no V(-s) or W fraction sample containers sent]

Signed/Sampler: [Signature]
Signed/Reviewer: [Signature]

Date: 10/21/86
Date: 10/25/86

WELL SAMPLING DATA FORM

Well Number: T6-5 Date: 10/21/86 Time: 1020
Boring Diameter: 12" Well Casing Diameter: 4" E.D.
Annular Space Length: 16.1' Stickup: +3.2'

WATER LEVEL

Held: - 10.00
Cut: 1.30
DTW: - 8.70 Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 22.7
DTW Top of Casing: 8.70
Column of Water in Well: 14.0

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart) = 1.51
Column of Water or Length of A.S. (whichever is less) X 14.0
Volume of Annular Space = 22.0
Gallons per foot of Casing = .6528
Column of Water X 14.0
Volume of Casing = 9.1
Total Volume (Volume of A.S. + Volume of Casing) = 31.1
Number of Volumes to be Evacuated X 3 - 5
Total Volume to be Evacuated = 93.3 - 155.5

Method of Purging (pump, bailer, etc.): Continuous pumping

FIELD ANALYSES

	Start	Mid	End
Time	<u>1029 @ 5 gal</u>	<u>1034 @ 80 gal</u>	<u>1040 @ 160 gal</u>
pH	<u>6.0</u>	<u>5.8</u>	<u>5.6</u>
Conductivity	<u>146</u>	<u>141</u>	<u>142</u>
Temperature	<u>23.6</u>	<u>23.2</u>	<u>24.1</u>

Total Volume Purged: 160 gal gallons

Sample Time: 1045 Sample Number: 4 * 5

FRACTIONS

B	C	CP	CL	F	H	M	N	NF
<u>0</u>	<u>P</u>	<u>R</u>	<u>RP</u>	<u>RS</u>	<u>S</u>	<u>T</u>	<u>UP</u>	<u>Z</u>

NOTES

VX3 W

Signed/Sampler: [Signature]

Signed/Reviewer: [Signature]

Date: 10/21/86

Date: 10/25/86

WELL SAMPLING DATA FORM

Well Number: T7-1 Date: 10/12/86 Time: 0800
Boring Diameter: 0" Well Casing Diameter: 2"
Annular Space Length: 10.5 Stickup: 2.7'

WATER LEVEL

Head: 5.0
Cut: 0.50
DTW: 4.50 Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 18.0'
DTW Top of Casing: 4.50'
Column of Water in Well: 13.5'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart) = 0.39
Column of Water or Length of A.S. (whichever is less) X 10.5
Volume of Annular Space = 4.10
Gallons per foot of Casing = .1632
Column of Water X 13.5
Volume of Casing = 2.20
Total Volume (Volume of A.S. + Volume of Casing) = 6.30
Number of Volumes to be Evacuated X 5
Total Volume to be Evacuated = 31.50

Method of Purging (pump, bailer, etc.): Hand Pump

FIELD ANALYSES

	Start	Mid	End
Time	<u>0812</u>	<u>0815</u>	<u>0827</u>
pH	<u>5.8</u>	<u>5.7</u>	<u>5.7</u>
Conductivity	<u>129</u>	<u>69</u>	<u>66</u>
Temperature	<u>25.5</u>	<u>25.8</u>	<u>26.2</u>

Total Volume Purged: 50 gallons
Sample Time: 0845 Sample Number: TVNDL 5*1
5*4

FRACTIONS

B	C	CF	CL	F	H	M	N	NF
0	P	R	RP	RS	S	T	UP	Z

NOTES

Signed/Sampler: [Signature]
Signed/Reviewer: [Signature]

Date: 10/12/86
Date: 10/24/86

WELL SAMPLING DATA FORM

Well Number: 17-2 Date: 10/9/83 Time: 10.39
Boring Diameter: 6" Well Casing Diameter: 2"
Annular Space Length: 10.5 Stickup: 2.7

WATER LEVEL

Held: 6.0'
Cut: .72'
DTW: 5.28 Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 17.50
DTW Top of Casing: 5.28
Column of Water in Well: 12.22

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart) = 0.39
Column of Water or Length of A.S. (whichever is less) X 10.50
Volume of Annular Space = 4.10
Gallons per foot of Casing = .1632
Column of Water X 12.22
Volume of Casing = 1.99
Total Volume (Volume of A.S. + Volume of Casing) = 6.09
Number of Volumes to be Evacuated X 5
Total Volume to be Evacuated = 30.47

Method of Purging (pump, bailer, etc.): CENTRIFUGAL PUMP

FIELD ANALYSES

	Start	Mid	End
Time	<u>11.3</u>	<u>11.47</u>	<u>12.21</u>
pH	<u>6.5</u>	<u>5.4</u>	<u>5.5</u>
Conductivity	<u>170</u>	<u>75</u>	<u>49</u>
Temperature	<u>30.1</u>	<u>27.1</u>	<u>27.7</u>

Total Volume Purged: 31 gallons

Sample Time: 12.30 Sample Number: 17-2-542

FRACTIONS

B C CF CL F H M N NF
O P R RP RS S T UP Z

NOTES

Signed/Sampler: [Signature]
Signed/Reviewer: [Signature]

Date: 10/21/86

WELL SAMPLING DATA FORM

Well Number: T7-3 Date: 10/18/86 Time: 0730
Boring Diameter: 6" Well Casing Diameter: 2"
Annular Space Length: 7.5' Stickup: 2.4'

WATER LEVEL

Held: 5.0
Cut: 1.20
DTW: 3.80 Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 18.0'
DTW Top of Casing: 3.8'
Column of Water in Well: 14.2'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart) = 0.51
Column of Water or Length of A.S. (whichever is less) X 7.5
Volume of Annular Space = 2.93
Gallons per foot of Casing = .1632
Column of Water X 14.2
Volume of Casing = 2.32
Total Volume (Volume of A.S. + Volume of Casing) = 5.24
Number of Volumes to be Evacuated X 5
Total Volume to be Evacuated = 26.2

Method of Purging (pump, bailer, etc.): CENTRIFUGAL

FIELD ANALYSES	Start	Mid	End
Time	<u>09:50</u>	<u>10:01</u>	<u>10:14</u>
pH	<u>6.2</u>	<u>5.1</u>	<u>4.8</u>
Conductivity	<u>98</u>	<u>98</u>	<u>98</u>
Temperature	<u>25.4</u>	<u>25.5</u>	<u>25.9</u>

Total Volume Purged: 40 gal gallons
Sample Time: 10:15 Sample Number: TMDL 5*3

FRACTIONS

B	C	CF	CL	F	H	M	N	NP
O	P	E	EP	RS	S	T	UP	Z

NOTES

Signed/Sampler: Rm Date: 10/21/86
Signed/Reviewer: Handy F. Lohr Date: 10/21/86

WELL SAMPLING DATA FORM

Well Number: BWT-7-11 Date: 12/1/85 Time: 14:12
Boring Diameter: _____ Well Casing Diameter: _____
Annular Space Length: _____ Stickup: _____

WATER LEVEL

Held: _____
Cut: _____
DTW: _____ Top of Casing _____

COLUMN OF WATER IN WELL

Casing Length: _____
DTW Top of Casing: _____
Column of Water in Well: _____

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart) = _____
Column of Water or Length of A.S. (whichever is less) X _____
Volume of Annular Space = _____
Gallons per foot of Casing = _____
Column of Water X _____
Volume of Casing = _____
Total Volume (Volume of A.S. + Volume of Casing) = _____
Number of Volumes to be Evacuated _____
Total Volume to be Evacuated _____

Method of Purging (pump, bailer, etc.): 12:50 PM START 14:12

FIELD ANALYSES	Start	Mid	End
Time	14:15	14:32	14:47
pH	7.9	7.7	7.5
Conductivity	1331	1310	1307
Temperature	23.0	22.5	23.7

Total Volume Purged: 517 gallons
Sample Time: 14:50 Sample Number: TVMDL 5 + 2

FRACTIONS

B	(C)	CF	CL	F	H	M	(N)	NP
O	P	R	RP	RS	S	T	UP	Z

NOTES

Signed/Sampler: [Signature] Date: 1/9/86
Signed/Reviewer: [Signature] Date: 1/21/86

PRESSURE TANK $\approx 6.32' \text{ H}_2\text{O}$ 5.1' H₂O

WELL SAMPLING DATA FORM

Well Number: T8-1 Date: 10/12/86 Time: 1:52-0
Boring Diameter: 6" Well Casing Diameter: 2"
Annular Space Length: 11.3 Stickup: 2.7

WATER LEVEL

Held: 7.0
Cut: 2.5
DTW: 6.75 Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 18'
DTW Top of Casing: 6.75
Column of Water in Well: 11.25

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart) = .39
Column of Water or Length of A.S. (whichever is less) X 11.25
Volume of Annular Space = 4.4
Gallons per foot of Casing = 1.332
Column of Water X 11.25
Volume of Casing = 1.8
Total Volume (Volume of A.S. + Volume of Casing) = 6.22
Number of Volumes to be Evacuated X 3-5
Total Volume to be Evacuated = 18.7 - 3.1

Method of Purging (pump, bailer, etc.): Centrifugal

FIELD ANALYSES

	10/12/86 Start	10/13/86 Mid	10/15/86 End
Time	<u>1646</u>	<u>1227</u>	<u>1608</u>
pH	<u>7.1</u>	<u>7.0</u>	<u>6.3</u>
Conductivity	<u>656</u>	<u>653</u>	<u>725</u>
Temperature	<u>29.9</u>	<u>—</u>	<u>25.0</u>

Total Volume Purged: 19.0 gallons

Sample Time: 1130 Sample Number: TYNDL 54.5

FRACTIONS

B C CF CL F H M N NF
P R RP RS S T UP Z

NOTES VX3

Due to slow recharge of well, length of bailer cord was extended. Bailed water was noticeably darker w/ increased sediment content. Tyndall (Banks) meters sample taken. 10/14/86 bailer was extended

Signed/Sampler: [Signature]
Signed/Reviewer: [Signature]

Date: 10/14/86
Date: 10/24/86

WELL SAMPLING DATA FORM

Well Number: T8-3 Date: 10-17-86 Time: 1250
Boring Diameter: 12' Well Casing Diameter: 4" I.D.
Annular Space Length: 15.5' Stickup: 2.5

WATER LEVEL

Held: 6.00
Cut: 2.00
DTW: 4.0 Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 20'
DTW Top of Casing: 4'
Column of Water in Well: 16'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart) = 1.57
Column of Water or Length of A.S. (whichever is less) X 15.5
Volume of Annular Space = 24.3
Gallons per foot of Casing = 0.6528
Column of Water X 16.0'
Volume of Casing = 10.4
Total Volume (Volume of A.S. + Volume of Casing) = 34.7
Number of Volumes to be Evacuated X 3 - 5
Total Volume to be Evacuated = 104.2 - 173.5

Method of Purging (pump, bailer, etc.):

Pumped continuously (slow rate)

FIELD ANALYSIS

	Start	Mid	End
Time	<u>1252</u>	<u>1316 @ 60 gal</u>	<u>1343 @ 120 gal.</u>
pH	<u>6.0</u>	<u>5.8</u>	<u>5.9</u>
Conductivity	<u>480</u>	<u>374</u>	<u>353</u>
Temperature	<u>24.5</u>	<u>25.2</u>	<u>25.1</u>

Total Volume Purged: 120 gallons

Sample Time: 1355

Sample Number: 5*6

5*8 - Entire QA set

FRACTIONS

B	C	CF	CL	F	H	M	N	NE
O	P	B	BP	MS	S	T	UP	Z

NOTES

W

VOA X3

to be used

Signed/Sampler: [Signature]

Signed/Reviewer: [Signature]

Date: 10/17/86

Date: 10/22/86

WELL SAMPLING DATA FORM

Well Number: T8-4 Date: 10/23/86 Time: 0910
Boring Diameter: 12" Well Casing Diameter: 4." I.D.
Annular Space Length: 16.5' Stickup: 3.8'

WATER LEVEL

Head: - 8.00'
Cut: 1.14
DTW: - 6.86' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 22.8
DTW Top of Casing: 6.86
Column of Water in Well: 15.94

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart) = 1.57
Column of Water or Length of A.S. (whichever is less) X 15.94
Volume of Annular Space = 25.0
Gallons per foot of Casing = 0.6528
Column of Water X 15.94
Volume of Casing = 10.4
Total Volume (Volume of A.S. + Volume of Casing) = 35.4
Number of Volumes to be Evacuated X 3-5
Total Volume to be Evacuated = 106.2 - 177

Method of Purging (pump, bailer, etc.): Pumped continuously

FIELD ANALYSES

	Start	Mid	End
Time	<u>0928 @ 5 gal</u>	<u>1000 @ 60 gal</u>	<u>1025 @ 120 gal</u>
pH	<u>6.0</u>	<u>5.8</u>	<u>5.8</u>
Conductivity	<u>233</u>	<u>239</u>	<u>185</u>
Temperature	<u>22.5</u>	<u>24.4</u>	<u>25.8</u>

Total Volume Purged: 120 gallons
Sample Time: 1030 Sample Number: 5*7

FRACTIONS

B	C	CF	CL	F	H	M	N	NF
O	P	R	RP	RS	S	T	UP	Z

NOTES: (W) (VX3)

To Banks

Signed/Sampler: [Signature] Date: 10/23/86
Signed/Reviewer: [Signature] Date: 10/23/86

WELL SAMPLING DATA FORM

Well Number: T9-1 Date: 10/12/80 Time: 17:22
Boring Diameter: 6" Well Casing Diameter: 2"
Annular Space Length: 15.7 Stickup: 2.8

WATER LEVEL

Held: 8.0
Cut: 1.0
DTW: 7.0 Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 23.0
DTW Top of Casing: 7.0
Column of Water in Well: 16'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart) = 0.39
Column of Water or Length of A.S. (whichever is less) X 15.7
Volume of Annular Space = 16.1
Gallons per foot of Casing = 16.32
Column of Water X 16.0
Volume of Casing = 2.0
Total Volume (Volume of A.S. + Volume of Casing) = 8.7
Number of Volumes to be Evacuated X 3 → 5
Total Volume to be Evacuated = 26.2 → 43.7

Method of Purging (pump, bailer, etc.): CEN

FIELD ANALYSES
Time 17:38 10/13 Mid NVTW 12:48 12:57 13:09
pH 5.5 5.1 4.7 4.6
Conductivity 93 087 88 34
Temperature 25.8 26.8 26.9 26.9

Total Volume Purged: 70 gallons
Sample Time: 14:10 Sample Number: TYMOL 6K9

FRACTIONS

B C CF CL F H M N NF
O P R RP RS S T UP Z

NOTES

Signed/Sampler: [Signature] Date: 10/12/80
Signed/Reviewer: [Signature] Date: 10/24/86

WELL SAMPLING DATA FORM

Well Number: 9.2 Date: 10/12/85 Time: 17:50
Boring Diameter: 6" Well Casing Diameter: 2"
Annular Space Length: 16.1 Stickup: 2.4

WATER LEVEL

Held: 8.0
Cut: 1.1
DTW: 6.9 Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 23.0'
DTW Top of Casing: 6.9
Column of Water in Well: 16.1

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart) = 0.39
Column of Water or Length of A.S. (whichever is less) X 16.1
Volume of Annular Space = 6.3
Gallons per foot of Casing = 1.632
Column of Water X 16.1
Volume of Casing = 2.6
Total Volume (Volume of A.S. + Volume of Casing) = 8.9
Number of Volumes to be Evacuated X 3 → 5
Total Volume to be Evacuated = 26.7 → 44.5

Method of Purging (pump, bailer, etc.): CSN

FIELD ANALYSES

	Start	Mid	End
Time	<u>1802</u>	<u>1813</u>	<u>1834</u>
pH	<u>5.5</u>	<u>5.0</u>	<u>4.9</u>
Conductivity	<u>102</u>	<u>99</u>	<u>98</u>
Temperature	<u>25.9</u>	<u>27.2</u>	<u>27.2</u>

Total Volume Purged: 46 gallons
Sample Time: 1448 Sample Number: TVN-5210

FRACTIONS

B	C	CP	CL	F	H	M	N	NF
O	P	R	RP	RS	S	T	UP	Z

NOTES

Signed/Sampler: Rm

Signed/Reviewer: 7.1.1

Date: 10/12/85

Date: 10/24/86

WELL SAMPLING DATA FORM

Well Number: T9-3 Date: 10/18/86 Time: 12.50
Boring Diameter: 12" Well Casing Diameter: 4" I.D.
Annular Space Length: 17.5 Stickup: 2.33'

WATER LEVEL

Head: 10.00
Cut: 1.65
DTW: 8.35 Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 22.3
DTW Top of Casing: 8.3
Column of Water in Well: 14.0

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart) = 1.57
Column of Water or Length of A.S. (whichever is less) X 14.0
Volume of Annular Space = 22.0
Gallons per foot of Casing = 0.6529
Column of Water X 14.0
Volume of Casing = 9.1
Total Volume (Volume of A.S. + Volume of Casing) = 31.1
Number of Volumes to be Evacuated X 3 - 5
Total Volume to be Evacuated = 93.3 - 155.5

Method of Purging (pump, bailer, etc.): Continuous pumping

FIELD ANALYSES

	Start	Mid	End
Time	<u>1254 @ 5 gal</u>	<u>1319 @ 81 gal</u>	<u>@ 155 gal</u>
pH	<u>5.6</u>	<u>5.7</u>	<u>5.8</u>
Conductivity	<u>96</u>	<u>102</u>	<u>107</u>
Temperature	<u>29</u>	<u>29.6</u>	<u>28.4</u>

Total Volume Purged: 155 gallons

Sample Time: 1310 Sample Number: 6211/6213 (see note below)

FRACTIONS

B C CF ED CL F H M N NF
O P VXS RP RS S T UP Z

NOTES Zone 9 QA ED Sample taken. However, only ESE (white label) sample container located. JRM indicated Zone 9 QA ED sample was taken 10/12 @ 11:19 a.m. Possibly he used Brooks (Blue label) container??

Signed/Sampler: [Signature] Date: 10/21/86
Signed/Reviewer: [Signature] Date: 10/25/86

WELL SAMPLING DATA FORM

Well Number: T9-4 Date: 10/18/86 Time: 1415
Boring Diameter: 12" Well Casing Diameter: 4" I.D.
Annular Space Length: 17' Stickup: 2.15'

WATER LEVEL

Held: 10.00'
Cut: 1.35'
DTW: 8.65' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 21'
DTW Top of Casing: 8.65'
Column of Water in Well: 12.35'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart) = 1.57
Column of Water or Length of A.S. (whichever is less) X 12.35
Volume of Annular Space = 19.4
Gallons per foot of Casing = 0.6528
Column of Water X 12.35
Volume of Casing = 8.1
Total Volume (Volume of A.S. + Volume of Casing) = 27.5
Number of Volumes to be Evacuated X 3 - 5
Total Volume to be Evacuated = 82.5 - 137.5

Method of Purging (pump, bailer, etc.): Purging (not continuous)

FIELD ANALYSES

	Start	Mid	End
Time	<u>1422 @ 5 gal.</u>	<u>1578 @ 60 gal</u>	<u>1210 @ 10/21 @ 120 gal.</u>
pH	<u>4.9</u>	<u>5.0</u>	<u>5.1</u>
Conductivity	<u>92</u>	<u>88</u>	<u>83</u>
Temperature	<u>28.6</u>	<u>35.3</u>	<u>28.2</u>

Total Volume Purged: 120 gallons

Sample Time: 1215 Sample Number: 6 * 12

FRACTIONS

B	C	CF	CL	F	H	M	<u>R</u>	NF
<u>0</u>	<u>P</u>	<u>R</u>	<u>RP</u>	<u>RS</u>	<u>S</u>	<u>T</u>	<u>UP</u>	<u>Z</u>

NOTES: Water dumped into adjacent oil/w separation during purging due to visible oil sheen on surface.

VX3 + ED

Signed/Sampler: [Signature]

Signed/Reviewer: [Signature]

Date: 10/21/86

Date: 10/21/86

To Brooks

WELL SAMPLING DATA FORM

Well Number: T10-1 Date: 10/18/86 Time: 1505
Boring Diameter: 12" Well Casing Diameter: 4" I.D.
Annular Space Length: 17.0' Stickup: 3.3'

WATER LEVEL

Head: -11.0
Cut: 0.8
DTW: -10.2' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 23.2'
DTW Top of Casing: -10.2'
Column of Water in Well: 13'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart) = 1.57
Column of Water or Length of A.S. (whichever is less) X 13'
Volume of Annular Space = 20.4
Gallons per foot of Casing = 0.6528
Column of Water X 13'
Volume of Casing = 8.5
Total Volume (Volume of A.S. + Volume of Casing) = 28.9
Number of Volumes to be Evacuated X 3-5
Total Volume to be Evacuated = 86.7-144.5

Method of Purging (pump, bailer, etc.): Pumping - not continuous

FIELD ANALYSES

	Start	Mid	End
Time	<u>1510 @ 5 gal</u>	<u>1456 @ 54 gal</u>	<u>1002 @ 95 gal</u>
pH	<u>6.4</u>	<u>6.3</u>	<u>6.4</u>
Conductivity	<u>442</u>	<u>453</u>	<u>453</u>
Temperature	<u>26.3</u>	<u>26.9</u>	<u>25.2</u>

Total Volume Purged: 95 gallons
Sample Time: 1015 Sample Number: 4 # 7

FRACTIONS

B	C	CF	CL	F	H	M	(N)	NE
(O)	P	R	RP	RS	S	T	UP	Z

NOTES W + 34V

Signed/Sampler: [Signature]
Signed/Reviewer: [Signature]

Date: 10/20/86
Date: 10/22/86

WELL SAMPLING DATA FORM

Well Number: T10-2 Date: 10/18/86 Time: 1500
Boring Diameter: 12" Well Casing Diameter: 4" I.D.
Annular Space Length: 17' Stickup: 2.6'

WATER LEVEL

Held: 12.0'
Cut: 1.6'
DTW: 10.4' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 22.5'
DTW Top of Casing: 10.4'
Column of Water in Well: 12.1'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart) = 1.57
Column of Water or Length of A.S. (whichever is less) X 12.1
Volume of Annular Space = 19.0
Gallons per foot of Casing = 0.6528
Column of Water X 12.1
Volume of Casing = 7.9
Total Volume (Volume of A.S. + Volume of Casing) = 26.9
Number of Volumes to be Evacuated X 3 - 5
Total Volume to be Evacuated = 80.7 - 134.5

Method of Purging (pump, bailer, etc.): Pumping - not continuous

FIELD ANALYSES

	Start	Mid	End
Time	<u>1502 @ 5 gal</u>	<u>1508 @ 20 gal</u>	<u>0737 @ 95 gal</u>
pH	<u>5.9</u>	<u>5.7</u>	<u>5.4</u>
Conductivity	<u>284</u>	<u>134</u>	<u>152</u>
Temperature	<u>26.8</u>	<u>27.0</u>	<u>24.6</u>

Total Volume Purged: 95 gallons

Sample Time: 0940 Sample Number: 4x8

FRACTIONS

B	C	CF	CL	F	H	M	N	NE
<u>①</u>	<u>P</u>	<u>B</u>	<u>RP</u>	<u>RS</u>	<u>S</u>	<u>T</u>	<u>UP</u>	<u>Z</u>

NOTES

Form forms on surfaces of purged water
W + 073

Signed/Sampler: [Signature]

Signed/Reviewer: [Signature]

Date: 10/20/86

Date: 10/22/86

WELL SAMPLING DATA FORM

Well Number: T10-3 Date: 10/18/86 Time: 1335
Boring Diameter: 12" Well Casing Diameter: 4" I.D.
Annular Space Length: 15.5' Stickup: 2.15'

WATER LEVEL

Held: 6.00
Cut: 1.15
DTW: 4.85 Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 22.1'
DTW Top of Casing: 4.85'
Column of Water in Well: 17.25'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart) = 1.57
Column of Water or Length of A.S. (whichever is less) X 15.5
Volume of Annular Space = 24.34
Gallons per foot of Casing = 0.6528
Column of Water X 17.25
Volume of Casing = 11.26
Total Volume (Volume of A.S. + Volume of Casing) = 35.6
Number of Volumes to be Evacuated X 3 - 5
Total Volume to be Evacuated = 106.8 - 178

Method of Purging (pump, bailer, etc.): Continuous pumping

FIELD ANALYSES

	Start	Mid	End
Time	<u>1342 @ 6 gal</u>	<u>1433 @ 92 gal</u>	<u>10/20/86 0853 @ 180 gal</u>
pH	<u>5.0</u>	<u>4.9</u>	<u>5.4 PR 5.2</u>
Conductivity	<u>54</u>	<u>51</u>	<u>57</u>
Temperature	<u>26.9</u>	<u>27.9</u>	<u>24.9</u>

Total Volume Purged: 180 gallons

Sample Time: 0910 Sample Number: 4*10

FRACTIONS

B	C	CF	CL	F	H	M	NP	Z
<u>0</u>	<u>P</u>	<u>R</u>	<u>RP</u>	<u>RS</u>	<u>S</u>	<u>T</u>	<u>UP</u>	<u>Z</u>

NOTES

Water clean during purging
W + 3xV + QA

Entire QA set

Signed/Sampler: [Signature]

Signed/Reviewer: [Signature]

Date: 10/20/86

Date: 10/22/86

WELL SAMPLING DATA FORM

Well Number: T11-1 Date: 10/18/86 Time: 1546
Boring Diameter: 12" Well Casing Diameter: 4" I.D.
Annular Space Length: 17' Stickup: 2.3'

WATER LEVEL

Held: -5.0'
Cut: 0.6'
DTW: -4.4' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 22.0'
DTW Top of Casing: 4.4'
Column of Water in Well: 17.6'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart) = 1.57
Column of Water or Length of A.S. (whichever is less) X 17'
Volume of Annular Space = 26.7
Gallons per foot of Casing = 0.6528
Column of Water X 17.6
Volume of Casing = 11.5
Total Volume (Volume of A.S. + Volume of Casing) = 38.2
Number of Volumes to be Evacuated X 3-5
Total Volume to be Evacuated = 114.6-191

Method of Purging (pump, bailer, etc.): Continuous pump

FIELD ANALYSES

	Start	Mid	End
Time	<u>1550 @ 5 gal</u>	<u>1616 @ 95 gal</u>	<u>1145 @ 191 gal</u>
pH	<u>5.2</u>	<u>5.1</u>	<u>4.9</u>
Conductivity	<u>201</u>	<u>154</u>	<u>159</u>
Temperature	<u>25.3</u>	<u>26.2</u>	<u>25.4</u>

140 gal
@ 1630
10/18

Total Volume Purged: 191 gallons

Sample Time: 1200 Sample Number: 4811

+51 gal
10/20

FRACTIONS

B	C	CF	CL	F	H	M	N	NP
①	P	R	RP	RS	J	T	UP	Z

NOTES

W+3XV
From surface of purged water ← at 11-3, not 11-1

Signed/Sampler: P. G. Smith

Signed/Reviewer: [Signature]

Date: 10/20/86
Date: 10/22/86

WELL SAMPLING DATA FORM

Well Number: T11-2 Date: 10/18/86 Time: 1520
Boring Diameter: 12" Well Casing Diameter: 4" I.D.
Annular Space Length: 17.0' Stickup: 2.2'

WATER LEVEL

Held: 10.0'
Cut: 1.3'
DTW: 8.7' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 22.2'
DTW Top of Casing: 8.7'
Column of Water in Well: 13.5'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart) = 1.57
Column of Water or Length of A.S. (whichever is less) X 13.5
Volume of Annular Space = 21.2
Gallons per foot of Casing = 0.6528
Column of Water X 13.5
Volume of Casing = 8.8
Total Volume (Volume of A.S. + Volume of Casing) = 30.0
Number of Volumes to be Evacuated X 3 - 5
Total Volume to be Evacuated = 90 - 150

Method of Purging (pump, bailer, etc.): Pumped (not continuous)

FIELD ANALYSES

	Start	Mid	End
Time	<u>1535 @ 5 gal</u>	<u>1623 @ 15 gal</u>	<u>1640 @ 150</u>
pH	<u>5.7</u>	<u>5.3</u>	<u>5.3</u>
Conductivity	<u>196</u>	<u>228</u>	<u>236</u>
Temperature	<u>23.5</u>	<u>25.8</u>	<u>25.0</u>

Total Volume Purged: 150 gallons

Sample Time: 1045 Sample Number: 4*12

FRACTIONS

B	C	CF	CL	F	H	M	N	NF
<u>0</u>	<u>P</u>	<u>B</u>	<u>HP</u>	<u>RS</u>	<u>S</u>	<u>T</u>	<u>UP</u>	<u>Z</u>

NOTES

Sample forms on surface of purging bucket
W + 3XV

Signed/Sampler: [Signature]

Date: 10/20/86

Signed/Reviewer: [Signature]

Date: 10/22/86

WELL SAMPLING DATA FORM

Well Number: T11-3 Date: 10/19/86 Time: 0915
Boring Diameter: 12" Well Casing Diameter: 4" I.D.
Annular Space Length: 17' Stickup: 2.2'

WATER LEVEL

Held: - 7.00'
Cut: 1.15'
DTW: - 5.85' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 20.90'
DTW Top of Casing: - 5.85'
Column of Water in Well: 15.05'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart) = 1.57
Column of Water or Length of A.S. (whichever is less) X 15.05
Volume of Annular Space = 23.6
Gallons per foot of Casing = 0.6528
Column of Water X 15.05
Volume of Casing = 9.8
Total Volume (Volume of A.S. + Volume of Casing) = 33.4
Number of Volumes to be Evacuated X 3.5
Total Volume to be Evacuated = 100.2 - 1670

Method of Purging (pump, bailer, etc.): Pumping (not continuous) 140 @ 1503
10/19

FIELD ANALYSES

	Start	Mid	End
Time	<u>9:45 @ 590k</u>	<u>11:40 @ 85</u>	<u>11:5 @ 1700gal + 20</u>
pH	<u>6.4</u>	<u>6.3</u>	<u>6.5</u>
Conductivity	<u>994</u>	<u>795</u>	<u>906</u>
Temperature	<u>26.4</u>	<u>27.9</u>	<u>25.1</u>

170 @ 10/20

Total Volume Purged: 170 gallons
Sample Time: 1:20 Sample Number: 4813

FRACTIONS

B C CF CL F H M (N) NF
(O) P R RP RS S T UP Z

NOTES

W + 3XV
Water foamy during purging

Signed/Sampler: [Signature]
Signed/Reviewer: [Signature]

Date: 10/20/86
Date: 10/22/86

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APPENDIX N

SAMPLE COLLECTION DATA

- SURFACE WATER SAMPLING DATA LOGS
- SEDIMENT SAMPLING DATA LOGS
- SOIL SAMPLING DATA LOGS

SURFACE WATER SAMPLING DATA LOGS

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SURFACE WATER SAMPLING

SAMPLE LOCATION:

LYNN BAY, BAYVIEW - 17

DATE 10/14/76

TIME 13:5

SAMPLE DEPTH SURFACE

WATER DEPTH .5'

SAMPLE NUMBER SWL-2

TMDY-249

FIELD PARAMETERS:

PH 7.1

CONDUCTIVITY 1355

D.O. 3.8

TEMPERATURE: AIR 23.7 WATER 24.8

FRACTIONS COLLECTED

NITRIC (SODIUMS - SEE SODIUMS COLLECTED)
OIL-GRADE x2
VOA x3

WEATHER CONDITIONS (PRIOR 3 DAYS) HEAVY RAIN (PAST 24 HRS)
PRIOR WEATHER: PARTLY SUNNY - DRIZZY
OVERCAST @ SAMPLING

GENERAL OBSERVATIONS WATER SURFACE FAIRLY WELL
PROTECTED FROM WIND - LOW TO NO FLOW
SLOPE TO WATER WELL VEGETATED
FIRMS & GRASSES - PASTURE
WATER CLOSE TO BOTTOM

SIGNED JRM REVIEWED R. L. L. L.
DATE 10/14/76 DATE 10/29/76

SURFACE WATER SAMPLING

SAMPLE LOCATION:

UP ST. - 0 - OUTSIDE

DATE 10/14/85 TIME 15:20
 SAMPLE DEPTH surface WATER DEPTH 6"
 SAMPLE NUMBER SW 11-1

FIELD PARAMETERS:

pH 7.0 CONDUCTIVITY 2700
 D.O. 5.4
 TEMPERATURE: AIR 26.2 WATER 26.3

FRACTIONS COLLECTED

<u>NITRIC</u>	<u>W</u>	-----	-----	-----
<u>OIL + ODS</u>	-----	-----	-----	-----
<u>VOA x3</u>	-----	-----	-----	-----

WEATHER CONDITIONS (PRIOR 3 DAYS)

GENERAL OBSERVATIONS

SIGNED mm REVIEWED R. L. L. L.
 DATE 10/14/85 DATE 10/14/85

SURFACE WATER SAMPLING

SAMPLE LOCATION:

02 72- T1-2

DATE 10/14/83 TIME 15:40
 SAMPLE DEPTH surface WATER DEPTH _____
 SAMPLE NUMBER SW11-2

FIELD PARAMETERS:

pH 6.8 CONDUCTIVITY 2650
 D.O. 2.2
 TEMPERATURE: AIR 26.0 WATER 27.1

FRACTIONS COLLECTED

	NITRIL	W			
<u>UIC-04456</u>					
<u>UUA x3</u>					

WEATHER CONDITIONS (PRIOR 3 DAYS) _____

GENERAL OBSERVATIONS _____

SIGNED [Signature] REVIEWED [Signature]
 DATE 10/14/83 DATE 10/29/86

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SEDIMENT SAMPLING DATA LOGS

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FIELD DATA FORM
Sediment Sampling

Station # LH 2560
Sample # SDT 2
TYNBL 2K9

Date 12/14/83
Project FWDL PRASLE SHAL 2
Field Personnel JRM MJJ

STATION DESCRIPTION:

Sample Method: BUTLE TUBE SUNK TO HARD SAND 5" 3X.
+ POS. SD SMALL BROWN GLASS SAND TYPED SEDIMENT SURFACE

Water Quality Conditions: OIL SHEEN ON SURFACE, OTHERWISE, CLEAR.
.5' (6") SEE ALSO SW SAMPLE LOG.

Depth to Sediment .5' (6")

Sediment Type: DETRITUS

Time of Sampling 13:40

Fraction	Preservative/Amount	Container Type
SS	None	OIL-GRADES - TYPE 2 RAIL
SV	None	MISCELLANEOUS

Remarks: SITE PHOTOS TAKEN

SMALL AMOUNT OF

Signature JRM

Date 10/14/83

FIELD DATA FORM
Sediment Sampling

Station # SDT11-1
Sample # TYNDL 11 #1

Date 10/14/86
Project TYNDAL PHASE II STAGE 2
Field Personnel JIM MJJ

STATION DESCRIPTION: UPSTREAM OF ACTIVE FINE TRIMMED OUTFALL
ALTHOUGH SAMPLE LOCATION IS UPSTREAM, TAIL INFLUENCE MAY INFLUENCE WATER
QUALITY AT "BACKGROUND" SAMPLE SITES. THIS MAY BE EXPECTED AT ANY POINT IN
Sample Method: CAVAL IN QUESTON, SINCE SLOPE GRADIENT IS NEGLIGIBLE.

BUTYL TUBE CORE TO ≈ 5 " DEPTH

PUSHED WIDEMOUTH AMBER ALONG SURFACE OF SEDIMENT

Water Quality Conditions:

Depth to Sediment ≈ 6 "

Sediment Type: SAND/SILT MIX

Time of Sampling 15:40

Fraction	Preservative/Amount	Container Type
SS	NONE	MASON
SV	NONE	WIDEMOUTH AMBER

Remarks:

NO OBVIOUS SIGN OF CONTAMINATION - MINNOWS ABSENT
AT SAMPLE SITES - PHOTO TAKEN

Signature JMM Date 10/14/86

FIELD DATA FORM
Sediment Sampling

Station # SDT 11-2
Sample # TYNDL 11#2

Date 10/14/56
Project TYNDAL PIER STATION 2
Field Personnel IRM PAR

STATION DESCRIPTION: 1ST FIRE TRAINING IN OUTFALL

Sample Method:

SS = BUTYL TUBE CORE

SV: PUSHED WIDE MOUTH AMBER BOTTLE THROUGH SEDIMENT SURFACE

Water Quality Conditions:

Depth to Sediment 21.0'

Sediment Type: SAND/SILT

Time of Sampling 15:30

Fraction	Preservative/Amount	Container Type
SS	NONE	MASON JAR
SV	NINE	WIDE MOUTH AMBER

Remarks: NO OBVIOUS SIGN OF CONTAMINATION - MINOR PRESS:
+ BLUE CRAB DIRECTLY UNDER OUTFALL - APPROX 140 GWT
APPROX 5" WIDE CARAPACE.

Signature JRM Date 10/14/56

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SOIL SAMPLING DATA LOGS

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Boring No. SO T11-1 Location Coordinates N SEF
 Hole Size 2" I.D. Slot - E Sketch
 Screen Length - Mat'l - Filter Materials -
 Diameter - Grout Type -
 Casing Length - Mat'l - Development -
 Diameter - Static Water Level -
 Date Start 10/15/86 Finish 10/15/86 Top of Well Elevation -
 Contractor ESE Driller Paul Thomas Drill Type Split Spoon

Depth (feet)	Sample	Lithology, Color	Sketch of ~~Construction~~ Location	Standard Pene Blow Cou
0.0-2.0	#1 @1505	SM, Sand, fine-to-med gr., ~5-10% silt, poorly graded, dk. brown 10YR3/2, loose, dry, mod-to-heavily oiled, not plastic - shells (fill) top 3"	Concrete pad around tank 	12-8-12-11
2.0-3.5		SM, Sand, fine-to-coarse gr., ~5% silt, mod. graded, dk. brown 10YR4/2, not plastic, loose, dry-to-sl. moist, mod.-to-heavily oiled		14-20-22
3.5-5.5	#2 @1515	SP, Sand, fine-to-coarse gr., mod. graded top 6"; becomes fine-to-med gr. lower 18"; poorly graded, gray 10YR5/1, loose, not plastic, sl. moist, lightly oiled	FIRE TRAINING PIT 	14-22-32-
5.5-7.0		SP, Sand, fine-to-med. gr., poorly graded, dk. brown 10YR3/2, loose-to-mod. stiff (oiled areas), not plastic-to-mod. plastic (oiled areas), moist to wet, lt.-to-heavily oiled	N ↑	18-21-18
7.0-9.0		SP, Sand, fine-to-med. gr., poorly graded, lt. gray 10YR7/2, becomes v. dk. brown 10YR2/2 lower 18" (heavily oiled), mod. plastic, saturated		14-20-20-

90'

END OF BORING

Boring No. SO T11-1

SHEET 1 OF 1

10/15/86

1440 - Set up rig inside ring of fire training pit,
level rig, clean equipment, set up DE-CON station

1445 - Begin split spoon boring, encounter concrete pad
underlying pit

1450 - Abandon site, select new site

1455 - Set up rig on new site, level rig, set up
DE-CON station

1500 - Begin split spoon boring, advance to 2.0 ft.

1505 - Sample # 1 taken; advance to 3.5 ft.

1510 - Advance to 5.5 ft.

1515 - Sample # 2 taken; advance to 7.0 ft.

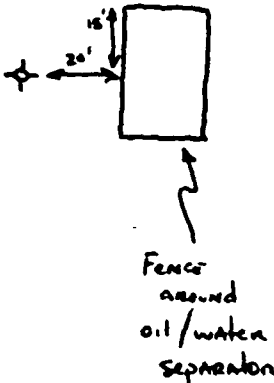
1520 - Advance to 9.0 ft.; hammer on rig shears;
termination of boring

10/15/86
DATE

[Signature]
SIGNED

SOURCE: Environmental Science and Engineering, Inc.,

Boring No. SO T11-2 Location Coordinates N SEE
Hole Size 2" I.D. Slot — E SKETCH
Screen Length — Mat'l — Filter Materials —
Diameter — Grout Type —
Casing Length — Mat'l — Development —
Diameter — Static Water Level —
Date Start 10/16/86 Finish 10/16/86 Top of Well Elevation —
Contractor ESE Driller PAUL THOMAS Drill Type SPLIT SPOON

Depth (feet)	Sample	Lithology, Color	Sketch of ~~Construction~~ Location	Standard Penetration Blow Count
0.0-2.0	#1 @840	SP Sand, fine-to-med gr., poorly graded, dk. grayish brown 10YR4/2, not plastic, loose, moist, mod. oiled		4-6-6-
2.0-3.5		SP Sand, fine-to-med gr., poorly graded, dk. grayish brown 10YR4/2, not plastic, loose, moist to wet, mod. oiled		8-12-15
3.5-5.5	#2 @845	SP, Sand, fine-to-med gr., poorly graded, lt. gray 10YR7/1, sl. plastic, loose-to-med. dense, wet to saturated		8-18-30-
5.5-7.0		SP, Sand, continuation of above		12-18-32
7.0-9.0		SP, Sand, continuation of above		18-30-43
9.0-10.5		SP, Sand, continuation of above		32-36-35
10.5		END OF BORING		

Boring No. SO T11-2

SHEET 1 OF 1

10/16/86

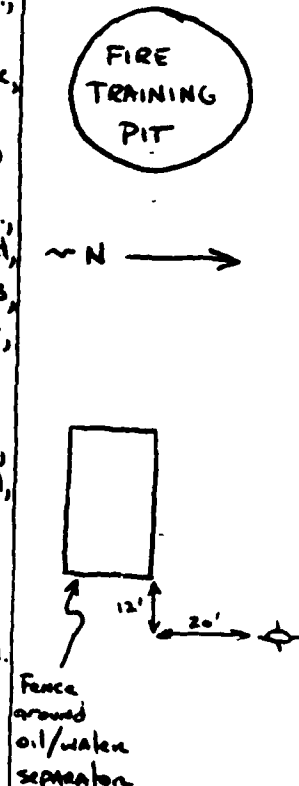
0830 Set up rig on site, level rig, clean
equipment, set up DE-CON station -
0835 Begin split spoon boring, advance to 2.0 ft.
0840 Sample # 1 taken, advance to 3.5 ft.
0845 Advance to 5.5 ft, sample # 2 taken, advance
to 7.0 ft.
0850 Advance to 9.0 ft.
0855 Advance to 10.5 ft., terminate boring
0900 Equipment dismantled, depart site

10/16/86
DATE

M. J. Jordan
SIGNED

SOURCE: Environmental Science and Engineering, Inc.,

Boring No. SO TII-3 Location Coordinates N See
 Hole Size 2" I.D. Slot — E Sketch
 Screen Length — Mat'l — Filter Materials —
 Diameter — Grout Type —
 Casing Length — Mat'l — Development —
 Diameter — Static Water Level —
 Date Start 10/16/86 Finish 10/16/86 Top of Well Elevation —
 Contractor ESE Driller PAUL THOMAS Drill Type SPLIT SPOON

Depth (feet)	Sample	Lithology, Color	Sketch of Construction LOCATION	Standard Pene Blow Count
0.0-2.0	# 1 @ 0915	SP, Sand, fine-to-med. gr., poorly graded, gray 104R6/2, not plastic, loose, dry, sl. to mod. oiled		2-4-8-0
2.0-3.5		SP, Sand, fine-to-med. gr., poorly graded, lt. gray 104R7/1, not plastic, loose, dry-to-moist, sl. oiled (odorless - no discoloration)		10-11-18
3.5-5.5	# 2 @ 0920	SM Sand, fine-to-med. gr., ~50% silt, poorly graded, med. plastic, buff 104R6/3, med. dense, moist-to-wet, sl. odor, no discoloration		12-20-26-
5.5-7.0		SM Sand, fine-to-med. gr., ~50% silt, poorly graded, white 104R8/1 from 5.5-6.2 ft.; becomes lt. brown 104R6/3 from 6.2-7.0 ft., mod. plastic, med. dense to dense, saturated		22-36-40
7.0-9.0		SM, continued from above to 7.8 ft.; becomes SP, Sand, fine-to-med. gr., poorly graded, gray 104R6/1, mod. plastic, dense saturated		18-22-30
9.0-10.5		SP, Sand, continuation of above		10-10-13

105

END OF BORING - N-19

Boring No. SO T11-3

SHEET 1 OF 1

10/16/86

0905 Set up rig on site, level rig, clean
equipment; set up DE-CON station
0910 Begin split spoon boring, advance to 2.0 ft.
0915 Take sample # 1; advance to 3.5 ft.
0920 Advance to 5.5 ft., sample # 2 taken
0925 Advance to 7.0 ft.
0930 Advance to 9.0 ft.
0935 Advance to 10.5 ft.; termination of boring
0940 Clean up and stow equipment, prepare rig
for travel
0945 Depart site

10/16/86
DATE

[Signature]
SIGNED

SOURCE: Environmental Science and Engineering, Inc., 1

APPENDIX O
MONITOR WELL DEVELOPMENT LOGS

**DEVELOPMENT
WELL SAMPLING DATA FORM**

03/15/85

Well Number: LH2-8 Date: 10/17/86 Time: 0840
 Boring Diameter: 12" Well Casing Diameter: 4" I.D.
 Annular Space Length: 16.7' Stickup: 2.2'

WATER LEVEL

Held: - 7.00'
 Cut: 0.95'
 DTW: - 6.05' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 21.70'
 DTW Top of Casing: 6.05'
 Column of Water in Well: 15.65'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart) = 1.57
 Column of Water or Length of A.S. (whichever is less) X 15.65
 Volume of Annular Space = 24.57
 Gallons per foot of Casing = 0.6528
 Column of Water X 15.65
 Volume of Casing = 10.22
 Total Volume (Volume of A.S. + Volume of Casing) = 34.79
 Number of Volumes to be Evacuated X 5
 Total Volume to be Evacuated = 174 gal.

Method of Purging (pump, bailer, etc.): Continuously pumped

FIELD ANALYSES

	Start	Mid	End
Time	<u>0925 @ 5 gal</u>	<u>0948 @ 85 gal</u>	<u>1025 @ 175 gal</u>
pH	<u>6.8</u>	<u>6.0</u>	<u>5.9</u>
Conductivity	<u>264</u>	<u>342</u>	<u>341</u>
Temperature	<u>26.2</u>	<u>27.1</u>	<u>27.9</u>

Total Volume Purged: 175 gallons

Sample Time: _____ Sample Number: _____

FRACTIONS

B C CF CL F H M N NF
 O P R RP RS S T UP Z

NOTES Water sediment free but slightly discolored upon completion of development.

Signed/Developer: [Signature] Date: 10/17/86
 Signed/Reviewer: _____ Date: _____

03/15/85

**DEVELOPMENT
WELL SAMPLING DATA FORM**

Well Number: LH2-9 Date: 10/17/86 Time: 0850
 Boring Diameter: 12" Well Casing Diameter: 4" I.D.
 Annular Space Length: 16.6' Stickup: 3.1'

WATER LEVEL

Held: -7.00'
 Cut: 1.05'
 DTW: -5.95' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 22.10'
 DTW Top of Casing: 5.95'
 Column of Water in Well: 16.15'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart) = 1.57
 Column of Water or Length of A.S. (whichever is less) X 16.15
 Volume of Annular Space = 25.36
 Gallons per foot of Casing = 0.6528
 Column of Water X 16.15
 Volume of Casing = 10.54
 Total Volume (Volume of A.S. + Volume of Casing) = 35.90
 Number of Volumes to be Evacuated X 5
 Total Volume to be Evacuated = 180 gal

Method of Purging (pump, bailer, etc.): Discontinuous pumping

FIELD ANALYSES

	Start	Mid	End
Time	<u>1047 @ 5 gal</u>	<u>1153 @ 90 gal</u>	<u>1336 @ 200 gal</u>
pH	<u>5.7</u>	<u>5.3</u>	<u>5.3</u>
Conductivity	<u>236</u>	<u>225</u>	<u>258</u>
Temperature	<u>27.2</u>	<u>29.1</u>	<u>28.5</u>

Total Volume Purged: 200 gallons

Sample Time: _____ Sample Number: _____

FRACTIONS

B	C	CF	CL	F	H	M	N	NF
O	P	R	RP	RS	S	T	UP	Z

NOTES Water sediment free but discolored upon completion of development.

DEVELOPER

Signed/Sampler: M. J. Jordan

Signed/Reviewer: _____

Date: 10/17/86

Date: _____

03/15/85

DEVELOPMENT
WELL SAMPLING DATA FORM

Well Number: T3-S Date: 10/12/86 Time: 0835
 Boring Diameter: 12" Well Casing Diameter: 4" I.D.
 Annular Space Length: 16.5' Stickup: 2'

WATER LEVEL

Held: - 6.0'
 Cut: 0.9'
 DTW: - 5.1' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 20.5'
 DTW Top of Casing: - 5.1'
 Column of Water in Well: 15.4'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart) = 1.57
 Column of Water or Length of A.S. (whichever is less) X 15.4
 Volume of Annular Space = 24.2
 Gallons per foot of Casing = 0.6528
 Column of Water X 15.4
 Volume of Casing = 10.1
 Total Volume (Volume of A.S. + Volume of Casing) = 34.2
 Number of Volumes to be Evacuated X 5
 Total Volume to be Evacuated = 171 gal

Method of Purging (pump, bailer, etc.): CONTINUOUS PUMPING

FIELD ANALYSES

	Start	Mid	End
Time	<u>0901 @ 5 gal</u>	<u>0910 @ 90 gal</u>	<u>0931 @ 300 gal</u>
pH	<u>6.0</u>	<u>6.1</u>	<u>6.2</u>
Conductivity	<u>393</u>	<u>318</u>	<u>304</u>
Temperature	<u>25.5</u>	<u>26.0</u>	<u>26.2</u>

Total Volume Purged: 300 gallons

Sample Time: _____

Sample Number: _____

FRACTIONS

B	C	CF	CL	F	H	M	N	NF
O	P	R	RP	RS	S	T	UP	Z

NOTES Approx 6-8" sand in well at onset of development; all sand removed during development. Water slightly odorous. Water was relatively clean upon completion of development.

Signed/Developer: Mal J. Jordan

Date: 10/12/86

Signed/Reviewer: _____

Date: _____

03/15/85

DEVELOPMENT
WELL SAMPLING DATA FORM

Well Number: T3-6 Date: 10/12/86 Time: 0840
 Boring Diameter: 12" Well Casing Diameter: 4"
 Annular Space Length: 16.5' Stickup: 2.0'

WATER LEVEL

Held: - 7.0'
 Cut: 1.1'
 DTW: - 5.9' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 20.9'
 DTW Top of Casing: - 5.9'
 Column of Water in Well: 15.0'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart) = 1.57
 Column of Water or Length of A.S. (whichever is less) X 15.0
 Volume of Annular Space = 23.6
 Gallons per foot of Casing = 0.6528
 Column of Water X 15.0
 Volume of Casing = 9.8
 Total Volume (Volume of A.S. + Volume of Casing) = 33.4
 Number of Volumes to be Evacuated X 5
 Total Volume to be Evacuated = 167 gal

Method of Purging (pump, bailer, etc.): Continuously pumped

FIELD ANALYSES

	Start	Mid	End	
Time	<u>0920 @ 5 gal</u>	<u>0925</u>	<u>0934</u>	<u>0937</u>
pH	<u>6.3</u>	<u>7.5</u>	<u>6.1</u>	<u>6.2</u>
Conductivity	<u>294</u>	<u>353</u>	<u>362</u>	<u>374</u>
Temperature	<u>25.7</u>	<u>26.2</u>	<u>26.1</u>	<u>26.1</u>

Total Volume Purged: 240 gallons

Sample Time: _____ Sample Number: _____

FRACTIONS

B	C	CP	CL	F	F	M	N	NF
O	P	R	RP	RS	S	T	UP	Z

NOTES Water relatively clean upon completion of development.

DEVELOPER
Signed/Sampler: [Signature]

Signed/Reviewer: _____

Date: 10/12/86

Date: _____

03/15/85

DEVELOPMENT
WELL SAMPLING DATA FORM

Well Number: T3-7 Date: 10/18/86 Time: 1020
 Boring Diameter: 12" Well Casing Diameter: 4" I.D.
 Annular Space Length: 16.2' Stickup: 3.35'

WATER LEVEL

Held: -9.00'
 Cut: 1.62'
 DTW: -7.38' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 22.85'
 DTW Top of Casing: -7.38'
 Column of Water in Well: 15.47'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart) = 1.57
 Column of Water or Length of A.S. (whichever is less) X 15.47
 Volume of Annular Space = 24.29
 Gallons per foot of Casing = 0.6528
 Column of Water X 15.47
 Volume of Casing = 10.1
 Total Volume (Volume of A.S. + Volume of Casing) = 34.4
 Number of Volumes to be Evacuated X 5
 Total Volume to be Evacuated = 172 gal.

Method of Purging (pump, bailer, etc.): Discontinuous Pumping

FIELD ANALYSES	Start	Mid	End
Time	<u>1042 @ 5 gal.</u>	<u>1235 @ 85 gal</u>	<u>1401 @ 175 gal</u>
pH	<u>6.0</u>	<u>5.2</u>	<u>5.2</u>
Conductivity	<u>92</u>	<u>74</u>	<u>70</u>
Temperature	<u>24.5</u>	<u>28.1</u>	<u>28.6</u>

Total Volume Purged: 175 gallons

Sample Time: _____ Sample Number: _____

FRACTIONS

B	C	CF	CL	F	H	M	N	NF
O	P	R	RP	RS	S	T	UP	Z

NOTES Water sediment-free but slightly cloudy at end of development.

Signed/Developer: [Signature] Date: 10/18/86
 Signed/Reviewer: _____ Date: _____

**DEVELOPMENT
WELL SAMPLING DATA FORM**

03/15/85

Well Number: T6-4 Date: 10/11/86 Time: 1626
 Boring Diameter: 12" Well Casing Diameter: 4" I.D.
 Annular Space Length: 17' Stickup: 1.6'

WATER LEVEL

Held: -6.0'
 Cut: 0.6'
 DTW: -5.4' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 20.6'
 DTW Top of Casing: -5.4'
 Column of Water in Well: 15.2'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart) = 1.57
 Column of Water or Length of A.S. (whichever is less) X 15.2
 Volume of Annular Space = 23.9
 Gallons per foot of Casing = 0.6528
 Column of Water X 15.2
 Volume of Casing = 9.9
 Total Volume (Volume of A.S. + Volume of Casing) = 33.8
 Number of Volumes to be Evacuated X 5
 Total Volume to be Evacuated = 169 gal

Method of Purging (pump, bailer, etc.): Continuous pumping

FIELD ANALYSES

	Start	Mid	End
Time	<u>1715 @ 5 gal</u>	<u>1811</u>	<u>1828</u>
pH	<u>5.3</u>	<u>5.0</u>	<u>6.0</u>
Conductivity	<u>140</u>	<u>133</u>	<u>226</u>
Temperature	<u>27.0</u>	<u>27.3</u>	<u>26.8</u>

Total Volume Purged: 205 gallons

Sample Time: _____ Sample Number: _____

FRACTIONS

B	C	CP	CL	F	H	M	N	NF
O	P	R	RP	RS	S	T	UP	Z

NOTES Water sediment-free but still very discolored upon completion of development

Developed
 Signed/Sampler: [Signature] Date: 10/11/86
 Signed/Reviewer: _____ Date: _____

DEVELOPMENT
WELL SAMPLING DATA FORM

03/15/85

Well Number: T6-5 Date: 10/16/86 Time: 1250
 Boring Diameter: 12" Well Casing Diameter: 4" I.D.
 Annular Space Length: 16.1' Stickup: 2.9'

WATER LEVEL

Held: - 10.0'
 Cut: 3.2'
 DTW: - 6.8' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 22.4'
 DTW Top of Casing: - 6.8'
 Column of Water in Well: 15.6'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart) = 1.57
 Column of Water or Length of A.S. (whichever is less) X 15.6
 Volume of Annular Space = 24.49
 Gallons per foot of Casing = 0.6528
 Column of Water X 15.6
 Volume of Casing = 10.18
 Total Volume (Volume of A.S. + Volume of Casing) = 34.67
 Number of Volumes to be Evacuated X 5
 Total Volume to be Evacuated = 173 gal

Method of Purging (pump, bailer, etc.): Continuously pumped

FIELD ANALYSES

	Start	Mid	End
Time	<u>1257 @ 22 gal</u>	<u>1302 @ 30 gal</u>	<u>1325 @ 300 gal</u>
pH	<u>6.2</u>	<u>5.7</u>	<u>5.7</u>
Conductivity	<u>142</u>	<u>137</u>	<u>142</u>
Temperature	<u>24.1</u>	<u>24.2</u>	<u>24.4</u>

Total Volume Purged: 300 gallons

Sample Name: _____ Sample Number: _____

FRACTIONS

B	C	CF	CL	F	H	M	N	NF
O	P	R	RP	RS	S	T	UP	Z

NOTES Water sediment-free but slightly cloudy upon completion of development.

Developed
 Signed/_____
 Signed/Reviewer: _____

Date: 10/16/86
 Date: _____

03/15/85

**DEVELOPMENT
WELL SAMPLING DATA FORM**

Well Number: T8-3 Date: 10/11/86 Time: 1212
 Boring Diameter: 12" Well Casing Diameter: 4" I.D.
 Annular Space Length: 15.5' Stickup: 2.4'

WATER LEVEL

Held: - 5.0'
 Cut: 0.5'
 DTW: - 4.5' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 20.0'
 DTW Top of Casing: - 4.5'
 Column of Water in Well: 15.5'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart) = 1.57
 Column of Water or Length of A.S. (whichever is less) X 15.5
 Volume of Annular Space = 24.3
 Gallons per foot of Casing = 0.6528
 Column of Water X 15.5
 Volume of Casing = 10.1
 Total Volume (Volume of A.S. + Volume of Casing) = 34.5
 Number of Volumes to be Evacuated X 5
 Total Volume to be Evacuated = 172 gal.

Method of Purging (pump, bailer, etc.): Continuous pumping

FIELD ANALYSES

	Start	Mid	End
Time	<u>1220</u>	<u>1257 @ 85 gal</u>	<u>1340</u>
pH	<u>5.9</u>	<u>5.7</u>	<u>5.6</u>
Conductivity	<u>394</u>	<u>346</u>	<u>327</u>
Temperature	<u>25.4</u>	<u>26.0</u>	<u>25.9</u>

Total Volume Purged: 173 gallons

Sample Time: _____ Sample Number: _____

FRACTIONS

B	C	CF	CL	F	H	M	N	NF
O	P	R	RP	RS	S	T	UP	Z

NOTES Water relatively clean upon completion of development.

Developed
 Signed/ Sampler: [Signature] Date: 10/11/86
 Signed/ Reviewer: _____ Date: _____

03/15/85

**DEVELOPMENT
WELL SAMPLING DATA FORM**

Well Number: T8-4 Date: 10/18/86 Time: 0940
 Boring Diameter: 12" Well Casing Diameter: 4" I.D.
 Annular Space Length: 17.0' Stickup: 3.75'

WATER LEVEL

Held: - 8.00'
 Cut: 1.35'
 DTW: - 6.65' Top of Casing

COLUMN OF WATER IN WELLCasing Length: 23.0DTW Top of Casing: - 6.65'Column of Water in Well: 16.35'**VOLUME TO BE REMOVED**

Gallons per foot of A.S. (from chart) = 1.57
 Column of Water or Length of A.S. (whichever is less) X 16.35
 Volume of Annular Space = 25.67
 Gallons per foot of Casing = 0.6528
 Column of Water X 16.35
 Volume of Casing = 10.67
 Total Volume (Volume of A.S. + Volume of Casing) = 36.34
 Number of Volumes to be Evacuated X 5
 Total Volume to be Evacuated = 182 gal

Method of Purging (pump, bailer, etc.): Discontinuous pumping**FIELD ANALYSES**

	Start	Mid	End
Time	<u>1010 @ 5 gal</u>	<u>1100 @ 90 gal</u>	<u>1145 @ 185 gal</u>
pH	<u>6.0</u>	<u>5.4</u>	<u>5.5</u>
Conductivity	<u>151</u>	<u>216</u>	<u>185</u>
Temperature	<u>22.8</u>	<u>26.3</u>	<u>27.3</u>

Total Volume Purged: 215 gallons

Sample Time: _____ Sample Number: _____

FRACTIONS

B	C	CF	CL	F	H	M	N	NF
O	P	R	RP	RS	S	T	UP	Z

NOTES Water relatively clean (slightly cloudy) at completion of development

Signed/Developer: Mark J. Jorden Date: 10/18/86
 Signed/Reviewer: _____ Date: _____

03/15/85

**DEVELOPMENT
WELL SAMPLING DATA FORM**

Well Number: T9-3 Date: 10/12/86 Time: 1043
 Boring Diameter: 12" Well Casing Diameter: 4" I.D.
 Annular Space Length: 17.5' Stickup: 2.3'

WATER LEVEL

Held: - 9.0'
 Cut: 0.7'
 DTW: - 8.3' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 22.3'
 DTW Top of Casing: - 8.3'
 Column of Water in Well: 14.0'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart) = 1.57
 Column of Water or Length of A.S. (whichever is less) X 14.0
 Volume of Annular Space = 22.0
 Gallons per foot of Casing = 0.6528
 Column of Water X 14.0
 Volume of Casing = 9.1
 Total Volume (Volume of A.S. + Volume of Casing) = 31.1
 Number of Volumes to be Evacuated X 5
 Total Volume to be Evacuated = 156 gal

Method of Purging (pump, bailer, etc.): Continuous pumping

FIELD ANALYSES	Start	Mid	End
Time	<u>1104</u>	<u>1122</u>	<u>1154</u>
pH	<u>5.7</u>	<u>5.7</u>	<u>5.6</u>
Conductivity	<u>100</u>	<u>117</u>	<u>116</u>
Temperature	<u>28.0</u>	<u>28.4</u>	<u>28.3</u>

Total Volume Purged: 200 gallons

Sample Time: _____ Sample Number: _____

FRACTIONS

B	C	CF	CL	F	H	M	N	NF
O	P	R	RP	RS	S	T	UP	Z

NOTES Water sediment-free but slightly discolored at completion of development.

Signed/Developer: [Signature] Date: 10/12/86
 Signed/Reviewer: _____ Date: _____

03/15/85

**DEVELOPMENT
WELL SAMPLING DATA FORM**

Well Number: T9-4 Date: 10/12/86 Time: 1335
 Boring Diameter: 12" Well Casing Diameter: 4" I.D.
 Annular Space Length: 17.0' Stickup: 2.0'

WATER LEVEL

Held: - 8.95'
 Cut: 0.84'
 DTW: - 8.11' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 21.0'
 DTW Top of Casing: - 8.11'
 Column of Water in Well: 12.89'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart) = 1.57
 Column of Water or Length of A.S. (whichever is less) X 12.89
 Volume of Annular Space = 20.24
 Gallons per foot of Casing = 0.6528
 Column of Water X 12.89
 Volume of Casing = 8.41
 Total Volume (Volume of A.S. + Volume of Casing) = 28.65
 Number of Volumes to be Evacuated X 5
 Total Volume to be Evacuated = 143 gal

Method of Purging (pump, bailer, etc.): DISCONTINUOUS PUMPING

FIELD ANALYSES

	Start	Mid	End
Time	<u>1401</u>	<u>1546</u>	<u>1823</u>
pH	<u>4.2</u>	<u>5.6</u>	<u>5.0</u>
Conductivity	<u>86</u>	<u>81</u>	<u>84</u>
Temperature	<u>26.6</u>	<u>27.4</u>	<u>26.8</u>

Total Volume Purged: 153 gallons

Sample Time: _____

Sample Number: _____

FRACTIONS

B	C	CF	CL	F	H	M	N	NF
O	P	R	RP	RS	S	T	UP	Z

NOTES: Water sediment-free but very discolored and or throughout development; All water discarded in O/Separator

Signed/Developer: Mark J. Jordan

Date: 10/12/86

Signed/Reviewer: _____

Date: _____

03/15/85

**DEVELOPMENT
WELL SAMPLING DATA FORM**

Well Number: T10-1 Date: 10/10/86 Time: 1700
 Boring Diameter: 12" Well Casing Diameter: 4" I.D.
 Annular Space Length: 17.0' Stickup: 3.0'

WATER LEVEL

Held: - 11.0'
 Cut: 1.05'
 DTW: - 9.95' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 23.0'
 DTW Top of Casing: - 9.95'
 Column of Water in Well: 13.05'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart) = 1.57
 Column of Water or Length of A.S. (whichever is less) X 13.05
 Volume of Annular Space = 20.5
 Gallons per foot of Casing = 0.6528
 Column of Water X 13.05
 Volume of Casing = 8.5
 Total Volume (Volume of A.S. + Volume of Casing) = 29.0
 Number of Volumes to be Evacuated X 5
 Total Volume to be Evacuated = 145 gal

Method of Purging (pump, bailer, etc.): Discontinuous pumping

FIELD ANALYSES	Start	Mid	End
Time	<u>1733</u>	<u>1352 (10/11)</u>	<u>1600 (10/12)</u>
pH	<u>6.9</u>	<u>6.4</u>	<u>6.6</u>
Conductivity	<u>553</u>	<u>507</u>	<u>495</u>
Temperature	<u>26.2</u>	<u>26.7</u>	<u>25.8</u>

Total Volume Purged: 147 gallons

Sample Time: _____ Sample Number: _____

FRACTIONS

B	C	CP	CL	F	H	M	N	NF
O	P	R	RP	RS	S	T	UP	Z

NOTES Water very clean upon completion of development

Developed
 Signed/Sampler: [Signature]
 Signed/Reviewer: [Signature]

Date: 10/12/86
 Date: _____

03/15/85

**DEVELOPMENT
WELL SAMPLING DATA FORM**

Well Number: T10-2 Date: 10/10/86 Time: 1405
 Boring Diameter: 12" Well Casing Diameter: 4" I.D.
 Annular Space Length: 17.0' Stickup: 2.6'

WATER LEVEL

Held: -11.0'
 Cut: 0.8'
 DTW: -10.2' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 22.6'
 DTW Top of Casing: -10.2'
 Column of Water in Well: 12.4'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart) = 1.57
 Column of Water or Length of A.S. (whichever is less) X 12.4
 Volume of Annular Space = 19.5
 Gallons per foot of Casing = 0.6528
 Column of Water X 12.4
 Volume of Casing = 8.1
 Total Volume (Volume of A.S. + Volume of Casing) = 27.6
 Number of Volumes to be Evacuated X 5
 Total Volume to be Evacuated = 138 gal

Method of Purging (pump, bailer, etc.): Discontinuous pumping

FIELD ANALYSES	Start	Mid	End
Time	<u>1430</u>	<u>1807</u>	<u>1158 (10/11/86)</u>
pH	<u>6.6</u>	<u>6.3</u>	<u>7.1</u>
Conductivity	<u>336</u>	<u>230</u>	<u>233</u>
Temperature	<u>28.6</u>	<u>26.0</u>	<u>25.4</u>

Total Volume Purged: 110 gallons

Sample Time: _____ Sample Number: _____

FRACTIONS

B	C	CF	CL	F	H	M	N	NF
O	P	R	RP	RS	S	T	UP	Z

NOTES Water very clean upon completion of development
slightly foamy

Signed/Developer: [Signature] Date: 10/11/86
 Signed/Reviewer: _____ Date: _____

03/15/85

**DEVELOPMENT
WELL SAMPLING DATA FORM**

Well Number: T10-3 Date: 10/10/86 Time: 1710
 Boring Diameter: 12" Well Casing Diameter: 4" I.D.
 Annular Space Length: 15.5' Stickup: 2.1'

WATER LEVEL

Held: - 5.0'
 Cut: 0.4'
 DTW: - 4.6' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 22.1'
 DTW Top of Casing: - 4.6'
 Column of Water in Well: 17.5'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart) = 1.57
 Column of Water or Length of A.S. (whichever is less) X 15.5
 Volume of Annular Space = 24.3
 Gallons per foot of Casing = 0.6528
 Column of Water X 17.5
 Volume of Casing = 11.4
 Total Volume (Volume of A.S. + Volume of Casing) = 35.8
 Number of Volumes to be Evacuated X 5
 Total Volume to be Evacuated = 179 gal

Method of Purging (pump, bailer, etc.): Discontinuous pumping

FIELD ANALYSES	Start	Mid	End
Time	<u>1742</u>	<u>1838 @ 90 gal</u>	<u>1022 (10/11/86)</u>
pH	<u>6.4</u>	<u>5.6</u>	<u>4.7</u>
Conductivity	<u>103</u>	<u>50</u>	<u>51</u>
Temperature	<u>26.6</u>	<u>26.8</u>	<u>26.7</u>

Total Volume Purged: 180 gallons

Sample Time: _____ Sample Number: _____

FRACTIONS

B	C	CF	CL	F	I	M	N	NF
O	P	R	RP	RS	S	T	UP	Z

NOTES Water very clean upon completion of development

Signed/Developer: [Signature] Date: 10/11/86
 Signed/Reviewer: _____ Date: _____

03/15/85

DEVELOPMENT WELL SAMPLING DATA FORM

Well Number: T11-1 Date: 10/11/86 Time: 1120
 Boring Diameter: 12" Well Casing Diameter: 4" I.D.
 Annular Space Length: 17.0' Stickup: 2.5'

WATER LEVEL

Head: -7.0'
 Cut: 0.9'
 DTW: -6.1' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 22.5'
 DTW Top of Casing: -6.1'
 Column of Water in Well: 16.4'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart) = 1.57
 Column of Water or Length of A.S. (whichever is less) X 16.4
 Volume of Annular Space = 25.7
 Gallons per foot of Casing = 0.6528
 Column of Water X 16.4
 Volume of Casing = 10.7
 Total Volume (Volume of A.S. + Volume of Casing) = 36.5
 Number of Volumes to be Evacuated X 5
 Total Volume to be Evacuated = 182 gal

Method of Purging (pump, bailer, etc.): CONTINUOUS PUMPING

FIELD ANALYSES

	Start	Mid	End
Time	<u>1422</u>	<u>1448</u>	<u>1515</u>
pH	<u>4.6</u>	<u>5.3</u>	<u>5.0</u>
Conductivity	<u>142</u>	<u>144</u>	<u>146</u>
Temperature	<u>25.6</u>	<u>26.9</u>	<u>26.7</u>

Total Volume Purged: 183 gallons

Sample Time: _____

Sample Number: _____

FRACTIONS

B	C	CF	CL	F	H	M	N	NF
O	P	R	RP	RS	S	T	UP	Z

NOTES Water sediment-free but still discolored upon completion of development

Developed
 Signed/_____
 Signed/Reviewer: _____

Date: 10/11/86
 Date: _____

03/15/85

**DEVELOPMENT
WELL SAMPLING DATA FORM**

Well Number: T11-2 Date: 10/11/86 Time: 1125
 Boring Diameter: 12" Well Casing Diameter: 4" I.D.
 Annular Space Length: 17.0' Stickup: 2.5'

WATER LEVEL

Held: - 9.0'
 Cut: 0.6'
 DTW: - 8.4' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 22.5'
 DTW Top of Casing: - 8.4'
 Column of Water in Well: 14.1'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart) = 1.57
 Column of Water or Length of A.S. (whichever is less) X 14.1
 Volume of Annular Space = 22.1
 Gallons per foot of Casing = 0.6528
 Column of Water X 14.1
 Volume of Casing = 9.2
 Total Volume (Volume of A.S. + Volume of Casing) = 31.3
 Number of Volumes to be Evacuated X 5
 Total Volume to be Evacuated = 157 gal

Method of Purging (pump, bailer, etc.): Discontinuous pumping

FIELD ANALYSES

	Start	Mid	End
Time	<u>1135</u>	<u>1216 @ 30 gal</u>	<u>1326</u>
pH	<u>4.9</u>	<u>4.9</u>	<u>4.8</u>
Conductivity	<u>198</u>	<u>179</u>	<u>180</u>
Temperature	<u>26.0</u>	<u>27.8</u>	<u>29.3</u>

Total Volume Purged: 175 gallons

Sample Time: _____ Sample Number: _____

FRACTIONS

B	C	CF	CL	F	H	M	N	NF
O	P	R	RP	RS	S	T	UP	Z

NOTES Water slightly cloudy and slightly foamy upon completion of development

Signed/Developer: Mark J. Jordan
 Signed/Reviewer: _____

Date: 10/11/86
 Date: _____

03/15/85

**DEVELOPMENT
WELL SAMPLING DATA FORM**

Well Number: T11-3 Date: 10/11/86 Time: 1130
 Boring Diameter: 12" Well Casing Diameter: 4" I.D.
 Annular Space Length: 17.0' Stickup: 2.0'

WATER LEVEL

Held: -6.0'
 Cut: 0.2'
 DTW: -5.8' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 22.0'
 DTW Top of Casing: -5.8'
 Column of Water in Well: 16.2'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart) = 1.57
 Column of Water or Length of A.S. (whichever is less) X 16.2
 Volume of Annular Space = 25.4
 Gallons per foot of Casing = 0.6528
 Column of Water X 16.2
 Volume of Casing = 10.6
 Total Volume (Volume of A.S. + Volume of Casing) = 36.0
 Number of Volumes to be Evacuated X 5
 Total Volume to be Evacuated = 180 gal

Method of Purging (pump, bailer, etc.): Discontinuous pumping

FIELD ANALYSES

	Start	Mid	End
Time	<u>1337</u>	<u>1547 @ 90 gal</u>	<u>1842 @ 154 gal</u>
pH	<u>5.9</u>	<u>6.1</u>	<u>6.4</u>
Conductivity	<u>582</u>	<u>798</u>	<u>830</u>
Temperature	<u>28.2</u>	<u>27.9</u>	<u>26.5</u>

Total Volume Purged: 184 gallons

Sample Type: _____

Sample Number: _____

FRACTIONS

B	C	CF	CL	F	H	M	N	NF
O	P	R	RP	RS	S	T	UP	Z

NOTES Water very foamy, relatively clear, slightly colored upon completion of development

Signed/Developer: M. J. Jordan
 Signed/Reviewer: _____

Date: 10/11/86
 Date: _____

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APPENDIX P
CHAIN-OF-CUSTODY

ENVIRONMENTAL SCIENCE & ENGINEERING 10-06-86 *** FIELD LOGSHEET *** FIELD GROUP: TYNDL7
 PROJECT NUMBER 86449 0000 PROJECT NAME: TYNDALL AFB LAB COORD. DILNA HALE

TYNDL7

#	SITE/STA HAZ?	FRACTIONS(CIRCLE)	DATE	TIME	PARAMETER LIST
*1	SDT11-1	SS SV			SZ 2,11
*2	SDT11-2	SS SV			SZ 2,11
*3	SDT2-1	SS SV	10/11/86	11:41	SZ 2,11

NOTE -CHANGE OR ENTER SITE ID AS NECESSARY; UP TO 9 ALPHANUMERIC CHARACTERS MAY BE USED
 -CIRCLE FRACTIONS COLLECTED. ENTER DATE, TIME, FIELD DATA (IF REQUIRED), HAZARD CODE AND NOTES
 -HAZARD CODES: I-IGNITABLE C-CORROSIVE R-REACTIVE T-TOXIC WASTE H-OTHER ACUTE HAZARD: IDENTIFY SPECIFICS IF KNOWN
 -PLEASE RETURN LOGSHEETS WITH SAMPLES TO ESE

RELINQUISHED BY: (NAME/ORGANIZATION/DATE/TIME) RECEIVED BY (NAME/ORGANIZATION/DATE/TIME)
 1 [Signature] 10/11/86 [Signature] 10-15/1980
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OTHER FIELD NOTES FOR FIELD GROUP TYNDL7:

ENVIRONMENTAL SCIENCE & ENGINEERING 09-30-86 *** FIELD LOGSHEET *** FIELD GROUP: TYNDAL
PROJECT NUMBER 86449 0000 PROJECT NAME: TYNDALL AFB LAB COORD. DILNA HALE

TYNDL4

SITE/STA HAZ?	FRACTIONS(CIRCLE)	DATE	TIME	PARAMETER LIST
GT6-1	N 0 VP VP VP W		2 6,10,11	

2	GT6-2	N 0	VP VP VP W	Z 6,10,11

3	GT6-3	N	O	VP	VP	VP	W	Z 6,10,11

4	GT6-4	N O	VP VP W	Z 6,10,11

5	GT6-5	N	O	VP	VP	W	2 6,10,11

6	GT60A	N	O	VP	VP	W	2 6, 10, 11

7	GT10-1	N	O	VP	VP	W	Z 6,10,11

8	GT10-2	N	O	VP	VP	W	Z 6,10,11

9 GT10-3 N O VP VP VP W Z 6,10,11

0 0 GT10QA N O VP VP VP W Z 6,10,11

1	GT11-1	N	O	VP	VP	VP	W	Z 6,10,11

2 GT11-2 N O VP VP VP W Z 6,10,11

GT11-3 N O VP VP VP W Z 6, 10, 11

11-11-11
N O VP VP VP W
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3 SW11-2 N O VP VP VP W- 1.1.1/21 18.43.20,10,11

2 - CHANGE OR ENTER SITE ID AS NECESSARY; UP TO 9 ALPHANUMERIC CHARACTERS MAY BE USED
- CIRCLE FRACTIONS COLLECTED. ENTER DATE, TIME, FIELD DATA (IF REQUIRED), HAZARD CODE AND NOTES
- HAZARD CODES: I-IGNITABLE C-CORROSIVE R-REACTIVE T-TOXIC WASTE H-OTHER ACUTE HAZARD; IDENTIFY SPECIFICS IF KNOWN
- PLEASE RETURN LOGSHEETS WITH SAMPLES TO ESE

	RECEIVED BY	(NAME/ORGANIZATION/DATE/TIME)
RELINQUISHED BY:	(NAME/ORGANIZATION/DATE/TIME)	

2/11/14

Q. Hah/ESE/10-15/1330

ER FIELD NOTES FOR FIELD GROUP TYNDL4:

ENVIRONMENTAL SCIENCE & ENGINEERING 09-30-86 *** FIELD LOGSHEET *** FIELD GROUP: TYNDL2
 PROJECT NUMBER 86449 0000 PROJECT NAME: TYNDALL AFB LAB COORD. DILNA HALE

ESE #	SITE/STA HAZ?	FRACTIONS(CIRCLE) N O O VP VP VP	DATE	TIME	PARAMETER LIST ZONE2
*1	GLH2-1	N O O VP VP VP	11/11	11:15	ZONE2
*2	GLH2-2	N O O VP VP VP	11/11	11:15	ZONE2
*3	GLH2-3	N O O VP VP VP	11/11	11:15	ZONE2
*4	GLH2-4	N O O VP VP VP	11/11	11:15	ZONE2
*5	GLH2-7	N O O VP VP VP	11/11	11:15	ZONE2
*6	GLH2QA	N O O VP VP VP			ZONE2
*7	GLH2-8	N O O VP VP VP			ZONE2
*8	GLH2-9	N O O VP VP VP			ZONE2
*9	SWLH2	N O O VP VP VP			ZONE2

NOTE -CHANGE OR ENTER SITE ID AS NECESSARY; UP TO 9 ALPHANUMERIC CHARACTERS MAY BE USED
 -CIRCLE FRACTIONS COLLECTED. ENTER DATE, TIME, FIELD DATA (IF REQUIRED), HAZARD CODE AND NOTES
 -HAZARD CODES: I-IGNITANT C-CORROSIVE R-REACTIVE T-TOXIC WASTE H-OTHER ACUTE HAZARD; IDENTIFY SPECIFICS IF KNOWN
 -PLEASE RETURN LOGSHEETS WITH SAMPLES TO ESE

RELINQUISHED BY: (NAME/ORGANIZATION/DATE/TIME) RECEIVED BY (NAME/ORGANIZATION/DATE/TIME)
 1 *11/11/86 10:14/86*
 2
 3

OTHER FIELD NOTES FOR FIELD GROUP TYNDL2:

ENVIRONMENTAL SCIENCE & ENGINEERING 09-30-86 *** FIELD LOGSHEET *** FIELD GROUP: TYNDL2
PROJECT NUMBER 86449 0000 PROJECT NAME: TYNDALL AFB LAB COORD. DILNA HALE

ESE #	SITE/STA HAZ?	FRACTIONS(CIRCLE)				DATE	TIME	PARAMETER LIST	ZONE2
		N	O	O	VP VP VP				
*1	GLH2-1	N	O	O	VP VP VP	10/14	1115		ZONE2
*2	GLH2-2	N	O	O	VP VP VP		1125		ZONE2
*3	GLH2-3	N	O	O	VP VP VP		1125		ZONE2
*4	GLH2-4	N	O	O	VP VP VP		1110		ZONE2
*5	GLH2-7	N	O	O	VP VP VP				ZONE2
*6	GLH2QA	N	O	O	VP VP VP				ZONE2
*7	GLH2-8	N	O	O	VP VP VP				ZONE2
*8	GLH2-9	N	O	O	VP VP VP				ZONE2
*9	SWLH2	N	O	O	VP VP VP	10/14	1315		ZONE2

NOTE - CHANGE OR ENTER SITE ID AS NECESSARY: UP TO 9 ALPHANUMERIC CHARACTERS MAY BE USED
- CIRCLE FRACTIONS COLLECTED. ENTER DATE, TIME, FIELD DATA (IF REQUIRED), HAZARD CODE AND NOTES
- HAZARD CODES: I-IGNITABLE C-CORROSIVE R-TOXIC WASTIC H-OTHER ACUTE HAZARD: IDENTIFY SPECIFICS IF KNOWN
- PLEASE RETURN LOGSHEETS WITH SAMPLES TO ESE

RELINQUISHED BY: (NAME/ORGANIZATION/DATE/TIME) RECEIVED BY (NAME/ORGANIZATION/DATE/TIME)

1 *[Signature]* 10/14/86 1315 *[Signature]* 10/14/86 1315

2

3

OTHER FIELD NOTES FOR FIELD GROUP TYNDL2:

OBJECT NUMBER 00449 0000 PROJECT NAME: UNKLE AND TYNOL6

	SITE/STA NAME	FRACTIONS(CIRCLED) ED N O VP VP VP	DATE	TIME	REMARKS
1	GT3-1	ED N O VP VP VP			
2	GT3-2	ED N O VP VP VP			
3	GT3-3	ED N O VP VP VP			
4	GT3-4	ED N O VP VP VP	24	1230	5A3,9
5	GT3-5	ED N O VP VP VP			
6	GT3-6	ED N O VP VP VP			
7	GT3-7	ED N O VP VP VP			
8	GT3QA	ED N O VP VP VP			
9	GT9-1	ED N O VP VP VP			
10	GT9-2	ED N O VP VP VP			
11	GT9-3	ED N O VP VP VP			
12	GT9-4	ED N O VP VP VP			
13	GT9QA	ED N O VP VP VP			

TE -CHANGE OR ENTER SITE ID AS NECESSARY: UP TO 9 ALPHANUMERIC CHARACTERS MAY BE USED
-CIRCLE FRACTIONS COLLECTED. ENTER DATE, TIME, FIELD DATA (IF REQUIRED), HAZARD CODE AND NOTES
-HAZARD CODES: I-IRRITANT C-CORROSIVE R-REACTIVE T-TOXIC WASTE H-OTHER ACUTE HAZARD; IDENTIFY SPECIFICS IF ANY
-PLEASE RETURN LOGSHEETS WITH SAMPLES TO ESE

RELINQUISHED BY: (NAME/ORGANIZATION/DATE/TIME) RECEIVED BY: (NAME/ORGANIZATION/DATE/TIME)
1 [Signature] 10/17/86 15:00
2 [Signature]
3 [Signature]

HER FIELD NOTES FOR FIELD GROUP TYNOL6:

ENVIRONMENTAL SCIENCE & ENGINEERING 09-30-86 *** FIELD LOGSHEET *** FIELD GROUP: TYNDL6
 PROJECT NUMBER 86449 0000 PROJECT NAME: TYNDALL AFB LAB COORD. DILNA HALE

PARAMETER LIST

ESE #	SITE/STA HAZ?	FRACTIONS(CIRCLE)	ED	N	O	VP	VP	VP	DATE	TIME	PARAMETER LIST
*1	GT3-1	ED N O VP VP VP									
*2	GT3-2	ED N O VP VP VP									
*3	GT3-3	ED N O VP VP VP									
*4	GT3-4	ED N O VP VP VP									
*5	GT3-5	ED N O VP VP VP							10/17	1145	239
*6	GT3-6	ED N O VP VP VP								1200	
*7	GT3-7	ED N O VP VP VP									
*8	GT3QA	ED N O VP VP VP							10/17	1145	
*9	GT9-1	ED N O VP VP VP									
*10	GT9-2	ED N O VP VP VP									
*11	GT9-3	ED N O VP VP VP									
*12	GT9-4	ED N O VP VP VP									
*13	GT9QA	ED N O VP VP VP									

NOTE: CHANGE OR ENTER SITE ID AS NECESSARY, UP TO 9 ALPHANUMERIC CHARACTERS MAY BE USED
 -CIRCLE FRACTIONS COLLECTED. ENTER DATE, TIME, FIELD DATA (IF REQUIRED), HAZARD CODE AND NOTES
 -HAZARD CODES: I-IGNITABLE C-CORROSIVE R-TOXIC WASTE H-OTHER ACUTE HAZARD; IDENTIFY SPECIFICS IF KNOWN
 -PLEASE RETURN LOGSHEETS WITH SAMPLES TO ESE

RELINQUISHED BY: (NAME/ORGANIZATION/DATE/TIME) RECEIVED BY: (NAME/ORGANIZATION/DATE/TIME)

OTHER FIELD NOTES FOR FIELD GROUP TYNDL6:

ENVIRONMENTAL SCIENCE & ENGINEERING 09-30-80 PROJECT NAME: TYNDALL AFB LAB COORD. DILNA HALE

ESE #	SITE/STA HAZ?	FRACTIONS(CIRCLE)	DATE	TIME	PARAMETER LIST
*1	GT7-1	N VP VP VP W			ZONE 7,8
*2	GT7-2	N VP VP VP W			ZONE 7,8
*3	GT7-3	N VP VP VP W			ZONE 7,8
*4	GT7-QA	N VP VP VP W			ZONE 7,8
*5	GT8-1	N VP VP VP W			ZONE 7,8
*6	GT8-3	N VP VP VP W	10/17	1355	ZONE 7,8
*7	GT8-4	N VP VP VP W			ZONE 7,8
*8	GT8QA	N VP VP VP W	10/17	1355	ZONE 7,8
*9	BWT7-11	N VP VP VP W			ZONE 7,8

NOTE - CHANGE OR ENTER SITE ID AS NECESSARY, UP TO 9 ALPHANUMERIC CHARACTERS MAY BE USED
 - CIRCLE FRACTIONS COLLECTED. ENTER DATE, TIME, FIELD DATA (IF REQUIRED), HAZARD CODE AND NOTES
 - HAZARD CODES: I-IGNITABLE C-CORROSIVE B-REACTIVE T-TOXIC WASTY H-OTHER ACUTE HAZARD: IDENTIFY SPECIFICS IF KNOWN
 - PLEASE RETURN LOGSHEETS WITH SAMPLES TO ESE

RELINQUISHED BY: (NAME/ORGANIZATION/DATE/TIME) RECEIVED BY (NAME/ORGANIZATION/DATE/TIME)

1 PAR ESE 10/17/86 1600 Robert J. ... 10/19/86 13.

OTHER FIELD NOTES FOR FIELD GROUP TYNDL5:

ENVIRONMENTAL SCIENCE & ENGINEERING 09-30-86 *** FIELD LOGSHEET *** FIELD GROUP: TYNDL5
PROJECT NUMBER 86449 0000 PROJECT NAME: TYNDALL AFB LAB COORD. DILNA HALE

TYNDL5				PARAMETER LIST
ESE #	SITE/STA HAZ?	FRACTIONS(CIRCLE) N VP VP VP W	DATE	TIME
*1	GT7-1	N VP VP VP W		ZONE 7,8
*2	GT7-2	N VP VP VP W		ZONE 7,8
*3	GT7-3	N VP VP VP W		ZONE 7,8
*4	GT7-QA	N VP VP VP W		ZONE 7,8
*5	GT8-1	N VP VP VP W	12/16	1130
*6	GT8-3	N VP VP VP W		ZONE 7,8
*7	GT8-4	N VP VP VP W		ZONE 7,8
*8	GT8QA	N VP VP VP W		ZONE 7,8
*9	BWT7-11	N VP VP VP W		ZONE 7,8

NOTE -CHANGE OR ENTER SITE ID AS NECESSARY; UP TO 9 ALPHANUMERIC CHARACTERS MAY BE USED
-CIRCLE FRACTIONS COLLECTED. ENTER DATE, TIME, FIELD DATA (IF REQUIRED), HAZARD CODE AND NOTES
-HAZARD CODES: I-IGNITABLE C-COMBUSTIBLE R-REACTIVE T-TOXIC MASH H-OTHER ACUTE HAZARD; IDENTIFY SPECIFICS IF KNOWN
-PLEASE RETURN LOGSHEETS WITH SAMPLES TO ESE

RELINQUISHED BY: (NAME/ORGANIZATION/DATE/TIME) RECEIVED BY (NAME/ORGANIZATION/DATE/TIME)
1 PAR/ESF 12/16/86 12/17/86 1510

OTHER FIELD NOTES FOR FIELD GROUP TYNDL5:

FIELD GROUP: TYNDL4
LAB COORD. DILNA HALE

SE #	SITE/STA HAZ?	FRACTIONS (CIRCLES)	DATE	TIME	PARAMETER LIST
*1	GT6-1	N O VP VP VP W	11/10	1455	Z 6,10,11
*2	GT6-2	N O VP VP VP W		1500	Z 6,10,11
*3	GT6-3	N O VP VP VP W		1505	Z 6,10,11
*4	GT6-4	N O VP VP VP W			Z 6,10,11
*5	GT6-5	N O VP VP VP W			Z 6,10,11
*6	GT6QA	N O VP VP VP W			Z 6,10,11
*7	GT10-1	N O VP VP VP W			Z 6,10,11
*8	GT10-2	N O VP VP VP W			Z 6,10,11
*9	GT10-3	N O VP VP VP W			Z 6,10,11
*10	GT10QA	N O VP VP VP W			Z 6,10,11
*11	GT11-1	N O VP VP VP W			Z 6,10,11
*12	GT11-2	N O VP VP VP W			Z 6,10,11
*13	GT11-3	N O VP VP VP W			Z 6,10,11
*14	SMT11-1	N O VP VP VP W			Z 6,10,11
*15	SMT11-2	N O VP VP VP W			Z 6,10,11

*15 SWT11-2 N O VP VP VFW

-CHANGE OR ENTER SITE ID AS NECESSARY; UP TO 9 ALPHANUMERIC CHARACTERS MAY BE USED
-CIRCLE FRACTIONS COLLECTED. ENTER DATE, TIME, FIELD DATA (IF REQUIRED), HAZARD CODE AND NOTES
-CODE C-CORROSION B-BEATING T-TONIC MUSIC H-OTHER ACUTE HAZARD; IDENTIFY SPECIFICITIES IF KNOWN

HAZARD COMPLETION		RECEIVED, BY	
LOGSHEETS WITH SAMPLES TO USE	(NAME/ORGANIZATION/DATE/TIME)	LOGSHEETS WITH SAMPLES TO USE	(NAME/ORGANIZATION/DATE/TIME)
PLEASE RETURN			

RELINQUISHED BY: (NAME/Organization/Office) _____
DATE: 1 APR 86 / 1016/86
LOCALITY: _____
COUNTRY: _____
TIME OF DAY: _____

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ENVIRONMENTAL SCIENCE & ENGINEERING 09-30-86 *** FIELD LOGSHEET *** FIELD GROUP: TYNDL6
PROJECT NUMBER 86449 0000 PROJECT NAME: TYNDALL AFB LAB COORD. DILNA HALE

ESE # SITE/STA HAZ? FRACTIONS(CIRCLE) DATE TIME PARAMETER LIST
*1 GT3-1 ED N O VP VP VP

*2 GT3-2 ED N O VP VP VP

*3 GT3-3 ED N O VP VP VP

*4 GT3-4 ED N O VP VP VP

*5 GT3-5 ED N O VP VP VP

*6 GT3-6 ED N O VP VP VP

*7 GT3-7 ED N O VP VP VP

*8 GT3QA ED N O VP VP VP

*9 GT9-1 ED N O VP VP VP

*10 GT9-2 ED N O VP VP VP

*11 GT9-3 ED N O VP VP VP

*12 GT9-4 ED N O VP VP VP

*13 GT9QA ED N O VP VP VP

NOTE -CHANGE OR ENTER SITE ID AS NECESSARY; UP TO 9 ALPHANUMERIC CHARACTERS MAY BE USED
-CIRCLE FRACTIONS COLLECTED. ENTER DATE, TIME, FIELD DATA (IF REQUIRED), HAZARD CODE AND NOTES
-HAZARD CODES: I-IGNITABLE C-COMPOSITE R-REACTIVE T-TOXIC WASTE H-OTHER ACUTE HAZARD; IDENTIFY SPECIFICS IF KNOWN
-PLEASE RETURN LOGSHEETS WITH SAMPLES TO ESE

RELINQUISHED BY: (NAME/ORGANIZATION/DATE/TIME) RECEIVED BY (NAME/ORGANIZATION/DATE/TIME)

1 DHA/ESE/10/13/86 1548 D. Hale/ESE/10/14/115

2

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OTHER FIELD NOTES FOR FIELD GROUP TYNDL6:

see by under lab 2 3, 9

ENVIRONMENTAL SCIENCE & ENGINEERING 10-02-86 *** FIELD LOGSHEET *** FIELD GROUP: TYNDLS
 PROJECT NUMBER 86449 0000 PROJECT NAME: TYNDALL AFB LAB COORD. DILNA HALE

TYNDLS			DATE	TIME	PARAMETER LIST
E #	SITE/STA NAME	FRACTIONS(CIRCLE)			EPMP
01	SOTEP1	SS	10/5/86	1400	EPMP
02	SOTEP2	SS			EPMP
03	SOTEP3	SS	10/5/86	1400	EPMP
04	SOTEP4	SS			EPMP
05	SOTEP5	SS			EPMP
06	SOTEP6	SS			EPMP

NOTE - CHANGE OR ENTER SITE ID AS NECESSARY, UP TO 9 ALPHANUMERIC CHARACTERS MAY BE USED
 - CIRCLE FRACTIONS COLLECTED, ENTER DATE, TIME, FIELD DATA (IF REQUIRED), HAZARD CODE AND NOTES
 - HAZARD CODES: I-IGNITABLE C-COMBUSTIVE R-REACTIVE T-TOXIC M-OTHER ACUTE HAZARD: IDENTIFY SPECIES IF KNOWN
 - PLEASE RETURN LOGSHEETS WITH SAMPLES TO ESE

RELINQUISHED BY: (NAME/ORGANIZATION/DATE/TIME) RECEIVED BY: (NAME/ORGANIZATION/DATE/TIME)

1 Phil Jondrow ESE 10/5 @ 1800 to John Marshall for transport to ESE Lab
 2
 3

OTHER FIELD NOTES FOR FIELD GROUP TYNDLS:

ALARM COGNOS

SOTEP-1 10/05/86 17:45

log

24 TYNDLS * 3 10/14

ENVIRONMENTAL SCIENCE & ENGINEERING 10-02-86 *** FIELD LOGSHEET *** FIELD GROUP: TYNDLS
PROJECT NUMBER 86449 0000 PROJECT NAME: TYNDALL AFB LAB COORD. DILNA HALE

ESE #	SITE/STA HAZ?	FRACTIONS(CIRCLE)	DATE	TIME	PARAMETER	TEST
"1	SOTEP 9-4	SS	12/27/86	1745	EPMP	
"2	SOTEP 27-3	SS			EPMP	
"3	SOTEP 3	SS		1545	EPMP	
"4	SOTEP 4	SS			EPMP	
"5	SOTEP 5	SS			EPMP	
"6	SOTEP 6	SS			EPMP	

NOTE -CHANGE OR ENTER SITE ID AS NECESSARY; UP TO 9 ALPHANUMERIC CHARACTERS MAY BE USED
-CIRCLE FRACTIONS COLLECTED; ENTER DATE, TIME, FIELD DATA (IF REQUIRED), HAZARD CODE AND NOTES
-HAZARD CODES: I-IGNITABLE C-CORROSIVE R-REACTIVE T-TOXIC NASTIC R-OTHER ACUTE HAZARD; IDENTIFY SPECIFICS IF KNOWN
-PLEASE RETURN LOGSHEETS WITH SAMPLES TO ESE

RELINQUISHED BY: (NAME/ORGANIZATION/DATE/TIME) RECEIVED BY (NAME/ORGANIZATION/DATE/TIME)

1 WGE

2 Q. HALE / ESE / 10-9-1315

3

OTHER FIELD NOTES FOR FIELD GROUP TYNDLS:

ENVIRONMENTAL SCIENCE & ENGINEERING 09-30-86 *** FIELD LOGSHEET *** FIELD GROUP: TYNDL6
PROJECT NUMBER 86449 0000 PROJECT NAME: TYNDALL AFB LAB COORD. DILNA HALE

TYNDL6

DATE TIME PARAMETER LIST

ESE # SITE/STA HAZ? FRACTIONS(CIRCLE)
#1 GT3-1 ED N O VP VP VP

#2 GT3-2 ED N O VP VP VP

#3 GT3-3 ED N O VP VP VP

#4 GT3-4 ED N O VP VP VP

#5 GT3-5 ED N O VP VP VP

#6 GT3-6 ED N O VP VP VP

#7 GT3-7 ED N O VP VP VP

#8 GT3QA ED N O VP VP VP

#9 GT9-1 ED N O VP VP VP

#10 GT9-2 ED N O VP VP VP

#11 GT9-3 ED N O VP VP VP

#12 GT9-4 ED N O VP VP VP

#13 GT9QA ED N O VP VP VP

NOTE: CHANGE OR ENTER SITE ID AS NECESSARY, UP TO 9 ALPHANUMERIC CHARACTERS MAY BE USED
CIRCLE FRACTIONS COLLECTED. ENTER DATE, TIME, FIELD DATA (IF REQUIRED), HAZARD CODE AND NOTES
HAZARD CODES: I-IMMITABLE C-CORROSIVE R-REACTIVE T-TOXIC MASTIC H-OTHER ACUTE HAZARD; IDENTIFY SPECIFICS IF KNOWN
PLEASE RETURN LOGSHEETS WITH SAMPLES TO ESE

RELINQUISHED BY: (NAME/ORGANIZATION/DATE/TIME) RECEIVED BY: (NAME/ORGANIZATION/DATE/TIME)

Dilna Tyndall 2:55 10/24/86 @ 1400 [Signature] 10/24/86

OTHER FIELD NOTES FOR FIELD GROUP TYNDL6:

Transported to ESE Lab by MT.

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ENVIRONMENTAL SCIENCE & ENGINEERING 10-06-86 *** FIELD LOGSHEET *** FIELD GROUP: TYNDL7
PROJECT NUMBER 86449 0000 PROJECT NAME: TYNDALL AFB LAB COORD. DILNA HALE

ESE #	SITE/STA HAZ?	FRACTIONS(CIRCLE)	DATE	TIME	PARAMETER LIST
*1	SDT11-1	SS SV			SZ 2,11
*2	SDT11-2	SS SV			SZ 2,11
*3	SDT2-1	SS SV			SZ 2,11

NOTE -CHANGE OR ENTER SITE ID AS NECESSARY; UP TO 9 ALPHANUMERIC CHARACTERS MAY BE USED
-CIRCLE FRACTIONS COLLECTED. ENTER DATE, TIME FIELD DATA (IF REQUIRED), HAZARD CODE AND NOTES
-HAZARD CODES: I-IGNITABLE C-CORROSIVE R-REACTIVE T-TOXIC WAST E-OTHER ACUTE HAZARD; IDENTIFY SPECIFICS IF KNOWN
-PLEASE RETURN LOGSHEETS WITH SAMPLES TO ESE

RELINQUISHED BY: (NAME/ORGANIZATION/DATE/TIME) RECEIVED BY (NAME/ORGANIZATION/DATE/TIME)

1					
2					
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OTHER FIELD NOTES FOR FIELD GROUP TYNDL7:

ENVIRONMENTAL SCIENCE & ENGINEERING 00 10-86 *** FIELD LOGSHEET *** FIELD GROUP: TYNDLS
 PROJECT NUMBER 86449 0000 PROJECT NAME: TYNDALL AFB LAB COORD. DILNA HALE

TYNDLS

#	SITE/STA HAZ?	FRACTIONS(CIRCLE)	DATE	TIME	PARAMETER
*1	GT7-1	N VP VP VP W	10/18/86	12:30	ZONE 7,8
*2	GT7-2	N VP VP VP W	10/18/86	12:30	ZONE 7,8
*3	GT7-3	N VP VP VP W	10/18/86	12:30	ZONE 7,8
*4	GT7-QA	N VP VP VP W	10/18/86	12:30	ZONE 7,8
*5	GT8-1	N VP VP VP W	10/18/86	12:30	ZONE 7,8
*6	GT8-3	N VP VP VP W	10/18/86	12:30	ZONE 7,8
*7	GT8-4	N VP VP VP W	10/18/86	12:30	ZONE 7,8
*8	GT8QA	N VP VP VP W	10/18/86	12:30	ZONE 7,8
*9	BWT7-1	N VP VP VP W	10/18/86	12:30	ZONE 7,8

NOTE - CHANGE OR ENTER SITE ID AS NECESSARY; UP TO 9 ALPHANUMERIC CHARACTERS MAY BE USED
 - CIRCLE FRACTIONS COLLECTED. ENTER DATE, TIME, FIELD DATA (IF REQUIRED), HAZARD CODE AND NOTES
 - HAZARD CODES: I-IGNITABLE C-CORROSIVE R-REACTIVE T-TOXIC WASTE H-OTHER ACUTE HAZARD: IDENTIFY SPECIFICS IF KNOWN
 - PLEASE RETURN LOGSHEETS WITH SAMPLES TO ESE

RELINQUISHED BY: (NAME/ORGANIZATION/DATE/TIME) RECEIVED BY: (NAME/ORGANIZATION/DATE/TIME)

1 JAC & Associates, Inc. 10/18/86 07:30
 2 JAC & Associates, Inc. 10/18/86 13:50
 3

OTHER FIELD NOTES FOR FIELD GROUP TYNDLS:

ENVIRONMENTAL SCIENCE & ENGINEERING 00-10-86 *** FIELD LOGSHEET *** FIELD GROUP: TYNDL3
 PROJECT NUMBER 86449 0000 PROJECT NAME: TYNDALL AFB LAB COORD. DILNA HALE

TYNDL3

1	SITE/STA HAZ?	FRACTIONS(CIRCLE)	DATE	TIME	PARAMETER
1	GT5-1	N VP VP VP VP W	10/27/86	11:45	ZONE 5
2	GT5-2	N VP VP VP VP W	11:35	11:35	ZONE 5
3	GT5-3	N VP VP VP VP W	12:00	12:00	ZONE 5
4	GT5QA	N VP VP VP VP W			ZONE 5

NOTE -CHANGE OR ENTER SITE ID AS NECESSARY; UP TO 9 ALPHANUMERIC CHARACTERS MAY BE USED
 -CIRCLE FRACTIONS COLLECTED. ENTER DATE, TIME, FIELD DATA (IF REQUIRED), HAZARD CODE AND NOTES
 -HAZARD CODES: I-IRRITANT C-CORROSIVE R-REACTIVE T-TOXIC WASTE H-OTHER ACUTE HAZARD; IDENTIFY SPECIFICS IF KNOWN
 -PLEASE RETURN LOGSHEETS WITH SAMPLES TO ESE

RELINQUISHED BY: (NAME/ORGANIZATION/DATE/TIME) RECEIVED BY: (NAME/ORGANIZATION/DATE/TIME)

1 PAR/ESE/10/27/86 1347

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OTHER FIELD NOTES FOR FIELD GROUP TYNDL3:

ENVIRONMENTAL SCIENCE & ENGINEERING 09-30-86 *** FIELD LOGSHEET *** FIELD GROUP: TYNDL3
 PROJECT NUMBER 86449 0000 PROJECT NAME: TYNDALL AFB LAB COORD. DILNA HALE

TYNDL3

SE #	SITE/STA HAZ?	FRACTIONS/CIRCLES	DATE	TIME	PARAMETER LIST
*1	GT5-1	N/ VP/VP VP W/ W	10/13	11:40	ZONE 5
*2	GT5-2	N/ VP/VP VP W/ W		11:35	ZONE 5
*3	GT5-3	N/ VP/VP VP W/ W		12:00	ZONE 5
*4	GT5QA	N VR/VP VP W/ W			ZONE 5

NOTE -CHANGE OR ENTER SITE ID AS NECESSARY: UP TO 9 ALPHANUMERIC CHARACTERS MAY BE USED
 -CIRCLE FRACTIONS COLLECTED. ENTER DATE, TIME, FIELD DATA (IF REQUIRED), HAZARD CODE AND NOTES
 -HAZARD CODES: I-IGNITANT C-CORROSIVE R-REACTIVE T-TOXIC WASTE B-OTHER ACUTE HAZARD; IDENTIFY SPECIFICS IF KNOWN
 -PLEASE RETURN LOGSHEETS WITH SAMPLES TO ESE

RELINQUISHED BY: (NAME/ORGANIZATION/DATE/TIME) RECEIVED BY: (NAME/ORGANIZATION/DATE/TIME)
 1 PAR/ESE/10/13/86 1557 9 HALE/ESE/10-14/1115
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OTHER FIELD NOTES FOR FIELD GROUP TYNDL3:

ENVIRONMENTAL SCIENCE & ENGINEERING, INC. 05-50-00 PROJECT NAME: TYNDALL AFB FIELD GROUP: LINDSEY
 PROJECT NUMBER 86449 0000 FIELD COORD. DILNA HALE

TYNDLS

1 SITE/STN HAZ?	FRACTIONS (CIRCLE)	DATE	TIME	PARAMETER LIST
GT7-1	(N) (VP) (VP) (W)	10/10/86	0845	ZONE (7) 8
GT7-2	N VP VP VP W			ZONE 7, 8
GT7-3	(N) (VP) (VP) (W)	10/10/86	1015	ZONE (7) 8
GT7-QA	(N) (VP) (VP) (W)	10/10/86	1015	ZONE (7) 8
GT8-1	N VP VP VP W			ZONE 7, 8
GT8-3	N VP VP VP W			ZONE 7, 8
GT8-4	N VP VP VP W			ZONE 7, 8
GT8QA	N VP VP VP W			ZONE 7, 8
BWT7-11	N VP VP VP W			ZONE 7, 8

NOTE - CHANGE OR ENTER SITE ID AS NECESSARY; UP TO 9 ALPHANUMERIC CHARACTERS MAY BE USED
 - CIRCLE FRACTIONS COLLECTED. ENTER DATE, TIME, FIELD DATA (IF REQUIRED), HAZARD CODE AND NOTES
 - HAZARD CODES: I-IGNITABLE C-CORROSIVE R-REACTIVE T-TOXIC MAST H-OTHER ACUTE HAZARD; IDENTIFY SPECIFICS IF KNOWN
 - PLEASE RETURN LOGSHEETS WITH SAMPLES TO ESE

RELINQUISHED BY: (NAME/ORGANIZATION/DATE/TIME) RECEIVED BY (NAME/ORGANIZATION/DATE/TIME)
 1 *SAFETY/ENVIRONMENTAL/ES&E* *10/10/86*
 2 *SAFETY/ENVIRONMENTAL/ES&E* *10/12/86*
 3

OTHER FIELD NOTES FOR FIELD GROUP TYNDLS:

PROJECT NUMBER 80-449 0000 PROJECT NAME: TYNDALL AFB LAB CORP. FULLY RATED

TYNDLA

IE #	SITE/STA HAZ?	FRACTIONS(CIRCLE)	DATE	TIME	PARAMETER LIST
*1	GT6-1	N O VP VP VP W			Z 6,10,11
*2	GT6-2	N O VP VP VP W			Z 6,10,11
*3	GT6-3	N O VP VP VP W			Z 6,10,11
*4	GT6-4	N O VP VP VP W	10/21	1000	Z 6,10,11
*5	GT6-5	N O VP VP VP W	10/21	1045	Z 6,10,11
*6	GT6QA	N O VP VP VP W			Z 6,10,11
*7	GT10-1	N O VP VP VP W			Z 6,10,11
*8	GT10-2	N O VP VP VP W			Z 6,10,11
*9	GT10-3	N O VP VP VP W			Z 6,10,11
*10	GT10QA	N O VP VP VP W			Z 6,10,11
*11	GT11-1	N O VP VP VP W			Z 6,10,11
*12	GT11-2	N O VP VP VP W			Z 6,10,11
*13	GT11-3	N O VP VP VP W			Z 6,10,11
*14	SMT11-1	N O VP VP VP W			Z 6,10,11
*15	SMT11-2	N O VP VP VP W			Z 6,10,11

NOTE -CHANGE OR ENTER SITE ID AS NECESSARY; UP TO 9 ALPHANUMERIC CHARACTERS MAY BE USED
 -CIRCLE FRACTIONS COLLECTED. ENTER DATE, TIME FIELD DATA (IF REQUIRED), HAZARD CODE AND NOTES
 -HAZARD CODES: I-IGNITABLE C-CORROSIVE R-REACTIVE T-TOXIC WASTE H-OTHER ACUTE HAZARD: IDENTIFY SPECIFICS IF KNOWN
 -PLEASE RETURN LOGSHEETS WITH SAMPLES TO ESE

RELINQUISHED BY: (NAME/ORGANIZATION/DATE/TIME) RECEIVED BY: (NAME/ORGANIZATION/DATE/TIME)

1 Mark Jordan ESE 10/21/86 @ 1700 *David H. Hester* 10/21/86 1700
 2 *David Hester* 10/22/86 1213
 3

OTHER FIELD NOTES FOR FIELD GROUP TYNDLA:

ENVIRONMENTAL SCIENCE & ENGINEERING 09-30-86 *** FIELD LOGSHEET *** FIELD GROUP: TYNDL2
 PROJECT NUMBER 86449 0000 PROJECT NAME: TYNDALL AFB LAB COORD. DILNA HALE

SE #	SITE/STA HAZ?	FRACTIONS(CIRCLE)	DATE	TIME	PARAMETER LIST
*1	GLH2-1	N 0 0 VP VP VP			ZONE2
*2	GLH2-2	N 0 0 VP VP VP			ZONE2
*3	GLH2-3	N 0 0 VP VP VP			ZONE2
*4	GLH2-4	N 0 0 VP VP VP			ZONE2
*5	GLH2-7	N 0 0 VP VP VP	10/22	1315	ZONE2
*6	GLH2QA	N 0 0 VP VP VP	10/22		ZONE2
*7	GLH2-8	N 0 0 VP VP VP	10/22	1230	ZONE2
*8	GLH2-9	N 0 0 VP VP VP	10/22	1110	ZONE2
*9	SWLH2	N 0 0 VP VP VP			ZONE2

NOTE -CHANGE OR ENTER SITE ID AS NECESSARY: UP TO 9 ALPHANUMERIC CHARACTERS MAY BE USED
 -CIRCLE FRACTIONS COLLECTED. ENTER DATE, TIME, FIELD DATA (IF REQUIRED), HAZARD CODE AND NOTES
 -HAZARD CODES: I-IGNITABLE C-CORROSIVE R-REACTIVE T-TOXIC MASTE H-OTHER ACUTE HAZARD: IDENTIFY SPECIFICS IF KNOWN
 -PLEASE RETURN LOGSHEETS WITH SAMPLES TO ESE

RELINQUISHED BY: (NAME/ORGANIZATION/DATE/TIME) RECEIVED BY: (NAME/ORGANIZATION/DATE/TIME)
 1 Mark Jondana ESE 10/22/86 1630 *[Signature]* 2/22/86
 2 *[Signature]* ESE 10/23/86 1400
 3

OTHER FIELD NOTES FOR FIELD GROUP TYNDL2:

VIRONMENTAL SCIENCE & ENGINEERING 09-30-86 *** FIELD LOGSHEET *** FIELD GROUP: TYNDL6
 OBJECT NUMBER 86449 0000 PROJECT NAME: TYNDALL AFB LAB COORD. DILNA HALE

TYNDL6

1	SITE/STA HAZ?	FRACTIONS(CIRCLE)	ED N	O	VP	VP	VP	DATE	TIME	PARAMETER LIST
1	GT3-1		ED N	O	VP	VP	VP			
2	GT3-2		ED N	O	VP	VP	VP			
3	GT3-3		ED N	O	VP	VP	VP			
4	GT3-4		ED N	O	VP	VP	VP			
5	GT3-5		ED N	O	VP	VP	VP			
6	GT3-6		ED N	O	VP	VP	VP			
7	GT3-7		ED N	O	VP	VP	VP			
8	GT3QA		ED N	O	VP	VP	VP			
9	GT9-1,		ED N	O	VP	VP	VP			
10	GT9-2		ED N	O	VP	VP	VP			
11	GT9-3		ED N	O	VP	VP	VP	10/21	1310	
12	GT9-4		ED N	O	VP	VP	VP	10/21	1215	
13	GT9QA		ED N	O	VP	VP	VP			

RE - CHANGE OR ENTER SITE ID AS NECESSARY, UP TO 9 ALPHANUMERIC CHARACTERS MAY BE USED
 - CIRCLE FRACTIONS COLLECTED. ENTER DATE, TIME, FIELD DATA (IF REQUIRED), HAZARD CODE AND NOTES
 - HAZARD CODES: I-IGNITABLE C-CORROSIVE R-REACTIVE T-TOXIC WASTE H-OTHER ACUTE HAZARD; IDENTIFY SPECIFICS IF KNOWN
 - PLEASE RETURN LOGSHEETS WITH SAMPLES TO ESE

RELINQUISHED BY: (NAME/ORGANIZATION/DATE/TIME) RECEIVED BY: (NAME/ORGANIZATION/DATE/TIME)

1 Mark Jondura ESE 10/21/86 @ 1700 10/21 1700
 2 10/22/86 14:30
 3

HER FIELD NOTES FOR FIELD GROUP TYNDL6:

ENVIRONMENTAL SCIENCE & ENGINEERING 10-02-86 *** FIELD LOGSHEET *** FIELD GROUP: TYNDLS
 PROJECT NUMBER 86449 0000 PROJECT NAME: TYNDALL AFB LAB COORD. DILNA HALE

IE #	SITE/STA HAZ?	FRACTIONS(CIRCLE)	DATE	TIME	PARAMETER LIST EPMP
01	SOTEP1	SS			
02	SOTEP2	SS SV SV	10/16	0845-0845	EPMP SZ 2, 11
03	SOTEP3	SS SV SV	10/16	0915-0920	EPMP SZ 2, 11
04	SOTEP4	SS			EPMP
05	SOTEP5	SS			EPMP
06	SOTEP6	SS			EPMP

NOTE -CHANGE OR ENTER SITE ID AS NECESSARY: UP TO 9 ALPHANUMERIC CHARACTERS MAY BE USED
 -CIRCLE FRACTIONS COLLECTED. ENTER DATE, TIME, FIELD DATA (IF REQUIRED), HAZARD CODE AND NOTES
 -HAZARD CODES: I-IGNITABLE C-CORROSIVE R-REACTIVE T-TOXIC MASH B-OTHER ACUTE HAZARD: IDENTIFY SPECIFICS IF KNOWN
 -PLEASE RETURN LOGSHEETS WITH SAMPLES TO ESE

RELINQUISHED BY: (NAME/ORGANIZATION/DATE/TIME) RECEIVED BY: (NAME/ORGANIZATION/DATE/TIME)

1 *Mark J. G. [Signature]* ESE 10/16/86 1700 *Harold J. [Signature]* ESE 10/17/86 15:00
 2
 3

OTHER FIELD NOTES FOR FIELD GROUP TYNDLS:

MENTAL SCIENCE & ENGINEERING 09-30-86 *** FIELD LOGSHEET *** FIELD GROUP: TYNDL6
NUMBER 86449 0000 PROJECT NAME: TYNDALL AFB LAB COORD. DILNA HALE

TYND1.6

TYPE/STA HAZ? FRACTIONS (TABLE)
GP3-1 ED N/O VP VP VP

PARAMETER LIST

DATE TIME

TYPE/STA HAZ? FRACTIONS (TABLE)
GP3-1 ED N/O VP VP VP

ED N/ Q' VP VP VP

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013-3 ED N O/ VI VP VP

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GP3-4 ED N O VP VP VP

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CT3-5 ED N O VI VP VP

GT'3-6 ED N O VI' VP VP

G13-7 ED N O VP VP VP

GT3QA ED N O VI VP VP

GT9-1, ED N O VP VP VP

GP9-2 ED N O VP VP VP

CT9-3 ED N O VI VP VP

ED N O VI' VP VP

CT9QA ED N Q VI VP VP

OR ENTER SITE ID AS NECESSARY; UP TO 9 ALPHANUMERIC CHARACTERS MAY BE USED
FRACTIONS COLLECTED. ENTER DATE, TIME, FIELD DATA (IF REQUIRED), HAZARD CODE AND NOTES
CODES: I-IGNITABLE C-CORROSIVE R-REACTIVE T-TOXIC H-OTHER ACUTE HAZARD: IDENTIFY SPECIFICS IF KNOWN
RETURN LOGSHEETS WITH SAMPLES TO ESE

UNQUISHED BY: (NAME/ORGANIZATION/DATE/TIME) RECEIVED BY (NAME/ORGANIZATION/DATE/TIME)

FILE 101-107

10/11/57 C and Room 5 Tudor City

ALL NOTES FOR FIELD GROUP 'TYNDL6':

31 Dec 1964

ORIENTAL SCIENCE & ENGINEERING 09-30-86 *** FIELD LOGSHEET *** FIELD GROUP: TYNDL1
 PROJECT NAME: TYNDALL AFB LAB COORD. DILNA HADJI

TYNDL1
 SITE/STA HAZ? FRACTIONS(CIRCLE) DATE TIME
 SOT11-1 SS/SS SV SV 10/15/86 1515
 SOT11-2 SS SS SV SV
 SOT11-3 SS SS SV SV

CHANGE OR ENTER SITE ID AS NECESSARY; UP TO 9 ALPHANUMERIC CHARACTERS MAY BE USED
 CIRCLE FRACTIONS COLLECTION; ENTER DATE, TIME, FIELD DATA (IF REQUIRED), HAZARD CODE AND NOTES
 HAZARD CODES: I-IGNITABLE C-CORROSIVE R-REACTIVE T-TOXIC WASTE H-OTHER ACUTE HAZARD; IDENTIFY SPECIFICS IF KNOWN
 PLEASE RETURN LOGSHEETS WITH SAMPLES TO ESE
 ELINQUISHED BY: (NAME/ORGANIZATION/DATE/TIME) RECEIVED BY (NAME/ORGANIZATION/DATE/TIME)
 J. L. Jendana ESE 10/15 @ 1800 to John Maxwell to transport to ESE LAB
 J. R. Jendana ESE 10/11/87 CALD from ST. John's

OTHER FIELD NOTES FOR FIELD GROUP TYNDL1:

APPENDIX Q

LABORATORY QUALITY CONTROL DATA

FIELD GROUP
TYNDALL - 1

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ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
 SAMPLE/BATCH REPORT FOR FIELD GROUP TYNDL1

DATE: 01 MAR 1988

SAMPLE ID	PARAMETER NAME	BATCH #
TYNDL1=1	HYDROCARBONS, PETROL	34700
	LEAD, SED	34900
	MOISTURE	34428
	VOLATILE ORGANICS(GCMS)	34449
TYNDL1=2	HYDROCARBONS, PETROL	34700
	LEAD, SED	34900
	MOISTURE	34428
	VOLATILE ORGANICS(GCMS)	34449
TYNDL1=3	HYDROCARBONS, PETROL	34700
	LEAD, SED	35635
	MOISTURE	34428
	VOLATILE ORGANICS(GCMS)	34449

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
 QUALITY CONTROL SUMMARY FOR TYNDALL AFB - FIELD GROUP TYNDL1
 DATE: 01 MAR 1988

NAME	UNITS	STORET=METHOD	BATCH	SAMPLE	DATE	FOUND	R.P.D.	MAX % REPL DIFF
LEAD SED	UG/G-DRY	1052*GFAA	35635	RP=COES02*1	22 JAN 87	782.9731	0.0	20
MOISTURE	WGT MT	70320*1	35635	RP=MXMLS*1	22 JAN 87	24.9	2.44	
			34428	RP=TYNDL1*3	21 OCT 86	6.2	6.67	

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
 QUALITY CONTROL SUMMARY FOR TYNDALL AFB - FIELD GROUP TYNDL1
 DATE: 01 MAR 1988

PAGE 3

NAME	UNITS	STORE METHOD	BATCH	SAMPLE	DATE	Sample Matrix Spike Recovery Summary	FOUND	REC.	REC. CRIT.	UNSPINED	R.P.D.	R.P.D. CRIT.
HYDROCARBONS, PETROL	UC/G-DRY	98233*1	34700	SPH=TYNDL1*2	13 NOV 86	TARGET	769	119.32	70.2 - 124.8	258		
LEAD, SED	UC/G-DRY	1052*GFAA	34900	SPH=TYNDL1*3	25 NOV 86		254	109.84	80 - 120	97.8		
			35635	SPH=TYNDL1*3	22 JAN 87		6.77	117.61	80 - 120	0.52		
				SPH=TYNDL1*3			6.99	122.45	80 - 120	0.52		
										3.20		

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
 QUALITY CONTROL SUMMARY FOR TYNDALL AFB - FIELD GROUP TYNDL1
 DATE: 01 MAR 1988

NAME	UNITS	STORE/METHOD	BATCH	SAMPLE	Method Blank Sample Summary	
					DATE	FOUND
HYDROCARBONS, PETROL	UC/G-DRY	98233=1	34700	MB=NONE=1	13 NOV 86	.8639
	UC/G-DRY	1052=6FAA	34900	MB=NONE=1	25 NOV 86	.4583
			35635	MB1=NONE=1	22 JAN 87	.7519
				MB2=NONE=1		.6292
LEAD, SED				MB1=NONE=2		.377

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FIELD GROUP
TYNDALL - 2

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ENVIRONMENTAL SCIENCE AND ENGINEERING, INC. SAMPLE / BATCH REPORT FOR FIELD GROUP TYNDL2

PAGE 1

DATE: 01 MAR 1988

SAMPLE ID	PARAMETER NAME	BATCH #
TYNDL2*1	VOLATILE HALOCARBONS(601)	34825
	VOLATILE AROMATICS(602)	34825
	HYDROCARBONS, PETRO	34552
	LEAD, TOTAL	34894
TYNDL2*2	VOLATILE HALOCARBONS(601)	34825
	VOLATILE AROMATICS(602)	34825
	HYDROCARBONS, PETRO	34552
	LEAD, TOTAL	34894
TYNDL2*3	VOLATILE HALOCARBONS(601)	34825
	VOLATILE AROMATICS(602)	34825
	HYDROCARBONS, PETRO	34552
	LEAD, TOTAL	34894
TYNDL2*4	VOLATILE HALOCARBONS(601)	34825
	VOLATILE AROMATICS(602)	34825
	HYDROCARBONS, PETRO	34552
	LEAD, TOTAL	34894
TYNDL2*5	VOLATILE HALOCARBONS(601)	34825
	VOLATILE AROMATICS(602)	34825
	HYDROCARBONS, PETRO	34552
	LEAD, TOTAL	34894
TYNDL2*6	VOLATILE HALOCARBONS(601)	NA
	VOLATILE AROMATICS(602)	NA
	HYDROCARBONS, PETRO	34627
	LEAD, TOTAL	34894
TYNDL2*7	VOLATILE HALOCARBONS(601)	34825
	VOLATILE AROMATICS(602)	34825
	HYDROCARBONS, PETRO	34627
	LEAD, TOTAL	34894
TYNDL2*8	VOLATILE HALOCARBONS(601)	34825
	VOLATILE AROMATICS(602)	34825
	HYDROCARBONS, PETRO	34627
	LEAD, TOTAL	34894
TYNDL2*9	VOLATILE HALOCARBONS(601)	34825
	VOLATILE AROMATICS(602)	34825
	HYDROCARBONS, PETRO	34552
	LEAD, TOTAL	34894

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
 QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE BASE-FIELD GROUP TYNDL2

NAME	UNITS	STORE#	METHOD	BATCH	SAMPLE	Replicate Analysis Sample Summary			
						DATE	FOUND	R.P.D.	MAX % REPL DIFF
HYDROCARBONS, PETRO	MG/L	45501-1		34627	RP1-TYNDL6-10	06 NOV 86	.1642	30.90	20
HYDROCARBONS, PETRO	MG/L	45501-1		34627	RP2-TYNDL6-10	06 NOV 86	.1642	0.0	

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC. QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE BASE-FIELD GROUP TYNDL2

Standard Matrix Spike Recovery and Replicate Summary									
NAME	UNITS	STORET-METHOD	BATCH	SAMPLE	DATE	TARGET	FOUND	REC. CRIT.	MET-BLN
CARBON TETRACHLORIDE	UG/L	32102*HA	34825	SP1=NONE#666	21 OCT 86	0.20	0.17	55 - 131	0
				SP2=NONE#666	21 OCT 86	0.20	0.21	55 - 131	0
				SP3=NONE#666	21 OCT 86	0.20	0.21	55 - 131	0
				SP4=NONE#666	21 OCT 86	0.20	0.17	55 - 131	0
1,1-DICHLOROETHANE	UG/L	34496*HA		SP5=NONE#666		0.20	0.17	55 - 131	0
				SP6=NONE#666		0.20	0.18	55 - 131	0
				SP1=NONE#666		0.20	0.17	55 - 131	0
				SP2=NONE#666		0.20	0.17	55 - 131	0
1,2-DICHLOROETHANE	UG/L	34531*HA		SP3=NONE#666		0.20	0.17	55 - 131	0
				SP4=NONE#666		0.20	0.17	55 - 131	0
				SP5=NONE#666		0.20	0.17	55 - 131	0
				SP6=NONE#666		0.20	0.17	55 - 131	0
1,1,1-TRICHLOROETHANE	UG/L	34506*HA		SP1=NONE#666		0.20	0.19	55 - 131	0
				SP2=NONE#666		0.20	0.19	55 - 131	0
				SP3=NONE#666		0.20	0.18	55 - 131	0
				SP4=NONE#666		0.20	0.18	55 - 131	0
ETHYLBENZENE	UG/L	34371*PI		SP5=NONE#666		0.20	0.17	55 - 131	0
				SP6=NONE#666		0.20	0.18	55 - 131	0
				SP1=NONE#666		0.20	0.18	55 - 131	0
				SP2=NONE#666		0.20	0.18	55 - 131	0
TOLUENE	UG/L	34010*PI		SP3=NONE#666		0.20	0.20	55 - 131	0
				SP4=NONE#666		0.20	0.20	55 - 131	0
				SP5=NONE#666		0.20	0.20	55 - 131	0
				SP6=NONE#666		0.20	0.20	55 - 131	0
HYDROCARBONS, PETRO	MG/L	45501*1	34552	SP1=NONE#1	30 OCT 86	8200.0	3.66	70.2 - 124.8	0.0758
				SP2=NONE#1	30 OCT 86	8200.0	3.71	70.2 - 124.8	0.0758
				SP3=NONE#1	06 NOV 86	8200.0	4.26	70.2 - 124.8	0.1055
				SP4=NONE#1	06 NOV 86	8200.0	4.31	70.2 - 124.8	0.1055
LEAD, TOTAL	UG/L	1051*GTAA	34553	SP5=NONE#1	29 OCT 86	50.00	59.3	80 - 120	5.4589
				SP6=NONE#1	25 NOV 86	50.00	57.1	80 - 120	3.3067
				SP1=NONE#1		50.00	59.3	80 - 120	3.3067
				SP2=NONE#1		50.00	59.3	80 - 120	3.3067
				SP3=NONE#1		50.00	61.4	80 - 120	3.3067
				SP4=NONE#1		50.00	63.6	80 - 120	3.3067
				SP5=NONE#1		50.00	65.7	80 - 120	3.3067
				SP6=NONE#1		50.00	59.3	80 - 120	3.3067

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE BASE-FIELD GROUP TYNDL2

NAME	UNITS	STORET-METHOD	BATCH	SAMPLE	Sample Matrix Spike Recovery Summary				REC. CRIT.	UNSPINED	R.P.D.	R.P.D. CRIT.
					DATE	TARGET	FOUND	\$REC				
CARBON TETRACHLORIDE	UG/L	32102*HA	34825	SPR2*TYNDL2*7	21 OCT 86	0.20	0.20	101.00	55 - 131	0.0		
CARBON TETRACHLORIDE	UG/L	32102*HA	34825	SPR1*TYNDL4*1	21 OCT 86	0.20	0.17	86.50	55 - 131	0.0		
				SPR3*TYNDL4*7		0.20	0.17	85.00	55 - 131	0.0		
1,1-DICHLOROETHANE	UG/L	34496*HA		SPR2*TYNDL2*7		0.20	0.20	100.50	57 - 121	0.0		
				SPR1*TYNDL4*1		0.20	0.19	93.00	57 - 121	0.0		
				SPR3*TYNDL4*7		0.20	0.17	85.00	57 - 121	0.0		
1,2-DICHLOROETHANE	UG/L	34531*HA		SPR2*TYNDL2*7		0.20	0.23	115.50	63 - 135	0.0		
				SPR1*TYNDL4*1		0.20	0.20	102.00	63 - 135	0.0		
				SPR3*TYNDL4*7		0.20	0.19	94.50	63 - 135	0.0		
1,1,1-TRICHL'ETHANE	UG/L	34506*HA		SPR2*TYNDL2*7		0.20	0.20	101.00	53 - 125	0.0		
				SPR1*TYNDL4*1		0.20	0.20	99.00	53 - 125	0.0		
				SPR3*TYNDL4*7		0.20	0.17	83.00	53 - 125	0.0		
ETHYLBENZENE	UG/L	34371*PI		SPR2*TYNDL2*7		2.52	2.80	111.11	48 - 144	0.0		
				SPR1*TYNDL4*1		2.22	2.28	102.70	48 - 144	0.0		
				SPR3*TYNDL4*7		2.44	2.05	92.34	48 - 144	0.0		
TOLUENE	UG/L	34010*PI		SPR2*TYNDL2*7		2.44	2.45	100.41	59 - 135	0.0		
				SPR1*TYNDL4*1		2.14	2.34	109.35	59 - 135	0.0		
				SPR3*TYNDL4*7		2.14	2.06	96.26	59 - 135	0.0		
HYDROCARBONS, PETRO	MG/L	45501*1	34552	SPR*TYNDL2*9	30 OCT 86	8225.0	5.21	22.16	70.2 - 124.8	4.20		
LEAD, TOTAL	UG/L	1051*GFAA	34894	SPR*PPPE-3*3	25 NOV 86	50.00	56.0	114.07	80 - 120	0		
				SPR*SEMR1*2		100.00	126	114.15	80 - 120	11.8		
				SPR*TYNDL2*1		50.00	51.7	105.46	80 - 120	0		
				SPR*TYNDL4*1		50.00	71.0	120.52	80 - 120	10.8		
				SPR*TYNDL4*12		100.00	66.7	133.44	80 - 120	.00002		
				SPR*TYNDL4*4		50.00	145	114.15	80 - 120	31.2		
				SPR*TYNDL6*10		50.00	72.1	131.28	80 - 120	6.46		
				SPR*TYNDL6*12		50.00	62.4	116.22	80 - 120	4.30		
				SPR*TYNDL6*9		100.00	132	96.93	80 - 120	35.5		
						100.00	137	108.76	80 - 120	28.0		

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE

NAME	UNITS	STORE#	METHOD	BATCH	SAMPLE	DATE	FOUND
BROMODICHLOROMETHANE	UG/L	32101#HA	34825	MB#NONE	666	21 OCT 86	0
BROMOFORM	UG/L	32104#HA	34825	MB#NONE	666	21 OCT 86	0
BROMOMETHANE	UG/L	34413#HA		MB#NONE	666		0
CARBON TETRACHLORIDE	UG/L	32102#HA		MB#NONE	666		0
CHLOROBENZENE	UG/L	34301#HA		MB#NONE	666		0
CHLOROETHANE	UG/L	34311#HA		MB#NONE	666		0
2-CHLOROETHYL VINYL ETHER	UG/L	34576#HA		MB#NONE	666		0
CHLOROFORM	UG/L	32106#HA		MB#NONE	666		0
CHLOROMETHANE	UG/L	34418#HA		MB#NONE	666		0
DIBROMOCHLOROMETHANE	UG/L	32103#HA		MB#NONE	666		0
DICHLOROBENZENE, TOT.	UG/L	81524#HA		MB#NONE	666		0
DICHLORODIFLUORO METHANE	UG/L	34666#HA		MB#NONE	666		0
1,1-DICHLOROETHANE	UG/L	34496#HA		MB#NONE	666		0
1,2-DICHLOROETHANE	UG/L	34531#HA		MB#NONE	666		0
1,1,1-DICHLOROETHYLENE	UG/L	34501#HA		MB#NONE	666		0
TRANS-1,2-DICHLORO ETHENE	UG/L	34546#HA		MB#NONE	666		0
1,2-DICHLOROPROPANE	UG/L	34211#HA		MB#NONE	666		0
CIS-1,3-DICHLORO PROPENE	UG/L	34704#HA		MB#NONE	666		0
TRANS-1,3-DICHLORO PROPENE	UG/L	34699#HA		MB#NONE	666		0
METHYLENE CHLORIDE	UG/L	34423#HA		MB#NONE	666		0
1,1,2,2-TETRACHLORO ETHANE	UG/L	34516#HA		MB#NONE	666		0
TETRACHLOROETHENE	UG/L	34475#HA		MB#NONE	666		0
1,1,1-TRICHL'ETHANE	UG/L	34506#HA		MB#NONE	666		0
1,1,2-TRICHL'ETHANE	UG/L	34511#HA		MB#NONE	666		0
TRICHLOROETHENE	UG/L	39180#HA		MB#NONE	666		0
TRICHL'FLUOROMETHANE	UG/L	34488#HA		MB#NONE	666		0
VINYL CHLORIDE	UG/L	39175#HA		MB#NONE	666		0
BENZENE	UG/L	34030#P1		MB#NONE	666		0
ETHYLBENZENE	UG/L	34371#P1		MB#NONE	666		0
TOLUENE	UG/L	34010#P1		MB#NONE	666		0
HYDROCARBONS, PETRO	MG/L	45501#1	34552	MB#NONE	666	30 OCT 86	0.758
			34527	MB#NONE	666	06 NOV 86	1.055
			34553	MB#NONE	666	29 OCT 86	5.4589
			34894	MB1#NONE	666	25 NOV 86	3.3067
				MB2#NONE	666		4.3828
				MB3#NONE	666		5.4589
LEAD, TOTAL	UG/L	1051#GFAA					

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FIELD GROUP
TYNDALL - 3

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ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
 SAMPLE / BATCH REPORT FOR FIELD GROUP TYNDL3

PAGE 1

DATE: 02 MAR 1988

SAMPLE ID	PARAMETER NAME	BATCH #
TYNDL3=1	VOLATILE HALOCARBONS(601)	34825
	VOLATILE AROMATICS(602)	34825
	PCAP METALS	34367
	MERCURY	34377
TYNDL3=2	VOLATILE HALOCARBONS(601)	34563
	VOLATILE AROMATICS(602)	34825
	PCAP METALS	34367
	MERCURY	34377
TYNDL3=3	VOLATILE HALOCARBONS(601)	34563
	VOLATILE AROMATICS(602)	34825
	PCAP METALS	34367
	MERCURY	34377
TYNDL3=4	VOLATILE HALOCARBONS(601)	34563
	VOLATILE AROMATICS(602)	34825
	PCAP METALS	34367
	MERCURY	NA

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.

QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE BASE-FIELD FROUP TYNDL3

Standard Matrix Spike Recovery and Replicate Summary

NAME	UNITS	STORET-METHOD	BATCH	SAMPLE	DATE	TARGET	FOUND	\$REC	REC CRIT	MET-BIN	R.P.D.	R.P.D. CRIT
CARBON TETRACHLORIDE	UG/L	32102=HA	34825	SP1=NONE#666	21 OCT 86	0.20	0.17	86.00	55 - 131	0	0	31.00
CARBON TETRACHLORIDE	UG/L	32102=HA	34825	SP2=NONE#666	21 OCT 86	0.20	0.21	107.00	55 - 131	0	0	31.00
				SP3=NONE#666		0.20	0.21	104.00	55 - 131	0	0.0	
				SP4=NONE#666		0.20	0.17	85.00	55 - 131	0	0.0	
				SP5=NONE#666		0.20	0.18	91.00	55 - 131	0	15.38	
1,1-DICHLOROETHANE	UG/L	34496=HA		SP1=NONE#666		0.20	0.17	84.00	57 - 121	0	0	30.00
				SP2=NONE#666		0.20	0.17	87.00	57 - 121	0	0.0	
				SP3=NONE#666		0.20	0.23	114.00	57 - 121	0	0	30.00
				SP4=NONE#666		0.20	0.21	107.00	57 - 121	0	21.05	
				SP5=NONE#666		0.20	0.19	92.50	57 - 121	0	11.11	
				SP6=NONE#666		0.20	0.19	95.50	57 - 121	0	11.11	
1,2-DICHLOROETHANE	UG/L	34531=HA		SP1=NONE#666		0.20	0.17	82.50	63 - 135	0	5.71	27.00
				SP2=NONE#666		0.20	0.18	89.50	63 - 135	0	0	
				SP3=NONE#666		0.20	0.23	116.00	63 - 135	0	30.00	
				SP4=NONE#666		0.20	0.22	109.00	63 - 135	0	25.64	
				SP5=NONE#666		0.20	0.17	87.00	63 - 135	0	0.0	
				SP6=NONE#666		0.20	0.18	91.50	63 - 135	0	5.71	
1,1,1-TRICHLOROETHANE	UG/L	34506=HA		SP1=NONE#666		0.20	0.18	88.50	53 - 125	0	0	32.00
				SP2=NONE#666		0.20	0.18	88.00	53 - 125	0	0.0	
				SP3=NONE#666		0.20	0.22	109.00	53 - 125	0	20.00	
				SP4=NONE#666		0.20	0.23	115.00	53 - 125	0	24.39	
				SP5=NONE#666		0.20	0.18	90.00	53 - 125	0	0.0	
				SP6=NONE#666		0.20	0.20	101.00	53 - 125	0	10.53	
ETHYLBENZENE	UG/L	34371=PI		SP1=NONE#666		2.22	1.89	85.10	48 - 144	0	0.0	35.00
				SP2=NONE#666		2.22	1.89	85.10	48 - 144	0	0.0	
				SP3=NONE#666		2.52	2.53	100.00	48 - 144	0	6.53	
				SP4=NONE#666		2.52	2.37	94.00	48 - 144	0	0	
				SP5=NONE#666		2.22	1.87	84.20	48 - 144	0	3.81	
				SP6=NONE#666		2.22	1.80	81.10	48 - 144	0	0	29.00
2,4-DINITROPHENOL	UG/L	34010=PI		SP1=NONE#666		2.14	2.24	105.00	59 - 135	0	0.0	
				SP2=NONE#666		2.14	2.24	105.00	59 - 135	0	0.0	
				SP3=NONE#666		2.44	2.49	102.00	59 - 135	0	10.13	
				SP4=NONE#666		2.44	2.25	92.20	59 - 135	0	0	
				SP5=NONE#666		2.14	1.71	79.90	59 - 135	0	1.74	
				SP6=NONE#666		2.14	1.74	81.30	59 - 135	0	0	41.00
4-CHLORO-3-METHYLPHENOL	UG/L	34452=PI	34367	SP1=NONE#1	21 OCT 86	34.41	33	95.00	39 - 101	0	0.0	0.0
2-CHLOROPHENOL	UG/L	34586=PI		SP1=NONE#1		30.17	25	83.00	74.9 - 115.1	0	0.0	0.0
2,4-DICHLOROPHENOL	UG/L	34601=PI		SP1=NONE#1		25.94	24	94.00	74.9 - 115.1	0	0.0	0.0
2,4-DINITROPHENOL	UG/L	34606=PI		SP1=NONE#1		22.84	21	90.00	85 - 115	0	0.0	0.0
2,4-DINITROPHENOL	UG/L	34616=PI		SP1=NONE#1		7.33	5.1	69.00	28 - 128	0	53.00	
2-METHYL-4,6-DINITROPHENOL	UG/L	34657=PI		SP1=NONE#1		6.66	6.1	91.00	75 - 115	0	0.0	0.0
4-NITROPHENOL	UG/L	34591=PI		SP1=NONE#1		8.83	8.0	90.00	85 - 115	0	0.0	0.0
4-NITROPHENOL	UG/L	34646=PI		SP1=NONE#1		12.47	7.1	57.00	85 - 115	0	0.0	0.0
PENTACHLOROPHENOL	UG/L	39032=PI		SP1=NONE#1		22.19	18	79.00	48 - 122	0	34.00	
PHENOL	UG/L	34694=PI		SP1=NONE#1		65.84	35.8	48.30	33 - 97	0	47.00	
2,4,6-TRICHLOROPHENOL	UG/L	34621=PI		SP1=NONE#1		35.91	32	88.00	80 - 120	0	20.00	
ARSENIC, TOTAL	UG/L	1002=ICAP	35477	SP1=NONE#1	14 JAN 87	1000.0	1020	102.00	80 - 120	0	20.00	
				SP2=NONE#1		1000.0	1040	104.00	80 - 120	0	1.94	
				SP3=NONE#1		1000.0	1030	103.00	80 - 120	0	0.98	
ANTIMONY, TOTAL	UG/L	1097=ICAP	36268	SP1=NONE#1	21 NOV 86	500.00	487	97.40	80 - 120	0	20.00	
				SP2=NONE#1		500.00	504	101.00	80 - 120	0	3.43	
				SP3=NONE#1		500.00	500	99.90	80 - 120	0	2.63	
				SP4=NONE#1		500.00	501	100.00	80 - 120	0	2.83	
BERYLLIUM, TOTAL	UG/L	1012=ICAP	35477	SP1=NONE#1	14 JAN 87	50.00	46.4	92.20	85 - 115	0	15.00	
				SP2=NONE#1		50.00	50.4	100.00	85 - 115	0	8.07	
				SP3=NONE#1		50.00	51.8	103.00	85 - 115	0	11.00	

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
 QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE BASE-FIELD FFOUP TYNDL3
 Standard Matrix Spike Recovery and Replicate Summary

NAME	UNITS	STORET-METHOD	BATCH	SAMPLE	DATE	TARGET	FOUND	\$REC	REC CRIT	ME*BIN	R.P.D.	R.P.D. CRIT
CADMIUM, TOTAL	UG/L	1027*ICAP	36268	SP1*NONE#1	23 NOV 86	50.00	51.8	101.00	85 - 115	1.08		15.00
				SP2*NONE#1		50.00	52.4	103.00	85 - 115	1.08	1.15	
				SP3*NONE#1		50.00	52.5	103.00	85 - 115	1.08	1.34	
				SP4*NONE#1		50.00	53.5	105.00	85 - 115	1.08	3.23	
CHROMIUM, TOTAL	UG/L	1034*ICAP		SP1*NONE#1		200.00	198	99.20	80 - 120	0		20.00
				SP2*NONE#1		200.00	204	102.00	80 - 120	0	2.99	
				SP3*NONE#1		200.00	201	100.00	80 - 120	0	1.50	
				SP4*NONE#1		200.00	206	103.00	80 - 120	0	3.96	
COPPER, TOTAL	UG/L	1042*ICAP		SP1*NONE#1		250.00	247	98.60	85 - 115	0		15.00
				SP2*NONE#1		250.00	249	99.50	85 - 115	0	0.81	
				SP3*NONE#1		250.00	248	99.30	85 - 115	0	0.40	
				SP4*NONE#1		250.00	253	101.00	85 - 115	0	2.40	
LEAD, TOTAL	UG/L	1051*ICAP		SP1*NONE#1		500.00	521	104.00	80 - 120	0		20.00
				SP2*NONE#1		500.00	531	106.00	80 - 120	0	1.90	
				SP3*NONE#1		500.00	544	109.00	80 - 120	0	4.32	
				SP4*NONE#1		500.00	549	110.00	80 - 120	0	5.23	
NICKEL, TOTAL	UG/L	1067*ICAP		SP1*NONE#1		500.00	524	103.00	80 - 120	9.73		20.00
				SP2*NONE#1		500.00	546	107.00	80 - 120	9.73	4.11	
				SP3*NONE#1		500.00	526	103.00	80 - 120	9.73	0.38	
				SP4*NONE#1		500.00	542	107.00	80 - 120	9.73	3.38	
SILVER, TOTAL	UG/L	1077*ICAP		SP1*NONE#1		100.00	99.2	98.50	70 - 110	.67		20.00
				SP2*NONE#1		100.00	101	100.00	70 - 110	.67	1.80	
				SP3*NONE#1		100.00	101	101.00	70 - 110	.67	1.80	
				SP4*NONE#1		100.00	107	106.00	70 - 110	.67	7.57	
SELENIUM, TOTAL	UG/L	1147*ICAP		SP1*NONE#1		1000.0	1060	103.00	80 - 120	26.46		20.00
				SP2*NONE#1		1000.0	1080	105.00	80 - 120	26.46	1.87	
				SP3*NONE#1		1000.0	1060	103.00	80 - 120	26.46	0.0	
				SP4*NONE#1		1000.0	9790	104.00	80 - 120	26.46	0.0	
THALLIUM, TOTAL	UG/L	1059*ICAP		SP1*NONE#1		10000	9810	97.90	80 - 120	0		20.00
				SP2*NONE#1		10000	9810	98.10	80 - 120	0	0.20	
				SP3*NONE#1		10000	9780	97.80	80 - 120	0	0.10	
				SP4*NONE#1		10000	10200	102.00	80 - 120	0	4.10	
ZINC, TOTAL	UG/L	1092*ICAP		SP1*NONE#1		500.00	519	102.00	85 - 115	6.67		15.00
				SP2*NONE#1		500.00	535	106.00	85 - 115	6.67	3.04	
				SP3*NONE#1		500.00	539	106.00	85 - 115	6.67	3.78	
				SP4*NONE#1		500.00	548	108.00	85 - 115	6.67	5.44	
MERCURY, TOTAL	UG/L	71900*CVAA	34583	SP2*NONE#2	30 OCT 86	5.00	4.86	97.20	80 - 120	.3456		20.00
				SP3*NONE#2		5.00	4.79	95.90	80 - 120	.3456	1.45	

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC. QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE BASE-FIELD GROUP TYNDL3

NAME	UNITS	STOCK NO.	BATCH	SAMPLE	DATE	TARGET	FOUND	REC.	CRIT.	UNPINED	K.P.D.	R.P.D. CRIT.
CARBON TETRACHLORIDE	UG/L	32102-HA	34825	SPM2-1	1012-7	21 OCT 86	0.20	101.00	55 - 131	0.0		
CARBON TETRACHLORIDE	UG/L	32102-HA	34825	SPM1-TYNDL4-1	21 OCT 86	0.20	0.17	86.50	55 - 131	0.0		
1,1-DICHLOROETHANE	UG/L	34496-HA		SPM3-TYNDL4-7		0.20	0.17	85.00	55 - 131	0.0		
				SPM2-TYNDL2-7		0.20	0.20	100.50	57 - 121	0.0		
				SPM1-TYNDL4-1		0.20	0.19	93.00	57 - 121	0.0		
1,2-DICHLOROETHANE	UG/L	34531-HA		SPM3-TYNDL4-7		0.20	0.17	85.00	57 - 121	0.0		
				SPM2-TYNDL2-7		0.20	0.23	115.50	63 - 135	0.0		
				SPM1-TYNDL4-1		0.20	0.20	102.00	63 - 135	0.0		
1,1,1-TRICHLOROETHANE	UG/L	34506-HA		SPM3-TYNDL4-7		0.20	0.19	94.50	63 - 135	0.0		
				SPM2-TYNDL2-7		0.20	0.20	101.00	53 - 125	0.0		
				SPM1-TYNDL4-1		0.20	0.20	99.00	53 - 125	0.0		
ETHYLBENZENE	UG/L	34371-PI		SPM3-TYNDL4-7		0.20	0.17	83.00	53 - 125	0.0		
				SPM2-TYNDL2-7		2.52	2.80	111.11	48 - 144	0.0		
				SPM1-TYNDL4-1		2.22	2.28	102.70	48 - 144	0.0		
TOLUENE	UG/L	34010-PI		SPM3-TYNDL4-7		2.22	2.05	92.34	48 - 144	0.0		
				SPM2-TYNDL2-7		2.44	2.45	100.41	59 - 135	0.0		
				SPM1-TYNDL4-1		2.14	2.34	109.35	59 - 135	0.0		
4-CHLORO-3-METHYLPHENOL	UG/L	34452-PI	34367	SPM3-TYNDL4-7	20 OCT 86	2.14	2.06	96.26	59 - 135	0.0		
2-CHLOROPHENOL	UG/L	34452-PI		SPM1-TYNDL4-1		34.41	35	99.81	39 - 101	0.38		
2,4-DICHLOROPHENOL	UG/L	34601-PI		SPM3-TYNDL4-7		30.17	25	83.97	74.9 - 115.1	0.06		
2,4-DINITROPHENOL	UG/L	34606-PI		SPM2-TYNDL2-7		25.94	25	97.08	74.9 - 115.1	0.23		
2,4-DINITROPHENOL	UG/L	34616-PI		SPM1-TYNDL4-1		22.84	19	84.07	85 - 115	0.14		
2-METHYL-4,6-DINITROPHENOL	UG/L	34657-PI		SPM3-TYNDL4-7		7.33	9.7	125.00	28 - 128	0.55		
4-NITROPHENOL	UG/L	34591-PI		SPM2-TYNDL2-7		6.66	7.3	96.89	75 - 115	0.84		
PENTACHLOROPHENOL	UG/L	34646-PI		SPM1-TYNDL4-1		8.83	8.5	93.00	85 - 115	0.32		
2,4,6-TRICHLOROPHENOL	UG/L	39032-PI		SPM3-TYNDL4-7		12.47	7.5	51.59	85 - 115	1.1		
PHENOL	UG/L	34621-PI		SPM2-TYNDL2-7		22.19	23	98.92	48 - 122	0.55		
ARSENIC, TOTAL	UG/L	1002-ICAP	35477	SPM1-TYNDL4-1		35.91	34	52.36	33 - 97	0		
				SPM3-TYNDL4-7	14 JAN 87	1000.0	1110	102.71	80 - 120	86.4		
				SPM2-TYNDL2-7		963.36	1230	107.03	80 - 120	203		
				SPM1-TYNDL4-1		1000.0	1000	99.71	80 - 120	5.06		
ANTIMONY, TOTAL	UG/L	1097-ICAP	36268	SPM3-TYNDL4-7	23 NOV 86	963.36	1030	105.83	80 - 120	6.00		
BERYLLIUM, TOTAL	UG/L	1012-ICAP	35477	SPM2-TYNDL2-7		500.00	515	103.01	80 - 120	0.0		
				SPM1-TYNDL4-1	14 JAN 87	50.00	44.3	61.42	85 - 115	13.6		
				SPM3-TYNDL4-7		853.68	956	111.96	85 - 115	0		
				SPM2-TYNDL2-7		50.00	52.0	87.20	85 - 115	8.37		
CADMIUM, TOTAL	UG/L	1027-ICAP	36268	SPM1-TYNDL4-1	23 NOV 86	853.68	935	109.52	85 - 115	0		
CHROMIUM, TOTAL	UG/L	1034-ICAP		SPM3-TYNDL4-7		50.00	52.9	105.70	85 - 115	0.0		
COPPER, TOTAL	UG/L	1042-ICAP		SPM2-TYNDL2-7		200.00	200	99.75	80 - 120	0.03		
LEAD, TOTAL	UG/L	1051-ICAP		SPM1-TYNDL4-1		250.00	251	99.76	85 - 115	1.12		
NICKEL, TOTAL	UG/L	1067-ICAP		SPM3-TYNDL4-7		500.00	535	107.06	80 - 120	0.0		
SILVER, TOTAL	UG/L	1077-ICAP		SPM2-TYNDL2-7		500.00	544	106.80	80 - 120	10.3		
SELENIUM, TOTAL	UG/L	1147-ICAP		SPM1-TYNDL4-1		100.00	105	102.86	70 - 110	2.17		
THALLIUM, TOTAL	UG/L	1059-ICAP		SPM3-TYNDL4-7		1000.0	1110	106.20	80 - 120	43.3		
ZINC, TOTAL	UG/L	1092-ICAP		SPM2-TYNDL2-7		1000.0	9860	97.98	80 - 120	61.6		
MERCURY, TOTAL	UG/L	71900-CVAA	34583	SPM1-TYNDL4-1	30 OCT 86	500.00	541	106.13	85 - 115	10.1		
				SPM3-TYNDL4-7		5.00	4.52	95.78	80 - 120	0		
				SPM2-TYNDL2-7		5.00	5.27	109.47	80 - 120	0		

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC. QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE BASE-FIELD GROUP TYNDL3

Method Blank Sample Summary

FOUND

DATE

SAMPLE

BATCH

STORE/INSTR

UNITS

NAME

BRONODICHLOROMETHANE

21 OCT 86

21 OCT 86

MB#NONE#666

34825

32101#HA

UG/L

BRONODICHLOROMETHANE

0

0

MB#NONE#666

34825

32104#HA

UG/L

BRONODICHLOROMETHANE

0

0

MB#NONE#666

34825

34413#HA

UG/L

BRONODICHLOROMETHANE

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34825

32102#HA

UG/L

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UG/L

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34825

34621#PI

UG/L

BRONODICHLOROMETHANE

0

0

MB#NONE#666

34825

1002#ICAP

UG/L

BRONODICHLOROMETHANE

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC. BASE-FIELD GROUP TYNDL3
 QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE Method Blank Sample Summary

NAME	UNITS	STORE/METHOD	BATCH	SAMPLE	DATE	FOUND
SILVER, TOTAL	UG/L	1077=ICAP		MB=NONE #2		0
				MB=NONE #1		.67
				MB=NONE #2		.16
SELENIUM, TOTAL	UG/L	1147=ICAP		MB=NONE #1		26.46
				MB=NONE #2		41.15
THALLIUM, TOTAL	UG/L	1059=ICAP		MB=NONE #1		0
				MB=NONE #2		0
ZINC, TOTAL	UG/L	1092=ICAP		MB=NONE #1		6.67
				MB=NONE #2		14.75
MERCURY, TOTAL	UG/L	71900=C.A	34583	MB1=NONE #1	30 OCT 86	3456
				MB2=NONE #2		1403

FIELD GROUP
TYNDALL - 4

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ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
 SAMPLE / BATCH REPORT FOR FIELD GROUP TYNOL4

PAGE 1

DATE: 01 MAR 1988

SAMPLE ID	PARAMETER NAME	BATCH #
TYNOL4#1	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	PHENOLS (GC-604)	35241
	HYDROCARBONS, PETRO	34552
	LEAD, TOTAL	34894
TYNOL4#2	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	PHENOLS (GC-604)	35241
	HYDROCARBONS, PETRO	34552
	LEAD, TOTAL	34894
TYNOL4#3	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	PHENOLS (GC-604)	35241
	HYDROCARBONS, PETRO	34552
	LEAD, TOTAL	34894
TYNOL4#4	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	PHENOLS (GC-604)	35241
	HYDROCARBONS, PETRO	34552
	LEAD, TOTAL	34894
TYNOL4#5	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	PHENOLS (GC-604)	35241
	HYDROCARBONS, PETRO	34552
	LEAD, TOTAL	34894
TYNOL4#6	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	PHENOLS (GC-604)	35241
	HYDROCARBONS, PETRO	34552
	LEAD, TOTAL	34894
TYNOL4#7	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	PHENOLS (GC-604)	35241
	HYDROCARBONS, PETRO	34552
	LEAD, TOTAL	34894
TYNOL4#8	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	PHENOLS (GC-604)	35241
	HYDROCARBONS, PETRO	34552
	LEAD, TOTAL	34894
TYNOL4#9	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	PHENOLS (GC-604)	35241
	HYDROCARBONS, PETRO	34552
	LEAD, TOTAL	34894
TYNOL4#10	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	PHENOLS (GC-604)	35241
	HYDROCARBONS, PETRO	34552
	LEAD, TOTAL	34894
TYNOL4#11	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	PHENOLS (GC-604)	35241
	HYDROCARBONS, PETRO	34552
	LEAD, TOTAL	34894

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
 SAMPLE / BATCH REPORT FOR FIELD GROUP TYNDL4

DATE: 01 MAR 1988

SAMPLE ID	PARAMETER NAME	BATCH #
TYNDL4#11	VOLATILE HALOCARBONS(601)	34825
	PHENOLS (GC-604)	35897
	HYDROCARBONS, PETRO	34627
	LEAD, TOTAL	34894
	VOLATILE AROMATICS(602)	34825
TYNDL4#12	VOLATILE HALOCARBONS(601)	34825
	PHENOLS (GC-604)	35897
	HYDROCARBONS, PETRO	34627
	LEAD, TOTAL	34894
	VOLATILE AROMATICS(602)	34825
TYNDL4#13	VOLATILE HALOCARBONS(601)	34825
	PHENOLS (GC-604)	35897
	HYDROCARBONS, PETRO	34627
	LEAD, TOTAL	34894
	VOLATILE AROMATICS(602)	34825
TYNDL4#14	VOLATILE HALOCARBONS(601)	34825
	PHENOLS (GC-604)	35241
	HYDROCARBONS, PETRO	34552
	LEAD, TOTAL	34894
	VOLATILE AROMATICS(602)	34825
TYNDL4#15	VOLATILE HALOCARBONS(601)	34825
	PHENOLS (GC-604)	35241
	HYDROCARBONS, PETRO	34552
	LEAD, TOTAL	34894
	VOLATILE AROMATICS(602)	34825

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
 QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE BASE-FIELD GROUP TYNDL4

NAME	UNITS	STORET-METHOD	BATCH	SAMPLE	Replicate Analysis Sample Summary		
					FOUND	R. P. D.	MAX % REPL DIFF
HYDROCARBONS, PETRO	MG/L	45501-1	34627	RP1-TYNDL 6-10	.1642	30.90	20
HYDROCARBONS, PETRO	MG/L	45501-1	34627	RP2-TYNDL 6-10	.1642	0.0	

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC. QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE BASE-FIELD GROUP TYNDL 4

Standard Matrix Spike Recovery and Replicate Summary

NAME	UNITS	START/METHOD	BATCH	SAMPLE	DATE	TARGET	FOUND	REC.	CRIT.	MEI=BLN	R.P.D.	R.P.D. CRIT.
CARBON TETRACHLORIDE	UG/L	32102*HA	34825	SP2=NONE*666	21 OCT 86	0.20	0.17	86.00	55 - 131	0	31.00	31.00
CARBON TETRACHLORIDE	UG/L	32102*HA	34825	SP3=NONE*666	21 OCT 86	0.20	0.21	107.00	55 - 131	0	0.0	0.0
				SP4=NONE*666		0.20	0.21	104.00	55 - 131	0	21.05	15.36
				SP5=NONE*666		0.20	0.17	85.00	55 - 131	0	30.00	30.00
1,1-DICHLOROETHANE	UG/L	34496*HA		SP6=NONE*666		0.20	0.18	91.00	55 - 131	0	0.0	0.0
				SP1=NONE*666		0.20	0.17	84.00	57 - 121	0	11.11	11.11
				SP2=NONE*666		0.20	0.17	87.00	57 - 121	0	21.05	21.05
				SP3=NONE*666		0.20	0.23	114.00	57 - 121	0	11.11	11.11
				SP4=NONE*666		0.20	0.21	107.00	57 - 121	0	11.11	11.11
				SP5=NONE*666		0.20	0.19	92.50	57 - 121	0	5.71	5.71
				SP6=NONE*666		0.20	0.19	95.50	57 - 121	0	30.00	30.00
1,2-DICHLOROETHANE	UG/L	34531*HA		SP1=NONE*666		0.20	0.17	82.50	63 - 135	0	25.64	25.64
				SP2=NONE*666		0.20	0.18	89.50	63 - 135	0	5.71	5.71
				SP3=NONE*666		0.20	0.23	116.00	63 - 135	0	0.0	0.0
				SP4=NONE*666		0.20	0.22	109.00	63 - 135	0	5.71	5.71
				SP5=NONE*666		0.20	0.17	87.00	63 - 135	0	0.0	0.0
				SP6=NONE*666		0.20	0.18	91.50	63 - 135	0	32.00	32.00
1,1,1-TRICHLOROETHANE	UG/L	34506*HA		SP1=NONE*666		0.20	0.18	88.50	53 - 125	0	0.0	0.0
				SP2=NONE*666		0.20	0.18	88.00	53 - 125	0	20.00	20.00
				SP3=NONE*666		0.20	0.22	109.00	53 - 125	0	24.39	24.39
				SP4=NONE*666		0.20	0.23	115.00	53 - 125	0	0.0	0.0
				SP5=NONE*666		0.20	0.18	90.00	53 - 125	0	10.53	10.53
				SP6=NONE*666		0.20	0.20	101.00	53 - 125	0	35.00	35.00
ETHYLBENZENE	UG/L	34371*PI		SP1=NONE*666		2.22	1.89	85.10	48 - 144	0	0.0	0.0
				SP2=NONE*666		2.22	1.89	85.10	48 - 144	0	6.53	6.53
				SP3=NONE*666		2.52	2.37	94.00	48 - 144	0	3.81	3.81
				SP4=NONE*666		2.22	1.87	84.20	48 - 144	0	0.0	0.0
				SP5=NONE*666		2.22	1.80	81.10	48 - 144	0	29.00	29.00
				SP6=NONE*666		2.14	1.80	81.10	48 - 144	0	0.0	0.0
2,4-DIMETHYLPHENOL	UG/L	34601*PI		SP1=NONE*666		2.14	2.24	105.00	59 - 135	0	1.74	1.74
				SP2=NONE*666		2.14	2.24	105.00	59 - 135	0	41.00	41.00
				SP3=NONE*666		2.44	2.49	102.00	59 - 135	0	9.09	9.09
				SP4=NONE*666		2.44	2.25	92.20	59 - 135	0	37.50	37.50
				SP5=NONE*666		2.14	1.71	79.90	59 - 135	0	0.0	0.0
				SP6=NONE*666		2.14	1.74	81.30	59 - 135	0	0.0	0.0
4-CHLORO-3-METHYLPHENOL	UG/L	34452*PI	35241	SP1=NONE*666	04 NOV 86	34.41	23	67.00	39 - 101	0	0.0	0.0
				SP2=NONE*666		34.41	21	60.00	39 - 101	0	0.0	0.0
				SP3=NONE*666	06 NOV 86	34.41	13	37.00	39 - 101	0	0.0	0.0
				SP4=NONE*666		34.41	19	56.00	39 - 101	0	0.0	0.0
				SP5=NONE*666	04 NOV 86	30.17	16	54.00	74.9 - 115.1	0	0.0	0.0
				SP6=NONE*666	06 NOV 86	30.17	11	35.00	74.9 - 115.1	0	0.0	0.0
				SP1=NONE*666	06 NOV 86	30.17	17	56.00	74.9 - 115.1	0	0.0	0.0
				SP2=NONE*666	04 NOV 86	25.94	15	60.00	74.9 - 115.1	0	0.0	0.0
				SP3=NONE*666		25.94	15	56.00	74.9 - 115.1	0	0.0	0.0
				SP4=NONE*666	06 NOV 86	25.94	8.8	34.00	74.9 - 115.1	0	45.61	45.61
				SP5=NONE*666	04 NOV 86	22.84	8.7	38.00	85 - 115	0	31.88	31.88
				SP6=NONE*666	06 NOV 86	22.84	12	53.00	85 - 115	0	36.36	36.36
				SP1=NONE*666	04 NOV 86	22.84	13	57.00	85 - 115	0	18.75	18.75
				SP2=NONE*666	06 NOV 86	7.33	3.5	48.00	28 - 128	0	37.50	37.50
				SP3=NONE*666		7.33	2.9	39.00	28 - 128	0	0.0	0.0
				SP4=NONE*666	06 NOV 86	7.33	5.7	77.00	28 - 128	0	53.00	53.00
				SP5=NONE*666		7.33	3.9	53.00	28 - 128	0	0.0	0.0
				SP6=NONE*666	04 NOV 86	6.66	3.9	59.00	75 - 115	0	0.0	0.0
2-METHYL-4,6-DINITROPHENOL	UG/L	34657*PI	35241	SP1=NONE*666								

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE BASE-FIELD GROUP TYNDL4

NAME	UNITS	STORET-METHOD	BATCH	SAMPLE	DATE	Standard Matrix Spike Recovery and Replicate Summary				REC. CRIT	MET-BLN	R.P.D.	R.P.D. CRIT.
						TARGET	FOUND	SREC					
2-NITROPHENOL	UG/L	34591-F1	35897	SP2-NONE#1	06 NOV 86	6.66	2.5	37.00	75 - 115	0	43.75		
				SP1-NONE#1		6.66	4.2	62.00	75 - 115	0			
				SP2-NONE#1		6.66	3.7	55.00	75 - 115	0		12.66	
				SP1-NONE#1	04 NOV 86	8.83	5.2	59.00	85 - 115	0			0.0
4-NITROPHENOL	UG/L	34646-F1	35897	SP2-NONE#1	06 NOV 86	8.83	4.9	55.00	85 - 115	0		5.94	
				SP1-NONE#1		8.83	4.5	51.00	85 - 115	0			
				SP2-NONE#1		8.83	4.7	53.00	85 - 115	0		4.15	0.0
				SP1-NONE#1	04 NOV 86	12.47	3.4	27.00	85 - 115	0		9.23	
PENTACHLOROPHENOL	UG/L	39032-F1	35897	SP2-NONE#1	06 NOV 86	12.47	3.1	24.00	85 - 115	0			
				SP1-NONE#1		12.47	8.6	69.00	85 - 115	0		89.08	34.00
				SP2-NONE#1		12.47	3.3	26.00	85 - 115	0			
				SP1-NONE#1	04 NOV 86	22.19	7.7	35.00	48 - 122	0		17.75	
PHENOL	UG/L	34694-F1	35897	SP2-NONE#1	06 NOV 86	22.19	9.2	41.00	48 - 122	0			
				SP1-NONE#1		22.19	4.6	21.00	48 - 122	0		95.45	47.00
				SP2-NONE#1		22.19	13	61.00	48 - 122	0			
				SP1-NONE#1	04 NOV 86	65.84	21.2	32.10	33 - 97	0		14.44	
2,4,6-TRICHLOROPHENOL	UG/L	34621-F1	35897	SP2-NONE#1	06 NOV 86	65.84	24.5	37.10	33 - 97	0			
				SP1-NONE#1		65.84	16.6	25.10	33 - 97	0		13.48	20.00
				SP2-NONE#1		65.84	19.0	28.80	33 - 97	0			
				SP1-NONE#1	04 NOV 86	35.91	23	63.00	80 - 120	0		9.09	
HYDROCARBONS, PETRO	MG/L	45501-F1	34552	SP2-NONE#1	06 NOV 86	35.91	21	58.00	80 - 120	0			
				SP1-NONE#1		35.91	13	35.00	80 - 120	0		47.06	20.00
				SP2-NONE#1		35.91	21	58.00	80 - 120	0			
				SP1-NONE#1	30 OCT 86	8200.0	3.66	87.20	70.2 - 124.8	.0758			
LEAD, TOTAL	UG/L	1051-GFAA	34627	SP2-NONE#1	06 NOV 86	8200.0	3.71	88.50	70.2 - 124.8	.0758		1.36	
				SP1-NONE#1		8200.0	4.26	101.00	70.2 - 124.8	.1055			
				SP2-NONE#1		8200.0	4.31	102.00	70.2 - 124.8	.1055		1.17	
				SP1-NONE#1	25 NOV 86	50.00	57.1	103.00	80 - 120	3.3067			20.00
			34894	SP2-NONE#1		50.00	59.3	108.00	80 - 120	3.3067		3.78	
				SP1-NONE#1		50.00	58.2	105.00	80 - 120	3.3067		1.91	
				SP3-NONE#1		50.00	61.4	112.00	80 - 120	3.3067		7.26	
				SP1-NONE#2		50.00	63.6	116.00	80 - 120	3.3067		10.77	
				SP2-NONE#2		50.00	65.7	121.00	80 - 120	3.3067		14.01	
				SP1-NONE#3		50.00	59.3	108.00	80 - 120	3.3067		3.78	

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC. QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE BASE-FIELD GROUP TYNDL4

NAME	UNITS	STORE/METHOD	BATCH	SAMPLE	Sample Matrix Spike Recovery Summary			REC. CRIT.	UNSPINED	R.P.D.	R.P.D. CRIT.
					DATE	TARGET	FOUND				
CARBON TETRACHLORIDE	UG/L	32102*HA	34825	SPM2=TYNDL2*7	21 OCT 86	0.20	0.20	55 - 131	0.0		0.0
CARBON TETRACHLORIDE	UG/L	32102*HA	34825	SPM1=TYNDL4*1	21 OCT 86	0.20	0.17	55 - 131	0.0		0.0
1,1-DICHLOROETHANE	UG/L	34496*HA		SPM3=TYNDL4*7		0.20	0.17	55 - 131	0.0		0.0
				SPM2=TYNDL2*7		0.20	0.20	57 - 121	0.0		0.0
				SPM1=TYNDL4*1		0.20	0.19	57 - 121	0.0		0.0
				SPM3=TYNDL4*7		0.20	0.17	57 - 121	0.0		0.0
1,2-DICHLOROETHANE	UG/L	34531*HA		SPM2=TYNDL2*7		0.20	0.23	63 - 135	0.0		0.0
				SPM1=TYNDL4*1		0.20	0.20	63 - 135	0.0		0.0
				SPM3=TYNDL4*7		0.20	0.19	63 - 135	0.0		0.0
				SPM2=TYNDL2*7		0.20	0.20	63 - 135	0.0		0.0
1,1,1-TRICHL'ETHANE	UG/L	34506*HA		SPM3=TYNDL4*7		0.20	0.20	53 - 125	0.0		0.0
				SPM2=TYNDL2*7		0.20	0.20	53 - 125	0.0		0.0
				SPM1=TYNDL4*1		0.20	0.17	53 - 125	0.0		0.0
				SPM3=TYNDL4*7		0.20	0.20	53 - 125	0.0		0.0
ETHYLBENZENE	UG/L	34371*PI		SPM2=TYNDL2*7		2.52	2.80	48 - 144	0.0		0.0
				SPM1=TYNDL4*1		2.22	2.28	48 - 144	0.0		0.0
				SPM3=TYNDL4*7		2.22	2.05	48 - 144	0.0		0.0
				SPM2=TYNDL2*7		2.44	2.45	59 - 135	0.0		0.0
TOLUENE	UG/L	34010*PI		SPM1=TYNDL4*1		2.14	2.34	59 - 135	0.0		0.0
				SPM3=TYNDL4*7		2.14	2.06	59 - 135	0.0		0.0
				SPM2=TYNDL2*7		4.9	3.9	39 - 101	4.0		4.0
				SPM1=TYNDL4*1	04 NOV 86	34.41	21	39 - 101	1.6		1.6
4-CHL'-3-METH'PHENOL	UG/L	34452*FI	35241	SPM3=TYNDL4*7	06 NOV 86	43.06	23	74.9 - 115.1	1.1		1.1
				SPM2=TYNDL2*7	04 NOV 86	30.17	14	74.9 - 115.1	0.0		0.0
				SPM1=TYNDL4*1	06 NOV 86	37.01	24	74.9 - 115.1	4.5		4.5
				SPM3=TYNDL4*7	06 NOV 86	25.94	19	74.9 - 115.1	2.5		2.5
2,4-DICHLOROPHENOL	UG/L	34601*FI	35241	SPM2=TYNDL2*7	04 NOV 86	32.60	20	85 - 115	3.4		3.4
				SPM1=TYNDL4*1	06 NOV 86	22.84	8.6	85 - 115	2.6		2.6
				SPM3=TYNDL4*7	04 NOV 86	10.46	11	85 - 115	1.3		1.3
				SPM2=TYNDL2*7	06 NOV 86	7.33	4.5	85 - 115	7.1		7.1
2,4-DIMETHYLPHENOL	UG/L	34616*FI	35241	SPM3=TYNDL4*7	04 NOV 86	9.50	8.7	75 - 115	1.1		1.1
				SPM2=TYNDL2*7	06 NOV 86	6.66	6.6	75 - 115	3.3		3.3
				SPM1=TYNDL4*1	04 NOV 86	12.60	9.0	75 - 115	4.3		4.3
				SPM3=TYNDL4*7	06 NOV 86	8.83	0.34	85 - 115	1.7		1.7
2-METHYL-4,6-DINITROPHENOL	UG/L	34657*FI	35241	SPM2=TYNDL2*7	04 NOV 86	17.79	12	85 - 115	8.7		8.7
				SPM1=TYNDL4*1	06 NOV 86	12.47	1.4	85 - 115	6.9		6.9
				SPM3=TYNDL4*7	04 NOV 86	31.67	13	85 - 115	3.7		3.7
				SPM2=TYNDL2*7	06 NOV 86	22.19	20	85 - 115	0.0		0.0
2-NITROPHENOL	UG/L	34591*FI	35241	SPM3=TYNDL4*7	04 NOV 86	93.95	40.6	33 - 97	1.78		1.78
				SPM2=TYNDL2*7	06 NOV 86	65.84	22.4	33 - 97	0.96		0.96
				SPM1=TYNDL4*1	04 NOV 86	51.25	33	80 - 120	3.1		3.1
				SPM3=TYNDL4*7	06 NOV 86	35.91	33	80 - 120	0.47		0.47
4-NITROPHENOL	UG/L	34646*FI	35241	SPM2=TYNDL2*7	04 NOV 86	8225.0	5.21	70.2 - 124.8	4.20		4.20
				SPM1=TYNDL4*1	06 NOV 86	50.00	56.0	80 - 120	0		0
				SPM3=TYNDL4*7	04 NOV 86	100.00	126	80 - 120	11.8		11.8
				SPM2=TYNDL2*7	06 NOV 86	50.00	51.7	80 - 120	0		0
PENTACHLOROPHENOL	UG/L	34694*FI	35241	SPM3=TYNDL4*7	04 NOV 86	50.00	71.0	80 - 120	10.8		10.8
				SPM2=TYNDL2*7	06 NOV 86	50.00	66.7	80 - 120	0.00002		0.00002
				SPM1=TYNDL4*1	04 NOV 86	100.00	145	80 - 120	31.2		31.2
				SPM3=TYNDL4*7	06 NOV 86	50.00	72.1	80 - 120	6.46		6.46
2,4,6-TRICHL'PHEMOL	UG/L	34621*FI	35241	SPM2=TYNDL2*7	04 NOV 86	50.00	62.4	80 - 120	4.30		4.30
				SPM1=TYNDL4*1	06 NOV 86	100.00	132	80 - 120	35.5		35.5
				SPM3=TYNDL4*7	04 NOV 86	100.00	137	80 - 120	28.0		28.0
				SPM2=TYNDL2*7	06 NOV 86	100.00	137	80 - 120	28.0		28.0
HYDROCARBONS, PETRO	MG/L	45501*1	34552	SPM3=TYNDL4*7	04 NOV 86	100.00	137	80 - 120	28.0		28.0
				SPM2=TYNDL2*7	06 NOV 86	100.00	137	80 - 120	28.0		28.0
				SPM1=TYNDL4*1	04 NOV 86	100.00	137	80 - 120	28.0		28.0
				SPM3=TYNDL4*7	06 NOV 86	100.00	137	80 - 120	28.0		28.0
LEAD, TOTAL	UG/L	1051*GFAA	34894	SPM2=TYNDL2*7	04 NOV 86	100.00	137	80 - 120	28.0		28.0
				SPM1=TYNDL4*1	06 NOV 86	100.00	137	80 - 120	28.0		28.0
				SPM3=TYNDL4*7	04 NOV 86	100.00	137	80 - 120	28.0		28.0
				SPM2=TYNDL2*7	06 NOV 86	100.00	137	80 - 120	28.0		28.0

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC. QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE BASE-FIELD GROUP TYNDL 4

Method Blank Sample Summary

NAME	UNITS	STORET METHOD	BATCH	SAMPLE	DATE	FOUND
BROMOCHLOROMETHANE	UG/L	32101*HA	34825	MB*NONE*666	21 OCT 86	0
BROMOFORM	UG/L	32104*HA	34825	MB*NONE*666	21 OCT 86	0
BROMOTHANE	UG/L	34413*HA		MB*NONE*666		0
CARBON TETRACHLORIDE	UG/L	32102*HA		MB*NONE*666		0
CHLOROBENZENE	UG/L	34301*HA		MB*NONE*666		0
CHLOROETHANE	UG/L	34311*HA		MB*NONE*666		0
2-CHLOROETHYL VINYL ETHER	UG/L	34576*HA		MB*NONE*666		0
CHLOROFORM	UG/L	32106*HA		MB*NONE*666		0
CHLOROTHANE	UG/L	34418*HA		MB*NONE*666		0
DIBROMOCHLOROMETHANE	UG/L	32105*HA		MB*NONE*666		0
DICHLOROBENZENE, TOT.	UG/L	81524*HA		MB*NONE*666		0
DICHLORODIFLUORO METHANE	UG/L	34668*HA		MB*NONE*666		0
1,1-DICHLOROETHANE	UG/L	34496*HA		MB*NONE*666		0
1,2-DICHLOROETHANE	UG/L	34531*HA		MB*NONE*666		0
1,1-DICHLOROETHYLENE	UG/L	34501*HA		MB*NONE*666		0
TRANS-1,2-DICHLORO ETHANE	UG/L	34546*HA		MB*NONE*666		0
1,2-DICHLOROPROPANE	UG/L	34541*HA		MB*NONE*666		0
CIS-1,3-DICHLORO PROPENE	UG/L	34704*HA		MB*NONE*666		0
TRANS-1,3-DICHLORO PROPENE	UG/L	34699*HA		MB*NONE*666		0
METHYLENE CHLORIDE	UG/L	34423*HA		MB*NONE*666		0
1,1,2,2-TETRACHLORO ETHANE	UG/L	34516*HA		MB*NONE*666		0
TETRACHLOROETHENE	UG/L	34475*HA		MB*NONE*666		0
1,1,1-TRICHL*ETHANE	UG/L	34506*HA		MB*NONE*666		0
1,1,2-TRICHL*ETHANE	UG/L	34511*HA		MB*NONE*666		0
TRICHLOROETHENE	UG/L	39180*HA		MB*NONE*666		0
TRICHL*FLUOROMETHANE	UG/L	34488*HA		MB*NONE*666		0
VINYL CHLORIDE	UG/L	39175*HA		MB*NONE*666		0
BENZENE	UG/L	34030*PI		MB*NONE*666		0
ETHYLBENZENE	UG/L	34371*PI		MB*NONE*666		0
TOLUENE	UG/L	34010*PI		MB*NONE*666		0
4-CHL*-3-METH*PHEMOL	UG/L	34452*FI	35241	MB*NONE*1	04 NOV 86	0
2-CHLOROPHENOL	UG/L	34586*FI	35897	MB*NONE*1	06 NOV 86	0
2,4-DICHLOROPHENOL	UG/L	35241	35897	MB*NONE*1	04 NOV 86	0
2,4-DIMETHYLPHENOL	UG/L	34601*FI	35241	MB*NONE*1	06 NOV 86	0
2,4-DINITROPHENOL	UG/L	34606*FI	35897	MB*NONE*1	04 NOV 86	0
2-METHYL-4,6-DINITROPHENOL	UG/L	34616*FI	35241	MB*NONE*1	06 NOV 86	0
2-NITROPHENOL	UG/L	34657*FI	35897	MB*NONE*1	04 NOV 86	0
4-NITROPHENOL	UG/L	34591*FI	35241	MB*NONE*1	06 NOV 86	0
PENTACHLOROPHENOL	UG/L	34646*FI	35897	MB*NONE*1	04 NOV 86	0
PHENOL	UG/L	39032*FI	35241	MB*NONE*1	06 NOV 86	0
2,4,6-TRICHL*PHEMOL	UG/L	34694*FI	35897	MB*NONE*1	04 NOV 86	0
HYDROCARBONS, PETRO	MG/L	45501*PI	35241	MB*NONE*1	06 NOV 86	0
LEAD, TOTAL	UG/L	1051*GFAA	34894	MB1*NONE*2	06 NOV 86	0
					30 OCT 86	.0758
					06 NOV 86	.1055
					25 NOV 86	3.3067
						4.3828

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
 QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE BASE--FIELD GROUP TYNDL4

Method Blank Sample Summary

NAME

UNITS

STORE#METHOD BATCH

SAMPLE

DATE

FOUND

MB2#NONE*3

5.4589

FIELD GROUP
TYNDALL -5

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ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
 SAMPLE / BATCH REPORT FOR FIELD GROUP TYNOL5

PAGE 1

DATE: 01 MAR 1988

SAMPLE ID	PARAMETER NAME	BATCH #
TYNOL5*1	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	BASE NEUTRAL ACID EXTRACTION(625)	34859
	ICAP METALS	35477
	MERCURY	34847
TYNOL5*2	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	BASE NEUTRAL ACID EXTRACTION(625)	34859
	ICAP METALS	35477
	MERCURY	34847
TYNOL5*3	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	BASE NEUTRAL ACID EXTRACTION(625)	34859
	ICAP METALS	35477
	MERCURY	34847
TYNOL5*4	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	BASE NEUTRAL ACID EXTRACTION(625)	34859
	ICAP METALS	35477
	MERCURY	34847
TYNOL5*5	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	BASE NEUTRAL ACID EXTRACTION(625)	34859
	ICAP METALS	35477
	MERCURY	34847
TYNOL5*6	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	BASE NEUTRAL ACID EXTRACTION(625)	34859
	ICAP METALS	35477
	MERCURY	34847
TYNOL5*	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	BASE NEUTRAL ACID EXTRACTION(625)	34859
	ICAP METALS	35477
	MERCURY	34847
TYNOL5*8	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	BASE NEUTRAL ACID EXTRACTION(625)	34859
	ICAP METALS	35477
	MERCURY	34847
TYNOL5*9	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	BASE NEUTRAL ACID EXTRACTION(625)	34859
	ICAP METALS	35477
	MERCURY	34847

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
 QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE BASE-FIELD GROUP TYNDLS

NAME	UNITS	STORET-METHOD	BATCH	SAMPLE	Replicate Analysis Sample Summary			
					DATE	FOUND	R.P.D.	MAX % REPL DIFF
MERCURY TOTAL	UG/L	71900-CVAA	34819	RP=NON-6=6	19 NOV 86	.497	16.27	20
MERCURY TOTAL	UG/L	71900-CVAA	34819	RP=HIGH/1=1	19 NOV 86	.2	0.0	
				RP=TYNDLS=7		.43	16.35	

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC. QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE BASE-FIELD GROUP TYNDLS

Standard Matrix Spike Recovery and Replicate Summary

NAME	UNITS	STORET-METHOD	BATCH	SAMPLE	DATE	TARGET	FOUND	REC.	REC. CRIT.	ME*BLN	R.P.D. CANT CALC	R.P.D. CRIT.
CARBON TETRACHLORIDE	UG/L	32102*HA	34825	SP2*NONE=666	21 OCT 86	0.20	0.17	86.00	55 - 131	0	31.00	31.00
				SP3*NONE=666	21 OCT 86	0.20	0.21	107.00	55 - 131	0	0.0	
				SP4*NONE=666		0.20	0.21	104.00	55 - 131	0	0.0	
				SP5*NONE=666		0.20	0.17	85.00	55 - 131	0	21.05	
1,1-DICHLOROETHANE	UG/L	34496*HA		SP1*NONE=666		0.20	0.17	84.00	57 - 121	0	15.38	30.00
				SP2*NONE=666		0.20	0.17	87.00	57 - 121	0	0.0	
				SP3*NONE=666		0.20	0.23	114.00	57 - 121	0	30.00	
				SP4*NONE=666		0.20	0.21	107.00	57 - 121	0	21.05	
1,2-DICHLOROETHANE	UG/L	34531*HA		SP5*NONE=666		0.20	0.19	92.50	57 - 121	0	11.11	
				SP6*NONE=666		0.20	0.19	95.50	57 - 121	0	11.11	
				SP1*NONE=666		0.20	0.17	82.50	63 - 135	0	27.00	
				SP2*NONE=666		0.20	0.18	89.50	63 - 135	0	5.71	
1,1,1-TRICHLOROETHANE	UG/L	34506*HA		SP3*NONE=666		0.20	0.23	116.00	63 - 135	0	30.00	
				SP4*NONE=666		0.20	0.22	109.00	63 - 135	0	25.64	
				SP5*NONE=666		0.20	0.17	87.00	63 - 135	0	0.0	
				SP6*NONE=666		0.20	0.18	91.50	63 - 135	0	5.71	
ETHYLBENZENE	UG/L	34371*PI		SP1*NONE=666		0.20	0.18	88.50	53 - 125	0	32.00	
				SP2*NONE=666		0.20	0.18	88.00	53 - 125	0	0.0	
				SP3*NONE=666		0.20	0.22	109.00	53 - 125	0	20.00	
				SP4*NONE=666		0.20	0.23	115.00	53 - 125	0	24.39	
TOLUENE	UG/L	34010*PI		SP5*NONE=666		0.20	0.18	90.00	53 - 125	0	0.0	
				SP6*NONE=666		0.20	0.18	90.00	53 - 125	0	10.53	35.00
				SP1*NONE=666		2.22	1.89	85.10	48 - 144	0	0.0	
				SP2*NONE=666		2.22	1.89	85.10	48 - 144	0	0.0	
ARSENIC, TOTAL	UG/L	1002*ICAP	35075	SP3*NONE=666		2.52	2.37	94.00	48 - 144	0	6.53	
				SP4*NONE=666		2.22	1.87	84.20	48 - 144	0	3.81	29.00
				SP5*NONE=666		2.14	1.80	81.10	48 - 144	0	0.0	
				SP6*NONE=666		2.22	1.87	84.20	48 - 144	0	0.0	
ANTHRAQUINONE, TOTAL	UG/L	1097*ICAP	35075	SP1*NONE=666	01 DEC 86	1000.0	1120	106.00	80 - 120	65.34	20.00	
				SP2*NONE=666		1000.0	1150	108.00	80 - 120	65.34	2.64	
				SP3*NONE=666	14 JAN 87	1000.0	1160	110.00	80 - 120	65.34	3.51	
				SP4*NONE=666		1000.0	1020	102.00	80 - 120	0	1.94	
BERYLLIUM, TOTAL	UG/L	1012*ICAP	35075	SP2*NONE=666		1000.0	1040	104.00	80 - 120	0	0.98	
				SP3*NONE=666		1000.0	1030	103.00	80 - 120	0	3.08	20.00
				SP4*NONE=666	23 FEB 87	1000.0	957	95.70	80 - 120	0	1.54	
				SP5*NONE=666	01 DEC 86	500.00	523	105.00	80 - 120	0	4.12	
ANTHRAQUINONE, TOTAL	UG/L	1097*ICAP	35075	SP2*NONE=666		500.00	515	103.00	80 - 120	0	1.54	
				SP3*NONE=666		500.00	545	109.00	80 - 120	0	4.12	
				SP4*NONE=666	23 FEB 87	500.00	464	92.70	80 - 120	0	4.41	
				SP5*NONE=666	23 NOV 86	500.00	487	97.40	80 - 120	0	3.43	
ANTHRAQUINONE, TOTAL	UG/L	1012*ICAP	35075	SP2*NONE=666		500.00	504	101.00	80 - 120	0	2.63	
				SP3*NONE=666		500.00	500	99.90	80 - 120	0	2.83	
				SP4*NONE=666	01 DEC 86	500.00	501	100.00	80 - 120	0	15.00	
				SP5*NONE=666		500.00	52.8	103.00	85 - 115	1.3	6.05	
ANTHRAQUINONE, TOTAL	UG/L	1012*ICAP	35075	SP2*NONE=666		500.00	49.7	96.80	85 - 115	1.3	6.05	
				SP3*NONE=666		500.00	56.4	110.00	85 - 115	1.3	6.59	
				SP4*NONE=666	14 JAN 87	500.00	46.4	92.20	85 - 115	1.3	6.59	
				SP5*NONE=666		500.00	46.4	92.20	85 - 115	1.3	6.59	

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC. QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE BASE-FIELD GROUP TYNDLS

NAME	UNITS	STORET-METHOD	BATCH	Standard Matrix Spike Recovery and Replicate Summary				REC. CRIT.	MET-BLK	R.P.D.	R.P.D. CRIT.
				SAMPLE	DATE	TARGET	FOUND				
Cadmium	UG/L	1027-ICAP	35075	SP2-NONE#1		50.00	50.3	85 - 115	28	8.07	
				SP3-NONE#1		50.00	51.8	85 - 115	28	11.00	
				SP1-NONE#2	23 FEB 87	50.00	40.0	85 - 115	0		
				SP3-NONE#2		50.00	37.6	85 - 115	0	6.19	15.00
				SP1-NONE#1	01 DEC 86	50.00	55.2	85 - 115	1.29	2.94	
				SP2-NONE#1		50.00	53.6	85 - 115	1.29	2.66	
				SP3-NONE#1		50.00	56.7	85 - 115	1.29		
				SP1-NONE#2	23 FEB 87	50.00	51.0	85 - 115	0		
				SP3-NONE#2		50.00	52.8	85 - 115	0	3.47	
				SP1-NONE#1	23 NOV 86	50.00	51.8	85 - 115	1.08		
Chromium	UG/L	1034-ICAP	35075	SP2-NONE#1		50.00	52.4	85 - 115	1.08	1.15	
				SP3-NONE#1		50.00	52.4	85 - 115	1.08	1.34	
				SP1-NONE#2		50.00	52.5	85 - 115	1.08		
				SP3-NONE#2		50.00	53.5	85 - 115	1.08	3.23	20.00
				SP1-NONE#1	01 DEC 86	200.00	209	80 - 120	46	2.83	
				SP2-NONE#1		200.00	215	80 - 120	46	0.0	
				SP3-NONE#1		200.00	209	80 - 120	46	0.0	
				SP1-NONE#2	23 FEB 87	200.00	174	80 - 120	0	0.56	
				SP3-NONE#2		200.00	173	80 - 120	0		
				SP1-NONE#1	23 NOV 86	200.00	198	80 - 120	0	2.99	
Copper	UG/L	1042-ICAP	35075	SP2-NONE#1		200.00	204	80 - 120	0	1.50	
				SP3-NONE#1		200.00	201	80 - 120	0	3.96	15.00
				SP1-NONE#2		200.00	206	80 - 120	0		
				SP3-NONE#2		250.00	248	85 - 115	0.08		
				SP1-NONE#1	01 DEC 86	250.00	247	85 - 115	0.08	0.40	
				SP2-NONE#1		250.00	250	85 - 115	0.08	0.80	
				SP3-NONE#1		250.00	224	85 - 115	0	0.45	
				SP1-NONE#2	23 FEB 87	250.00	223	85 - 115	0	0.81	
				SP3-NONE#2		250.00	247	85 - 115	0	0.40	
				SP1-NONE#1	23 NOV 86	250.00	249	85 - 115	0	2.40	20.00
Lead	UG/L	1051-ICAP	35075	SP2-NONE#1		250.00	253	85 - 115	0		
				SP3-NONE#1		500.00	557	80 - 120	49.36	2.18	
				SP1-NONE#2		500.00	545	80 - 120	49.36	0.18	
				SP3-NONE#2		500.00	558	80 - 120	49.36		
				SP1-NONE#1	01 DEC 86	500.00	463	80 - 120	0	3.52	
				SP2-NONE#1		500.00	447	80 - 120	0		
				SP3-NONE#1	23 FEB 87	500.00	521	80 - 120	0	1.90	
				SP1-NONE#2		500.00	544	80 - 120	0	4.32	
				SP3-NONE#2		500.00	549	80 - 120	0	5.23	20.00
				SP1-NONE#1	01 DEC 86	500.00	543	80 - 120	0	0.0	
Nickel	UG/L	1067-ICAP	35075	SP2-NONE#1		500.00	546	80 - 120	0	0.55	
				SP3-NONE#1		500.00	488	80 - 120	0		
				SP1-NONE#2	23 FEB 87	500.00	470	80 - 120	0	3.76	
				SP3-NONE#2		500.00	524	80 - 120	9.73		
				SP1-NONE#1	23 NOV 86	500.00	546	80 - 120	9.73	4.11	
				SP2-NONE#1		500.00	526	80 - 120	9.73	0.38	
				SP3-NONE#1		500.00	542	80 - 120	9.73	3.38	
				SP1-NONE#2		1000.0	1110	80 - 120	94.49	0.0	20.00
				SP3-NONE#2		1000.0	1110	80 - 120	94.49	0.0	
				SP1-NONE#1	01 DEC 86	1000.0	951	80 - 120	23.4	4.08	
Selenium	UG/L	1147-ICAP	35075	SP2-NONE#1		1000.0	1060	80 - 120	26.46		
				SP3-NONE#1		1000.0	1080	80 - 120	26.46	1.87	
				SP1-NONE#2	23 FEB 87	1000.0	913	80 - 120	23.4		
				SP3-NONE#2	23 NOV 86	1000.0	1060	80 - 120	26.46		

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC. QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE BASE-FIELD GROUP TYNDLS

Standard Matrix Spike Recovery and Replicate Summary

NAME	UNITS	STORET-METHOD	BATCH	SAMPLE	DATE	TARGET	FOUND	\$REC	REC. CRIT.	ME-BLN	R.P.D.	R.P.D. CRIT.
SILVER, TOTAL	UG/L	1077-ICAP	35075	SP3-NONE#1		1000.0	1060	103.00	80 - 120	26.46	0.0	
				SP4-NONE#1		1000.0	1060	104.00	80 - 120	26.46	0.0	
				SP1-NONE#1	01 DEC 86	100.00	119	106.00	70 - 110	12.64		20.00
				SP2-NONE#1		100.00	117	104.00	70 - 110	12.64	1.69	
				SP3-NONE#1		100.00	129	117.00	70 - 110	12.64	8.06	
				SP1-NONE#2	23 FEB 87	100.00	94.9	94.90	70 - 110	6		
				SP3-NONE#2		100.00	92.6	92.60	70 - 110	6	2.45	
				SP1-NONE#1	23 NOV 86	100.00	99.2	98.50	70 - 110	.67		
THALLIUM, TOTAL	UG/L	1059-ICAP	35075	SP2-NONE#1		100.00	101	100.00	70 - 110	.67	1.60	
				SP3-NONE#1		100.00	101	101.00	70 - 110	.67	1.60	
				SP4-NONE#1		100.00	107	106.00	70 - 110	.67	7.57	
				SP1-NONE#1	01 DEC 86	10000	10300	102.00	80 - 120	63.05		20.00
				SP2-NONE#1		10000	10300	102.00	80 - 120	63.05	0.0	
				SP3-NONE#1		10000	10200	102.00	80 - 120	63.05	0.94	
				SP1-NONE#2	23 FEB 87	10000	8460	84.60	80 - 120	0		
				SP3-NONE#2		10000	8450	84.50	80 - 120	0	0.12	
ZINC, TOTAL	UG/L	1092-ICAP	35075	SP1-NONE#1	23 NOV 86	10000	9790	97.90	80 - 120	0		
				SP2-NONE#1		10000	9810	98.10	80 - 120	0	0.20	
				SP3-NONE#1		10000	9780	97.80	80 - 120	0	0.10	
				SP4-NONE#1		10000	10200	102.00	80 - 120	0	4.10	15.00
				SP1-NONE#1	01 DEC 86	500.00	563	113.00	85 - 115	0		
				SP2-NONE#1		500.00	553	111.00	85 - 115	0	1.79	
				SP3-NONE#1		500.00	581	116.00	85 - 115	0	3.15	
				SP1-NONE#2	23 FEB 87	500.00	490	97.70	85 - 115	2.08		
MERCURY, TOTAL	UG/L	71900-CVAA	36110	SP3-NONE#2		500.00	482	96.00	85 - 115	2.08	1.65	
				SP1-NONE#1	23 NOV 86	500.00	519	102.00	85 - 115	6.67		
				SP2-NONE#1		500.00	535	106.00	85 - 115	6.67	3.04	
				SP3-NONE#1		500.00	539	106.00	85 - 115	6.67	3.78	
				SP4-NONE#1		500.00	548	108.00	85 - 115	6.67	5.44	
				SP2-NONE#1	05 NOV 86	5.00	4.95	95.10	80 - 120	.1938		20.00
				SP1-NONE#1		5.00	4.77	91.50	80 - 120	.1938	3.70	
				SP1-NONE#1	12 NOV 86	4.70	4.10	87.20	80 - 120	.8023		
			34706	SP2-NONE#1		4.70	4.58	97.50	80 - 120	.8023	11.06	
				SP3-NONE#1		4.70	4.85	103.00	80 - 120	.8023	16.76	
				SP1-NONE#1	19 NOV 86	5.00	4.90	98.00	80 - 120	.2		
				SP2-NONE#1		5.00	5.16	103.00	80 - 120	.2	5.17	

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC. QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE BASE-FIELD GROUP TYNDLS

NAME	UNITS	STORE/METHOD	BATCH	SAMPLE	DATE	TARGET	FOUND	SREC	REC CRIT	UNSPINED	R.P.D.	R.P.D. CRIT.
Sample Matrix Spike Recovery Summary												
CARBON TETRACHLORIDE	UG/L	32102*HA	34825	SPR2=TYNDL2*7	21 OCT 86	0.20	0.20	101.00	55 - 131	0.0		0.0
	UG/L	32102*HA	34825	SPR1=TYNDL4*1	21 OCT 86	0.20	0.17	86.50	55 - 131	0.0		0.0
	UG/L	34496*HA		SPR3=TYNDL4*7		0.20	0.17	85.00	55 - 131	0.0		0.0
1,1-DICHLOROETHANE	UG/L			SPR2=TYNDL2*7		0.20	0.20	100.50	57 - 121	0.0		0.0
	UG/L			SPR1=TYNDL4*1		0.20	0.19	93.00	57 - 121	0.0		0.0
	UG/L			SPR3=TYNDL4*7		0.20	0.17	85.00	57 - 121	0.0		0.0
1,2-DICHLOROETHANE	UG/L	34531*HA		SPR2=TYNDL2*7		0.20	0.23	115.50	63 - 135	0.0		0.0
	UG/L			SPR1=TYNDL4*1		0.20	0.20	102.00	63 - 135	0.0		0.0
	UG/L			SPR3=TYNDL4*7		0.20	0.19	94.50	63 - 135	0.0		0.0
1,1,1-TRICHLOROETHANE	UG/L	34506*HA		SPR2=TYNDL2*7		0.20	0.20	101.00	53 - 125	0.0		0.0
	UG/L			SPR1=TYNDL4*1		0.20	0.20	99.00	53 - 125	0.0		0.0
	UG/L			SPR3=TYNDL4*7		0.20	0.17	83.00	53 - 125	0.0		0.0
ETHYLBENZENE	UG/L	34371*PI		SPR2=TYNDL2*7		2.52	2.80	111.11	48 - 144	0.0		0.0
	UG/L			SPR1=TYNDL4*1		2.22	2.28	102.70	48 - 144	0.0		0.0
	UG/L			SPR3=TYNDL4*7		2.22	2.05	92.34	48 - 144	0.0		0.0
TOLUENE	UG/L	34010*PI		SPR2=TYNDL2*7		2.44	2.45	100.41	59 - 135	0.0		0.0
	UG/L			SPR1=TYNDL4*1		2.14	2.34	109.35	59 - 135	0.0		0.0
	UG/L			SPR3=TYNDL4*7		2.14	2.06	96.26	59 - 135	0.0		0.0
ARSENIC, TOTAL	UG/L	1002*ICAP	35075	SPR=PEP8*1	01 DEC 86	1000.0	1130	112.46	80 - 120	10.1		10.1
	UG/L			SPR=PEP8*10		1087.1	1340	119.58	80 - 120	39.2		39.2
	UG/L		35477	SPR=TYNDL3*1	14 JAN 87	1000.0	1110	102.71	80 - 120	86.4		86.4
	UG/L			SPR=TYNDL3*3		963.36	1230	107.03	80 - 120	203		203
	UG/L			SPR=TYNDL5*1		1000.0	1000	99.71	80 - 120	5.06		5.06
	UG/L			SPR=TYNDL5*4		963.36	1030	105.83	80 - 120	6.00		6.00
	UG/L		36110	SPR=TYNDL5*5	23 FEB 87	1000.0	949	94.94	80 - 120	0.0		0.0
	UG/L			SPR=TYNDL5*8		1000.0	941	94.06	80 - 120	0.0		0.0
ANTIMONY, TOTAL	UG/L	1097*ICAP	35075	SPR=PEP8*1	01 DEC 86	500.00	532	104.64	80 - 120	9.15		9.15
	UG/L			SPR=PEP8*10		984.02	1150	116.53	80 - 120	0.0		0.0
	UG/L		36110	SPR=TYNDL5*5	23 FEB 87	500.00	444	88.81	80 - 120	0.0		0.0
	UG/L			SPR=TYNDL5*8		1000.0	899	89.87	80 - 120	0.0		0.0
	UG/L		36268	SPR=TYNDL5*9	23 NOV 86	500.00	515	103.01	80 - 120	0.0		0.0
	UG/L		35075	SPR=PEP8*1	01 DEC 86	50.00	54.0	110.64	85 - 115	0.0		0.0
	UG/L			SPR=PEP8*10		956.25	1120	117.51	85 - 115	0.0		0.0
	UG/L		35477	SPR=TYNDL3*1	14 JAN 87	50.00	44.3	61.42	85 - 115	13.6		13.6
	UG/L			SPR=TYNDL3*3		853.68	956	111.96	85 - 115	0.0		0.0
	UG/L			SPR=TYNDL5*4		50.00	52.0	87.20	85 - 115	8.37		8.37
	UG/L		36110	SPR=TYNDL5*5	23 FEB 87	50.00	43.1	86.16	85 - 115	0.0		0.0
	UG/L			SPR=TYNDL5*8		1000.0	920	92.01	85 - 115	0.0		0.0
CADMIUM, TOTAL	UG/L	1027*ICAP	35075	SPR=PEP8*1	01 DEC 86	50.00	54.3	108.52	85 - 115	0.0		0.0
	UG/L			SPR=PEP8*10		1006.7	1160	115.19	85 - 115	0.0		0.0
	UG/L		36110	SPR=TYNDL5*5	23 FEB 87	50.00	51.3	102.66	85 - 115	0.0		0.0
	UG/L			SPR=TYNDL5*8		1000.0	926	92.56	85 - 115	0.0		0.0
	UG/L		36268	SPR=TYNDL5*9	23 NOV 86	50.00	52.9	105.70	85 - 115	0.0		0.0
	UG/L		35075	SPR=PEP8*1	01 DEC 86	200.00	219	109.51	80 - 120	0.0		0.0
	UG/L			SPR=PEP8*10		966.77	1140	118.44	80 - 120	0.0		0.0
	UG/L		36110	SPR=TYNDL5*5	23 FEB 87	200.00	186	93.23	80 - 120	0.0		0.0
	UG/L			SPR=TYNDL5*8		1000.0	935	93.53	80 - 120	0.0		0.0
	UG/L		36268	SPR=TYNDL5*9	23 NOV 86	200.00	200	99.75	80 - 120	0.03		0.03
	UG/L		35075	SPR=PEP8*1	01 DEC 86	250.00	251	99.04	85 - 115	3.10		3.10
	UG/L			SPR=PEP8*10		929.21	1050	113.28	85 - 115	0.55		0.55
	UG/L		36110	SPR=TYNDL5*5	23 FEB 87	250.00	235	89.54	85 - 115	10.8		10.8
	UG/L			SPR=TYNDL5*8		1000.0	906	90.64	85 - 115	0.0		0.0
	UG/L		36268	SPR=TYNDL5*9	23 NOV 86	250.00	251	99.76	85 - 115	1.12		1.12
	UG/L		35075	SPR=PEP8*1	01 DEC 86	500.00	513	108.43	80 - 120	0.0		0.0
	UG/L			SPR=PEP8*10		1020.9	1150	116.87	80 - 120	0.0		0.0

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE BASE-FIELD GROUP TYNDLS

NAME	UNITS	STORE METHOD	BATCH	SAMPLE	DATE	Target	FOUND	REC	CRIT	UNSPINED	R.P.D.	R.P.D. CRIT.
				SPR-TYNDL5-5	23 FEB 87	500.00	482	92.91	80 - 120	17.0		
			36110	SPR-TYNDL5-8		1000.0	945	94.51	80 - 120	0.0		
			36268	SPR-TYNDL5-9	23 NOV 86	500.00	535	107.06	80 - 120	0.0		
			35075	SPR-PEP8-1	01 DEC 86	500.00	542	108.37	80 - 120	0.0		
				SPR-PEP8-10		978.86	1130	115.88	80 - 120	0.0		
			36110	SPR-TYNDL5-5	23 FEB 87	500.00	480	95.96	80 - 120	0.0		
				SPR-TYNDL5-8		1000.0	904	90.35	80 - 120	0.0		
			36268	SPR-TYNDL5-9	23 NOV 86	500.00	544	106.80	80 - 120	10.3		
			35075	SPR-PEP8-1	01 DEC 86	1000.0	1070	105.71	80 - 120	0.0		
				SPR-PEP8-10		1111.4	1380	121.87	80 - 120	0.0		
			36110	SPR-TYNDL5-5	23 FEB 87	1000.0	967	99.05	80 - 120	0.0		
				SPR-TYNDL5-8		1000.0	948	97.18	80 - 120	0.0		
			36268	SPR-TYNDL5-9	23 NOV 86	1000.0	1110	106.20	80 - 120	43.3		
			35075	SPR-PEP8-1	01 DEC 86	130.00	109	105.96	70 - 110	3.24		
				SPR-PEP8-10		970.89	1130	115.09	70 - 110	8.10		
			36110	SPR-TYNDL5-5	23 FEB 87	100.00	92.5	91.03	70 - 110	1.47		
				SPR-TYNDL5-8		500.00	439	87.80	70 - 110	0.02		
			36268	SPR-TYNDL5-9	23 NOV 86	100.00	105	102.86	70 - 110	2.17		
			35075	SPR-PEP8-1	01 DEC 86	10000	10400	103.65	80 - 120	0.0		
				SPR-PEP8-10		1025.5	1200	118.52	80 - 120	0.0		
			36110	SPR-TYNDL5-5	23 FEB 87	10000	8530	85.35	80 - 120	0.0		
				SPR-TYNDL5-8		1000.0	870	86.97	80 - 120	0.0		
			36268	SPR-TYNDL5-9	23 NOV 86	10000	9860	97.98	80 - 120	61.6		
			35075	SPR-PEP8-1	01 DEC 86	500.00	575	112.74	85 - 115	11.7		
				SPR-PEP8-10		1014.4	1210	116.62	85 - 115	27.3		
			36110	SPR-TYNDL5-5	23 FEB 87	500.00	527	97.28	85 - 115	40.3		
				SPR-TYNDL5-8		1000.0	926	92.09	85 - 115	4.91		
			36268	SPR-TYNDL5-9	23 NOV 86	500.00	541	106.13	85 - 115	10.1		
			34647	SPR-TYNDL5-1	05 NOV 86	5.00	4.45	91.48	80 - 120	0.0		
				SPR-TYNDL5-2		5.00	4.45	91.48	80 - 120	0.0		
			34706	SPR-MALU-1	12 NOV 86	4.70	4.16	81.59	80 - 120	0.32		
			34819	SPR-PEP8-8	19 NOV 86	5.00	4.83	100.60	80 - 120	0.0		
				SPR-WHGM1-2		5.00	4.54	94.80	80 - 120	0.0		
				SPR-WOM-6-2		5.00	5.36	97.74	80 - 120	0.47		

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC. QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE BASE-FIELD GROUP TYNDLS

NAME	UNITS	SIGMET-METHOD	BATCH	SAMPLE	Method Blank Sample Summary	
					DATE	FOUND
BROMODICHLOROMETHANE	UG/L	32101-HA	34825	MB-NONE #666	21 OCT 86	0
BROMOFORM	UG/L	32104-HA	34825	MB-NONE #666	21 OCT 86	0
BROMOMETHANE	UG/L	34413-HA		MB-NONE #666		0
CARBON TETRACHLORIDE	UG/L	32102-HA		MB-NONE #666		0
CHLOROBENZENE	UG/L	34301-HA		MB-NONE #666		0
CHLOROETHANE	UG/L	34311-HA		MB-NONE #666		0
2-CHLOROETHYL VINYL ETHER	UG/L	34576-HA		MB-NONE #666		0
CHLOROFORM	UG/L	32106-HA		MB-NONE #666		0
CHLOROPHANE	UG/L	34418-HA		MB-NONE #666		0
DIBROMOCHLOROMETHANE	UG/L	32105-HA		MB-NONE #666		0
DICHLORODIFLUORO METHANE	UG/L	34668-HA		MB-NONE #666		0
1,1-DICHLOROETHANE	UG/L	34496-HA		MB-NONE #666		0
1,2-DICHLOROETHANE	UG/L	34531-HA		MB-NONE #666		0
1,1-DICHLOROETHYLENE	UG/L	34501-HA		MB-NONE #666		0
TRANS-1,2-DICHLORO ETHENE	UG/L	34546-HA		MB-NONE #666		0
1,2-DICHLOROPROPANE	UG/L	34541-HA		MB-NONE #666		0
CIS-1,3-DICHLORO PROPENE	UG/L	34704-HA		MB-NONE #666		0
TRANS-1,3-DICHLORO PROPENE	UG/L	34699-HA		MB-NONE #666		0
METHYLENE CHLORIDE	UG/L	34423-HA		MB-NONE #666		0
1,1,2,2-TETRACHLORO ETHANE	UG/L	34516-HA		MB-NONE #666		0
TETRACHLOROETHENE	UG/L	34475-HA		MB-NONE #666		0
1,1,1-TRICHL 'ETHANE	UG/L	34506-HA		MB-NONE #666		0
1,1,2-TRICHL 'ETHANE	UG/L	34511-HA		MB-NONE #666		0
TRICHLOROETHENE	UG/L	39180-HA		MB-NONE #666		0
TRICHL 'FLUOROMETHANE	UG/L	34488-HA		MB-NONE #666		0
VINYL CHLORIDE	UG/L	39175-HA		MB-NONE #666		0
BENZENE	UG/L	34030-P1		MB-NONE #666		0
ETHYLBENZENE	UG/L	34371-P1		MB-NONE #666		0
TOLUENE	UG/L	34010-P1		MB-NONE #666		0
ARSENIC, TOTAL	UG/L	1002-1CAP	35075	MB-NONE #1	01 DEC 86	65.34
			35477	MB-NONE #1	14 JAN 87	0
				MB-NONE #2		2.78
			36110	MB-NONE #1	23 FEB 87	0
				MB-NONE #2		0
ANTIMONY, TOTAL	UG/L	1097-1CAP	35075	MB-NONE #1	01 DEC 86	0
			36110	MB-NONE #1	23 FEB 87	0
				MB-NONE #2		0
			36268	MB-NONE #1	23 NOV 86	0
				MB-NONE #2		0
BERYLLIUM, TOTAL	UG/L	1012-1CAP	35075	MB-NONE #1	01 DEC 86	1.3
			35477	MB-NONE #1	14 JAN 87	.28
				MB-NONE #2		0
			36110	MB-NONE #1	23 FEB 87	0
				MB-NONE #2		0
CADMIUM, TOTAL	UG/L	1027-1CAP	35075	MB-NONE #1	01 DEC 86	1.29
			36110	MB-NONE #1	23 FEB 87	0
				MB-NONE #2		0
			36268	MB-NONE #1	23 NOV 86	1.08
				MB-NONE #2		.86
CHROMIUM, TOTAL	UG/L	1034-1CAP	35075	MB-NONE #1	01 DEC 86	.46
			36110	MB-NONE #1	23 FEB 87	0
				MB-NONE #2		0
			36268	MB-NONE #1	23 NOV 86	0
				MB-NONE #2		0
COPPER, TOTAL	UG/L	1042-1CAP	35075	MB-NONE #1	01 DEC 86	.08
			36110	MB-NONE #1	23 FEB 87	0
				MB-NONE #2		0

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE BASE-FIELD GROUP TYNDLS

NAME	UNITS	STORE/METHOD	BATCH	SAMPLE	DATE	FOUND	Method Blank Sample Summary
				MB=NONE #2		0	
LEAD, TOTAL	UG/L	1051*1CAP	36268	MB=NONE #1	23 NOV 86	0	
				MB=NONE #2		0	
				MB=NONE #1	01 DEC 86	49.36	
				MB=NONE #2	23 FEB 87	0	
NICKEL, TOTAL	UG/L	1067*1CAP	36268	MB=NONE #1	23 NOV 86	0	
				MB=NONE #2		20.57	
				MB=NONE #1	01 DEC 86	0	
				MB=NONE #2	23 FEB 87	0	
SELENIUM, TOTAL	UG/L	1147*1CAP	36268	MB=NONE #1	23 NOV 86	9.73	
				MB=NONE #2		0	
				MB=NONE #1	01 DEC 86	94.49	
				MB=NONE #2	23 FEB 87	23.4	
SILVER, TOTAL	UG/L	1077*1CAP	36268	MB=NONE #1	23 NOV 86	26.46	
				MB=NONE #2		41.15	
				MB=NONE #1	01 DEC 86	12.64	
				MB=NONE #2	23 FEB 87	6	
THALLIUM, TOTAL	UG/L	1059*1CAP	36268	MB=NONE #1	23 NOV 86	67	
				MB=NONE #2		16	
				MB=NONE #1	01 DEC 86	63.05	
				MB=NONE #2	23 FEB 87	0	
ZINC, TOTAL	UG/L	1092*1CAP	36268	MB=NONE #1	23 NOV 86	0	
				MB=NONE #2		0	
				MB=NONE #1	01 DEC 86	0	
				MB=NONE #2	23 FEB 87	2.08	
MERCURY, TOTAL	UG/L	71.00*CVAA	34647	MB=NONE #1	23 NOV 86	6.67	
				MB=NONE #2		14.75	
				MB=NONE #1	05 NOV 86	1938	
				MB=NONE #2	12 NOV 86	8023	
			34756	MB=NONE #1		1002	
			34819	MB=NONE #1	19 NOV 86	.2	

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FIELD GROUP
TYNDALL - 6

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ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
SAMPLE / BATCH REPORT FOR FIELD GROUP TYNOL6
DATE: 01 MAR 1988

PAGE 1

SAMPLE ID	PARAMETER NAME	BATCH #
TYNOL6#1	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	1,2-DIBROMOETHANE (EDB)	34522
	HYDROCARBONS, PETRO	34552
	LEAD, TOTAL	34894
TYNOL6#2	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	1,2-DIBROMOETHANE (EDB)	34522
	HYDROCARBONS, PETRO	34552
	LEAD, TOTAL	34894
TYNOL6#3	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	1,2-DIBROMOETHANE (EDB)	34522
	HYDROCARBONS, PETRO	34552
	LEAD, TOTAL	35121
TYNOL6#4	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	1,2-DIBROMOETHANE (EDB)	34522
	HYDROCARBONS, PETRO	34552
	LEAD, TOTAL	34894
TYNOL6#5	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	1,2-DIBROMOETHANE (EDB)	34522
	HYDROCARBONS, PETRO	34552
	LEAD, TOTAL	34894
TYNOL6#6	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	1,2-DIBROMOETHANE (EDB)	34522
	HYDROCARBONS, PETRO	34552
	LEAD, TOTAL	34894
TYNOL6#7	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	1,2-DIBROMOETHANE (EDB)	34522
	HYDROCARBONS, PETRO	34552
	LEAD, TOTAL	35121
TYNOL6#8	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	1,2-DIBROMOETHANE (EDB)	34522
	HYDROCARBONS, PETRO	34552
	LEAD, TOTAL	34894
TYNOL6#9	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	1,2-DIBROMOETHANE (EDB)	34522
	HYDROCARBONS, PETRO	34470
	LEAD, TOTAL	34894
TYNOL6#10	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	1,2-DIBROMOETHANE (EDB)	34522
	HYDROCARBONS, PETRO	34552
	LEAD, TOTAL	34894
TYNOL6#11	VOLATILE AROMATICS(602)	34825

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
 SAMPLE / BATCH REPORT FOR FIELD GROUP TYNDL6

DATE: 01 MAR 1988

SAMPLE ID	PARAMETER NAME	BATCH #
TYNDL6*11	VOLATILE HALOCARBONS(601)	34825
	1,2-DIBROMOETHANE (EDB)	34522
	HYDROCARBONS, PETRO	34627
	LEAD, TOTAL	34894
TYNDL6*12	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	1,2-DIBROMOETHANE (EDB)	34522
	HYDROCARBONS, PETRO	34627
TYNDL6*13	LEAD, TOTAL	34894
	VOLATILE AROMATICS(602)	NA
	VOLATILE HALOCARBONS(601)	NA
	1,2-DIBROMOETHANE (EDB)	34522
	HYDROCARBONS, PETRO	NA
	LEAD, TOTAL	NA

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
 QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE BASE-FIELD GROUP TYNDL6

Replicate Analysis Sample Summary									
NAME	UNITS	STORET=METHOD	BATCH	SAMPLE	DATE	FOUND	R.P.D.	MAX % REPL DIFF	
HYDROCARBONS, PETRO	MG/L	45501=1	34627	RP1=TYNDL6=10	06 NOV 86	.1642	30.90	20	
HYDROCARBONS, PETRO	MG/L	45501=1	34627	RP2=TYNDL6=10	06 NOV 86	.1642	0.0		

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC. QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE BASE-FIELD GROUP TYNDL6

Standard Matrix Spike Recovery and Replicate Summary									
NAME	UNITS	STORET METHOD	BATCH	SAMPLE	DATE	TARGET	FOUND	SREC	REC. CRIT
CARBON TETRACHLORIDE	UG/L	32102*HA	34825	SP2*NONE*666	21 OCT 86	0.20	0.17	86.00	55 - 131
CARBON TETRACHLORIDE	UG/L	32102*HA	34825	SP3*NONE*666	21 OCT 86	0.20	0.21	107.00	55 - 131
				SP4*NONE*666		0.20	0.21	104.00	55 - 131
				SP5*NONE*666		0.20	0.17	85.00	55 - 131
				SP6*NONE*666		0.20	0.18	91.00	55 - 131
1,1-DICHLOROETHANE	UG/L	34496*HA		SP1*NONE*666		0.20	0.17	84.00	57 - 121
				SP2*NONE*666		0.20	0.17	87.00	57 - 121
				SP3*NONE*666		0.20	0.23	114.00	57 - 121
				SP4*NONE*666		0.20	0.21	107.00	57 - 121
				SP5*NONE*666		0.20	0.19	92.50	57 - 121
				SP6*NONE*666		0.20	0.19	95.50	57 - 121
1,2-DICHLOROETHANE	UG/L	34531*HA		SP1*NONE*666		0.20	0.17	82.50	63 - 135
				SP2*NONE*666		0.20	0.18	89.50	63 - 135
				SP3*NONE*666		0.20	0.23	116.00	63 - 135
				SP4*NONE*666		0.20	0.22	109.00	63 - 135
				SP5*NONE*666		0.20	0.17	87.00	63 - 135
				SP6*NONE*666		0.20	0.18	91.50	63 - 135
1,1,1-TRICHL'ETHANE	UG/L	34508*HA		SP1*NONE*666		0.20	0.18	88.50	53 - 125
				SP2*NONE*666		0.20	0.18	88.00	53 - 125
				SP3*NONE*666		0.20	0.22	109.00	53 - 125
				SP4*NONE*666		0.20	0.23	115.00	53 - 125
				SP5*NONE*666		0.20	0.18	90.00	53 - 125
				SP6*NONE*666		0.20	0.20	101.00	53 - 125
ETHYLBENZENE	UG/L	34371*PI		SP1*NONE*666		2.22	1.89	85.10	48 - 144
				SP2*NONE*666		2.22	1.89	85.10	48 - 144
				SP3*NONE*666		2.52	2.53	100.00	48 - 144
				SP4*NONE*666		2.52	2.37	94.00	48 - 144
				SP5*NONE*666		2.22	1.87	84.20	48 - 144
				SP6*NONE*666		2.22	1.80	81.10	48 - 144
TOLUENE	UG/L	34010*PI		SP1*NONE*666		2.14	2.24	105.00	59 - 135
				SP2*NONE*666		2.14	2.24	105.00	59 - 135
				SP3*NONE*666		2.44	2.49	102.00	59 - 135
				SP4*NONE*666		2.44	2.25	92.20	59 - 135
				SP5*NONE*666		2.14	1.71	79.90	59 - 135
				SP6*NONE*666		2.14	1.74	81.30	59 - 135
XYLENES, TOTAL	UG/L	81551*PI		SP1*NONE*666		6.02	5.22	86.70	56 - 134
				SP2*NONE*666		6.02	5.22	86.70	56 - 134
				SP3*NONE*666		6.02	7.12	118.00	56 - 134
				SP4*NONE*666		6.02	6.67	111.00	56 - 134
				SP5*NONE*666		6.02	5.21	86.50	56 - 134
				SP6*NONE*666		6.02	5.08	84.40	56 - 134
1,2-DIBROMOETHANE (EDB)	UG/L	77651*EC	34522	SP1*NONE*1	27 OCT 86	0.29	0.31	107.00	60 - 140
				SP2*NONE*1		0.29	0.30	104.00	60 - 140
HYDROCARBONS, PETRO	MG/L	45501*1	34470	SP1*NONE*1	22 OCT 86	8200.0	3.86	92.60	70.2 - 124.8
				SP2*NONE*1		8200.0	3.92	94.00	70.2 - 124.8
			34552	SP1*NONE*1	30 OCT 86	8200.0	3.66	87.20	70.2 - 124.8
				SP2*NONE*1		8200.0	3.71	88.50	70.2 - 124.8
			34627	SP1*NONE*1	06 NOV 86	8200.0	4.26	101.00	70.2 - 124.8
				SP2*NONE*1		8200.0	4.31	102.00	70.2 - 124.8
LEAD, TOTAL	UG/L	1051*GFAA	34894	SP1*NONE*1	25 NOV 86	50.00	57.1	103.00	80 - 120
				SP2*NONE*1		50.00	59.3	108.00	80 - 120
				SP3*NONE*1		50.00	58.2	105.00	80 - 120
				SP1*NONE*2		50.00	61.4	112.00	80 - 120
				SP2*NONE*2		50.00	63.6	116.00	80 - 120
				SP1*NONE*3		50.00	65.7	121.00	80 - 120
				SP3*NONE*3		50.00	59.3	108.00	80 - 120

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE BASE-FIELD GROUP TYNDL6

Standard Matrix Spike Recovery and Replicate Summary

NAME	UNITS	STORE	METHOD	BATCH	SAMPLE	DATE	RECORDED	TARGET	FOUND	REC	REC. CRIT.	METABLA	R.P.D.	R.P.D. CRIT.
				35121	SP1#NONE#1	12 DEC 86		50.00	47.7	95.50	80 - 120	1434		
					SP2#NONE#1			50.00	47.7	95.50	80 - 120	1434		
					SP1#NONE#2			50.00	57.1	114.00	80 - 120	1434		0.0
					SP2#NONE#2			50.00	52.4	105.00	80 - 120	1434		17.94
					SP1#NONE#3			50.00	43.1	86.10	80 - 120	1434		9.39
					SP2#NONE#3			50.00	47.3	94.60	80 - 120	1434		10.13
					SP1#NONE#4			50.00	57.5	115.00	80 - 120	1434		0.84
					SP2#NONE#4			50.00	53.3	107.00	80 - 120	1434		18.65
								50.00	53.3	107.00	80 - 120	1434		11.09

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC. QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE BASE-FIELD GROUP TYNDLS

NAME	UNITS	STORE/METHOD	BATCH	SAMPLE	Sample Matrix Spike Recovery Summary				REC. CRIT.	UNSPINED	R.P.D.	R.P.D. CRIT.
					DATE	TARGET	FOUND	SRLC				
CARBON TETRACHLORIDE	UG/L	32102*HA	34825	SPM2=TYNDL2*7	21 OCT 86	0.20	0.20	101.00	55 - 131	0.0		0.0
CARBON TETRACHLORIDE	UG/L	32102*HA	34825	SPM1=TYNDL4*1	21 OCT 86	0.20	0.17	86.50	55 - 131	0.0		0.0
				SPM3=TYNDL4*7		0.20	0.17	85.00	55 - 131	0.0		0.0
1,1-DICHLOROETHANE	UG/L	34496*HA		SPM2=TYNDL2*7		0.20	0.20	100.50	57 - 121	0.0		0.0
				SPM1=TYNDL4*1		0.20	0.19	93.00	57 - 121	0.0		0.0
				SPM3=TYNDL4*7		0.20	0.17	85.00	57 - 121	0.0		0.0
1,2-DICHLOROETHANE	UG/L	34531*HA		SPM2=TYNDL2*7		0.20	0.23	115.50	63 - 135	0.0		0.0
				SPM1=TYNDL4*1		0.20	0.20	102.00	63 - 135	0.0		0.0
				SPM3=TYNDL4*7		0.20	0.19	94.50	63 - 135	0.0		0.0
1,1,1-TRICHLOROETHANE	UG/L	34506*HA		SPM2=TYNDL2*7		0.20	0.20	101.00	53 - 125	0.0		0.0
				SPM1=TYNDL4*1		0.20	0.20	99.00	53 - 125	0.0		0.0
				SPM3=TYNDL4*7		0.20	0.17	83.00	53 - 125	0.0		0.0
ETHYLBENZENE	UG/L	34371*PI		SPM2=TYNDL2*7		2.52	2.80	111.11	48 - 144	0.0		0.0
				SPM1=TYNDL4*1		2.22	2.28	102.70	48 - 144	0.0		0.0
				SPM3=TYNDL4*7		2.22	2.05	92.34	48 - 144	0.0		0.0
TOLUENE	UG/L	34010*PI		SPM2=TYNDL2*7		2.44	2.45	100.41	59 - 135	0.0		0.0
				SPM1=TYNDL4*1		2.14	2.34	109.35	59 - 135	0.0		0.0
				SPM3=TYNDL4*7		2.14	2.06	96.26	59 - 135	0.0		0.0
XYLENES, TOTAL	UG/L	81551*PI		SPM2=TYNDL2*7		6.02	8.76	145.51	56 - 134	0.0		0.0
				SPM1=TYNDL4*1		6.02	8.48	140.86	56 - 134	0.0		0.0
				SPM3=TYNDL4*7		6.02	6.67	110.80	56 - 134	0.0		0.0
1,2-DIBROMOETHANE (E08)	UG/L	77651*EC	34522	SPM=TYNDL6*1	27 OCT 86	0.29	0.29	100.34	60 - 140	0.0		0.0
HYDROCARBONS, PETRO	MG/L	45501*1	34552	SPM=TYNDL2*9	30 OCT 86	8225.0	5.21	22.16	70.2 - 124.8	4.20		4.20
LEAD, TOTAL	UG/L	1051*GFAA	34894	SPM=PPPE-3*3	25 NOV 86	50.00	56.0	114.07	80 - 120	0		0
				SPM=SEME*7		50.00	126	114.15	80 - 120	0		0
				SPM=TYNDL2*1		50.00	71.0	120.52	80 - 120	10.8		10.8
				SPM=TYNDL4*1		50.00	66.7	133.44	80 - 120	0.00002		0.00002
				SPM=TYNDL4*12		100.00	145	114.15	80 - 120	31.2		31.2
				SPM=TYNDL4*4		50.00	72.1	131.28	80 - 120	6.46		6.46
				SPM=TYNDL6*10		50.00	62.4	116.22	80 - 120	4.30		4.30
				SPM=TYNDL6*12		100.00	132	96.93	80 - 120	35.5		35.5
				SPM=TYNDL6*9		100.00	137	108.76	80 - 120	28.0		28.0
			35121	SPM=PEP9*12	12 DEC 86	100.00	111	111.62	80 - 120	0		0
				SPM=TYNDL6*7		100.00	119	104.25	80 - 120	14.9		14.9

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
 QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE BASE-FIELD GROUP TYNDL6

Method Blank Sample Summary

NAME	UNITS	STORET-METHOD	BATCH	SAMPLE	DATE	FOUND
BROMODICHLOROMETHANE	UG/L	32101#HA	34825	MB#NONE#666	21 OCT 86	0
BROMOFORM	UG/L	32104#HA	34825	MB#NONE#666	21 OCT 86	0
BROMOMETHANE	UG/L	34413#HA		MB#NONE#666		0
CARBON TETRACHLORIDE	UG/L	32102#HA		MB#NONE#666		0
CHLOROBENZENE	UG/L	34301#HA		MB#NONE#666		0
CHLOROETHANE	UG/L	34311#HA		MB#NONE#666		0
2-CHLOROETHYL VINYL ETHER	UG/L	34576#HA		MB#NONE#666		0
CHLOROFORM	UG/L	32106#HA		MB#NONE#666		0
CHLOROMETHANE	UG/L	34418#HA		MB#NONE#666		0
DIBROMODICHLOROMETHANE	UG/L	32105#HA		MB#NONE#666		0
DICHLOROBENZENE, TOT.	UG/L	81524#HA		MB#NONE#666		0
DICHLORODIFLUORO METHANE	UG/L	34668#HA		MB#NONE#666		0
1,1-DICHLOROETHANE	UG/L	34496#HA		MB#NONE#666		0
1,2-DICHLOROETHANE	UG/L	34531#HA		MB#NONE#666		0
1,1-DICHLOROETHYLENE	UG/L	34501#HA		MB#NONE#666		0
TRANS-1,2-DICHLORO ETHENE	UG/L	34546#HA		MB#NONE#666		0
1,2-DICHLOROPROPANE	UG/L	34541#HA		MB#NONE#666		0
CIS-1,3-DICHLORO PROPENE	UG/L	34704#HA		MB#NONE#666		0
TRANS-1,3-DICHLORO PROPENE	UG/L	34699#HA		MB#NONE#666		0
METHYLENE CHLORIDE	UG/L	34423#HA		MB#NONE#666		0
1,1,2,2-TETRACHLORO ETHANE	UG/L	34516#HA		MB#NONE#666		0
TETRACHLOROETHENE	UG/L	34475#HA		MB#NONE#666		0
1,1,1-TRICHL'ETHANE	UG/L	34506#HA		MB#NONE#666		0
1,1,2-TRICHL'ETHANE	UG/L	34511#HA		MB#NONE#666		0
TRICHLOROETHENE	UG/L	39180#HA		MB#NONE#666		0
TRICHL'FLUOROMETHANE	UG/L	34488#HA		MB#NONE#666		0
VINYL CHLORIDE	UG/L	39175#HA		MB#NONE#666		0
BENZENE	UG/L	34030#PI		MB#NONE#666		0
ETHYLBENZENE	UG/L	34371#PI		MB#NONE#666		0
TOLUENE	UG/L	34010#PI		MB#NONE#666		0
XYLENES, TOTAL	UG/L	81551#PI		MB#NONE#666		0
1,2-DIBROMOETHANE (EDB)	UG/L	77651#EC	34522	MB#NONE#1	27 OCT 86	0
HYDROCARBONS, PETRO	MG/L	45501#I	34470	MB#NONE#1	22 OCT 86	.0591
			34552	MB#NONE#1	30 OCT 86	.0758
			34627	MB#NONE#1	06 NOV 86	.1055
			34894	MB1#NONE#1	25 NOV 86	3.3067
				MB1#NONE#2		4.3828
				MB2#NONE#3		5.4589
			35121	MB1#NONE#1	12 DEC 86	.1434
				MB1#NONE#2		0
				MB2#NONE#3		0
				MB1#NONE#4		0
LEAD, TOTAL	UG/L	1051#GFAA				

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ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
 SAMPLE / BATCH REPORT FOR FIELD GROUP TYNDL7

DATE: 01 MAR 1988

SAMPLE ID	PARAMETER NAME	BATCH #
TYNDL7#1	HYDROCARBONS, PETROL	34700
	LEAD, SED	34900
	MOISTURE	34427
	VOLATILE ORGANICS(624)	34449
TYNDL7#2	HYDROCARBONS, PETROL	34700
	LEAD, SED	34900
	MOISTURE	34427
	VOLATILE ORGANICS(624)	34449
TYNDL7#3	HYDROCARBONS, PETROL	34700
	LEAD, SED	34900
	MOISTURE	34427
	VOLATILE ORGANICS(624)	34449

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ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
 QUALITY CONTROL SUMMARY FOR TYNDALL AFB - FIELD GROUP TYNDL7
 DATE: 01 MAR 1988

NAME	UNITS	STORE METHOD	BATCH	SAMPLE	DATE	Replicate Analysis	Sample Summary	R.P.D.	MAX % REPL DIFF
MOISTURE	70320#1	34900	RP#HAZ2#5	1.9	25 NOV 86	0.0	0.0		

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
 QUALITY CONTROL SUMMARY FOR TYNDALL AFB - FIELD GROUP TYNDL7
 DATE: 01 MAR 1988

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NAME	UNITS	STORET=METHOD	BATCH	SAMPLE	DATE	Standard Matrix Spike Recovery and Replicate Summary						R.P.D.	CRIT.
						TARGET	FOUND	REC	REC	REC	MLT*BLN		
HYDROCARBONS, PETROL	UG/G-DRY	98233=1	34700	SP1=NONE=1	13 NOV 86	8200.0	16.1	92.70	70.2	124.8	8639	20.00	
HYDROCARBONS, PETROL	UG/G-DRY	98233=1	34700	SP2=NONE=1	13 NOV 86	8200.0	16.5	95.40	70.2	124.8	8639	20.00	
LEAD, SED	UG/G-DRY	1052=GF/AA	34900	SP1=NONE=1	25 NOV 86	0.05	10.8	103.00	80	120	4583	20.00	
				SP2=NONE=1		0.05	11.3	108.00	80	120	4583	4.52	

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ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
 QUALITY CONTROL SUMMARY FOR TYNDALL AFB - FIELD GROUP TYNDL 7
 DATE: 01 MAR 1988

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NAME	UNITS	STORE#METHOD	BATCH	SAMPLE	Method Blank Sample Summary	
					DATE	FOUND
HYDROCARBONS, PETROL	UG/G-DRY	98233*1	34700	HB#NONE*1	13 NOV 86	8639
LEAD, SED	UG/G-DRY	1052*GFAA	34900	HB#NONE*1	25 NOV 86	4583

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ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
 SAMPLE / BATCH REPORT FOR FIELD GROUP TYNDLS

DATE: 01 MAR 1988

SAMPLE ID	PARAMETER NAME	BATCH #
TYNDLS#1	EP-TOX DATE OF EXTRACTION	34261
	ORGANOCHLORINE PEST.(608)	34688
	ORGANOCHLORINE HERB.(615)	35444
	ICAP METALS	35015
	ARSENIC	34770
TYNDLS#2	SELENIUM	35183
	MERCURY	34584
	EP-TOX DATE OF EXTRACTION	34261
	ORGANOCHLORINE PEST.(608)	34688
	ORGANOCHLORINE HERB.(615)	35444
TYNDLS#3	ICAP METALS	35015
	ARSENIC	34770
	SELENIUM	35183
	MERCURY	34584
	EP-TOX DATE OF EXTRACTION	34403
	ORGANOCHLORINE PEST.(608)	34813
	ORGANOCHLORINE HERB.(615)	35444
	ICAP METALS	35222
	ARSENIC	34770
	SELENIUM	34756
	MERCURY	34706

PROJECT NUMBER 86449 0000
FIELD GROUP TYNDLS
PROJECT NAME TYNDALL AFB
PROJECT MANAGER D.M. HALE
LAB COORDINATOR DILNA HALE
EPNP1

SAMPLE ID/#

PARAMETERS	UNITS	STORET #	SOT9-4	SOT9-3	SOTEP3
		METHOD	TYNDLS	TYNDLS	TYNDLS
DATE			10/05/86	10/05/86	10/15/86
TIME			17:45	15:45	14:00
EP-TOX. DATE OF EXTRA		97078	10/14/86	10/14/86	10/21/86
CTLOW		NP	34261	34261	34403
ENDRIN		39390	<0.133	<0.064	<0.083
	UG/L	EC	34688	34688	34813
BHC, G(LINDANE)		39340	<0.066	<0.032	<0.041
	UG/L	EC	34688	34688	34813
METHOXYCHLOR		39480	<0.347	<0.168	<0.217
	UG/L	EC	34688	34688	34813
TOXAPHENE		39400	<1.57	<0.758	<0.978
	UG/L	EC	34688	34688	34813
2,4-D, TOTAL		39730	<0.222	<0.222	<0.222
	UG/L	EC	35444	35444	35444
2,4,5-TP/SILVER X		39760	<0.056	<0.056	<0.056
	UG/L	EC	35444	35444	35444
CADMIUM, DISS		10254	<0.0047	<0.0047	<0.0036
	MG/L	ICAP	35015	35015	35222
CHROMIUM, DISS		10304	<0.0190	<0.0190	<0.0054
	MG/L	ICAP	35015	35015	35222
LEAD, DISS		10494	<0.0330	<0.0330	<0.0220
	MG/L	ICAP	35015	35015	35222
SILVER, DISS		10754	<0.0059	<0.0059	<0.0048
	MG/L	ICAP	35015	35015	35222
ARSENIC, DISS		10004	0.0041	0.0067	0.0041
	MG/L	GFAA	34770	34770	34770
MERCURY, DISS		718904	0.0003	<0.0002	<0.0002
	MG/L	CVAA	34584	34584	34706
SELENIUM, DISS		11454	<0.0031	<0.0031	<0.0042
	MG/L	GFAA	35183	35183	34756
BARIUM, DISS		10054	0.161	0.102	0.213
	MG/L	ICAP	35015	35015	35222

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC. QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE BASE-FIELD GROUP TYNDLS

NAME	UNITS	STORET-METHOD	BATCH	SAMPLE	Standard Matrix Spike Recovery and Replicate Summary				REC. CRIT.	MET-BLA	R.P.D.	R.P.D. CRIT.
					DATE	TARGET	FOUND	XREC				
ENDRIN	UG/L	39390*EC	34688	SPI*NONE#1	18 OCT 86	0.25	4300000	89.00	60 - 130	0.145		30.00
				SPI*NONE#1	21 NOV 86	0.25	0.002	0.0	60 - 130	.002		30.00
				SPI*NONE#1	18 OCT 86	0.12	0.0	124.00	60 - 130	.0069		30.00
				SPI*NONE#1	21 NOV 86	0.12	0.0	94.80	60 - 130	.0031		20.00
METHOXYCHLOR	UG/L	39480*EC	34688	SPI*NONE#1	18 OCT 86	0.65	0.0	112.00	80 - 120	.0099		20.00
				SPI*NONE#1	21 NOV 86	0.65	0.0	85.80	80 - 120	.0291		33.00
				SPI*NONE#1	02 NOV 86	7.31	4.21	57.20	50 - 130	0		33.00
				SPI*NONE#1	24 NOV 86	50.00	52.4	103.00	85 - 115	.0154		15.00
2,4-D, TOTAL	UG/L	39730*EC	35444	SPI*NONE#1	24 NOV 86	50.00	51.8	101.00	85 - 115	1.08		
				SPI*NONE#1	22 DEC 86	50.00	52.5	103.00	85 - 115	1.08		
				SPI*NONE#1	22 DEC 86	50.00	50.0	100.00	85 - 115	1.08		
				SPI*NONE#1	24 NOV 86	50.00	56.7	113.00	85 - 115	0		
CADMIUM DISS	UG/L	1025*ICAP	35015	SPI*NONE#1	24 NOV 86	200.00	204	102.00	85 - 115	0		15.00
				SPI*NONE#1	22 DEC 86	200.00	201	100.00	85 - 115	0		
				SPI*NONE#1	22 DEC 86	200.00	191	84.60	85 - 115	21.28		
				SPI*NONE#1	24 NOV 86	200.00	206	92.30	85 - 115	21.28		
CHROMIUM DISS	UG/L	1030*ICAP	35015	SPI*NONE#1	24 NOV 86	500.00	531	106.00	80 - 120	0		20.00
				SPI*NONE#1	22 DEC 86	500.00	544	109.00	80 - 120	0		
				SPI*NONE#1	22 DEC 86	500.00	474	94.70	80 - 120	0		
				SPI*NONE#1	24 NOV 86	500.00	506	101.00	80 - 120	0		
LEAD DISS	UG/L	1049*ICAP	35015	SPI*NONE#1	24 NOV 86	100.00	101	100.00	70 - 110	.67		20.00
				SPI*NONE#1	22 DEC 86	100.00	99.2	98.50	70 - 110	.67		
				SPI*NONE#1	22 DEC 86	100.00	101	101.00	70 - 110	0		
				SPI*NONE#1	24 NOV 86	100.00	94.4	94.40	70 - 110	0		
SILVER DISS	UG/L	1075*ICAP	35015	SPI*NONE#1	24 NOV 86	100.00	112	112.00	70 - 110	0		20.00
				SPI*NONE#1	22 DEC 86	100.00	101	101.00	70 - 110	0		
				SPI*NONE#1	22 DEC 86	100.00	94.4	94.40	70 - 110	0		
				SPI*NONE#1	24 NOV 86	100.00	112	112.00	70 - 110	0		
ARSENIC DISS	UG/L	1000*GFAA	34770	SPI*NONE#1	17 NOV 86	25.00	28.6	97.90	80 - 120	1.5618		20.00
				SPI*NONE#1	22 DEC 86	25.00	31.1	108.00	80 - 120	1.5618		
				SPI*NONE#1	22 DEC 86	25.00	27.1	91.80	80 - 120	1.5618		
				SPI*NONE#1	24 NOV 86	25.00	30.1	104.00	80 - 120	1.5618		
MERCURY DISS.	UG/L	71890*CVAA	34584	SPI*NONE#1	30 OCT 86	25.00	30.6	106.00	80 - 120	1.5618		20.00
				SPI*NONE#1	22 DEC 86	25.00	32.2	112.00	80 - 120	1.5618		
				SPI*NONE#1	22 DEC 86	25.00	28.6	97.90	80 - 120	1.5618		
				SPI*NONE#1	24 NOV 86	25.00	29.1	99.90	80 - 120	1.5618		
SELENIUM DISS	UG/L	1145*GFAA	34756	SPI*NONE#1	14 NOV 86	25.00	26.8	107.00	80 - 120	1.5618		20.00
				SPI*NONE#1	22 DEC 86	25.00	27.4	109.00	80 - 120	1.5618		
				SPI*NONE#1	22 DEC 86	25.00	25.6	102.00	80 - 120	1.5618		
				SPI*NONE#1	24 NOV 86	25.00	23.5	93.80	80 - 120	1.5618		

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.

R FORCE BASE-FIELD GROUP TYNDLS

NAME	UNITS	STORE#	METHOD	BATCH	SAMPLE	DATE	TARGET	FOUND	REC.	CRIT.	MET#	BIN	R.P.D.	CRIT.
BARIUM DISS	UG/L	1U05	ICAP	35015	SP4#NONE#1	24 NOV 86	25.00	24.7	98.50	80 - 120		0625	4.98	
					SP2#NONE#1		2000.0	2020	101.00	85 - 115		1.08		15.00
					SP1#NONE#1		2000.0	2000	99.90	85 - 115		1.08	1.00	
					SP3#NONE#1		2000.0	2010	101.00	85 - 115		1.08	0.50	
				35222	SP1#NONE#1	22 DEC 86	2000.0	1970	98.70	85 - 115		0		
					SP2#NONE#1		2000.0	1930	96.60	85 - 115		0	4.05	
					SP3#NONE#1		2000.0	2030	102.00	85 - 115		0	2.00	

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC. QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE BASE-FIELD GROUP TYNDLS

NAME	UNITS	STORET-METHOD	BATCH	SAMPLE	DATE	TARGET	FOUND	REC.	REC. CRIT.	UNSPINED	R.P.D.	R.P.D. CRIT.
ENDRIIN	UG/L	39390*EC	34688	SPM-TYNDLS=1	18 OCT 86	0.53	598000	22.38	60 - 130	0.03		
ENDRIIN	UG/L	39390*EC	34813	SPM-TYNDLS=3	21 NOV 86	0.33	0.0	92.58	60 - 130	0.003		
BHC, G(LINDANE)	UG/L	39340*EC	34688	SPM-TYNDLS=1	18 OCT 86	0.26	0.0	114.87	60 - 130	0.01		
	UG/L		34813	SPM-TYNDLS=3	21 NOV 86	0.17	0.0	110.78	60 - 130	0.004		
METHOXYCHLOR	UG/L	39480*EC	34688	SPM-TYNDLS=1	18 OCT 86	1.39	0.0	95.22	80 - 120	0.02		
	UG/L		34813	SPM-TYNDLS=3	21 NOV 86	0.87	0.0	116.47	80 - 120	0.04		
2,4-D, TOTAL	UG/L	39730*EC	35444	SPM-TYNDLS=1	02 NOV 86	7.31	7.10	96.52	50 - 130	0.0		
2,4,5-TP/SILVEX	UG/L	39760*EC		SPM-TYNDLS=1		1.11	1.02	89.93	50 - 130	0.02		
CADMIUM, DISS	UG/L	1025*ICAP	35015	SPM-TYNDLS=2	24 NOV 86	50.00	50.7	99.24	85 - 115	1.03		
	UG/L		35222	SPM-TYNDLS=3	22 DEC 86	500.00	480	95.97	85 - 115	0.0		
CHROMIUM, DISS	UG/L	1030*ICAP	35015	SPM-TYNDLS=2	24 NOV 86	200.00	214	103.71	85 - 115	6.63		
	UG/L		35222	SPM-TYNDLS=3	22 DEC 86	500.00	478	99.30	85 - 115	0		
LEAD, DISS	UG/L	1049*ICAP	35015	SPM-TYNDLS=2	24 NOV 86	500.00	587	112.54	80 - 120	24.5		
	UG/L		35222	SPM-TYNDLS=3	22 DEC 86	500.00	451	90.17	80 - 120	0.0		
SILVER, DISS	UG/L	1075*ICAP	35015	SPM-TYNDLS=2	24 NOV 86	100.00	106	104.16	70 - 110	2.26		
	UG/L		35222	SPM-TYNDLS=3	22 DEC 86	500.00	479	95.83	70 - 110	0.0		
ARSENIC, DISS	UG/L	1000*GFAA	34770	SPM-ADCMQ2=1	17 NOV 86	25.00	24.0	83.62	80 - 120	0.0		
				SPM-MXHL=1		25.00	28.1	79.54	80 - 120	0.0		
				SPM-MXHL=8		100.00	128	107.61	80 - 120	0.0		
				SPM-SSRHH1=1		25.00	28.1	101.97	80 - 120	0.0		
				SPM-SSRHH1=14		100.00	119	116.79	80 - 120	0.0		
				SPM-SSRHH1=2		25.00	32.2	89.74	80 - 120	0.0		
				SPM-SSRHH1=4		100.00	100	97.42	80 - 120	0.0		
				SPM-MHGW1=4		100.00	114	111.69	80 - 120	0.0		
MERCURY, DISS.	UG/L	71890*CVAA	34706	SPM-MXHL=1	12 NOV 86	4.70	4.16	81.59	80 - 120	0.0		
SELENIUM, DISS	UG/L	1145*GFAA		SPM-PEP5=12	86318	100.00	95.6	92.03	80 - 120	0.0		
				SPM-TYNDLS=3		100.00	89.7	86.10	80 - 120	3.56		
				SPM-TYNDLS=2	86443	100.00	93.9	92.68	80 - 120	1.17		
BARIUM, DISS	UG/L	1005*ICAP	35015	SPM-TYNDLS=2	24 NOV 86	2000.0	2160	102.99	85 - 115	100		
			35222	SPM-TYNDLS=3	22 DEC 86	500.00	717	100.82	85 - 115	213		

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE BASE-FIELD GROUP TYNDLS

NAME	DATE OF EXTRACTION	UNITS	STORAGE METHOD	BATCH	SAMPLE	DATE	FOUND
ENDRIN		UG/L	97078*EC	34403	MB-NONE #1	22 OCT 86	0
					MB-NONE #1	18 OCT 86	0.145
BHC GULLINANE		UG/L	39390*EC	34688	MB-NONE #1	21 NOV 86	0.02
					MB-NONE #1	18 OCT 86	0.069
METHOXYCHLOR		UG/L	39340*EC	34688	MB-NONE #1	21 NOV 86	0.031
					MB-NONE #1	18 OCT 86	0.099
TOLAPRENE		UG/L	39480*EC	34813	MB-NONE #1	21 NOV 86	0.291
					MB-NONE #1	18 OCT 86	0
2,4-D TOTAL		UG/L	39400*EC	34813	MB-NONE #1	21 NOV 86	0
2,4,5-TP SILVER		UG/L	39730*EC	34813	MB-NONE #1	21 NOV 86	0
CADMIUM DISS		UG/L	39760*EC	35444	MB-NONE #1	02 NOV 86	0.0154
			1025*ICAP	35015	MB-NONE #1	24 NOV 86	1.08
					MB-NONE #2		0.86
CHROMIUM DISS		UG/L	1030*ICAP	35222	MB-NONE #1	22 DEC 86	0
				35015	MB-NONE #1	24 NOV 86	0
					MB-NONE #2		0
LEAD DISS		UG/L	1049*ICAP	35222	MB-NONE #1	22 DEC 86	21.28
				35015	MB-NONE #1	24 NOV 86	0
					MB-NONE #2		20.57
SILVER DISS		UG/L	1075*ICAP	35222	MB-NONE #1	22 DEC 86	0
				35015	MB-NONE #1	24 NOV 86	0.67
					MB-NONE #2		16
ARSENIC DISS		UG/L	1000*GFAA	35222	MB-NONE #1	22 DEC 86	0
				34770	MB2-NONE #1	17 NOV 86	1.5618
					MB2-NONE #2		5421
					MB1-NONE #3		1.5618
MERCURY DISS		UG/L	71890*GFAA	34584	MB1-NONE #4	30 OCT 86	4.1112
					MB1-NONE #1		3456
					MB2-NONE #2		1403
				34706	MB1-NONE #1	12 NOV 86	8023
					MB2-NONE #1		1002
SELENIUM DISS		UG/L	1145*GFAA	34756	MB1-NONE #1	14 NOV 86	6691
					MB2-NONE #1		6691
					MB1-NONE #2		2.4488
					MB2-NONE #2		1.2623
BARIUM DISS		UG/L	1005*ICAP	35183	MB-NONE #1	09 DEC 86	0.025
				35015	MB-NONE #1	24 NOV 86	1.08
					MB-NONE #2		41
				35222	MB-NONE #1	22 DEC 86	0

APPENDIX R
ANALYTICAL RESULTS FOR GROUND WATERS,
SURFACE WATERS, SEDIMENTS, AND SOILS

FIELD GROUP
TYNDALL - 1

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PROJECT NUMBER 86449 0000
FIELD GROUP TYNDL 1
SZZ 11R

PROJECT NAME TYNDALL AFB
PROJECT MANAGER RANDY SCHULZE
LAB COORDINATOR DAVE NROTHE

PARAMETERS	UNITS	STORET #	METHOD	SAMPLE ID/#		
				SOT11-1 TYNDL 1	SOT11-2 TYNDL 1	SOT11-3 TYNDL 1
DATE				10/15/86	10/16/86	10/16/86
TIME				15:15	08:40	09:15
HYDROCARBONS, PETROL	MG/KG	98233A	1	1200	260	27000
LEAD, SED	MG/KG	1052A	1	1.8	2.9	0.52
MOISTURE	MG/KG	70120	1	8.3	10.7	6.2
BENZENE	MG/KG	34237A	1	4.9	<0.22	<0.23
BROMODICHLOROMETHANE	MG/KG	34330A	1	<0.12	<0.11	<0.12
BROMOFORM	MG/KG	34290A	1	<0.26	<0.24	<0.25
BROMOMETHANE	MG/KG	34416A	1	<0.32	<0.29	<0.31
CARBON TETRACHLORIDE	MG/KG	34299A	1	<0.15	<0.14	<0.15
CHLOROBENZENE	MG/KG	34304A	1	<0.33	<0.30	<0.32
CHLOROMETHANE	MG/KG	34314A	1	<0.45	<0.41	<0.44
2-CHLOROETHYL VINYL ETHER	MG/KG	34579A	1	<0.55	<0.50	<0.53
CHLOROPROPENE	MG/KG	34318A	1	0.088	<0.080	<0.085
CHLOROMETHANE	MG/KG	34421A	1	<0.23	<0.22	<0.23
DIBROMODICHLOROMETHANE	MG/KG	34309A	1	<0.17	<0.16	<0.17
DICHLOROBENZENE, TOTAL	MG/KG	98578A	1	<0.22	<0.20	<0.21
1,1-DICHLOROMETHANE	MG/KG	34499A	1	<0.26	<0.24	<0.25
1,2-DICHLOROMETHANE	MG/KG	34534A	1	<0.15	<0.14	<0.15
1,1-DICHLOROETHYLENE	MG/KG	34504A	1	<0.17	<0.16	<0.17
1,2-DICHLOROETHYLENE	MG/KG	34509A	1	<0.087	<0.080	<0.085

PROJECT NAME TYNDALL AFB
PROJECT MANAGER RANDY SCHULZE
LAB COORDINATOR DAVE KNOTHE

PROJECT NUMBER 86449 0000
TYNDL 1
FIELD GROUP SZ2.11R

SAMPLE 10/8
SOT11-1 SOT11-2 SOT11-3
TYNDL 1 TYNDL 1 TYNDL 1
1 2 3

DATE 10/15/86 10/16/86 10/16/86
TIME 15:15 08:40 09:15

PARAMETERS STORE # METHOD
UNITS

CIS-1,3-DICHLORO 34702A

PROPENE MG/KG GWS

TRANS-1,3-DICHLORO 34697A

PROPENE MG/KG GWS

ETHYLBENZENE 34374A

MG/KG GWS

METHYLENE CHLORIDE 34426A

MG/KG GWS

1,1,2,2-TETRACHLORO 34519A

ETHANE MG/KG GWS

TETRACHLOROETHENE 34478A

MG/KG GWS

TOLUENE 34483A

MG/KG GWS

1,1,1-TRICHLOROETHANE 34509A

MG/KG GWS

1,1,2-TRICHLOROETHANE 34514A

MG/KG GWS

TRICHLOROETHENE 34487A

MG/KG GWS

TRICHLOROFLUOROMETHANE 34491A

MG/KG GWS

VINYL CHLORIDE 34495A

MG/KG GWS

M-XYLENE 97016A

MG/KG GWS

O-P-XYLENE 97017A

MG/KG GWS

ACROLEIN, SED 34213A

MG/KG GWS

ACRYLONITRILE, SED 34218A

MG/KG GWS

R 14

FIELD GROUP
TYNDALL - 2

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PARAMETERS	UNITS	STORET #	GLH2-1 TYNDL 2	GLH2-2 TYNDL 2	GLH2-3 TYNDL 2	GLH2-4 TYNDL 2	GLH2-7 TYNDL 2	GLH2QA** TYNDL 2	SAMPLE 10/8 GLH2-8 TYNDL 2	GLH2-9 TYNDL 2	SMUHL2 TYNDL 2
DATE TIME		METHOD	1 11:15	2 11:25	3 14:25	4 14:10	5 13:15	6 13:15	7 12:30	8 11:10	9 13:15
BROMODICHLOROMETHANE	UG/L	32101 HA	<0.050	<0.050	<0.050	<0.050	<0.050	MA	<0.050	<0.050	<0.050
BROMOFORM	UG/L	32104 HA	<0.050	<0.050	<0.050	<0.050	<0.050	MA	<0.050	<0.050	<0.050
BROMOTHANE	UG/L	34413 HA	<0.050	<0.050	<0.050	<0.050	<0.050	MA	<0.050	<0.050	<0.050
CARBON TETRACHLORIDE	UG/L	32102 HA	<0.050	<0.050	<0.050	<0.050	<0.050	MA	<0.050	<0.050	<0.050
CHLOROBENZENE	UG/L	34301 HA	<0.050	<0.050	<0.050	<0.050	<0.050	MA	<0.050	<0.050	<0.050
CHLOROTHANE	UG/L	34311 HA	<0.050	<0.050	<0.050	<0.050	<0.050	MA	<0.050	<0.050	<0.050
CHLOROTRIFLUOROMETHANE	UG/L	34576 HA	<0.050	<0.050	<0.050	<0.050	<0.050	MA	<0.050	<0.050	<0.050
CHLOROFORM	UG/L	32106 HA	<0.050	<0.050	<0.050	<0.050	<0.050	MA	<0.050	<0.050	<0.050
CHLOROMETHANE	UG/L	34418 HA	<0.050	<0.050	<0.050	<0.050	<0.050	MA	<0.050	<0.050	<0.050
DIBROMODICHLOROMETHANE	UG/L	32105 HA	<0.050	<0.050	<0.050	<0.050	<0.050	MA	<0.050	<0.050	<0.050
DICHLOROBENZENE, TOT.	UG/L	81524 HA	<0.050	<0.050	<0.050	<0.050	<0.050	MA	<0.050	<0.050	<0.050
DICHLORODIFLUOROMETHANE	UG/L	34668 HA	<0.050	<0.050	<0.050	<0.050	<0.050	MA	<0.050	<0.050	<0.050
1,1-DICHLOROTHANE	UG/L	34496 HA	<0.050	<0.050	<0.050	<0.050	<0.050	MA	<0.050	<0.050	<0.050
1,2-DICHLOROTHANE	UG/L	34531 HA	<0.050	<0.050	<0.050	<0.050	<0.050	MA	<0.050	<0.050	<0.050
1,1,1-DICHLOROTHYLENE	UG/L	34501 HA	<0.050	<0.050	<0.050	<0.050	<0.050	MA	<0.050	<0.050	<0.050
TRANS-1,2-DICHLOROTHYLENE	UG/L	34546 HA	<0.050	<0.050	<0.050	<0.050	<0.050	MA	<0.050	<0.050	<0.050
1,2-DICHLOROPROPANE	UG/L	34541 HA	<0.050	<0.050	<0.050	<0.050	<0.050	MA	<0.050	<0.050	<0.050
1,1,1,3-TETRACHLOROPROPENE	UG/L	34704 HA	<0.050	<0.050	<0.050	<0.050	<0.050	MA	<0.050	<0.050	<0.050
TRANS-1,2-DICHLOROPROPENE	UG/L	34699 HA	<0.050	<0.050	<0.050	<0.050	<0.050	MA	<0.050	<0.050	<0.050
METHYLENE CHLORIDE	UG/L	34423 HA	<0.050	<0.050	<0.050	0.095*	<0.050	MA	<0.050	<0.050	<0.050

* Single column quantification, unable to confirm by second column due to interference.

PROJECT NUMBER 86449 0000
 FIELD GROUP TYNDL2
 ZONE 2R

PROJECT NAME TYNDALL AFB
 PROJECT MANAGER RANDY SCHULZE
 LAB COORDINATOR DAVE NNOTHE

PARAMETERS	STORET #	UNITS	GLH2-1 TYNDL2	GLH2-2 TYNDL2	GLH2-3 TYNDL2	GLH2-4 TYNDL2	GLH2-7 TYNDL2	GLH2-8 TYNDL2	GLH2-9 TYNDL2	SMH2 TYNDL2
			1	2	3	4	5	6	7	8
DATE			10/14/86	10/14/86	10/14/86	10/14/86	10/22/86	10/22/86	10/22/86	10/14/86
TIME			11:15	11:25	14:25	14:10	13:15	13:15	11:10	13:15
1,1,2,2-TETRACHLOROETHANE	34516	UG/L	<0.050	<0.050	<0.050	<0.25	<0.050	NA	<0.050	<0.050
TETRACHLOROTHENE	34475	UG/L	<0.050	<0.050	<0.050	<0.25	<0.050	NA	<0.050	<0.050
1,1,1-TRICHLOROETHANE	34506	UG/L	<0.050	<0.050	<0.050	<0.050	<0.050	NA	<0.050	<0.050
1,1,2-TRICHLOROETHANE	34511	UG/L	<0.050	<0.050	<0.050	<0.050	<0.050	NA	<0.050	<0.050
TRICHLOROETHENE	39180	UG/L	<0.050	<0.050	<0.050	<0.050	<0.050	NA	<0.050	<0.050
TRICHLOROFLUOROMETHANE	34488	UG/L	<0.050	<0.050	<0.050	0.10*	<0.050	NA	<0.050	<0.050
VINYL CHLORIDE	39175	UG/L	<0.050	<0.050	<0.050	<0.050	<0.050	NA	<0.050	<0.050
BENZENE	34030	UG/L	<0.050	<0.050	<0.050	<0.050	<0.050	NA	<0.050	0.54*
ETHYLBENZENE	34371	UG/L	<0.050	<0.050	<0.050	<0.050	<0.050	NA	<0.050	<0.050
TOLUENE	34010	UG/L	<0.050	<0.050	<0.050	<0.050	<0.050	NA	<0.050	0.80*
HYDROCARBONS, PETRO	45501	UG/L	0.15	0.093	0.18	<0.091	0.11	0.16	<0.091	0.12
LEAD, TOTAL	1051A	MG/L	0.0086	<0.0031	<0.0031	<0.0031	0.0043	<0.0031	<0.0031	<0.0031
PH, FIELD	400	MG/L	5.70	5.60	7.00	6.90	5.70	NA	6.00	5.70
SP. COND., FIELD	94	UMHOS/CM	143	58.0	352	261	237	NA	330	293
WATER TEMP	10	C	28.1	26.5	29.6	28.8	28.8	NA	27.9	25.8
D.O., PROC	299	MG/L	NA	NA	NA	NA	NA	NA	NA	NA

* Single column quantification, unable to confirm by second column due to interference.

Single column quantification, second column confirmation was not conducted

+ first column quantification, second column confirmation

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FIELD GROUP
TYNDALL - 3

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ENVIRONMENTAL SCIENCE & ENGINEERING 05/02/87 STATUS: FINAL
 PROJECT NUMBER 86449 UNDO
 FIELD GROUP TYNDL3 ZSRX
 PROJECT NAME TYNDALL AFB
 PROJECT MANAGER RANDY SCHULZE
 LAB COORDINATOR DAVE ANOTHE

PARAMETERS STORET # UNITS SAMPLE ID/8
 TYNDL 3 TYNDL 3 TYNDL 3
 METHOD 1 2 3 4

DATE	TIME	10/13/86	10/13/86	10/13/86	10/13/86
BROMODICHLOROMETHANE	32101	HA	UG/L	<0.050	0.070*
BROMOFORM	32104	HA	UG/L	<0.050	<0.050
BROMOMETHANE	34413	HA	UG/L	<0.050	<0.050
CARBON TETRACHLORIDE	32102	HA	UG/L	<0.050	<0.050
CHLOROBENZENE	34301	HA	UG/L	<0.050	<0.050
CHLOROMETHANE	34311	HA	UG/L	<0.050	<0.050
2-CHLOROETHYL VINYL ETHER	34576	HA	UG/L	<0.050	<0.050
CHLOROFORM	32106	HA	UG/L	<0.050	0.46*
CHLOROMETHANE	34418	HA	UG/L	<0.050	<0.050
DIBROMOCHLOROMETHANE	32105	HA	UG/L	<0.050	<0.050
DICHLOROBENZENE, TOT	81524	HA	UG/L	<0.050	<0.050
DICHLORODIFLUOROETHANE	34668	HA	UG/L	<0.050	<0.050
1,1-DICHLOROMETHANE	34496	HA	UG/L	<0.050	<0.050
1,2-DICHLOROMETHANE	34531	HA	UG/L	<0.050	<0.050
1,1-DICHLOROETHYLENE	34501	HA	UG/L	<0.050	<0.050
TRANS-1,2-DICHLOROETHYLENE	34546	HA	UG/L	<0.050	<0.050
1,2-DICHLOROPROPANE	34541	HA	UG/L	<0.050	<0.050
CIS-1,3-DICHLOROPROPENE	34704	HA	UG/L	<0.050	<0.050
TRANS-1,3-DICHLOROPROPENE	34699	HA	UG/L	<0.050	<0.050
METHYLENE CHLORIDE	34423	HA	UG/L	<0.050	<0.050

* Single column quantification, unable to confirm by second column due to interference

ENVIRONMENTAL SCIENCE & ENGINEERING 05/02/87 STATUS: FINAL
 PROJECT NUMBER 86449 0000 PROJECT NAME TYNDALL AFB
 FIELD GROUP TYNDLJ PROJECT MANAGER RANDY SCHULZE
 ZSRX LAB COORDINATOR DAVE KNOTHE

PARAMETERS	STORET #	METHOD	UNITS	SAMPLE ID/#			
				GTS 1	GTS 2	GTS 3	GTS0A**
				TYNDL 3	TYNDL 3	TYNDL 3	TYNDL J
				1	2	3	4
DATE				10/13/86	10/13/86	10/13/86	
TIME				11:40	11:35	12:00	00:00
2,4,6-TRICHL-PHEMUA	34621			<0.4	<0.4	<0.4	<0.4
UG/L	FI						
PH FIELD	400			6.20	6.00	6.40	NA
STD UNITS	0						
SP. COND. FIELD@25C	94			93.0	105	581	NA
UMHOS/CM	0						
WATER TEMP	10			26.8	27.0	26.2	NA
C	0						

* Single column quantification : unable to confirm by second column due to interference

Single column quantification : second column confirmation was not conducted

* First column quantification : second column confirmation.

** Field Duplicate

ENVIRONMENTAL SCIENCE & ENGINEERING 04/30/87 STATUS: FINAL

PROJECT NAME TYNDALL AFB
PROJECT MANAGER D. H. KNOTHE
LAB COORDINATOR DAVE ANOTHE

PROJECT NUMBER 86449 0000
FIELD GROUP TYNDL3
TYNDL3
TYNDL3
TYNDL3

PARAMETERS	UNITS	STORE # METHOD	SAMPLE ID/8				10/13/86 11:40	10/13/86 11:35	10/13/86 12:00	10/13/86 00:00
			GT5-1 TYNDL3	GT5-2 TYNDL3	GT5-3 TYNDL3	GT5QA** TYNDL3				
DATE										
TIME										
ARSENIC, TOTAL	MG/L	1002A	0.086	0.63	0.20	NA				
ICAP		ICAP								
ANTIMONY, TOTAL	MG/L	1097A	<0.060	<0.060	<0.060	NA				
ICAP		ICAP								
BERYLLIUM, TOTAL	MG/L	1012A	0.014	<0.0010	<0.0010	NA				
ICAP		ICAP								
CADMIUM, TOTAL	MG/L	1027A	<0.0080	<0.0080	<0.0080	NA				
ICAP		ICAP								
CHROMIUM, TOTAL	MG/L	1034A	0.019	0.054	0.128	NA				
ICAP		ICAP								
COPPER, TOTAL	MG/L	1042A	0.0067	0.019	0.014	NA				
ICAP		ICAP								
LEAD, TOTAL	MG/L	1051A	<0.050	<0.050	<0.050	NA				
ICAP		ICAP								
NICKEL, TOTAL	MG/L	1067A	<0.015	0.015	<0.015	NA				
ICAP		ICAP								
SILVER, TOTAL	MG/L	1077A	<0.0060	<0.0060	0.0065	NA				
ICAP		ICAP								
SELENIUM, TOTAL	MG/L	1147A	<0.090	<0.090	<0.090	NA				
ICAP		ICAP								
THALLIUM, TOTAL	MG/L	1059A	<0.037	0.056	<0.037	NA				
ICAP		ICAP								
ZINC, TOTAL	MG/L	1092A	0.009	0.019	0.011	NA				
ICAP		ICAP								
MERCURY, TOTAL	MG/L	71900A	<0.0002	0.0003	<0.0002	NA				
CVAA		CVAA								

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FIELD GROUP
TYNDALL - 4

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PROJECT NUMBER 86449 0000
PROJECT NAME TYNDALL AFB
PROJECT MANAGER RANDY SCHULZE
LAB COORDINATOR DAVE ANOTHE

FIELD GROUP TYNDL4
26.10.11R

PARAMETERS	STORY #	UNITS	DATE	TIME	GT6-1 TYNDL4	GT6-2 TYNDL4	GT6-3 TYNDL4	GT6-4 TYNDL4	GT6-5 TYNDL4	GT6-6 TYNDL4	GT6-7 TYNDL4	GT6-8 TYNDL4	GT6-9 TYNDL4	GT6-10 TYNDL4	GT6-11 TYNDL4	GT6-12 TYNDL4	GT6-13 TYNDL4	GT6-14 TYNDL4
BROMODICHLOROMETHANE	32101	HA	10/16/86	14:00	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
BROMOFORM	32104	UG/L	10/16/86	15:40	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
BROMOTHANE	34413	UG/L	10/16/86	15:05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
CARBON TETRACHLORIDE	32102	UG/L	10/16/86	15:05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
CHLOROBENZENE	34301	HA	10/16/86	15:05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
CHLOROTHANE	34311	UG/L	10/16/86	15:05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
2-CHLOROETHYL VINYL	34576	HA	10/16/86	15:05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
ETHER	32106	UG/L	10/16/86	15:05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
CHLOROFORM	34418	UG/L	10/16/86	15:05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
CHLOROMETHANE	32105	UG/L	10/16/86	15:05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
DIBROMOCHLOROMETHANE	81524	HA	10/16/86	15:05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
DICHLOROBENZENE TOT.	34668	HA	10/16/86	15:05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
DICHLORODIFLUORO	34496	HA	10/16/86	15:05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
METHANE	34571	UG/L	10/16/86	15:05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1-DICHLOROMETHANE	34501	HA	10/16/86	15:05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1-DICHLOROMETHYLENE	34546	HA	10/16/86	15:05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
TRANS-1,2-DICHLORO	34541	UG/L	10/16/86	15:05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
ETHYLENE	34704	HA	10/16/86	15:05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,2-DICHLOROPROPANE	34699	HA	10/16/86	15:05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
CIS-1,3-DICHLORO	34423	HA	10/16/86	15:05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
PROPENE	34423	UG/L	10/16/86	15:05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
TRANS-1,3-DICHLORO	34423	HA	10/16/86	15:05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
PROPENE	34423	UG/L	10/16/86	15:05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
METHYLENE CHLORIDE	34423	HA	10/16/86	15:05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050

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Single column quantification, second column confirmation was not conducted.

+ First column quantification, second column confirmation.

(1) - See footnote #1 at end of analytical data ----(2) - See footnote #2 at end of analytical data

** Field Duplicate

PROJECT NUMBER 86449 0000
FIELD GROUP TYNDL4
76, 10, 11R

PROJECT NAME TYNDALL AFB
PROJECT MANAGER RANDY SCHULZE
LAB COORDINATOR DAVE NNOTHE

PARAMETERS	STORET #	UNITS	GT6-1 TYNDL4	GT6-2 TYNDL4	GT6-3 TYNDL4	GT6-4 TYNDL4	GT6-5 TYNDL4	GT6QA== TYNDL4	GT10-1 TYNDL4	GT10-2 TYNDL4	GT10-3 TYNDL4	GT10QA== TYNDL4	GT11-1 TYNDL4	GT11-2 TYNDL4	GT11-3 TYNDL4	SM711-1 TYNDL4
DATE			10/16/86	10/16/86	10/16/86	10/21/86	10/21/86	10/21/86	10/20/86	10/20/86	10/20/86	10/20/86	10/20/86	10/20/86	10/20/86	10/14/86
TIME			14:00	15:40	15:05	10:00	10:45	10:45	10:15	09:40	09:10	09:10	12:00	10:45	11:20	15:20
1,1,2,2-TETRACHLOROETHANE	34516	UG/L	<0.050	<0.050	<0.050	<0.050	<0.050	NA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1,2,2-TETRACHLOROETHANE	34475	UG/L	<0.050	<0.050	<0.050	<0.050	<0.050	NA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1,1-TRICHLOROETHANE	34506	UG/L	<0.050	<0.050	<0.050	<0.050	<0.050	NA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1,2-TRICHLOROETHANE	34511	UG/L	<0.050	<0.050	<0.050	<0.050	<0.050	NA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
TRICHLOROETHENE	39180	UG/L	<0.050	0.060*	<0.050	<0.050	<0.050	NA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.085*
TRICHLOROETHENE	34488	UG/L	<0.050	<0.050	0.060*	<0.050	<0.050	NA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
VINYL CHLORIDE	39175	UG/L	<0.050	0.16*	0.14*(3)	0.24*	0.10*	NA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
BENZENE	34030	UG/L	<0.50	94*	260*	6.0*	0.56*	NA	<0.50	34*	<0.50	<0.50	1.7*	<0.50	35*	<0.50
ETHYLBENZENE	34371	UG/L	<0.50	2.5*	1.7*	<0.50	<0.50	NA	<0.50	0.85*	<0.50	<0.50	<0.50	<0.50	9.0*	<0.50
TOLUENE	34010	UG/L	<0.50	<0.50	5*	1.0*	1.0*	NA	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	12*	0.61*
4-CHL-3-METHYLPHEMOL	34452	UG/L	<11	<11	<21	<11	<11	NA	<5.3	<6.4	<1.1	<1.1	<11	<5.3	<11	<11
2-CHLOROPHEMOL	34586	UG/L	<4	<4	<9	<4	<4	NA	<2	<4	<0.4	<0.4	<4	<2	<4	<4
2,4-DICHLOROPHEMOL	34601	UG/L	<11	<11	<22	<4	<4	NA	<2	<4	<0.4	<0.4	<4	<2	<4	<11
2,4-DIMETHYLPHEMOL	34606	UG/L	<4	<4	<8	<4	<4	NA	<2	<1	<0.4	<0.4	<4	<2	<4	<4
2,4-DINITROPHENOL	34616	UG/L	<63	<63	<130	<40	<40	NA	<20	<32	<4	<4	<40	<20	<40	<63
2-METHYL-4,6-DINITROPHENOL	34657	UG/L	<20	<20	<40	<10	<10	NA	<5	<8	<1	<1	<10	<5	<10	<20
2-NITROPHENOL	34591	UG/L	<10	<10	<21	<4	<4	NA	<2	<3	<0.4	<0.4	<4	<2	<4	<10
4-NITROPHENOL	34646	UG/L	<41	<41	<82	<41	<41	NA	<21	<33	<4	<4	<41	<21	<41	<41
PENTACHLOROPHEMOL	39032	UG/L	<40	<40	<80	<4	<4	NA	<2	<3	<0.4	<0.4	<4	<2	<4	<40
PHEMOL	34694	UG/L	<4	<4	<8	<10	<10	NA	<5	<8	<1	<1	<10	<5	<10	<4

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+ first column quantification, second column confirmation.

(3)-See footnote #3 at end of analytical data.

** Field Duplicate

PROJECT NUMBER 86449 0000
 FIELD GROUP TYNDL4
 26.10.11R

PROJECT NAME TYNDALL AFB
 PROJECT MANAGER RANDY SCHULZE
 LAB COORDINATOR DAVE KNOTHE

PARAMETERS	UNITS	STORET #	STORY	DATE	TIME	GT6-1	GT6-2	GT6-3	GT6-4	GT6-5	GT10-1	GT10-2	GT10-3	GT10-4	GT11-1	GT11-2	GT11-3	GT11-4	SWT11-1
						TYNDL4	TYNDL4	TYNDL4	TYNDL4	TYNDL4	TYNDL4	TYNDL4	TYNDL4	TYNDL4	TYNDL4	TYNDL4	TYNDL4	TYNDL4	TYNDL4
						1	2	3	4	5	6	7	8	9	10	11	12	13	14
2,4,6-TRICHL-PHENOL	UG/L	34621		10/16/86	14:00	<4	<4	<8	<4	<4	NA	<3	<0.4	<0.4	<4	<2	<4	<4	<4
HYDROCARBONS, PETRO	MG/L	45501		10/16/86	15:40	<0.10	<0.10	4.9	<0.093	0.80	<0.092	<0.092	<0.092	<0.092	<0.092	0.12	<0.092	<0.092	0.26
LEAD, TOTAL	MG/L	1051A		10/16/86	15:05	0.017	0.017	0.023	0.0043	0.0032	0.022	<0.0031	<0.0031	<0.0031	0.056	0.029	<0.0031	<0.0031	<0.0031
PH, FIELD	STD UNITS	400		10/16/86	15:40	6.00	4.80	5.90	6.20	5.60	6.40	5.40	5.20	5.20	4.90	5.30	6.50	7.00	7.00
SP. COND., FIELD/25C	UMHOS/CM	94		10/16/86	15:40	92.0	61.0	302	379	142	453	152	57.0	57.0	159	236	906	2700	2700
WATER TEMP	C	10		10/16/86	15:40	23.7	23.8	23.5	26.9	24.1	25.2	24.6	24.9	24.9	25.4	25.0	25.1	26.3	26.3
TD.O., PROBE	MG/L	299		10/16/86	15:40	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5.4

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** Field Duplicate

ENVIRONMENTAL SCIENCE & ENGINEERING 05/02/87 STATUS: FINAL

PROJECT NUMBER 86449 0000 PROJECT NAME TYNDALL AFB
 FIELD GROUP TYNDL4 PROJECT MANAGER RANDY SCHULZE
 26.10.11R LAB COORDINATOR DAVE KNOTHE

PARAMETERS	STORET #	UNITS	METHOD	SAMPLE ID/#	
				SMT11-2	TYNDL4
DATE				10/14/86	
TIME				15:40	
BROMODICHLOROMETHANE	32101	HA		<0.050	
UG/L					
BROMOFORM	32104	HA		<0.050	
UG/L					
BROMOMETHANE	34413	HA		<0.050	
UG/L					
CARBON TETRACHLORIDE	32102	HA		<0.050	
UG/L					
CHLOROBENZENE	34301	HA		<0.050	
UG/L					
CHLOROMETHANE	34311	HA		<0.050	
UG/L					
2-CHLOROETHYL VINYL	34576	HA		<0.050	
ETHER					
UG/L					
CHLOROFORM	32106	HA		0.05*	
UG/L					
CHLOROMETHANE	34418	HA		<0.050	
UG/L					
DIBROMOCHLOROMETHANE	32105	HA		<0.050	
UG/L					
DICHLOROBENZENE, TOT.	81524	HA		<0.050	
UG/L					
DICHLORODIFLUORO	34668	HA		<0.050	
METHANE					
UG/L					
1,1-DICHLOROMETHANE	34496	HA		<0.050	
UG/L					
1,2-DICHLOROMETHANE	34511	HA		<0.050	
UG/L					
1,1-DICHLOROETHYLENE	34501	HA		<0.050	
UG/L					
TRANS-1,2-DICHLORO	34546	HA		0.18*	
ETHYLENE					
UG/L					
1,2-DICHLOROPROPANE	34541	HA		<0.050	
UG/L					
CIS-1,3-DICHLORO	34704	HA		<0.050	
PROPENE					
UG/L					
TRANS-1,3-DICHLORO	34699	HA		<0.050	
PROPENE					
UG/L					
METHYLENE CHLORIDE	34423	HA		<0.050	
UG/L					

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** Field Duplicate

ENVIRONMENTAL SCIENCE & ENGINEERING 05/02/87 STATUS: FINAL

PROJECT NUMBER 86449 0000 PROJECT NAME TYNDALL AFB
 FIELD GROUP TYNDL4 PROJECT MANAGER RANDY SCHULZE
 .6.10.11R LAB COORDINATOR DAVE KNOTHE

SAMPLE 10/8
 SM111-2

PARAMETERS STORET # UNITS METHOD
 DATE TIME

10/14/86
 15:40

1,1,2,2-TETRACHLORO
 ETHANE UG/L 34516 HA

TETRACHLOROETHANE
 UG/L 34475 HA

1,1,1-TRICHLOROETHANE
 UG/L 34506 HA

1,1,2-TRICHLOROETHANE
 UG/L 34511 HA

TRICHLOROETHANE
 UG/L 39180 HA

TRICHLOROETHANE
 UG/L 34488 HA

VINYL CHLORIDE
 UG/L 39175 HA

BENZENE
 UG/L 34030 HA

ETHYLBENZENE
 UG/L 34371 HA

TOLUENE
 UG/L 34010 HA

4-CHLORO-3-METHYLPHE
 NOL UG/L 34452 HA

2-CHLOROPHENOL
 UG/L 34586 HA

2,4-DICHLOROPHENOL
 UG/L 34601 HA

2,4-DIMETHYLPHE
 NOL UG/L 34606 HA

2,4-DINITROPHENOL
 UG/L 34616 HA

2-METHYL-4,6-DINITRO
 PHE
 NOL UG/L 34657 HA

2-NITROPHENOL
 UG/L 34591 HA

4-NITROPHENOL
 UG/L 34646 HA

PENTACHLOROPHENOL
 UG/L 39032 HA

PHE
 NOL UG/L 34694 HA

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 # Single column quantification, second column confirmation was not conducted
 * first column quantification, second column confirmation.
 ** field duplicate

ENVIRONMENTAL SCIENCE & ENGINEERING 05/02/87 STATUS: FINAL

PROJECT NUMBER 86449 0000 PROJECT NAME TYNDALL AFB
 FIELD GROUP TYNDL 4 PROJECT MANAGER RANDY SCHULZE
 26.10.11R LAB COORDINATOR DAVE NGOTHE

PARAMETERS	STORET #	UNITS	METHOD	SAMPLE ID/8
	TYNDL 4	15		SMT11-2
DATE				10/14/86
TIME				15:40
2,4,6-TRICHL-PHENOL	34621	UG/L	FI	<6
HYDROCARBONS, PETRO	45501	MG/L	FI	0.23
LEAD, TOTAL	1051A	MG/L	GFAA	<0.0031
PH, FIELD	400	STD UNITS		6.80
SP. COND., FIELD@25C	94	UMHOS/CM		2680
WATER TEMP	10	C		27.1
D.O., PROBE	299	MG/L		2.2
	0			

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 + First column quantification, second column confirmation
 ** Field Duplicate

FIELD GROUP
TYNDALL - 5

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PROJECT NUMBER 86449 0000
PROJECT NAME TYNDALL AFB
PROJECT MANAGER RANDY SCHULZE
LAB COORDINATOR DAVE KNOTHE
FIELD GROUP TYNDLS
Z78RX

PARAMETERS	UNITS	STORET #	METHOD	GT7-1		GT7-2		GT7-3		GT7 QA**		GT8-1		GT8-3		GT8-4		GT8QA**	
				TYNDLS	1	TYNDLS	2	TYNDLS	3	TYNDLS	4	TYNDLS	5	TYNDLS	6	TYNDLS	7	TYNDLS	8
DATE				10/10/86		10/09/86		10/10/86		10/10/86		10/16/86		10/17/86		10/23/86		10/17/86	
TIME				08:45		12:30		10:15		10:15		11:30		13:55		13:03		13:55	
BROMODICHLOROMETHANE	UG/L	32101	HA	<0.050		<0.050		<0.050		<0.050		<0.050		<0.050		<0.050		<0.050	
BROMOFORM	UG/L	32104	HA	<0.050		<0.050		<0.050		<0.050		<0.050		<0.050		<0.050		<0.050	
BROMOTHANE	UG/L	34413	HA	<0.050		<0.050		<0.050		<0.050		<0.050		<0.050		<0.050		<0.050	
CARBON TETRACHLORIDE	UG/L	32102	HA	<0.050		<0.050		<0.050		<0.050		<0.050		<0.050		<0.050		<0.050	
CHLOROBENZENE	UG/L	34301	HA	<0.050		<0.050		<0.050		<0.050		<0.050		<0.050		<0.050		<0.050	
CHLOROTHANE	UG/L	34311	HA	<0.050		<0.050		<0.050		<0.050		<0.050		<0.050		<0.050		<0.050	
2-CHLOROTHYLVINYL	UG/L	34576	HA	<0.050		<0.050		<0.050		<0.050		<0.050		<0.050		<0.050		<0.050	
ETHER	UG/L	32106	HA	<0.050		<0.050		<0.050		<0.050		<0.050		<0.050		<0.050		<0.050	
CHLOROFORM	UG/L	34418	HA	<0.050		<0.050		<0.050		<0.050		<0.050		<0.050		<0.050		<0.050	
CHLOROTHANE	UG/L	32105	HA	<0.050		<0.050		<0.050		<0.050		<0.050		<0.050		<0.050		<0.050	
DIBROMOCHLOROMETHANE	UG/L	34668	HA	<0.050		<0.050		<0.050		<0.050		<0.050		<0.050		<0.050		<0.050	
DICHLORODIFLUORO	UG/L	34496	HA	<0.050		<0.050		<0.050		<0.050		<0.050		<0.050		<0.050		<0.050	
METHANE	UG/L	34531	HA	<0.050		<0.050		<0.050		<0.050		<0.050		<0.050		<0.050		<0.050	
1,1-DICHLOROMETHANE	UG/L	34501	HA	<0.050		<0.050		<0.050		<0.050		<0.050		<0.050		<0.050		<0.050	
1,1-DICHLOROMETHYLENE	UG/L	34546	HA	<0.050		<0.050		<0.050		<0.050		<0.050		<0.050		<0.050		<0.050	
TRANS-1,2-DICHLORO	UG/L	34541	HA	<0.050		<0.050		<0.050		<0.050		<0.050		<0.050		<0.050		<0.050	
ETHYLENE	UG/L	34704	HA	<0.050		<0.050		<0.050		<0.050		<0.050		<0.050		<0.050		<0.050	
1,2-DICHLOROPROPANE	UG/L	34659	HA	<0.050		<0.050		<0.050		<0.050		<0.050		<0.050		<0.050		<0.050	
CIS-1,3-DICHLORO	UG/L	34423	HA	<0.050		<0.050		<0.050		<0.050		<0.050		<0.050		<0.050		<0.050	
PROPENE	UG/L	34516	HA	<0.050		<0.050		<0.050		<0.050		<0.050		<0.050		<0.050		<0.050	
TRANS-1,3-DICHLORO	UG/L	34516	HA	<0.050		<0.050		<0.050		<0.050		<0.050		<0.050		<0.050		<0.050	
PROPENE	UG/L	34516	HA	<0.050		<0.050		<0.050		<0.050		<0.050		<0.050		<0.050		<0.050	
METHYLENE CHLORIDE	UG/L	34516	HA	<0.050		<0.050		<0.050		<0.050		<0.050		<0.050		<0.050		<0.050	
1,1,2,2-TETRACHLORO	UG/L	34516	HA	<0.050		<0.050		<0.050		<0.050		<0.050		<0.050		<0.050		<0.050	
ETHANE	UG/L																		

* Single column quantification, unable to confirm by second column due to interference

Single column quantification, second column confirmation was not conducted

+ first column quantification, second column confirmation

** field duplicate

PROJECT NUMBER 86449 0000
FIELD GROUP TYNDLS
778RX

PROJECT NAME TYNDALL AFB
PROJECT MANAGER RANDY SCHULZE
LAB COORDINATOR DAVE KNOTHE

PARAMETERS	STORET #	UNITS	GT7-1 TYNDLS	GT7-2 TYNDLS	GT7-3 TYNDLS	GT7-QA** TYNDLS	GT8-1 TYNDLS	GT8-3 TYNDLS	GT8-4 TYNDLS	GT8QA** TYNDLS	BMT7-11 TYNDLS
DATE	TIME		10/10/86 08:45	10/09/86 12:30	10/10/86 10:15	10/10/86 10:15	10/16/86 11:30	10/17/86 13:55	10/23/86 13:03	10/17/86 13:55	10/09/86 14:50
TETRACHLOROETHENE	34475	HA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
UG/L											
1,1,1-TRICHL*ETHANE	34506	HA	<0.050	<0.050	<0.050	0.060*	<0.050	<0.050	<0.050	<0.050	0.060*
UG/L											
1,1,2-TRICHL*ETHANE	34511	HA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
UG/L											
TRICHLOROETHENE	39180	HA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
UG/L											
TRICHL*FLUOROPETHANE	34488	HA	<0.050	<0.050	<0.050	<0.050	0.12*	<0.050	<0.050	<0.050	<0.050
UG/L											
VINYL CHLORIDE	39175	HA	<0.050	<0.050	<0.050	<0.050	0.12*	<0.050	<0.050	<0.050	<0.050
UG/L											
BENZENE	34030	HA	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
UG/L											
ETHYLBENZENE	34371	PI	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
UG/L											
TOLUENE	34010	PI	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
UG/L											
ACENAPHTHENE	34205	PI	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0
UG/L											
ACENAPHTHYLENE	34200	GMS	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0
UG/L											
ANTHRACENE	34220	GMS	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0
UG/L											
BENZIDINE	39120	GMS	<2.1	<2.1	<2.1	NA	<2.1	<2.1	<2.1	<2.1	<2.1
UG/L											
BENZO(A)ANTHRACENE	34526	GMS	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0
UG/L											
BENZO(B)FLUORANTHENE	34230	GMS	<1.5	<1.5	<1.5	NA	<1.5	<1.5	<1.5	<1.5	<1.5
UG/L											
BENZO(K)FLUORANTHENE	34242	GMS	<1.5	<1.5	<1.5	NA	<1.5	<1.5	<1.5	<1.5	<1.5
UG/L											
BENZO(A)PYRENE	34247	GMS	<1.5	<1.5	<1.5	NA	<1.5	<1.5	<1.5	<1.5	<1.5
UG/L											
BENZO(GH)PERYLENE	34521	GMS	<2.0	<2.0	<2.0	NA	<2.0	<2.0	<2.0	<2.0	<2.0
UG/L											
BUTYLBENZYLPHthalate	34292	GMS	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0
UG/L											
BIS(2-CHLOROETHYL) ETHER	34273	GMS	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0
UG/L											

* Single column quantification, unable to confirm by second column due to interference.

Single column quantification, second column confirmation was not conducted.

+ First column quantification, second column confirmation.

** Field Duplicate

PROJECT NUMBER 86449 0000
FIELD GROUP TYNDLS
778RX

PROJECT NAME TYNDALL AFB
PROJECT MANAGER RANDY SCHULZE
LAB COORDINATOR DAVE NMOHE

PARAMETERS	STORET #	UNITS	GT7-1 TYNDLS	GT7-2 TYNDLS	GT7-3 TYNDLS	GT7-0A** TYNDLS	GT8-1 TYNDLS	GT8-3 TYNDLS	GT8-4 TYNDLS	GT8-0A** TYNDLS
DATE			10/10/86	10/09/86	10/10/86	10/10/86	10/16/86	10/17/86	10/23/86	10/17/86
TIME			08:45	12:30	10:15	10:15	11:30	13:55	13:03	13:55
BIS(2-CHLOROETHOXY) METHANE UG/L	34278	GMS	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0
BIS(2-ETHYLHEXYL) PHthalate UG/L	39100	GMS	<1.0	<1.0	52	NA	3.6	11	4.5	9.5
BIS(2-CHLOROPROPYL) ETHER UG/L	34283	GMS	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0
4-BROMOPHENYLPHENYL ETHER UG/L	34636	GMS	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0
2-CHLORONAPHTHALENE UG/L	34581	GMS	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0
2-CHLOROPHENOXY UG/L	34586	GMS	<1.7	<1.7	<1.7	NA	<1.7	<1.7	<1.7	<1.7
4-CHLORO-3-METHYL PHENOL UG/L	34452	GMS	<1.4	<1.4	<1.4	NA	<1.4	<1.4	<1.4	<1.4
4-CHLOROPHENYLPHENYL ETHER UG/L	34641	GMS	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0
CHRYSENE UG/L	34320	GMS	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0
DIBEN(A,H)ANTHACENE UG/L	34550	GMS	<2.0	<2.0	<2.0	NA	<2.0	<2.0	<2.0	<2.0
D1-N-BUTYLPHthalate UG/L	39110	GMS	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0
1,3-DICHLOROBENZENE UG/L	34566	GMS	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0
1,2-DICHLOROBENZENE UG/L	34536	GMS	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0
1,4-DICHLOROBENZENE UG/L	34571	GMS	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0
3,3'-DICHLOROBENZIDINE UG/L	34631	GMS	<1.5	<1.5	<1.5	NA	<1.5	<1.5	<1.5	<1.5
2,4-DICHLOROPHENOXY UG/L	34601	GMS	<1.4	<1.4	<1.4	NA	<1.4	<1.4	<1.4	<1.4
DIEthylPHthalate UG/L	34336	GMS	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0
2,4-DIMETHYLPHENOXY UG/L	34606	GMS	<1.4	<1.4	<1.4	NA	<1.4	<1.4	<1.4	<1.4
DIMETHYLPHthalate UG/L	34341	GMS	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0
2,4-DINITROPHENOXY UG/L	34616	GMS	<3.0	<3.0	<3.0	NA	<3.0	<3.0	<3.0	<3.0

** Field Duplicate

ENVIRONMENTAL SCIENCE & ENGINEERING 05/02/87 STATUS: FINAL

PROJECT NUMBER 86449 0000
FIELD GROUP TYNDLS 278RX
PROJECT NAME TYNDALL AFB
PROJECT MANAGER RANDY SCHULZE
LAB COORDINATOR DAVE KROTHE

PARAMETERS	UNITS	STORET #	GT7-1 TYNDLS	GT7-2 TYNDLS	GT7-3 TYNDLS	GT7-QA** TYNDLS	GT8-1 TYNDLS	GT8-3 TYNDLS	GT8-4 TYNDLS	GT8QA** TYNDLS	GT8-5 TYNDLS	GT8-6 TYNDLS	GT8-7 TYNDLS	GT8-8 TYNDLS	GT8-9 TYNDLS
DATE			10/10/86	10/09/86	10/10/86	10/10/86	10/16/86	10/17/86	10/23/86	10/17/86	10/17/86	10/09/86			
TIME			08:45	12:30	10:15	10:15	11:30	13:55	13:03	13:55	14:50				
2,4-DINITROTOLUENE	UG/L	34611	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2,6-DINITROTOLUENE	UG/L	34626	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
D1-N-OCTYLPHTHALATE	UG/L	34596	<1.1	<1.1	1.4	NA	<1.1	<1.1	2.2	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1
FLUORANTHENE	UG/L	34376	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
FLUORENE	UG/L	34381	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
HEXACHLORO BENZENE	UG/L	39700	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
HEXACHLOROCYCLOPENTADIENE	UG/L	34391	<1.1	<1.1	<1.1	NA	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1
HEXACHLOROCYCLOPENTADIENE	UG/L	34386	<2.0	<2.0	<2.0	NA	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
HEXACHLOROCYCLOPENTADIENE	UG/L	34396	<1.5	<1.5	<1.5	NA	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5
INDENO (1,2,3-CD)	UG/L	34403	<2.0	<2.0	<2.0	NA	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
PYRENE	UG/L	34408	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
ISOPHORENE	UG/L	34657	<5.0	<5.0	<5.0	NA	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
2-METHYL-4,6-DINITROPHENOL	UG/L	34696	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
NAPHTHALENE	UG/L	34447	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
NITROBENZENE	UG/L	34591	<1.4	<1.4	<1.4	NA	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4
2-NITROPHENOL	UG/L	34646	<5.0	<5.0	<5.0	NA	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
4-NITROPHENOL	UG/L	34438	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
N-NITROSODIMETHYLAMINE	UG/L	34428	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
N-NITROSODI-N-PROPYLAMINE	UG/L	34433	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
PENTACHLOROPHENOL	UG/L	39012	<10	<10	<10	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10

** Field Duplicate

PROJECT NUMBER 86449 0000
FIELD GROUP TYNDLS 2708X
PROJECT NAME TYNDALL AFB
PROJECT MANAGER RANDY SCHULZE
LAB COORDINATOR DAVE KNOTHE

PARAMETERS	UNITS	STORE #	STORY #	GT7-1 TYNDLS	GT7-2 TYNDLS	GT7-3 TYNDLS	GT7-QA** TYNDLS	GT8-1 TYNDLS	GT8-3 TYNDLS	GT8-4 TYNDLS	GT8QA** TYNDLS	GT8-5 TYNDLS	GT8-6 TYNDLS	GT8-7 TYNDLS	GT8-8 TYNDLS	GT8-9 TYNDLS	GT8-10 TYNDLS	GT8-11 TYNDLS
DATE				10/10/86	10/09/86	10/10/86	10/10/86	10/16/86	10/17/86	10/23/86	10/17/86	10/17/86	10/09/86					
TIME				08:45	12:30	10:15	10:15	11:30	13:55	13:03	13:55	14:50						
PHEMANTHRENE	UG/L	34461	GMS	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0					
PHEMOL	UG/L	34694	GMS	<1.3	<1.3	<1.3	NA	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3					
PYRENE	UG/L	34469	GMS	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0					
1,2,4-TRICH* BENZENE	UG/L	34551	GMS	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0					
2,4,6-TRICHL* PHENOL	UG/L	34621	GMS	<1.8	<1.8	<1.8	NA	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8					
PH FIELD	STD UNITS	400		5.70	5.50	4.80	NA	6.30	5.80	5.80	NA	7.90						
SP COND. FIELD	UMHOS/CH	94		66.0	69.0	98.0	NA	720	353	185	NA	1310						
WATER TEMP	C	10		26.2	27.7	25.9	NA	25.0	25.1	25.8	NA	23.7						
DDT PP*	UG/L	39300	GMS	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7					
BHC A	UG/L	39337	GMS	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1					
BHC B	UG/L	39338	GMS	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1					
BHC D	UG/L	34259	GMS	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1					
BHC G(L INDANE)	UG/L	39340	GMS	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1					
CHLORDANE	UG/L	39350	GMS	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1					
DDD PP*	UG/L	39310	GMS	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7					
DDE PP*	UG/L	39320	GMS	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7					
DDT PP*	UG/L	39300	GMS	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7					
DIELDRIN	UG/L	39380	GMS	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7					
ENDOSULFAN A	UG/L	34361	GMS	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6					
ENDOSULFAN B	UG/L	34356	GMS	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6					

** Field Duplicate

ENVIRONMENTAL SCIENCE & ENGINEERING 05/02/87 STATUS: FINAL

PROJECT NUMBER 86449 0000 PROJECT NAME TYNDALL AFB
 FIELD GROUP TYNDLS PROJECT MANAGER RANDY SCHULZE
 Z7BRX LAB COORDINATOR DAVE ANOTHE

PARAMETERS	STORY #	UNITS	METHOD	SAMPLE ID/8											
				GT7-1	GT7-2	GT7-3	GT7-QA**	GT8-1	GT8-3	GT8-4	GT8QA**	BT7-11	BT7-11	BT7-11	BT7-11
DATE				TYNDLS	TYNDLS	TYNDLS	TYNDLS	TYNDLS	TYNDLS	TYNDLS	TYNDLS	TYNDLS	TYNDLS	TYNDLS	TYNDLS
TIME															
ENDOSULFAN SULFATE	34351	UG/L	GMS	10/10/86 08:45	10/09/86 12:30	10/10/86 10:15	10/10/86 10:15	10/16/86 11:30	10/17/86 13:55	10/23/86 13:03	10/17/86 13:55	10/09/86 14:50	10/09/86 14:50	10/09/86 14:50	10/09/86 14:50
ENDORIN	39390	UG/L	GMS	<5.6	<7.6	<5.6	<7.6	<5.6	<7.6	<7.6	<5.6	<5.6	<5.6	<7.6	<7.6
ENDORIN ALDEHYDE	34366	UG/L	GMS	<7.6	<7.6	<7.6	<7.6	<7.6	<7.6	<7.6	<7.6	<7.6	<7.6	<7.6	<7.6
HEPTACHLOR	39410	UG/L	GMS	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
HEPTACHLOR EPOXIDE	39420	UG/L	GMS	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2
PCB-1016	34671	UG/L	GMS	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30
PCB-1221	39488	UG/L	GMS	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30
PCB-1232	39492	UG/L	GMS	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30
PCB-1242	39496	UG/L	GMS	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30
PCB-1248	39500	UG/L	GMS	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30
PCB-1254	39504	UG/L	GMS	<36	<36	<36	<36	<36	<36	<36	<36	<36	<36	<36	<36
PCB-1260	39508	UG/L	GMS	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40
TOXAPHENE	39400	UG/L	GMS	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60

** Field Duplicate

PROJECT NUMBER 86449 0000 PROJECT NAME TYNDALL AFB
FIELD GROUP TYNDLS PROJECT MANAGER D.M. ANOTHE
TYNDLP LAB COORDINATOR DAVE ANOTHE

PARAMETERS	UNITS	STORET #	DATE	TIME	GT7-1 TYNDLS	GT7-2 TYNDLS	GT7-3 TYNDLS	GT7 QA** TYNDLS	GT8-1 TYNDLS	GT8-3 TYNDLS	GT8-4 TYNDLS	GT8QA** TYNDLS	BTW7-11 TYNDLS
		METHOD			1	2	3	4	5	6	7	8	9
DATE			10/10/86	08:45	10/09/86	10/10/86	10/10/86	10/10/86	10/16/86	10/17/86	10/23/86	10/17/86	10/09/86
TIME						12:30	10:15	10:15	11:30	13:55	13:03	13:55	14:50
ARSENIC, TOTAL	MG/L	1002A			<0.060	0.065	0.069	<0.060	<0.060	<0.060	0.061	<0.060	<0.060
ICAP		ICAP											
ANTIMONY, TOTAL	MG/L	1097A			<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060
ICAP		ICAP											
BERYLLIUM, TOTAL	MG/L	1012A			0.0087	0.011	0.0054	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
ICAP		ICAP											
CADMIUM, TOTAL	MG/L	1027A			<0.0080	<0.0080	<0.0080	<0.0080	<0.0080	<0.0080	<0.0080	<0.0080	<0.0080
ICAP		ICAP											
CHROMIUM, TOTAL	MG/L	1034A			<0.0060	0.015	0.017	<0.0060	<0.0060	<0.0060	0.014	<0.0060	<0.0060
ICAP		ICAP											
COPPER, TOTAL	MG/L	1042A			<0.0060	<0.0060	<0.0060	<0.0060	0.0108	<0.0060	<0.0060	<0.0060	<0.0060
ICAP		ICAP											
LEAD, TOTAL	MG/L	1051A			<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
ICAP		ICAP											
NICKEL, TOTAL	MG/L	1067A			<0.015	0.016	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015
ICAP		ICAP											
SILVER, TOTAL	MG/L	1077A			<0.0060	<0.0060	<0.0060	<0.0060	0.0075	0.0059	0.0063	0.0060	<0.0060
ICAP		ICAP											
SELENIUM, TOTAL	MG/L	1147A			<0.090	<0.090	<0.090	<0.090	<0.090	<0.090	<0.090	<0.090	<0.090
ICAP		ICAP											
THALLIUM, TOTAL	MG/L	1059A			<0.037	<0.037	<0.037	<0.037	<0.041	<0.041	<0.027	<0.041	0.062
ICAP		ICAP											
ZINC, TOTAL	MG/L	1092A			<0.0030	<0.0030	0.0051	<0.0030	0.040	0.011	0.038	0.0049	0.0034
ICAP		ICAP											
MERCURY, TOTAL	MG/L	71900A			<0.0002	<0.0002	<0.0002	<0.0002	<0.002	<0.002	<0.002	0.0003	<0.0002
ICAP		ICAP											
CVA		CVA											

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FIELD GROUP
TYNDALL - 6

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PROJECT NUMBER 86449 0000
FIELD GROUP TYNOL6
Z3.9R

PROJECT NAME TYNDALL AFB
PROJECT MANAGER RANDY SCHULZE
LAB COORDINATOR DAVE KNOTHE

PARAMETERS	STORET #	UNITS	GT3-1 TYNDL6	GT3-2 TYNDL6	GT3-3 TYNDL6	GT3-4 TYNDL6	GT3-5 TYNDL6	GT3-6 TYNDL6	GT3-7 TYNDL6	GT30A** TYNDL6	GT9-1 TYNDL6	GT9-2 TYNDL6	GT9-3 TYNDL6	GT9-4 TYNDL6	GT90A** TYNDL6
DATE			10/15/86	10/15/86	10/15/86	10/16/86	10/17/86	10/17/86	10/17/86	10/17/86	10/13/86	10/13/86	10/13/86	10/21/86	10/21/86
TIME			10:50	11:10	11:55	10:45	11:45	12:30	12:20	11:45	14:10	14:48	13:10	12:15	12:15
BROMODICHLOROMETHANE	32101	HA	<0.050	<0.050	<0.050	<0.050	0.050*	<0.050	<0.050	0.080*	<0.050	<0.050	<0.050	<0.050	NA
BROMOFORM	32104	HA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NA
BROMOTHANE	34413	HA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NA
CARBON TETRACHLORIDE	32102	HA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NA
CHLOROBENZENE	34301	HA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NA
CHLOROTHANE	34311	HA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NA
2-CHLOROETHYL VINYL	34576	HA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NA
ETHER	32106	HA	<0.050	<0.050	<0.050	<0.050	0.43*	<0.050	<0.050	0.48*	<0.050	0.050*	<0.050	<0.050	NA
CHLOROMETHANE	34418	HA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NA
DIBROMOCHLOROMETHANE	32105	HA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NA
DICHLOROBENZENE, TOT.	81524	HA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NA
DICHLORODIFLUORO	34668	HA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NA
METHANE	34496	HA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NA
1,1-DICHLOROETHANE	34531	HA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NA
1,2-DICHLOROETHANE	34501	HA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.60*	<0.050	<0.050	<0.050	NA
1,1-DICHLOROETHYLENE	34546	HA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NA
TRANS-1,2-DICHLORO	34546	HA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.25*	<0.050	<0.050	0.37*	NA
ETHENE	34541	HA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050*	<0.050	<0.050	<0.050	NA
1,2-DICHLOROPROPANE	34541	HA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NA
CIS-1,3-DICHLORO	34704	HA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NA
PROPENE	34699	HA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NA
TRANS-1,3-DICHLORO	34423	HA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NA
METHYLENE CHLORIDE	34423	HA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NA

* Single column quantification, unable to confirm by second column due to interference.

Single column quantification, second column confirmation was not conducted.

* First column quantification, second column confirmation.

** Field Duplicate

FIELD GROUP
TYNDALL - 7

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PROJECT NUMBER 86449 0000 PROJECT NAME TYNDALL AFB
 FIELD GROUP TYNDL7 PROJECT MANAGER RANDY SCHULZE
 SZ2.11R LAB COORDINATOR DAVE ANOTHE

PARAMETERS	STORET #	METHOD	SAMPLE ID/8			
			SDT11-1 TYNDL7	SDT11-2 TYNDL7	SDT2-1 TYNDL7	SDT2-2 TYNDL7
UNITS			1	2	3	
DATE			10/14/86	10/14/86	10/14/86	
TIME			13:40	13:30	13:40	
HYDROCARBONS, PETROL	98233A		170	75	35000	
MG/KG						
LEAD, SED	1052A		5.1	3.2	98	
MG/KG						
MOISTURE	7032U		26.4	27.7	43.8	
MG/KG						
BENZENE	34237A		<0.30	<0.30	<0.39	
MG/KG						
BROMODICHLOROMETHANE	34330A		<0.15	<0.15	<0.20	
MG/KG						
BROMOCHLOROMETHANE	34290A		<0.32	<0.33	<0.42	
MG/KG						
BROMOTHANE	34416A		<0.39	<0.40	<0.52	
MG/KG						
CARBON TETRACHLORIDE	34299A		<0.19	<0.19	<0.25	
MG/KG						
CHLOROBENZENE	34304A		<0.41	<0.41	<0.54	
MG/KG						
CHLOROTHANE	34314A		<0.56	<0.57	<0.73	
MG/KG						
2-CHLORODIETHYL VINYL	34579A		<0.68	<0.69	<0.89	
ETHER						
CHLORODIETHYL	34318A		<0.11	<0.11	<0.14	
MG/KG						
CHLOROMETHANE	34421A		<0.29	<0.30	<0.38	
MG/KG						
DIBROMOCHLOROMETHANE	34309A		<0.21	<0.21	<0.28	
MG/KG						
DICHLOROBENZENE, TOTAL	98578A		<0.27	<0.28	<0.36	
MG/KG						
1,1-DICHLOROMETHANE	34499A		<0.32	<0.33	<0.42	
MG/KG						
1,2-DICHLOROMETHANE	34534A		<0.19	<0.19	<0.25	
MG/KG						
1,1-DICHLORODIETHYLENE	34504A		<0.22	<0.22	<0.28	
MG/KG						
TRANS-1,2-DICHLORO	34549A		<0.11	<0.11	<0.14	
ETHYLENE						
1,2-DICHLOROPROPANE	34544A		<0.41	<0.41	<0.53	
MG/KG						

R130

PROJECT NUMBER 86449 0000 PROJECT NAME TYNDALL AFB
 FIELD GROUP TYNDL7 PROJECT MANAGER RANDY SCHULZE
 SZ2, 11R LAB COORDINATOR DAVE KNOTHE

PARAMETERS	UNITS	STORET #	SAMPLE ID/8			
			SDT11-1 TYNDL7	SDT11-2 TYNDL7	SDT2-1 TYNDL7	
DATE		METHOD	1	2	3	
TIME			10/14/86 13:40	10/14/86 13:30	10/14/86 13:40	
CIS-1,3-DICHLORO PROPENE	MG/KG	34702A GMS	<0.34	<0.35	<0.44	
TRANS-1,3-DICHLORO PROPENE	MG/KG	34697A GMS	<0.43	<0.44	<0.57	
ETHYLBENZENE	MG/KG	34374A GMS	<0.49	<0.50	<0.64	
METHYLENE CHLORIDE	MG/KG	34426A GMS	<0.19	<0.19	<0.25	
1,1,2,2-TETRACHLORO ETHANE	MG/KG	34519A GMS	<0.28	<0.28	<0.36	
TETRACHLOROETHENE	MG/KG	34478A GMS	<0.28	<0.28	<0.36	
TOLUENE	MG/KG	34483A GMS	<0.41	<0.41	<0.53	
1,1,1-TRICHLOROETHANE	MG/KG	34509A GMS	<0.26	<0.26	<0.34	
1,1,2-TRICHLOROETHANE	MG/KG	34514A GMS	<0.34	<0.35	<0.44	
TRICHLOROETHENE	MG/KG	34487A GMS	<0.13	<0.13	<0.17	
TRICHLOROFLUOROMETHANE	MG/KG	34491A GMS	<0.22	<0.22	<0.28	
VINYL CHLORIDE	MG/KG	34495A GMS	<0.33	<0.34	<0.44	
M-XYLENE	MG/KG	97016A GMS	<0.41	<0.41	<0.53	
O,P-XYLENE	MG/KG	97017A GMS	<0.41	<0.41	<0.53	
ACROLEIN SED	MG/KG	34213A GMS	<6.8	<6.9	<8.9	
ACRYLONITRILE SED	MG/KG	34218A GMS	<6.8	<6.9	<8.9	

Footnotes to Analytical Results

¹Primary column indicates 3.8 µg/L of total 1,2-Dichloroethene, however, the secondary column shows the peak to probably be Cis 1,2-Dichloroethene which is a non-target compound.

²Primary column indicates 12 µg/L of total 1,2-Dichloroethene, however, the secondary column shows the major portion of the peak to probably be Cis 1,2-Dichloroethene while confirming a level of 0.17 µg/L of Trans 1,2-Dichloroethene.

³Vinyl Chloride co-elutes with Dichlorodifluoromethene on the primary column. The second column indicates the major peak to be probably Dichlorodifluoromethene and a second peak to be either Vinyl Chloride or Chloromethane or both, making confirmation of either impossible. There is a response on the PID on the primary column indicating a probable presence of Vinyl Chloride, but as stated above, the hit cannot be confirmed.

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ANALYTICAL RESULTS OF FIELD DUPLICATES
COLLECTED AT TYNDALL AFB

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PROJECT NUMBER 86449 0000
FIELD GROUP TYNOL2
ZONE 2R

PROJECT NAME TYNDALL AFB
PROJECT MANAGER RANDY SCHULZE
LAB COORDINATOR DAVE NNOIHE

SAMPLE ID: 8

PARAMETERS	UNITS	STORET #	METHOD	GLH2QA TYNDL2	GLH2-9 TYNDL2
DATE				10/22/86	10/22/86
TIME				13:15	11:10
BROMODICHLOROMETHANE	UG/L	32101	HA	NA	<0.050
BROMOFORM	UG/L	32104	HA	NA	<0.050
BROMOMETHANE	UG/L	34413	HA	NA	<0.050
CARBON TETRACHLORIDE	UG/L	32102	HA	NA	<0.050
CHLOROBENZENE	UG/L	34301	HA	NA	<0.050
CHLOROMETHANE	UG/L	34311	HA	NA	<0.050
2-CHLOROETHYL VINYL ETHER	UG/L	34576	HA	NA	<0.050
CHLOROFORM	UG/L	32106	HA	NA	<0.050
CHLOROMETHANE	UG/L	34418	HA	NA	<0.050
DIBROMOCHLOROMETHANE	UG/L	32105	HA	NA	<0.050
DICHLOROBENZENE, TOT.	UG/L	81524	HA	NA	<0.050
DICHLORODIFLUORO METHANE	UG/L	34668	HA	NA	<0.050
1,1-DICHLOROMETHANE	UG/L	34496	HA	NA	<0.050
1,2-DICHLOROMETHANE	UG/L	34531	HA	NA	<0.050
1,1-DICHLOROETHYLENE	UG/L	34501	HA	NA	<0.050
TRANS-1,2-DICHLORO ETHENE	UG/L	34546	HA	NA	<0.050
1,2-DICHLOROPROPANE	UG/L	34541	HA	NA	<0.050
CIS-1,3-DICHLORO PROPENE	UG/L	34704	HA	NA	<0.050
TRANS-1,3-DICHLORO PROPENE	UG/L	34699	HA	NA	<0.050
METHYLENE CHLORIDE	UG/L	34423	HA	NA	<0.050

PROJECT NUMBER 86449 0000 PROJECT NAME TYNDALL AFB
 FIELD GROUP TYNDL2 PROJECT MANAGER RANDY SCHULZE
 ZONE2R LAB COORDINATOR DAVE KNOTHE

SAMPLE ID#

PARAMETERS	UNITS	STORE#	GLH2O	GLH2-9
		METHOD	TYNDL2	TYNDL2
			6	8
DATE			10/22/86	10/22/86
TIME			13:15	11:10
1,1,2,2-TETRACHLOROETHANE	UG/L	34516	NA	<0.050
TETRACHLOROETHENE	UG/L	34475	NA	<0.050
1,1,1-TRICHLOROETHANE	UG/L	34506	NA	<0.050
1,1,2-TRICHLOROETHANE	UG/L	34511	NA	<0.050
TRICHLOROETHENE	UG/L	39180	NA	<0.050
TRICHLOROETHANE	UG/L	34488	NA	<0.050
VINYL CHLORIDE	UG/L	39175	NA	<0.050
BENZENE	UG/L	34030	NA	<0.50
ETHYLBENZENE	UG/L	34371	NA	2.00*
TOLUENE	UG/L	34010	NA	<0.50
HYDROCARBONS, PETRO	UG/L	45501	0.159	0.226
LEAD, TOTAL	MG/L	1051A	<0.0031	<0.0031
PH, FIELD	MG/L	GFAA	NA	5.79
SP. COND., FIELD@25C	STD UNITS	400	NA	293
WATER TEMP	UMHOS/CM	94	NA	25.8
D.O. PROBE	C	10	NA	0
	MC/L	299	NA	NA
		0		

PROJECT NUMBER 86449 0000
 FIELD GROUP TYNOL3 25H
 PROJECT NAME TYNOLL AFB
 PROJECT MANAGER RANDY SCHULZE
 LAB COORDINATOR DAVE KNOTHE

SAMPLE ID: #

PARAMETERS	UNITS	STORET #	GT5-3 TYNDL3	GT50A TYNDL3
DATE			3	4
TIME			10/13/86 12:00	10/13/86 00:00
BROMODICHLOROMETHANE	UG/L	32101	0.070 ↑	0.060 ↑
BROMOFORM	UG/L	32104	<0.050	<0.050
BROMOTHANE	UG/L	34413	<0.050	<0.050
CARBON TETRACHLORIDE	UG/L	32102	<0.050	<0.050
CHLOROBENZENE	UG/L	34301	<0.050	<0.050
CHLOROTHANE	UG/L	34311	<0.050	<0.050
2-CHLOROETHYL VINYL	UG/L	34576	<0.050	<0.050
ETHER	UG/L	32106	0.440 ↑	0.460 ↑
CHLOROFORM	UG/L	34418	<0.050	<0.050
CHLOROMETHANE	UG/L	32105	<0.050	<0.050
DIBROMOCHLOROMETHANE	UG/L	81524	<0.050	<0.050
DICHLOROBENZENE, TOT.	UG/L	34668	<0.050	<0.050
DICHLORODIFLUORO	UG/L	34496	<0.050	<0.050
METHANE	UG/L	34531	<0.050	<0.050
1,1-DICHLOROTHANE	UG/L	34501	<0.050	<0.050
1,2-DICHLOROTHANE	UG/L	34546	<0.050	<0.050
1,1,1-DICHLOROETHYLENE	UG/L	34541	<0.050	<0.050
TRANS-1,2-DICHLORO	UG/L	34704	<0.050	<0.050
ETHENE	UG/L	34699	<0.050	<0.050
1,2-DICHLOROPROPANE	UG/L	34423	<0.050	<0.050
CIS-1,3-DICHLORO	UG/L			
PROPENE	UG/L			
TRANS-1,3-DICHLORO	UG/L			
PROPENE	UG/L			
METHYLENE CHLORIDE	UG/L			

PROJECT NUMBER 86449 0000 PROJECT NAME TINDALL AFB
FIELD GROUP TINDL 3 PROJECT MANAGER RANDY SCHULZE
258X LAB COORDINATOR DAVE AMOTHE

SAMPLE ID/8

PARAMETERS	STORER #	UNITS	GT5-3 TINDL 3	GT50A TINDL 3
	METHOD		3	4
DATE			10/13/86	10/13/86
TIME			12:00	00:00
1,1,2,2-TETRACHLOROETHANE	34516	UG/L	<0.050	<0.050
TETRACHLOROETHENE	34475	UG/L	<0.050	<0.050
1,1,1-TRICHLOROETHANE	34506	UG/L	<0.050	<0.050
1,1,2-TRICHLOROETHANE	34511	UG/L	<0.050	<0.050
TRICHLOROETHENE	39180	UG/L	<0.050	<0.050
TRICHLOROFLUOROMETHANE	34488	UG/L	<0.050	<0.050
VINYL CHLORIDE	39175	UG/L	<0.050	<0.050
BENZENE	34030	UG/L	<0.050	<0.050
ETHYLBENZENE	34371	UG/L	<0.050	<0.050
TOLUENE	34010	UG/L	<0.050	<0.050
4-CHLORO-3-METHYLPHENOL	34452	UG/L	<0.042	<0.042
2-CHLOROPHENOL	34586	UG/L	<0.04	<0.04
2,4-DICHLOROPHENOL	34601	UG/L	<0.04	<0.04
2,4-DIMETHYLPHENOL	34606	UG/L	<0.04	<0.04
2,4-DINITROPHENOL	34616	UG/L	<0.04	<0.04
2-METHYL-4,6-DINITROPHENOL	34657	UG/L	<0.04	<0.04
2-NITROPHENOL	34591	UG/L	<0.04	<0.04
4-NITROPHENOL	34646	UG/L	<0.04	<0.04
PENTACHLOROPHENOL	39032	UG/L	<0.04	<0.04
PHE-NOL	34694	UG/L	<0.04	<0.04

PROJECT NAME - TYNDALL AFB
PROJECT MANAGER RANDY SCHULZE
LAB COORDINATOR DAVE KNOTHE

PROJECT NUMBER 86449 0000
FIELD GROUP TYNDL3
ZSRX

SAMPLE ID/8

PARAMETERS	UNITS	STORET #	GT50A	TYNDL3	TYNDL3
		METHOD	3	4	
DATE			10/13/86	10/13/86	
TIME			12.00	00.00	
2,4,6-TRICHL-PHENOL		34621	<0.4	<0.4	
	UG/L	F1			
PH FIELD		400	6.40	NA	
	STD UNITS				
SP COND., FIELD025C		94	581	NA	
	UMHOS/CM				
WATER TEMP		10	26.2	NA	
	C	0			

PROJECT NUMBER 86449 0000
FIELD GROUP TYNDL4 Z6.10.11H
PROJECT NAME TYNDALL AFB
PROJECT MANAGER RANDY SCHULZE
LAB COORDINATOR DAVE ANOTHE

SAMPLE ID#

PARAMETERS	UNITS	STORET #	GT6-4 TYNDL4	GT60A TYNDL4	GT110-3 TYNDL4	GT110QA TYNDL4
DATE			10/21/86	10/21/86	10/20/86	10/20/86
TIME			10:00	10:45	09:10	09:10
BROMODICHLOROMETHANE	UG/L	32101	<0.050	NA	<0.050	<0.050
BROMOFORM	UG/L	32104	<0.050	NA	<0.050	<0.050
BROMOMETHANE	UG/L	34413	<0.050	NA	<0.050	<0.050
CARBON TETRACHLORIDE	UG/L	32102	<0.050	NA	<0.050	<0.050
CHLOROBENZENE	UG/L	34301	<0.050	NA	<0.050	<0.050
CHLOROFORANE	UG/L	34311	<0.050	NA	<0.050	<0.050
2-CHLOROETHYL VINYL ETHER	UG/L	34576	<0.050	NA	<0.050	<0.050
CHLOROFORM	UG/L	32106	0.11 *	NA	<0.050	<0.050
CHLOROMETHANE	UG/L	34418	<0.050	NA	<0.050	0.10 †
DIBROMOCHLOROMETHANE	UG/L	32105	<0.050	NA	<0.050	<0.050
DICHLOROBENZENE, TOT.	UG/L	81524	<0.050	NA	<0.050	<0.050
DICHLORODIFLUORO METHANE	UG/L	34668	<0.050	NA	<0.050	<0.050
1,1-DICHLOROETHANE	UG/L	34496	<0.050	NA	<0.050	<0.050
1,2-DICHLOROETHANE	UG/L	34537	0.070 †	NA	<0.050	<0.050
1,1-DICHLOROETHYLENE	UG/L	34501	<0.050	NA	<0.050	<0.050
TRANS-1,2-DICHLORO ETHYLENE	UG/L	34546	1.1 *	NA	<0.050	<0.050
1,2-DICHLOROPROPANE	UG/L	34541	<0.050	NA	<0.050	<0.050
CIS-1,3-DICHLORO PROPENE	UG/L	34704	<0.050	NA	<0.050	<0.050
TRANS-1,3-DICHLORO PROPENE	UG/L	34699	<0.050	NA	<0.050	<0.050
METHYLENE CHLORIDE	UG/L	34423	<0.050	NA	<0.050	<0.050

PROJECT NUMBER 86449 0000 PROJECT NAME TYNDALL AFB
FIELD GROUP TYNDL4 PROJECT MANAGER RANDY SCHULZE
26, 10, 11R LAB COORDINATOR DAVE ANOTHE

SAMPLE ID/8

PARAMETERS	STORY #	UNITS	GT6-4 TYNDL4	GT60A TYNDL4	GT10-3 TYNDL4	GT100A TYNDL4
DATE	TIME	METHOD				
1,1,2,2-TETRACHLOROETHANE	UG/L	HA	10/21/86 10:00	10/21/86 10:45	10/20/86 09:10	10/20/86 09:10
TETRACHLOROETHENE	UG/L	HA	<0.050	NA	<0.050	<0.050
1,1,1-TRICHLOROETHANE	UG/L	HA	<0.050	NA	<0.050	<0.050
1,1,2-TRICHLOROETHANE	UG/L	HA	<0.050	NA	<0.050	<0.050
TRICHLOROETHENE	UG/L	HA	<0.050	NA	<0.050	<0.050
TRICHLOROETHANE	UG/L	HA	<0.050	NA	<0.050	<0.050
VINYL CHLORIDE	UG/L	HA	0.24	NA	<0.050	<0.050
BENZENE	UG/L	PI	6.0	NA	<0.50	<0.50
ETHYLBENZENE	UG/L	PI	<0.50	NA	<0.50	<0.50
TOLUENE	UG/L	PI	1.1	NA	<0.50	<0.50
4-CHLORO-3-METHYLPHENOL	UG/L	PI	<1.1	NA	<1.1	<1.1
2-CHLOROPHENOL	UG/L	FI	<4	NA	<0.4	<0.4
2,4-DICHLOROPHENOL	UG/L	FI	<4	NA	<0.4	<0.4
2,4-DIMETHYLPHENOL	UG/L	FI	<4	NA	<0.4	<0.4
2,4-DINITROPHENOL	UG/L	FI	<40	NA	<4	<4
2-METHYL-4,6-DINITROPHENOL	UG/L	FI	<10	NA	<1	<1
2-NITROPHENOL	UG/L	FI	<4	NA	<0.4	<0.4
4-NITROPHENOL	UG/L	FI	<4	NA	<4	<4
PENTACHLOROPHENOL	UG/L	FI	<4	NA	<0.4	<0.4
PHENOL	UG/L	FI	<10	NA	<1	<1

ENVIRONMENTAL SCIENCE & ENGINEERING 05/07/87 STATUS
 PROJECT NUMBER R6449 0000 PROJECT NAME TYNDALE AFB
 FIELD GROUP TYNDALE PROJECT MANAGER RANDY SCHULZE
 26 10 11K LAB COORDINATOR DAVE NORTHE

SAMPLE 10/8

PARAMETERS	UNITS	STORED #	STRETCH	GT10 4	GT10 3	GT10 2
DATE				10/21/86	10/20/86	10/20/86
TIME				10:00	09:10	09:10
2,4,6-TRICHLOROPHENOL	UG/L	34621	F1	<4	<0.4	<0.4
HYDROCARBONS, PETRO	MG/L	45501	I	<0.093	0.122	0.139
LEAD, TOTAL	MG/L	1051A	GRAA	0.0043	<0.0031	<0.0031
PH, FIELD	STD UNITS	400		6.20	5.20	NA
SP. COND. FIELD@25C	UMHOS/CM	94		379	57.0	NA
WATER TEMP	C	10		26.9	24.9	NA
D.O., PROBE	MG/L	299		NA	NA	NA

R-52

PROJECT NAME TYNDALL AFB
PROJECT MANAGER RANDY SCHULZE
LAB COORDINATOR DAVE KNOTHE

PROJECT NUMBER 86449 0000
FIELD GROUP TYNDLS
278RX

SAMPLE ID: 8

PARAMETERS	STREET #	GT 1	GT 2	GT 3	GT 4	GT 5
UNITS	METHOD	TYNDLS	TYNDLS	TYNDLS	TYNDLS	TYNDLS
DATE		10-10-86	10-17-86	10-17-86	10-17-86	
TIME		08:45	10:15	13:55	13:55	
BROMODICHLOROMETHANE	32101	<0.050	<0.050	<0.050	<0.050	
HA						
BROMOFORM	32104	<0.050	<0.050	<0.050	<0.050	
HA						
BROMOTHANE	34413	<0.050	<0.050	<0.050	<0.050	
HA						
CARBON TETRACHLORIDE	32102	<0.050	<0.050	<0.050	<0.050	
HA						
CHLOROBENZENE	34301	<0.050	<0.050	<0.050	<0.050	
HA						
CHLOROTHANE	34311	<0.050	<0.050	<0.050	<0.050	
HA						
2-CHLOROETHYL VINYL	44576	<0.050	<0.050	<0.050	<0.050	
ETHER	HA					
CHLOROFORM	34106	<0.050	<0.050	<0.050	<0.050	
HA						
CHLOROMETHANE	34418	<0.050	<0.050	<0.050	<0.050	
HA						
DIBROMOCHLOROMETHANE	34105	<0.050	<0.050	<0.050	<0.050	
HA						
DICHLORODIFLUORO	34668	<0.050	<0.050	<0.050	<0.050	
METHANE	HA					
1,1-DICHLOROETHANE	34496	<0.050	<0.050	<0.050	<0.050	
HA						
1,2-DICHLOROETHANE	34531	<0.050	<0.050	<0.050	<0.050	
HA						
1,1-DICHLOROETHYLENE	34501	<0.050	<0.050	<0.050	<0.050	
HA						
TRANS-1,2-DICHLORO	34546	<0.050	<0.050	<0.050	<0.050	
ETHYLENE	HA					
1,2-DICHLOROPROPANE	34541	<0.050	<0.050	<0.050	<0.050	
HA						
C15-1,3-DICHLORO	34704	<0.050	<0.050	<0.050	<0.050	
PROPENE	HA					
TRANS-1,3-DICHLORO	34699	<0.050	<0.050	<0.050	<0.050	
PROPENE	HA					
METHYLENE CHLORIDE	34423	<0.050	<0.050	<0.050	<0.050	
HA						
1,1,2,2-TETRACHLORO	34516	<0.050	<0.050	<0.050	<0.050	
ETHANE	HA					

PROJECT NAME TYNDALL AFB
PROJECT MANAGER RANDY SCHULZE
LAB COORDINATOR DAVE KNOTHE

PROJECT NUMBER 86449 0000
FIELD GROUP TYNDLS
278RX

SAMPLE ID: #

PARAMETERS	STORY #	GT1-1	GT1-1A	GT1-3	GT1-3A
UNITS	METHOD	TYNDLS	TYNDLS	TYNDLS	TYNDLS
DATE		10/10/86	10/10/86	10/17/86	10/17/86
TIME		08:45	10:15	13:55	13:55
TETRACHLOROETHENE	34475	<0.050	<0.050	<0.050	<0.050
UG/L	HA				
1,1,1-TRICHL*ETHANE	34506	<0.050	0.06	<0.050	<0.050
UG/L	HA				
1,1,2-TRICHL*ETHANE	34511	<0.050	<0.050	<0.050	<0.050
UG/L	HA				
TRICHLOROETHENE	39180	<0.050	<0.050	<0.050	<0.050
UG/L	HA				
TRICHL*FLUOROTHANE	34488	<0.050	<0.050	<0.050	<0.050
UG/L	HA				
VINYL CHLORIDE	39175	<0.050	<0.050	<0.050	<0.050
UG/L	HA				
BENZENE	34030	<0.50	<0.50	<0.50	<0.50
UG/L	PI				
ETHYLBENZENE	34371	<0.50	<0.50	<0.50	<0.50
UG/L	PI				
TOLUENE	34010	<0.50	<0.50	<0.50	<0.50
UG/L	PI				
ACENAPHTHENE	34205	<1.0	NA	<1.0	<1.0
UG/L	GMS				
ACENAPHTHYLENE	34200	<1.0	NA	<1.0	<1.0
UG/L	GMS				
ANTHRACENE	34220	<1.0	NA	<1.0	<1.0
UG/L	GMS				
BENZIDINE	39120	<2.1	NA	<2.1	<2.1
UG/L	GMS				
BENZO(A)ANTHRACENE	34526	<1.0	NA	<1.0	<1.0
UG/L	GMS				
BENZO(B)FLUORANTHENE	34230	<1.5	NA	<1.5	<1.5
UG/L	GMS				
BENZO(A)FLUORANTHENE	34242	<1.5	NA	<1.5	<1.5
UG/L	GMS				
BENZO(A)PYRENE	34247	<1.5	NA	<1.5	<1.5
UG/L	GMS				
BENZO(CH)PERYLENE	34521	<2.0	NA	<2.0	<2.0
UG/L	GMS				
BUTYLBENZYLPHTHALATE	34292	<1.0	NA	<1.0	<1.0
UG/L	GMS				
BIS(2-CHLOROETHYL)	34273	<1.0	NA	<1.0	<1.0
ETHER	GMS				

PROJECT NUMBER 86449 0000
FIELD GROUP TYNOL5
PROJECT NAME TINDALL AFB
PROJECT MANAGER RANDY SCHULZE
LAB COORDINATOR DAVE KNOTHE

SAMPLE ID/#

PARAMETERS	UNITS	STORET #	GT7-1 TYNOL5	GT7-QA TYNOL5	GT8-3 TYNOL5	GT8QA TYNOL5
DATE		METHOD				
TIME						
BIS(2-CHLOROETHOXY)		44278	10/10/86	10/10/86	10/17/86	10/17/86
METHANE	UG/L	GMS	08:45	10:15	13:55	13:55
BIS(2-ETHYLHEXYL)		39100	<1.0	NA	<1.0	<1.0
PHTHALATE	UG/L	GMS	<1.0	NA	11	9.5
BIS(2-CHLORISOPROPYL)		34283	<1.0	NA	<1.0	<1.0
ETHER	UG/L	GMS	<1.0	NA	<1.0	<1.0
4-BROMOPHENYLPHENYL		34636	<1.0	NA	<1.0	<1.0
ETHER	UG/L	GMS	<1.0	NA	<1.0	<1.0
2-CHLOROPHTHALENE		34581	<1.0	NA	<1.0	<1.0
UG/L		GMS	<1.0	NA	<1.0	<1.0
2-CHLOROPHTHALENE		34586	<1.7	NA	<1.7	<1.7
UG/L		GMS	<1.4	NA	<1.4	<1.4
4-CHLORO-3-METHYL		34452	<1.0	NA	<1.0	<1.0
PHENOL	UG/L	GMS	<1.0	NA	<1.0	<1.0
4-CHLOROPHENYLPHENYL		34641	<1.0	NA	<1.0	<1.0
ETHER	UG/L	GMS	<1.0	NA	<1.0	<1.0
CHRYSENE		34320	<2.0	NA	<2.0	<2.0
UG/L		GMS	<1.0	NA	<1.0	<1.0
DIBEN(A,H)ANTH-CENE		34556	<1.0	NA	<1.0	<1.0
UG/L		GMS	<1.0	NA	<1.0	<1.0
DI-N-BUTYLPHTHALATE		37110	<1.0	NA	<1.0	<1.0
UG/L		GMS	<1.0	NA	<1.0	<1.0
1,3-DICHLOROBENZENE		34566	<1.0	NA	<1.0	<1.0
UG/L		GMS	<1.0	NA	<1.0	<1.0
1,2-DICHLOROBENZENE		34536	<1.0	NA	<1.0	<1.0
UG/L		GMS	<1.0	NA	<1.0	<1.0
1,4-DICHLOROBENZENE		34571	<1.5	NA	<1.5	<1.5
UG/L		GMS	<1.4	NA	<1.4	<1.4
3,3'-DICHLOROBENZIDINE		34631	<1.0	NA	<1.0	<1.0
UG/L		GMS	<1.0	NA	<1.0	<1.0
2,4-DICHLOROPHTHALENE		34601	<1.0	NA	<1.0	<1.0
UG/L		GMS	<1.0	NA	<1.0	<1.0
DIEHTHYPHTHALATE		34336	<1.0	NA	<1.0	<1.0
UG/L		GMS	<1.0	NA	<1.0	<1.0
2,4-DIMETHYLPHTHALENE		34606	<1.0	NA	<1.0	<1.0
UG/L		GMS	<1.0	NA	<1.0	<1.0
DIMETHYLPHTHALATE		34341	<1.0	NA	<1.0	<1.0
UG/L		GMS	<1.0	NA	<1.0	<1.0
2,4-DIMETHYLPHTHALENE		34616	<1.0	NA	<1.0	<1.0
UG/L		GMS	<1.0	NA	<1.0	<1.0

PROJECT NAME TYNDALL AFB
PROJECT MANAGER RANDY SCHULZE
LAB COORDINATOR DAVE ANOTHE

PROJECT NUMBER 86449 0000
FIELD GROUP TYNDLS
778RX

SAMPLE 10/8

PARAMETERS	STREET #	UNITS	GT7-1 TYNDLS	GT7-0A TYNDLS	GT8-3 TYNDLS	GT8A TYNDLS
DATE			10/10/86	10/10/86	10/17/86	10/17/86
TIME			08:45	10:15	13:55	13:55
2,4-DINITROTOLUENE UG/L	34611 GMS		<1.0	NA	<1.0	<1.0
2,6-DINITROTOLUENE UG/L	34626 GMS		<1.0	NA	<1.0	<1.0
DI-N-OCTYLPHTHALATE UG/L	34596 GMS		<1.1	NA	<1.1	<1.1
FLUORANTHENE UG/L	34376 GMS		<1.0	NA	<1.0	<1.0
FLUORENE UG/L	34381 GMS		<1.0	NA	<1.0	<1.0
HEXACHLOROBENZENE UG/L	39700 GMS		<1.0	NA	<1.0	<1.0
HEXACHLOROCYCLOPENTADIENE UG/L	34391 GMS		<1.1	NA	<1.1	<1.1
HEXACHLOROCYCLOPENTADIENE UG/L	34386 GMS		<2.0	NA	<2.0	<2.0
HEXACHLOROCYCLOPENTADIENE UG/L	34396 GMS		<1.5	NA	<1.5	<1.5
INDENO(1,2,3-CD) PYRENE UG/L	34403 GMS		<2.0	NA	<2.0	<2.0
ISOPHORONE UG/L	34408 GMS		<1.0	NA	<1.0	<1.0
2-METHYL-4,6-DINITRO PHENOL UG/L	34657 GMS		<5.0	NA	<5.0	<5.0
NAPHTHALENE UG/L	34696 GMS		<1.0	NA	<1.0	<1.0
NITROBENZENE UG/L	34447 GMS		<1.0	NA	<1.0	<1.0
2-NITROPHENOL UG/L	34591 GMS		<1.4	NA	<1.4	<1.4
4-NITROPHENOL UG/L	34646 GMS		<5.0	NA	<5.0	<5.0
N-NITROSODIMETHYLAMINE UG/L	34438 GMS		<1.0	NA	<1.0	<1.0
N-NITROSODI-N-PROPYLAMINE UG/L	34428 GMS		<1.0	NA	<1.0	<1.0
N-NITROSODIPIPERIDINE UG/L	34433 GMS		<1.0	NA	<1.0	<1.0
PENTACHLOROPHENOL UG/L	39032 GMS		<10	NA	<10	<10

PROJECT NAME TYNDALL AFB
PROJECT MANAGER RANDY SCHULZE
LAB COORDINATOR DAVE KNOTHE

PROJECT NUMBER B6449 0000
FIELD GROUP TYNDLS
Z78RX

SAMPLE ID/#

PARAMETERS	UNITS	STORET #	GT7-1 TYNDLS	GT7-QA TYNDLS	GT8-3 TYNDLS	GT80A TYNDLS
DATE	TIME	METHOD	10/10/86 08:45	10/10/86 10:15	10/17/86 13:55	10/17/86 13:55
PHENANTHRENE	UG/L	34461 GMS	<1.0	NA	<1.0	<1.0
PHENOL	UG/L	34694 GMS	<1.3	NA	<1.3	<1.3
PYRENE	UG/L	34469 GMS	<1.0	NA	<1.0	<1.0
1,2,4-TRICHLOROBENZENE	UG/L	34551 GMS	<1.0	NA	<1.0	<1.0
2,4,6-TRICHLOROPHENOL	UG/L	34621 GMS	<1.8	NA	<1.8	<1.8
PH FIELD	STD UNITS	400	5.70	NA	5.80	NA
SP. COND. FIELD 025C	UMHOS/CM	94	66.0	NA	35.3	NA
WATER TEMP	C	10	26.2	NA	25.1	NA
DDT PP	UG/L	39300 GMS	<3.1	<4.7	<4.7	<4.7
BHC A	UG/L	39337 GMS	<3.1	<3.1	<3.1	<3.1
BHC B	UG/L	39338 GMS	<3.1	<3.1	<3.1	<3.1
BHC D	UG/L	34259 GMS	<3.1	<3.1	<3.1	<3.1
BHC G (LINDANE)	UG/L	39340 GMS	<3.1	<3.1	<3.1	<3.1
CHLORDANE	UG/L	39350 GMS	<5.1	<5.1	<5.1	<5.1
DDD PP	UG/L	39310 GMS	<4.7	<4.7	<4.7	<4.7
DDO PP	UG/L	39320 GMS	<4.7	<4.7	<4.7	<4.7
DDT PP	UG/L	39300 GMS	<4.7	<4.7	<4.7	<4.7
DIELDRIN	UG/L	39380 GMS	<4.7	<4.7	<4.7	<4.7
ENDOSULFAN A	UG/L	34361 GMS	<5.6	<5.6	<5.6	<5.6
ENDOSULFAN B	UG/L	34356 GMS	<5.6	<5.6	<5.6	<5.6

ENVIRONMENTAL SCIENCE & ENGINEERING OS:07/87 STATUS:

PROJECT NAME TYNDALL AFB
PROJECT MANAGER RANDY SCHULZE
LAB COORDINATOR DAVE KNOTHE

PROJECT NUMBER 86449 0000
FIELD GROUP TYNDLS
Z7BRX

SAMPLE ID/8

PARAMETERS	STORET #	UNITS	GT7-1 TYNDLS	GT7-QA TYNDLS	GT8-3 TYNDLS	GT8QA TYNDLS
DATE			10/10/86	10/10/86	10/17/86	10/17/86
TIME			08:45	10:15	13:55	13:55
ENDOSULFAM SULFATE	34351	UG/L	<5.6	<5.6	<5.6	<5.6
	GMS					
ENDRIN	39390	UG/L	<7.6	<7.6	<7.6	<7.6
	GMS					
ENDRIN ALDHYDE	34366	UG/L	<7.6	<7.6	<7.6	<7.6
	GMS					
HEPTACHLOR	39410	UG/L	<1.9	<1.9	<1.9	<1.9
	GMS					
HEPTACHLOR EPOXIDE	39420	UG/L	<2.2	<2.2	<2.2	<2.2
	GMS					
PCB-1016	34671	UG/L	<30	<30	<30	<30
	GMS					
PCB-1221	39488	UG/L	<30	<30	<30	<30
	GMS					
PCB-1232	39492	UG/L	<30	<30	<30	<30
	GMS					
PCB-1242	39496	UG/L	<30	<30	<30	<30
	GMS					
PCB 1248	39500	UG/L	<30	<30	<30	<30
	GMS					
PCB-1254	39504	UG/L	<36	<36	<36	<36
	GMS					
PCB-1260	39508	UG/L	<40	<40	<40	<40
	GMS					
TOXAPHENE	39400	UG/L	<60	<60	<60	<60
	GMS					

PROJECT NAME TYNDALL AFB
PROJECT MANAGER RANDY SCHULZE
LAB COORDINATOR DAVE KNOTHE

PROJECT NUMBER 86449 0000
FIELD GROUP TYNDL 6
Z3 9R

SAMPLE ID/8

PARAMETERS	UNITS	STORET #	GT3-5 TYNDL 6	GT30A TYNDL 6	GT9-3 TYNDL 6	GT90A TYNDL 6
DATE		METHOD	5	8	11	13
TIME			10/17/86 11:45	10/17/86 11:45	10/21/86 13:10	10/21/86 12:15
BROMODICHLOROMETHANE	UG/L	32101	0.050	0.080	<0.050	NA
BROMOFORM	UG/L	32104	<0.050	<0.050	<0.050	NA
BROMOTHANE	UG/L	34413	<0.050	<0.050	<0.050	NA
CARBON TETRACHLORIDE	UG/L	32102	<0.050	<0.050	<0.050	NA
CHLOROBENZENE	UG/L	34307	<0.050	<0.050	<0.050	NA
CHLOROTHANE	UG/L	34311	<0.050	<0.050	<0.050	NA
2-CHLOROETHYL VINYL ETHER	UG/L	34576	<0.050	<0.050	<0.050	NA
CHLOROFORM	UG/L	32106	0.43	0.48	<0.050	NA
CHLOROMETHANE	UG/L	34418	<0.050	<0.050	<0.050	NA
DIBROMOCHLOROMETHANE	UG/L	32105	<0.050	<0.050	<0.050	NA
DICHLOROBENZENE, TOT.	UG/L	81524	<0.050	<0.050	<0.050	NA
DICHLORODIFLUORO METHANE	UG/L	34668	<0.050	<0.050	<0.050	NA
1,1-DICHLOROTHANE	UG/L	34496	<0.050	<0.050	<0.050	NA
1,2-DICHLOROTHANE	UG/L	34531	<0.050	<0.050	<0.050	NA
1,1-DICHLOROTHYLENE	UG/L	34501	<0.050	<0.050	<0.050	NA
TRANS-1,2-DICHLORO ETHYLENE	UG/L	34546	<0.050	<0.050	<0.050	NA
1,2-DICHLOROPROPANE	UG/L	34541	<0.050	<0.050	<0.050	NA
CIS-1,3-DICHLORO PROPENE	UG/L	34704	<0.050	<0.050	<0.050	NA
TRANS-1,3-DICHLORO PROPENE	UG/L	34699	<0.050	<0.050	<0.050	NA
METHYLENE CHLORIDE	UG/L	34423	<0.050	<0.050	<0.050	NA

ENVIRONMENTAL SCIENCE & ENGINEERING US-07-87 STATUS: PROJECT NAME TYNDALL AFB
PROJECT NUMBER B6449 0000 PROJECT MANAGER RANDY SCHULZE
FIELD GROUP TYNDL6 LAB COORDINATOR DAVE ANOTHE
Z3.9R

SAMPLE 10/8

PARAMETERS	UNITS	STORET #	GT3-5 TYNDL6	GT30A TYNDL6	GT9-3 TYNDL6	GT90A TYNDL6
DATE			10/17/86	10/17/86	10/21/86	10/21/86
TIME			11:45	11:45	13:10	12:15
1,1,2,2-TETRACHLOROETHANE	UG/L	34516	<0.050	<0.050	<0.050	NA
TETRACHLOROETHENE	UG/L	34475	<0.050	<0.050	<0.050	NA
1,1,1-TRICHL*ETHANE	UG/L	34506	<0.050	<0.050	<0.050	NA
1,1,2-TRICHL*ETHANE	UG/L	34511	<0.050	<0.050	<0.050	NA
TRICHLOROETHENE	UG/L	39180	<0.050	<0.050	<0.050	NA
TRICHL*FLUOROMETHANE	UG/L	34488	<0.050	0.05	<0.050	NA
VINYL CHLORIDE	UG/L	39175	<0.050	<0.050	<0.050	NA
1,2-DIBROMOETHANE (EDB)	UG/L	34010	<0.050	<0.050	<0.050	NA
HYDROCARBONS, PETRO	MG/L	45501	0.187	<0.094	0.693	NA
LEAD, TOTAL	MG/L	1051A	<0.0031	<0.0031	0.0086	NA
PH, FIELD	STD UNITS	400	61.0	NA	5.80	NA
SP. COND., FIELD	UMHOS/CM	94	308	NA	107	NA
WATER TEMP	C	10	26.6	NA	28.4	NA

NOT TO SCALE

<u>Code</u>	<u>Technique</u>
I	miscellaneous inorganic techniques
GFAA	graphite furnace atomic absorption
GMS	gas chromatography/mass spectrometry
HA	gas chromatography with a halide-specific detector
PI	gas chromatography with a photoionization detector
Ø	miscellaneous field techniques
FI	gas chromatography with a flame ionization detector
ICAP	inductively coupled argon plasma atomic emission spectrometry
CVAA	cold vapor atomic absorption
EC	gas chromatography with an electron capture detector
MP	metals and pesticides extraction procedure for toxicity characterization

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APPENDIX S
EP TOXICITY DATA FOR DRILL CUTTINGS
FROM ZONE 6 AND 9

ENVIRONMENTAL SCIENCE & ENGINEERING 02 29/88

PROJECT NAME TYNDALL AFB
PROJECT MANAGER D.M. HALE
LAB COORDINATOR DILNA HALE

PROJECT NUMBER 86449 0000
FIELD GROUP TYNDLS
EPMP1

SAMPLE ID/#

PARAMETERS	STORET #	UNITS	SOT9-4 TYNDLS	SOT9-3 TYNDLS	SOT9-3 TYNDLS
DATE			10/05/86	10/05/86	10/15/86
TIME			17:45	15:45	14:00
EP-TOX DATE OF EXTRA	97078		10/14/86	10/14/86	10/21/86
CTION	MP				
ENDRI	39390	EC	<0.133	<0.064	<0.083
BHC, G(LINDANE)	39340	UG/L	<0.066	<0.032	<0.041
EC	39480	UG/L	<0.347	<0.168	<0.217
METHOXYCHLOR	39480	UG/L	<0.347	<0.168	<0.217
TOXAPHENE	39400	UG/L	<1.57	<0.758	<0.978
2,4-D, TOTAL	39730	UG/L	<0.222	<0.222	<0.222
2,4,5-TP/SILVER	39760	UG/L	<0.056	<0.056	<0.056
CADMIUM DISS	1025A	UG/L	<0.3047	<0.0047	<0.0036
ICAP	1030A	MG/L	<0.0190	<0.0190	<0.0054
ICAP	1049A	MG/L	<0.0330	<0.0330	<0.0220
LEAD DISS	1075A	MG/L	<0.0059	<0.0059	<0.0048
SILVER DISS	1000A	MG/L	0.0041	0.0067	0.0041
ARSENIC DISS	71890A	MG/L	0.0003	<0.0002	<0.0002
MERCURY DISS	1145A	MG/L	<0.0031	<0.0031	<0.0042
SELENIUM DISS	1005A	MG/L	0.161	0.102	0.213
BARIUM DISS	ICAP	MG/L			

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APPENDIX T

GLOSSARY OF TERMINOLOGY, ABBREVIATIONS, AND ACRONYMS

GLOSSARY OF TERMINOLOGY, ABBREVIATIONS, AND ACRONYMS

AAFES	Army and Air Force Exchange Service
AFB	Air Force Base
ACMI	Aircraft Control Maneuvering Instrumentation
AFESC	Air Force Engineering and Service Center
AFFFS	aqueous film-forming foams
aquifer	A hydrologic unit that is permeable enough to conduct ground water and to yield economically significant quantities of water.
aquitard	A confining bed that retards but does not prevent the flow of water to or from an adjacent aquifer.
artesian	Ground water confined under hydrostatic pressure.
ASTM	American Society for Testing and Materials
AVGAS	aviation gasoline
BES	Bioenvironmental Services
BOD	biochemical oxygen demand
°C	degrees Celsius
CA	contamination assessment
calcareous	containing calcium carbonate, often implying 50 percent calcium carbonate as a constituent
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
cm/sec	centimeter(s) per second
CME	Central Mine Equipment
CO	carbon monoxide
CO ₂	carbon dioxide
confined aquifer	An aquifer bounded above and below by impermeable beds or beds of distinctly lower permeability than that of the aquifer.
confining bed or unit	A body of impermeable or distinctly less permeable material stratigraphically adjacent to one or more aquifers.
contaminate plume	Three dimensional space (areal and vertical) having defined boundaries in which contamination is found.
contamination	The addition of any substance or property to water, soil, or air that does not occur naturally or exceeds the naturally occurring concentrations present in the water, soil, or air.
DDT	dichlorodiphenyl trichloroethane
DEQPPM	Defense Environmental Quality Program Policy Memorandum
DFSP	Defense Fuels Supply Point
discharge area	An area in which subsurface water discharges to the land surface, surface water, or to the atmosphere.
DOC	dissolved organic carbon
DOD	Department of Defense

GLOSSARY OF TERMINOLOGY, ABBREVIATIONS, AND ACRONYMS
(Continued, Page 2 of 5)

downgradient	Occurring at a lower hydraulic gradient or topographic gradient, especially in reference to ground water or surface water.
DPDO	Defense Property Disposal Office
EDB	ethylene dibromide
electromagnetic (EM) conduc- tivity	A method of electrical surveying in which the ground is energized with direct current through a pair of electrode contacts, and the behavior of the current is surveyed by measuring the resulting magnetic field.
EM	electromagnetic
EP	extraction procedure
EPA	U.S. Environmental Protection Agency
ESE	Environmental Science and Engineering, Inc. (ESE)
estuary	Drainage channels adjacent to the sea in which the tide ebbs and flows.
°F	degrees Fahrenheit
FAC	Florida Administrative Code
FDER	Florida Department of Environmental Regulation
Floridan Aquifer	Primary aquifer in north and central Florida from which large amounts of potable water are derived.
ft	foot (feet)
g	gram
gal	gallon(s)
GC	gas chromatography
GC/MS	gas chromatography/mass spectrophotometer
geomorphology	The study of the classification, description, nature, origin, and development of present (and past) landforms.
gpd	gallon(s) per day
gpm	gallon(s) per minute
GWCI	ground water contamination indicators
H ₂ O	water
HARM	Hazard Assessment Rating Methodology
hazardous contaminants	Contamination that contains hazardous constituents as defined by the Environmental Protection Agency.
hydraulic gradient	In an aquifer, the rate of change of total head per unit of distance of flow at a given point and in a given direction. In a stream, the slope of the free water surface.
hydrogeology	Science dealing with subsurface waters and with related geologic aspects of surface waters.

GLOSSARY OF TERMINOLOGY, ABBREVIATIONS, AND ACRONYMS
(Continued, Page 3 of 5)

ICP	Inductively Coupled Plasma
igneous rock	rock that solidified from molten magma
IR	infrared
IRP	Installation Restoration Program
kg	kilogram(s)
kn	knot(s)
L	liter(s)
lb	pound(s)
leachate	Water that has percolated through soil containing soluble substances and that contains certain amounts of these substances in solution.
lithology	The description of rocks on the basis of color, mineralogic composition, grain size, and other characteristics.
log	A continuous record as a function of depth, usually graphic and plotted to scale, from observations made of the geologic section.
magnetometry	A geophysical method that measures the Earth's magnetic field and its changes.
MCL	maximum contaminant level
metamorphic rock	Rock derived from pre-existing rock by mineralogical, chemical, or structural changes.
mg/day	milligram(s) per day
mg/kg	milligram(s) per kilogram
mg/L	milligram(s) per liter
mhos/m	millimhos per meter
msl	mean sea level
N ₂	nitrogen
NPDES	National Pollutant Discharge Elimination Systems
NPDWR	National Primary Drinking Water Regulations
NSDWR	National Secondary Drinking Water Regulations
O ₂	oxygen
OEHL	Occupational and Environmental Health Laboratory
PCB	polychlorinated biphenyl
permeability	The capacity of a porous rock, sediment, or soil to transmit a fluid.
physiographic province	A region of which all parts are similar in geologic structure and the region differs significantly in relief and landforms from that of adjacent regions.
piezometric surface	An imaginary surface that everywhere coincides with the static level of the water in an aquifer.

GLOSSARY OF TERMINOLOGY, ABBREVIATIONS, AND ACRONYMS
(Continued, Page 4 of 5)

POL	Petroleum, oils, and lubricants
potable water	Fresh water that is safe and palatable for human use.
potentiometric surface	Surface to which water in an aquifer would rise by hydrostatic pressure.
ppm	parts per million
PVC	polyvinyl chloride
QA	Quality Assurance
QA/QC	Quality Assurance/Quality Control
QC	Quality Control
RCRA	Resource Conservation and Recovery Act
recharge	Process involving the absorption and addition of water to the zone of saturation.
recharge area	An area in which water is absorbed that eventually reaches the zone of saturation in one or more aquifers.
RMCL	Recommended Maximum Contaminant Level
runoff	That part of precipitation appearing in surface streams.
saltwater intrusion	Displacement of fresh water (surface or ground water) by the advance of salt water due to its greater density.
sedimentary rock	A rock resulting from the consolidation of loose sediment that has accumulated in layers.
sludge	A semifluid, slushy mass of sediment resulting from treatment of water, sewage, or industrial wastes; a soft, soupy, muddy bottom deposit found on tideland or in a stream bed.
static water level	Water level of a well that is not being affected by withdrawal of ground water.
stratigraphy	Pertaining to rock strata, the science of their origin, geologic history, age relations, composition, form, and distribution.
surficial aquifer	Stratigraphically uppermost aquifer that is under water table conditions.
TAC	Tactical Air Command
TDS	total dissolved solids
terrace	A narrow, gently sloping constructional coastal strip extending seaward or lakeward, and veneered by a sedimentary deposit.
THM	trihalomethane
topography	The relief and contour of the land.
TOX	total organic halogens
transmissivity	The rate at which water is transmitted through a unit width of the aquifer under a unit hydraulic gradient.
TRPH	total recoverable petroleum hydrocarbons

GLOSSARY OF TERMINOLOGY, ABBREVIATIONS, AND ACRONYMS
(Continued, Page 5 of 5)

µg/L	microgram(s) per liter
umhos/cm	micromhos per centimeter
unconfined	
aquifer	An aquifer having a water table.
upgradient	Occurring at a higher hydraulic gradient or topographic gradient, especially in reference to ground water or surface water.
USAF	U.S. Air Force
USCS	Unified Soil Classification System
USGS	U.S. Geological Survey
USSCS	U.S. Soil Conservation Service
UTM	Universal Transverse Mercator
UV	ultraviolet
WAR	Water and Air Research, Inc.
water table	That surface of a body of unconfined ground water at which the pressure is equal to that of the atmosphere.
watershed	The area contained within a drainage divide above a specified point on a stream.
well yield	Volume of ground water that can be pumped from a well in a unit time.
WWII	World War II

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APPENDIX U

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REFERENCES

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