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OPERATION AND MAINTENANCE MANUAL

Volume 3 - Final Construction Report

Perimeter Groundwater Containment System, Barrier Wall and Associated Extraction Systems

AMERICAN CHEMICAL SERVICE, INC. NPL SITE

GRIFFITH, INDIANA

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PREPARED FOR:

ACS RD/RA EXECUTIVE COMMITTEE

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AMERICAN CHEMICAL SERVICE INC., NPL SITE

OPERATIONS AND MAINTENANCE MANUAL FOR THE PERIMETER GROUNDWATER CONTAINMENT SYSTEM AND THE BARRIER WALL AND ASSOCIATED EXTRACTION SYSTEM

VOLUME 1	OPERATIONS AND MAINTENANCE PLAN/CONTINGENCY PLAN FOR THE PGCS AND BWES
VOLUME 2	PERFORMANCE STANDARD VERIFICATION PLANS A. PGCS PSVP AND QAPP B. BWES PSVP AND QAPP
VOLUME 3	*CONSTRUCTION COMPLETION REPORT/COMPLETION OF REMEDIAL ACTION REPORT*
VOLUME 4	AS-BUILTS FOR THE PGCS AND BWES
VOLUME 5	EQUIPMENT MANUFACTURER'S MANUAL INSTRUMENTATION AND CONTROL EQUIPMENT
VOLUME 6	EQUIPMENT MANUFACTURER'S MANUAL
VOLUME 7	EQUIPMENT MANUFACTURER'S MANUALS
VOLUME 8	EQUIPMENT MANUFACTURER'S MANUAL UV OXIDATION UNIT

TABLE OF CONTENTS

CONSTRUCTION COMPLETION REPORT	PAGE
CERTIFICATION OF COMPLETION	
1.0 INTRODUCTION	1-1
1.1 Purpose	1-1
1.2 Scope of the Perimeter Groundwater Containment System	1-1
1.3 Scope of the Barrier Wall and Associated Groundwater Extraction System	1-2
1.4 Report Organization	1-3
2.0 PROJECT BACKGROUND	2-1
2.1 Site Description	2-1
2.1.1. Operational History	2-1
2.1.2. Land Disposal History	2-3
2.1.3. Administrative History	2-4
3.0 WORK PERFORMED AND CONSTRUCTION CHRONOLOGY	3-1
3.1 PGCS and BWES Extraction Trenches	3-1
3.2 Groundwater Treatment System and Treatment System Building	3-3
3.3 Barrier Wall	3-6
3.4 Conveyance Piping, Utilities and Access Road	3-10
3.5 Construction Chronology	3-12
4.0 CONSTRUCTION QUALITY ASSURANCE/QUALITY CONTROL	4-1
4.1 Introduction	4-1
4.2 Quality Assurance Documents and Responsibilities	4-1
4.2.1. Design Basis, Design Plans and Technical Specifications	4-1
4.2.2. QA Implementation	4-2
4.3 Construction Testing and Inspection Reports	4-3
5.0 DESIGN AND CONSTRUCTION MODIFICATIONS	5-1
5.1 PGCS Extraction Trenches	5-1
5.2 Barrier Wall	5-1
5.3 Treatment System Building and Associated Facilities	5-2
5.4 Groundwater Treatment System	5-3

Table of Contents

	PAGE
6.0 SYSTEM START-UP	6-1
6.1 Introduction	6-1
6.2 Initial Inspection and Testing	6-1
6.2.1. Initial Inspection of the Treatment System	6-1
6.2.2. Inspection and Development of the PGCS and BWES Trenches	6-2
6.3 Clean Water Testing of the Treatment System	6-2
6.4 Prefinal Inspection of the Treatment System	6-3
6.5 Start-up of the PGCS Extraction System	6-3
6.6 Start-up and Optimization of the Treatment System	6-4
6.6.1. Start-up	6-4
6.6.2. Optimization	6-5
6.7 Start-up of the BWES Extraction System	6-6
7.0 PROJECT EXPENDITURES	7-1
7.1 Budgeted Expenditures	7-1
7.2 Actual Expenditures	7-1

APPENDIX A – CONSTRUCTION PHOTOGRAPHS
APPENDIX B – CONSTRUCTION TESTING
APPENDIX C – BARRIER WALL QA/QC
APPENDIX D – CONSTRUCTION MODIFICATIONS
APPENDIX E – MONITORING DATA
APPENDIX F – BWES DATA

CERTIFICATION OF COMPLETION

To the best of my knowledge, after thorough investigation, I certify that the information contained in or accompanying this submission is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

June 2, 1999

Joseph D. Adams Jr., P.E.
Vice President

1.0 INTRODUCTION

1.1 PURPOSE

This document is the Final Construction Report for the Perimeter Groundwater Containment System (PGCS) and the Barrier Wall and Associated Extraction Systems (BWES) which were installed as expedited remedial actions at the American Chemical Service (ACS) Site in Griffith, Indiana. Construction of the two systems was completed in September of 1997. This document is Volume 3 of the overall Operations and Maintenance Manual for the PGCS and BWES. The report presents a summary of activities conducted during the installation of the perimeter groundwater containment system, the groundwater treatment system, the subsurface barrier wall, and the extraction systems located within the barrier wall. It is intended to satisfy the reporting requirements contained in the Statement of Work (SOW) issued by the U.S. EPA on September 30, 1992.

Construction of expedited remedial actions were based on the 50 percent design submittals which were submitted to U.S. EPA in March of 1996 (PGCS) and in June of 1996 (BWES). Since the design-build approach was used to implement the PGCS and BWES, construction began while the designs were being finalized. The construction and start-up activities associated with the project were supervised by a U.S. EPA oversight contractor during all phases of the work. This report documents various construction related activities that were performed including: construction tests, inspections and QA/QC activities; significant changes from the conceptual design; start-up activities and analytical results; as-built drawings; and photographic documentation.

1.2 SCOPE OF THE PERIMETER GROUNDWATER CONTAINMENT SYSTEM

The objective of the PGCS is to prevent off-site migration of contaminants in the upper aquifer along the northwestern perimeter of the site. The system is not intended to remediate the full extent of groundwater contamination, but it is an integral component of the overall remedy.

Since the PGCS is the first component of the overall remedy, it was designed with a high degree of flexibility such that it can easily be updated or reconfigured to accommodate future components of the remedy. The PGCS includes the following components:

- A perimeter groundwater extraction trench to intercept groundwater flow in the upper aquifer along the northwestern perimeter of the site (Figure 1-1 of Volume 1 - O&M Plan).

- A conveyance system to transport extracted groundwater to a groundwater treatment system (Figure 1-1 of Volume 1 - O&M Plan).

- A groundwater treatment system and an associated infrastructure including a treatment system building, utilities, access road and parking area (Figures 2-1 and 2-2 of Volume 1 - O&M Plan).

- A treated groundwater conveyance line and wetlands discharges structures (Figure 1-1 of Volume 1 - O&M Plan).

1.3 SCOPE OF THE BARRIER WALL AND ASSOCIATED GROUNDWATER EXTRACTION SYSTEM

The BWES was designed to accomplish or facilitate many of the components of the remedy stated in the ROD. They were implemented on an expedited schedule for the following reasons:

- The perimeter groundwater extraction trench was being implemented and, once operational, it would increase the potential for contamination to migrate from the waste areas (i.e., towards the PGCS trench and site boundary) because of the increase in groundwater gradients it would introduce. Consequently, it was essential to have the barrier wall in place to isolate the waste areas before or shortly after the trench became operational.

- Dewatering of the waste areas may be necessary for the final remedy and this effort could take a substantial amount of time to complete. In addition, there is significant uncertainty about the quantity and quality of water that needs to

be extracted for dewatering. By expediting construction of the barrier wall and extraction systems, the dewatering process was initiated sooner. The continued movement of groundwater into and through the waste areas is also minimized, resulting in less total dewatering water. The extraction system within the barrier wall will also provide the opportunity to obtain additional data regarding the water quality so that timely modifications can be made to the groundwater treatment system to accommodate the dewatering water.

The BWES includes the following components:

- A subsurface barrier wall consisting of soil amended with bentonite clay and high density polyethylene panels encircling the Site to isolate the waste areas Figure 1-2 of Volume 1 - O&M Plan)..

- A groundwater extraction system and conveyance piping to extract groundwater within the barrier wall and deliver it to the groundwater treatment system (Figure 1-2 of Volume 1 - O&M Plan).

1.4 REPORT ORGANIZATION

As previously indicated, this report provides a summary of the construction activities associated with the installation of the PGCS and BWES. Detailed information on the design, operations, and maintenance of the systems is contained in Volume 1 of the O&M Manual (Operations and Maintenance Plan/Contingency Plan for the PGCS and BWES) and will not be repeated in this document. As-built drawings for the systems that were constructed and equipment manufacturer's manuals for specific components of the extraction and treatment system are contained in Volumes 4 through 8 of this O&M Manual. In addition to this introduction section, this report consists of 7 other sections and 7 appendices.

- **Section 2.0 Project Background.** This section provides a site description, and operational, land disposal and administrative history's of the Site.

- **Section 3.0 Work Performed and Construction Chronology.** This section discusses the installation of the PGCS and BWES extraction trenches, groundwater treatment system and building, barrier wall, and site utilities and access road.

- **Section 4.0 Construction Quality Assurance/Quality Control.** This section summarizes the quality assurance (QA) and quality control (QC) procedures, documentation, and QA program compliance.

- **Section 5.0 Design and Construction Modifications.** This section describes modifications to the design submittals that were made during the construction of the facilities.

- **Section 6.0 System Start-up.** This section provides a description of the start-up and testing procedures and activities for the extraction trenches and PGCS treatment system.

- **Section 7.0 Project Expenditures.** This section provides a comparison of the budgeted costs to the actual costs of constructing the facilities at the ACS Site.

- **Appendix A—Construction Photographs.** This appendix presents photographic documentation of the construction activities.

- **Appendix B—Construction Testing.** This appendix contains construction testing and inspection reports.

- **Appendix C—Barrier Wall QA/QC.** This appendix contains the Engineers Certification Report for the barrier wall.

- **Appendix D—Construction Modifications.** This appendix contains field modification forms.

- **Appendix E—Monitoring Data.** This appendix contains the first Quarterly Monitoring Report for the PGCS.

- **Appendix F—BWES Data.** This appendix contains analytical data on the BWES water quality.

2.0 PROJECT BACKGROUND

2.1 SITE DESCRIPTION

The ACS Site is located at 420 South Colfax Avenue in the City of Griffith, Indiana, which is in the northwestern corner of the state. The Site is bordered on the east and northeast by Colfax Avenue. The Chesapeake and Ohio railway bisects the Site in a northwest-southeast direction, between the fenced On-Site Area (north) and the Off-Site Area (south). On the west and northwest, south of the Chesapeake and Ohio railway, the Site is bordered by the abandoned Erie and Lackawanna railway, and the active portion of the Griffith Municipal Landfill. North of the Chesapeake and Ohio railway, the Site is bordered on the west by wetland areas. The northern boundary of the Site is formed by the Grand Trunk railway.

There are five land disposal areas at the ACS Site: the On-Site Containment Area (ONCA), the Still Bottoms Pond (SBP) Area, the Treatment Lagoons, the Off-Site Containment Area (OFCA), and the Kapica/Pazmey Area[1].

2.1.1. Operational History

Based on information provided by American Chemical Service, Inc., the ACS facility began operation in May 1955 as a solvent recovery facility. Solvent recovery remained the primary operation performed on site through in the late 1960s, when the manufacture of small quantities of specialty chemicals began. These manufacturing operations included treating rope with fungicide, bromination and treating ski cable.

[1] The terms On-Site and Off-Site are used to denote particular portions of the ACS Site: both areas are within the CERCLA Site. The Off-Site Containment area is designated as off-site only because it is adjacent to, rather than within the boundaries of the property where ACS currently conducts its chemical formulation operations. However, ACS owns the property and as noted, for CERCLA purposes, both of these areas are considered on-site.

In 1961, ACS sold a two-acre parcel to John Kapica, and in 1962 Kapica began the operation of his drum reclaiming business at the location. Operations at Kapica Drum, Inc., consisted of drum reconditioning. Kapica Drum was sold to Pazmey Corporation in February 1980. Kapica/Pazmey operated from 1980 to 1987. The Pazmey Corporation property was sold to Darija Djurovic in March 1987.

ACS' solvent operations involved spent solvent mixtures containing alcohols, ketones, esters, chlorinated solvents, aromatics, aliphatics, and glycols. In the early years of operation, spent solvents were stored in 55-gallon drums at various locations at the Site. Solvent recovery was performed in batch evaporation units, which were charged by pumping material directly from 55-gallon drums into the evaporation vessels. Still bottoms from the evaporation vessels were disposed in the Still Bottom Pond, prior to the installation of incinerators at the facility. ACS installed its first incinerator in 1966 and installed a second incinerator in 1969. The incinerators were used to burn still bottoms and non-reclaimable materials generated at the site and wastes from off site. The incinerator units were dismantled in 1977.

From 1970 to 1975, the spent solvents reclaimed at the Site were similar to those which were handled in the 1960s. However, an increasing percentage of shipments were received at the Site in bulk tanker trucks. In addition, the batch manufacturing processes were expanded during this period. A lard oil process which utilized tallow and animal rendering was used to manufacture a lubricant product. This process, along with a soldering flux operation, was discontinued prior to 1990. In 1971, the additive manufacturing area was built. Various detergents lubricants, and chemical additives were manufactured, in addition to soldering flux, various amines, methanol, formaldehyde, sodium hydroxide, and maleic anhydride. An epoxidation plant was constructed in 1974 and a bromination operation using hexane was added in 1975. At various times up until 1990, the epoxidation plant used toluene or benzene as a reaction carrier.

Some time between 1975 and 1990, the solvent distillation units were replaced with new units though the types of solvent wastes reclaimed remained essentially the same. Spent

solvent and reclaimed solvent recovery tank farms were constructed during this time period and the majority of the spent solvent waste streams were shipped in bulk tanker trucks, although drummed wastes were still processed. A hazardous waste drum unloading dock and storage area were built in the early 1970s, with spill containment curbing and a sump area added at a later date. In September 1990, ACS ceased accepting hazardous waste shipments and filed for closure. On March 31, 1993 ACS completed closure and terminated its interim RCRA status. ACS currently operates as a chemical production facility at the Site. The operations include chemical reaction processes, custom blending, and product distribution. The facility encompasses 8.5 acres with process buildings, tank farms, loading and unloading areas, a laboratory, offices, and support utility buildings. The company operates 24 hours per day, five to six days per week. The operating production facility is secured by a continuous fence with a single controlled access gate.

2.1.2. Land Disposal History

When ACS began operations in 1955, the still bottoms from the solvent recovery operations were disposed of in the Still Bottoms Pond/Treatment Lagoon area. In 1972, the pond and lagoons were drained, and drums, partially filled with sludge materials, were landfilled there.

The OFCA was utilized for the landfilling of wastes including excavated materials from the Still Bottoms/Treatment Lagoon from 1958 to 1975. The waste types disposed of in the OFCA over the course of ACS' operations also included general refuse, drums, still bottoms and incinerator ash. According to the ACS, Inc. owner/operators, drums placed in the OFCA were crushed or punctured as part of the disposal process.

During the mid-1960s, it is estimated that approximately 400 drums of sludge and semi-solids were landfilled in the ONCA. Residual wastes and rinse waters from the Kapica/Pazmey drum reconditioning operation were disposed of on the ground in the Kapica/Pazmey Area.

2.1.3. Administrative History

In February 1980, the U.S. EPA performed a Preliminary Assessment of the ACS Site, collecting samples in the Off-Site Containment Area and at the Griffith Municipal Landfill in May 1980. The U.S. EPA performed a site inspection on September 9, 1980, and in July 1982. U.S. EPA contractors installed four monitoring wells near the Off-Site Containment Area and the Griffith Landfill. Based upon information developed during these investigative efforts, a hazard ranking system score of 34.98 was assigned to the ACS Site by U.S. EPA in June 1983.

In 1986, a group of approximately 125 Potentially Responsible Parties (PRPs) formed a Steering Committee to conduct the Remedial Investigation/Feasibility Study (RI/FS) pursuant to an agreement with the U.S. EPA. The PRPs signed a Consent Order to perform the RI/FS in June 1988. Following U.S. EPA approval of the RI/FS Work Plan, the field investigation for Phase I of the RI began in July 1989. Phase II RI field work began in March 1990, and in December 1990, the Phase III RI field work was initiated. The RI report was completed in June 1991. Warzyn (now Montgomery Watson Americas, Inc.) completed the FS report in June 1992.

In June 1992, the U.S. EPA published notice of its Proposed Plan for Remedial Action for the ACS Site. The remedy presented in that Proposed Plan was described by U.S. EPA as a modification of Remedial FS Alternative 6B. The U.S. EPA issued a Record of Decision (ROD) in September 1992. The UAO was issued on September 30, 1994. The Respondents provided notice to the U.S. EPA of their intent to comply with the UAO, and have developed the planning documents and performed other tasks required by the UAO to date.

3.0 WORK PERFORMED AND CONSTRUCTION CHRONOLOGY

This section provides a summary of the major activities completed during the PGCS and BWES construction at the ACS Site, including:

- PGCS and BWES Extraction Trench Construction
- Groundwater Treatment Building and Treatment System Construction
- Barrier Wall Installation
- Conveyance Piping, Utilities and Access Road Construction

A brief description of each of the above construction activities and its related construction technology is provided in the following sections. Specific details regarding the design, architectural dimensions, and construction details can be found in Volume 1 and Volumes 4 through 8 of the Operation and Maintenance Manual. In addition, photographs documenting the facilities and major construction activities are included in Appendix A.

3.1 PGCS AND BWES EXTRACTION TRENCHES

The perimeter groundwater containment system trench was designed and installed to cutoff groundwater flow in the upper aquifer along the northwestern perimeter of the Site, thereby, preventing contaminated groundwater from leaving the Site. The barrier wall extraction systems (BWES) were designed and installed to sufficiently lower the water table within the barrier wall, to minimize any outward gradient.

Installation of the PGCS began in April, 1996 and was completed in March, 1997. Installation of the BWES was initiated in January, 1997 and was completed in September, 1997. Both the PGCS and BWES extraction trenches were installed by Horizontal Technologies, Inc. (HTI) of Cape Coral, Florida using custom designed and patented trenching equipment. Use of this equipment allowed the trenches to be installed in a single pass (i.e., the extraction trench excavation, backfilling and drain line installation are performed in one operation) with a minimum of disturbance to the site.

In general, each extraction trench was constructed by replacing site soils with a more permeable engineered backfill material. The backfill material was selected to collect and convey site groundwater while at the same time prohibiting clogging of the trench. A perforated drain line, wrapped in filter fabric, was installed in each trench to assist in conveying site groundwater. The drain line was connected to a well casing or sump on one end of each trench. The drain line was extended to the site surface on the opposite end of the trench to serve as a clean-out.

HTI excavated the site soils through the use of a large cutting chain mounted on the front of the trenching equipment. This cutting chain (roughly 16 inches wide) brought the site soils to the surface and a conveyor system removed the soils to the side of the trench. A trench box was mounted in front of the cutting chain. As the trenching equipment moved backwards, the trench box was pulled by the trenching equipment through the void left by the cutting chain. As the trench box was pulled along, the engineered backfill material was fed into the top of the trench box. The back side of the trench box was open to allow the backfill material to disperse into the trench. At the same time the backfill was being fed into the trench, the drain line was fed into position through a special chute in the side of the trench box. Prior to starting construction of each trench, a well was constructed with the trenching machine by mounting a well casing to the backside of the trench box and cutting the casing into a vertical position. Once the casing was in the vertical position it was released from the trench box.

The PGCS extraction trench is approximately 1,350 linear feet and consists of three overlapping trench segments each roughly 450 feet in length. The actual location of the trenches are shown on drawing numbers C-1, C-2 and C-3 of the as-built drawing set. The three overlapping segments are approximately 20 feet deep and extend down to the underlying clay layer. Each of the three trench segments has a sump which is equipped with an electric, submersible pump capable of extracting 15 to 20 gallons per minute of groundwater. The three sumps (one per segment) extend approximately three feet above the ground surface and are finished at the surface with a concrete pad.

The BWES consists of eight extraction trenches located within the barrier wall surrounding the On-Site and Off-Site Areas as shown on drawing numbers C-1, C-2 and C-3 of the as-built drawing set. Each BWES trench is approximately 100 feet long. The trenches extend down to the underlying clay layer and range in depth from approximately 15 to 25 feet. Each of the sumps in the BWES trenches is equipped with a pneumatic, submersible pump capable of extracting 5 to 10 gpm of groundwater. The eight BWES sump casings (one per trench) are finished below grade. Each sump casing terminates in a concrete vault and is accessible through a manhole.

Prior to installation of the extraction trenches, locations were identified and staked by Montgomery Watson and HTI personnel. During installation, the depth of the trenches and the elevation of the drain lines were monitored/controlled by the use of survey equipment. The length of installed drain line was also monitored to ensure that unwanted stretching did not occur.

3.2 GROUNDWATER TREATMENT SYSTEM AND TREATMENT SYSTEM BUILDING

The groundwater treatment system was primarily designed and constructed to receive and treat contaminated groundwater from the PGCS extraction trench. The system was also designed with flexibility to handle some groundwater from the BWES, if the water was not too highly contaminated. The treatment system building was designed to house the treatment system and contains space for future additions to the treatment process should the system need to be expanded to handle flows from the BWES or other future remedial activities. The building is also readily expandable if necessary to accommodate future facilities.

Construction of the groundwater treatment building was initiated on May 28, 1996. Construction of the building floor slab, frame, roof, and siding was completed in February 1997. Installation of the treatment system equipment, piping, and

instrumentation was initiated in October, 1996 and completed in March, 1997. Operation of the treatment plant began on March 13, 1997.

Several contractors participated in construction of the groundwater treatment building and treatment plant including:

- Custom Steel Building, Lynwood, Illinois - overall responsibility for construction of the pre-engineered steel building and floor slab;
- Direct Design Ltd., McHenry, Illinois - provided architectural drawings including building foundations and floor slab design;
- Kerr-Con, Portage, Indiana- erected the pre-engineered steel building;
- Walker Construction, Hammond, Indiana - constructed the building floor slab;
- Gatlin Plumbing and Heating, Griffith, Indiana - installed the building plumbing;
- Hyre Electric, Highland, Indiana - installed the building electrical systems;
- Bowen Engineering, Fishers, Indiana - overall responsibility for finalizing the treatment system design and constructing the groundwater treatment system;
- Mussett, Nicholas & Associates, Inc., Indianapolis, Indiana - finalized mechanical design of the treatment system;
- Precision Controls, Indianapolis, Indiana - finalized the design of the instrumentation and control system, programmed the control system and calibrated the instrumentation;

- Hermman & Goetz, South Bend, Indiana - installed instrumentation and controls equipment.

The treatment system building is a 6,000 square foot pre-manufactured metal building. The building houses all treatment equipment (with the exception of the hydrogen peroxide tank), a control room, an office, a restroom and shower, a small laboratory which is not outfitted yet, a maintenance room, and a mechanical room. The hydrogen peroxide tank is in a separate containment facility located outside the southwest corner of the building. The building floor is a concrete slab on grade with housekeeping pads/foundations for equipment. A 6-inch curb was placed around the edge of the building to provide secondary containment for the general processing facilities. Separate secondary containment facilities have been provided for the acid and base storage tanks. The floor of the building and all containment and process areas have been coated with a protective coating to protect the integrity of the secondary containment in the event of a spill or leak.

The building also contains a filter press area which has been enclosed in a separate room, located in the northwest corner of the treatment building, to control potential odors associated with sludge processing and storage. An exhaust fan was installed to ventilate this area. A separate rollup door located on the north side of the treatment building allows for removal of a roll-off sludge dumpster.

An oversized rollup door located on the north side of the treatment building allows for additional treatment equipment to be brought in if needed in the future. Additionally, the southern wall of the treatment building has been designed to be expandable should additional room be required in the building.

Three fire extinguishers and two eye wash/showers are located in the building in the event of an emergency.

The main treatment system contains the facilities necessary to provide for flow equalization, organic removal, metals removal, solids removal, and solids handling. A process flow diagram is shown in drawing number M4 of the as-built drawing set. Groundwater from the PGCS is pumped directly to the main equalization tank where it is blended with the groundwater from the BWES extraction system. Prior to entering the main equalization tank, the groundwater from the BWES is routed through a phase separator. The blended combination of water is pumped from the main equalization tank through a UV oxidation unit to remove dissolved organic contaminants. Effluent from the UV oxidation unit flows to a metals removal system consisting of precipitation, flocculation and clarification. Effluent from the clarifier flows by gravity through a sand filter which removes residual suspended solids. Effluent from the sand filter flows to a storage tank where pH adjustment takes place. Water is pumped from this third storage tank through two 1,500-pound and two 10,000-pound activated carbon units for final polishing and is then discharged to the wetlands area via a wetlands diffuser system. A sludge storage and dewatering system has been provided which consists of a sludge storage tank and filter press.

Details regarding construction of the treatment building and treatment system can be found in the as-built drawing set. Photographic documentation regarding the treatment building and treatment system construction can be found in Appendix A.

3.3 BARRIER WALL

The barrier wall was designed and installed to provide a continuous, vertical, hydraulic cut-off wall encompassing substantially all known subsurface wastes, as well as the higher concentrations of impacted groundwater. The low hydraulic conductivity barrier wall (no greater than 1x10-7 cm/s) is keyed into the natural low hydraulic conductivity clay stratum underlying the Site and will provide isolation of the contaminant sources.

Design of the barrier wall was begun in June, 1996 and installation of the barrier wall was completed in July, 1997. Both the design and installation of the barrier wall were

completed by HTI with engineering and quality assurance/quality control assistance provided by Foster Wheeler Corporation of Columbus, Ohio. During the design process, the barrier wall alignment through the northern end of the ACS facility was moved approximately 200 feet north of the original alignment to minimize disruption to the operating ACS facility. Field activities associated with the barrier wall began in early October, 1996 with clearing and grubbing along the barrier wall alignment. Installation of the barrier wall began in February, 1997 and was completed in July, 1997. Also during February 1997, the former Kapica/Pazemy building was demolished to allow installation of the barrier wall. During installation, the barrier wall alignment through the northern end of the ACS facility was again relocated several hundred feet north to enclose a buried drum area uncovered during construction activities. Site restoration activities associated with barrier wall construction were completed in September 1997.

The location of the barrier wall is shown on drawing numbers C-1, C-2 and C-3 of the As-Built drawing set. The barrier wall is approximately 4,500 linear feet in length and is approximately 16 inches wide. The wall varies in depth from approximately 15 to 25 feet (see Appendix C) but in all places extends a minimum of two feet into the underlying clay layer. The wall consists of a 60 mil high density polyethylene (HDPE) sheeting with 8 inches of soil amended-bentonite slurry backfill on either side. The bentonite slurry backfill has a permeability of no greater than 1×10^{-7} cm/s.

In general, the barrier wall was constructed using much the same equipment as was used to construct the PGCS and BWES extraction trenches. As the trencher moved backwards, the cutting chain, mounted to front of the trencher, removed site soils creating a void space for the trench box, mounted in front of the chain. A roll of HDPE sheeting, measuring approximately 100 to 130 linear feet in length, was contained within the trench box. As the trencher progressed, the roll of HDPE sheeting was released thereby creating a continuous HDPE barrier. When the roll of HDPE sheeting in the trench box had reached its end, a new roll was inserted into the trench box (via crane) and connected to the existing roll (already in the ground). The joint between the new roll and the existing roll was made by inserting a female profile, of the new roll of HDPE sheeting, over the

male profile of the HDPE sheeting already in the ground. A hydrophilic cord was inserted along the female profile to ensure that the joint was water tight. The rolls of HDPE sheeting were constructed under controlled conditions at HTI's indoor warehouse located near the project site. A male and female profile were attached at opposite ends of each roll of HDPE sheeting using a double-track fusion welder.

Installation of the bentonite slurry was accomplished using one of two different methods. The method used at the beginning of construction employed an auger system to meter dry, powdered bentonite from large hoppers, mounted on the rear of the trencher, to the cutting chain mounted on the front of the trencher. Once deposited on the cutting chain, the dry bentonite was thoroughly mixed with site soils to achieve the desired backfill permeability. While this system produced the desired results, it was susceptible to moisture. Moisture, in the form of snow or rain, caused the dry bentonite in the storage hopper to begin hydrating. Once the bentonite began to hydrate, it would plug the auger system and delay barrier wall installation. To eliminate delays associated with auger system maintenance, a second bentonite delivery system was implemented. The second delivery system consisted of placing the desired amount of dry bentonite in a shallow (i.e., 2 to 3 feet deep) trench ahead of the trenching machine. The shallow trench prohibited the powdered bentonite from blowing away in the wind. When the cutting chain of the trencher passed through the shallow trench, the dry bentonite was again thoroughly mixed with site soils to produce the desired backfill permeability.

In addition to the bentonite delivery system, other challenges were overcome during construction of the barrier wall. The presence of a fine gravel material in the subsurface formation along Colfax Avenue made installation of the HDPE sheeting and bentonite backfill difficult using the single pass methods. The gravel material worked past the seals on the trench box and interfered with the release of the HDPE sheeting from the box. To overcome this situation, HTI employed a two pass system. During the first pass through this area, the trencher mixed the dry bentonite with the site soils, thereby creating the desired backfill material. The location of the bentonite backfill was field marked. During the second pass, the trencher deployed the HDPE sheeting through the bentonite

backfill. This two pass system proved effective in areas with difficult subsurface conditions. The northern alignment of the barrier wall through the ACS facility was also completed using this two pass system.

As noted above, on occasion the HDPE sheeting would become stuck within the trench box. At times this condition was remedied by using an air lift to clean the inside of the trench box of foreign matter, thereby releasing the HDPE sheeting. However, on seven occasions the wall was not freed from the box and a break in the HDPE sheeting occurred. An eighth break in the HDPE sheeting also occurs at the final connection of the HDPE sheeting (i.e., a the point where the circle closed).

To seal the breaks in the HDPE sheeting, closure panels were fabricated and installed. Each closure panel is a narrow (i.e., generally less than 10 feet wide) section of HDPE sheeting with male and female profiles attached. Once fabricated, the closure panel was mounted to an installation boom, lifted into position by a crane, and jetted into the subsurface formation using a high pressure pump and bentonite slurry. The closure panel connected to the HDPE sheeting already in the ground via the male/female profiles. For each break in the HDPE sheeting, multiple closure panels were installed as necessary to fill the width of the break. For two of the breaks in the HDPE sheeting, the roll of polywall left in the ground when the break occurred had lost a profile (leaving the closure panel with nowhere to connect). To remedy this situation, a metal "clothes pin" was inserted over the HDPE sheeting with no profile. The cloths pin extends the entire depth of the HDPE sheeting. Attached to one side of the clothes pin was a profile (giving the closure panel a place to connect). Closure panels were then installed as described above. Following installation of the closure panels, the void space between the HDPE sheeting and the clothes pin was sealed using a thick, bentonite grout, grout pump, and tremie pipe. See Foster Wheeler Report in Appendix C for more details on the barrier wall construction.

3.4 CONVEYANCE PIPING, UTILITIES AND ACCESS ROAD

The conveyance piping, utilities and access road were designed and constructed to support operation of the groundwater treatment building and treatment system. The conveyance piping provides the pathway for groundwater extracted from the PGCS and the BWES extraction systems to be conveyed to the treatment system. Along with the conveyance piping, effluent discharge piping and structures were constructed in the wetlands. The utilities support operation of the treatment building and treatment system. Utilities installed include: electricity, natural gas, potable water, and a sewage handling septic tank. The roadway provides access for plant operators, deliveries, and visitors.

Installation of the conveyance piping began in December 1996 and was completed in August 1997. Installation of the utilities began in August 1996 and was completed in February 1997. Installation of the access roadway began in April 1996 and was completed in October 1996

Several contractors participated in construction of the conveyance piping, utilities, and access roadway including:

- Young's Environmental Cleanup, Inc., Flint, Michigan - installed the conveyance piping and wetlands discharge structures, natural gas service, water line, and sewage storage tank;

- Northern Indiana Public Service Company (NIPSCO), Hammond, Indiana - installed the electrical service;

- Express Electric, Michigan City, Indiana - extended the existing power pole line;

- Midwest Material Services, Hammond, Indiana - constructed access roadway.

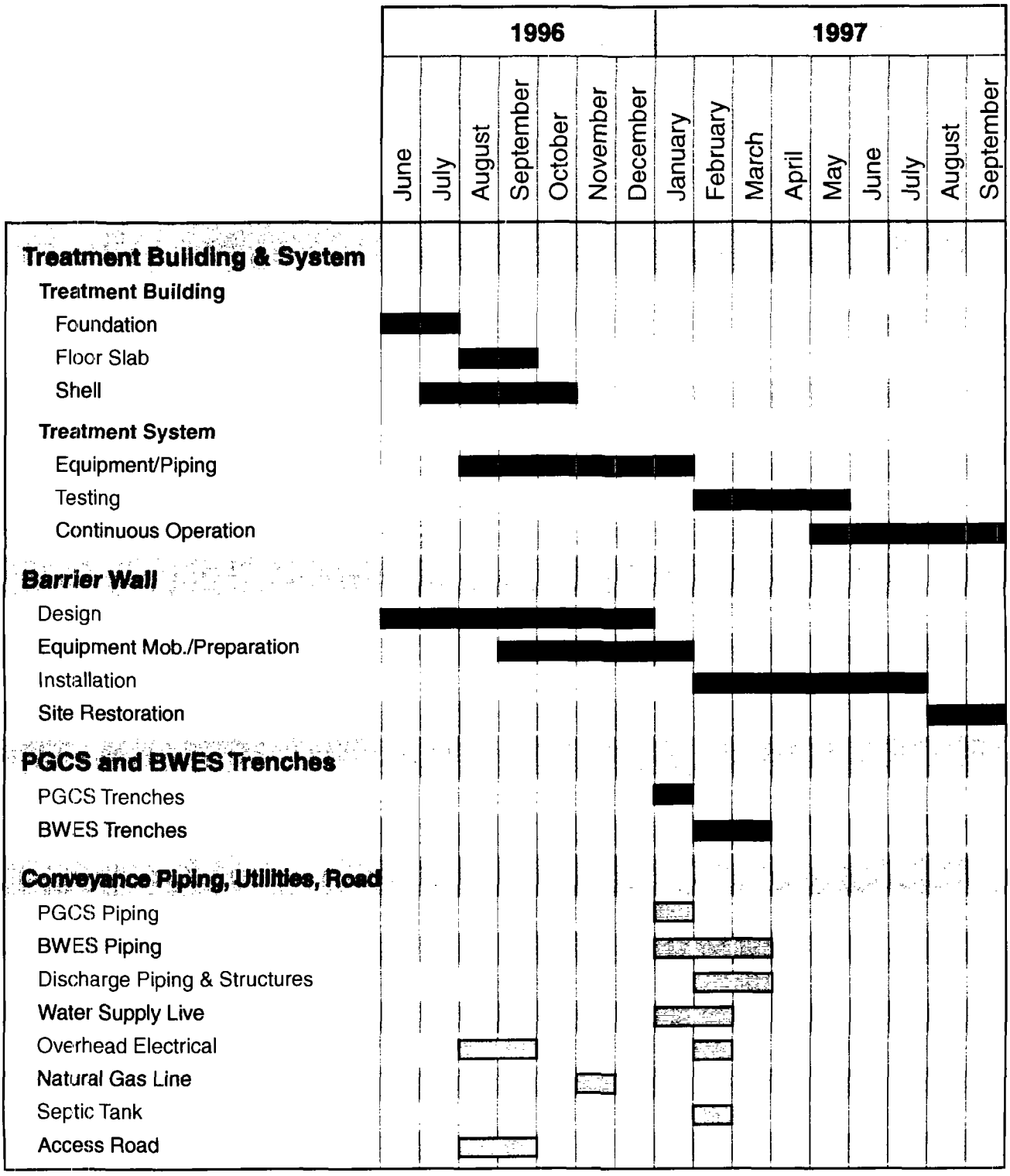
The conveyance piping connects the PGCS and BWES extraction systems to the groundwater treatment system. A single 2-inch diameter HDPE line collects the flow from the three PGCS pumps and delivers this flow to the treatment building. Similarly, a single 2-inch diameter HDPE line collects flow from all eight BWES extraction pumps and delivers it to the treatment building. A single 4-inch diameter HDPE line exits the building and delivers the treated effluent to the wetlands. The 4-inch effluent line splits into three separate lines near the edge of the wetlands and the three lines deliver the effluent to three diffusers located in the wetlands. The effluent discharge diffusers consist of bottomless precast concrete manholes with perforated cast iron covers. The manholes were set in the ground such that their tops were approximately 1 foot above grade and were backfilled with coarse gravel. All the conveyance piping, discharge piping, and discharge structures were installed using open cut excavating methods with backhoe. The discharge structures were set at a controlled elevation and the piping at a controlled slope. The conveyance piping was buried at least four feet deep to prevent freezing.

The natural gas line to the building was installed using a vibratory plow. The gas line is 4-inch HDPE. The water line was installed using open cut trench. The water line is 6-inch ductile iron pipe with bell and spigot joints. Electric service to the treatment system building was extended from an existing overhead power service through the ACS facility.

A sewage storage tank was installed to handle sanitary wastes. It only receives flow from the building toilet, sinks, shower, and floor drains in the office and laboratory. The tank must be pumped out periodically.

3.5 CONSTRUCTION CHRONOLOGY

The construction chronology for activities during the installation of the PGCS and BWES extraction trenches, groundwater treatment facility, the barrier wall is shown in Figure 3-1.



PROJECT NO. 1252042.12090174 5/5/98

MONTGOMERY WATSON

AMERICAN CHEMICAL SERVICE SITE
CONSTRUCTION CHRONOLOGY
FIGURE 3-1

4.0 CONSTRUCTION QUALITY ASSURANCE/QUALITY CONTROL

4.1 INTRODUCTION

Construction quality assurance (QA) and quality control (QC) was conducted to assure that the facilities were constructed properly. The following discussion briefly summarizes the QA/QC measures implemented during the construction activities at the Site.

4.2 QUALITY ASSURANCE DOCUMENTS AND RESPONSIBILITIES

Project QA was the responsibility of Montgomery Watson Constructors, Inc. (MWCI) with assistance from Montgomery Watson Americas (MWA). MWCI was the general contractor and responsible for coordinating and documenting all subcontractor's work and providing construction oversight. MWA was responsible for providing technical support to MWCI and reviewing and approving subcontractor submittals. The contractor for construction of the PGCS and BWES trenches and the barrier wall was Horizontal Technologies, Inc. (HTI), the contractor responsible for constructing the treatment system was Bowen Engineering. The treatment system building was constructed by Custom Steel Buildings. These major subcontractors, as well as many minor subcontractors (listed in Section 3) were responsible for installing site facilities in accordance with the design plans and technical specifications.

4.2.1. Design Basis, Design Plans and Technical Specifications

The 50 Percent Design Submittal provided detailed requirements for all of the treatment system components, the extraction trenches and the barrier wall, the integration of the components into a complete treatment system, and the operational sequence of the treatment system. The documents also included discussions regarding project requirements for submittals, QA, influent water quality, and discharge limitations.

4.2.2. QA Implementation

Implementation of the design was the responsibility of MWCI, and its subcontractors. MWCI was responsible for the following construction QA activities:

- Obtaining permits and coordinating inspections with permitting agencies.
- Providing supervisory management of all construction activities and personnel on a daily basis.
- Recording all construction activities.
- Maintaining records.

HTI, Bowen Engineering and Custom Steel Buildings were the primary subcontractors and were responsible for the following construction QA activities:

- Quality control of materials as required by the "Technical Specifications".
- Material specifications submittals to MWCI.
- Supporting MWCI and MWA in facilitating inspections and providing documentation of the construction for the project record.
- Reviewing work completed and work scheduled with MWCI and the EPA oversight contractor during construction meetings.

MWA was responsible for the following construction QA activities:

- Preparing procurement packages for major equipment to ensure that the desired make and model were obtained.

- Approval of all submittals from MWCI and its subcontractors.

- Conducting inspections to assess compliance of subcontractors with the treatment system design documents.

MWCI provided management of all subcontactors work and conducted inspections on a daily basis ensure compliance with the project requirements. The work performed and results of the inspections were recorded by MWCI on a daily basis. The daily reports were maintained on site throughout the duration of the project, and will be maintained on site for future reference.

4.3 CONSTRUCTION TESTING AND INSPECTION REPORTS

During construction activities construction materials and installation were subject to testing to assure compliance with the technical specifications. These tests and inspections included concrete cylinder testing, roadway compaction testing, pipeline leak testing, QA/QC inspection of the PGCS and BWES materials and installation. Testing and inspection reports are provided in Appendix B.

Prior to installation of the barrier wall, the barrier wall alignment was walked with representatives of Montgomery Watson (MW), Montgomery Watson Constructors, Inc. (MWCI), HTI, U.S. EPA, and ACS. During installation of the barrier wall, Foster Wheeler Environmental conducted quality control (QC) activities. MWCI conducted QA activities. Material QC testing included: visual inspection of all HDPE sheeting and profiles; comparison of HDPE material to manufacturer's specifications; labeling all HDPE panels with a unique identification number; testing trial welds for shear strength; and vacuum box testing all fusion welds. Installation QC testing included: monitoring and recording the elevation of the bottom of the barrier wall; visually inspecting all HDPE sheeting; recording the location of all HDPE sheeting according to their unique identification number; monitoring the addition of dry bentonite material; and collecting

samples of the bentonite backfill material for gradation and permeability analysis. Documentation of the barrier wall testing and QC program is provided in the "Engineers Certification Report" submitted by Foster Wheeler in March, 1998. This report and its appendices are contained in Appendix C.

5.0 DESIGN AND CONSTRUCTION MODIFICATIONS

The construction of the extraction and treatment systems was completed in general accordance with the design drawings and specifications. Some minor deviations from the design package were implemented during the construction of the PGCS containment system, barrier wall and associated extraction system. Design and field modifications are listed below and field modification forms are included in Appendix D. All significant modifications are illustrated in the as-built drawings (Volume 4 of the Operation and Maintenance Manual), but not all minor modifications are included as some system changes continue to be made to improve its operation.

5.1 PGCS EXTRACTION TRENCHES

- The alignment of the PGCS trench was altered slightly and the trench was lengthened on the northwest end.
- Level transmitters were installed instead of switches in each extraction sump to control the submersible pump operation and to monitor the water level in each sump.
- Control panels for the submersible extraction pumps were moved into the treatment system building.

5.2 BARRIER WALL

- The barrier wall was lengthened and the alignment was adjusted based on conditions encountered during the wall installation.
- The Kapicia-Pazmay building was demolished.
- Extraction trench EW-14 was not installed and the location of extraction trench EW-18 was moved to the north to provide additional dewatering within the ACS production facility.

5.3 TREATMENT SYSTEM BUILDING AND ASSOCIATED FACILITIES

- The width of the access road to the building was decreased and the elevation along the centerline was lowered slightly.

- The elevation of the building floor slab and surrounding land surface was increased by 1 foot to minimize the impacts of a high water table on the construction.

- The hairpin connecting the building stemwalls to the floor slab were not cast into the building piers, but were inserted though sleeves in the piers.

- Adhesive type waterstops were used instead of fin type stops around the building pads and stemwalls.

- Electrical conduits were cast into the floor slab instead of being hung overhead.

- The conduits from the building floor sumps to the process sump were changed from galvanized steel to schedule 80 PVC.

- The sanitary sewer pipeline was not installed as shown in the design documents. A 1,000 gallon holding tank was installed to handle all sewage and laboratory water generated in the building.

- The natural gas pipeline was rerouted out of the waste areas to a direct connection with the utility.

- The 6-inch waterline backfill material was modified from CA-13 limestone to self compacting limestone.

- The connection point for the 6-inch waterline to the water main was downstream of the ACS water meter and backflow preventor so that a separate flow meter would not be required. The water line route was also changed slightly to shorten the line.

- The hand sink location was changed from the mechanical room to the maintenance room.

5.4 GROUNDWATER TREATMENT SYSTEM

- The size of the clarifier platform was decreased.

- The location of the peroxide storage tank was moved. The tank was relocated next to the building, eliminating the pipe tunnel.

- The effluent weir box was eliminated from the effluent conveyance piping. An inline flowmeter and pH adjustment system were installed on the effluent pipeline instead.

- A vacuum breaker was installed on the effluent discharge pipeline to prevent siphoning.

- The valve vault in the wetlands was replaced with direct buried valves in the effluent discharge piping and they were located closer to the treatment building.

- The treated groundwater effluent piping materials were changed from PVC to HDPE.

- The wetlands discharge structures were changed from surface discharge lines to prefabricated infiltration manholes.

- Check valves in the tank air vent lines were eliminated.

- Alarm indicator lights were installed on the Main Control Panel.

- A sump pump was added in the floor sump underneath the filter press.

- The filter press operation was made independent of other operating systems (i.e. the filter press operation is not tied to critical alarm or shut down condition in the plant).

6.0 SYSTEM START-UP

6.1 INTRODUCTION

Inspection, testing, and start-up of the various components of the PGCS and BWES were conducted in the following sequence:

- Initial Inspection and Testing
- Clean Water Testing of the Treatment System
- PreFinal Inspection of the Treatment Systems
- Start-up of the PGCS Extraction System
- Start-up and Optimization of the Treatment System
- Start-up of the Barrier Wall Extraction System

Each of these phases is discussed in the following text. The PGCS extraction and treatment system was commissioned before the BWES trenches were brought on-line. Final testing of the treatment system was performed after the BWES extraction trenches were brought on-line. This was necessary because the water from the PGCS trench did not have high enough contaminant concentrations to evaluate the performance of the UV oxidation system.

6.2 INITIAL INSPECTION AND TESTING

6.2.1. Initial Inspection of the Treatment System

The initial inspection and testing was conducted for each construction element. Most of the initial testing activities were performed by the various subcontractors and witnessed by MWCI personnel. This phase included dry testing of instrumentation loops, calibration of instruments and meters, pressure testing of piping (utilities, conveyance,

and process piping), checkout of building systems (electrical power, lighting, HVAC, water supply, sewer, etc.), checkout of valves and pumps, and testing of compressed air systems.

6.2.2. Inspection and Development of the PGCS and BWES Trenches

The PGCS and BWES trenches were developed as part of the initial phase of the startup. The trenches were developed by pumping several hundred gallons of water from each well. In each case, pumping continued until the pumped water became free of silt. The pumped water was stored in portable tanks and was later processed through the treatment system.

6.3 CLEAN WATER TESTING OF THE TREATMENT SYSTEM

Upon completion of the initial inspection and testing, equalization tank (T-1) was filled with potable water to conduct the clean water test. The test was conducted in two stages: a batch test of each equipment unit; and a continuous test of the entire treatment process. The batch test involved filling each unit with water and testing for leaks and operational functions. After completion of tests on each unit operation, the water was pumped to the next unit in the treatment train. The oil/water separator, oil storage tank, chemical feed systems, effluent conveyance and discharge systems, and sludge processing facilities were also tested at this time.

Once the entire treatment train was checked out, the system was operated continuously for 24 hours by recycling the water back to the equalization tank through the off-specification effluent recycle piping. During this stage, the PLC control sequences were tested to ensure that all control functions, system failures, shutdowns, alarms, and interlocks were functioning properly. The chemical feed systems were also tested for operation and proper dosing rate.

Bowen Engineering Corporation and its associated subcontractors conducted the clean water testing phases of the system start-up. Respective equipment manufacturers for the filter press, the lamella clarifier, sand filter, and the UV oxidation unit also participated the testing. Technicians from each manufacturer were on site to check the installation, start-up the unit and adjust the operations. This phase of the testing was completed on March 14, 1997, upon continuous operation of the treatment system for 24 hours without a failure.

6.4 PREFINAL INSPECTION OF THE TREATMENT SYSTEM

The prefinal inspection was completed by MW, MWCI, U.S. EPA and IDEM on March 11-13, 1997. The purpose of this inspection was to assess the construction quality and operation of the treatment system in accordance to the design package and operational intent. An internal punch list was generated and submitted to the appropriate subcontractors to address deficiencies.

6.5 START-UP OF THE PGCS EXTRACTION SYSTEM

The PGCS extraction system was started during the prefinal inspection phase. EW-1 was initially brought online followed by EW-2 and EW-3, respectively. The start/stop operation of each pump and water level indicating transmitter readings on each sump were verified. The extracted groundwater was routed through the oil/water separator and into equalization tanks T-1 and T-2 during the start-up phase. The extraction system pump control operations were verified by confirming automatic shutdown of the extraction well pumps high level signal from the water level meter in the tanks.

Testing of the PGCS extraction system was delayed until after start-up of the treatment system. Testing was initiated on May 19, 1997 with the continuous operation of the

extraction and treatment system. Initial groundwater elevations were measured in PGCS piezometers on May 19, 1997. The extraction system was then turned on and was operated continuously until June 7, 1997, at which point it was turned off. Water levels were measured in the piezometers daily for the first seven days of operation and then weekly for the following three weeks. The water level measurements were collected in accordance with procedures outlined in the PGCS Performance Standard Verification Plan (PSVP).

The influence of the PGCS trench on groundwater flow patterns in the upper aquifer is shown in Figures 1 though 5 of first Quarterly Monitoring Report for the PGCS (Appendix F). As shown in the Figures 1 through 4, there was increasing drawdown with time as the trench was pumped. By June 4, 1997, the potentiometric surface at PGCS piezometer nest P90/P91/P92 dropped approximately 2 feet as compared to the pre-pumping level. After four idle days (not pumping the PGCS trench), the potentiometric surface recovered almost completely to pre-pumping levels (Figure 5). Based on the response of the potentiometric surface to pumping of the PGCS trench, the trench clearly provides a hydraulic barrier to groundwater flow.

6.6 START-UP AND OPTIMIZATION OF THE TREATMENT SYSTEM

6.6.1. Start-up

The start-up phase included processing contaminated water from T-2 through the UV/peroxide oxidation unit, precipitation unit, sand filter, pH adjustment tank, and GAC contactors. The treated water was then stored in temporary 20,000 gallon tanks. The start-up included operation of the system for 2 days. Stored effluent was tested to assess compliance with the discharge limitations and discharged if those discharge criteria were met. Effluent sampling was conducted in accordance with the PGCS PSVP.

The analytical results are included in the first Quarterly Monitoring Report for the PGCS (Appendix E).

Bowen Engineering was primarily responsible for operating and maintaining the treatment plant during the entire start-up phase. After the system was successfully operated, Bowen Engineering turned over the operational responsibilities to MWCI on April 10, 1997.

6.6.2. Optimization

After the start-up phase, the plant operators began an extended period of adjusting the various components of the treatment system. This phase was necessary for the operators to become fully knowledgeable about the system, to troubleshoot problems, and to optimize the operation. MWA personnel provided operational support to the MWCI operators during this phase start-up.

Optimization took place after the BWES trenches were started-up. Tanks T-1 and T-2 were filled with a mixture of contaminated water from both the BWES and PGCS extraction trenches. The mixture approximated the design influent condition as stated in the performance guarantee from Calgon Carbon Oxidation Systems. A sample of the BWES water was analyzed prior to this step so that the appropriate mixture could be determined to achieve the desired characteristics. As the influent mixture was prepared, samples of the water were taken and analyzed on site for COD using a Hach COD kit. The COD data was used to determine when the COD of the mixture was approximately that of the design influent. At that point, MWCI collected samples which were sent to a laboratory for 24-hour turnaround analysis of VOCs, SVOCs, metals, and general water quality parameters.

The mixture was processed through the treatment system at a flow rate of 40 gpm. During this phase, the treated effluent was routed into a 20,000 gallon temporary storage tank. The effluent from the oxidation unit and the final effluent were sampled and sent for the analysis with 24-hour turnaround and the results are presented in the first Quarterly Monitoring Report for the PGCS (Appendix E). During process optimization, exceedences of the effluent discharge parameters were observed for methylene chloride (3 times), vinyl chloride (2 times), arsenic (2 times), pH (2 times) and TSS (1 time). The pH and TSS exceedances were determined to be due to laboratory errors. The metals precipitation pH was lowered from 10.0 to 8.5 to provide better removal of arsenic.

The methylene chloride and vinyl chloride concentrations in the influent were higher than expected and therefore, were not removed to the desired levels by the UV/peroxide oxidation system. To remedy the problem, a shallow tray air stripper was installed as part of the treatment process downstream of the sand filter. Installation of the stripper successfully removed both compounds and has eliminated the reoccurrence of such exceedances.

Testing of the sludge handling system consisted of filter pressing one load of sludge and sending a sample of the sludge feed and sludge cake to a laboratory for solids analysis. The laboratory results showed that the a cake had a solids content of 54 percent.

6.7 START-UP OF THE BWES EXTRACTION SYSTEM

Start-up of the BWES extraction trenches began on June 5, 1997, after the initial inspection and testing of the extraction and conveyance facilities had been completed. HTI was responsible for initially starting each of the pumps and verifying start/stop operation. MWCI then adjusted the operation of each extraction pump. One extraction pump was brought on line at a time, tested, adjusted, and its flowrate recorded. All water from the start-up activity was routed to equalization tank T-1. Once all BWES extraction

pumps were operating, the system was allowed to operate for approximately 30 minutes and then shutdown. This was necessary to avoid overloading the treatment system with the more highly contaminated water from within the barrier wall.

During the startup, MWCI collected samples of the groundwater from trenches EW-10 through 18. The samples were sent to a laboratory for analyses of COD, VOCs, SVOCs, PCBs, metals, and general water quality parameters. This information is contained in Appendix F.

7.0 PROJECT EXPENDITURES

7.1 BUDGETED PRE-DESIGN EXPENDITURES

The following is the breakdown of the pre-design budgeted expenditures for the various construction components of the remediation facilities at the ACS Site:

Item	Cost
Permits/Notifications	$ 2,588
Construction Surveys	$ 10,350
Temporary Services	$ 45,478
Site Roadwork, Utilities and Site Preparation	$ 459,840
Treatment System Building	$ 391,500
PGCS Extraction Trench	$ 303,671
Treatment System Equipment and Construction	$ 1,247,626
Barrier Wall	$ 1,116,726
Unplanned Activities	$ 0
Construction Coordination and Oversight	$ 366,570
SUBTOTAL	**$ 3,944,348**
Contingency	**$ 986,087**
TOTAL	**$ 4,930,435**

7.2 BUDGETED DESIGNED EXPENDITURES

The following is the breakdown of the post-design budgeted expenditures for the various construction components of the remediation facilities at the ACS Site:

Item	Cost
Permits/Notifications	$ 2,588
Construction Surveys	$ 10,350
Temporary Services	$ 45,478
Site Roadwork, Utilities and Site Preparation	$ 430,278
Treatment System Building	$ 518,587
PGCS Extraction Trench	$ 184,169
Treatment System Equipment and Construction	$ 1,383,583
Barrier Wall	$ 1,596,697
Unplanned Activities	$ 1,131,181

Construction Coordination and Oversight	$ 456,618
SUBTOTAL	**$ 5,760,527**
Contingency	**$ 0**
TOTAL	**$ 5,760,527**

7.3 ACTUAL EXPENDITURES

The following is the breakdown of the actual expenditures for the various construction components of the project:

Item	Cost
Permits/Notifications	$ 649
Construction Surveys	$ 1,702
Temporary Services	$ 24,565
Site Roadwork, Utilities and Site Preparation	$ 413,213
Treatment System Building	$ 523,945
PGCS Extraction Trench	$ 184,160
Treatment System Equipment and Construction	$ 1,384,758
Barrier Wall	$ 1,633,203
Unplanned Activities	$ 985,022
Construction Coordination and Oversight	$ 457,615
TOTAL	**$ 5,608,832**

The items that were added during design and constructed at the site include:

- Replacement of unsuitable fill materials during the building construction
- Replacement of unsuitable fill materials during the road construction
- Backfilling to increase the elevation change of building
- Construction of containment structures and application of concrete coatings inside the treatment system building
- Increasing the area contained within barrier wall from approximately 16 acres to 30 acres

- Construction of barrier wall extraction system trenches
- Addition of railroad crossing for truck traffic between the on-site and off-site area
- Implementation and management of a "Spoils Management Plan" as required by the USEPA.
- Demolition of the Kapica/Pazemy building
- Removal of buried waste drums during installation of the water line and barrier wall
- Investigations along the barrier wall alignment for obstructions
- Additional Project Management for increased work activities
- Relocation of refuse from the barrier wall alignment
- Storage and accelerated analysis of treated water during treatment system start up
- Employment of Local 150 Union Operators during construction
- Addition of air stripping equipment to the groundwater treatment system.
- Installation of storm water management controls in the Off-Site area

APPENDIX A

CONSTRUCTION PHOTOGRAPHS

Photo 1. Clearing for the treatment system building access road.

Photo 2. Top soil removal for the treatment system building access road.

Photo 3. Sub-base grading for the treatment system building access road.

Photo 4. Three inch rock fill in soft areas under the treatment system building access road.

Photo 5. Culvert installation under the treatment system building access road.

Photo 6. Final grading of the treatment system building access road.

Photo 7. Installation of the natural gas supply line for the treatment system building using a vibrating plow.

Photo 8. Final connection of the natural gas supply line.

Photo 9. Installation of the ductile iron water supply line for the treatment system building.

Photo 10. Trenching and installation of the water supply line.

Photo 11. Removal of buried drums during installation of the water supply line.

Photo 12. Overpack drums for buried drums removed during installation of the water supply line.

Photo 13. Removal of contaminated liquid from the trench excavation during installation of the water supply line.

Photo 14. Influent and effluent conveyance piping penetrations of the building foundation and floor slab (exterior view).

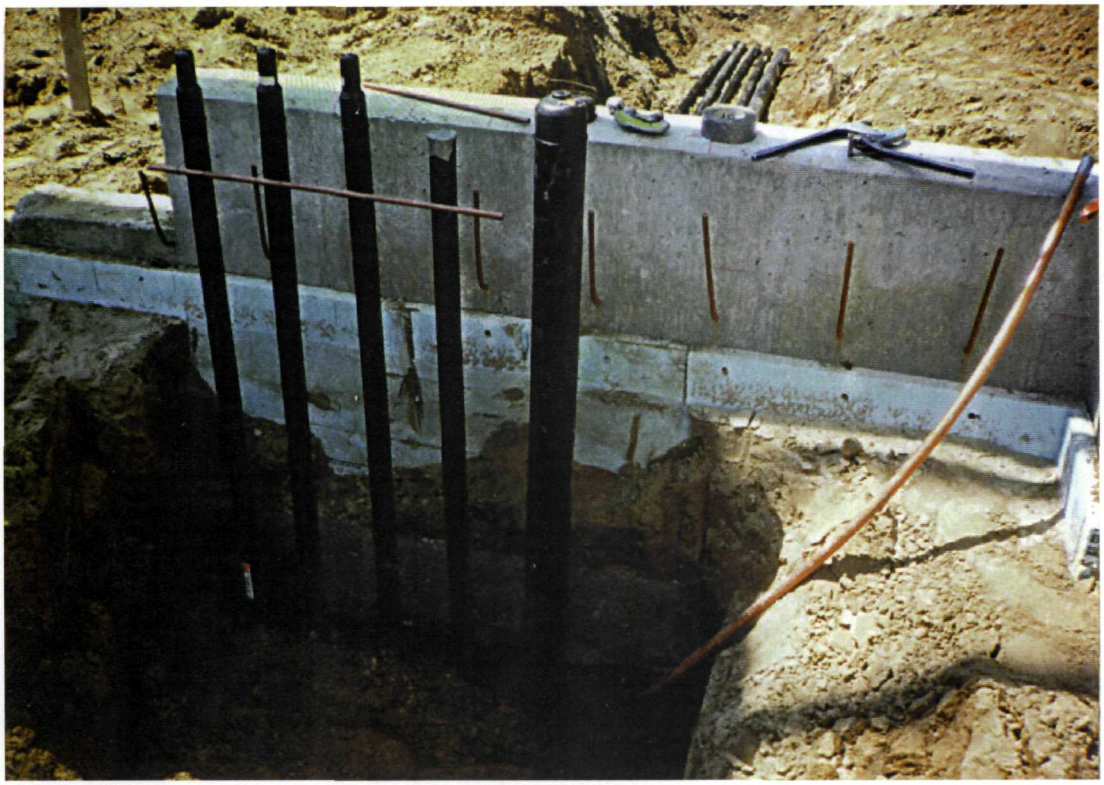


Photo 15. Influent and effluent conveyance piping penetrations of the building foundation and floor slab (interior view).

Photo 16. Treated effluent conveyance piping manifold installation.

Photo 17. Treated effluent conveyance piping manifold and valve installation.

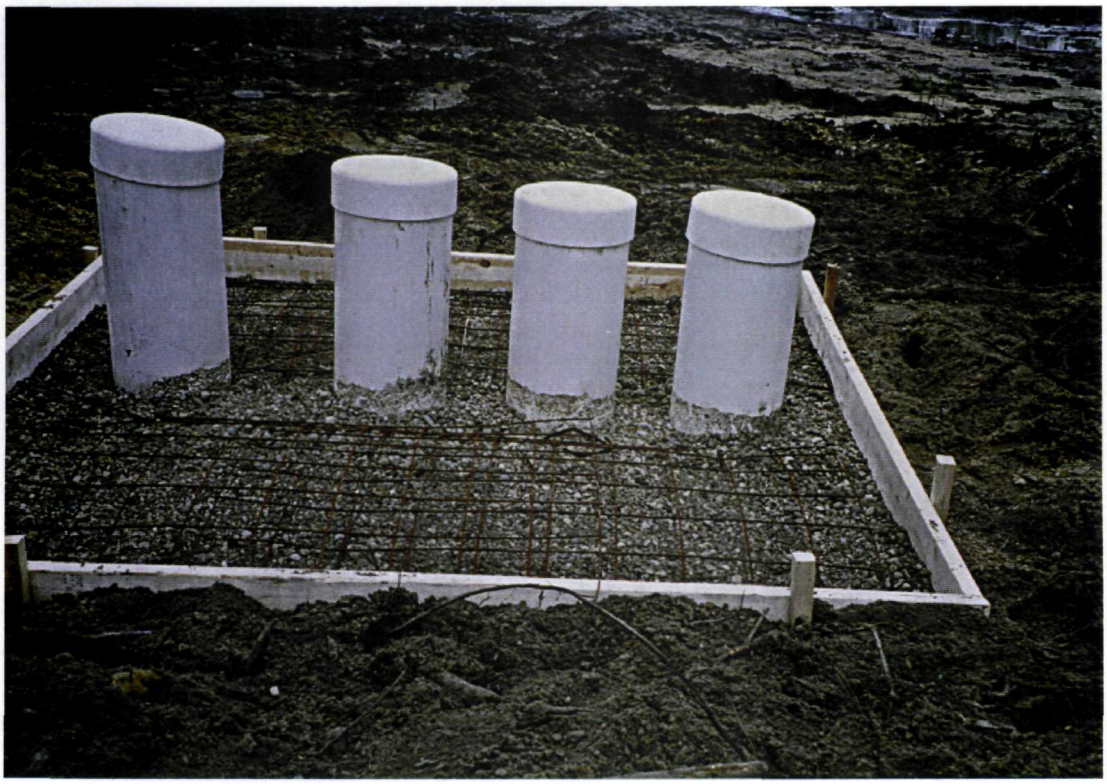


Photo 18. Treated effluent conveyance piping valve installation surface completion.

Photo 19. Treated effluent conveyance piping installation through wetlands.

Photo 20. Sheet plate shoring for installation of the effluent discharge manholes in the wetlands.

Photo 21. Installation of influent groundwater conveyance piping in the off-site area.

Photo 22. Installation of influent groundwater conveyance piping along the PGCS trench alignment.

Photo 23. Pressure and leak testing conveyance piping after installation.

Photo 24. Pressure and leak testing treated effluent conveyance piping after installation.

Photo 25. Placement of 2 inch stone under the treatment system building footings.

Photo 26. Excavation and placement of 2 inch stone under the treatment system building footings.

Photo 27. Construction of forms for the treatment system building footings.

Photo 28. Grading around the completed building footings and foundation walls.

Photo 29. Installation of concrete floor sumps and conduits under the building floor. Building framing and acid and caustic containment structures are complete in background.

Photo 30. Construction of forms for the acid and caustic containment structures.

Photo 31. Preparation for pouring the building floor slab in the office/mechanical/electrical room area. Electrical conduits are installed under the floor slab with mesh reinforcement above.

Photo 32. Preparation for pouring the building floor slab in the processing area. Equipment base foundations have already been poured. Electrical conduits are encased in the concrete floor slab with steel reinforcing bars at one foot intervals in both directions.

Photo 33. Placement of the concrete for the building floor slab in the processing area. Acid and caustic containment structures are in the background.

Photo 34. Placement of the large tanks inside the building prior to the completion of the building frame.

Photo 35. Completion of the building frame.

Photo 36. Completion of the building frame.

Photo 37. Grounding of the building frame.

Photo 38. Completion of the exterior building walls and interior concrete block buildouts.

Photo 39. Installation of the exterior building siding.

Photo 40. Construction of the ceiling for the interior concrete block buildouts.

Photo 41. Placement of process tanks and equipment in the building.

Photo 42. Placement of the sand filter in the building.

Photo 43. Placement of filter press in the building.

Photo 44. Construction of the hydrogen peroxide containment structure outside of the building.

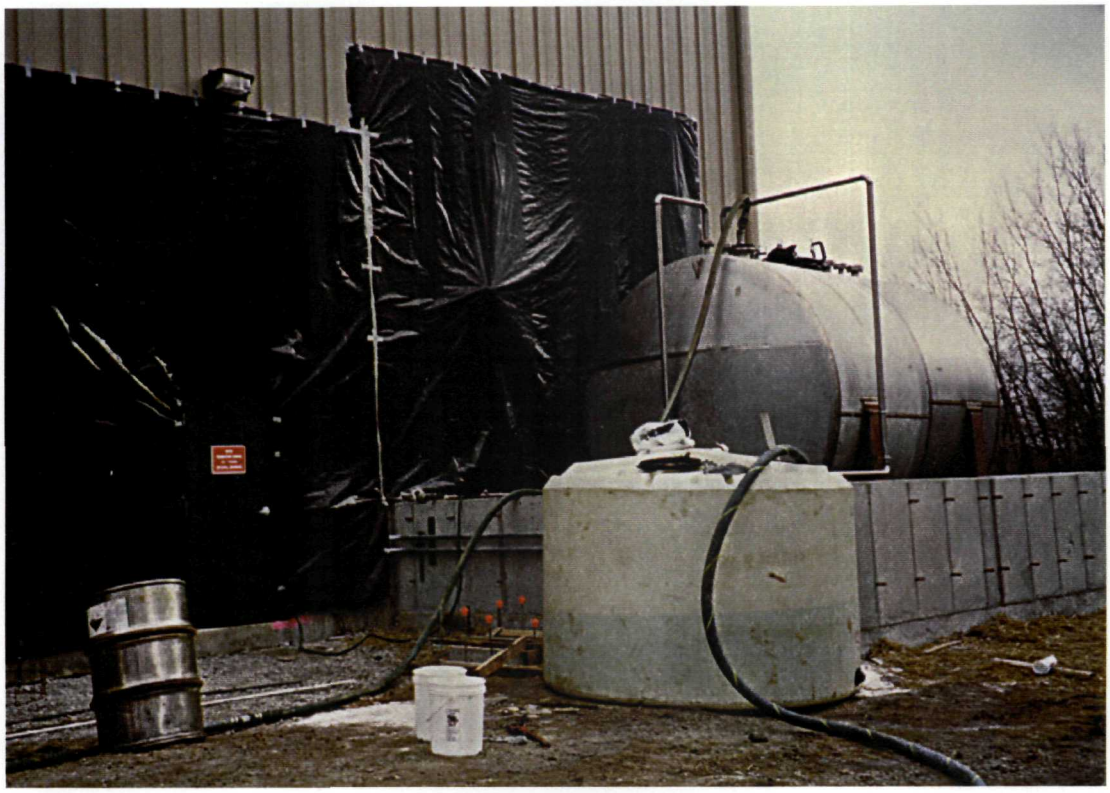


Photo 45. Cleaning and passivation of the hydrogen peroxide tank after installation.

Photo 46. Installation of tanks and equipment in the treatment system building.

Photo 47. Completed installation of tanks, process equipment and piping in the treatment system building.

Photo 48. Barrier wall and PGCS extraction trench continuous trenching machine.

Photo 49. Installation of the barrier wall in the off-site area using the continuous trenching machine.

Photo 50. Installation of the barrier wall in the off-site area near the landfill boundary using the continuous trenching machine.

Photo 51. Installation of the barrier wall HDPE sheeting through the soil/bentonite slurry mixture.

Photo 52. Dewatering prior to installation of the barrier wall near the ACS waterline.

Photo 53. Introduction of bentonite into the trench to construct the slurry wall portion of the barrier wall along Colfax Avenue.

Photo 54. Preparation of an HDPE connection section prior to installation.

Photo 55. Installation of the HDPE connection section to *join two sections of HDPE barrier wall sheeting.*

Photo 56. Preparation for construction of the ACS sewer line penetration through the barrier wall.

Photo 57. Penetration of the ACS sewer line through the barrier wall HDPE sheeting.

Photo 58. Preparation for installation of a PGCS extraction trench sump using the continuous trenching machine.

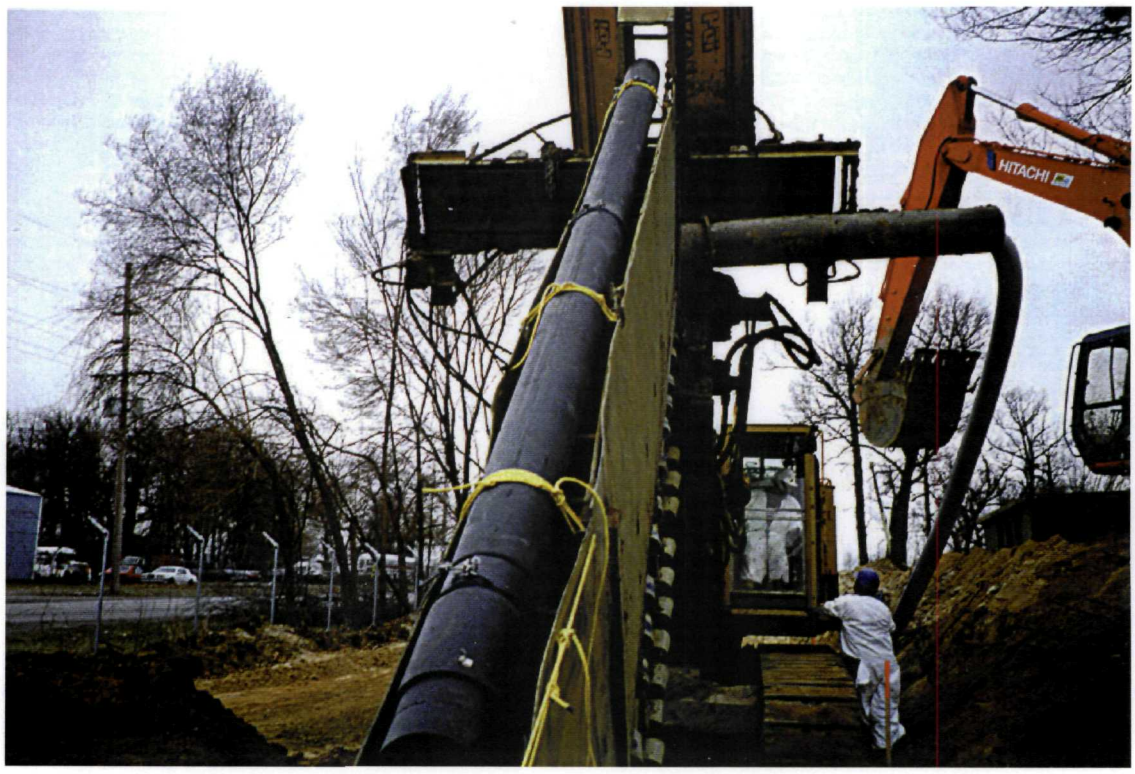


Photo 59. Extraction trench sump attached to the cutter arm of the trenching machine. The sump will be cut into a vertical position and then released from the cutter arm.

Photo 60. Installation of the PGCS extraction trench. Gravel backfill is continuously placed in the trench using the cutter arm of the trenching machine.

APPENDIX B

CONSTRUCTION TESTING

Pipe Testing Logs –

Aboveground &
Belowground
piping

ACCEPTED

- ☐ FOUNDATION
- ☐ SERVICE
- ☐ PLUMBING
- ☒ U/G PLUMBING
- ☐ ELECTRICAL
- ☐ BUILDING
- ☐ OTHER _____

The inspector was here to inspect your installation as per request.

ADDRESS 420 S. CALKAN

DATE 7-31-96

☐ The inspection could not be made because no one was at the site.

BILL GRECO

Griffith Building Inspection Dept
111 NORTH BROAD STREET
GRIFFITH, INDIANA
TELEPHONE 924-7500

MONTGOMERY WATSON

Pipe Testing Log

Project ACS Contractor GATLIN / MWC

Owner Job No. 23

Test No.	Test Date	Description/Location	Plan/Spec. Reference	Pipe Placed Size	Pipe Placed Material	Fail	Pass
1	8-89	4 LINES APPROX 30FT LONG WAS TESTED WITH AIR AT 100 PSI FOR 3 HRS.	LEE CROSS	2" SDR-11	HDPE		X
2	8-89	2 LINES APPROX 30FT LONG WAS TESTED WITH AIR AT 10 PSI FOR 3 HRS.	LEE CROSS	4" SDR-11	HDPE		X

CM 422 (Revised 10/01/93)

Page ..... of .....

ACCEPTED

- [ ] FOUNDATION
- [ ] SERVICE
- [x] PLUMBING
- [ ] OTHER 2nd Rough

- [ ] U/G PLUMBING
- [ ] ELECTRICAL
- [ ] BUILDING

The inspector was here to inspect your installation as per request.

ADDRESS 430 S. Colfax

DATE 9-10-96

Bill Greco

- [x] The inspection could not be made because no one was at the site.

Griffith Building Inspection Dept.
111 NORTH BROAD STREET
GRIFFITH, INDIANA
TELEPHONE 924-7500

MONTGOMERY WATSON

Pipe Testing Log

Project: ACS

Contractor: GATLIN PLUMBING

Owner:

Job No.:

Test No.	Test Date	Description/Location	Plan/Spec. Reference	Pipe Placed Size	Pipe Placed Material	Fail	Pass
	12/14/96	2 PIPES LEADING TO THE	10 PSI	4"	HDPE		X
		PEROXIDE CONTAINMENT SUMP	1 HR		SDR-11		
		LEE0R952					

CM 422 (Revised 10/01/93)

Page ..... of .....

MONTGOMERY WATSON

Pipe Testing Log

Project AMERICAN CHEMICAL Contractor BOWEN ENGINEERING

Owner SERVICE INC (ACS) Job No.

ALL TESTS TWO HOURS

Test No.	Test Date	Description/Location	Plan/Spec. Reference	Pipe Placed Size	Pipe Placed Material	Fail	Pass
1	12/30/96	VENT LINES FROM T-1	5 PSI	4"	STAINLESS		X
		T-2, T-4, T-5, T-6 TO	TWO HRS		STEEL		
		VAPOR GAC					
2	12/30/97	CONDENSATION LINE					
		FROM BEFORE VAPOR	5 PSI	1"	STAINLESS		X
		GAC TO PHASE SEPERATOR	TWO HRS		STEEL		
3	1/3/97	SLUDGE PUMPS P-12	10 PSI	2"	STAINLESS STEEL		X
		P-13 TO SLUDGE TANK	TWO HRS	2"	CPVC		X
4	1/3/97	SLUDGE TANK TO SIGHT GLASS	10 PSI	2"	STAINLESS STEEL		X
5	1/4/97	FROM T-2 TO UV OXIDATION	87 PSI	2"	STAINLESS STEEL		
		LEAKED AT A PRESS FITTING	TWO HRS			X	
		LEAKED AT THE PRESSURE GUAGE				X	
		THIRD TIME					X
6	1/10/97	FROM T-2/2" SS TO 4" SS	86 PSI	2"	STAINLESS		
		TO T-2 ALSO FROM T-2/2" SS	TWO HRS	4"	STEEL		
		TO BOTH INFLUENT LINES TO					
		THE oil/WATER SEPERATOR AND					
		1/2" SS FROM T-1/T-4					
		TESTED OVER NIGHT				X	

CM 422 (Revised 10/01/93)

MONTGOMERY WATSON

Pipe Testing Log

All Tests Two Hours

Project _____ Contractor _____

Owner _____ Job No. _____

Test No.	Test Date	Description/Location	Plan/Spec. Reference	Pipe Placed Size	Pipe Placed Material	Fail	Pass
6	1/9/97	Soaped All Press Fittings	86 PSI	2" / 4"	Stainless Steel		
		This Test Has Ten Valves	Two Hrs				
		in Line (Tested Again)					X
7	1/9/97	Ten Foot Section From	32 PSI	2"	Stainless Steel		
		Phase Seperator To T-6	Two Hrs				X
8	1/15/97	T-1 To P-1 / P-2 (A Four Ft Section)	21 PSI	2"	Stainless Steel		X
9	1/15/97	T-2 To P-6, P7, P8 (A Four Ft Section)	22 PSI	2"	Stainless Steel		X
10	1/15/97	T-4 To P-9, P-10 (A Four Ft Section)	27 PSI	2"	Stainless Steel		X
11	1/21/97	Nada T-6 Loading Line	20 PSI	2"	Stainless Steel		X
12	2/18/97	Copper Water Line Inside (TB)	90 PSI	1"	Copper		X
13	2/18/97	Acid Suction Line	25 PSI	1/2"	Kynar		X
14	2/18/97	Peroxide Tank Fill Line	30 PSI	2"	Stainless Steel		X
15	2/18/97	Air Dryer To Filter Press	88 PSI	1/2", 1", 1/4"	Black Pipe		X
16	2/18/97	Acid Pump 1 Discharge To UV Unit	40 PSI	1/2	Kynar		X

CM 422 (Revised 10/01/93)

Page _____ of _____

MONTGOMERY WATSON

Pipe Testing Log

Project _____ Contractor _____

Owner _____ Job No. _____

All TESTS TWO HOURS

Test No.	Test Date	Description/Location	Plan/Spec. Reference	Pipe Placed Size	Pipe Placed Material	Fail	Pass
17	8/6/97	PERMIDE SUCTION LINE	40 PSI	2" 1"	STAINLESS STEEL		X
13	8/26/97	ACID PUMP 2 TO T-3	40 PSI	1/2	KYNAR		X

CM 422 (Revised 10/01/93)

Page _____ of _____

MONTGOMERY WATSON

Pipe Testing Log

Project: ACS

Contractor: YOUNGS

Owner:

Job No.:

Test No.	Test Date	Description/Location	Plan/Spec. Reference	Pipe Placed Size	Pipe Placed Material	Fail	Pass
	7/11/97	9AM TESTED APPROXIMATELY	150 PSI	6"	DUCTILE IRON	X	
		1200 LINEAR FEET FOR					
		TWO HOURS. LEAKED BELOW					
		100 PSI. CHECKED TWO					
		VALVES BOTH WERE NOT					
		CLOSED ALL THE WAY					
	7/11/97	4PM TESTED AGAIN	150 PSI	6"	DUCTILE IRON		
		FOR TWO HOURS. 145 PSI					
		OVER NIGHT 125 PSI					X

Page ..... of .....

CM 422 (Revised 10/01/93)

MONTGOMERY WATSON

Pipe Testing Log

Project: ACS Contractor: YOUNGS

Owner: Job No.:

Test No.	Test Date	Description/Location	Plan/Spec. Reference	Pipe Placed Size	Pipe Placed Material	Fail	Pass
	3/3/97	3 DISCHARGE PIPES	30 PSI	4"	HDPE		X
		FROM BUILDING TO	TWO HOURS		SDR-11		
		MANIFOLD					

CM 422 (Revised 10/01/93)

Page ____ of ____

Flushing and Pressure Testing

ing

he main should be filled to uld be flushed to remove ity in the main should be no gineer or job superintendent t permit the required flow to e to the right shows the ra.es locity of 2.5 ft/sec. in pipes o substitute for preventive ertain contaminants, such as t any feasible velocity. meter, an acceptable alter- sweep the main, carefully chlorinating the main.

REQUIRED FLOW and OPENINGS to FLUSH PIPELINES
(40 psi residual pressure in water main)*

PIPE SIZE	FLOW REQUIRED TO PRODUCE 2.5 ft/s (approx.) VELOCITY IN MAIN	SIZE OF TAP (inches)			NUMBER OF 2.5 in. HYDRANT OUTLETS*
		1"	1.5"	2"	
		NUMBER OF TAPS ON PIPE †			
4"	100 gpm	1	—	—	1
6"	200 gpm	—	1	—	1
8"	400 gpm	—	2	1	1
10"	600 gpm	—	3	2	1
12"	900 gpm	—	—	2	2
16"	1600 gpm	—	—	4	2

* With a 40-psi pressure in the main with the hydrant flowing to atmosphere, a 2 1/2" hydrant outlet will discharge approximately 1000 gpm and a 4 1/2" hydrant outlet will discharge approximately 2500 gpm.
† Number of taps on pipe based on discharge through 5' of galvanized pipe with one 90° elbow.

MICR TECH 932-1770

esting

ula: $L = \frac{SD\sqrt{P}}{133{,}200}$

LENGTH = FOOTAGE × DIA. OF PIPE × $\sqrt{P}$ 12.25 / 133,200

akage, in gallons per hour.
e tested, in feet.
meter of the pipe, in inches.
pressure during the leakage test, in pounds per square inch (gauge).

Feet of Pipeline* — GPH (gallons per hour)

	NOMINAL PIPE DIAMETER (inches)													
	6	8	10	12	14	16	18	20	24	30	36	42	48	54
.64	0.95	1.27	1.59	1.91	2.23	2.55	2.87	3.18	3.82	4.78	5.73	6.69	7.64	8.60
.60	0.90	1.20	1.50	.80	2.10	2.40	2.70	3.00	3.60	4.50	5.41	6.31	7.21	8.11
.56	0.84	1.12	1.40	1.69	1.97	2.25	2.53	2.81	3.37	4.21	5.06	5.90	6.74	7.58
.52	0.78	1.04	1.30	1.56	1.82	2.08	2.34	2.60	3.12	3.90	4.68	5.46	6.24	7.02
.50	0.75	1.00	1.24	1.49	1.74	1.99	2.24	2.49	2.99	3.73	4.48	5.23	5.98	6.72
.47	0.71	0.95	1.19	1.42	1.66	1.90	2.14	2.37	2.85	3.56	4.27	4.99	5.70	6.41
.45	0.68	0.90	1.13	1.35	1.58	1.80	2.03	2.25	2.70	3.38	4.05	4.73	5.41	6.03
.43	0.64	0.85	1.06	1.28	1.48	1.70	1.91	2.12	2.55	3.19	3.82	4.46	5.09	5.73
.40	0.59	0.80	0.99	1.19	1.39	1.59	1.79	1.98	2.38	2.98	3.58	4.17	4.77	5.36
.37	0.55	0.74	0.92	1.10	1.29	1.47	1.66	1.84	2.21	2.76	3.31	3.86	4.41	4.97
.34	0.50	0.67	0.84	1.01	1.18	1.34	1.51	1.68	2.01	2.52	3.02	3.53	4.03	4.53
.30	0.45	0.60	0.75	0.90	1.05	1.20	1.35	1.50	1.80	2.25	2.70	3.15	3.60	4.05

ins sections of various e will be the sum of the

sed metal-seated valves, valve of 0.0078 gph/in. llowed.

S

MONTGOMERY WATSON

Pipe Testing Log

Project _____ Contractor _____

Owner _____ Job No. _____

Test No.	Test Date	Description/Location	Plan/Spec. Reference	Pipe Placed Size	Pipe Placed Material	Fail	Pass
	5/21	EXTRACTION LINE	50 PSI	2"	HDPE		X
		15,16					
	5/21	EXTRACTION LINE	50 PSI	1"	HDPE		X
		15,16					
	5/22	EXTRACTION LINE	50 PSI	2"	HDPE		X
		10,11,12,13,17,18					
	5/22						

CM 422 (Revised 10/01/93)

Page _____ of _____

FORRER SUPPLY COMPANY, INC.

N117 W18388 Fulton Drive
Germantown, WI 53022
Phone (414) 255-3030
FAX (414) 255-4064

*** FAX TRANSMISSION ***

TO: Ben

COMPANY: Montgomery Watson

FAX: 708-691-5133

FROM: Carter Kruis

TOTAL NUMBER OF PAGES INCLUDING COVER (3)

MESSAGE: See Attached.

WE ARE YOUR DISTRIBUTOR FOR:
PIPE, VALVES, FITTINGS, HOSE,
AND GEOTEXTILES

Weatherability

Driscopipe 6400 is protected against degradation caused by ultraviolet rays from direct sunlight. The raw material contains 2½% of finely divided carbon black . . . which also accounts for the black color of Driscopipe 6400. Carbon black is the most effective single additive for enhancing the weathering characteristics of plastic materials. The protection that even relatively low levels of carbon black impart to the plastic is so great, that it is not necessary to use other UV absorbers.

Weatherability tests indicate that Driscopipe 6400 can be safely stored outside in most climates for periods of many years without danger of loss of physical properties due to UV exposure.

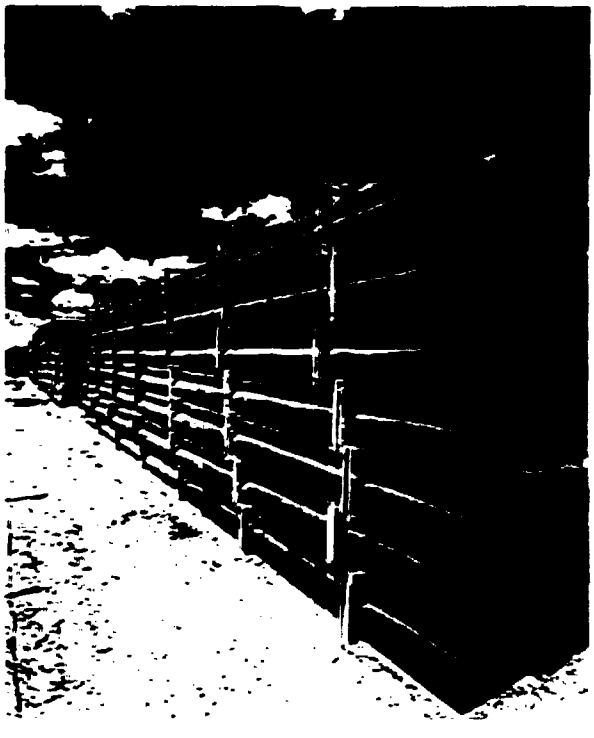
Applications

Driscopipe 6400 is extruded from a Type III, Class C, Category 5, Grade P34 compound as described in ASTM D 1248. It is classified as cell 345434C according to ASTM D 3350 and has the material designation of PE 3408. The pipe is manufactured to meet the requirements of ASTM D 2513 which is necessary to meet the Pipeline Safety Regulations Part 192, Minimum Federal Safety Standards for the transport of natural gas. Driscopipe 6400 also meets the requirements of API 15LE (American Petroleum Institute's Standard for Plastic Pipe).

By meeting the requirements of these two important specifications, Driscopipe 6400 is well qualified to meet the demanding needs of the energy market in applications such as oil and gas gathering systems, methane recovery from coal seams and landfills, and water supply lines for oil recovery systems.

The properties discussed in the preceding sections, plus the excellent flow characteristics of high density polyethylene piping, enhance the performance of Driscopipe 6400.

A thorough discussion of installation, design and hydraulic parameters is available through a Driscopipe representative.



08/02/96 16:27 ☎414 255 2336 FORRER SUPPLY 002/003

DRISCOPIPE

Driscopipe® 1000 series

Data Sheet

PHILLIPS 66

Customer Benefits

High quality Driscopipe® 1000 is manufactured from extra high molecular weight, high density PE3408 polyethylene pipe grade resin.

This black, weather-resistant pipe exhibits . . . .

- Outstanding Chemical & Corrosion Resistance
- High Environmental Stress Cracking Resistance
- Improved Flow Characteristics
- Toughness & Ductility
- Flexibility with lightweight
- Non-Toxic
- Abrasion Endurance
- Fatigue Endurance
- Long-term Hydrostatic Strength / Physical strength
- Reliability

Suggested Industries & Applications

- Industrial Water Distribution
- Agriculture
- Landfills
- Marine
- Pollution Control
- Pulp / paper / wood
- Power Plants
- Petrochemical
- Mining / Mineral Processing
- Dredging / sand / gravel
- Organic Chemicals
- Inorganic Chemicals
- Aquaculture
- Hazardous Waste
- Local / State / Federal Gov'ts.
- Cement Plants
- Irrigation
- Municipal
- Gravity sewers
- Forced main sewers
- Water distribution
- Sewer treatment
- Sludge handling
- Leachate collection
- Dual Containment
- Brine
- Fertilizer
- Acid / Caustic lines
- Utility / Process piping
- Slurry
- SX acid mining
- Tailings disposal
- Marinas
- Snow melting / making
- Hard rock mining
- Coal Slurry / Processing
- Dredging
- Water intakes
- Water outfalls
- Fire-water
- De-Watering
- Fly-Ash disposal
- Temporary pipelines
- Cable Stayed Bridges
- Golf course irrigation
- Farmland irrigation
- Swimming pools
- Ice rinks
- . . . . and many others

Available in sizes
1" thru 54"

Specification Data

The resin, pipe & fittings comply with these accepted (and other) industry standards . . . .

1400 meets the same standards

✓ASTM F-714 - Pipe Standard

ASTM D3261 - Fittings Standard

✓Cell Classification - ASTM D3350 - PE345434C

✓ASTM D1248 - Type III, Class C Category 5, Grade P34

EPA 9090 ISO #161

PPI Designation - PE3408

NSF - Listed, Standard #14 (by size,per order)

Factory Mutual (by size, per order) ◄ FM ►

CGSB41 - GP-25M-Pipe Standard

AWWA C901 - Potable Water Pipe & Tubing

American Water Works Association

Printed in Texas, USA 6-91

RECEIVED JUL 16 1996

midwest engineering services, inc.

9362 Calumet Avenue • Munster, IN 46321 • 219-836-8109 • FAX 219-836-8189

REPORT OF FIELD INSPECTION OF CONCRETE

CLIENT: Mr. Larry Lyman
Custom Steel Buildings
21686 E. Lincoln Hwy.
Lynwood, Illinois 60411

DATE: July 8, 1996

PROJECT: New Water Treatment Facility
American Chemical Services
Griffith, Indiana

PROJECT NO.: 6-65012-3

TEST DATA

AIR TEMP: 85F

SET NO.	NO. CYLS	SUPPLIER TICKET NO.	TIME TRUCK DISPATCHED	TIME TRUCK UNLOADED	CUBIC YARDS	SLUMP IN.	AIR %	TEMP. CONC.	GAL. WATER ADDED
2	4	23395	1:18 p.m.	3:25 p.m.	10	4.75	5.7	78	10

LOCATION

2	Foundation walls - See location diagram

SPECIFICATIONS

CONCRETE MIX NO: 3000# AE	PSI 3000	SLUMP: -	AIR: -

REMARKS:

FIELD REPRESENTATIVE: David Coffey

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midwest engineering services, inc.
9362 Calumet Avenue • Munster, IN 46321 • 219-836-8109 • FAX 219-836-8189

REPORT OF FIELD INSPECTION OF CONCRETE

CLIENT: Mr. Larry Lyman
Custom Steel Buildings
21686 E. Lincoln Hwy.
Lynwood, Illinois 60411

DATE: July 5, 1996

PROJECT: New Water Treatment Facility
American Chemical Services
Griffith, Indiana

PROJECT NO.: 6-65012-2
Page 1 of 1

TEST DATA

AIR TEMP: 88F

SET NO.	NO. CYLS	SUPPLIER TICKET NO.	TIME TRUCK DISPATCHED	TIME TRUCK UNLOADED	CUBIC YARDS	SLUMP IN.	AIR %	TEMP. CONC.	GAL. WATER ADDED
1	4	23322	1:23 p.m.	2:20 p.m.	10	4.0	6.5	78	10
-	-	23326	1:40 p.m.	3:00 p.m.	10	4.0	-	-	5
-	-	23327	1:53 p.m.	3:30 p.m.	10	4.0	-	-	5

LOCATION

1	Exterior wall footings and pads, Interior column pads
-	Exterior wall footings and pads, Interior column pads
-	Exterior wall footings and pads, Interior column pads

SPECIFICATIONS

CONCRETE MIX NO: 3000# AE	PSI 3000	SLUMP: -	AIR: -

REMARKS:

FIELD REPRESENTATIVE: David Coffey

RECEIVED JUL 1 6 1996

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9362 Calumet Avenue • Munster, IN 46321 • 219-836-8109 • FAX 219-836-8189

REPORT OF FIELD INSPECTION OF CONCRETE

CLIENT: Mr. Larry Lyman
Custom Steel Buildings
21686 E. Lincoln Hwy.
Lynwood, Illinois 60411

DATE: July 5, 1996

PROJECT: New Water Treatment Facility
American Chemical Services
Griffith, Indiana

PROJECT NO.: 6-65012-2
Page 1 of 1

TEST DATA

AIR TEMP: 88F

SET NO.	NO. CYLS	SUPPLIER TICKET NO.	TIME TRUCK DISPATCHED	TIME TRUCK UNLOADED	CUBIC YARDS	SLUMP IN.	AIR %	TEMP. CONC.	GAL. WATER ADDED
1	4	23322	1:23 p.m.	2:20 p.m.	10	4.0	6.5	78	10
-	-	23326	1:40 p.m.	3:00 p.m.	10	4.0	-	-	5
-	-	23327	1:53 p.m.	3:30 p.m.	10	4.0	-	-	5

LOCATION

1	Exterior wall footings and pads, Interior column pads
-	Exterior wall footings and pads, Interior column pads
-	Exterior wall footings and pads, Interior column pads

SPECIFICATIONS

CONCRETE MIX NO: 3000# AE	PSI 3000	SLUMP: -	AIR: -

REMARKS:

FIELD REPRESENTATIVE: David Coffey

TREATMENT
Bldg. —

Concrete
Cylinder
Results

RECEIVED JUL 1 6 1996

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9362 Calumet Avenue • Munster, IN 46321 • 219-836-8109 • FAX 219-836-8189

REPORT OF FIELD INSPECTION OF CONCRETE

CLIENT: Mr. Larry Lyman
Custom Steel Buildings
21686 E. Lincoln Hwy.
Lynwood, Illinois 60411

DATE: July 5, 1996

PROJECT: New Water Treatment Facility
American Chemical Services
Griffith, Indiana

PROJECT NO.: 6-65012-2

TEST DATA

AIR TEMP: 88F

SET NO.	NO. CYLS	SUPPLIER TICKET NO.	TIME TRUCK DISPATCHED	TIME TRUCK UNLOADED	CUBIC YARDS	SLUMP IN.	AIR %	TEMP. CONC.	GAL. WATER ADDED
1	4	23322	1:23 p.m.	2:20 p.m.	10	4.0	6.5	78	10
-	-	23326	1:40 p.m.	3:00 p.m.	10	4.0	-	-	5
-	-	23327	1:53 p.m.	3:30 p.m.	10	4.0	-	-	5

LOCATION

1	Exterior wall footings and pads, Interior column pads
-	Exterior wall footings and pads, Interior column pads
-	Exterior wall footings and pads, Interior column pads

SPECIFICATIONS

CONCRETE MIX NO: 3000# AE	PSI 3000	SLUMP: -	AIR: -

REMARKS:

FIELD REPRESENTATIVE: David Coffey

midwest engineering services, inc.

geotechnical • environmental • materials engineers

9362 Calumet Avenue
Munster, IN 46321
219-836-8109
FAX 219-836-8189

REPORT OF CONCRETE COMPRESSION TEST

CLIENT: Mr. Larry Lyman
Custom Steel Buildings
21686 E. Lincoln Hwy.
Lynwood, Illinois 60411

PROJECT: New Water Treatment Facility
American Chemical Services
Griffith, Indiana

DATE: August 2, 1996

REPORT NO. : 6-65012-2A

FIELD TEST DATA

LOCATION OF POUR:	**Footings: Wall & Interior Column Pads**		
DATE CAST:	**7/5/96**	SLUMP:	4.0 inches
TIME:	2:10 p.m.	AIR CONTENT:	6.5%
BATCH TO PLACE TIME:	57 min	CONC. TEMP.:	78F
AIR TEMPERATURE:	88F	WATER ADDED:	10 gallons
Field Data Submitted By:	M.E.S.	Cylinder Cast By:	M.E.S.
Date Delivered:	7/8/96	Cylinder Delivered By:	M.E.S.

MIX DATA

SUPPLIER:	Smith Ready Mix	MIX NO.:	**3000#AE**
TICKET NO.:	23322	CEMENT :	*
MIX DATA SUBMITTED BY:	Smith Ready Mix	WATER :	*
CONTRACTOR:	*	FINE AGG. :	*
		COARSE AGG. :	*
		ADMIXTURE :	6%AE
		ADMIXTURE :	*

** Data not provided*

COMPRESSION TEST RESULTS

NOMINAL SPECIMEN SIZE: 6 X 12

LAB NO.	SET NO.	TYPE CURING	AGE DAYS	TEST DATE	COMPRESSIVE STRENGTH, psi
1339	1	L	7	7/12/96	2780
1340	1	L	28	8/2/96	3500
1341	1	L	28	8/2/96	3490
1342	1	L	SP		Discarded
SPECIFICATION		L	28		3000

Field Representative: David Coffey

RECEIVED JUL 1 6 1996

midwest engineering services, inc.

9362 Calumet Avenue • Munster, IN 46321 • 219-836-8109 • FAX 219-836-8189

REPORT OF FIELD INSPECTION OF CONCRETE

CLIENT: Mr. Larry Lyman
Custom Steel Buildings
21686 E. Lincoln Hwy.
Lynwood, Illinois 60411

DATE: July 8, 1996

PROJECT: New Water Treatment Facility
American Chemical Services
Griffith, Indiana

PROJECT NO.: 6-65012-3

TEST DATA

AIR TEMP: 85F

SET NO.	NO. CYLS	SUPPLIER TICKET NO.	TIME TRUCK DISPATCHED	TIME TRUCK UNLOADED	CUBIC YARDS	SLUMP IN.	AIR %	TEMP. CONC.	GAL. WATER ADDED
2	4	23395	1:18 p.m.	3:25 p.m.	10	4.75	5.7	78	10

LOCATION

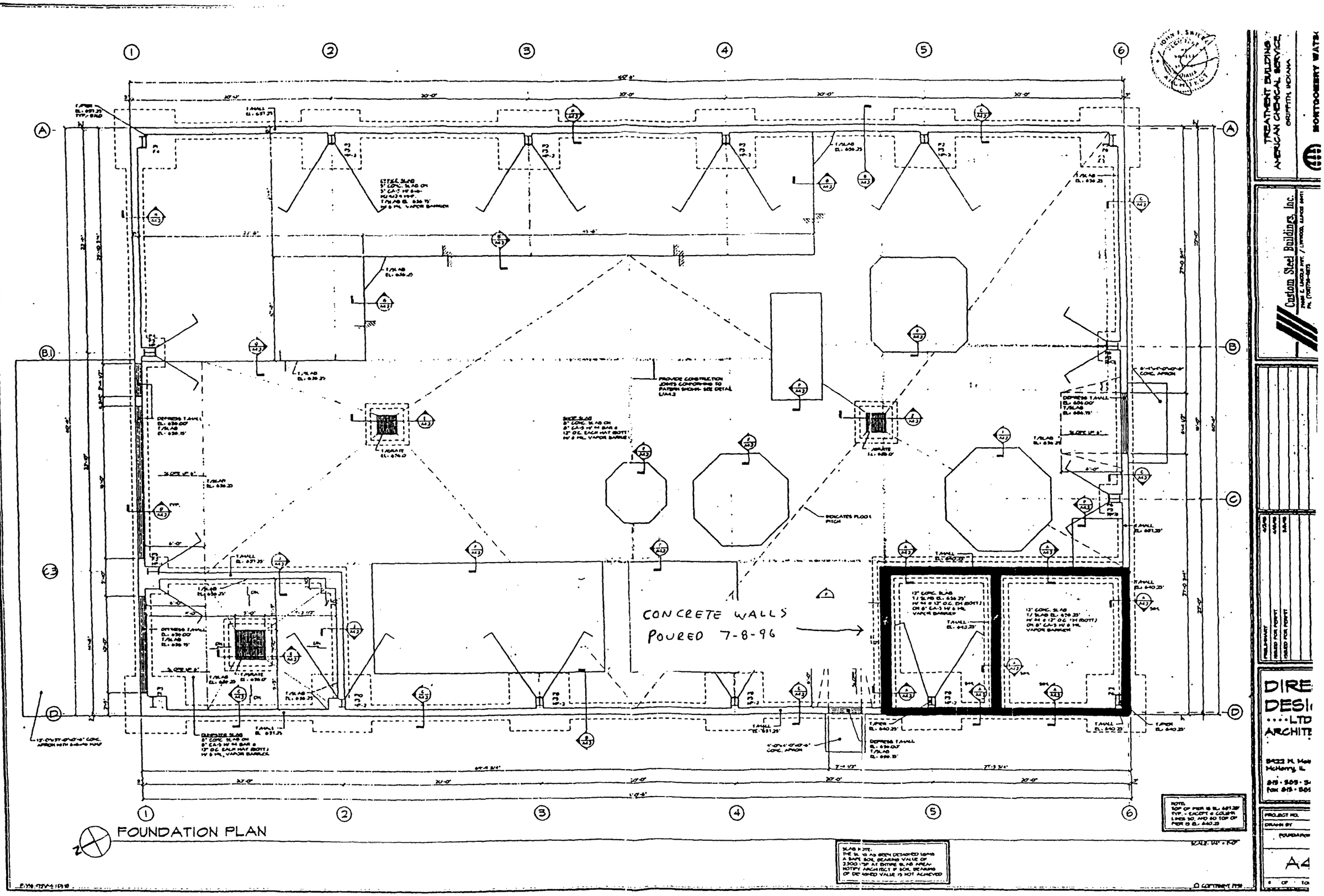
2	Foundation walls - See location diagram

SPECIFICATIONS

CONCRETE MIX NO: 3000# AE	PSI 3000	SLUMP: -	AIR: -

REMARKS:

FIELD REPRESENTATIVE: David Coffey



CONCRETE WALLS
POURED 7-8-96
FOUNDATION PLAN
TREATMENT BUILDING
AMERICAN CHEMICAL SERVICE
GRIFFITH, INDIANA
MONTGOMERY WATS
Custom Steel Buildings, Inc.
DIRE
DESI
LTD
ARCHITE
PROJECT NO.
DRAWN BY
A4

midwest engineering services, inc.

geotechnical • environmental • materials engineers

9362 Calumet Avenue
Munster, IN 46321
219-836-8109
FAX 219-836-8189

REPORT OF CONCRETE COMPRESSION TEST

CLIENT: Mr. Larry Lyman
Custom Steel Buildings
21686 E. Lincoln Hwy.
Lynwood, Illinois 60411

PROJECT: New Water Treatment Facility
American Chemical Services
Griffith, Indiana

DATE: August 5, 1996

REPORT NO. : 6-65012-3A

FIELD TEST DATA

LOCATION OF POUR:	**Foundation walls**		
DATE CAST:	**7/8/96**	SLUMP:	4.75 inches
TIME:	2:45 p.m.	AIR CONTENT:	5.7%
BATCH TO PLACE TIME:	127 min	CONC. TEMP.:	78F
AIR TEMPERATURE:	85F	WATER ADDED:	10 gallons
Field Data Submitted By:	M.E.S.	Cylinder Cast By:	M.E.S.
Date Delivered:	7/9/96	Cylinder Delivered By:	M.E.S.

MIX DATA

SUPPLIER:	Smith Ready Mix	MIX NO.:	**3000#AE**
TICKET NO.:	23395	CEMENT :	*
MIX DATA SUBMITTED BY:	Smith Ready Mix	WATER :	*
CONTRACTOR:	Walker	FINE AGG. :	*
		COARSE AGG. :	*
		ADMIXTURE :	*
		ADMIXTURE :	*

* Data not provided

COMPRESSION TEST RESULTS

NOMINAL SPECIMEN SIZE: 6 X 12

LAB NO.	SET NO.	TYPE CURING	AGE DAYS	TEST DATE	COMPRESSIVE STRENGTH, psi
1347	2	L	7	7/15/96	2510
1348	2	L	28	8/5/96	3280
1349	2	L	28	8/5/96	3410
1350	2	L	SP		Discarded
SPECIFICATION		L	28		3000

Field Representative: David Coffey

RECEIVED JUL 1 6 1996

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REPORT OF FIELD INSPECTION OF CONCRETE

CLIENT: Mr. Larry Lyman
Custom Steel Buildings
21686 E. Lincoln Hwy.
Lynwood, Illinois 60411

DATE: July 10, 1996

PROJECT: New Water Treatment Facility
American Chemical Services
Griffith, Indiana

PROJECT NO.: 6-65012-4

TEST DATA

AIR TEMP: 78F

SET NO.	NO. CYLS	SUPPLIER TICKET NO.	TIME TRUCK DISPATCHED	TIME TRUCK UNLOADED	CUBIC YARDS	SLUMP IN.	AIR %	TEMP. CONC.	GAL. WATER ADDED
3	4	23540	10:26 a.m.	11:25 a.m.	7.5	4.5	5.4	73	6
-	-	23575	1:39 p.m.	3:10 p.m.	8.5	4.0	-	-	0
4	4	23578	1:53 p.m.	3:50 p.m.	8.5	3.5	5.1	76	0
-	-	23580	2:20 p.m.	4:20 p.m.	8.5	3.0/4.0	-	-	8

LOCATION

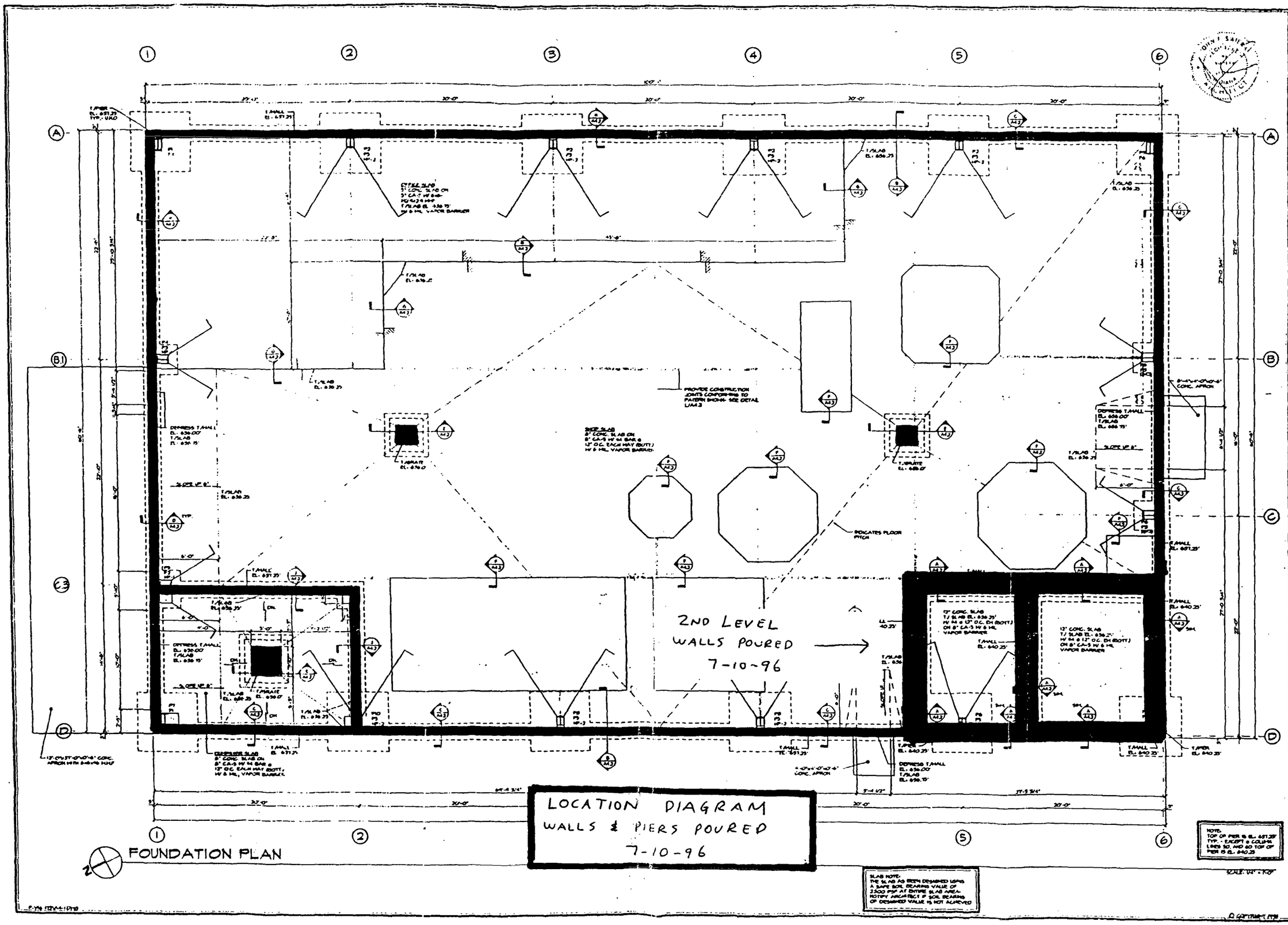
3	2nd level foundation walls & Interior piers - See location diagram
-	Foundation walls - See location diagram
4	Foundation walls - See location diagram
-	Foundation walls - See location diagram

SPECIFICATIONS

CONCRETE MIX NO: 3000# AE	PSI 3000	SLUMP: -	AIR: -

REMARKS:

FIELD REPRESENTATIVE: David Coffey



2ND LEVEL
WALLS POURED
7-10-96
LOCATION DIAGRAM
WALLS & PIERS POURED
7-10-96
FOUNDATION PLAN
TREATMENT BUILDING
AMERICAN CHEMICAL SERVICE, INC.
GRIFFITH, INDIANA
MONTGOMERY WATSON
Salt Lake City, Utah
Custom Steel Buildings, Inc.
DIRECT
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REPORT OF CONCRETE COMPRESSION TEST

CLIENT: Mr. Larry Lyman
Custom Steel Buildings
21686 E. Lincoln Hwy.
Lynwood, Illinois 60411

PROJECT: New Water Treatment Facility
American Chemical Services
Griffith, Indiana

DATE: August 7, 1996

REPORT NO. : 6-65012-4A

FIELD TEST DATA

LOCATION OF POUR:	**Foundation walls (2nd level) & Interior piers**		
DATE CAST:	**7/10/96**	SLUMP:	4.5 inches
TIME:	11:10 a.m.	AIR CONTENT:	5.4%
BATCH TO PLACE TIME:	59 min	CONC. TEMP.:	73F
AIR TEMPERATURE:	78F	WATER ADDED:	6 gallons
Field Data Submitted By:	M.E.S.	Cylinder Cast By:	M.E.S.
Date Delivered:	7/11/96	Cylinder Delivered By:	M.E.S.

MIX DATA

SUPPLIER:	Smith Ready Mix	MIX NO.:	**3000#AE**
TICKET NO.:	23540	CEMENT :	*
MIX DATA SUBMITTED BY:	Smith Ready Mix	WATER :	*
CONTRACTOR:	Walker	FINE AGG. :	*
		COARSE AGG. :	*
		ADMIXTURE :	*
		ADMIXTURE :	*

* Data not provided

COMPRESSION TEST RESULTS

NOMINAL SPECIMEN SIZE: 6 X 12

LAB NO.	SET NO.	TYPE CURING	AGE DAYS	TEST DATE	COMPRESSIVE STRENGTH, psi
1373	3	L	7	7/17/96	3310
1374	3	L	28	8/7/96	3800
1375	3	L	28	8/7/96	4120
1376	3	L	SP		Discarded
SPECIFICATION		L	28		3000

Field Representative: David Coffey

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REPORT OF CONCRETE COMPRESSION TEST

CLIENT: Mr. Larry Lyman
Custom Steel Buildings
21686 E. Lincoln Hwy.
Lynwood, Illinois 60411

PROJECT: New Water Treatment Facility
American Chemical Services
Griffith, Indiana

DATE: August 7, 1996

REPORT NO. : 6-65012-4B

FIELD TEST DATA

LOCATION OF POUR:	**Foundation walls**		
DATE CAST:	**7/10/96**	SLUMP:	3.5 inches
TIME:	3:30 p.m.	AIR CONTENT:	5.1%
BATCH TO PLACE TIME:	117 min	CONC. TEMP.:	76F
AIR TEMPERATURE:	80F	WATER ADDED:	0 gallons
Field Data Submitted By:	M.E.S.	Cylinder Cast By:	M.E.S.
Date Delivered:	7/11/96	Cylinder Delivered By:	M.E.S.

MIX DATA

SUPPLIER:	Smith Ready Mix	MIX NO.:	**3000#AE**
TICKET NO.:	23578	CEMENT :	*
MIX DATA SUBMITTED BY:	Smith Ready Mix	WATER :	*
CONTRACTOR:	Walker	FINE AGG. :	*
		COARSE AGG. :	*
		ADMIXTURE :	*
		ADMIXTURE :	*

* Data not provided

COMPRESSION TEST RESULTS

NOMINAL SPECIMEN SIZE: 6 X 12

LAB NO.	SET NO.	TYPE CURING	AGE DAYS	TEST DATE	COMPRESSIVE STRENGTH, psi
1377	4	L	7	7/17/96	3170
1378	4	L	28	8/7/96	4050
1379	4	L	28	8/7/96	3870
1380	4	L	SP		Discarded
SPECIFICATION		L	28		3000

Field Representative: David Coffey

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REPORT OF CONCRETE COMPRESSION TEST

CLIENT: Mr. Larry Lyman
Custom Steel Buildings
21686 E. Lincoln Hwy.
Lynwood, Illinois 60411

PROJECT: New Water Treatment Facility
American Chemical Services
Griffith, Indiana

DATE: September 23, 1996

REPORT NO. : 6-65012-8A

FIELD TEST DATA

LOCATION OF POUR:	**Interior equipment pads**		
DATE CAST:	**8/26/96**	SLUMP:	4.75 inches
TIME:	10:45 a.m.	AIR CONTENT:	5.25%
BATCH TO PLACE TIME:	*	CONC. TEMP.:	78F
AIR TEMPERATURE:	80F	WATER ADDED:	9 gallons
Field Data Submitted By:	M.E.S.	Cylinder Cast By:	M.E.S.
Date Delivered:	8/27/96	Cylinder Delivered By:	M.E.S.

MIX DATA

SUPPLIER:	Smith Ready Mix	MIX NO.:	**3500#AE**
TICKET NO.:	278088	CEMENT :	*
MIX DATA SUBMITTED BY:	Smith Ready Mix	WATER :	*
CONTRACTOR:	Walker	FINE AGG. :	*
		COARSE AGG. :	*
		ADMIXTURE :	*
		ADMIXTURE :	*

* Data not provided

COMPRESSION TEST RESULTS

NOMINAL SPECIMEN SIZE: 6 X 12

LAB NO.	SET NO.	TYPE CURING	AGE DAYS	TEST DATE	COMPRESSIVE STRENGTH, psi
1888	5	L	8	9/3/96	3510
1889	5	L	28	9/23/96	4170
1890	5	L	28	9/23/96	4200
1891	5	L	SP		Discarded
SPECIFICATION		L	28		3500

Field Representative: David Corralez

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REPORT OF CONCRETE COMPRESSION TEST

CLIENT: Mr. Larry Lyman
Custom Steel Buildings
21686 E. Lincoln Hwy.
Lynwood, Illinois 60411

PROJECT: New Water Treatment Facility
American Chemical Services
Griffith, Indiana

DATE: September 23, 1996

REPORT NO. : 6-65012-9A

FIELD TEST DATA

LOCATION OF POUR:	**Office floor slab**		
DATE CAST:	**8/27/96**	SLUMP:	5.0 inches
TIME:	8:25 a.m.	AIR CONTENT:	4.2%
BATCH TO PLACE TIME:	73 min	CONC. TEMP.:	77F
AIR TEMPERATURE:	79F	WATER ADDED:	0 gallons
Field Data Submitted By:	M.E.S.	Cylinder Cast By:	M.E.S.
Date Delivered:	8/28/96	Cylinder Delivered By:	M.E.S.

MIX DATA

SUPPLIER:	Smith Ready Mix	MIX NO.:	**3500#AE**
TICKET NO.:	*	CEMENT :	*
MIX DATA SUBMITTED BY:	Smith Ready Mix	WATER :	*
CONTRACTOR:	Walker	FINE AGG. :	*
		COARSE AGG. :	*
		ADMIXTURE :	*
		ADMIXTURE :	*

* Data not provided

COMPRESSION TEST RESULTS

NOMINAL SPECIMEN SIZE: 6 X 12

LAB NO.	SET NO.	TYPE CURING	AGE DAYS	TEST DATE	COMPRESSIVE STRENGTH, psi
1922	6	L	7	9/3/96	2590
1923	6	L	28	9/23/96	3590
1924	6	L	28	9/23/96	3600
1925	6	L	SP		Discarded
SPECIFICATION		L	28		3500

Field Representative: David Corralez

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REPORT OF CONCRETE COMPRESSION TEST

CLIENT: Mr. Larry Lyman
Custom Steel Buildings
21686 E. Lincoln Hwy.
Lynwood, Illinois 60411

PROJECT: New Water Treatment Facility
American Chemical Services
Griffith, Indiana

DATE: October 14, 1996

REPORT NO. : 6-65012-10A

FIELD TEST DATA

LOCATION OF POUR:	**Southwest slab**		
DATE CAST:	**9/16/96**	SLUMP:	4.5 inches
TIME:	11:25 a.m.	AIR CONTENT:	-
BATCH TO PLACE TIME:	35 min	CONC. TEMP.:	75F
AIR TEMPERATURE:	77F	WATER ADDED:	5 gallons
Field Data Submitted By:	M.E.S.	Cylinder Cast By:	M.E.S.
Date Delivered:	9/17/96	Cylinder Delivered By:	M.E.S.

MIX DATA

SUPPLIER:	Smith Ready Mix	MIX NO.:	**4000# Limestone**
TICKET NO.:	280918	CEMENT :	*
MIX DATA SUBMITTED BY:	Smith Ready Mix	WATER :	*
CONTRACTOR:	Walker	FINE AGG. :	*
		COARSE AGG. :	*
		ADMIXTURE :	*
		ADMIXTURE :	*

* Data not provided

COMPRESSION TEST RESULTS

NOMINAL SPECIMEN SIZE: 6 X 12

LAB NO.	SET NO.	TYPE CURING	AGE DAYS	TEST DATE	COMPRESSIVE STRENGTH, psi
2173	7	L	7	9/23/96	2970
2174	7	L	28	10/14/96	4310
2175	7	L	28	10/14/96	4290
2176	7	L	SP		Discarded
SPECIFICATION		L	28		3500

Field Representative: David Corralez

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REPORT OF CONCRETE COMPRESSION TEST

CLIENT: Mr. Larry Lyman
Custom Steel Buildings
21686 E. Lincoln Hwy.
Lynwood, Illinois 60411

PROJECT: New Water Treatment Facility
American Chemical Services
Griffith, Indiana

DATE: October 14, 1996

REPORT NO. : 6-65012-10B

FIELD TEST DATA

LOCATION OF POUR:	**Southeast slab (interior) to middle southwest**		
DATE CAST:	**9/16/96**	SLUMP:	4.25 inches
TIME:	12:40 p.m.	AIR CONTENT:	-
BATCH TO PLACE TIME:	44 min	CONC. TEMP.:	74F
AIR TEMPERATURE:	76F	WATER ADDED:	5 gallons
Field Data Submitted By:	M.E.S.	Cylinder Cast By:	M.E.S.
Date Delivered:	9/17/96	Cylinder Delivered By:	M.E.S.

MIX DATA

SUPPLIER:	Smith Ready Mix	MIX NO.:	**4000# Limestone**
TICKET NO.:	280937	CEMENT :	*
MIX DATA SUBMITTED BY:	Smith Ready Mix	WATER :	*
CONTRACTOR:	Walker	FINE AGG. :	*
		COARSE AGG. :	*
		ADMIXTURE :	*
		ADMIXTURE :	*

* Data not provided

COMPRESSION TEST RESULTS

NOMINAL SPECIMEN SIZE: 6 X 12

LAB NO.	SET NO.	TYPE CURING	AGE DAYS	TEST DATE	COMPRESSIVE STRENGTH, psi
2177	8	L	7	9/23/96	3160
2178	8	L	28	10/14/96	4410
2179	8	L	28	10/14/96	4540
2180	8	L	SP		Discarded
SPECIFICATION		L	28		3500

Field Representative: David Corralez

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REPORT OF CONCRETE COMPRESSION TEST

CLIENT: Mr. Larry Lyman
Custom Steel Buildings
21686 E. Lincoln Hwy.
Lynwood, Illinois 60411

PROJECT: New Water Treatment Facility
American Chemical Services
Griffith, Indiana

DATE: October 14, 1996

REPORT NO. : 6-65012-10C

FIELD TEST DATA

LOCATION OF POUR:	**East to middle slab (interior)**		
DATE CAST:	**9/16/96**	SLUMP:	4 inches
TIME:	1:56 p.m.	AIR CONTENT:	-
BATCH TO PLACE TIME:	30 min	CONC. TEMP.:	74F
AIR TEMPERATURE:	77F	WATER ADDED:	5 gallons
Field Data Submitted By:	M.E.S.	Cylinder Cast By:	M.E.S.
Date Delivered:	9/17/96	Cylinder Delivered By:	M.E.S.

MIX DATA

SUPPLIER:	Smith Ready Mix	MIX NO.:	**4000# Limestone**
TICKET NO.:	280972	CEMENT :	*
MIX DATA SUBMITTED BY:	Smith Ready Mix	WATER :	*
CONTRACTOR:	Walker	FINE AGG. :	*
		COARSE AGG. :	*
		ADMIXTURE :	*
		ADMIXTURE :	*

* Data not provided

COMPRESSION TEST RESULTS

NOMINAL SPECIMEN SIZE: 6 X 12

LAB NO.	SET NO.	TYPE CURING	AGE DAYS	TEST DATE	COMPRESSIVE STRENGTH, psi
2181	9	L	7	9/23/96	3100
2182	9	L	28	10/14/96	4450
2183	9	L	28	10/14/96	4590
2184	9	L	SP		Discarded
SPECIFICATION		L	28		3500

Field Representative: David Corralez

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REPORT OF CONCRETE COMPRESSION TEST

CLIENT: Mr. Larry Lyman
Custom Steel Buildings
21686 E. Lincoln Hwy.
Lynwood, Illinois 60411

PROJECT: New Water Treatment Facility
American Chemical Services
Griffith, Indiana

DATE: October 14, 1996

REPORT NO. : 6-65012-10D

FIELD TEST DATA

LOCATION OF POUR:	**Northwest slab (interior)**		
DATE CAST:	**9/16/96**	SLUMP:	3.25 inches
TIME:	3:00 p.m.	AIR CONTENT:	-
BATCH TO PLACE TIME:	32 min	CONC. TEMP.:	75F
AIR TEMPERATURE:	77F	WATER ADDED:	5 gallons
Field Data Submitted By:	M.E.S.	Cylinder Cast By:	M.E.S.
Date Delivered:	9/17/96	Cylinder Delivered By:	M.E.S.

MIX DATA

SUPPLIER:	Smith Ready Mix	MIX NO.:	**4000# Limestone**
TICKET NO.:	280998	CEMENT :	*
MIX DATA SUBMITTED BY:	Smith Ready Mix	WATER :	*
CONTRACTOR:	Walker	FINE AGG. :	*
		COARSE AGG. :	*
		ADMIXTURE :	*
		ADMIXTURE :	*

* Data not provided

COMPRESSION TEST RESULTS

NOMINAL SPECIMEN SIZE: 6 X 12

LAB NO.	SET NO.	TYPE CURING	AGE DAYS	TEST DATE	COMPRESSIVE STRENGTH, psi
2185	10	L	7	9/23/96	3280
2186	10	L	28	10/14/96	5060
2187	10	L	28	10/14/96	4950
2188	10	L	SP		Discarded
SPECIFICATION		L	28		3500

Field Representative: David Corralez

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REPORT OF FIELD INSPECTION OF CONCRETE

CLIENT: Mr. Larry Lyman
Custom Steel Buildings
21686 E. Lincoln Hwy.
Lynwood, Illinois 60411

DATE: December 10, 1996

PROJECT: New Water Treatment Facility
American Chemical Services
Griffith, Indiana

PROJECT NO.: 6-65012-11

TEST DATA

AIR TEMP: 53F

SET NO.	NO. CYLS	SUPPLIER TICKET NO.	TIME TRUCK DISPATCHED	TIME TRUCK UNLOADED	CUBIC YARDS	SLUMP IN.	AIR %	TEMP. CONC.	GAL. WATER ADDED
11	4	291484	1:11 p.m.	2:38 p.m.	11	3.5	-	71	0

LOCATION

11	North truck dock slab & west door entry slab

SPECIFICATIONS

CONCRETE MIX NO: 4000# Limestone	PSI 4000	SLUMP: 5 inches	AIR: -

REMARKS:

FIELD REPRESENTATIVE: David Corralez

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REPORT OF CONCRETE COMPRESSION TEST

CLIENT: Mr. Larry Lyman
Custom Steel Buildings
21686 E. Lincoln Hwy.
Lynwood, Illinois 60411

PROJECT: New Water Treatment Facility
American Chemical Services
Griffith, Indiana

DATE: January 7, 1997

REPORT NO. : 6-65012-11A

FIELD TEST DATA

LOCATION OF POUR:	**Truck slab, north bay door & west side footing by door**		
DATE CAST:	**12/10/96**	SLUMP:	3.5 inches
TIME:	2:25 p.m.	AIR CONTENT:	-
BATCH TO PLACE TIME:	44 min	CONC. TEMP.:	71F
AIR TEMPERATURE:	53F	WATER ADDED:	0 gallons
Field Data Submitted By:	M.E.S.	Cylinder Cast By:	M.E.S.
Date Delivered:	10/11/96	Cylinder Delivered By:	M.E.S.

MIX DATA

SUPPLIER:	Smith Ready Mix	MIX NO.:	**6 Bag**
TICKET NO.:	291484	CEMENT :	*
MIX DATA SUBMITTED BY:	Smith Ready Mix	WATER :	*
CONTRACTOR:	Walker	FINE AGG. :	*
		COARSE AGG. :	*
		ADMIXTURE :	*
		ADMIXTURE :	*

* Data not provided

COMPRESSION TEST RESULTS

NOMINAL SPECIMEN SIZE: 6 X 12

LAB NO.	SET NO.	TYPE CURING	AGE DAYS	TEST DATE	COMPRESSIVE STRENGTH, psi
3221	11	L	7	12/17/96	4060
3222	11	L	28	1/7/97	5490
3223	11	L	28	1/7/97	5500
3224	11	L	SP		Discarded
SPECIFICATION		L	28		4000

Field Representative: David Corralez

PGCS &

BWES

QA/QC

SHEETS

F8

HORIZONTAL TECHNOLOGIES, INC.
4767 PINE ISLAND ROAD, NW
MATLACHA, FLORIDA 33993

QA/QC FOR EXTRACTION TRENCHES AT AMERICAN CHEMICAL SERVICES - NPL SITE - GRIFFITH, INDIANA

DATE: 1/2/94

TRENCH NO PACS-1

TOTAL LENGTH: 300 LF

TOTAL HDPE PIPE USED —

SUMP ELEVATION: 620.75 INV ELE: 621.75

QUANTITY OF PACK MATERIAL INSTALLED 135 CY

TOP OF CLAY ELEVATION 620.5 TO 621.2

NOTES: Level "C" PPE / Extremely muddy / Slow
Will complete run tomorrow
on mattes. Grade maintained w/level

REPORT BY: Johnny [signature]

23
ACS
F8
005
JMF

HORIZONTAL TECHNOLOGIES, INC.
4767 PINE ISLAND ROAD, NW
MATLACHA, FLORIDA 33993

QA/QC FOR EXTRACTION TRENCHES AT AMERICAN CHEMICAL SERVICES - NPL SITE - GRIFFITH, INDIANA

DATE: 1-4-97

TRENCH NO. ACS-1

TOTAL LENGTH: 160 LF (460 LF)

TOTAL HDPE PIPE USED: 451'

SUMP ELEVATION: SEE 1-2-97 INV. ELE: 621.75

QUANTITY OF PACK MATERIAL INSTALLED: 68 CY

TOP OF CLAY ELEVATION: 621.0 +/-

NOTES:
ON MATES / MUDDY
GRADE MAINTAINED W/ LEVEL

REPORT BY: [signature]

HORIZONTAL TECHNOLOGIES, INC.
4767 PINE ISLAND ROAD, NW
MATLACHA, FLORIDA 33993

QA/QC FOR EXTRACTION TRENCHES AT AMERICAN CHEMICAL SERVICES - NPL SITE - GRIFFITH, INDIANA

DATE: 1-15-97

TRENCH NO. ACS - 2

TOTAL LENGTH: 460 LF

TOTAL HDPE PIPE USED: 458'

SUMP ELEVATION: 620.75 INV ELE: 621.75

QUANTITY OF PACK MATERIAL INSTALLED: 204 CY

TOP OF CLAY ELEVATION 619.5 +/-

NOTES: ON MATES / SLOW / GRADE MAINTAINED W/ LEVEL

PIPE LEVEL "B" & "C"

REPORT BY:

HORIZONTAL TECHNOLOGIES, INC.
4767 PINE ISLAND ROAD, NW
MATLACHA, FLORIDA 33993

QA/QC FOR EXTRACTION TRENCHES AT AMERICAN CHEMICAL SERVICES - NPL SITE - GRIFFITH, INDIANA

DATE: 1-8-97

TRENCH NO. PGCS-3

TOTAL LENGTH: 365'

TOTAL HDPE PIPE USED: 359'

SUMP ELEVATION: 620.75 INV. ELE: 621.75

QUANTITY OF PACK MATERIAL INSTALLED: 132 CY

TOP OF CLAY ELEVATION: 620.4 +/-

NOTES: ON MATTES / GRADE MAINTAIND W/ LEVEL
PPE LEVEL "B" & "C"

REPORT BY: [signature]

HORIZONTAL TECHNOLOGIES, INC.
4767 PINE ISLAND ROAD, NW
MATLACHA, FLORIDA 33993

QA/QC FOR EXTRACTION TRENCHES AT AMERICAN CHEMICAL SERVICES - NPL SITE - GRIFFITH, INDIANA

DATE 3-26-97

TRENCH NO EW-10

TOTAL LENGTH 100'

TOTAL HDPE PIPE USED 96'

SUMP ELEVATION 617.72 INV ELE 618.39

QUANTITY OF PACK MATERIAL INSTALLED 115 CY

TOP OF CLAY ELEVATION 617.6 TO 618.7

NOTES:
MOVE 6006 ACCESS TRACKS
RESET HOPPER - PRE-TRENCH RUBBLE
GRADE MAINTAINED W/LEVEL
PPE MOD "D" & "C"

REPORT BY [signature]

HORIZONTAL TECHNOLOGIES, INC.
4767 PINE ISLAND ROAD, NW
MATLACHA, FLORIDA 33993

QA/QC FOR EXTRACTION TRENCHES AT AMERICAN CHEMICAL SERVICES - NPL SITE - GRIFFITH, INDIANA

DATE: 2-9-97

TRENCH NO. EW-11

TOTAL LENGTH: 100'

TOTAL HDPE PIPE USED: 96'

SUMP ELEVATION: 619.97 INV. ELE: 620.34

QUANTITY OF PACK MATERIAL INSTALLED: 95 CY

TOP OF CLAY ELEVATION: 619.0 TO 621.0

NOTES:
GRADE CHECK W/ LEVEL
LEVEL "B" AND "C"

REPORT BY: Johnny Ward

HORIZONTAL TECHNOLOGIES, INC.
4767 PINE ISLAND ROAD, NW
MATLACHA, FLORIDA 33993

QA/QC FOR EXTRACTION TRENCHES AT AMERICAN CHEMICAL SERVICES - NPL SITE - GRIFFITH, INDIANA

DATE: 3-23-97

TRENCH NO. EW-12

TOTAL LENGTH: 100'

TOTAL HDPE PIPE USED: 97'

SUMP ELEVATION: 619.72 INV ELE: 620.39

QUANTITY OF PACK MATERIAL INSTALLED: 100 CY

TOP OF CLAY ELEVATION 620.1 TO 620.4

NOTES:
LEVEL "C" PPE
~~NO MWCI ON-SITE~~
~~ON-MATTES~~
GRADE MAINTAINED W/LEVEL

REPORT BY: [signature]

HORIZONTAL TECHNOLOGIES, INC.
4767 PINE ISLAND ROAD, NW
MATLACHA, FLORIDA 33993

QA/QC FOR EXTRACTION TRENCHES AT AMERICAN CHEMICAL SERVICES - NPL SITE - GRIFFITH, INDIANA

DATE: 3-21-97

TRENCH NO. EW-13

TOTAL LENGTH: 100'

TOTAL HDPE PIPE USED: 96'

SUMP ELEVATION: 620.46 INV. ELE: 621.13

QUANTITY OF PACK MATERIAL INSTALLED: 130 CY

TOP OF CLAY ELEVATION: 620.9 +/-

NOTES:
Completed 3-22
Level "C" and "B"
Todd Lewis on-site
Grade maintained w/level

REPORT BY: [signature]

HORIZONTAL TECHNOLOGIES, INC.
4767 PINE ISLAND ROAD, NW
MATLACHA, FLORIDA 33993

QA/QC FOR EXTRACTION TRENCHES AT AMERICAN CHEMICAL SERVICES - NPL SITE - GRIFFITH, INDIANA

DATE: 3-25-97

TRENCH NO: EW-15

TOTAL LENGTH: 100'

TOTAL HDPE PIPE USED: 95'

SUMP ELEVATION: 620.81 INV ELE: 621.48

QUANTITY OF PACK MATERIAL INSTALLED: 95 CY

TOP OF CLAY ELEVATION: 621.5

NOTES:
IN BENCH
GRADE MAINTAINED W/LEVEL
LEVEL "B" & "C"

REPORT BY: [signature]

HORIZONTAL TECHNOLOGIES, INC.
4767 PINE ISLAND ROAD, NW
MATLACHA, FLORIDA 33993

QA/QC FOR EXTRACTION TRENCHES AT AMERICAN CHEMICAL SERVICES - NPL SITE - GRIFFITH, INDIANA

DATE: 3-24-97

TRENCH NO. EW-16

TOTAL LENGTH: 75'

TOTAL HDPE PIPE USED: —

SUMP ELEVATION: 619.86 INV. ELE: 620.53

QUANTITY OF PACK MATERIAL INSTALLED: 80 CY

TOP OF CLAY ELEVATION: 619.9 TO 620.2

NOTES:
RAINED OUT
~~GRADE MAINTAINED W/LEVEL~~
PPE LEVEL "B" & "C"

REPORT BY:

HORIZONTAL TECHNOLOGIES, INC.
4767 PINE ISLAND ROAD, NW
MATLACHA, FLORIDA 33993

QA/QC FOR EXTRACTION TRENCHES AT AMERICAN CHEMICAL SERVICES - NPL SITE - GRIFFITH, INDIANA

DATE: 3-25-97

TRENCH NO EW-16

TOTAL LENGTH: 25' FINISH

TOTAL HDPE PIPE USED 96'

SUMP ELEVATION: 619.86 INV ELE 620.53

QUANTITY OF PACK MATERIAL INSTALLED 30 CY

TOP OF CLAY ELEVATION 619.9 TO 620.2

NOTES: GRADE CHECKED
PPE LEVEL "B" & "C"

REPORT BY: [illegible]

HORIZONTAL TECHNOLOGIES, INC.
4767 PINE ISLAND ROAD, NW
MATLACHA, FLORIDA 33993

QA/QC FOR EXTRACTION TRENCHES AT AMERICAN CHEMICAL SERVICES - NPL SITE - GRIFFITH, INDIANA

DATE: 3-27-97

TRENCH NO. EW-17

TOTAL LENGTH: 100'

TOTAL HDPE PIPE USED: 95'

SUMP ELEVATION: 617.33 INV. ELE: 618.0

QUANTITY OF PACK MATERIAL INSTALLED: 110 CY

TOP OF CLAY ELEVATION: 617.9 TO 618.2

NOTES:
GRADE MAINTAINED W/LEVEL
PPE LEVEL "C"

REPORT BY: [signature]

HORIZONTAL TECHNOLOGIES, INC.
4767 PINE ISLAND ROAD, NW
MATLACHA, FLORIDA 33993

QA/QC FOR EXTRACTION TRENCHES AT AMERICAN CHEMICAL SERVICES - NPL SITE - GRIFFITH, INDIANA

DATE: 3-27-97

TRENCH NO. EW-18

TOTAL LENGTH: 100'

TOTAL HDPE PIPE USED 97'

SUMP ELEVATION: 618.38 INV ELE: 619.05

QUANTITY OF PACK MATERIAL INSTALLED: 110 CY

TOP OF CLAY ELEVATION 619.0 TO 620.0'

NOTES: RELOCATED TO N. END OF JOB
~~GRADE MAINTAINED~~ W/LEVEL
DUE LEVEL "C"

REPORT BY: [signature]

APPENDIX C

BARRIER WALL QA/QC

The barrier wall QA/QC Tests are included in the Foster Wheeler Construction Report.

APPENDIX D

CONSTRUCTION MODIFICATIONS

Document # FM-1

FIELD MODIFICATION

Modification No. 1

Project No. 23

Project American Chemical Services

DESCRIPTION OF MODIFICATION: The elevation of the treatment building and surrounding land surface has been raised one foot.

ORIGIN OF MODIFICATION: Excessive rainfall at the site resulted in the water table rising above expected and/or foreseeable levels preventing installation of the treatment building foundations. In order to avoid delays in constructing the treatment building, the elevation of the treatment building and surrounding land area was raised one foot.

ATTACHMENTS: Work Order #15

PREPARED BY: Ben McCleachy 9/18/96

APPROVED BY: R Schlicher 9/30/96

COPY TO: J. Adams
P. Vagt
T. Lewis
R. Schlicher (for approval) ✓
L. Orosz
J. Willich

Document # FM-2

FIELD MODIFICATION

Modification No. 2

Project No. 23

Project American Chemical Services

DESCRIPTION OF MODIFICATION: The hairpin anchors, used to connect the treatment building stem walls to the treatment building floor slab, were not cast into the building piers. The hairpin anchors were inserted sleeves in the building piers. The anchors were field bent "cold". The hooked ends of the anchors were made from precast hooked bars that were tied onto the ends of the anchors.

ORIGIN OF MODIFICATION: Modification made at the Contractors request to facilitate concrete forming/pouring.

ATTACHMENTS: August 8, 1996 Letter from Direct Design to Custom Steel Buildings,
August 19, 1996 calculations on splices

PREPARED BY: Ben McCready 9/18/96

APPROVED BY: R Schlicher 9/30/96

COPY TO: J. Adams
P. Vagt
T. Lewis
R. Schlicher (for approval)
L. Orosz
J. Willich

August 8, 1996

DIRECT DESIGN LTD.
ARCHITECTS

Mr. Larry Lyman
Custom Steel Buildings, Inc.
21686 E. Lincoln Highway
Lynwood, Illinois 60411

Re: A.C.S.
Griffith, IN
DDL #96-173

Dear Larry,

The following information is in response to your 8/2/96 fax, attached for your reference, regarding the hairpin anchor sleeves.

1. The hairpin anchor sleeves were deleted from the building design and are reflected in our conference call documentation of 6/21/96. The phone report was faxed to Larry Lyman, Mike Foster, Ron Schlicher and Todd Lewis.
2. The anchor sleeves have been installed and will require the hairpins to be field bent.
3. Attached are the A.C.I. recommendations for the bending of the hairpins. I have bubbled the requirements for the diameter of the bend and the bending process. The diameter and process, per A.C.I., must be adhered to and shall be sufficient to properly carry the loading for which the hairpins have been designed.

Please contact me if you have any questions.

Sincerely,

John F. Swierk, A.I.A.
President

enclosure

8922 W. Main Street
McHenry, IL 60050

815 · 385 · 8430

CODE

7.2.3 – Inside diameter of bend in welded wire fabric (plain or deformed) for stirrups and ties shall not be less than $4d_b$ for deformed wire larger than D6 and $2d_b$ for all other wires. Bends with inside diameter of less than $8d_b$ shall not be less than $4d_b$ from nearest welded intersection.

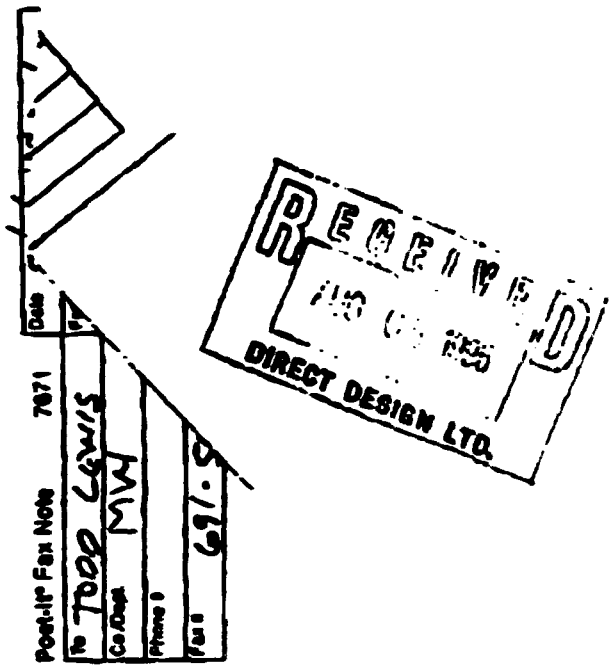
Table 7.2 — MINIMUM DIAMETERS OF BEND

Bar size	Minimum diameter
#3 through #8	$6d_b$
#9, #10, and #11	$8d_b$
#14 and #18	$10d_b$

7.3 – Bending

7.3.1 – All reinforcement shall be bent cold, unless otherwise permitted by the Engineer.

7.3.2 – Reinforcement partially embedded in concrete shall not be field bent, except as shown on the design drawings or permitted by the Engineer.



7.4 – Surface conditions of reinforcement

7.4.1 – At time concrete is placed, metal reinforcement shall be free from mud, oil, or other nonmetallic coatings that decrease bond. Epoxy coatings of bars in accord with standards in this code are permitted.

7.4.2 – Metal reinforcement, except prestressing

COMMENTARY

R7.2.3 – Welded wire fabric, of smooth or deforme wire, can be used for stirrups and ties. The wire at welde intersections does not have the same uniform duct bendability as in areas which were not heated. effects of the welding temperature are usually dissipat in a distance of approximately four wire diameters. Mi imum bend diameters permitted are in most cases the sa as those required in the ASTM bend tests for wire m terial.

R7.3 – Bending

R7.3.1 – The Engineer may be the design engineer architect or the engineer or architect employed by owner to perform inspection. For unusual bends w inside diameters less than ASTM bend test requiremen special fabrication may be required.

R7.3.2 – Construction conditions may make it necess to bend bars that have been embedded in concrete. S field bending should not be done without authorizatio the Engineer. The Engineer must determine whether bars should be bent cold or if heating should be us Bends should be gradual and must be straightened required.

Tests[7.2,7.3] have shown that A 615 Grade 40 and G 60 reinforcing bars can be cold bent and straightene to 90 degrees at or near the minimum diameter speci in 7.2. If cracking or breakage is encountered, heatin a maximum temperature of 1500 F should be benef for avoiding this condition for the remainder of the Bars that fracture during bending or straightening ca spliced outside the bend region.

Heating must be performed in a manner that will a damage to the concrete. If the bend area is withi proximately 6 in. of the concrete, some protective lation may need to be applied. Heating of the bar s be controlled by temperature-indicating crayons or suitable means. The heated bars should not be artifi cooled (with water or forced air) until after cooling least 600 F.

R7.4 – Surface conditions of reinforcemen

Specific limits on rust are based on tests,[7.4] plus a re of earlier tests and recommendations. Reference 7.4 vides guidance with regard to the effects of r d scale on bond characteristics of deformed fo bars. Research has shown that a normal amount of increases bond. Normal rough handling generally which is loose enough to injure the

Custom Steel Buildings, Inc.

21686 E. LINCOLN HIGHWAY / LYNWOOD, ILLINOIS 60411 / PH. 708-758-0875
FAX 708-758-0881

FAX TRANSMITTAL LETTER

Date: 8-19-96

SENT TO FAX # 219-924-1485

COMPANY: MKI

ATTENTION: BEN McGEACHEY

FROM: LARRY CYMAN

RE: ACS, GRIFFITH, IN

NUMBER OF PAGES TRANSMITTED INCLUDING COVER PAGE: 2

Please contact (708) 758-0875 if all pages are not received or if copies are not legible. OUR FAX NUMBER IS: (708) 758-0881.

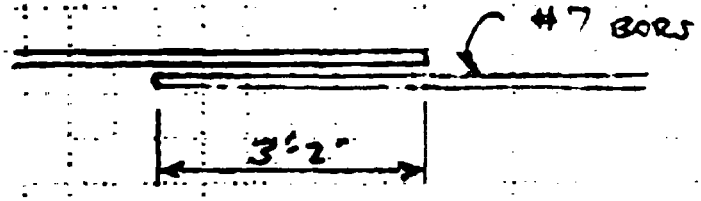
MESSAGE: LAP PROCEDURE FOR ATTACHMENT OF HOOKS TO HAIRPINS FOR YOUR USE

CC: TODD L., HARS V., GREG W.

NEEDHAM & ASSOCIATES – CONSULTING ENGINEERS
301 Airport North Office Park
Fort Wayne, Indiana 46825

Project Name: American Chemical Proj. No.: By: Checked:
Client Name: Direct Design Date: Aug. 19, 1996 Sheet:
Subject: Splices for Hook Bars.

Tension Laps ACI 318-89 Section 12.2

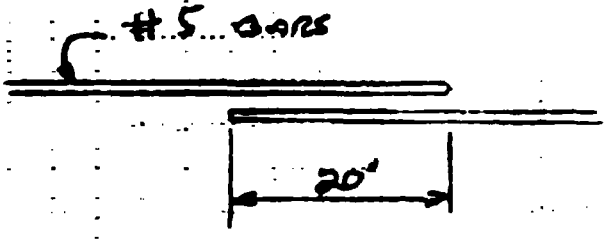


3000# concrete

$l_{db} = 0.04(0.6)(60000)/\sqrt{3000} = 26.3"$

$l_d = 1.4(26.2) = 36.8$

Say 38"



$l_{db} = 0.04(0.31)(60000)/\sqrt{3000} = 13.5$

$l_d = 13.5(1.4) = 18.9$

Say 20"

Tension Splices

FAX to John @ 815-395-3445
708-758-0881

Document # FM-3

FIELD MODIFICATION

Modification No. 3

Project No. 23

Project American Chemical Services

DESCRIPTION OF MODIFICATION: The "fin type" waterstops were not cast into the building stem walls or equipment pads. An alternate "adhesive" style water stop was placed, in the necessary locations, prior to pouring the building floor slab.

ORIGIN OF MODIFICATION: Modification made at the Contractors request to facilitate concrete forming/pouring.

ATTACHMENTS: August 16, 1996 memorandum from MWCI to Direct Design,
Water stop product information

PREPARED BY: Ben McGeachy 9/18/96

APPROVED BY: [illegible] 9/30/96

COPY TO: J. Adams
P. Vagt
T. Lewis
R. Schlicher (for approval)
L. Orosz
J. Willich

MEMORANDUM

MONTGOMERY WATSON

2100 Corporate Drive
Addison, IL 60101
Tel: (708)691-5000
Fax: (708)691-5133

To: Larry Lyman / CSB **Date:** 8/16/96

From: Todd Lewis

Subject: ACS Building-Waterstops

MWCI has reviewed the information submitted by CSB regarding the substitution of the approved waterstop originally designed (fin type) with an alternate waterstop. We will allow the installation of the alternate waterstop (Akwastop) based on CSB's recommendation and assurance that the system will function as intended. The performance of the waterstop is CSB responsibility, MWCI will not be responsible for the performance or failure of the system. Acceptance of is change contingent upon CSB installing all of the waterstops with 4 inches of concrete on either side of the waterstop. Please insure that all field personal are aware of this change and the design documents are updated.

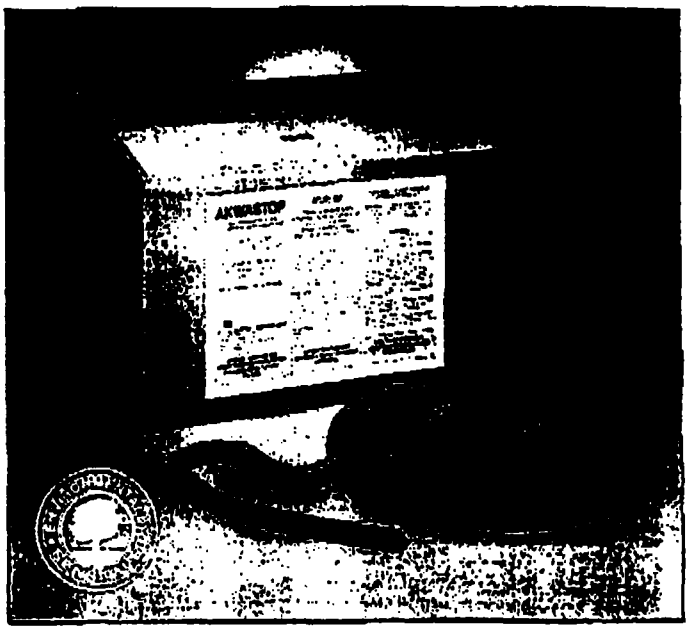
cc: Ron Schlicher- MWA \ SLC
Joe Willich -MWCI
Ben McGeachy -MWCI
Lee Orosz- MWCI

TAL
J:\4077\T_LEWIS\SUB\CUSTOM\WATERSTP.DOC

AKWASTOP®

AKWASTOP®- Gasket Waterstop

AKWASTOP is a chemical resistant hydrophilic vinylester waterstop designed to provide an active seal in concrete construction joints. AKWASTOP is a soft, flexible yet durable strip that reacts with water in a controlled manner to provide a tight seal against water intrusion under hydrostatic pressure. Liquid molecules are held in a vinylester polymer matrix by electrochemical bonds causing swelling to create a gasket seal without creating a wicking effect. AKWASTOP is resistant to water that is contaminated with solvents and hydrocarbons such as; gasoline, kerosene, diesel fuel and heating oil.



Use

As a waterstop in concrete construction where two concrete surfaces abut or where concrete abuts another surface such as plastic pipe, steel anchors, masonry or rock. Typical applications include precast concrete, below grade foundations, water and sewage treatment tanks, manholes, tunnels, dams and reservoirs.

- Environmentally Sensitive
- Simple to Install - No Split Forming
- Chemically Resistant
- Ideal for Precast Construction
- Active Swelling Waterstop
- Universal Product for all Applications

Application

AKWASTOP can be adhered to the substrate with WB Adhesive. Roller or brush apply the WB Adhesive a minimum of 10 mils thick. Firmly press the entire length of AKWASTOP onto the adhesive. Hold firmly in place for 15 seconds. AKWASTOP may be applied to damp surfaces but not in standing water. Tightly butt coil ends together to form a continuous waterstop. Do not overlap coil ends. Where required, cut coils with a sharp knife or utility blade. Place in maximum practical lengths to minimize butt joints. Alternately, AKWASTOP may be fastened to the substrate using powder activated fasteners, masonry or concrete nails. Fasteners should be placed at a maximum spacing of 10 inches. In all cases, AKWASTOP must follow the contour of the substrate, additional fasteners may be required to contour irregular surfaces.

Packaging

AKWASTOP comes in convenient 33' rolls, six rolls per carton.

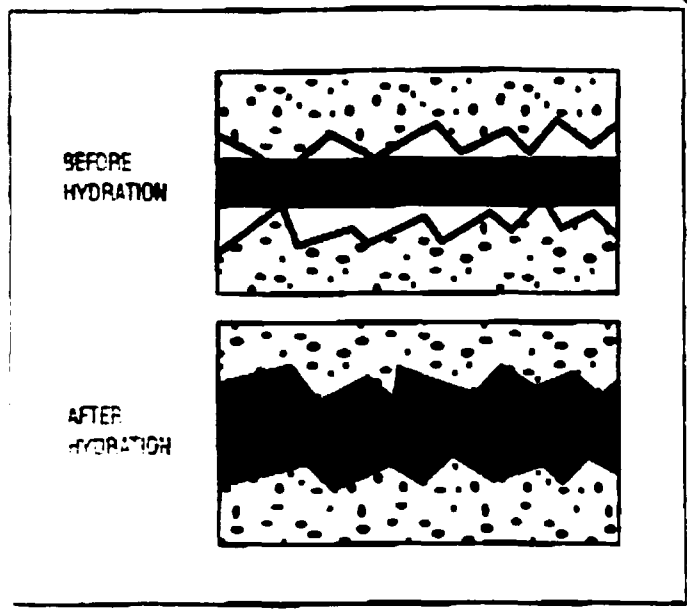
Post-it® Fax Note 7671	Date 8-13-96	# of pages ▶ 8
To Larry	From Leo Olshansky	
Co./Dept.	Co. CETCO	
Phone #	Phone # 847-392-5800	
Fax # 708 758 0881	Fax # 847-506-6195	

AKWASTOP

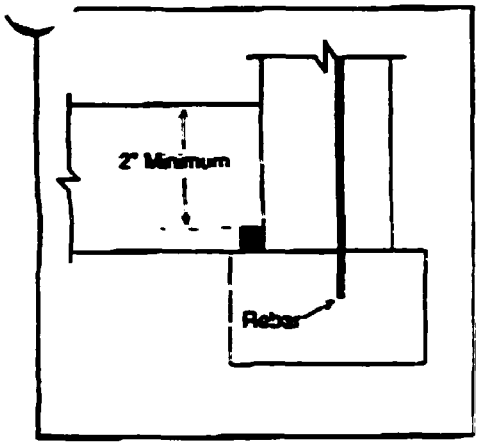
Applications

- Precast concrete joints
- Secondary chemical containment
- Water and sewage treatment tanks
- Manholes and sewage tunnels
- Cast in place concrete joints

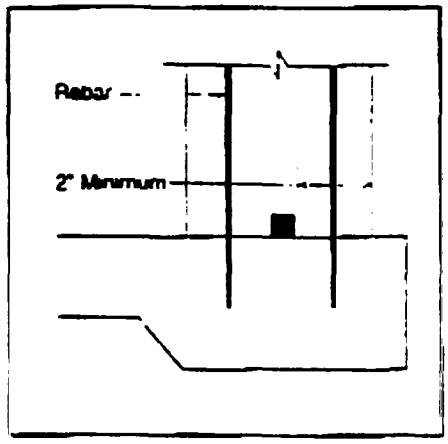
AKWASTOP is not an expansion joint material and should be utilized with a complete waterproofing system such as that manufactured by CETCO. Consult manufacturer for precise installation instructions for your particular application.



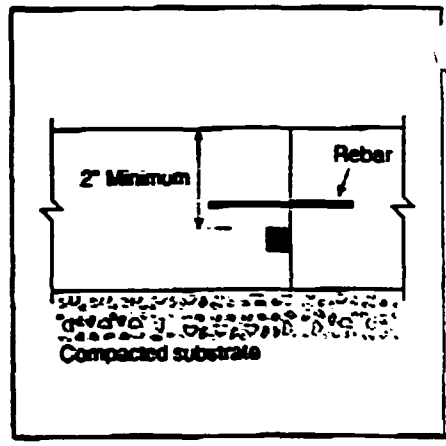
Footing Details



Vertical Wall Detail



Horizontal Slab Detail



Experience

Established in 1991, CETCO (Colloid Environmental Technologies Company) provides a wide range of specialty products and environmental technologies for the construction, wastewater treatment, groundwater and lining industries. As a wholly owned subsidiary of AMCOL International, CETCO [illegible]ws support from more than six decades of [illegible]chnology, research and experience in the field.

CETCO
COLLOID ENVIRONMENTAL TECHNOLOGIES COMPANY

Building Materials Group
1350 West Shure Drive
Arlington Heights, IL 60004-1440 USA
(847) 392-5800 • Fax (847) 506-6195
Toll free 1-800-527-9948

A wholly owned subsidiary of AMCOL International

1. PRODUCT NAME

AKWASTOP™ Gasket Waterstop

2. MANUFACTURER

Colloid Environmental Technologies Company (CETCO)
Building Materials Group
1350 West Shure Drive
Arlington Heights, IL 60004
Phone (847) 392-5800
FAX: (847) 506-6195

3. PRODUCT DESCRIPTION

AKWASTOP is a chemically resistant hydrophilic vinylester waterstop designed to provide an active seal in concrete construction joints. AKWASTOP is a soft, flexible yet durable strip that reacts with water in a controlled manner to provide a tight seal against water intrusion under hydrostatic pressure.

Basic Use: As a waterstop in concrete construction where two concrete surfaces abut or where concrete abuts another surface such as plastic pipe, steel anchors, masonry or rock. Typical applications include precast concrete, below grade foundations, water and sewage treatment tanks, manholes, tunnels, dams and reservoirs.

Composition and Materials: Proprietary technology based in hydrophilic vinylester. Liquid molecules are held in vinylester polymer matrix by electrochemical bonds causing swelling to create a gasket seal without creating a wicking effect. AKWASTOP is green in color and is manufactured in 3/4" x 3/8" x 33' (20 mm x 10 mm x 10.06 m) dimensions.

Packaging: AKWASTOP is packaged 197 lineal feet per carton.

Limitations: Do not place AKWASTOP in standing water. Chemical resistivity is as defined on Table 1 - Chemical Compatibility. Do not exceed these concentrations. Keep WB-Adhesive from freezing.

4. TECHNICAL DATA

Material Properties:

Density	1.3 - 1.6 gm/ ml (68°F) ASTM D 3800-79
Tensile Strength	25 - 35 psi ASTM D 638 M-89
Percent Elongation	70 - 100% ASTM D 638 M-89
Shore Hardness	25-35 DIN 53505
Shrinkage	10 - 20% by weight 1 week at 131° F
Percent Swell	160% 12 day immersion
Corrosiveness	non-corrosive
Toxicity	non toxic

* Typical values not to be used in specifications

5. INSTALLATION

Surface Preparation: The surface must be structurally sound, clean and free of dirt, debris, oil and other contaminants including curing compounds, form release agents, coatings, paint and efflorescence.

Methods: AKWASTOP can be adhered to the substrate with WB-Adhesive. Roller or brush apply the WB-Adhesive a minimum of 10 mils thick. Firmly press the entire length of AKWASTOP onto the adhesive. Hold firmly in place for 15 seconds. AKWASTOP may be applied to damp surfaces but not in standing water.

Tightly butt coil ends together to form a continuous waterstop. Do not overlap coil ends. Where required cut coils with a sharp knife or utility blade. Place in maximum practicable lengths to minimize butt joints. Allow adhesive to dry before pouring concrete.

Alternately, AKWASTOP may be fastened to the substrate using powder activated fasteners, masonry or concrete nails. Fasteners should be placed at a maximum spacing of 10". In all cases the AKWASTOP must follow the contour of the substrate, additional fasteners may be required to contour irregular surfaces.

TECH-DATA

CETCO

COLLOID ENVIRONMENTAL TECHNOLOGIES COMPANY

NOTE: AKWASTOP swells when placed in contact with water. All information and data herein is believed to be accurate and reliable. The accuracy and completeness are not guaranteed.

Precautions: It is mandatory that the user take the following precautionary measures to protect workers and the public.

Avoid ingestion of material. If ingestion occurs, contact a poison center or physician. Additional precautions, safety information and first aid treatments are contained on the Material Safety Data Sheet.

INDUSTRIAL USE ONLY. KEEP OUT OF REACH OF CHILDREN.

6. AVAILABILITY AND COST

Available worldwide through a network of Manufacturer's Representatives and Distributors. Contact the manufacturer for the nearest Distributor's location. Applied costs are dependent on local labor costs, freight costs and job site conditions. Material costs are competitive with comparable materials.

7. WARRANTY

Information contained herein supersedes all previously printed matter and is subject to change without notice.

All goods sold by Seller are warranted to be free from defects in material and workmanship.

The foregoing warranty is in lieu of and excludes all other warranties not expressly set forth herein

Document # FM-4

FIELD MODIFICATION

Modification No. 4

Project No. 23

Project American Chemical Services

DESCRIPTION OF MODIFICATION: Electrical conduits were poured into the treatment building floor slabs. Each conduit is 1-1/2 inch diameter, schedule 80 PVC. These conduits are fully encased in concrete in accordance with the ACI code. The location of the electrical conduits is documented on MWCI's as-built drawings.

ORIGIN OF MODIFICATION: Modification made at the Contractor's request to facilitate installation of electrical wiring. Contractor provided deduct on bid to allow installation of conduit in slab.

ATTACHMENTS: Excerpt from ACI code

PREPARED BY: Ben McCheady 9/18/96

APPROVED BY: [signature]

COPY TO: J. Adams
P. Vagt
T. Lewis
R. Schlicher (for approval)
L. Orosz
J. Willich

CODE

COMMENTARY

shore removal, and reshoring including the minimum time intervals between the various operations;

(e) Any other loading or condition that affects the safety or serviceability of the structure during construction.

For multistory construction, the strength of the concrete during the various stages of construction should be substantiated by job-cured test specimens or other approved methods. The various stages of the construction procedure should be controlled by a competent foreman under the supervision of an engineer, and any change in the procedure should be approved by the Engineer. The structural analysis and test data used in planning and implementing the form removal and shoring should be furnished by the contractor to the Building Official, when so requested.

6.3 – Conduits and pipes embedded in concrete

6.3.1 – Conduits, pipes and sleeves of any material not harmful to concrete and within limitations of 6.3 shall be permitted to be embedded in concrete with approval of the Engineer, provided they are not considered to replace structurally the displaced concrete.

6.3.2 – Conduits and pipes of aluminum shall not be embedded in structural concrete unless effectively coated or covered to prevent aluminum-concrete reaction or electrolytic action between aluminum and steel.

6.3.3 – Conduits, pipes, and sleeves passing through a slab, wall, or beam shall not impair significantly the strength of the construction.

6.3.4 – Conduits and pipes, with their fittings, embedded within a column shall not displace more than 4 percent of the area of cross section on which strength is calculated or which is required for fire protection.

R6.3 – Conduits and pipes embedded in concrete

R6.3.1 – Conduits, pipes and sleeves not harmful to concrete can be embedded within the concrete, but the work must be done in such a manner that the structure will not be endangered. Empirical rules are given in 6.3 for safe installations under common conditions; for other than common conditions, special designs must be made. Many general building codes have adopted ANSI/ASME piping codes B 31.1 for power piping[6.2] and ANSI B 31.3 for chemical and petroleum piping.[6.3] The Specifier should be sure that the appropriate piping codes are used in the design and testing of the system. The Contractor should not be permitted to install conduits, pipes, ducts, or sleeves that are not shown on the plans or not approved by the Engineer or Architect.

For the integrity of the structure, it is important that all conduit and pipe fittings within the concrete be carefully assembled as shown on the plans or called for in the job specifications.

R6.3.2 – The code prohibits the use of aluminum in structural concrete unless it is effectively coated or covered. Aluminum reacts with concrete and, in the presence of chloride ions, may also react electrolytically with steel, causing cracking and/or spalling of the concrete. Aluminum electrical conduits present a special problem since stray electric current accelerates the adverse reaction.

CODE

6.2.6 – Except when drawings for conduits and pipes are approved by the Structural Engineer, conduits and pipes embedded within a slab, wall, or beam (other than those merely passing through) shall satisfy the following:

6.2.6.1 – They shall not be larger in outside dimension than 1/3 the overall thickness of slab, wall, or beam in which they are embedded.

6.2.6.2 – They shall not be spaced closer than 3 diameters or widths on center.

6.2.6.3 – They shall not impair significantly the strength of the construction.

6.2.6 – Conduits, pipes, and sleeves shall be permitted to be considered as replacing structurally in compression the displaced concrete provided:

6.2.6.1 – They are not exposed to rusting or other deterioration.

6.2.6.2 – They are of unvented or galvanized iron or steel not thinner than standard Schedule 40 steel pipe.

6.2.6.3 – They have a nominal inside diameter not over 2 in. and are spaced not less than 3 diameters on center.

6.2.7 – Pipes and fittings shall be designed to resist effects of the material, pressure, and temperature to which they will be subjected.

6.2.8 – No liquid, gas, or vapor, except water not exceeding 90 F nor 50 psi pressure, shall be placed in the pipes until the concrete has attained its design strength.

6.2.9 – In solid slabs, piping, unless it is for radiant heating or snow melting, shall be placed between top and bottom reinforcement.

6.2.10 – Concrete cover for pipes, conduits, and fittings shall not be less than 1-1/2 in. for concrete exposed to earth or weather, nor 3/4 in. for concrete not exposed to weather or in contact with ground.

6.2.11 – Reinforcement with an area not less than 0.002 times area of concrete section shall be provided normal to piping.

6.2.12 – Piping and conduit shall be so fabricated and installed that cutting, bending, or displacement of reinforcement from its proper location will not be required.

COMMENTARY

R6.3.6 – The 1963 code limited the maximum pressure in embedded pipe to 200 psi, which was considered too restrictive. Nevertheless the effects of such pressures and the expansion of embedded pipe should be considered in the design of the concrete member.

R6.3.7 – The 1963 code limited the maximum pressure in embedded pipe to 200 psi, which was considered too restrictive. Nevertheless, the effects of such pressures and the expansion of embedded pipe should be considered in the design of the concrete member.

Document # FM-5

FIELD MODIFICATION

Modification No. 5

Project No. 23

Project American Chemical Services

DESCRIPTION OF MODIFICATION: Treated groundwater effluent piping has been changed from PVC piping to HDPE piping. This change was documented in the Underground Piping and Utilities Request for Bid package (MWCI, August 7, 1996).

ORIGIN OF MODIFICATION: Modification made to provide stronger pipe in areas of the site where compaction will be difficult (i.e., the wetlands).

ATTACHMENTS: None.

PREPARED BY: Ben McCarthy 9/18/96

APPROVED BY: R. Schlicher 9/30/96

COPY TO:
J. Adams
P. Vagt
T. Lewis
R. Schlicher (for approval)
L. Orosz
J. Willich

Document # FM-6

FIELD MODIFICATION

Modification No. 6

Project No. 23

Project American Chemical Services

DESCRIPTION OF MODIFICATION: Conduits from building floor sumps to main process sumps were changed from galvanized steel piping to schedule 80 PVC piping. The tee was eliminated and separate conduits were run to each sump. The 90 degree bend was eliminated and replaced by two 45 degree bends.

ORIGIN OF MODIFICATION: Modifications made to facilitate future installation of discharge piping from sump pumps.

ATTACHMENTS: None.

PREPARED BY: Ben McGeady 9/18/96

APPROVED BY: R Schlicher 9/30/96

COPY TO: J. Adams
P. Vagt
T. Lewis
R. Schlicher (for approval)
L. Orosz
J. Willich

Document # FM-7

FIELD MODIFICATION

Modification No. 7

Project No. 23

Project American Chemical Services

DESCRIPTION OF MODIFICATION: The width of the access roadway has been changed from 24 ft wide to 12 ft wide.

ORIGIN OF MODIFICATION: Material was uncovered along the route of the access roadway that was unsuitable to support the roadway. The unsuitable material must be removed prior to constructing the access roadway. To minimize impacts to the project budget, the width of the roadway will be reduced to compensate for the removal cost of the unsuitable material.

ATTACHMENTS: Work Order #18.
July 31, 1996 memorandum from Mike Marchant to Ron Schlicher

PREPARED BY: Ben McGeachy 9/18/96

APPROVED BY: R Schlicher 7/30/96

COPY TO: J. Adams
P. Vagt
T. Lewis
R. Schlicher (for approval)
L. Orosz
J. Willich

M E M O R A N D U M

MONTGOMERY WATSON

To:	Ron Schlicher	**Date:**	July 31, 1997
From:	Mike Marchant	**Reference:**	000
Subject:	ACS - Access Roadway		

Ben called today and asked me to review some changes to the ACI - Access Roadway. The following lists my thoughts about the changes.

The roadway elevation was set using two criteria as the primary drivers. Drainage and water table depth. It is my understanding that the water table is very high. If this is so be careful lowering the road elevations. Saturated subbase material will weaken the road structure. The foot or foot and a half reduction of base material could cause substantial impact on road wear. Lowering the road will also impact the drainage ditches to the side of the road. The culvert at approximate Sta 1+50 will also have to be lowered to allow traffic to pass over it or it will have to be abandoned. Lowering the culvert will place the culvert much lower than the surrounding ground elevation and a muck longer swale will be required to get rid of the water.

Removing the poor material is a good idea. If rock is used to replace the poor material, it should only be used if below the water table and compaction of imported material is not possible. Also if rock is used, a barrier will be required between the rock and the smaller base material. This will prevent the small material from falling into the rock voids. If the poor material is above the water table, a good pit run material should be considered as the replacement material.

The road can be reduced in width if needed. I recommend this over lowering the road. It is my understanding that the road will not have much traffic. If this is true, a 12 foot road with 2 foot shoulders is my recommendation. The curve and entrance to the main road may have to be wider to allow for truck turning radius. This will need to be determined based on the largest truck expected to be operating at the facility. A turnout about midway down the road should be considered to allow for vehicle passage. Again this is a factor of the number of vehicles that will be using the road.

Please give me a call if you have any questions.

cc: Vivek Agrawal
Todd Lewis
Ben McGeachy

Document # FM-8

FIELD MODIFICATION

Modification No. 8

Project No. 23

Project American Chemical Services

DESCRIPTION OF MODIFICATION: The route of the water line has been changed. The new water line route is shown on the attached sketch. The water line will begin downstream of the ACS water meter and backflow preventor.

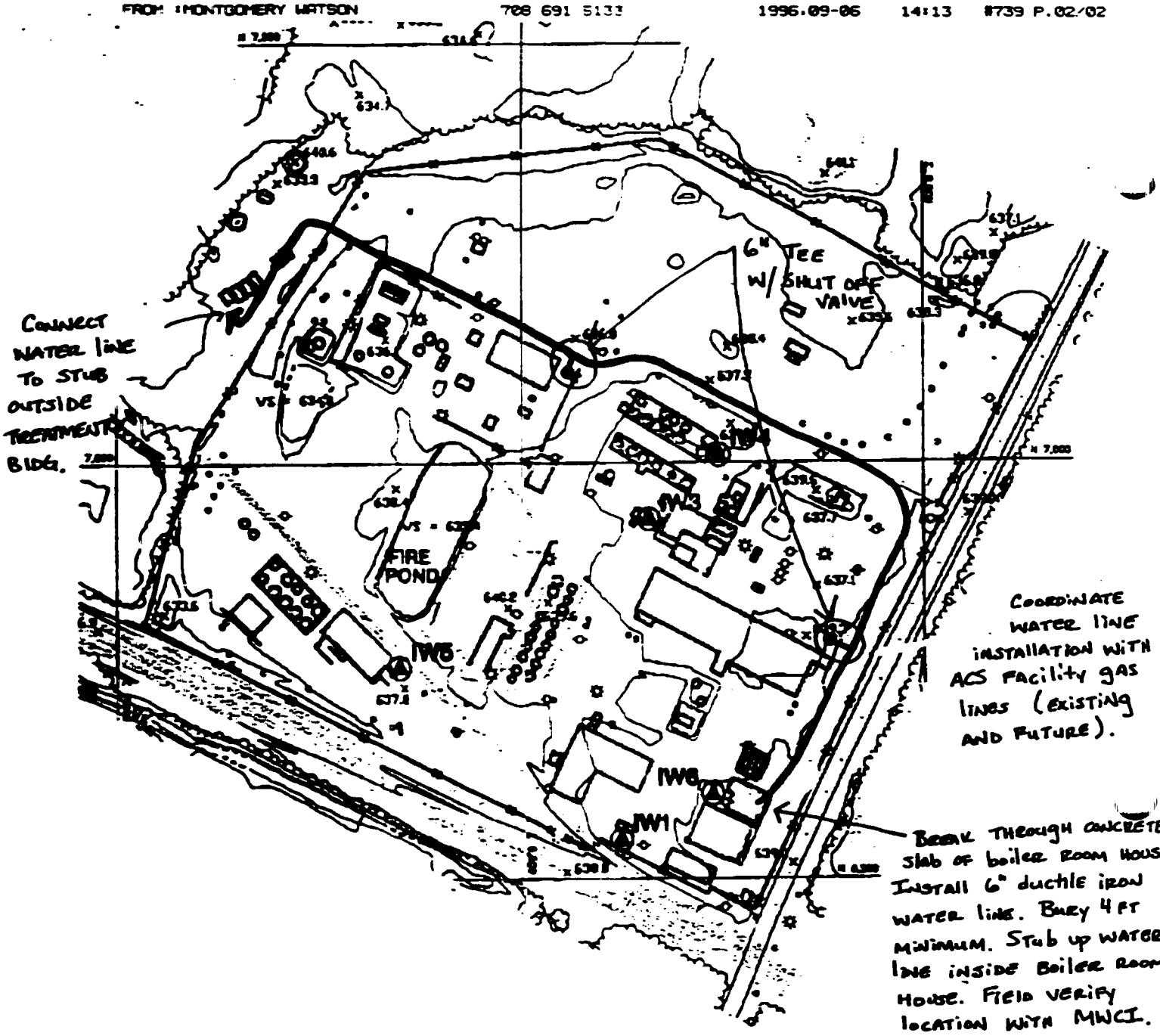
ORIGIN OF MODIFICATION: The new route of the water line is shorter (and less expensive) than the route shown in the Underground Piping and Utilities RFB. Connecting downstream of the ACS water meter and backflow preventor provides additional savings.

ATTACHMENTS: New water line route (sketch).

PREPARED BY: Ben McCausey 9/18/96

APPROVED BY: [illegible] 9/20/96

COPY TO: J. Adams
P. Vagt
T. Lewis
R. Schlicher (for approval)
L. Orosz
J. Willich



ID

W1 INDUSTRIAL WATER WELL LOCATION AND NUMBER

FENCE LINE

RAILROAD TRACK

TOPOGRAPHIC CONTOUR

NOTES

1. BASE MAP DEVELOPED FROM AN AERIAL SURVEY MAP OF THE SITE FLOWN ON MARCH 8, 1994 BY GEONEX CHICAGO AERIAL SURVEY, INC.
2. VERTICAL DATUM IS U.S.G.S. DATUM. CONTOUR INTERVAL IS 2ft.
3. WELLS NUMBER 5 AND 6 ARE INACTIVE.

north

0 200

SCALE IN FEET

FIGURE

Drawn By

Drawing Number

Document # FM-9

FIELD MODIFICATION

Modification No. 9

Project No. 23

Project American Chemical Services

DESCRIPTION OF MODIFICATION: The hand sink has been moved from the mechanical equipment room to the maintenance storage room. The floor drain in the bathroom has been moved from against the wall to the center of the room.

ORIGIN OF MODIFICATION: The hand sink relocation was made at the Engineer's request. The floor drain relocation was made to promote better drainage.

ATTACHMENTS: None.

PREPARED BY: Ben McCauley 9/18/96

APPROVED BY: R Schlicher 9/30/96

COPY TO: J. Adams
P. Vagt
T. Lewis
R. Schlicher (for approval)
L. Orosz
J. Willich

Document # FM-10

FIELD MODIFICATION

Modification No. 10
Project No. 23
Project American Chemical Services

DESCRIPTION OF MODIFICATION: As-Built elevations along the center line of the access road are lower than design elevations. As-Built elevations and design elevations are summarized as follows:

Station	As-Built Elevations (ft msl)	Design Elevations (ft msl)
0+00	635.50	636.00
1+00	635.98	636.12
2+00	635.93	636.25
3+00	636.07	636.37
4+00	636.45	636.50
5+00	636.05	636.62
6+00	635.95	636.75
7+00	636.60	636.87
8+00	636.99	637.00
8+35 (tie-in to existing driveway)	637.48	637.48

ORIGIN OF MODIFICATION. Phase I of roadway construction has been completed in accordance with approved Work Orders #3 and #18. Phase I of roadway construction is defined as completion of the roadway to within six inches of final design elevations. A work order for phase II of the roadway construction (i.e., the final six inches) has not been prepared at this time. If required, phase II of the roadway construction will be completed in the spring of 1997. Completion of the roadway in the spring will allow for touch up of roadway damage caused by winter weather and/or snow removal activities.

ATTACHMENTS: None.

PREPARED BY: Dan McGeachy NOVEMBER 27, 1996

APPROVED BY: _____

COPY TO:
J. Adams
P. Vagt
R. Schlicher (for approval)
T. Lewis
J. Willich
L. Gross

Document # FM-11

FIELD MODIFICATION

Modification No. 11

Project No. 23

Project American Chemical Services

DESCRIPTION OF MODIFICATION: The effluent sump and weir box (ME-10) and static mixer ME-21 have been eliminated. An in-line static mixer and magnetic flow meter have been added in place of ME-10 and ME-21. Changes to be made in accordance with Bowen Engineering's letter dated October 1, 1996.

ORIGIN OF MODIFICATION: Change made at Contractor's request as value engineering.

ATTACHMENTS: Bowen Engineering's letter dated October 1, 1996.

PREPARED BY: Don McCurdy November 27, 1996

APPROVED BY: _____

COPY TO:
J. Adams
P. Vaet
R. Schlicher (for approval)
T. Lewis
J. Willich
L. Orosz

BOWEN
Engineering Corporation

October 1, 1996

Montgomery Watson Constructors, Inc.
2100 Corporate Drive
Addison, IL 60101

Attn: Mr. Todd A. Lewis
Senior Construction Management Engineer

RE: **American Chemical Services, PGCS Water Treatment System**
Effluent Weir Box Elimination

Dear Mr. Lewis:

As discussed in our 9-26-96 teleconference, Bowen has investigated the cost impact of eliminating the effluent weir box. This item can be deleted for a $7000.00 credit applied to MWCI. This credit accounts for all costs associated with elimination of the weir box/ support and mixer ME-21 as well as the addition of in-line static mixing and magnetic flow meter measurement.

Please review this matter with Salt Lake City and advise if acceptable from a process engineering standpoint. Construction of the weir box is currently on hold pending this decision. Fabrication of the box, if still required, requires a six week lead time.

Your attention to this matter is appreciated. Please advise if more information is required from Bowen.

Sincerely,

Jim Ankrum, Project Manager

MWCI CONSTRUCTOR'S FILE COPY
23
ACS
C2
050
BTM

CC: Bruce Kreiger, BEC Supt.
Gary Moon, BEC
Jed Holt/file, BEC
Ben McGeachy, MWCI Site Mgr.

Document # FM-12

FIELD MODIFICATION

Modification No. 12
Project No. 23
Project American Chemical Services

DESCRIPTION OF MODIFICATION: A 1,000-gallon precast concrete septic tank will be installed in accordance with Young's Environmental's proposal dated November 5, 1996.

ORIGIN OF MODIFICATION: The septic tank will be installed to reduce groundwater storage and treatment costs associated with construction of the designed sanitary sewer line. The sanitary sewer line is intended to connect the treatment building to the existing sanitary sewer main. Construction of the sanitary sewer line, at this time, would require dewatering activities and associated groundwater storage and treatment. Installation of the septic tank will allow for construction of the sanitary sewer line at a later date (i.e., following completion of the treatment system). Once the treatment system is operational, groundwater collected as part of dewatering activities for the sanitary sewer line could be routed directly into the treatment system (thereby eliminating storage and treatment costs).

ATTACHMENTS: Young's Environmental's proposal dated November 5, 1996.

PREPARED BY: Dan McCauley NOVEMBER 27, 1996

APPROVED BY: _____

COPY TO: J. Adams
P. Vagt
R. Schlicher (for approval)
T. Lewis
J. Willich
L. Orosz

YOUNG'S
ENVIRONMENTAL
CLEANUP INC.

November 5, 1996

Attn: Ben McGeachy
Montgomery Watson Constructors
2100 Corporate Drive
Addison, Illinois 60101

RE: Septic tank installation
at American Chemicals Service
in Griffith, IN

Proposal #114396

Dear Mr. McGeachy,

Young's Environmental Cleanup, Inc. is pleased to present the following executed proposal/agreement to provide excavation services at the above referenced site. Young's Environmental Cleanup, Inc. operates state-of-the-art equipment and has safely and efficiently completed hundreds of projects throughout Michigan and the Great Lakes Region.

SCOPE OF WORK

Mobilize to the site, supply equipment, labor and materials to install a 1000 gallon concrete septic tank for sewer at the on site treatment building at the above mentioned site. Young's will excavate for new septic tank, install approximately 40 feet of pipe from treatment building to the tank and backfill excavation with clean fill sand if required. An approved traffic rated casting will be used on one of the outlets on the tank for pumping purposes. Young's will install the casting so as to match proposed grade. Septic tank is not traffic rated therefore bumper posts will need to be installed around the tank for protection. Included in this proposal are six (6) four inch diameter steel bumper posts filled with concrete and painted to desired color. Conditions out of the control of Young's such as but not limited to, dewatering, water containerization or treatment, and/or soil relocation/disposal will invoiced on a time and material basis.

SEPTIC TANK INSTALLATION	Lump Sum	*	$4775.00

*Note price based upon being already on site and no additional mobilization being required.

TERMS AND CONDITIONS

Work will be completed in accordance with the standard subcontract agreement between Young's and Montgomery Watson. Work will proceed following acceptance of a work order separate from WORK ORDER #1 dated 10/30/96.

ACCEPTANCE

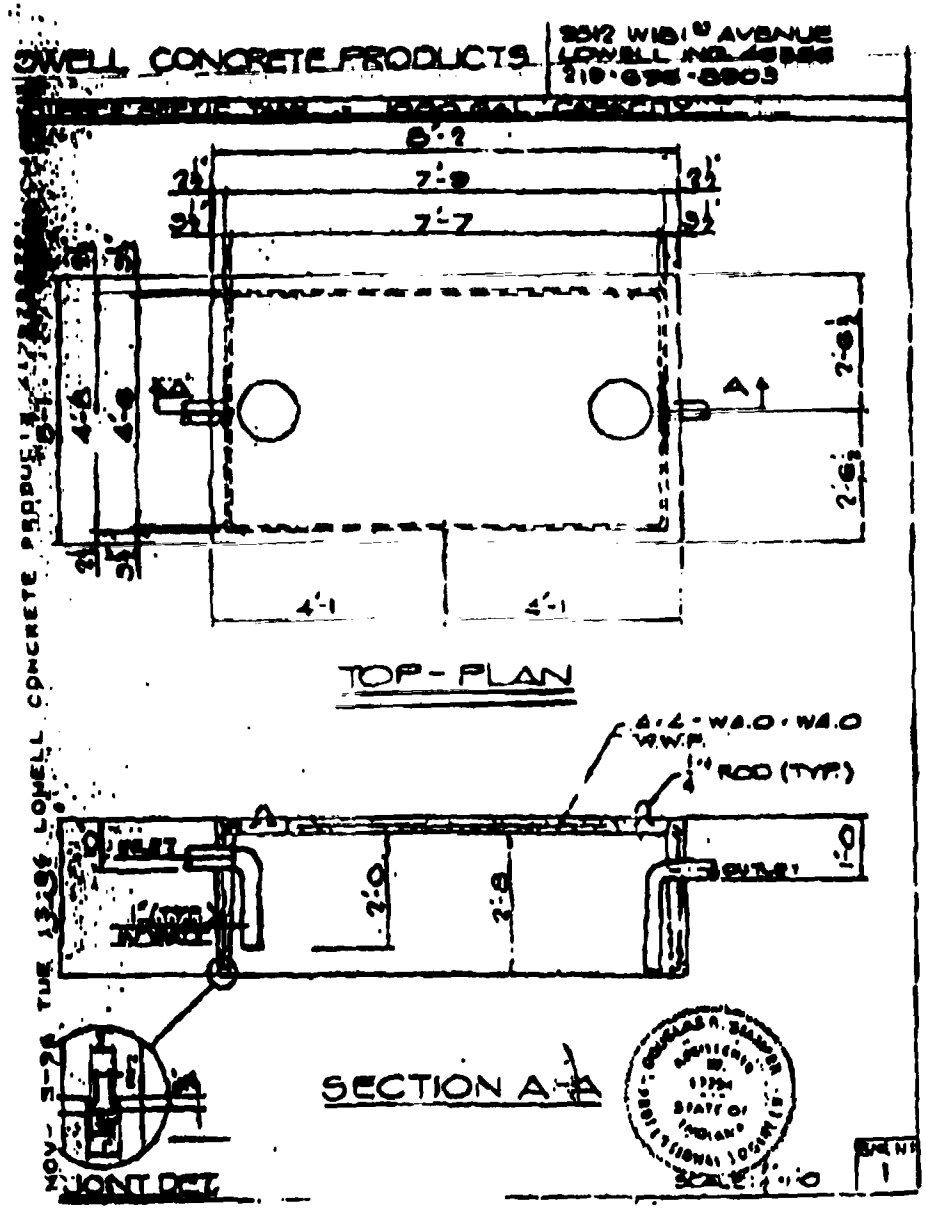
Please sign below indicating your acceptance and return one (1) copy to our office. In addition, please feel free to contact me at (810) 789-7155 if you have any questions. Thank you for considering Young's Environmental Cleanup, Inc. we look forward to working for you on this project.

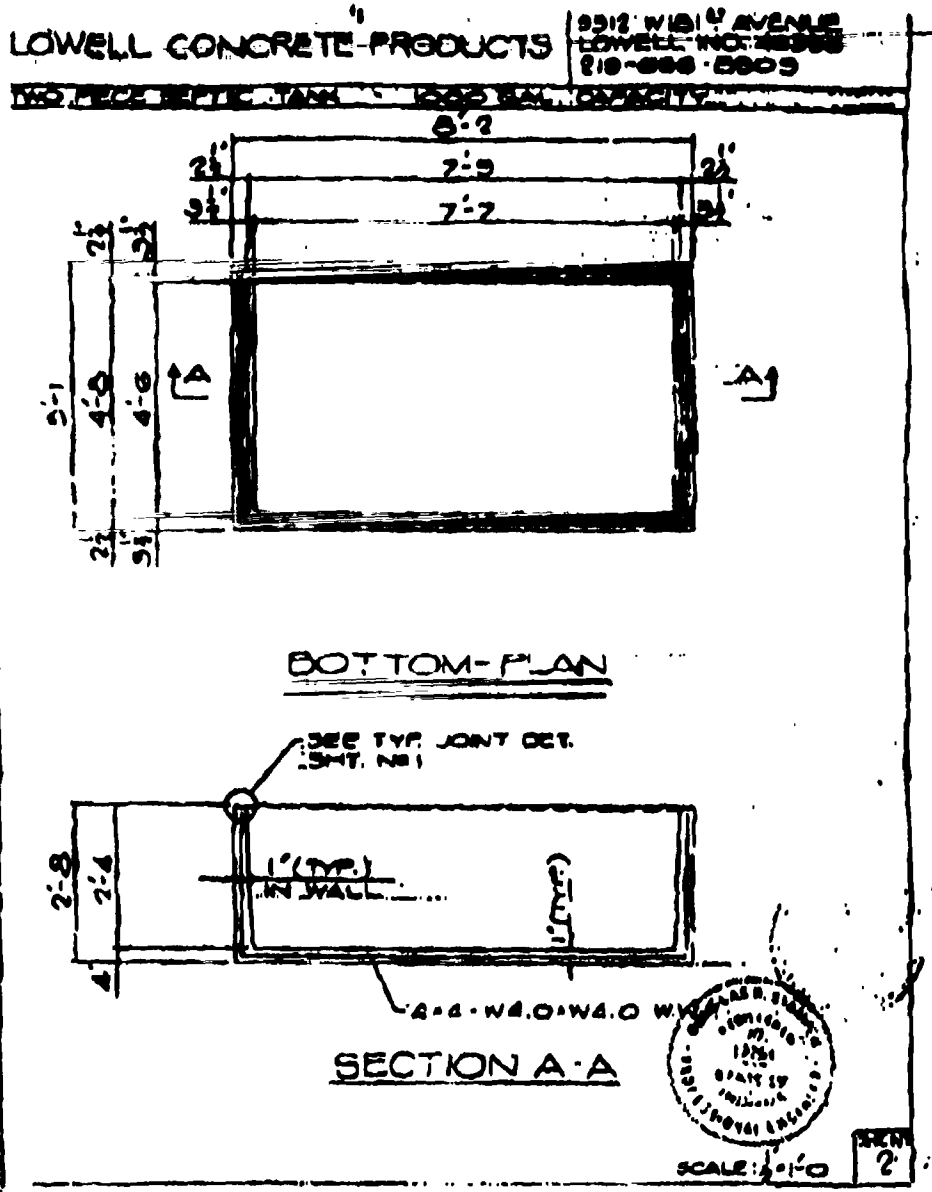
BY: YOUNG'S ENVIRONMENTAL CLEANUP, INC.

Joe Fisher

ACCEPTED BY: MONTGOMERY WATSON CONSTRUCTORS INC.

_____





NOV-27-96 TUE 13:36 LOWELL CONCRETE PRODUCTS

Document # FM-13

FIELD MODIFICATION

Modification No. 13

Project No. 23

Project American Chemical Services

DESCRIPTION OF MODIFICATION: Replace the specified backfill material surrounding the six-inch diameter water line (i.e., CA-13 limestone as defined in the Underground Piping Request for Bid Package) with self-compacting limestone material meeting the attached gradation requirements. Eliminate the requirement for compaction testing every 100 lineal feet of water line. Demonstrate that the self-compacting material meets the specified compaction requirements.

ORIGIN OF MODIFICATION: The high water table at the site inhibits efforts to compact the backfill material surrounding the water supply line. To ensure that compaction of the backfill material meets the design specifications throughout, the subcontractor (Young's Environmental Cleanup Inc.) proposes to use a self-compacting material in the pipe zone and trench zone surrounding the ductile iron line. YECI will compact this material using a walk-behind vibratory plate compactor; however, compaction tests indicate that the material meets the design specifications without any mechanical compaction. In lieu of the additional compaction tests originally specified, YECI has offered an additional six month warranty on the water line using the self-compacting material.

ATTACHMENTS: Gradation Requirements for Self-Compacting Limestone,
Compaction Test Results Along Water Supply Line Route

PREPARED BY: Sean McGeachy 2/3/98

APPROVED BY: _____

COPY TO: J. Adams
P. Vagt
R. Schlicher (for approval)
T. Lewis
J. Willich
L. Orosz

Received on
FEB 05 1998
at Montgomery Watson

#23
ACS
CZ
194
BTM

Kirk Trucking Inc.

FAX

Date: Jan. 2, 1997

Number of pages including cover sheet: 1

To:
YOUNGER ENVIRONMENTAL
ATTN: JOE FISHER

Phone:
Fax phone:
CC:

From:
Sam Watt

Phone: 219-287-9000
Fax phone: 219-287-2300

REMARKS: ☐ Urgent ☒ For your review ☐ Reply ASAP ☐ Please comment

AVERAGE GRADATION - INDIANA NO. 9 L.S.

SIEVE SIZE	PERCENT PASSING
3/4"	100%
1/2"	71
3/8"	26.2
NO 4	2.6

SAMER MATERIAL SERVICE
THORNTON QUARRY

Great Lakes Soil & Environmental Consultants, Inc.	FIELD COMPACTION TEST REPORT
1743 Novo Dr., Schererville, IN 46375, Ph.(219) 865-9023, Fax(219) 865-8919	

Client	Young's Environmental Cleanup, Inc. G-5305 North Dort Highway, Flint, MI 48505. Attn.: Mr. Joe Fisher						
Project	Underground piping, American chemical Service, Colfax Ave., Griffith, Indiana						
File No	1147	Date	1/22/97	Report No	1	Sheet	1/1

Type of Fill		Subgrade Condition				Method of Compaction	
Stone	X	Moist	X	Frozen		Vibrating Plate	X
Sand		Damp		Soft		Vibrating Roller	
Clay		Wet		Loose		Sheepsfoot Roller	
Slag		Dry	X	Firm	X	Rubber Tire Roller	

Laboratory Data & Procedures				Field Test Methods	
ASTM D1557-91		Method		ASTM D1556-90	
ASTM D 698-91	X	Method	C	ASTM D 3017-93	X
Reference Test No.	1	2	3	Specification Requirements	
Max. Density (PCF)	103.0	143.0	108.5	90.0	% Maximum Density
Optimum Moisture %	3.0	8.0	8.3		%Relative Density

Date	Ref. No	Test No	Dry Density PCF	Moisture %	Compaction %	Pass/Fail	Location of Test
1/21/97	2	1	147.90	8.30	103.43	Pass	Station # 0+00 Final grade
1/21/97	2	2	137.60	10.60	96.22	Pass	Station # 1+00 Final grade
1/21/97	2	3	138.40	8.10	96.78	Pass	Station # 2+00 Final grade
1/21/97	2	4	140.90	9.00	98.53	Pass	Station # 3+00 Final grade
1/21/97	2	5	138.10	9.70	96.57	Pass	Station # 4+00 Final grade
1/21/97	1	6	101.20	3.00	98.25	Pass	Station # 5+00 Pipe zone

Remarks		Please see attached drawing for test locations.
Technician	GAK	

Great Lakes Soil & Environmental Consultants, Inc.	FIELD COMPACTION TEST REPORT
[illegible] Dr., Schererville, IN 46375, Ph:(219) [illegible]-0023, Fax:(219) 865-6919	

Client	Young's Environmental Cleanup, Inc. G-5305 North Dort Highway, Flint, MI 48505. Attn.: Mr. Joe Fisher						
Project	Underground piping, American chemical Service, Colfax Ave., Griffith, Indiana						
File No	1147	Date	1/24/97	Report No	3	Sheet	1/1

Type of Fill		Subgrade Condition				Method of Compaction	
Stone	X	Moist	X	Frozen		Vibrating Plate	X
Sand	X	Damp		Soft		Vibrating Roller	
Clay		Wet		Loose		Sheepsfoot Roller	
Slag		Dry		Firm	X	Rubber Tire Roller	

Laboratory Data & Procedures				Field Test Methods	
ASTM D1557-91	X	Method	A	ASTM D1556-90	
ASTM D 698-91	X	Method	C	ASTM D 3017-93	X
Reference Test No	1	2	3	Specification Requirements	
Max. Density (PCF)	103.0	143.0	108.5	90.0	% Maximum Density
Optimum Moisture %	3.0	8.0	8.3		%Relative Density

Date	Ref. No	Test No	Dry Density PCF	Moisture %	Compaction %	Pass/Fail	Location of Test
1/24/97	1	1	102.20	3.70	99.22	Pass	Station # 6+00 Pipe zone
1/24/97	1	2	109.70	2.20	106.50	Pass	Station # 7+00 Pipe zone
1/24/97	3	3	112.30	13.80	103.50	Pass	Station # 6+00 Middle zone (sand)
1/24/97	3	4	112.10	12.30	103.32	Pass	Station # 7+00 Middle zone (sand)
1/24/97	2	5	136.70	12.40	95.59	Pass	Station # 8+00 Final grade

Remarks	Please see attached drawing for test locations
Technician	GAK

Great Lakes Soil & Environmental Consultants, Inc. 1743 Novo Dr., Schererville, IN 46375, Ph.(219) 865-9023, Fax:(219) 865-8919	FIELD COMPACTION TEST REPORT

Client	Young's Environmental Cleanup, Inc. G-5305 North Dort Highway, Flint, MI 48505. Attn.: Mr. Joe Fisher						
Project	Underground piping, American chemical Service, Colfax Ave., Griffith, Indiana						
File No	1147	Date	1/23/97	Report No	2	Sheet	1/1

Type of Fill		Subgrade Condition				Method of Compaction	
Stone		Moist	X	Frozen		Vibrating Plate	X
Sand	X	Damp		Soft		Vibrating Roller	
Clay		Wet		Loose		Sheepsfoot Roller	
Slag		Dry		Firm	X	Rubber Tire Roller	

Laboratory Data & Procedures				Field Test Methods	
ASTM D1557-91	X	Method		ASTM D1556-90	
ASTM D 698-91		Method	A	ASTM D 3017-93	X
Reference Test No.	1	2	3	Specification Requirements	
Max. Density (PCF)	103.0	143.0	108.5	90.0	% Maximum Density
Optimum Moisture %	3.0	8.0	8.3		%Relative Density

Date	Ref. No	Test No	Dry Density PCF	Moisture %	Compaction %	Pass/Fail	Location of Test
1/23/97	3	1	110.20	8.30	101.57	Pass	Station # 10+00 Middle zone (sand)
1/23/97	3	2	110.60	10.60	101.94	Pass	Station # 11+00 Middle zone (sand)
1/23/97	3	3	106.20	8.10	97.88	Pass	Station # 12+00 Middle zone (sand)

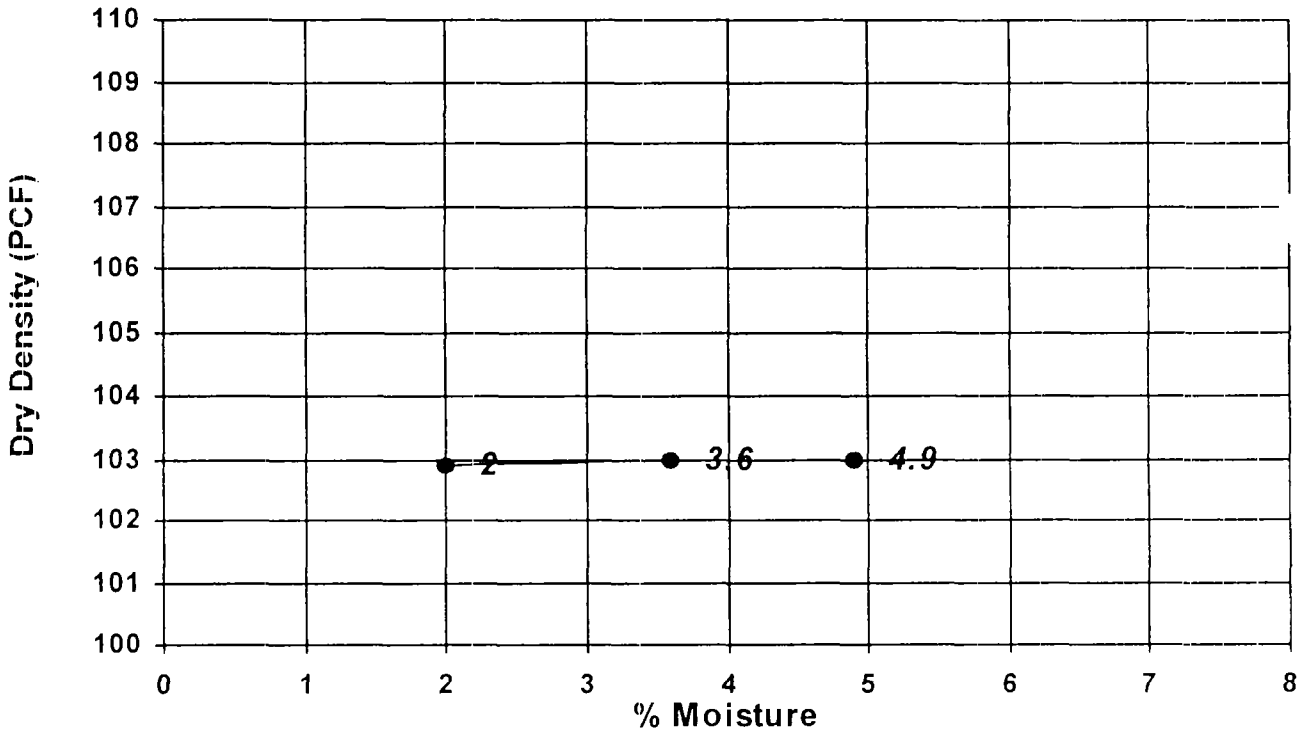
Remarks		Please see attached drawing for test locations.
Technician	GAK	

Great Lakes Soil & Environmental Consultants, Inc.
1743 Novo Drive, Schererville, IN 46375, Ph: (219) 865-9023, Fax: (219) 865-8919

MOISTURE-DENSITY RELATIONSHIP CUP

Client	Young's Environmental Cleanup, Inc. G-5305 North Dort Highway, Flint, MI 48505. Attn.: Mr. Joe Fisher								
Project	Underground piping, American chemical Service, Colfax, Griffith, Indiana								
File No.	1147	Date	1/9/97	Report No	1	Ref. No.	1	Tested By	RDS

Source of Material	Borrow						
Description of Soil	Crushed stone						
Type of Proctor	Standard ASTM D698, Method C			No. of Layers	3	No. of Blows	56
Hammer Weight	5.5lbs	Drop	12.0in	Maximum Dry Density (pcf)	103.0	% Optimum Moisture	3.0



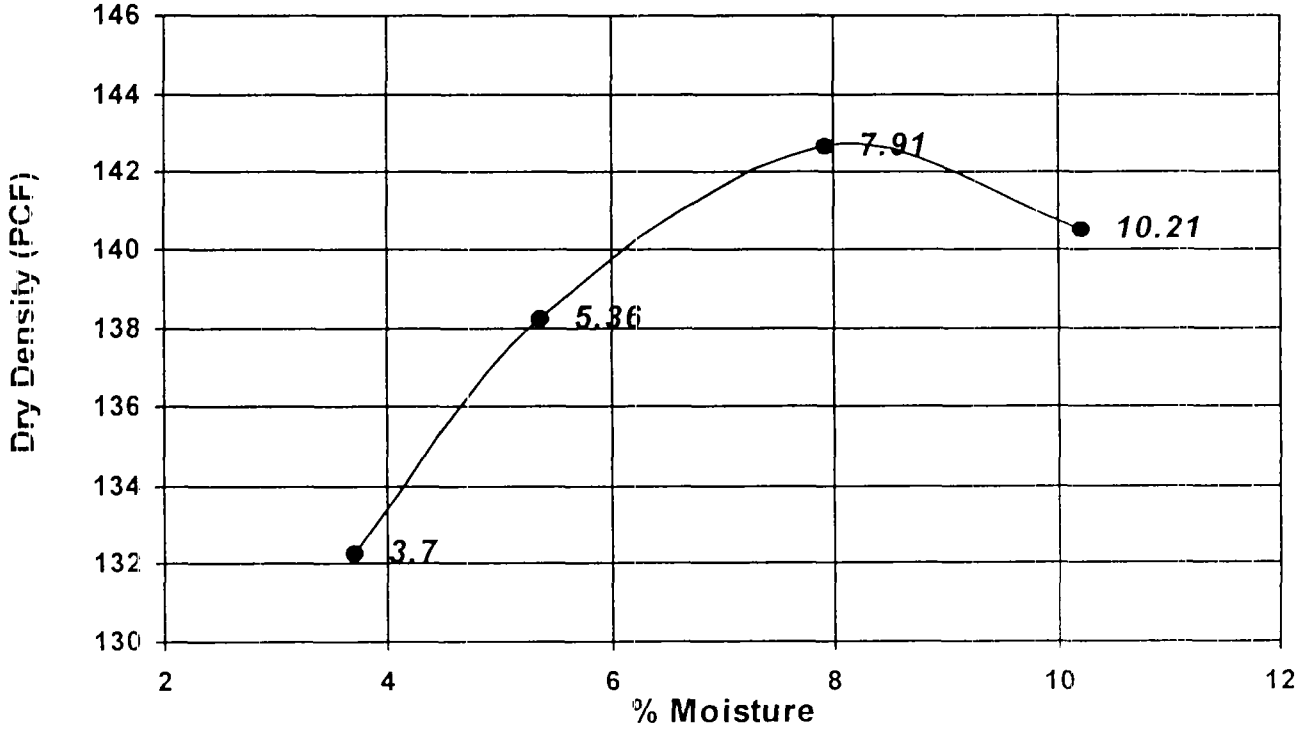
Remarks	

Great Lakes Soil & Environmental Consultants, Inc.
1743 Novo Drive, Schererville, IN 46375, Ph. (219) 865-9023, Fax (219) 865-8919

MOISTURE-DENSITY RELATIONSHIP CURVE

Client	Young's Environmental								
Project	American chemicals								
File No.	1147	Date	1/9/97	Report No	2	Ref. No.	2	Tested By	RDS

Source of Material	Borrow						
Description of Soil	Crushed stone with fines						
Type of Proctor	Standard ASTM D698-91, Method C			No. of Layers	3	No. of Blows	56
Hammer Weight	5.5lbs	Drop	12.0in	Maximum Dry Density (pcf)	143.0	% Optimum Moisture	8.0

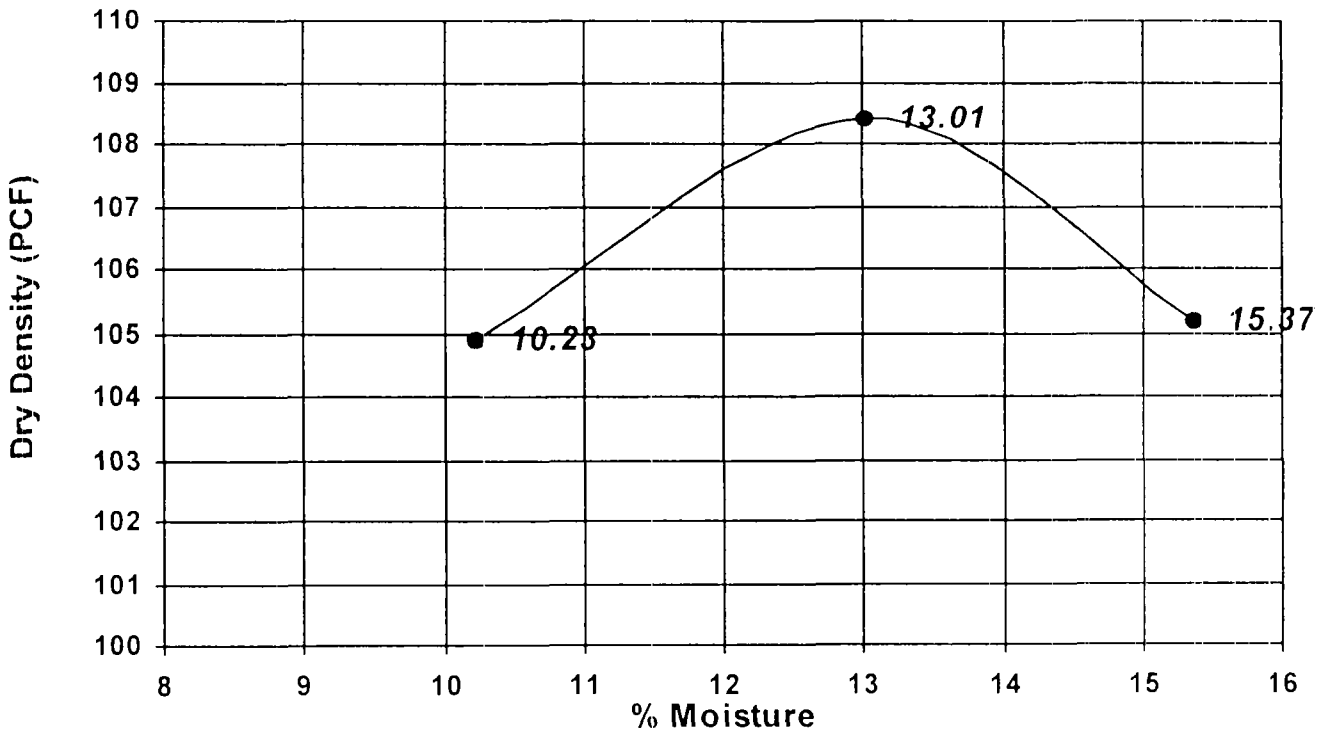


Remarks	

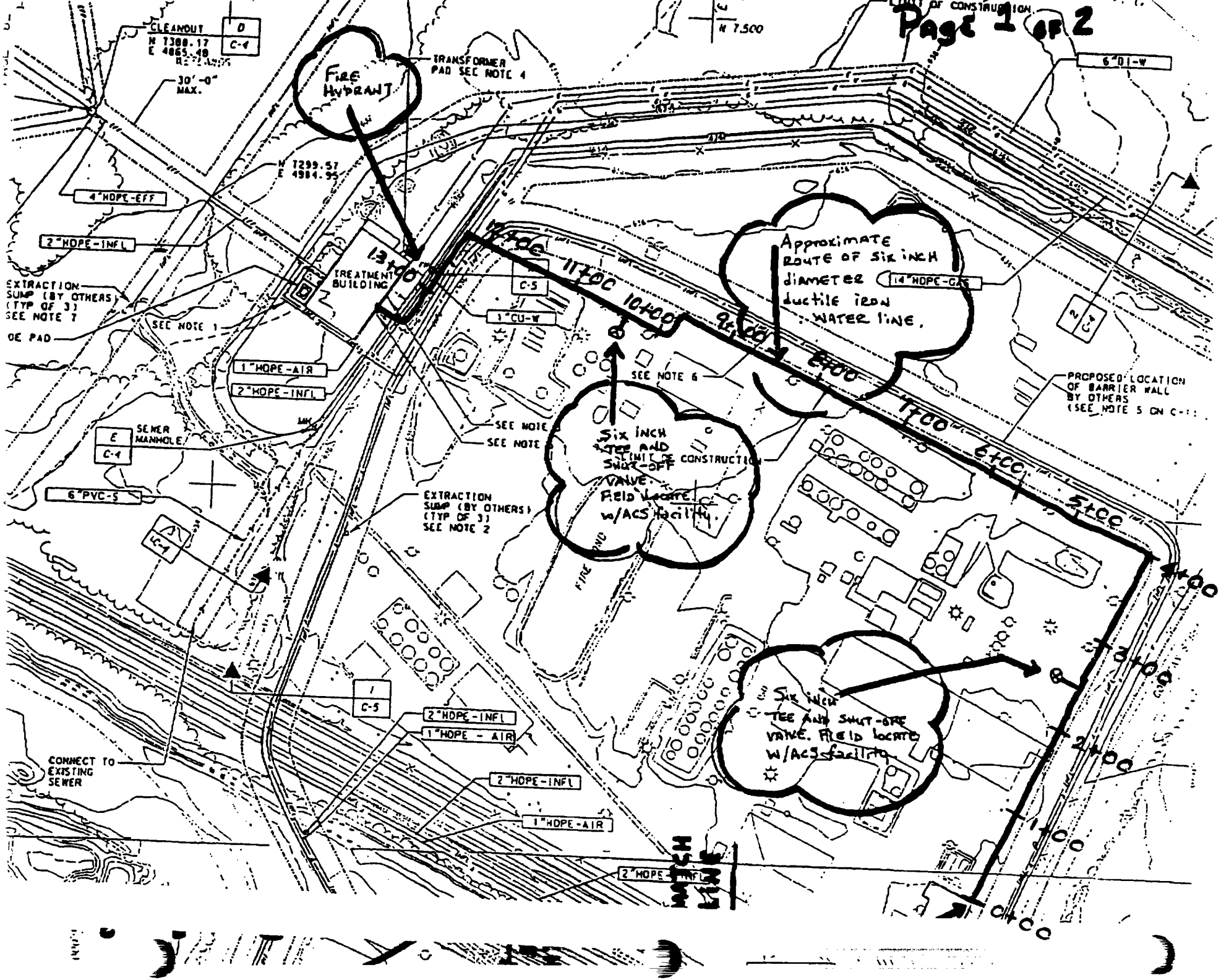
Great Lakes Soil & Environmental Consultants, Inc. 1743 Nowi Drive, Schererville, IN 46375, Ph. (219) 865 8023, Fax (219) 865 8919	MOISTURE-DENSITY RELATIONSHIP CUR

Client	Young's Environmental Cleanup, Inc. G-5305 North Dort Highway, Flint, MI 48505. Attn.: Mr. Joe Fisher								
Project	Underground piping, American chemical Service, Colfax, Griffith, Indiana								
File No.	1147	Date	1/22/97	Report No	3	Ref. No.	1	Tested By	AK

Source of Material	Onsite						
Description of Soil	Brown fine sand						
Type of Proctor	Modified ASTM 1557, Method A			No. of Layers	5	No. of Blows	25
Hammer Weight	10 lbs	Drop	18.0"	Maximum Dry Density (pcf)	108.5	% Optimum Moisture	13.3



Remarks	


CLEANOUT
N 7388.17
E 4865.48
D
C-4
30'-0" MAX.
Fire Hydrant
TRANSFORMER PAD SEE NOTE 4
N 7,500
6"DI-W
N 7299.57
E 4984.95
4"HDPE-EFF
2"HDPE-INFL
EXTRACTION SUMP (BY OTHERS) (TYP OF 3) SEE NOTE 7
SEE NOTE 1
TREATMENT BUILDING
13+00
12+00
11+00
10+00
9+00
8+00
7+00
6+00
5+00
4+00
3+00
2+00
1+00
0+00
C-5
1"CU-W
14"HDPE-GAS
Approximate route of six inch diameter ductile iron water line.
SEE NOTE 6
PROPOSED LOCATION OF BARRIER WALL BY OTHERS (SEE NOTE 5 ON C-1)
1"HDPE-AIR
2"HDPE-INFL
SEWER MANHOLE
E
C-4
SEE NOTE
SEE NOTE
Six inch tee and shut-off valve. Field locate w/ACS facility.
6"PVC-S
EXTRACTION SUMP (BY OTHERS) (TYP OF 3) SEE NOTE 2
Six inch tee and shut-off valve. Field locate w/ACS facility.
CONNECT TO EXISTING SEWER
2"HDPE-INFL
1"HDPE-AIR
2"HDPE-INFL
1"HDPE-AIR
2"HDPE-INFL

Great Lakes Soil & Environmental Consultants, Inc.	DAILY FIELD OBSERVATION REPORT

Project:	Underground piping American chemical Service Colfax Ave., Griffith, Indiana						
Client:	Young's Environmental Cleanup, Inc G-5305 North Dort Highway Flint, MI 48505 Attn.: Mr Joe Fisher						
File No.:	1147	Date:	1/21/97	Rpt. No.:	1	Observer	GAK

On this day, field compaction tests were performed on the final grade and pipe zone between stations 0+00 and 5+00. All the results met with project specifications.

The contractor expressed his desire to use self compacting 3/4" stone and avoid field compaction testing. To justify that, field compaction tests were performed on the stone stockpile and compared with in place compacted (using vibrating plate) stone. The results of both the tests were very close to each other and met with the project specifications.

Proctor # used:	103.00 pcf. @ 3.0 % moisture
Test in Stockpile, without any compaction	97.38 % @ 2.05 % moisture
In place, compacted with vibrating plate	98.25 % @ 3.00 % moisture

Page No	1/1

Signature

Ashok Guntaka, Project Engineer

Quality, Service & Commitment

APPENDIX E

MONITORING DATA

QUARTERLY MONITORING REPORT
PERIMETER GROUNDWATER CONTAINMENT SYSTEM
GROUNDWATER TREATMENT SYSTEM

AMERICAN CHEMICAL SERVICE NPL SITE
GRIFFITH, INDIANA

Montgomery Watson File No. 1252057

Prepared For:

American Chemical Service
Griffith, Indiana

Prepared By:

Montgomery Watson
2100 Corporate Drive
Addison, Illinois 60101

October 1997

MONTGOMERY WATSON

QUARTERLY MONITORING REPORT
GROUNDWATER TREATMENT SYSTEM

AMERICAN CHEMICAL SERVICE NPL SITE
GRIFFITH, INDIANA

Prepared For:

American Chemical Service
Griffith, Indiana

Prepared by: _____ _____

Srinivas S. N. Devulapalli — Date
Senior Engineer

Approved by: _____ _____

Peter J. Vagt, Ph.D., CPG — Date
Project Manager

TABLE OF CONTENTS

Section		Page
1.0	INTRODUCTION	1
2.0	COMPLIANCE MONITORING	3
2.1	Introduction	3
2.2	Sampling and Analyses	3
2.3	Analytical Results	3
3.0	TREATMENT SYSTEM PROCESS MODIFICATIONS	7
4.0	PGCS GAUGING ACTIVITIES	9

LIST OF TABLES

Table 1.1	Operation Chronology	2
Table 2.1	Groundwater Treatment System Effluent Discharge Limits	5
Table 2.2	Sampling Frequency Scheme Groundwater Treatment System	6
Table 2.3	Summary of Compliance Monitoring Data, March - August 1997	7
Table 3.1	Groundwater Treatment System Discharge Exceedances	7

LIST OF APPENDICES

Appendix A Analytical Data Reports

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1.0 INTRODUCTION

Montgomery Watson, on behalf of the ACS RD/RA Executive Committee, commenced operation of an on-site groundwater treatment system at the American Chemical Service NPL Site in Griffith, Indiana on March 13, 1997. This treatment system was designed to treat groundwater from the perimeter groundwater containment system (PGCS) and limited volumes of water from the Barrier Wall Extraction System (BWES). The treated effluent from the treatment system is discharged to the nearby wetlands, west of the treatment system in accordance with Agency approvals. The treatment train consists of a phase separator for oil and free product removal, equalization tanks, a UV-oxidation unit for destruction of organic constituents, a chemical precipitation and clarification unit to remove metals, a sand filter to remove suspended solids, and activated carbon vessels for final polishing of the treated groundwater. An air stripper has been added to treat methylene chloride in the groundwater.

Although the majority of the treatment system capacity was originally designed to treat PGCS-associated groundwater only, the system is also used to treat groundwater from the barrier wall extraction system (BWES). The groundwater associated with the BWES typically has higher concentrations than that of the PGCS due to their respective locations on the ACS site. Consequently, efforts are being made to modify the treatment system to accommodate more of the BWES related groundwater.

This is the first quarterly monitoring report for the treatment system, and therefore it summarizes all the analytical data collected between March 13 (when operations commenced) and August 28, 1997. The first quarter of operations was consumed by startup, testing and optimization of the groundwater treatment system. The startup, testing and optimization work for the groundwater treatment system was done in accordance with the PGCS Performance Standard Verification Plan (PSVP) dated April 1997. The treatment system was initially operated in batch mode in which the discharge from the treatment system was stored in temporary collection tanks instead of being directly discharged to the wetlands. Once receipt and review of the analytical data indicated that the effluent was in compliance with discharge standards, temporary tank contents were discharged to the wetlands. The treatment system did not operate between March 13 and 18, 1997, because Montgomery Watson was awaiting analytical results. Montgomery Watson re-started the treatment system on April 8, 1997, which is considered the second day of operation. The effluent from the treatment system was then discharged to the wetlands. April 9, 17, 21, 22 and 24, 1997 were operating days 3, 4, 5, 6 and 7, respectively. The treatment system was shut down during the period of April 25 through May 20, 1997, because Montgomery Watson was awaiting analytical results prior to discharging treated groundwater to the wetlands. The treated groundwater from April 9, 17, 21, 22 and 26, 1997, was stored in temporary storage tanks. Upon receiving analytical data that indicated compliance, the treated groundwater was discharged to the wetlands. Operation of the treatment system resumed on May 21, 1997, on a continuous basis. The following table summarizes the chronology of the system operation.

Table 1.1 Operation Chronology

Day 1	3/13/97	0 - 7 Days
Day 2	4/8/97	
Day 3	4/9/97	
Day 4	4/17/97	
Day 5 6	4/21/97	
Day 6	4/22/97	
Day 7	4/24/97	
Week 1	5/21/97	8 - 30 Days
Week 2	5/29/97	
Week 3	6/5/97	
Month 1	6/13/97	Monthly
Month 2	7/3/97	
Month 3	8/13/97	

Section 2 presents the effluent discharge limitations imposed by the Indiana Department of Environmental Management (IDEM) and the United States Environmental Protection Agency (U.S. EPA) for the wetland discharge. Section 2 also presents details of the analytical methods and summarizes the data collected to date. During process optimization of the treatment system, exceedances of the effluent discharge limitations were observed for a couple of parameters. Appropriate process modifications were immediately implemented to eliminate the exceedance situations, and then samples were collected and analyzed to demonstrate compliance with the limitations. Details of these process modifications are discussed in Section 3 of this report. U.S. EPA was immediately notified of each of these exceedances and measures have been taken to minimize the occurrence of future exceedances.

2.0 COMPLIANCE MONITORING

2.1 INTRODUCTION

Effluent samples were periodically collected from the treatment system to demonstrate compliance with the discharge limitations (Table 2.1) established by IDEM and the U.S. EPA. Effluent samples were collected in accordance with the sampling frequency delineated in the U.S. EPA approved PSVP, which is presented in Table 2.2. Sampling and analyses were performed in accordance with the approved Quality Assurance Project Plan (QAPP) prepared by Montgomery Watson for the ACS RD/RA Executive Committee in April 1997. The following sections present details on sampling and analyses, and also summarize the analytical data collected to date on the treatment system effluent.

2.2 SAMPLING AND ANALYSES

Effluent samples were collected directly from a sample tap on the effluent line just before it exits the groundwater treatment system building. All effluent samples were placed in contaminant-free containers, as specified in the U.S. EPA Specifications and Guidance for Obtaining Contaminant-Free Sample Containers (U.S. EPA, 1992). Appropriate sample containers and preservatives, as specified in the QAPP, were used to collect and preserve the samples. Following sample collection, the sample containers were refrigerated at 4° C in coolers. Chain-of-Custody forms were prepared to track the transfer of samples from the treatment system to the laboratories. The following analytical methods were adopted to analyze samples:

- VOCs (Analytical Method: SW-846 8260A)
- SVOCs (Analytical Method: SW-846 8270B)
- Pentachlorophenol (Analytical Method: SW-846 8270B and SIM)
- Pesticides/PCBs (Analytical Method: EPA 608)
- Metals (Excluding Mercury) (Analytical Method: SW-846 6010)
- General Water Quality Parameters (TSS and BOD-5) (Analytical Method: EPA 160.2 and 405.1)
- Mercury (Analytical Method: SW-846 7470)
- pH (Analytical Method: EPA 150.1)

2.3 ANALYTICAL RESULTS

During the period of March 13, 1997, through August 28, 1997, the treatment system effluent has been in compliance with the discharge limitations in Table 2.1 with a few exceptions. A comparison of the analytical data collected to date with the discharge limitations is presented in Table 2.3. There were two pH, two arsenic, three methylene chloride, two vinyl chloride and one TSS reported by the laboratory that exceeded the

discharge limits during this monitoring period. Two of these exceedances are considered to be laboratory errors. Montgomery Watson suspects one additional exceedance to also be a laboratory error. Section 3 presents details of these exceedances and the measures already adopted to rectify such situations.

In general, the groundwater treatment system effluent pH was in the range of 7.3 to 9.0. The effluent pH exceeded the upper discharge limit of 9.0 on June 27 and July 29, 1997. With the exception of July 29, 1997, total suspended solids (TSS) were not detected for most of the compliance monitoring period. The five-day biochemical oxygen demand (BOD_5) was always below the effluent discharge limit. Barring two arsenic exceedances, metal constituent concentrations were consistently below the effluent discharge limits. Volatile organic constituents, barring three methylene chloride and two vinyl chloride, exceedances were below the effluent limits; typically, non-detect concentrations were observed for a majority of the constituents. All of the regulated semi-volatile constituents were well below the effluent limits of the groundwater treatment system. Detailed analytical reports are appended at the end of this document.

Table 2.1 Groundwater Treatment System Effluent Discharge Limits
American Chemical Service NPL Site
Griffith, Indiana

Groundwater Quality Parameter	Effluent Standard (Limit)
General Water Quality Parameters	
BOD-5	30 mg/L
TSS	30 mg/L
pH	6 - 9 S.U.
Inorganics	
Arsenic	50 µg/L
Beryllium	
Cadmium	4.1 µg/L
Manganese	
Mercury	0.02 µg/L (w/DL = 0.64)
Selenium	8.2 µg/L
Thallium	
Zinc	411 µg/L
Volatile Organics	
Acetone	6,800 µg/L
Benzene	5 µg/L
2-Butanone	210 µg/L
Chloromethane	
1,4 - Dichlorobenzene	
1,1 - Dichloroethane	
1,2 - Dichloroethene - cis	70 µg/L
Ethylbenzene	34 µg/L
Methylene chloride	5 µg/L
Tetrachloroethene	5 µg/L
Trichloroethene	5 µg/L
Vinyl chloride	2 µg/L
4 - Methyl - 2 - pentanone	15 µg/L
Semi-Volatile Organics	
bis(2 - Chloroethyl) ether	9.6 µg/L
bis(2 - Ethylhexyl) phthalate	6 µg/L
Isophorone	50 µg/L
4 - Methylphenol	34 µg/L
Pentachlorophenol	1 µg/L
PCBs	
PCBs	0.00056 µg/L (w/DL = 0.1)

Table 2.2 Sampling Frequency Scheme
Groundwater Treatment System
American Chemical Service NPL Site
Griffith, Indiana

Analytes	Cumulative Time From Startup*	Frequency
Flowrate and pH	–	Continuous
BOD, TSS, SVOCs and Metals	0 to 7 days	Once per day
	8 to 30 days	Once per week
	31 to 180 days	Once per month
	181 days onward	Once per quarter
VOCs	0 to 7 days	Once per day
	8 to 30 days	Once per week
	31 days onward	Once per month
PCBs	0 to 7 days	Once
	8 to 30 days	Once
	31 to 180 days	Twice
	181 days onward	Once per quarter
PCBs in Sediment (one location)	–	Once per year

* *Cumulative time from startup of the groundwater treatment system. Startup refers to the point at which contaminated groundwater from the extraction trench was being introduced into the treatment system. Startup occurred once the initial equipment/system testing with clean water was completed (March 13, 1997).*

3.0 TREATMENT SYSTEM PROCESS MODIFICATIONS

Treatment system modifications were implemented to address all experienced discharge exceedances. During the period of March 1997 through August 1997, the following effluent discharge limit exceedances were observed:

Table 3.1 Groundwater Treatment System Discharge Exceedances

Sample Date	Parameter	Measured Concentration	Discharge Limit
June 11, 1997	Methylene Chloride	110 µg/L	5 µg/L
June 11, 1997	Vinyl Chloride	6.8 µg/L	2 µg/L
June 18, 1997	Methylene Chloride	58 µg/L	5 µg/L
June 18, 1997	Vinyl Chloride	37 µg/L	2 µg/L
June 23, 1997	Methylene Chloride	13 µg/L	5 µg/L
June 27, 1997*	pH	10	6 - 9
June 27, 1997	Arsenic	0.17 mg/L	0.05 mg/L
July 10, 1997	Arsenic	0.061 mg/L	0.05 mg/L
July 29, 1997*	pH	9.9	6 - 9
July 29, 1997*	TSS	96 mg/L	30 mg/L

* *Laboratory error*

The following is a summary of the measures undertaken by Montgomery Watson to verify and prevent the recurrence of the above listed exceedances:

- Montgomery Watson evaluated various options to prevent future occurrences of Vinyl Chloride and Methylene Chloride exceedances, which occurred on the June 11, 18 and 23, 1997, sampling event. These efforts included optimization studies on the UV Oxidizer. On July 9, 1997, a shallow tray air stripper was installed downstream of the sand filter to strip the methylene chloride and vinyl chloride from the sand filter effluent. Following addition of the air stripper, discharge exceedances for these two constituents have not been observed. The addition of the air stripper has successfully eliminated the recurrence of such exceedances.

- The laboratory reported pH exceedance on June 27, 1997, is suspected to be a laboratory error. Montgomery Watson reviewed the continuous effluent pH and the carbon vessels influent pH recordings during the operating period. Unfortunately, the effluent pH probe had malfunctioned on this sampling day. However, it has been Montgomery Watson's experience from operating this treatment system, that there is no significant variation in the influent and effluent pH of the carbon vessels. The carbon vessel influent pH was 8.5; therefore, we believe that the laboratory result for the effluent pH was in error, probably a

matrix interference in the laboratory, or sample container contamination (i.e., presence of a preservative).

- The Arsenic exceedances observed on June 27, 1997, and July 10, 1997, were resolved by lowering the target chemical precipitation pH of the clarifier from 10.0 to 8.5. A lower pH was necessary to precipitate the Arsenic from the groundwater. Following this process modification change, no further Arsenic exceedances have been observed.

- On July 29, 1997, the laboratory reported a pH and TSS exceedance in the treatment system effluent. Montgomery Watson reviewed the sampling observations made during collection of the samples on this day. The samples collected for compliance monitoring on this day were clear (no visual observance of TSS; TSS of 96 mg/L should be fairly visible to the naked eye). The groundwater treatment system has an in-line pH probe and transmitter that sets off a low alarm when the effluent pH drops below 6.0 and a high pH alarm when the effluent pH exceeds 9.0. On July 29, 1997, the operations staff of Montgomery Watson did not receive a high pH alarm from the transmitter. Further, the results of the August 5, 1997, compliance monitoring sample revealed an effluent pH of 7.4 and a non-detect TSS. Therefore, Montgomery Watson believes that the original sample analyses of pH and TSS on July 29, 1997, were in error, possibly due to matrix interference at the laboratory, or sample container contamination (i.e., the presence of a preservative). Montgomery Watson believes that the pH and TSS values in the treatment system effluent were not in exceedance of the effluent discharge limitations. Also, a review of the analytical data summarized in Table 2.3 reveals that TSS concentrations were typically non-detect, suggesting that the TSS concentration on July 29, 1997, was an outlier and probably an error.

4.0 PGCS GAUGING ACTIVITIES

As previously described, the PGCS trenches and groundwater treatment system were initially operated in batch mode; pumping for a day, collecting a sample and turning the system off until analytical results indicating compliance with discharge limits were received. However, on May 19, 1997, operation of the PGCS trenches were turned on and operated in "auto" mode (semi-continuously). Gauging was evaluated on the PGCS piezometers to determine the effect of the pumping system. Water level measurements were taken daily for seven days starting on May 19, and weekly for three weeks thereafter. The dates of the measurements are as follows: May 19 through 25, May 28, June 5 and 11, 1997.

The influence of the PGCS trench on groundwater flow patterns in the upper aquifer is shown in Figures 1 through 5:

- As shown in Figure 1 (May 19), groundwater elevations prior to the operation of the PGCS are from approximately 631.0 feet amsl at piezometer nest P90/P91/P92 to 633.0 feet amsl at nest P81/P82/P83. The direction of groundwater flow is from east to west.

- Figure 2 (May 20) represents the potentiometric surface of the upper aquifer after approximately one day of semi-continuous operation. The groundwater elevations are clearly influenced by the PGCS trench. Upper aquifer groundwater is clearly being drawn into the trench, as water levels dropped approximately 0.5 feet at each PGCS piezometer nest.

- As shown in Figure 3 (May 24), water levels dropped approximately one foot below levels established prior to PGCS operation at piezometer nests P81/P82/P/83 and P90/P91/P92 after six days of semi-continuous operation.

- As shown in Figure 4 (June 5), groundwater is clearly being conveyed to the PGCS trench. The groundwater contours to the north of piezometer net P87/P88/P89 indicate a strong gradient toward the trench. Additionally, the potentiometric surface at PGCS piezometer nest P90/P91/P92 dropped approximately 2.0 feet as compared to groundwater elevations prior to PGCS initiation.

- After four idle days (not operating the PGCS trench), the potentiometric surface is shown in Figure 5 (June 11). PGCS piezometer gauging indicated little effect on water levels near the trench and in the surrounding area.

Based on the above analysis, operation of the PGCS clearly draws groundwater toward the trenches.

As shown in Figure 6, the PGCS trench was operated intermittently between June 11 and August 31, 1997. During the periods when the PGCS was not in operation, the influent source to the treatment system was water pumped from the off-site drainage swale to prevent over-topping of the barrier wall and from baker tanks used to collect water from construction dewatering activities. Because the PGCS was not consistently operated, steady-state water levels were not established in the surrounding area. Water level measurements on a monthly basis would not have reflected the true effect of the pumping system due to the intermittent operation of the PGCS. Monthly water level measurements will be collected now that the PGCS trench is operated on a regular schedule.

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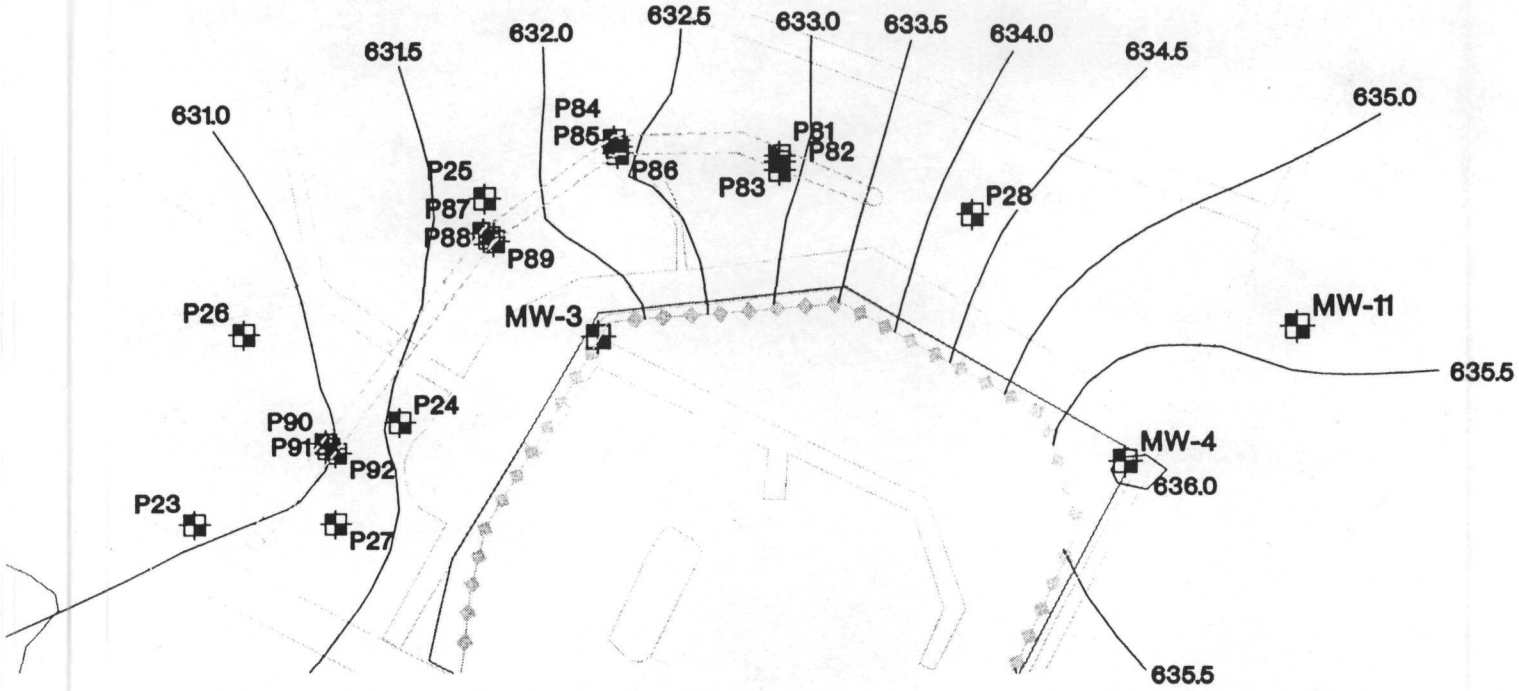
Figures



LEGEND

MW-12 UPPER AQUIFER WELL LOCATION AND NUMBER

P81 PIEZOMETER LOCATION AND NUMBER

631.50 GROUNDWATER ELEVATION

REVISED PGCS EXTRACTION TRENCH ALIGNMENT

NEW ALIGNMENT OF BARRIER WALL

north

0 300 600

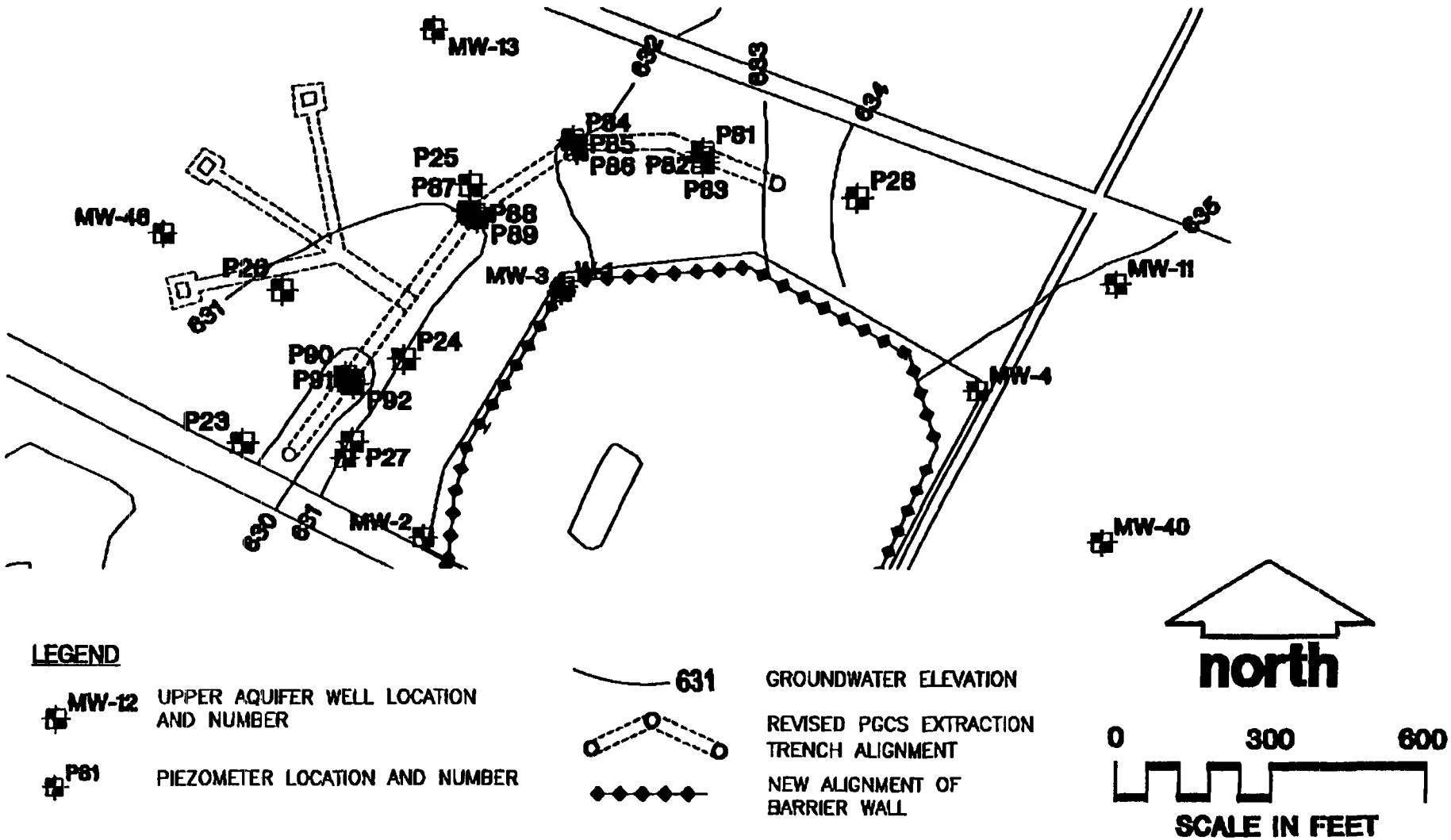
SCALE IN FEET

MONTGOMERY WATSON
Chicago, Illinois

American Chemical
Griffith, IN

UPPER AQUIFER POTENTIOMETRIC SURFACE
MAY 19, 1997

FIGURE 1

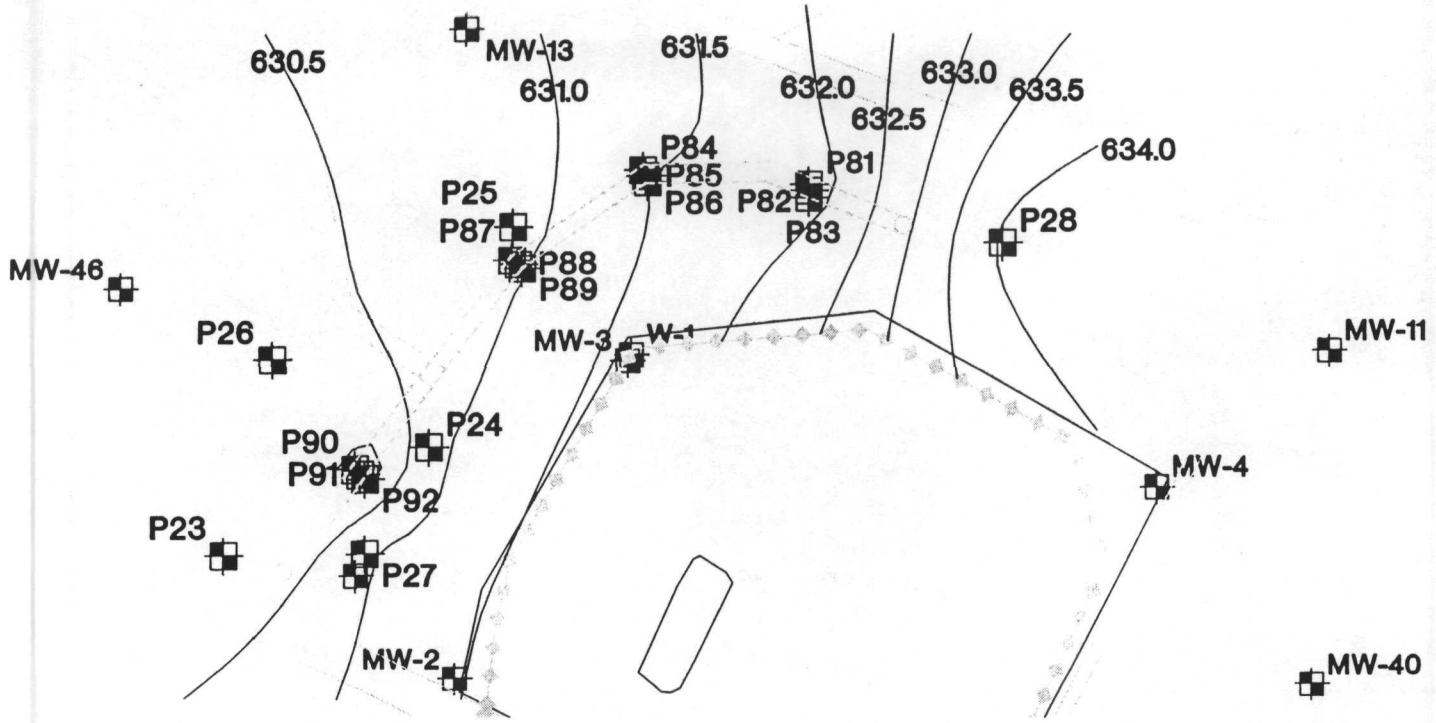


MONTGOMERY WATSON
Chicago, Illinois

American Chemical
Griffith, IN

UPPER AQUIFER POTENTIOMETRIC SURFACE
MAY 20, 1997

FIGURE 2



LEGEND

MW-12 UPPER AQUIFER WELL LOCATION AND NUMBER

P81 PIEZOMETER LOCATION AND NUMBER

631.50 GROUNDWATER ELEVATION

REVISED PGCS EXTRACTION TRENCH ALIGNMENT

NEW ALIGNMENT OF BARRIER WALL

north

0 300 600

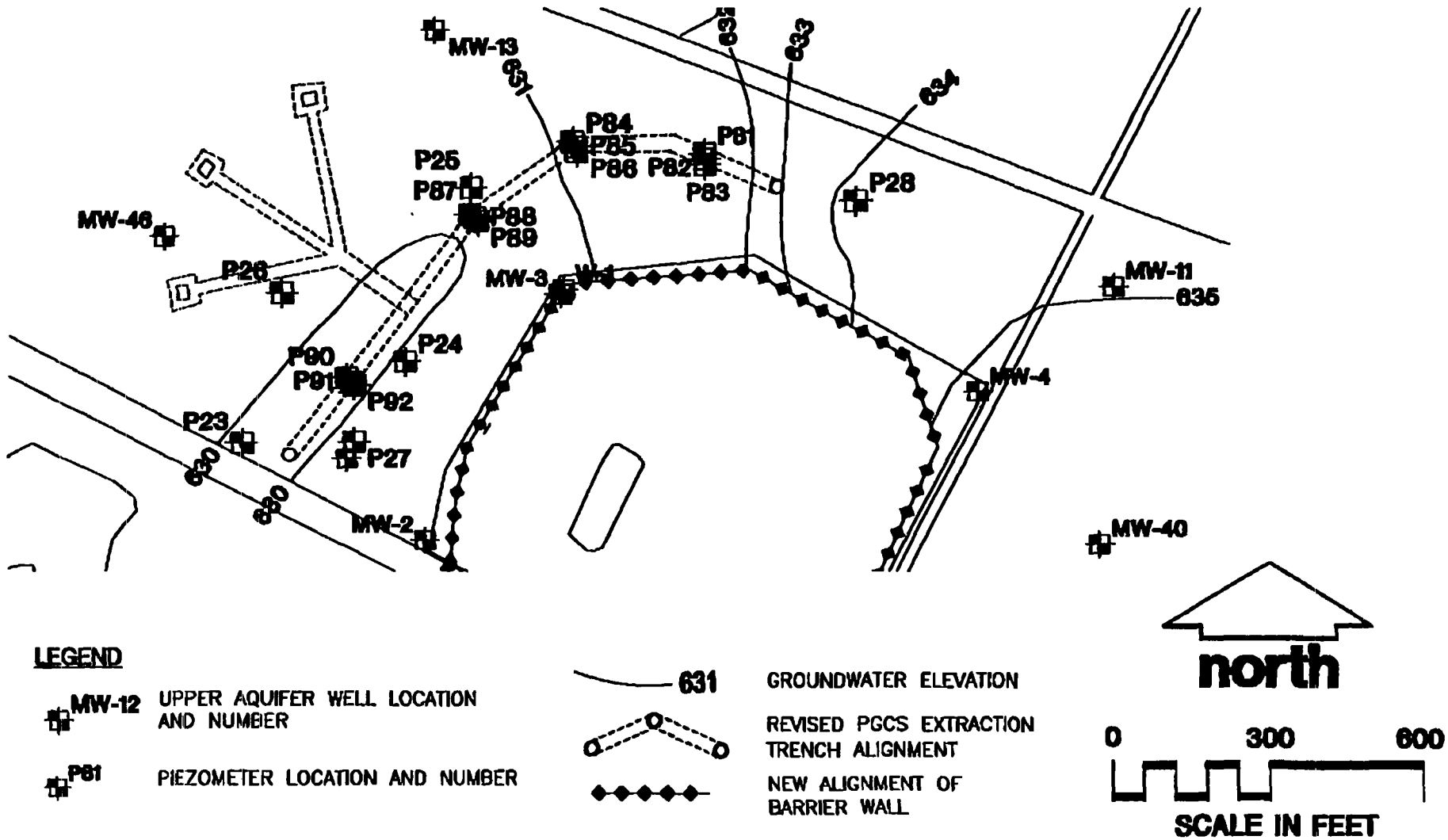
SCALE IN FEET

MONTGOMERY WATSON
Chicago, Illinois

American Chemical
Griffith, IN

UPPER AQUIFER POTENTIOMETRIC SURFACE
MAY 24, 1997

FIGURE 3

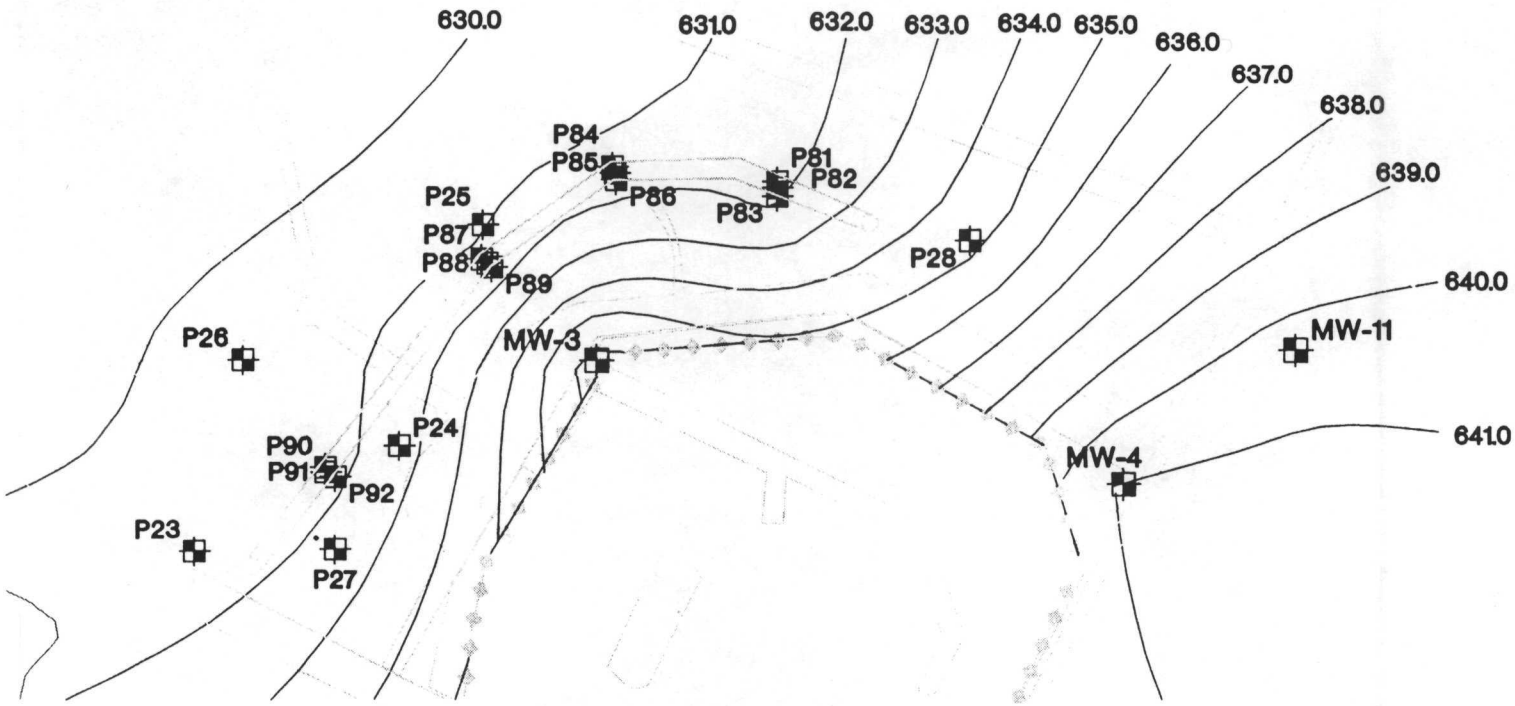


MONTGOMERY WATSON
Chicago, Illinois

American Chemical
Griffith, IN

UPPER AQUIFER POTENTIOMETRIC SURFACE
JUNE 5, 1997

FIGURE 4



LEGEND

MW-12 UPPER AQUIFER WELL LOCATION AND NUMBER

P81 PIEZOMETER LOCATION AND NUMBER

631.50 GROUNDWATER ELEVATION

REVISED PGCS EXTRACTION TRENCH ALIGNMENT

NEW ALIGNMENT OF BARRIER WALL

north

0 300 600

SCALE IN FEET

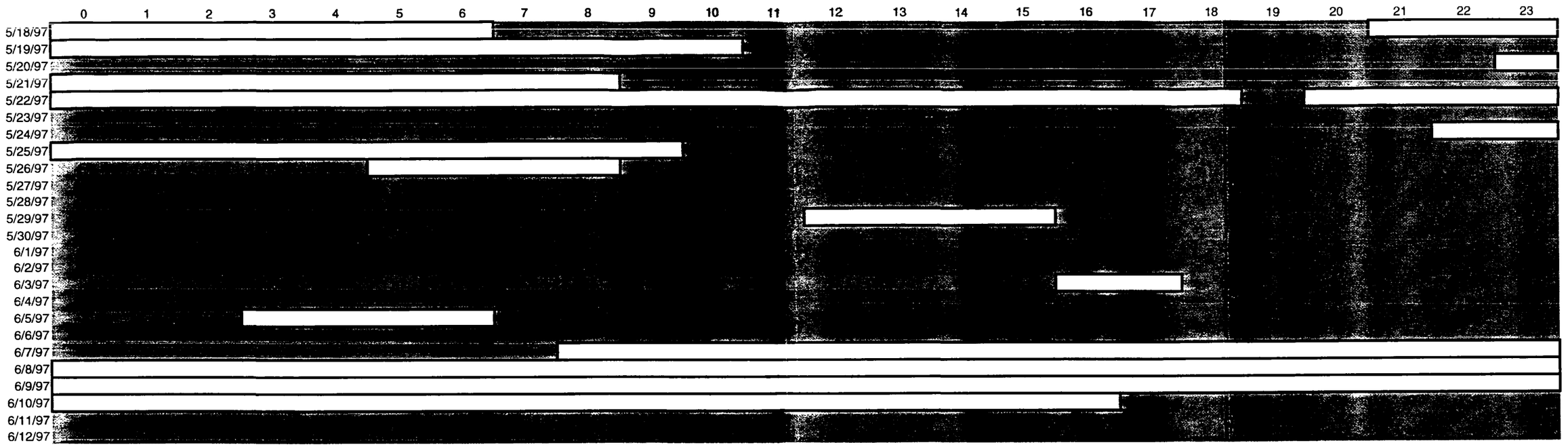
MONTGOMERY WATSON
Chicago, Illinois

American Chemical
Griffith, IN

UPPER AQUIFER POTENTIOMETRIC SURFACE
JUNE 11, 1997

FIGURE 5

Figure 6
PGCS Operation Schedule: May 18 through August 31, 1997
American Chemical Service, Inc.
Griffith, Indiana



During the period of June 13 through July 17, 1997, the PGCS was operated intermittently.

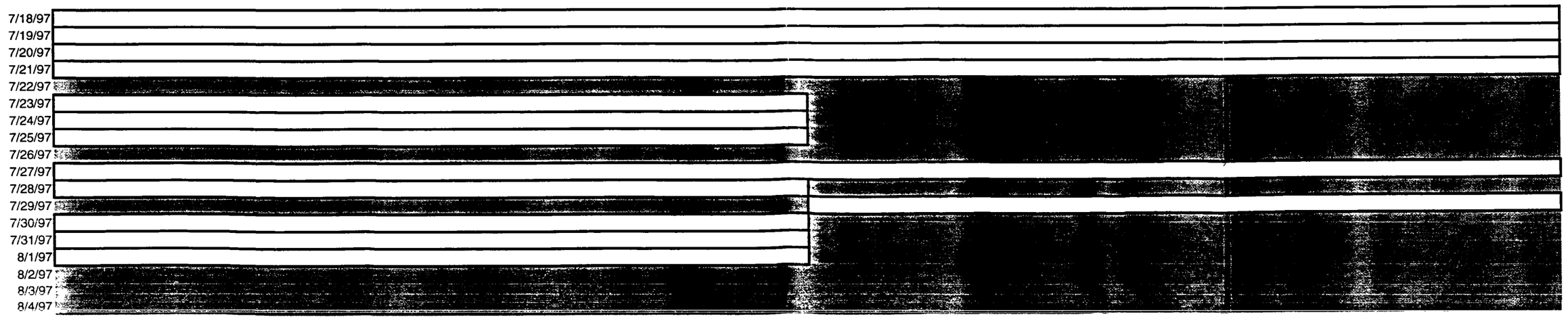


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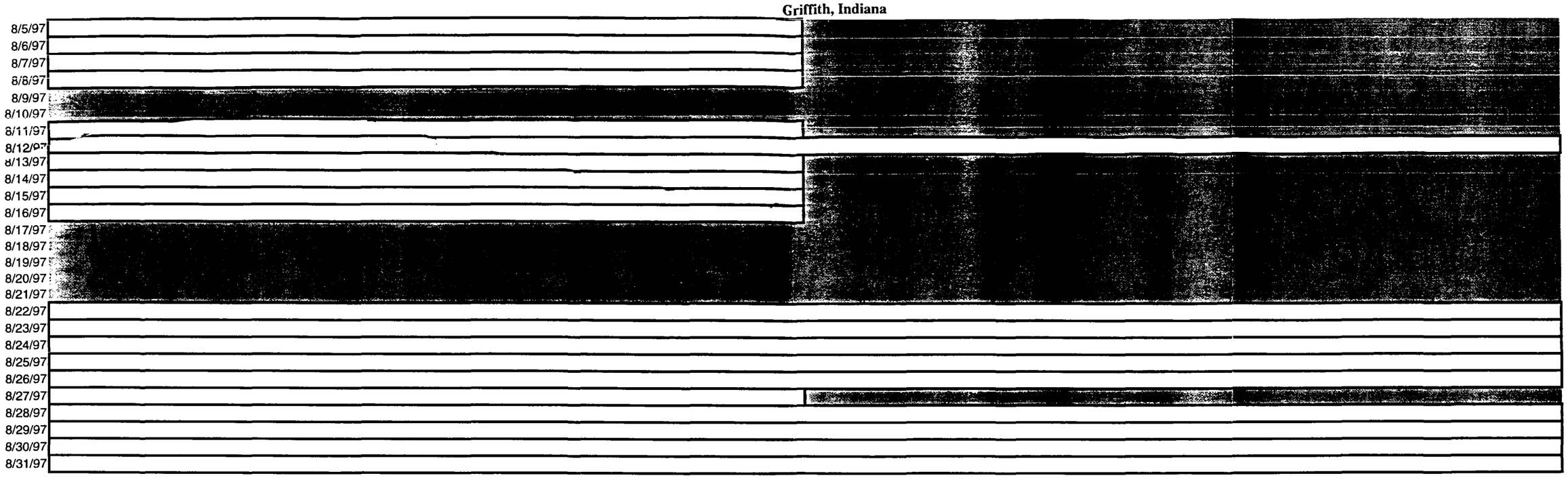
Figure 6
PGCS Operation Schedule: May 18 through August 31, 1997
American Chemical Service, Inc.
Griffith, Indiana



OFFLINE
ONLINE

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Appendices

METALS
(Water)

Client Name: Montgomery Watson, Inc.
Client ID: EFFLUENT
LAB ID: 125014-0001-2A
Matrix: AQUEOUS
Authorized: 17 MAR 97

Sampled: 13 MAR 97
Prepared: See Below

Received: 17 MAR 97
Analyzed: See Below

Parameter	Result	Qual	DIL	RL	Units	Method	Prep Date	Analyzed Date
Arsenic	0.0082	J	1.0	0.010	mg/L	6010A	17 MAR 97	18 MAR 97
Beryllium	0.00030	J	1.0	0.0050	mg/L	6010A	17 MAR 97	18 MAR 97
Cadmium	ND		1.0	0.0020	mg/L	6010A	17 MAR 97	18 MAR 97
Manganese	0.0017	J	1.0	0.015	mg/L	6010A	17 MAR 97	18 MAR 97
Mercury	ND		1.0	0.00020	mg/L	SW7470	19 MAR 97	19 MAR 97
Selenium	ND		1.0	0.0050	mg/L	6010A	17 MAR 97	18 MAR 97
Thallium	ND		1.0	0.010	mg/L	6010A	17 MAR 97	18 MAR 97
Zinc	0.010	JB	1.0	0.020	mg/L	6010A	17 MAR 97	18 MAR 97

PRELIMINARY DATA
PENDING QC, FINAL REVIEW AND APPROVAL

B = Compound is also detected in the blank.
J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Volatile Organic Compounds
Method SW8260A

Client Name:	Montgomery Watson, Inc.		
Client ID:	[illegible]		
Lab ID:	125014-0001-SA		
Matrix:	AQUEOUS	Sampled: 13 MAR 97	Received: 17 MAR 97
Extracted:	17 MAR 97	Prepared: 17 MAR 97	Analyzed: 17 MAR 97
Instrument:	GC/MS-HD	Dilution: 1.0	

Parameter	Result	Qualifier	RL	Units
Benzene	ND		1.0	ug/L
Bromobenzene	ND		1.0	ug/L
Bromochloromethane	ND		1.0	ug/L
Bromodichloromethane	ND		1.0	ug/L
Bromoform	ND		1.0	ug/L
Bromomethane	ND		2.0	ug/L
n-Butylbenzene	ND		1.0	ug/L
sec-Butylbenzene	ND		1.0	ug/L
Carbon tetrachloride	ND		1.0	ug/L
Chlorobenzene	ND		1.0	ug/L
Chloroethane	ND		2.0	ug/L
Chloroform	ND		1.0	ug/L
Chloromethane	ND		2.0	ug/L
2-Chlorotoluene	ND		1.0	ug/L
Dibromochloromethane	ND		1.0	ug/L
1,2-Dibromo-3-chloro-propane (DBCP)	ND		2.0	ug/L
1,2-Dibromoethane (EDB)	ND		1.0	ug/L
Dibromomethane	ND		1.0	ug/L
1,2-Dichlorobenzene	ND		1.0	ug/L
1,3-Dichlorobenzene	ND		1.0	ug/L
1,4-Dichlorobenzene	ND		1.0	ug/L
Dichlorodifluoromethane	ND		2.0	ug/L
1,1-Dichloroethane	ND		1.0	ug/L
1,2-Dichloroethane	ND		1.0	ug/L
1,1-Dichloroethene	ND		5.0	ug/L
cis-1,2-Dichloroethene	ND		1.0	ug/L
trans-1,2-Dichloroethene	ND		1.0	ug/L
1,2-Dichloropropane	ND		1.0	ug/L
1,3-Dichloropropane	ND		1.0	ug/L
2,2-Dichloropropane	ND		1.0	ug/L
1,1-Dichloropropene	ND		1.0	ug/L
Ethylbenzene	ND		1.0	ug/L
Hexachlorobutadiene	ND		1.0	ug/L
Isopropylbenzene	ND		1.0	ug/L
Isopropyltoluene	ND		1.0	ug/L
Methylene chloride	ND		5.0	ug/L
Naphthalene	ND		1.0	ug/L
n-Propylbenzene	ND		1.0	ug/L
Styrene	ND		1.0	ug/L
1,1,1,2-Tetrachloroethane	ND		1.0	ug/L
1,1,2,2-Tetrachloroethane	ND		1.0	ug/L
Tetrachloroethene	ND		1.0	ug/L
Toluene	ND		1.0	ug/L
1,2,3-Trichlorobenzene	ND		1.0	ug/L

ND = Not Detected

PRELIMINARY DATA
PENDING QC, FINAL REVIEW AND APPROVAL

Volatile Organic Compounds
Method SW8260A

(cont.)

Client Name: Montgomery Watson, Inc.
Client ID: EFFLUENT
LAB ID: 125014-0001-SA
Matrix: AQUEOUS — Sampled: 13 MAR 97 — Received: 17 MAR 97
Authorized: 17 MAR 97 — Prepared: 17 MAR 97 — Analyzed: 17 MAR 97
Instrument: GC/MS-MD — Dilution: 1.0

Parameter	Result	Qualifier	RL	Units
1,2,4-Trichlorobenzene	ND		1.0	ug/L
1,1,1-Trichloroethane	ND		1.0	ug/L
1,1,2-Trichloroethane	ND		1.0	ug/L
Trichloroethene	ND		1.0	ug/L
Trichlorofluoromethane	ND		2.0	ug/L
1,2,3-Trichloropropane	ND		1.0	ug/L
1,2,4-Trimethylbenzene	ND		1.0	ug/L
1,3,5-Trimethylbenzene	ND		1.0	ug/L
Vinyl chloride	ND		2.0	ug/L
m- & p-Xylenes	ND		1.0	ug/L
o-Xylene	ND		1.0	ug/L
Acetone	ND		10	ug/L
2-Butanone	6.9	J	10	ug/L
4-Methyl-2-pentanone	ND		10	ug/L

Surrogate	Recovery		Acceptable Range
1,2-Dichloroethane-d4	99	%	80 - 120
Toluene-d8	102	%	80 - 120
Bromofluorobenzene	96	%	80 - 120

Limit is 210

PRELIMINARY DATA
PENDING QC, FINAL REVIEW AND APPROVAL

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Semivolatile Organic Compounds
Appendix IX List
Method 8270

Client Name: Montgomery Watson, Inc.
Client ID: EFFLUENT
LAB ID: 125014-0001-01A
Matrix: AQUEOUS — Sampled: 13 MAR 97 — Received: 17 MAR 97
Extracted: 17 MAR 97 — Prepared: 17 MAR 97 — Analyzed: 18 MAR 97
Instrument: GC/MS-MS — Dilution: 1.0

Parameter	Result	Qualifier	RL	Units
N-Nitrosodimethylamine	ND		10	ug/L
Aniline	ND		10	ug/L
Phenol	ND		10	ug/L
bis(2-Chloroethyl) ether	ND		10	ug/L
2-Chlorophenol	ND		10	ug/L
1,3-Dichlorobenzene	ND		10	ug/L
1,4-Dichlorobenzene	ND		10	ug/L
Benzyl alcohol	ND		10	ug/L
1,2-Dichlorobenzene	ND		10	ug/L
2-Methylphenol	ND		10	ug/L
bis(2-Chloroisopropyl)-ether	ND		10	ug/L
3/4-Methylphenol	ND		10	ug/L
N-Nitroso-di-n-propylamine	ND		10	ug/L
Hexachloroethane	ND		10	ug/L
Nitrobenzene	ND		10	ug/L
Isophorone	ND		10	ug/L
2-Nitrophenol	ND		10	ug/L
2,4-Dimethylphenol	ND		10	ug/L
Benzoic acid	ND		50	ug/L
bis(2-Chloroethoxy)-methane	ND		10	ug/L
2,4-Dichlorophenol	ND		10	ug/L
1,2,4-Trichlorobenzene	ND		10	ug/L
Naphthalene	ND		10	ug/L
4-Chloroaniline	ND		10	ug/L
Hexachlorobutadiene	ND		10	ug/L
4-Chloro-3-methylphenol	ND		10	ug/L
2-Methylnaphthalene	ND		10	ug/L
Hexachlorocyclopentadiene	ND		50	ug/L
2,4,6-Trichlorophenol	ND		10	ug/L
2,4,5-Trichlorophenol	ND		50	ug/L
2-Chloronaphthalene	ND		10	ug/L
2-Nitroaniline	ND		50	ug/L
Dimethyl phthalate	ND		10	ug/L
Acenaphthylene	ND		10	ug/L
3-Nitroaniline	ND		50	ug/L
Acenaphthene	ND		10	ug/L
2,4-Dinitrophenol	ND		50	ug/L
4-Nitrophenol	ND		50	ug/L
Dibenzofuran	ND		10	ug/L
2,4-Dinitrotoluene	ND		10	ug/L
2,6-Dinitrotoluene	ND		10	ug/L
Diethyl phthalate	ND		10	ug/L
1,2-Diphenylhydrazine	ND		50	ug/L
4-Chlorophenyl phenyl ether	ND		10	ug/L

ND = Not Detected

PRELIMINARY DATA
PENDING QC, FINAL REVIEW AND APPROVAL

Semivolatile Organic Compounds (cont.)
Appendix IX List
Method 8270

Client Name: Montgomery Watson, Inc.
Client ID: EFFLUENT
LAB ID: 125014-0001-SA
Matrix: AQUEOUS Sampled: 13 MAR 97 Received: 17 MAR 97
Authorized: 17 MAR 97 Prepared: 17 MAR 97 Analyzed: 18 MAR 97
Instrument: GC/MS-NE Dilution: 1.0

Parameter	Result	Qualifier	RL	Units
Fluorene	ND		10	ug/L
4-Nitroaniline	ND		50	ug/L
4,6-Dinitro-2-methylphenol	ND		50	ug/L
N-Nitrosodiphenylamine	ND		10	ug/L
4-Bromophenyl phenyl ether	ND		10	ug/L
Hexachlorobenzene	ND		10	ug/L
Phenanthrene	ND		10	ug/L
Anthracene	ND		10	ug/L
Di-n-butyl phthalate	ND		10	ug/L
Fluoranthene	ND		10	ug/L
Pyrene	ND		10	ug/L
Butyl benzyl phthalate	ND		10	ug/L
3,3'-Dichlorobenzidine	ND		50	ug/L
Benzo(a)anthracene	ND		10	ug/L
bis(2-Ethylhexyl)-phthalate	0.76	J	10	ug/L
Chrysene	ND		10	ug/L
Di-n-octyl phthalate	ND		10	ug/L
Benzo(b)fluoranthene	ND		10	ug/L
Benzo(k)fluoranthene	ND		10	ug/L
Benzo(a)pyrene	ND		10	ug/L
Indeno(1,2,3-c,d)pyrene	ND		10	ug/L
Dibenz(a,h)anthracene	ND		10	ug/L
Benzo(g,h,i)perylene	ND		10	ug/L
2-Picoline	ND		20	ug/L
Ethyl methanesulfonate	ND		10	ug/L
Acetophenone	ND		10	ug/L
N-Nitrosopiperidine	ND		10	ug/L
a,a-Dimethylphenethyl-amine	ND		50	ug/L
2,6-Dichlorophenol	ND		10	ug/L
N-Nitroso-di-n-butylamine	ND		10	ug/L
1,2,4,5-Tetrachloro-benzene	ND		10	ug/L
Pentachlorobenzene	ND		10	ug/L
1-Naphthylamine	ND		10	ug/L
2-Naphthylamine	ND		10	ug/L
2,3,4,6-Tetrachlorophenol	ND		50	ug/L
Phenacetin	ND		20	ug/L
4-Aminobiphenyl	ND		50	ug/L
Pronamide	ND		20	ug/L
Pentachloronitrobenzene	ND		50	ug/L
4-Dimethylaminoazobenzene	ND		20	ug/L
7,12-Dimethylbenz(a)-anthracene	ND		20	ug/L
Phenacidine	ND		100	ug/L

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

PRELIMINARY DATA
PENDING Q.C. FINAL REVIEW AND APPROVAL

Semivolatile Organic Compounds
Appendix IX List
Method 8270

(cont.)

Client Name: Montgomery Watson, Inc.
Client ID: EFFLUENT
LAB ID: 125014-0001-SA
Matrix: AQUEOUS
Authorized: 17 MAR 97
Instrument: GC/MS-MB

Sampled: 13 MAR 97
Prepared: 17 MAR 97
Dilution: 1.0

Received: 17 MAR 97
Analyzed: 18 MAR 97

Parameter	Result	Qualifier	RL	Units
1-Chloronaphthalene	ND		10	ug/L
Dibenz(a,j)acridine	ND		20	ug/L

Surrogate	Recovery		Acceptable Range
2-Fluorophenol	42	%	21 - 100
Phenol-d5	28	%	10 - 94
Nitrobenzene-d5	73	%	36 - 114
2-Fluorobiphenyl	66	%	43 - 116
2,4,6-Tribromophenol	50	%	10 - 123
Terphenyl-d14	50	%	33 - 141

ND = Not Detected

PRELIMINARY DATA
PENDING QC REVIEW AND APPROVAL

Category: Phenols
Method: SW-846 8040A
Matrix: Water

Sample Date : 03/13/97
Receipt Date : 03/17/97
Report Date : 03/18/97

Client ID: [redacted]

Quanterra ID : 14020-001

Analyte	CAS Number	Blank Sample Name	Prep. Date	Analysis Date	Result	Unit	Qual.	Detection Limit	Dilution
[redacted]	87-86-5	QCBLK133864-1	03/17/97	03/17/97	[redacted]	UG/L		1.0	1
2-Fluorophenol	367-12-4	QCBLK133864-1	03/17/97	03/17/97	41	%REC			1
2,4,6-Tribromophenol	118-79-6	QCBLK133864-1	03/17/97	03/17/97	63	%REC			1

To: SRINIVAS

From: Ben

Quanterra Environmental Services

Volatile Organic Compounds
Method SW8260A

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT
LAB ID: 125399-0001-SA
Matrix: AQUEOUS — Sampled: 08 APR 97 — Received: 09 APR 97
Authorized: 09 APR 97 — Prepared: 09 APR 97 — Analyzed: 09 APR 97
Instrument: GC/MS-MC — Prep Method: SW5030 — Dilution: 1.0

Parameter	Result	Qualifier	RL	Units
Benzene	ND		1.0	ug/L
Bromobenzene	ND		1.0	ug/L
Bromochloromethane	ND		1.0	ug/L
Bromodichloromethane	ND		1.0	ug/L
Bromoform	ND		1.0	ug/L
Bromomethane	ND		2.0	ug/L
n-Butylbenzene	ND		1.0	ug/L
sec-Butylbenzene	ND		1.0	ug/L
Carbon tetrachloride	ND		1.0	ug/L
Chlorobenzene	ND		1.0	ug/L
Chloroethane	ND		2.0	ug/L
Chloroform	ND		1.0	ug/L
Chloromethane	0.42	J	2.0	ug/L
2-Chlorotoluene	ND		1.0	ug/L
Dibromochloromethane	ND		1.0	ug/L
1,2-Dibromo-3-chloro-propane (DBCP)	ND		2.0	ug/L
1,2-Dibromoethane (EDB)	ND		1.0	ug/L
Dibromomethane	ND		1.0	ug/L
1,2-Dichlorobenzene	ND		1.0	ug/L
1,3-Dichlorobenzene	ND		1.0	ug/L
1,4-Dichlorobenzene	ND		1.0	ug/L
Dichlorodifluoromethane	ND		2.0	ug/L
1,1-Dichloroethane	ND		1.0	ug/L
1,2-Dichloroethane	ND		1.0	ug/L
1,1-Dichloroethene	ND		5.0	ug/L
cis-1,2-Dichloroethene	ND		1.0	ug/L
trans-1,2-Dichloroethene	ND		1.0	ug/L
1,2-Dichloropropane	ND		1.0	ug/L
1,3-Dichloropropane	ND		1.0	ug/L
2,2-Dichloropropane	ND		1.0	ug/L
1,1-Dichloropropene	ND		1.0	ug/L
Ethylbenzene	ND		1.0	ug/L
Hexachlorobutadiene	ND		1.0	ug/L
Isopropylbenzene	ND		1.0	ug/L
Isopropyltoluene	ND		1.0	ug/L
Methylene chloride	ND		5.0	ug/L
Naphthalene	ND		1.0	ug/L
n-Propylbenzene	ND		1.0	ug/L
Styrene	ND		1.0	ug/L
1,1,1,2-Tetrachloroethane	ND		1.0	ug/L
1,1,2,2-Tetrachloroethane	ND		1.0	ug/L
Tetrachloroethene	ND		1.0	ug/L
Toluene	ND		1.0	ug/L

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Quanterra
Environmental Services

(cont.)

Volatile Organic Compounds
Method SW8260A

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT
LAB ID: 125399-0001-SA
Matrix: AQUEOUS | Sampled: 08 APR 97 | Received: 09 APR 97
Authorized: 09 APR 97 | Prepared: 09 APR 97 | Analyzed: 09 APR 97
Instrument: GC/MS-MC | Prep Method: SW5030 | Dilution: 1.0

Parameter	Result	Qualifier	RL	Units
1,2,3-Trichlorobenzene	ND		1.0	ug/L
1,2,4-Trichlorobenzene	ND		1.0	ug/L
1,1,1-Trichloroethane	ND		1.0	ug/L
1,1,2-Trichloroethane	ND		1.0	ug/L
Trichloroethene	ND		1.0	ug/L
Trichlorofluoromethane	ND		2.0	ug/L
1,2,3-Trichloropropane	ND		1.0	ug/L
1,2,4-Trimethylbenzene	ND		1.0	ug/L
1,3,5-Trimethylbenzene	ND		1.0	ug/L
Vinyl chloride	ND		2.0	ug/L
m- & p-Xylenes	ND		1.0	ug/L
o-Xylene	ND		1.0	ug/L
Acetone	2.4	J	10	ug/L
2-Butanone	1.8	J	10	ug/L
4-Methyl-2-pentanone	ND		10	ug/L

Surrogate	Recovery		Acceptable Range
1,2-Dichloroethane-d4	105	%	80 - 120
Toluene-d8	102	%	80 - 120
Bromofluorobenzene	98	%	80 - 120

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Quanterra Environmental Services

Semivolatile Organic Compounds
Appendix IX List
Method 8270

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT
LAB ID: 125399-0001-SA
Matrix: AQUEOUS — Sampled: 08 APR 97 — Received: 09 APR 97
Authorized: 09 APR 97 — Prepared: 10 APR 97 — Analyzed: 10 APR 97
Instrument: GC/MS-MB — Prep Method: SW3510 — Dilution: 1.0

Parameter	Result	Qualifier	RL	Units
N-Nitrosodimethylamine	ND		10	ug/L
Aniline	ND		10	ug/L
Phenol	ND		10	ug/L
bis(2-Chloroethyl) ether	ND		10	ug/L
2-Chlorophenol	ND		10	ug/L
1,3-Dichlorobenzene	ND		10	ug/L
1,4-Dichlorobenzene	ND		10	ug/L
Benzyl alcohol	ND		10	ug/L
1,2-Dichlorobenzene	ND		10	ug/L
2-Methylphenol	ND		10	ug/L
bis(2-Chloroisopropyl)-ether	ND		10	ug/L
3/4-Methylphenol	ND		10	ug/L
N-Nitroso-di-n-propylamine	ND		10	ug/L
Hexachloroethane	ND		10	ug/L
Nitrobenzene	ND		10	ug/L
Isophorone	ND		10	ug/L
2-Nitrophenol	ND		10	ug/L
2,4-Dimethylphenol	ND		10	ug/L
Benzoic acid	ND		50	ug/L
bis(2-Chloroethoxy)-methane	ND		10	ug/L
2,4-Dichlorophenol	ND		10	ug/L
1,2,4-Trichlorobenzene	ND		10	ug/L
Naphthalene	ND		10	ug/L
4-Chloroaniline	ND		10	ug/L
Hexachlorobutadiene	ND		10	ug/L
4-Chloro-3-methylphenol	ND		10	ug/L
2-Methylnaphthalene	ND		10	ug/L
Hexachlorocyclopentadiene	ND		50	ug/L
2,4,6-Trichlorophenol	ND		10	ug/L
2,4,5-Trichlorophenol	ND		50	ug/L
2-Chloronaphthalene	ND		10	ug/L
2-Nitroaniline	ND		50	ug/L
Dimethyl phthalate	ND		10	ug/L
Acenaphthylene	ND		10	ug/L
3-Nitroaniline	ND		50	ug/L
Acenaphthene	ND		10	ug/L
2,4-Dinitrophenol	ND		50	ug/L
4-Nitrophenol	ND		50	ug/L
Dibenzofuran	ND		10	ug/L
2,4-Dinitrotoluene	ND		10	ug/L
2,6-Dinitrotoluene	ND		10	ug/L
Diethyl phthalate	ND		10	ug/L
1,2-Diphenylhydrazine	ND		50	ug/L
4-Chlorophenyl phenyl ether	ND		10	ug/L

ND = Not Detected

Quanterra Environmental Services

Semivolatile Organic Compounds
Appendix IX List
Method 8270

(cont.)

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT
LAB ID: 125399-0001-SA
Matrix: AQUEOUS | Sampled: 08 APR 97 | Received: 09 APR 97
Authorized: 09 APR 97 | Prepared: 10 APR 97 | Analyzed: 10 APR 97
Instrument: GC/MS-ME | Prep Method: SW3510 | Dilution: 1.0

Parameter	Result	Qualifier	RL	Units
Fluorene	ND		10	ug/L
4-Nitroaniline	ND		50	ug/L
4,6-Dinitro-2-methylphenol	ND		50	ug/L
N-Nitrosodiphenylamine	ND		10	ug/L
4-Bromophenyl phenyl ether	ND		10	ug/L
Hexachlorobenzene	ND		10	ug/L
Phenanthrene	ND		10	ug/L
Anthracene	ND		10	ug/L
Di-n-butyl phthalate	ND		10	ug/L
Fluoranthene	ND		10	ug/L
Pyrene	ND		10	ug/L
Butyl benzyl phthalate	ND		10	ug/L
3,3'-Dichlorobenzidine	ND		50	ug/L
Benzo(a)anthracene	ND		10	ug/L
bis(2-Ethylhexyl)-phthalate	ND		10	ug/L
Chrysene	ND		10	ug/L
Di-n-octyl phthalate	ND		10	ug/L
Benzo(b)fluoranthene	ND		10	ug/L
Benzo(k)fluoranthene	ND		10	ug/L
Benzo(a)pyrene	ND		10	ug/L
Indeno(1,2,3-c,d)pyrene	ND		10	ug/L
Dibenz(a,h)anthracene	ND		10	ug/L
Benzo(g,h,i)perylene	ND		10	ug/L
2-Picoline	ND		20	ug/L
Ethyl methanesulfonate	ND		10	ug/L
Acetophenone	ND		10	ug/L
N-Nitrosopiperidine	ND		10	ug/L
a,a-Dimethylphenethyl-amine	ND		50	ug/L
2,6-Dichlorophenol	ND		10	ug/L
N-Nitroso-di-n-butylamine	ND		10	ug/L
1,2,4,5-Tetrachloro-benzene	ND		10	ug/L
Pentachlorobenzene	ND		10	ug/L
1-Naphthylamine	ND		10	ug/L
2-Naphthylamine	ND		10	ug/L
2,3,4,6-Tetrachlorophenol	ND		50	ug/L
Phenacetin	ND		20	ug/L
4-Aminobiphenyl	ND		50	ug/L
Pronamide	ND		20	ug/L
Pentachloronitrobenzene	ND		50	ug/L
p-Dimethylaminoazobenzene	ND		20	ug/L
7,12-Dimethylbenz(a)-anthracene	ND		20	ug/L
Benzidine	ND		100	ug/L
1-Chloronaphthalene	ND		10	ug/L
Dibenz(a,j)acridine	ND		20	ug/L

ND = Not Detected

Quanterra Environmental Services

Semivolatile Organic Compounds
Appendix IX List
Method 8270

(cont.)

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT
LAB ID: 125399-0001-SA
Matrix: AQUEOUS — Sampled: 08 APR 97 — Received: 09 APR 97
Authorized: 09 APR 97 — Prepared: 10 APR 97 — Analyzed: 10 APR 97
Instrument: GC/MS-ME — Prep Method: SW3510 — Dilution: 1.0

Parameter	Result	Qualifier	RL	Units

Surrogate	Recovery		Acceptable Range
2-Fluorophenol	34	%	21 - 100
Phenol-d5	23	%	10 - 94
Nitrobenzene-d5	56	%	34 - 114
2-Fluorobiphenyl	56	%	43 - 116
2,4,6-Tribromophenol	66	%	10 - 123
Terphenyl-d14	61	%	33 - 141

Quanterra
Environmental Services

METALS
(Water)

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT
LAB ID: 125399-0001-SA
Matrix: AQUEOUS Sampled: 08 APR 97 Received: 09 APR 97
Authorized: 09 APR 97 Prepared: See Below Analyzed: See Below

Parameter	Result	Qual	DIL	RL	Units	Prep Method	Test Method	Prepared Date	Analyzed Date
Arsenic	ND		1.0	0.010	mg/L	TOTREC	6010A	09 APR 97	10 APR 97
Beryllium	0.00049	J	1.0	0.0050	mg/L	TOTREC	6010A	09 APR 97	10 APR 97
Cadmium	ND		1.0	0.0020	mg/L	TOTREC	6010A	09 APR 97	10 APR 97
Manganese	0.071		1.0	0.015	mg/L	TOTREC	6010A	09 APR 97	10 APR 97
Mercury	ND		1.0	0.00020	mg/L	METHOD	SW7470	10 APR 97	10 APR 97
Selenium	ND		1.0	0.0050	mg/L	TOTREC	6010A	09 APR 97	10 APR 97
Thallium	0.0054	JB	1.0	0.010	mg/L	TOTREC	6010A	09 APR 97	10 APR 97
Zinc	0.0081	J	1.0	0.020	mg/L	TOTREC	6010A	09 APR 97	10 APR 97

B = Compound is also detected in the blank.
J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Quanterra Environmental Services

GENERAL INORGANICS

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT
LAB ID: 125399-0001-SA
Matrix: AQUEOUS — Sampled: 08 APR 97 — Received: 09 APR 97
Authorized: 09 APR 97 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Qual	DIL	RL	Units	Method	Prep Date	Analyzed Date
pH	8.6		1.0	NA	units	150.1	NA	09 APR
Total Suspended Solids	ND		1.0	10.0	mg/L	E160.2	NA	10 APR

ND = Not Detected

E.S. BABCOCK & SONS, INC.
ESTABLISHED 1906

6100 Quail Valley Court Riverside, CA 92507
P.O. Box 432 Riverside, CA 92502
PH (909) 653-3351 FAX (909) 653-1662
Environmental Laboratory Certification #1156

2466-285940
Client:
Quanterra Environmental Services
Manny Valasquez
1721 S. Grand Avenue

Santa Ana,CA 92705

Client I.D.: 125399
Site: MW/ACS
Description: Effluent

Matrix: wastewater

Lab No.: L28160-001

Date Reported: 04/15/97

Collected By: L.Reed
Date: 04/08/97
Time: 1400
Submitted By: AirEx
Date: 04/10/97
Time: 0925

Constituent	Result		Method	RL	Date / Analyst
Biochemical Oxygen Demand	ND	mg/L	EPA 405.1	5.	970410/JKB

ND = None detected at RL (Reporting Limit). RL units same as result.

cc:

E. S. Babcock & Sons Inc.

Industrial & Environmental Analysts, Inc. (IEA)
PCB IN WATER

IEA Project Number:	2240-037	Date Received:	04/09/97
IEA Sample Number:	9704184-01	Date Sampled:	04/08/97
Client Name:	Montgomery Watson	Date Extracted:	04/09/97
Client Project I.D.:	ACS-023	Date Analyzed:	04/10/97
Sample Identification:	EFFLUENT	Analysis By:	Briggs
Matrix:	Water	Dilution Factor:	1.0

Number	Compound	Quantitation Limit (ug/L)	Results Concentration (ug/L)
1	Aroclor 1016	0.10	BQL
2	Aroclor 1221	0.10	BQL
3	Aroclor 1232	0.10	BQL
4	Aroclor 1242	0.10	BQL
5	Aroclor 1248	0.10	BQL
6	Aroclor 1254	0.10	BQL
7	Aroclor 1260	0.10	BQL

Comments:
Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor.
BQL = Below Quantitation Limit

FORM PCBW Rev. 030293

Quanterra
Environmental Services

Volatile Organic Compounds
Method SW8260A

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT
LAB ID: 125414-0001-SA
Matrix: AQUEOUS — Sampled: 09 APR 97 — Received: 10 APR 97
Authorized: 10 APR 97 — Prepared: 10 APR 97 — Analyzed: 10 APR 97
Instrument: GC/MS-MC — Prep Method: SW5030 — Dilution: 1.0

Parameter	Result	Qualifier	RL	Units
Benzene	0.10	J	1.0	ug/L
Bromobenzene	ND		1.0	ug/L
Bromochloromethane	ND		1.0	ug/L
Bromodichloromethane	ND		1.0	ug/L
Bromoform	ND		1.0	ug/L
Bromomethane	ND		2.0	ug/L
n-Butylbenzene	ND		1.0	ug/L
sec-Butylbenzene	ND		1.0	ug/L
Carbon tetrachloride	ND		1.0	ug/L
Chlorobenzene	ND		1.0	ug/L
Chloroethane	ND		2.0	ug/L
Chloroform	ND		1.0	ug/L
Chloromethane	ND		2.0	ug/L
2-Chlorotoluene	ND		1.0	ug/L
Dibromochloromethane	ND		1.0	ug/L
1,2-Dibromo-3-chloro-propane (DBCP)	ND		2.0	ug/L
1,2-Dibromoethane (EDB)	ND		1.0	ug/L
Dibromomethane	ND		1.0	ug/L
1,2-Dichlorobenzene	ND		1.0	ug/L
1,3-Dichlorobenzene	ND		1.0	ug/L
1,4-Dichlorobenzene	ND		1.0	ug/L
Dichlorodifluoromethane	ND		2.0	ug/L
1,1-Dichloroethane	ND		1.0	ug/L
1,2-Dichloroethane	ND		1.0	ug/L
1,1-Dichloroethene	ND		5.0	ug/L
cis-1,2-Dichloroethene	ND		1.0	ug/L
trans-1,2-Dichloroethene	ND		1.0	ug/L
1,2-Dichloropropane	ND		1.0	ug/L
1,3-Dichloropropane	ND		1.0	ug/L
2,2-Dichloropropane	ND		1.0	ug/L
1,1-Dichloropropene	ND		1.0	ug/L
Ethylbenzene	ND		1.0	ug/L
Hexachlorobutadiene	ND		1.0	ug/L
Isopropylbenzene	ND		1.0	ug/L
Isopropyltoluene	ND		1.0	ug/L
Methylene chloride	ND		5.0	ug/L
Naphthalene	ND		1.0	ug/L
n-Propylbenzene	ND		1.0	ug/L
Styrene	ND		1.0	ug/L
1,1,1,2-Tetrachloroethane	ND		1.0	ug/L
1,1,2,2-Tetrachloroethane	ND		1.0	ug/L
Tetrachloroethene	ND		1.0	ug/L
Toluene	ND		1.0	ug/L

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Quanterra Environmental Services

Volatile Organic Compounds
Method SW8260A

(cont.)

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT
LAB ID: 125414-0001-SA
Matrix: AQUEOUS — Sampled: 09 APR 97 — Received: 10 APR 97
Authorized: 10 APR 97 — Prepared: 10 APR 97 — Analyzed: 10 APR 97
Instrument: GC/MS-MC — Prep Method: SW5030 — Dilution: 1.0

Parameter	Result	Qualifier	RL	Units
1,2,3-Trichlorobenzene	ND		1.0	ug/L
1,2,4-Trichlorobenzene	ND		1.0	ug/L
1,1,1-Trichloroethane	ND		1.0	ug/L
1,1,2-Trichloroethane	ND		1.0	ug/L
Trichloroethene	ND		1.0	ug/L
Trichlorofluoromethane	ND		2.0	ug/L
1,2,3-Trichloropropane	ND		1.0	ug/L
1,2,4-Trimethylbenzene	ND		1.0	ug/L
1,3,5-Trimethylbenzene	ND		1.0	ug/L
Vinyl chloride	ND		2.0	ug/L
m- & p-Xylenes	ND		1.0	ug/L
o-Xylene	ND		1.0	ug/L
Acetone	ND		10	ug/L
2-Butanone	ND		10	ug/L
4-Methyl-2-pentanone	ND		10	ug/L

Surrogate	Recovery		Acceptable Range
1,2-Dichloroethane-d4	101	%	80 - 120
Toluene-d8	96	%	80 - 120
Bromofluorobenzene	96	%	80 - 120

ND = Not Detected

Quanterra Environmental Services

Semivolatile Organic Compounds
Appendix IX List
Method 8270

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT
LAB ID: 125414-0001-SA
Matrix: AQUEOUS — Sampled: 09 APR 97 — Received: 10 APR 97
Authorized: 10 APR 97 — Prepared: 11 APR 97 — Analyzed: 14 APR 97
Instrument: GC/MS-MA — Prep Method: SW3510 — Dilution: 1.0

Parameter	Result	Qualifier	RL	Units
N-Nitrosodimethylamine	ND		10	ug/L
Aniline	ND		10	ug/L
Phenol	ND		10	ug/L
bis(2-Chloroethyl) ether	ND		10	ug/L
2-Chlorophenol	ND		10	ug/L
1,3-Dichlorobenzene	ND		10	ug/L
1,4-Dichlorobenzene	ND		10	ug/L
Benzyl alcohol	ND		10	ug/L
1,2-Dichlorobenzene	ND		10	ug/L
2-Methylphenol	ND		10	ug/L
bis(2-Chloroisopropyl)-ether	ND		10	ug/L
3/4-Methylphenol	ND		10	ug/L
N-Nitroso-di-n-propylamine	ND		10	ug/L
Hexachloroethane	ND		10	ug/L
Nitrobenzene	ND		10	ug/L
Isophorone	ND		10	ug/L
2-Nitrophenol	ND		10	ug/L
2,4-Dimethylphenol	ND		10	ug/L
Benzoic acid	ND		50	ug/L
bis(2-Chloroethoxy)-methane	ND		10	ug/L
2,4-Dichlorophenol	ND		10	ug/L
1,2,4-Trichlorobenzene	ND		10	ug/L
Naphthalene	ND		10	ug/L
4-Chloroaniline	ND		10	ug/L
Hexachlorobutadiene	ND		10	ug/L
4-Chloro-3-methylphenol	ND		10	ug/L
2-Methylnaphthalene	ND		10	ug/L
Hexachlorocyclopentadiene	ND		50	ug/L
2,4,6-Trichlorophenol	ND		10	ug/L
2,4,5-Trichlorophenol	ND		50	ug/L
2-Chloronaphthalene	ND		10	ug/L
2-Nitroaniline	ND		50	ug/L
Dimethyl phthalate	ND		10	ug/L
Acenaphthylene	ND		10	ug/L
3-Nitroaniline	ND		50	ug/L
Acenaphthene	ND		10	ug/L
2,4-Dinitrophenol	ND		50	ug/L
4-Nitrophenol	ND		50	ug/L
Dibenzofuran	ND		10	ug/L
2,4-Dinitrotoluene	ND		10	ug/L
2,6-Dinitrotoluene	ND		10	ug/L
Diethyl phthalate	ND		10	ug/L
1,2-Diphenylhydrazine	ND		50	ug/L
4-Chlorophenyl phenyl ether	ND		10	ug/L

ND = Not Detected

Quanterra Environmental Services

Semivolatile Organic Compounds (cont.)
Appendix IX List
Method 8270

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT
LAB ID: 125414-0001-SA
Matrix: AQUEOUS — Sampled: 09 APR 97 — Received: 10 APR 97
Authorized: 10 APR 97 — Prepared: 11 APR 97 — Analyzed: 14 APR 97
Instrument: GC/MS-MA — Prep Method: SW3510 — Dilution: 1.0

Parameter	Result	Qualifier	RL	Units
Fluorene	ND		10	ug/L
4-Nitroaniline	ND		50	ug/L
4,6-Dinitro-2-methylphenol	ND		50	ug/L
N-Nitrosodiphenylamine	ND		10	ug/L
4-Bromophenyl phenyl ether	ND		10	ug/L
Hexachlorobenzene	ND		10	ug/L
Phenanthrene	ND		10	ug/L
Anthracene	ND		10	ug/L
Di-n-butyl phthalate	ND		10	ug/L
Fluoranthene	ND		10	ug/L
Pyrene	ND		10	ug/L
Butyl benzyl phthalate	ND		10	ug/L
3,3'-Dichlorobenzidine	ND		50	ug/L
Benzo(a)anthracene	ND		10	ug/L
bis(2-Ethylhexyl)-phthalate	ND		10	ug/L
Chrysene	ND		10	ug/L
Di-n-octyl phthalate	ND		10	ug/L
Benzo(b)fluoranthene	ND		10	ug/L
Benzo(k)fluoranthene	ND		10	ug/L
Benzo(a)pyrene	ND		10	ug/L
Indeno(1,2,3-c,d)pyrene	ND		10	ug/L
Dibenz(a,h)anthracene	ND		10	ug/L
Benzo(g,h,i)perylene	ND		10	ug/L
2-Picoline	ND		20	ug/L
Ethyl methanesulfonate	ND		10	ug/L
Acetophenone	ND		10	ug/L
N-Nitrosopiperidine	ND		10	ug/L
a,a-Dimethylphenethyl-amine	ND		50	ug/L
2,6-Dichlorophenol	ND		10	ug/L
N-Nitroso-di-n-butylamine	ND		10	ug/L
1,2,4,5-Tetrachloro-benzene	ND		10	ug/L
Pentachlorobenzene	ND		10	ug/L
1-Naphthylamine	ND		10	ug/L
2-Naphthylamine	ND		10	ug/L
2,3,4,6-Tetrachlorophenol	ND		50	ug/L
Phenacetin	ND		20	ug/L
4-Aminobiphenyl	ND		50	ug/L
Pronamide	ND		20	ug/L
Pentachloronitrobenzene	ND		50	ug/L
p-Dimethylaminoazobenzene	ND		20	ug/L
7,12-Dimethylbenz(a)-anthracene	ND		20	ug/L
Benzidine	ND		100	ug/L
1-Chloronaphthalene	ND		10	ug/L
Dibenz(a,j)acridine	ND		20	ug/L

ND = Not Detected

Quanterra Environmental Services

(cont.)

Semivolatile Organic Compounds
Appendix IX List
Method 8270

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT
LAB ID: 125414-0001-SA
Matrix: AQUEOUS | Sampled: 09 APR 97 | Received: 10 APR 97
Authorized: 10 APR 97 | Prepared: 11 APR 97 | Analyzed: 14 APR 97
Instrument: GC/MS-MA | Prep Method: SW3510 | Dilution: 1.0

Parameter	Result	Qualifier	RL	Units

Surrogate	Recovery		Acceptable Range
2-Fluorophenol	35	%	21 - 100
Phenol-d5	23	%	10 - 94
Nitrobenzene-d5	57	%	34 - 114
2-Fluorobiphenyl	61	%	43 - 116
2,4,6-Tribromophenol	57	%	10 - 123
Terphenyl-d14	65	%	33 - 141

Quanterra Environmental Services

METALS
(Water)

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT
LAB ID: 125414-0001-SA
Matrix: AQUEOUS Sampled: 09 APR 97 Received: 10 APR 97
Authorized: 10 APR 97 Prepared: See Below Analyzed: See Below

Parameter	Result	Qual	DIL	RL	Units	Prep Method	Test Method	Prepared Date	Analyzed Date
Arsenic	0.0033	J	1.0	0.010	mg/L	TOTREC	6010A	10 APR 97	10 APR 97
Beryllium	0.00065	JB	1.0	0.0050	mg/L	TOTREC	6010A	10 APR 97	10 APR 97
Cadmium	ND		1.0	0.0020	mg/L	TOTREC	6010A	10 APR 97	10 APR 97
Manganese	0.039		1.0	0.015	mg/L	TOTREC	6010A	10 APR 97	10 APR 97
Mercury	ND		1.0	0.00020	mg/L	METHOD	SW7470	14 APR 97	14 APR 97
Selenium	ND		1.0	0.0050	mg/L	TOTREC	6010A	10 APR 97	10 APR 97
Thallium	0.0064	JB	1.0	0.010	mg/L	TOTREC	6010A	10 APR 97	10 APR 97
Zinc	0.015	J	1.0	0.020	mg/L	TOTREC	6010A	10 APR 97	10 APR 97

B = Compound is also detected in the blank.
J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Quanterra Environmental Services

GENERAL INORGANICS

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT
LAB ID: 125414-0001-SA
Matrix: AQUEOUS
Authorized: 10 APR 97

Sampled: 09 APR 97
Prepared: See Below

Received: 10 APR 97
Analyzed: See Below

Parameter	Result	Qual	DIL	RL	Units	Method	Prep Date	Analyzed Date
pH	8.2		1.0	NA	units	150.1	NA	10 APR 97
Total Suspended Solids	ND		1.0	10.0	mg/L	E160.2	NA	10 APR 97

ND = Not Detected

E.S. BABCOCK & SONS, INC.

6100 Quail Valley Court Riverside, CA 92507
P.O. Box 432 Riverside, CA 92502
PH (909) 653-3351 FAX (909) 653-1662
Environmental Laboratory Certification #1156

2466-285940
Client:
Quanterra Environmental Services
Manny Valasquez
1721 S. Grand Avenue

Santa Ana,CA 92705

Client I.D.: 125414
Site: MW/ACS#23
Description: Effluent

Matrix: wastewater

Lab No.: L28190-001

Date Reported: 04/16/97

Collected By: L.Reed
Date: 04/09/97
Time: 1415
Submitted By: Edmund
Date: 04/10/97
Time: 1615

Constituent	Result		Method	RL	Date / Analyst
Biochemical Oxygen Demand	5.	mg/L	EPA 405.1	5.	970411/K(

ND = None detected at RL (Reporting Limit). RL units same as result.

cc:

E. S. Babcock & Sons Inc

Sean H. Jenkins

Industrial & Environmental Analysts, Inc. (IEA)
GC SEMIVOLATILE SW-846 METHOD 8081 PCB in WATER

IEA Project Number:	2240-038	Date Received:	04/10/97
IEA Sample Number:	9704216-01	Date Sampled:	04/09/97
Client Name:	Montgomery Watson	Date Extracted:	04/11/97
Client Project ID:	ACS-#23	Date Analyzed:	04/14/97
Sample Identification:	Effluent	Analysis By:	Briggs
Associated QC Blank:	PB421	Dilution Factor:	1.0
QC Batch ID#:	421	Matrix:	Water

Number	Compound	Quantitation Limit (ug/L)	Results Concentration (ug/L)
1	Aroclor 1016	0.10	BQL
2	Aroclor 1221	0.10	BQL
3	Aroclor 1232	0.10	BQL
4	Aroclor 1242	0.10	BQL
5	Aroclor 1248	0.10	BQL
6	Aroclor 1254	0.10	BQL
7	Aroclor 1260	0.10	BQL

Surrogate Compounds:	Acceptance Criteria	% Recovery
Tetrachloro-m-xylene	60 - 150	52 *
Decachlorobiphenyl	60 - 150	98

Comments:
Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor and/or moisture correction factor where reported.
BQL = Below Quantitation Limit

FORM RPCBW Rev. 082296

Quanterra Environmental Services

Penta & Tetrachlorophenol

Method QUANTERRA

Client Name: Montgomery Watson Constructors
Client ID: Effluent
Lab ID: 092642-0001-SA
Matrix: AQUEOUS Sampled: 09 APR 97 Received: 10 APR 97
Authorized: 10 APR 97 Prepared: 11 APR 97 Analyzed: 11 APR 97

Parameter	Result	Units	Reporting Limit
Pentachlorophenol	ND	ug/L	0.50
Surrogate	Recovery		
2,4,6-Tribromophenol	71	%	

ND = Not detected
NA = Not applicable

Reported By: Jon Edmondson Approved By: Kirby Garrett

The cover letter is an integral part of this report.
Rev 230787

Industrial & Environmental Analysts, Inc. (IEA)
GC SEMIVOLATILE SW-846 METHOD 8081 PCB in WATER

IEA Project Number:	2240-039	Date Received:	04/11/97
IEA Sample Number:	9704242-01	Date Sampled:	04/10/97
Client Name:	Montgomery Watson	Date Extracted:	04/11/97
Client Project ID:	ACS-#23	Date Analyzed:	04/14/97
Sample Identification:	Effluent	Analysis By:	Briggs
Associated QC Blank:	PB421	Dilution Factor:	1.0
QC Batch ID#:	421	Matrix:	Water

Number	Compound	Quantitation Limit (ug/L)	Results Concentration (ug/L)
1	Aroclor 1016	0.10	BQL
2	Aroclor 1221	0.10	BQL
3	Aroclor 1232	0.10	BQL
4	Aroclor 1242	0.10	BQL
5	Aroclor 1248	0.10	BQL
6	Aroclor 1254	0.10	BQL
7	Aroclor 1260	0.10	BQL

Surrogate Compounds:	Acceptance Criteria	% Recovery
Tetrachloro-m-xylene	60 - 150	58 *
Decachlorobiphenyl	60 - 150	98

Comments:
Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor and/or moisture correction factor where reported.
BQL = Below Quantitation Limit

FORM RPCBW Rev. 082296

Quanterra
Environmental Services

Penta & Tetrachlorophenol

Method QUANTERRA

Client Name: Montgomery Watson Constructors
Client ID: Effluent
Lab ID: 092666-0001-SA
Matrix: AQUEOUS Sampled: 10 APR 97 Received: 11 APR 97
Authorized: 11 APR 97 Prepared: 11 APR 97 Analyzed: 11 APR 97

Parameter	Result	Units	Reporting Limit
Pentachlorophenol	ND	ug/L	0.50
Surrogate	Recovery		
2,4,6-Tribromophenol	74	%	

ND = Not detected
NA = Not applicable

Reported By: Jon Edmondson Approved By: Kirby Garrett

The cover letter is an integral part of this report.
Rev 230787

Quanterra
Environmental Services

Penta & Tetrachlorophenol
Method QUANTERRA

Client Name: Montgomery Watson Constructors
Client ID: Effluent
LAB ID: 092760-0001-SA
Matrix: AQUEOUS Sampled: 17 APR 97 Received: 18 APR 97
Authorized: 18 APR 97 Prepared: 21 APR 97 Analyzed: 22 APR 97

Dilution Factor: 1.0

Parameter	Result	Units	Reporting Limit	Qualifier
Pentachlorophenol	ND	ug/L	0.50	

Surrogate	Recovery	Acceptable Range
2,4,6-Tribromophenol	81 %	-

ND = Not Detected

Reported By: Jon Edmondson Approved By: Lisa Stafford

The cover letter is an integral part of this report.
Rev 230787

E.S. BABCOCK & SONS, INC.

6100 Quail Valley Court Riverside, CA 92507
P.O. Box 432 Riverside, CA 92502
PH (909) 653-3351 FAX (909) 653-1662
Environmental Laboratory Certification #1156

2466-285940

Page: 1 of 1
Lab No.: L28452-001

Client:
Quanterra Environmental Services
Manny Valasquez
1721 S. Grand Avenue

Santa Ana, CA 92705

Client I.D.: 125563 EFFLUENT
Site: MW/ACS #23
Description:

Matrix: wastewater

Date Reported: 04/24/9

Collected By:
Date: 04/17/9
Time: 1345
Submitted By: Courier
Date: 04/18/9
Time: 1305

Constituent	Result		Method	RL	Date / Analyst
Biochemical Oxygen Demand	ND	mg/L	EPA 405.1	5.	970418/

ND = None detected at RL (Reporting Limit). RL units same as result.

cc:

E. S. Babcock & Son

Quanterra Environmental Services

Volatile Organic Compounds
Method SW8260A

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 4/17/97
LAB ID: 125563-0001-SA
Matrix: AQUEOUS — Sampled: 17 APR 97 — Received: 18 APR 97
Authorized: 18 APR 97 — Prepared: 19 APR 97 — Analyzed: 19 APR 97
Instrument: GC/MS-MC — Prep Method: SW5030 — Dilution: 1.0

Parameter	Result	Qualifier	RL	Units
Benzene	ND		1.0	ug/L
Bromobenzene	ND		1.0	ug/L
Bromochloromethane	ND		1.0	ug/L
Bromodichloromethane	ND		1.0	ug/L
Bromoform	ND		1.0	ug/L
Bromomethane	ND		2.0	ug/L
n-Butylbenzene	ND		1.0	ug/L
sec-Butylbenzene	ND		1.0	ug/L
Carbon tetrachloride	ND		1.0	ug/L
Chlorobenzene	ND		1.0	ug/L
Chloroethane	ND		2.0	ug/L
Chloroform	ND		1.0	ug/L
Chloromethane	0.55	J	2.0	ug/L
2-Chlorotoluene	ND		1.0	ug/L
Dibromochloromethane	ND		1.0	ug/L
1,2-Dibromo-3-chloro-propane (DBCP)	ND		2.0	ug/L
1,2-Dibromoethane (EDB)	ND		1.0	ug/L
Dibromomethane	ND		1.0	ug/L
1,2-Dichlorobenzene	ND		1.0	ug/L
1,3-Dichlorobenzene	ND		1.0	ug/L
1,4-Dichlorobenzene	ND		1.0	ug/L
Dichlorodifluoromethane	ND		2.0	ug/L
1,1-Dichloroethane	ND		1.0	ug/L
1,2-Dichloroethane	ND		1.0	ug/L
1,1-Dichloroethene	ND		5.0	ug/L
cis-1,2-Dichloroethene	ND		1.0	ug/L
trans-1,2-Dichloroethene	ND		1.0	ug/L
1,2-Dichloropropane	ND		1.0	ug/L
1,3-Dichloropropane	ND		1.0	ug/L
2,2-Dichloropropane	ND		1.0	ug/L
1,1-Dichloropropene	ND		1.0	ug/L
Ethylbenzene	ND		1.0	ug/L
Hexachlorobutadiene	ND		1.0	ug/L
Isopropylbenzene	ND		1.0	ug/L
Isopropyltoluene	ND		1.0	ug/L
Methylene chloride	ND		5.0	ug/L
Naphthalene	ND		1.0	ug/L
n-Propylbenzene	ND		1.0	ug/L
Styrene	ND		1.0	ug/L
1,1,1,2-Tetrachloroethane	ND		1.0	ug/L
1,1,2,2-Tetrachloroethane	ND		1.0	ug/L
Tetrachloroethene	ND		1.0	ug/L
Toluene	ND		1.0	ug/L

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Quanterra Environmental Services

Volatile Organic Compounds
Method SW8260A

(cont.)

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 4/17/97
LAB ID: 125563-0001-SA
Matrix: AQUEOUS — Sampled: 17 APR 97 — Received: 18 APR 97
Authorized: 18 APR 97 — Prepared: 19 APR 97 — Analyzed: 19 APR 97
Instrument: GC/MS-MC — Prep Method: SW5030 — Dilution: 1.0

Parameter	Result	Qualifier	RL	Units
1,2,3-Trichlorobenzene	ND		1.0	ug/L
1,2,4-Trichlorobenzene	ND		1.0	ug/L
1,1,1-Trichloroethane	ND		1.0	ug/L
1,1,2-Trichloroethane	ND		1.0	ug/L
Trichloroethene	ND		1.0	ug/L
Trichlorofluoromethane	ND		2.0	ug/L
1,2,3-Trichloropropane	ND		1.0	ug/L
1,2,4-Trimethylbenzene	ND		1.0	ug/L
1,3,5-Trimethylbenzene	ND		1.0	ug/L
Vinyl chloride	ND		2.0	ug/L
m- & p-Xylenes	ND		1.0	ug/L
o-Xylene	ND		1.0	ug/L
Acetone	4.4	J	10	ug/L
2-Butanone	ND		10	ug/L
4-Methyl-2-pentanone	ND		10	ug/L

Surrogate	Recovery		Acceptable Range
1,2-Dichloroethane-d4	94	%	80 - 120
Toluene-d8	98	%	80 - 120
Bromofluorobenzene	93	%	80 - 120

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Quanterra Environmental Services

GENERAL INORGANICS

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 4/17/97
LAB ID: 125563-0001-SA
Matrix: AQUEOUS — Sampled: 17 APR 97 — Received: 18 APR 97
Authorized: 18 APR 97 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Qual	DIL	RL	Units	Prep Method	Test Method	Prepared Date	Analyzed Date
pH	7.9		1.0	NA	units	NONE	150.1	NA	18 APR 97
Total Suspended Solids	ND		1.0	10.0	mg/L	NONE	E160.2	NA	18 APR 97

ND = Not Detected

Quanterra
Environmental Services

METALS
(Water)

ient Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 4/17/97
LAB ID: 125563-0001-SA
Matrix: AQUEOUS Sampled: 17 APR 97 Received: 18 APR 97
Authorized: 18 APR 97 Prepared: See Below Analyzed: See Below

Parameter	Result	Qual	DIL	RL	Units	Prep Method	Test Method	Prepared Date	Analyz Date
Arsenic	0.0034	J	1.0	0.010	mg/L	TOTREC	6010A	18 APR 97	22 APR
Beryllium	ND		1.0	0.0050	mg/L	TOTREC	6010A	18 APR 97	22 APR
Cadmium	ND		1.0	0.0020	mg/L	TOTREC	6010A	18 APR 97	22 APR
Manganese	0.21		1.0	0.015	mg/L	TOTREC	6010A	18 APR 97	22 APR
Mercury	ND		1.0	0.00020	mg/L	METHOD	SW7470	18 APR 97	21 APR
Selenium	ND		1.0	0.0050	mg/L	TOTREC	6010A	18 APR 97	22 APR
Thallium	0.0091	JB	1.0	0.010	mg/L	TOTREC	6010A	18 APR 97	22 APR
Zinc	ND		1.0	0.020	mg/L	TOTREC	6010A	18 APR 97	22 APR

B = Compound is also detected in the blank.
J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Quanterra Environmental Services

Semivolatile Organic Compounds
Appendix IX List
Method 8270

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 4/17/97
LAB ID: 125563-0001-SA
Matrix: AQUEOUS — Sampled: 17 APR 97 — Received: 18 APR 97
Authorized: 18 APR 97 — Prepared: 21 APR 97 — Analyzed: 22 APR 97
Instrument: GC/MS-MI — Prep Method: SW3510 — Dilution: 1.0

Parameter	Result	Qualifier	RL	Units
N-Nitrosodimethylamine	ND		10	ug/L
Aniline	ND		10	ug/L
Phenol	ND		10	ug/L
bis(2-Chloroethyl) ether	ND		10	ug/L
2-Chlorophenol	ND		10	ug/L
1,3-Dichlorobenzene	ND		10	ug/L
1,4-Dichlorobenzene	ND		10	ug/L
Benzyl alcohol	ND		10	ug/L
1,2-Dichlorobenzene	ND		10	ug/L
2-Methylphenol	ND		10	ug/L
bis(2-Chloroisopropyl)-ether	ND		10	ug/L
3/4-Methylphenol	ND		10	ug/L
N-Nitroso-di-n-propylamine	ND		10	ug/L
Hexachloroethane	ND		10	ug/L
Nitrobenzene	ND		10	ug/L
Isophorone	ND		10	ug/L
2-Nitrophenol	ND		10	ug/L
2,4-Dimethylphenol	ND		10	ug/L
Benzoic acid	ND		50	ug/L
bis(2-Chloroethoxy)-methane	ND		10	ug/L
2,4-Dichlorophenol	ND		10	ug/L
1,2,4-Trichlorobenzene	ND		10	ug/L
Naphthalene	ND		10	ug/L
4-Chloroaniline	ND		10	ug/L
Hexachlorobutadiene	ND		10	ug/L
4-Chloro-3-methylphenol	ND		10	ug/L
2-Methylnaphthalene	ND		10	ug/L
Hexachlorocyclopentadiene	ND		50	ug/L
2,4,6-Trichlorophenol	ND		10	ug/L
2,4,5-Trichlorophenol	ND		50	ug/L
2-Chloronaphthalene	ND		10	ug/L
2-Nitroaniline	ND		50	ug/L
Dimethyl phthalate	ND		10	ug/L
Acenaphthylene	ND		10	ug/L
3-Nitroaniline	ND		50	ug/L
Acenaphthene	ND		10	ug/L
2,4-Dinitrophenol	ND		50	ug/L
4-Nitrophenol	ND		50	ug/L
Dibenzofuran	ND		10	ug/L
2,4-Dinitrotoluene	ND		10	ug/L
2,6-Dinitrotoluene	ND		10	ug/L
Diethyl phthalate	ND		10	ug/L
1,2-Diphenylhydrazine	ND		50	ug/L
4-Chlorophenyl phenyl ether	ND		10	ug/L

ND = Not Detected

Quanterra Environmental Services

Semivolatile Organic Compounds (cont.)
Appendix IX List
Method 8270

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 4/17/97
LAB ID: 125563-0001-SA
Matrix: AQUEOUS — Sampled: 17 APR 97 — Received: 18 APR 97
Authorized: 18 APR 97 — Prepared: 21 APR 97 — Analyzed: 22 APR 97
Instrument: GC/MS-MI — Prep Method: SW3510 — Dilution: 1.0

Parameter	Result	Qualifier	RL	Units
Flucrene	ND		10	ug/L
4-Nitroaniline	ND		50	ug/L
4,6-Dinitro-2-methylphenol	ND		50	ug/L
N-Nitrosodiphenylamine	ND		10	ug/L
4-Bromophenyl phenyl ether	ND		10	ug/L
Hexachlorobenzene	ND		10	ug/L
Phenanthrene	ND		10	ug/L
Anthracene	ND		10	ug/L
Di-n-butyl phthalate	ND		10	ug/L
Fluoranthene	ND		10	ug/L
Pyrene	ND		10	ug/L
Butyl benzyl phthalate	ND		10	ug/L
3,3'-Dichlorobenzidine	ND		50	ug/L
Benzo(a)anthracene	ND		10	ug/L
bis(2-Ethylhexyl)-phthalate	ND		10	ug/L
Chrysene	ND		10	ug/L
Di-n-octyl phthalate	ND		10	ug/L
Benzo(b)fluoranthene	ND		10	ug/L
Benzo(k)fluoranthene	ND		10	ug/L
Benzo(a)pyrene	ND		10	ug/L
Indeno(1,2,3-c,d)pyrene	ND		10	ug/L
Dibenz(a,h)anthracene	ND		10	ug/L
Benzo(g,h,i)perylene	ND		10	ug/L
2-Picoline	ND		20	ug/L
Ethyl methanesulfonate	ND		10	ug/L
Acetophenone	ND		10	ug/L
N-Nitrosopiperidine	ND		10	ug/L
a,a-Dimethylphenethyl-amine	ND		50	ug/L
2,6-Dichlorophenol	ND		10	ug/L
N-Nitroso-di-n-butylamine	ND		10	ug/L
1,2,4,5-Tetrachloro-benzene	ND		10	ug/L
Pentachlorobenzene	ND		10	ug/L
1-Naphthylamine	ND		10	ug/L
2-Naphthylamine	ND		10	ug/L
2,3,4,6-Tetrachlorophenol	ND		50	ug/L
Phenacetin	ND		20	ug/L
4-Aminobiphenyl	ND		50	ug/L
Pronamide	ND		20	ug/L
Pentachloronitrobenzene	ND		50	ug/L
p-Dimethylaminoazobenzene	ND		20	ug/L
7,12-Dimethylbenz(a)-anthracene	ND		20	ug/L
Benzidine	ND		100	ug/L
1-Chloronaphthalene	ND		10	ug/L
Dibenz(a,j)acridine	ND		20	ug/L

ND = Not Detected

Quanterra Environmental Services

(cont.)

Semivolatile Organic Compounds
Appendix IX List
Method 8270

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 4/17/97
LAB ID: 125563-0001-SA
Matrix: AQUEOUS — Sampled: 17 APR 97 — Received: 18 APR 97
Authorized: 18 APR 97 — Prepared: 21 APR 97 — Analyzed: 22 APR 97
Instrument: GC/MS-MI — Prep Method: SW3510 — Dilution: 1.0

Parameter	Result	Qualifier	RL	Units

Surrogate	Recovery		Acceptable Range
2-Fluorophenol	34	%	21 - 100
Phenol-d5	23	%	10 - 94
Nitrobenzene-d5	61	%	34 - 114
2-Fluorobiphenyl	68	%	43 - 116
2,4,6-Tribromophenol	58	%	10 - 123
Terphenyl-d14	64	%	33 - 141

Industrial & Environmental Analysts, Inc. (IEA)
GC SEMIVOLATILE SW-846 METHOD 8081 PCB in WATER

IEA Project Number:	2240-040	Date Received:	04/18/97
IEA Sample Number:	9704377-01	Date Sampled:	04/17/97
Client Name:	Montgomery Watson	Date Extracted:	04/21/97
Client Project ID:	ACS-#23	Date Analyzed:	04/21/97
Sample Identification:	Effluent 04/17/97	Analysis By:	Briggs
Associated QC Blank:	PB428	Dilution Factor:	1.0
QC Batch ID#:	428	Matrix:	Water

Number	Compound	Quantitation Limit (ug/L)	Results Concentration (ug/L)
1	Aroclor 1016	0.10	BQL
2	Aroclor 1221	0.10	BQL
3	Aroclor 1232	0.10	BQL
4	Aroclor 1242	0.10	BQL
5	Aroclor 1248	0.10	BQL
6	Aroclor 1254	0.10	BQL
7	Aroclor 1260	0.10	BQL

Surrogate Compounds:	Acceptance Criteria	% Recovery
Tetrachloro-m-xylene	60 - 150	68
Decachlorobiphenyl	60 - 150	92

Comments:
Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor and/or moisture correction factor where reported.
BQL = Below Quantitation Limit

FORM RPCSW Rev. 080296

Industrial & Environmental Analysts, Inc. (IEA)
GC SEMIVOLATILE SW-846 METHOD 8081 PCB in WATER

IEA Project Number:	2240-041	Date Received:	04/22/97
IEA Sample Number:	9704457-01	Date Sampled:	04/21/97
Client Name:	Montgomery Watson	Date Extracted:	04/23/97
Client Project ID:	ACS-#23	Date Analyzed:	04/23/97
Sample Identification:	Effluent	Analysis By:	Briggs
Associated QC Blank:	PB432	Dilution Factor:	1.0
QC Batch ID#:	432	Matrix:	Water

Number	Compound	Quantitation Limit (ug/L)	Results Concentration (ug/L)
1	Aroclor 1016	0.10	BQL
2	Aroclor 1221	0.10	BQL
3	Aroclor 1232	0.10	BQL
4	Aroclor 1242	0.10	BQL
5	Aroclor 1248	0.10	BQL
6	Aroclor 1254	0.10	BQL
7	Aroclor 1260	0.10	BQL

Surrogate Compounds:	Acceptance Criteria	% Recovery
Tetrachloro-m-xylene	60 - 150	85
Decachlorobiphenyl	60 - 150	105

Comments:
Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor and/or moisture correction factor where reported.
BQL = Below Quantitation Limit

FORM RPCBW Rev. 082296

Quanterra
Environmental Services

GENERAL INORGANICS

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT
LAB ID: 125601-0001-SA
Matrix: AQUEOUS — Sampled: 21 APR 97 — Received: 22 APR 97
Authorized: 22 APR 97 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Qual	DIL	RL	Units	Prep Method	Test Method	Prepared Date	Analyzed Date
pH	7.5		1.0	NA	units	NONE	150.1	NA	22 APR 97
Total Suspended Solids	ND		1.0	10.0	mg/L	NONE	E160.2	NA	22 APR 97

ND = Not Detected

Quanterra
Environmental Services

METALS
(Water)

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT
LAB ID: 125601-0001-SA
Matrix: AQUEOUS Sampled: 21 APR 97 Received: 22 APR 97
Authorized: 22 APR 97 Prepared: See Below Analyzed: See Below

Parameter	Result	Qual	DIL	RL	Units	Prep Method	Test Method	Prepared Date	Analyzed Date
Arsenic	ND		1.0	0.010	mg/L	TOTREC	6010A	22 APR 97	24 APR 97
Beryllium	ND		1.0	0.0050	mg/L	TOTREC	6010A	22 APR 97	24 APR 97
Cadmium	ND		1.0	0.0020	mg/L	TOTREC	6010A	22 APR 97	24 APR 97
Manganese	0.22		1.0	0.015	mg/L	TOTREC	6010A	22 APR 97	24 APR 97
Mercury	ND		1.0	0.00020	mg/L	METHOD	SW7470	23 APR 97	24 APR 97
Selenium	ND		1.0	0.0050	mg/L	TOTREC	6010A	22 APR 97	24 APR 97
Thallium	0.0075	JB	1.0	0.010	mg/L	TOTREC	6010A	22 APR 97	24 APR 97
Zinc	0.0092	J	1.0	0.020	mg/L	TOTREC	6010A	22 APR 97	24 APR 97

B = Compound is also detected in the blank.
J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Quanterra
Environmental Services

Volatile Organic Compounds
Method SW8260A

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT
LAB ID: 125601-0001-SA
Matrix: AQUEOUS Sampled: 21 APR 97 Received: 22 APR 97
Authorized: 22 APR 97 Prepared: 26 APR 97 Analyzed: 26 APR 97
Instrument: GC/MS-MC Dilution: 1.0

Parameter	Result	Qualifier	RL	Units
Benzene	ND		1.0	ug/L
Bromobenzene	ND		1.0	ug/L
Bromochloromethane	ND		1.0	ug/L
Bromodichloromethane	ND		1.0	ug/L
Bromoform	ND		1.0	ug/L
Bromomethane	0.11	J	2.0	ug/L
n-Butylbenzene	ND		1.0	ug/L
sec-Butylbenzene	ND		1.0	ug/L
Carbon tetrachloride	ND		1.0	ug/L
Chlorobenzene	ND		1.0	ug/L
Chloroethane	ND		2.0	ug/L
Chloroform	ND		1.0	ug/L
Chloromethane	0.49	J	2.0	ug/L
2-Chlorotoluene	ND		1.0	ug/L
Dibromochloromethane	ND		1.0	ug/L
1,2-Dibromo-3-chloro-propane (DBCP)	ND		2.0	ug/L
1,2-Dibromoethane (EDB)	ND		1.0	ug/L
Dibromomethane	ND		1.0	ug/L
1,2-Dichlorobenzene	ND		1.0	ug/L
1,3-Dichlorobenzene	ND		1.0	ug/L
1,4-Dichlorobenzene	ND		1.0	ug/L
Dichlorodifluoromethane	ND		2.0	ug/L
1,1-Dichloroethane	ND		1.0	ug/L
1,2-Dichloroethane	ND		1.0	ug/L
1,1-Dichloroethene	ND		5.0	ug/L
cis-1,2-Dichloroethene	ND		1.0	ug/L
trans-1,2-Dichloroethene	ND		1.0	ug/L
1,2-Dichloropropane	ND		1.0	ug/L
1,3-Dichloropropane	ND		1.0	ug/L
2,2-Dichloropropane	ND		1.0	ug/L
1,1-Dichloropropene	ND		1.0	ug/L
Ethylbenzene	ND		1.0	ug/L
Hexachlorobutadiene	ND		1.0	ug/L
Isopropylbenzene	ND		1.0	ug/L
Isopropyltoluene	ND		1.0	ug/L
Methylene chloride	ND		5.0	ug/L
Naphthalene	ND		1.0	ug/L
n-Propylbenzene	ND		1.0	ug/L
Styrene	ND		1.0	ug/L
1,1,1,2-Tetrachloroethane	ND		1.0	ug/L
1,1,2,2-Tetrachloroethane	ND		1.0	ug/L
Tetrachloroethene	ND		1.0	ug/L
Toluene	ND		1.0	ug/L

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Quanterra
Environmental Services

Volatile Organic Compounds (cont.)
Method SW8260A

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT
LAB ID: 125601-0001-SA
Matrix: AQUEOUS Sampled: 21 APR 97 Received: 22 APR 97
Authorized: 22 APR 97 Prepared: 26 APR 97 Analyzed: 26 APR 97
Instrument: GC/MS-MC Dilution: 1.0

Parameter	Result	Qualifier	RL	Units
1,2,3-Trichlorobenzene	ND		1.0	ug/L
1,2,4-Trichlorobenzene	ND		1.0	ug/L
1,1,1-Trichloroethane	ND		1.0	ug/L
1,1,2-Trichloroethane	ND		1.0	ug/L
Trichloroethene	ND		1.0	ug/L
Trichlorofluoromethane	ND		2.0	ug/L
1,2,3-Trichloropropane	ND		1.0	ug/L
1,2,4-Trimethylbenzene	ND		1.0	ug/L
1,3,5-Trimethylbenzene	ND		1.0	ug/L
Vinyl chloride	ND		2.0	ug/L
m- & p-Xylenes	ND		1.0	ug/L
o-Xylene	ND		1.0	ug/L
Acetone	15		10	ug/L
2-Butanone	ND		10	ug/L
4-Methyl-2-pentanone	ND		10	ug/L

Surrogate	Recovery		Acceptable Range
1,2-Dichloroethane-d4	94	%	60 - 120
Toluene-d8	97	%	80 - 120
Bromofluorobenzene	88	%	60 - 120

ND = Not Detected

Quanterra
Environmental Services

Semivolatile Organic Compounds
Appendix IX List
Method 8270

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT
LAB ID: 1256C1-0001-SA
Matrix: AQUEOUS — Sampled: 21 APR 97 — Received: 22 APR 97
Authorized: 22 APR 97 — Prepared: 23 APR 97 — Analyzed: 24 APR 97
Instrument: GC/MS-MI — Prep Method: SW3510 — Dilution: 1.0

Parameter	Result	Qualifier	RL	Units
N-Nitrosodimethylamine	ND		10	ug/L
Aniline	ND		10	ug/L
Phenol	ND		10	ug/L
bis(2-Chloroethyl) ether	ND		10	ug/L
2-Chlorophenol	ND		10	ug/L
1,3-Dichlorobenzene	ND		10	ug/L
1,4-Dichlorobenzene	ND		10	ug/L
Benzyl alcohol	ND		10	ug/L
1,2-Dichlorobenzene	ND		10	ug/L
2-Methylphenol	ND		10	ug/L
bis(2-Chloroisopropyl)-ether	ND		10	ug/L
3/4-Methylphenol	ND		10	ug/L
N-Nitroso-di-n-propylamine	ND		10	ug/L
Hexachloroethane	ND		10	ug/L
Nitrobenzene	ND		10	ug/L
Isophorone	ND		10	ug/L
2-Nitrophenol	ND		10	ug/L
2,4-Dimethylphenol	ND		10	ug/L
Benzoic acid	ND		50	ug/L
bis(2-Chloroethoxy)-methane	ND		10	ug/L
2,4-Dichlorophenol	ND		10	ug/L
1,2,4-Trichlorobenzene	ND		10	ug/L
Naphthalene	ND		10	ug/L
4-Chloroaniline	ND		10	ug/L
Hexachlorobutadiene	ND		10	ug/L
4-Chloro-3-methylphenol	ND		10	ug/L
2-Methylnaphthalene	ND		10	ug/L
Hexachlorocyclopentadiene	ND		50	ug/L
2,4,6-Trichlorophenol	ND		10	ug/L
2,4,5-Trichlorophenol	ND		50	ug/L
2-Chloronaphthalene	ND		10	ug/L
2-Nitroaniline	ND		50	ug/L
Dimethyl phthalate	ND		10	ug/L
Acenaphthylene	ND		10	ug/L
3-Nitroaniline	ND		50	ug/L
Acenaphthene	ND		10	ug/L
2,4-Dinitrophenol	ND		50	ug/L
4-Nitrophenol	ND		50	ug/L
Dibenzofuran	ND		10	ug/L
2,4-Dinitrotoluene	ND		10	ug/L
2,6-Dinitrotoluene	ND		10	ug/L
Diethyl phthalate	ND		10	ug/L
1,2-Diphenylhydrazine	ND		50	ug/L
4-Chlorophenyl phenyl ether	ND		10	ug/L

ND = Not Detected

Quanterra
Environmental Services

Semivolatile Organic Compounds (cont.)
Appendix IX List
Method 8270

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT
LAB ID: 125601-0001-SA
Matrix: AQUEOUS Sampled: 21 APR 97 Received: 22 APR 97
Authorized: 22 APR 97 Prepared: 23 APR 97 Analyzed: 24 APR 97
Instrument: GC/MS-MI Prep Method: SW3510 Dilution: 1.0

Parameter	Result	Qualifier	RL	Units
Fluorene	ND		10	ug/L
4-Nitroaniline	ND		50	ug/L
4,6-Dinitro-2-methylphenol	ND		50	ug/L
N-Nitrosodiphenylamine	ND		10	ug/L
4-Bromophenyl phenyl ether	ND		10	ug/L
Hexachlorobenzene	ND		10	ug/L
Phenanthrene	ND		10	ug/L
Anthracene	ND		10	ug/L
Di-n-butyl phthalate	ND		10	ug/L
Fluoranthene	ND		10	ug/L
Pyrene	ND		10	ug/L
Butyl benzyl phthalate	ND		10	ug/L
3,3'-Dichlorobenzidine	ND		50	ug/L
Benzo(a)anthracene	ND		10	ug/L
bis(2-Ethylhexyl)-phthalate	ND		10	ug/L
Chrysene	ND		10	ug/L
Di-n-octyl phthalate	ND		10	ug/L
Benzo(b)fluoranthene	ND		10	ug/L
Benzo(k)fluoranthene	ND		10	ug/L
Benzo(a)pyrene	ND		10	ug/L
Indeno(1,2,3-c,d)pyrene	ND		10	ug/L
Dibenz(a,h)anthracene	ND		10	ug/L
Benzo(g,h,i)perylene	ND		10	ug/L
2-Picoline	ND		20	ug/L
Ethyl methanesulfonate	ND		10	ug/L
Acetophenone	ND		10	ug/L
N-Nitrosopiperidine	ND		10	ug/L
a,a-Dimethylphenethyl-amine	ND		50	ug/L
2,6-Dichlorophenol	ND		10	ug/L
N-Nitroso-di-n-butylamine	ND		10	ug/L
1,2,4,5-Tetrachloro-benzene	ND		10	ug/L
Pentachlorobenzene	ND		10	ug/L
1-Naphthylamine	ND		10	ug/L
2-Naphthylamine	ND		10	ug/L
2,3,4,6-Tetrachlorophenol	ND		50	ug/L
Phenacetin	ND		20	ug/L
4-Aminobiphenyl	ND		50	ug/L
Pronamide	ND		20	ug/L
Pentachloronitrobenzene	ND		50	ug/L
p-Dimethylaminoazobenzene	ND		20	ug/L
7,12-Dimethylbenz(a)-anthracene	ND		20	ug/L
Benzidine	ND		100	ug/L
1-Chloronaphthalene	ND		10	ug/L
Dibenz(a,j)acridine	ND		20	ug/L

ND = Not Detected

Quanterra Environmental Services

Semivolatile Organic Compounds (cont.)
Appendix IX List
Method 8270

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT
LAB ID: 125601-0001-SA
Matrix: AQUEOUS Sampled: 21 APR 97 Received: 22 APR 97
Authorized: 22 APR 97 Prepared: 23 APR 97 Analyzed: 24 APR 97
Instrument: GC/MS-MI Prep Method: SW3510 Dilution: 1.0

Parameter	Result	Qualifier	RL	Units

Surrogate	Recovery		Acceptable Range
2-Fluorophenol	42	%	21 - 100
Phenol-d5	29	%	10 - 94
Nitrobenzene-d5	73	%	34 - 114
2-Fluorobiphenyl	75	%	43 - 116
2,4,6-Tribromophenol	67	%	10 - 123
Terphenyl-d14	55	%	33 - 141

E.S. BABCOCK & SONS, INC.
ESTABLISHED 1906

6100 Quail Valley Court Riverside, CA 92507
P.O. Box 432 Riverside, CA 92502
PH (909) 653-3351 FAX (909) 653-1662
Environmental Laboratory Certification #1156

2466-285940
Client:
Quanterra Environmental Services
Manny Valasquez
1721 S. Grand Avenue

Santa Ana,CA 92705

Client I.D.: 125601-001
Site: MW/AVCS#23
Description: Effluent

Matrix: wastewater

Page: 1 of 1
Lab No.: L28524-001

Date Reported: 04/29/97

Collected By:
Date: 04/21/97
Time: 1525
Submitted By: Courier
Date: 04/22/97
Time: 1245

Constituent	Result		Method	RL	Date / Analyst
Biochemical Oxygen Demand	6.	mg/L	EPA 405.1	5.	970423/KC

ND = None detected at RL (Reporting Limit). RL units same as result.

cc:

E. S. Babcock & Sons Inc

Quanterra Environmental Services

Volatile Organic Compounds
Method SW8260A

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 4/22/97
LAB ID: 125628-0001-SA
Matrix: AQUEOUS — Sampled: 22 APR 97 — Received: 23 APR 97
Authorized: 23 APR 97 — Prepared: 23 APR 97 — Analyzed: 23 APR 97
Instrument: GC/MS-MC — Prep Method: SW5030 — Dilution: 1.0

Parameter	Result	Qualifier	RL	Units
Benzene	0.16	J	1.0	ug/L
Bromobenzene	ND		1.0	ug/L
Bromochloromethane	ND		1.0	ug/L
Bromodichloromethane	ND		1.0	ug/L
Bromoform	ND		1.0	ug/L
Bromomethane	ND		2.0	ug/L
n-Butylbenzene	ND		1.0	ug/L
sec-Butylbenzene	ND		1.0	ug/L
Carbon tetrachloride	ND		1.0	ug/L
Chlorobenzene	ND		1.0	ug/L
Chloroethane	ND		2.0	ug/L
Chloroform	0.13	J	1.0	ug/L
Chloromethane	ND		2.0	ug/L
2-Chlorotoluene	ND		1.0	ug/L
Dibromochloromethane	ND		1.0	ug/L
1,2-Dibromo-3-chloro-propane (DBCP)	ND		2.0	ug/L
1,2-Dibromoethane (EDB)	ND		1.0	ug/L
Dibromomethane	ND		1.0	ug/L
1,2-Dichlorobenzene	ND		1.0	ug/L
1,3-Dichlorobenzene	ND		1.0	ug/L
1,4-Dichlorobenzene	ND		1.0	ug/L
Dichlorodifluoromethane	ND		2.0	ug/L
1,1-Dichloroethane	ND		1.0	ug/L
1,2-Dichloroethane	ND		1.0	ug/L
1,1-Dichloroethene	ND		5.0	ug/L
cis-1,2-Dichloroethene	ND		1.0	ug/L
trans-1,2-Dichloroethene	ND		1.0	ug/L
1,2-Dichloropropane	ND		1.0	ug/L
1,3-Dichloropropane	ND		1.0	ug/L
2,2-Dichloropropane	ND		1.0	ug/L
1,1-Dichloropropene	ND		1.0	ug/L
Ethylbenzene	ND		1.0	ug/L
Hexachlorobutadiene	ND		1.0	ug/L
Isopropylbenzene	ND		1.0	ug/L
Isopropyltoluene	ND		1.0	ug/L
Methylene chloride	ND		5.0	ug/L
Naphthalene	ND		1.0	ug/L
n-Propylbenzene	ND		1.0	ug/L
Styrene	ND		1.0	ug/L
1,1,1,2-Tetrachloroethane	ND		1.0	ug/L
1,1,2,2-Tetrachloroethane	ND		1.0	ug/L
Tetrachloroethene	ND		1.0	ug/L
Toluene	ND		1.0	ug/L

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Quanterra
Environmental Services

Volatile Organic Compounds (cont.)
Method SW8260A

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 4/22/97
LAB ID: 125628-0001-SA
Matrix: AQUEOUS Sampled: 22 APR 97 Received: 23 APR 97
Authorized: 23 APR 97 Prepared: 23 APR 97 Analyzed: 23 APR 97
Instrument: GC/MS-MC Prep Method: SW5030 Dilution: 1.0

Parameter	Result	Qualifier	RL	Units
1,2,3-Trichlorobenzene	ND		1.0	ug/L
1,2,4-Trichlorobenzene	ND		1.0	ug/L
1,1,1-Trichloroethane	ND		1.0	ug/L
1,1,2-Trichloroethane	ND		1.0	ug/L
Trichloroethene	ND		1.0	ug/L
Trichlorofluoromethane	ND		2.0	ug/L
1,2,3-Trichloropropane	ND		1.0	ug/L
1,2,4-Trimethylbenzene	ND		1.0	ug/L
1,3,5-Trimethylbenzene	ND		1.0	ug/L
Vinyl chloride	ND		2.0	ug/L
m- & p-Xylenes	ND		1.0	ug/L
o-Xylene	ND		1.0	ug/L
Acetone	2.1	J	10	ug/L
2-Butanone	2.6	J	10	ug/L
4-Methyl-2-pentanone	ND		10	ug/L

Surrogate	Recovery		Acceptable Range
1,2-Dichloroethane-d4	100	%	80 - 120
Toluene-d8	100	%	80 - 120
Bromofluorobenzene	95	%	80 - 120

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Quanterra
Environmental Services

Semivolatile Organic Compounds
Appendix IX List
Method 8270

Client Name:	Montgomery Watson Constructors, Inc.		
Client ID:	EFFLUENT 4/22/97		
LAB ID:	125628-0001-SA		
Matrix:	AQUEOUS	Sampled: 22 APR 97	Received: 23 APR 97
Authorized:	23 APR 97	Prepared: 24 APR 97	Analyzed: 24 APR 97
Instrument:	GC/MS-MI	Dilution: 1.0	

Parameter	Result	Qualifier	RL	Units
N-Nitrosodimethylamine	ND		10	ug/L
Aniline	ND		10	ug/L
Phenol	ND		10	ug/L
bis(2-Chloroethyl) ether	ND		10	ug/L
2-Chlorophenol	ND		10	ug/L
1,3-Dichlorobenzene	ND		10	ug/L
1,4-Dichlorobenzene	ND		10	ug/L
Benzyl alcohol	ND		10	ug/L
1,2-Dichlorobenzene	ND		10	ug/L
2-Methylphenol	ND		10	ug/L
bis(2-Chloroisopropyl)-ether	ND		10	ug/L
3/4-Methylphenol	ND		10	ug/L
N-Nitroso-di-n-propylamine	ND		10	ug/L
Hexachloroethane	ND		10	ug/L
Nitrobenzene	ND		10	ug/L
Isophorone	ND		10	ug/L
2-Nitrophenol	ND		10	ug/L
2,4-Dimethylphenol	ND		10	ug/L
Benzoic acid	ND		50	ug/L
bis(2-Chloroethoxy)-methane	ND		10	ug/L
2,4-Dichlorophenol	ND		10	ug/L
1,2,4-Trichlorobenzene	ND		10	ug/L
Naphthalene	ND		10	ug/L
4-Chloroaniline	ND		10	ug/L
Hexachlorobutadiene	ND		10	ug/L
4-Chloro-3-methylphenol	ND		10	ug/L
2-Methylnaphthalene	ND		10	ug/L
Hexachlorocyclopentadiene	ND		50	ug/L
2,4,6-Trichlorophenol	ND		10	ug/L
2,4,5-Trichlorophenol	ND		50	ug/L
2-Chloronaphthalene	ND		10	ug/L
2-Nitroaniline	ND		50	ug/L
Dimethyl phthalate	ND		10	ug/L
Acenaphthylene	ND		10	ug/L
3-Nitroaniline	ND		50	ug/L
Acenaphthene	ND		10	ug/L
2,4-Dinitrophenol	ND		50	ug/L
4-Nitrophenol	ND		50	ug/L
Dibenzofuran	ND		10	ug/L
2,4-Dinitrotoluene	ND		10	ug/L
2,6-Dinitrotoluene	ND		10	ug/L
Diethyl phthalate	ND		10	ug/L
1,2-Diphenylhydrazine	ND		50	ug/L
4-Chlorophenyl phenyl ether	ND		10	ug/L

ND = Not Detected

Quanterra
Environmental Services

Semivolatile Organic Compounds (cont.)
Appendix IX List
Method 8270

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 4/22/97
LAB ID: 125628-0001-SA
Matrix: AQUEOUS Sampled: 22 APR 97 Received: 23 APR 97
Authorized: 23 APR 97 Prepared: 24 APR 97 Analyzed: 24 APR 97
Instrument: GC/MS-MI Dilution: 1.0

Parameter	Result	Qualifier	RL	Units
Fluorene	ND		10	ug/L
4-Nitroaniline	ND		50	ug/L
4,6-Dinitro-2-methylphenol	ND		50	ug/L
N-Nitrosodiphenylamine	ND		10	ug/L
4-Bromophenyl phenyl ether	ND		10	ug/L
Hexachlorobenzene	ND		10	ug/L
Phenanthrene	ND		10	ug/L
Anthracene	ND		10	ug/L
Di-n-butyl phthalate	ND		10	ug/L
Fluoranthene	ND		10	ug/L
Pyrene	ND		10	ug/L
Butyl benzyl phthalate	ND		10	ug/L
3,3'-Dichlorobenzidine	ND		50	ug/L
Benzo(a)anthracene	ND		10	ug/L
bis(2-Ethylhexyl)-phthalate	ND		10	ug/L
Chrysene	ND		10	ug/L
Di-n-octyl phthalate	ND		10	ug/L
Benzo(b)fluoranthene	ND		10	ug/L
Benzo(k)fluoranthene	ND		10	ug/L
Benzo(a)pyrene	ND		10	ug/L
Indeno(1,2,3-c,d)pyrene	ND		10	ug/L
Dibenz(a,h)anthracene	ND		10	ug/L
Benzo(g,h,i)perylene	ND		10	ug/L
2-Picoline	ND		20	ug/L
Ethyl methanesulfonate	ND		10	ug/L
Acetophenone	ND		10	ug/L
N-Nitrosopiperidine	ND		10	ug/L
a,a-Dimethylphenethyl-amine	ND		50	ug/L
2,6-Dichlorophenol	ND		10	ug/L
N-Nitroso-di-n-butylamine	ND		10	ug/L
1,2,4,5-Tetrachloro-benzene	ND		10	ug/L
Pentachlorobenzene	ND		10	ug/L
1-Naphthylamine	ND		10	ug/L
2-Naphthylamine	ND		10	ug/L
2,3,4,6-Tetrachlorophenol	ND		50	ug/L
Phenacetin	ND		20	ug/L
4-Aminobiphenyl	ND		50	ug/L
Pronamide	ND		20	ug/L
Pentachloronitrobenzene	ND		50	ug/L
p-Dimethylaminoazobenzene	ND		20	ug/L
7,12-Dimethylbenz(a)-anthracene	ND		20	ug/L
Benzidine	ND		100	ug/L
1-Chloronaphthalene	ND		10	ug/L

ND = Not Detected

Quanterra Environmental Services

Semivolatile Organic Compounds (cont.)
Appendix IX List
Method 8270

Client Name:	Montgomery Watson Constructors, Inc.		
Client ID:	EFFLUENT 4/22/97		
LAB ID:	125628-0001-SA		
Matrix:	AQUEOUS	Sampled: 22 APR 97	Received: 23 APR 97
Authorized:	23 APR 97	Prepared: 24 APR 97	Analyzed: 24 APR 97
Instrument:	GC/MS-MI	Dilution: 1.0	

Parameter	Result	Qualifier	RL	Units
Dibenz(a,j)acridine	ND		20	ug/L

Surrogate	Recovery		Acceptable Range
2-Fluorophenol	36	%	21 - 100
Phenol-d5	25	%	10 - 94
Nitrobenzene-d5	63	%	34 - 114
2-Fluorobiphenyl	66	%	43 - 116
2,4,6-Tribromophenol	60	%	10 - 123
Terphenyl-d14	48	%	33 - 141

ND = Not Detected

Quanterra
Environmental Services

METALS
(Water)

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 4/22/97
LAB ID: 125628-0001-SA
Matrix: AQUEOUS Sampled: 22 APR 97 Received: 23 APR 97
Authorized: 23 APR 97 Prepared: See Below Analyzed: See Below

Parameter	Result	Qual	DIL	RL	Units	Prep Method	Test Method	Prepared Date	Analyzed Date
Arsenic	ND		1.0	0.010	mg/L	TOTREC	6010A	23 APR 97	25 APR 97
Beryllium	ND		1.0	0.0050	mg/L	TOTREC	6010A	23 APR 97	25 APR 97
Cadmium	ND		1.0	0.0020	mg/L	TOTREC	6010A	23 APR 97	25 APR 97
Manganese	0.038		1.0	0.015	mg/L	TOTREC	6010A	23 APR 97	25 APR 97
Mercury	ND		1.0	0.00020	mg/L	METHOD	SW7470	24 APR 97	25 APR 97
Selenium	ND		1.0	0.0050	mg/L	TOTREC	6010A	23 APR 97	25 APR 97
Thallium	ND		1.0	0.010	mg/L	TOTREC	6010A	23 APR 97	25 APR 97
Zinc	ND		1.0	0.020	mg/L	TOTREC	6010A	23 APR 97	25 APR 97

ND = Not Detected

Quanterra Environmental Services

GENERAL INORGANICS

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 4/22/97
LAB ID: 125628-0001-SA
Matrix: AQUEOUS — Sampled: 22 APR 97 — Received: 23 APR 97
Authorized: 23 APR 97 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Qual	DIL	RL	Units	Prep Method	Test Method	Prepared Date	Analyzed Date
pH	7.5		1.0	NA	units	NONE	150.1	NA	23 APR 97
Total Suspended Solids	ND		1.0	10.0	mg/L	NONE	E160.2	NA	24 APR 97

ND = Not Detected

Quanterra
Environmental Services

Penta & Tetrachlorophenol
Method QUANTERRA

Client Name: Montgomery Watson Constructors
Client ID: Effluent 4/22/97
LAB ID: 092828-0002-SA
Matrix: AQUEOUS — Sampled: 22 APR 97 — Received: 23 APR 97
Authorized: 23 APR 97 — Prepared: 25 APR 97 — Analyzed: 28 APR 97

Dilution Factor: 1.0

Parameter	Result	Units	Reporting Limit	Qualifier
Pentachlorophenol	ND	ug/L	0.50	

Surrogate	Recovery	Acceptable Range
2,4,6-Tribromophenol	71 %	-

ND = Not Detected

Reported By: Jon Edmondson — Approved By: Emily Uebelhoer

The cover letter is an integral part of this report.
Rev 230787

Industrial & Environmental Analysts, Inc. (IEA)
GC SEMIVOLATILE SW-846 METHOD 8081 PCB in WATER

IEA Project Number:	2240-042	Date Received:	04/23/97
IEA Sample Number:	9704476-01	Date Sampled:	04/22/97
Client Name:	Montgomery Watson	Date Extracted:	04/23/97
Client Project ID:	ACS-#23	Date Analyzed:	04/24/97
Sample Identification:	Effluent 4/22/97	Analysis By:	Briggs
Associated QC Blank:	PB432	Dilution Factor:	1.0
QC Batch ID#:	432	Matrix:	Water

Number	Compound	Quantitation Limit (ug/L)	Results Concentration (ug/L)
1	Aroclor 1016	0.10	BQL
2	Aroclor 1221	0.10	BQL
3	Aroclor 1232	0.10	BQL
4	Aroclor 1242	0.10	BQL
5	Aroclor 1248	0.10	BQL
6	Aroclor 1254	0.10	BQL
7	Aroclor 1260	0.10	BQL

Surrogate Compounds:	Acceptance Criteria	% Recovery
Tetrachloro-m-xylene	60 - 150	82
Decachlorobiphenyl	60 - 150	95

Comments:
Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor and/or moisture correction factor where reported.
BQL = Below Quantitation Limit

FORM RPCBW Rev. 082295

E.S. BABCOCK & SONS, INC.
ESTABLISHED 1906

6100 Quail Valley Court Riverside, CA 92507
P.O. Box 432 Riverside, CA 92502
PH (909) 653-3351 FAX (909) 653-1662
Environmental Laboratory Certification #1156

2466-285940
Client:
Quanterra Environmental Services
Manny Valasquez
1721 S. Grand Avenue

Santa Ana,CA 92705

Client I.D.: 125628-01
Site: MW/ACS#23
Description: Effluent 4/22/97

Matrix: wastewater

Page: 1 of 1
Lab No.: L28571-001

Date Reported: 04/30/97

Collected By:
Date: 04/22/97
Time: 1520
Submitted By: Courier
Date: 04/23/97
Time: 1245

Constituent	Result		Method	RL	Date / Analyst
Biochemical Oxygen Demand	ND	mg/L	EPA 405.1	5.	970424/TF

ND = None detected at RL (Reporting Limit). RL units same as result.

cc:

E. S. Babcock & Sons Inc

Quanterra Environmental Services

GENERAL INORGANICS

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 4/24/97
LAB ID: 125676-0001-SA
Matrix: AQUEOUS Sampled: 24 APR 97 Received: 25 APR 97
Authorized: 25 APR 97 Prepared: See Below Analyzed: See Below

Parameter	Result	Qual	DIL	RL	Units	Prep Method	Test Method	Prepared Date	Analyzed Date
pH	7.3		1.0	NA	units	NONE	150.1	NA	25 APR 97
Total Suspended Solids	ND		1.0	10.0	mg/L	NONE	E160.2	NA	29 APR 97

ND = Not Detected

Industrial & Environmental Analysts, Inc. (IEA)
GC SEMIVOLATILE SW-846 METHOD 8081 PCB in WATER

IEA Project Number:	2240-048	Date Received:	04/25/97
IEA Sample Number:	9704556-01	Date Sampled:	04/24/97
Client Name:	Mongomery Watson	Date Extracted:	04/28/97
Client Project ID:	ACS-#23	Date Analyzed:	04/30/97
Sample Identification:	EFFLUENT 4/24/97	Analysis By:	Briggs
Associated QC Blank:	PB436	Dilution Factor:	1.0
QC Batch ID#:	436	Matrix:	Water
		Time of Analysis:	1107

Number	Compound	Quantitation Limit (ug/L)	Results Concentration (ug/L)
1	Aroclor 1016	0.10	BQL
2	Aroclor 1221	0.10	BQL
3	Aroclor 1232	0.10	BQL
4	Aroclor 1242	0.10	BQL
5	Aroclor 1248	0.10	BQL
6	Aroclor 1254	0.10	BQL
7	Aroclor 1260	0.10	BQL

Surrogate Compounds:	Acceptance Criteria	% Recovery
Tetrachloro-m-xylene	60 - 150	82
Decachlorobiphenyl	60 - 150	100

Comments:
Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor and/or moisture correction factor where reported.
BQL = Below Quantitation Limit

FORM RPCBW Rev. 082296

Quanterra
Environmental Services

METALS
(Water)

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 4/24/97
LAB ID: 125676-0001-SA
Matrix: AQUEOUS Sampled: 24 APR 97 Received: 25 APR 97
Authorized: 25 APR 97 Prepared: See Below Analyzed: See Below

Parameter	Result	Qual	DIL	RL	Units	Prep Method	Test Method	Prepared Date	Analyzed Date
Arsenic	ND		1.0	0.010	mg/L	TOTREC	6010A	28 APR 97	29 APR 97
Beryllium	ND		1.0	0.0050	mg/L	TOTREC	6010A	28 APR 97	29 APR 97
Cadmium	ND		1.0	0.0020	mg/L	TOTREC	6010A	28 APR 97	29 APR 97
Manganese	0.13		1.0	0.015	mg/L	TOTREC	6010A	28 APR 97	29 APR 97
Mercury	ND		1.0	0.00020	mg/L	METHOD	SW7470	28 APR 97	28 APR 97
Selenium	ND		1.0	0.0050	mg/L	TOTREC	6010A	28 APR 97	29 APR 97
Thallium	ND		1.0	0.010	mg/L	TOTREC	6010A	28 APR 97	29 APR 97
Zinc	ND		1.0	0.020	mg/L	TOTREC	6010A	28 APR 97	29 APR 97

ND = Not Detected

Industrial & Environmental Analysts, Inc. (IEA)
GC SEMIVOLATILE SW-846 METHOD 8080 PCB in WATER

IEA Project Number:	2240-048	Date Received:	04/25/97
IEA Sample Number:	9704556-01	Date Sampled:	04/24/97
Client Name:	Mongomery Watson	Date Extracted:	04/28/97
Client Project ID:	ACS-#23	Date Analyzed:	04/30/97
Sample Identification:	EFFLUENT 4/24/97	Analysis By:	Briggs
Associated QC Blank:	PB436	Dilution Factor:	1.0
QC Batch ID#:	436	Matrix:	Water
		Time of Analysis:	1107

Number	Compound	Quantitation Limit (ug/L)	Results Concentration (ug/L)
1	Aroclor 1016	0.10	BQL
2	Aroclor 1221	0.10	BQL
3	Aroclor 1232	0.10	BQL
4	Aroclor 1242	0.10	BQL
5	Aroclor 1248	0.10	BQL
6	Aroclor 1254	0.10	BQL
7	Aroclor 1260	0.10	BQL

Surrogate Compounds:	Acceptance Criteria	% Recovery
Tetrachloro-m-xylene	60 - 150	82
Decachlorobiphenyl	60 - 150	100

Comments:
Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor and/or moisture correction factor where reported.
BQL = Below Quantitation Limit

FORM RPCBW Rev. 082296

E.S. BABCOCK & SONS, INC.

6100 Quail Valley Court Riverside, CA 92507
P.O. Box 432 Riverside, CA 92502
PH (909) 653-3351 FAX (909) 653-1662
Environmental Laboratory Certification #1156

2466-285940

Client:
Quanterra Environmental Services
Manny Valasquez
1721 S. Grand Avenue

Santa Ana,CA 92705

Client I.D.: 125676-01
Site: MW/ACS#23
Description: Effluent 04/24/97

Matrix: grndwater

Page: 1 of 1
Lab No.: L28686-001

Date Reported: 05/01/9

Collected By:
Date: 04/24/9
Time: 1545
Submitted By: Courier
Date: 04/25/9
Time: 1435

Constituent	Result		Method	RL	Date / Analyst
Biochemical Oxygen Demand	ND	mg/L	EPA 405.1	5.	970401/

ND = None detected at RL (Reporting Limit). RL units same as result.

cc:

E. S. Babcock & Son

Quanterra
Environmental Services

Volatile Organic Compounds
Method SW8260A

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 4/24/97
LAB ID: 125676-0001-SA
Matrix: AQUEOUS Sampled: 24 APR 97 Received: 25 APR 97
Authorized: 25 APR 97 Prepared: 26 APR 97 Analyzed: 26 APR 97
Instrument: GC/MS-MC Dilution: 1.0

Parameter	Result	Qualifier	RL	Units
Benzene	0.19	J	1.0	ug/L
Bromobenzene	ND		1.0	ug/L
Bromochloromethane	ND		1.0	ug/L
Bromodichloromethane	ND		1.0	ug/L
Bromoform	ND		1.0	ug/L
Bromomethane	ND		2.0	ug/L
n-Butylbenzene	ND		1.0	ug/L
sec-Butylbenzene	ND		1.0	ug/L
Carbon tetrachloride	ND		1.0	ug/L
Chlorobenzene	ND		1.0	ug/L
Chloroethane	ND		2.0	ug/L
Chloroform	ND		1.0	ug/L
Chloromethane	ND		2.0	ug/L
2-Chlorotoluene	ND		1.0	ug/L
Dibromochloromethane	ND		1.0	ug/L
1,2-Dibromo-3-chloro-propane (DBCP)	ND		2.0	ug/L
1,2-Dibromoethane (EDB)	ND		1.0	ug/L
Dibromomethane	ND		1.0	ug/L
1,2-Dichlorobenzene	ND		1.0	ug/L
1,3-Dichlorobenzene	ND		1.0	ug/L
1,4-Dichlorobenzene	ND		1.0	ug/L
Dichlorodifluoromethane	ND		2.0	ug/L
1,1-Dichloroethane	ND		1.0	ug/L
1,2-Dichloroethane	ND		1.0	ug/L
1,1-Dichloroethene	ND		5.0	ug/L
cis-1,2-Dichloroethene	ND		1.0	ug/L
trans-1,2-Dichloroethene	ND		1.0	ug/L
1,2-Dichloropropane	ND		1.0	ug/L
1,3-Dichloropropane	ND		1.0	ug/L
2,2-Dichloropropane	ND		1.0	ug/L
1,1-Dichloropropene	ND		1.0	ug/L
Ethylbenzene	ND		1.0	ug/L
Hexachlorobutadiene	ND		1.0	ug/L
Isopropylbenzene	ND		1.0	ug/L
Isopropyltoluene	ND		1.0	ug/L
Methylene chloride	ND		5.0	ug/L
Naphthalene	ND		1.0	ug/L
n-Propylbenzene	ND		1.0	ug/L
Styrene	ND		1.0	ug/L
1,1,1,2-Tetrachloroethane	ND		1.0	ug/L
1,1,2,2-Tetrachloroethane	ND		1.0	ug/L
Tetrachloroethene	ND		1.0	ug/L
Toluene	ND		1.0	ug/L

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Quanterra
Environmental Services

Volatile Organic Compounds (cont.)
Method SW8260A

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 4/24/97
LAB ID: 125676-0001-SA
Matrix: AQUEOUS Sampled: 24 APR 97 Received: 25 APR 97
Authorized: 25 APR 97 Prepared: 26 APR 97 Analyzed: 26 APR 97
Instrument: GC/MS-MC Dilution: 1.0

Parameter	Result	Qualifier	RL	Units
1,2,3-Trichlorobenzene	ND		1.0	ug/L
1,2,4-Trichlorobenzene	ND		1.0	ug/L
1,1,1-Trichloroethane	ND		1.0	ug/L
1,1,2-Trichloroethane	ND		1.0	ug/L
Trichloroethene	ND		1.0	ug/L
Trichlorofluoromethane	ND		2.0	ug/L
1,2,3-Trichloropropane	ND		1.0	ug/L
1,2,4-Trimethylbenzene	ND		1.0	ug/L
1,3,5-Trimethylbenzene	ND		1.0	ug/L
Vinyl chloride	ND		2.0	ug/L
m- & p-Xylenes	ND		1.0	ug/L
o-Xylene	ND		1.0	ug/L
Acetone	ND		10	ug/L
2-Butanone	ND		10	ug/L
4-Methyl-2-pentanone	ND		10	ug/L

Surrogate	Recovery		Acceptable Range
1,2-Dichloroethane-d4	93	%	80 - 120
Toluene-d8	92	%	80 - 120
Bromofluorobenzene	86	%	80 - 120

ND = Not Detected

Quanterra
Environmental Services

Semivolatile Organic Compounds
Appendix IX List
Method 8270

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 4/24/97
LAB ID: 125676-0001-SA
Matrix: AQUEOUS Sampled: 24 APR 97 Received: 25 APR 97
Authorized: 25 APR 97 Prepared: 25 APR 97 Analyzed: 28 APR 97
Instrument: GC/MS-MI Dilution: 1.0

Parameter	Result	Qualifier	RL	Units
N-Nitrosodimethylamine	ND		10	ug/L
Aniline	ND		10	ug/L
Phenol	ND		10	ug/L
bis(2-Chloroethyl) ether	ND		10	ug/L
2-Chlorophenol	ND		10	ug/L
1,3-Dichlorobenzene	ND		10	ug/L
1,4-Dichlorobenzene	ND		10	ug/L
Benzyl alcohol	ND		10	ug/L
1,2-Dichlorobenzene	ND		10	ug/L
2-Methylphenol	ND		10	ug/L
bis(2-Chloroisopropyl)-ether	ND		10	ug/L
3/4-Methylphenol	ND		10	ug/L
N-Nitroso-di-n-propylamine	ND		10	ug/L
Hexachloroethane	ND		10	ug/L
Nitrobenzene	ND		10	ug/L
Isophorone	ND		10	ug/L
2-Nitrophenol	ND		10	ug/L
2,4-Dimethylphenol	ND		10	ug/L
Benzoic acid	ND		50	ug/L
bis(2-Chloroethoxy)-methane	ND		10	ug/L
2,4-Dichlorophenol	ND		10	ug/L
1,2,4-Trichlorobenzene	ND		10	ug/L
Naphthalene	ND		10	ug/L
4-Chloroaniline	ND		10	ug/L
Hexachlorobutadiene	ND		10	ug/L
4-Chloro-3-methylphenol	ND		10	ug/L
2-Methylnaphthalene	ND		10	ug/L
Hexachlorocyclopentadiene	ND		50	ug/L
2,4,6-Trichlorophenol	ND		10	ug/L
2,4,5-Trichlorophenol	ND		50	ug/L
2-Chloronaphthalene	ND		10	ug/L
2-Nitroaniline	ND		50	ug/L
Dimethyl phthalate	ND		10	ug/L
Acenaphthylene	ND		10	ug/L
3-Nitroaniline	ND		50	ug/L
Acenaphthene	ND		10	ug/L
2,4-Dinitrophenol	ND		50	ug/L
4-Nitrophenol	ND		50	ug/L
Dibenzofuran	ND		10	ug/L
2,4-Dinitrotoluene	ND		10	ug/L
2,6-Dinitrotoluene	ND		10	ug/L
Diethyl phthalate	ND		10	ug/L
1,2-Diphenylhydrazine	ND		50	ug/L
4-Chlorophenyl phenyl ether	ND		10	ug/L

ND = Not Detected

Quanterra
Environmental Services

Semivolatile Organic Compounds (cont.)
Appendix IX List
Method 8270

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 4/24/97
LAB ID: 125676-0001-SA
Matrix: AQUEOUS Sampled: 24 APR 97 Received: 25 APR 97
Authorized: 25 APR 97 Prepared: 25 APR 97 Analyzed: 28 APR 97
Instrument: GC/MS-MI Dilution: 1.0

Parameter	Result	Qualifier	RL	Units
Fluorene	ND		10	ug/L
4-Nitroaniline	ND		50	ug/L
4,6-Dinitro-2-methylphenol	ND		50	ug/L
N-Nitrosodiphenylamine	ND		10	ug/L
4-Bromophenyl phenyl ether	ND		10	ug/L
Hexachlorobenzene	ND		10	ug/L
Phenanthrene	ND		10	ug/L
Anthracene	ND		10	ug/L
Di-n-butyl phthalate	ND		10	ug/L
Fluoranthene	ND		10	ug/L
Pyrene	ND		10	ug/L
Butyl benzyl phthalate	ND		10	ug/L
3,3'-Dichlorobenzidine	ND		50	ug/L
Benzo(a)anthracene	ND		10	ug/L
bis(2-Ethylhexyl)-phthalate	0.61	J	10	ug/L
Chrysene	ND		10	ug/L
Di-n-octyl phthalate	ND		10	ug/L
Benzo(b)fluoranthene	ND		10	ug/L
Benzo(k)fluoranthene	ND		10	ug/L
Benzo(a)pyrene	ND		10	ug/L
Indeno(1,2,3-c,d)pyrene	ND		10	ug/L
Dibenz(a,h)anthracene	ND		10	ug/L
Benzo(g,h,i)perylene	ND		10	ug/L
2-Picoline	ND		20	ug/L
Ethyl methanesulfonate	ND		10	ug/L
Acetophenone	ND		10	ug/L
N-Nitrosopiperidine	ND		10	ug/L
a,a-Dimethylphenethyl-amine	ND		50	ug/L
2,6-Dichlorophenol	ND		10	ug/L
N-Nitroso-di-n-butylamine	ND		10	ug/L
1,2,4,5-Tetrachloro-benzene	ND		10	ug/L
Pentachlorobenzene	ND		10	ug/L
1-Naphthylamine	ND		10	ug/L
2-Naphthylamine	ND		10	ug/L
2,3,4,6-Tetrachlorophenol	ND		50	ug/L
Phenacetin	ND		20	ug/L
4-Aminobiphenyl	ND		50	ug/L
Pronamide	ND		20	ug/L
Pentachloronitrobenzene	ND		50	ug/L
p-Dimethylaminoazobenzene	ND		20	ug/L
7,12-Dimethylbenz(a)-anthracene	ND		20	ug/L
Benzidine	ND		100	ug/L

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Quanterra
Environmental Services

Semivolatile Organic Compounds (cont.)
Appendix IX List
Method 8270

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 4/24/97
LAB ID: 125676-0001-SA
Matrix: AQUEOUS Sampled: 24 APR 97 Received: 25 APR 97
Authorized: 25 APR 97 Prepared: 25 APR 97 Analyzed: 28 APR 97
Instrument: GC/MS-MI Dilution: 1.0

Parameter	Result	Qualifier	RL	Units
1-Chloronaphthalene	ND		10	ug/L
Dibenz(a,j)acridine	ND		20	ug/L

Surrogate	Recovery		Acceptable Range
2-Fluorophenol	42	%	21 - 100
Phenol-d5	29	%	10 - 94
Nitrobenzene-d5	71	%	34 - 114
2-Fluorobiphenyl	71	%	43 - 116
2,4,6-Tribromophenol	64	%	10 - 123
Terphenyl-d14	60	%	33 - 141

ND = Not Detected

Quanterra
Environmental Services

Volatile Organic Compounds
Method SW8260A

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 5/21/97
LAB ID: 126058-0001-SA
Matrix: AQUEOUS Sampled: 21 MAY 97 Received: 22 MAY 97
Authorized: 22 MAY 97 Prepared: 23 MAY 97 Analyzed: 23 MAY 97
Instrument: GC/MS-MC Dilution: 1.0

Parameter	Result	Qualifier	RL	Units
Benzene	ND		1.0	ug/L
Bromobenzene	ND		1.0	ug/L
Bromochloromethane	ND		1.0	ug/L
Bromodichloromethane	ND		1.0	ug/L
Bromoform	ND		1.0	ug/L
Bromomethane	ND		2.0	ug/L
n-Butylbenzene	ND		1.0	ug/L
sec-Butylbenzene	ND		1.0	ug/L
Carbon tetrachloride	ND		1.0	ug/L
Chlorobenzene	ND		1.0	ug/L
Chloroethane	3.7		2.0	ug/L
Chloroform	ND		1.0	ug/L
Chloromethane	0.61	J	2.0	ug/L
2-Chlorotoluene	ND		1.0	ug/L
Dibromochloromethane	ND		1.0	ug/L
1,2-Dibromo-3-chloro-propane (DBCP)	ND		2.0	ug/L
1,2-Dibromoethane (EDB)	ND		1.0	ug/L
Dibromomethane	ND		1.0	ug/L
1,2-Dichlorobenzene	ND		1.0	ug/L
1,3-Dichlorobenzene	ND		1.0	ug/L
1,4-Dichlorobenzene	ND		1.0	ug/L
Dichlorodifluoromethane	ND		2.0	ug/L
1,1-Dichloroethane	ND		1.0	ug/L
1,2-Dichloroethane	ND		1.0	ug/L
1,1-Dichloroethene	ND		5.0	ug/L
cis-1,2-Dichloroethene	ND		1.0	ug/L
trans-1,2-Dichloroethene	ND		1.0	ug/L
1,2-Dichloropropane	ND		1.0	ug/L
1,3-Dichloropropane	ND		1.0	ug/L
2,2-Dichloropropane	ND		1.0	ug/L
1,1-Dichloropropene	ND		1.0	ug/L
Ethylbenzene	ND		1.0	ug/L
Hexachlorobutadiene	ND		1.0	ug/L
Isopropylbenzene	ND		1.0	ug/L
Isopropyltoluene	ND		1.0	ug/L
Methylene chloride	0.15	J	5.0	ug/L
Naphthalene	ND		1.0	ug/L
n-Propylbenzene	ND		1.0	ug/L
Styrene	ND		1.0	ug/L
1,1,1,2-Tetrachloroethane	ND		1.0	ug/L
1,1,2,2-Tetrachloroethane	ND		1.0	ug/L
Tetrachloroethene	ND		1.0	ug/L
Toluene	ND		1.0	ug/L

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Quanterra Environmental Services

Volatile Organic Compounds
Method SW8260A (cont.)

Client Name:	Montgomery Watson Constructors, Inc.		
Client ID:	EFFLUENT 5/21/97		
LAB ID:	126058-0001-SA		
Matrix:	AQUEOUS	Sampled: 21 MAY 97	Received: 22 MAY 97
Authorized:	22 MAY 97	Prepared: 23 MAY 97	Analyzed: 23 MAY 97
Instrument:	GC/MS-MC	Dilution: 1.0	

Parameter	Result	Qualifier	RL	Units
1,2,3-Trichlorobenzene	ND		1.0	ug/L
1,2,4-Trichlorobenzene	ND		1.0	ug/L
1,1,1-Trichloroethane	ND		1.0	ug/L
1,1,2-Trichloroethane	ND		1.0	ug/L
Trichloroethene	ND		1.0	ug/L
Trichlorofluoromethane	ND		2.0	ug/L
1,2,3-Trichloropropane	ND		1.0	ug/L
1,2,4-Trimethylbenzene	ND		1.0	ug/L
1,3,5-Trimethylbenzene	ND		1.0	ug/L
Vinyl chloride	ND		2.0	ug/L
m- & p-Xylenes	ND		1.0	ug/L
o-Xylene	ND		1.0	ug/L
Acetone	2.7	J	10	ug/L
2-Butanone	ND		10	ug/L
4-Methyl-2-pentanone	ND		10	ug/L

Surrogate	Recovery		Acceptable Range
1,2-Dichloroethane-d4	100	%	80 - 120
Toluene-d8	100	%	80 - 120
Bromofluorobenzene	107	%	80 - 120

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Quanterra Environmental Services

Semivolatile Organic Compounds
Appendix IX List
Method 8270

Client Name:	Montgomery Watson Constructors, Inc.		
Client ID:	EFFLUENT 5/21/97		
LAB ID:	126058-0001-SA		
Matrix:	AQUEOUS	Sampled: 21 MAY 97	Received: 22 MAY 97
Authorized:	22 MAY 97	Prepared: 22 MAY 97	Analyzed: 03 JUN 97
Instrument:	GC/MS-MA	Dilution: 1.0	

Parameter	Result	Qualifier	RL	Units
N-Nitrosodimethylamine	ND		10	ug/L
Aniline	ND		10	ug/L
Phenol	ND		10	ug/L
bis(2-Chloroethyl) ether	ND		10	ug/L
2-Chlorophenol	ND		10	ug/L
1,3-Dichlorobenzene	ND		10	ug/L
1,4-Dichlorobenzene	ND		10	ug/L
Benzyl alcohol	ND		10	ug/L
1,2-Dichlorobenzene	ND		10	ug/L
2-Methylphenol	ND		10	ug/L
bis(2-Chloroisopropyl)-ether	ND		10	ug/L
3/4-Methylphenol	ND		10	ug/L
N-Nitroso-di-n-propylamine	ND		10	ug/L
Hexachloroethane	ND		10	ug/L
Nitrobenzene	ND		10	ug/L
Isophorone	ND		10	ug/L
2-Nitrophenol	ND		10	ug/L
2,4-Dimethylphenol	ND		10	ug/L
Benzoic acid	ND		50	ug/L
bis(2-Chloroethoxy)-methane	ND		10	ug/L
2,4-Dichlorophenol	ND		10	ug/L
1,2,4-Trichlorobenzene	ND		10	ug/L
Naphthalene	ND		10	ug/L
4-Chloroaniline	ND		10	ug/L
Hexachlorobutadiene	ND		10	ug/L
4-Chloro-3-methylphenol	ND		10	ug/L
2-Methylnaphthalene	ND		10	ug/L
Hexachlorocyclopentadiene	ND		50	ug/L
2,4,6-Trichlorophenol	ND		10	ug/L
2,4,5-Trichlorophenol	ND		50	ug/L
2-Chloronaphthalene	ND		10	ug/L
2-Nitroaniline	ND		50	ug/L
Dimethyl phthalate	ND		10	ug/L
Acenaphthylene	ND		10	ug/L
3-Nitroaniline	ND		50	ug/L
Acenaphthene	ND		10	ug/L
2,4-Dinitrophenol	ND		50	ug/L
4-Nitrophenol	ND		50	ug/L
Dibenzofuran	ND		10	ug/L
2,4-Dinitrotoluene	ND		10	ug/L
2,6-Dinitrotoluene	ND		10	ug/L
Diethyl phthalate	ND		10	ug/L
1,2-Diphenylhydrazine	ND		50	ug/L
4-Chlorophenyl phenyl ether	ND		10	ug/L

ND = Not Detected

Quanterra Environmental Services

Semivolatile Organic Compounds
Appendix IX List
Method 8270

(cont.)

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 5/21/97
LAB ID: 126058-0001-SA
Matrix: AQUEOUS Sampled: 21 MAY 97 Received: 22 MAY 97
Authorized: 22 MAY 97 Prepared: 22 MAY 97 Analyzed: 03 JUN 97
Instrument: GC/MS-MA Dilution: 1.0

Parameter	Result	Qualifier	RL	Units
Flucrene	ND		10	ug/L
4-Nitroaniline	ND		50	ug/L
4,6-Dinitro-2-methylphenol	ND		50	ug/L
N-Nitrosodiphenylamine	ND		10	ug/L
4-Bromophenyl phenyl ether	ND		10	ug/L
Hexachlorobenzene	ND		10	ug/L
Phenanthrene	ND		10	ug/L
Anthracene	ND		10	ug/L
Di-n-butyl phthalate	ND		10	ug/L
Fluoranthene	ND		10	ug/L
Pyrene	ND		10	ug/L
Butyl benzyl phthalate	ND		10	ug/L
3,3'-Dichlorobenzidine	ND		50	ug/L
Benzo(a)anthracene	ND		10	ug/L
bis(2-Ethylhexyl)-phthalate	ND		10	ug/L
Chrysene	ND		10	ug/L
Di-n-octyl phthalate	ND		10	ug/L
Benzo(b)fluoranthene	ND		10	ug/L
Benzo(k)fluoranthene	ND		10	ug/L
Benzo(a)pyrene	ND		10	ug/L
Indeno(1,2,3-c,d)pyrene	ND		10	ug/L
Dibenz(a,h)anthracene	ND		10	ug/L
Benzo(g,h,i)perylene	ND		10	ug/L
2-Picoline	ND		20	ug/L
Ethyl methanesulfonate	ND		10	ug/L
Acetophenone	ND		10	ug/L
N-Nitrosopiperidine	ND		10	ug/L
a,a-Dimethylphenethyl-amine	ND		50	ug/L
2,6-Dichlorophenol	ND		10	ug/L
N-Nitroso-di-n-butylamine	ND		10	ug/L
1,2,4,5-Tetrachloro-benzene	ND		10	ug/L
Pentachlorobenzene	ND		10	ug/L
1-Naphthylamine	ND		10	ug/L
2-Naphthylamine	ND		10	ug/L
2,3,4,6-Tetrachlorophenol	ND		50	ug/L
Phenacetin	ND		20	ug/L
4-Aminobiphenyl	ND		50	ug/L
Pronamide	ND		20	ug/L
Pentachloronitrobenzene	ND		50	ug/L
p-Dimethylaminoazobenzene	ND		20	ug/L
7,12-Dimethylbenz(a)-anthracene	ND		20	ug/L
Benzidine	ND		100	ug/L
1-Chloronaphthalene	ND		10	ug/L

ND = Not Detected

Quanterra Environmental Services

Semivolatile Organic Compounds
Appendix IX List
Method 8270

(cont.)

Client Name:	Montgomery Watson Constructors, Inc.		
Client ID:	EFFLUENT 5/21/97		
LAB ID:	126058-0001-SA		
Matrix:	AQUEOUS	Sampled: 21 MAY 97	Received: 22 MAY 97
Authorized:	22 MAY 97	Prepared: 22 MAY 97	Analyzed: 03 JUN 97
Instrument:	GC/MS-MA	Dilution: 1.0	

Parameter	Result	Qualifier	RL	Units
Dibenz(a,j)acridine	ND		20	ug/L

Surrogate	Recovery		Acceptable Range
2-Fluorophenol	44	%	21 - 100
Phenol-d5	26	%	10 - 94
Nitrobenzene-d5	76	%	34 - 114
2-Fluorobiphenyl	73	%	43 - 116
2,4,6-Tribromophenol	58	%	10 - 123
Terphenyl-d14	72	%	33 - 141

ND = Not Detected

Quanterra Environmental Services

METALS
(Water)

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 5/21/97
LAB ID: 126058-0001-SA
Matrix: AQUEOUS Sampled: 21 MAY 97 Received: 22 MAY 97
Authorized: 22 MAY 97 Prepared: See Below Analyzed: See Below

Parameter	Result	Qual	DIL	RL	Units	Method	Prep Date	Analyzed Date
Arsenic	ND		1.0	0.010	mg/L	6010A	23 MAY 97	28 MAY
Beryllium	0.00067	J	1.0	0.0050	mg/L	6010A	23 MAY 97	28 MAY
Cadmium	ND		1.0	0.0020	mg/L	6010A	23 MAY 97	28 MAY
Manganese	0.058		1.0	0.015	mg/L	6010A	23 MAY 97	28 MAY
Mercury	ND		1.0	0.00020	mg/L	SW7470	27 MAY 97	27 MAY
Selenium	ND		1.0	0.0050	mg/L	6010A	23 MAY 97	28 MAY
Thallium	0.0041	JB	1.0	0.010	mg/L	6010A	23 MAY 97	28 MAY
Zinc	0.010	J	1.0	0.020	mg/L	6010A	23 MAY 97	28 MAY

B = Compound is also detected in the blank.
J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Quanterra Environmental Services

GENERAL INORGANICS

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 5/21/97
LAB ID: 126058-0001-SA
Matrix: AQUEOUS — Sampled: 21 MAY 97 — Received: 22 MAY
Authorized: 22 MAY 97 — Prepared: See Below — Analyzed: See Bel

Parameter	Result	Qual	DIL	RL	Units	Method	Prep Date	Analyz Date
pH	7.8		1.0	NA	units	150.1	NA	22 MA
Total Suspended Solids	ND		1.0	10.0	mg/L	E160.2	NA	27 MA

ND = Not Detected

E.S. BABCOCK & SONS, INC.
ESTABLISHED 1906

6100 Quail Valley Court Riverside, CA 92507
P.O. Box 432 Riverside, CA 92502
PH (909) 653-3351 FAX (909) 653-1662
Environmental Laboratory Certification #1156

2466-285940
Client:
Quanterra Environmental Services
Manny Valasquez
1721 S. Grand Avenue

Santa Ana,CA 92705

Client I.D.: 126058-0001
Site: MW/ACS #3
Description: Effluent

Matrix: grndwater

Lab No.: L29513-001

Date Reported: 05/29/97

Collected By:
Date: 05/21/97
Time: 1315
Submitted By: Courier
Date: 05/22/97
Time: 1320

Constituent	Result		Method	RL	Date / Analyst
Biochemical Oxygen Demand	5.	mg/L	EPA 405.1	5.	970523/K(

ND = None detected at RL (Reporting Limit). RL units same as result.

Temp. Blank = 3C upon receipt.

cc:

E. S. Babcock & Sons Inc

Semivolatile Organics
Selected Ion Monitoring
Method SW8270-SIM

Client Name:	Montgomery Watson Constructors, Inc.		
Client ID:	EFFLUENT 5-21-97		
LAB ID:	126106-0001-SA		
Matrix:	AQUEOUS	Sampled: 21 MAY 97	Received: 24 MAY 97
Authorized:	24 MAY 97	Prepared: 28 MAY 97	Analyzed: 30 MAY 97
Instrument:	GC/MS-MA	Dilution: 1.0	

Parameter	Result	Qualifier	RL	Units
Pentachlorophenol	ND		1.0	ug/L

PRELIMINARY DATA
PENDING QC, FINAL REVIEW AND APPROVAL

ND = Not Detected

Industrial & Environmental Analysts, Inc. (IEA)
PESTICIDES / PCBs EPA 608 COMPOUND LIST

IEA Project Number:	2240-049	Date Received:	05/22/97
IEA Sample Number:	9705432-01	Date Sampled:	05/21/97
Client Name:	Mongomery Watson	Date Extracted:	05/23/97
Client Project ID:	ACS-#23	Date Analyzed:	05/30/97
Sample Identification:	EFFLUENT 5/21/97	Analysis By:	Briggs
Matrix:	Water	Dilution Factor:	1.0

Number	Compound	Quantitation Limit (ug/L)	Results Concentration (ug/L)
1	Aroclor 1016	0.50	BQL
2	Aroclor 1221	0.50	BQL
3	Aroclor 1232	0.50	BQL
4	Aroclor 1242	0.50	BQL
5	Aroclor 1248	0.50	BQL
6	Aroclor 1254	1.0	BQL
7	Aroclor 1260	1.0	BQL

Comments:
Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor.
BQL = Below Quantitation Limit

FORM 608 REV. 030293

E.S. BABCOCK & SONS, INC.

6100 Quail Valley Court Riverside, CA 92507
P.O. Box 432 Riverside, CA 92502
PH (909) 653-3351 FAX (909) 653-1662
Environmental Laboratory Certification #1156

2466-285940
Client:
Quanterra Environmental Services
Manny Valasquez
1721 S. Grand Avenue

Santa Ana, CA 92705

Client I.D.: 126058-0001
Site: MW/ACS #3
Description: Effluent

Matrix: grndwater

Page: 1 of 1
Lab No.: L29513-001

Date Reported: 05/29/97

Collected By:
Date: 05/21/97
Time: 1315
Submitted By: Courier
Date: 05/22/97
Time: 1320

Constituent	Result		Method	RL	Date / Analyst
Biochemical Oxygen Demand	5.	mg/L	EPA 405.1	5.	970523/KO

ND = None detected at RL (Reporting Limit). RL units same as result.

Temp. Blank = 3C upon receipt.

cc:

E. S. Babcock & Sons Inc.

Lawrence J Chrystal

Quanterra Environmental Services

Volatile Organic Compounds
Method SW8260A

Client Name:	Montgomery Watson Constructors, Inc.		
Client ID:	EFFLUENT 5/29/97		
LAB ID:	126172-0001-SA		
Matrix:	AQUEOUS	Sampled: 29 MAY 97	Received: 30 MAY 97
Authorized:	30 MAY 97	Prepared: 03 JUN 97	Analyzed: 03 JUN 97
Instrument:	GC/MS-MD	Dilution: 10	

Parameter	Result	Qualifier	RL	Units
Benzene	ND		10	ug/L
Bromobenzene	ND		10	ug/L
Bromochloromethane	ND		10	ug/L
Bromodichloromethane	ND		10	ug/L
Bromoform	ND		10	ug/L
Bromomethane	ND		20	ug/L
n-Butylbenzene	ND		10	ug/L
sec-Butylbenzene	ND		10	ug/L
Carbon tetrachloride	ND		10	ug/L
Chlorobenzene	ND		10	ug/L
Chloroethane	120		20	ug/L
Chloroform	ND		10	ug/L
Chloromethane	ND		20	ug/L
2-Chlorotoluene	ND		10	ug/L
Dibromochloromethane	ND		10	ug/L
1,2-Dibromo-3-chloro-propane (DBCP)	ND		20	ug/L
1,2-Dibromoethane (EDB)	ND		10	ug/L
Dibromomethane	ND		10	ug/L
1,2-Dichlorobenzene	ND		10	ug/L
1,3-Dichlorobenzene	ND		10	ug/L
1,4-Dichlorobenzene	ND		10	ug/L
Dichlorodifluoromethane	ND		20	ug/L
1,1-Dichloroethane	ND		10	ug/L
1,2-Dichloroethane	ND		10	ug/L
1,1-Dichloroethene	ND		50	ug/L
cis-1,2-Dichloroethene	ND		10	ug/L
trans-1,2-Dichloroethene	ND		10	ug/L
1,2-Dichloropropane	ND		10	ug/L
1,3-Dichloropropane	ND		10	ug/L
2,2-Dichloropropane	ND		10	ug/L
1,1-Dichloropropene	ND		10	ug/L
Ethylbenzene	ND		10	ug/L
Hexachlorobutadiene	ND		10	ug/L
Isopropylbenzene	ND		10	ug/L
Isopropyltoluene	ND		10	ug/L
Methylene chloride	4.3	J	50	ug/L
Naphthalene	ND		10	ug/L
n-Propylbenzene	ND		10	ug/L
Styrene	ND		10	ug/L
1,1,1,2-Tetrachloroethane	ND		10	ug/L
1,1,2,2-Tetrachloroethane	ND		10	ug/L
Tetrachloroethene	ND		10	ug/L
Toluene	ND		10	ug/L

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Quanterra Environmental Services

Volatile Organic Compounds
Method SW8260A

(cont.)

Client Name:	Montgomery Watson Constructors, Inc.		
Client ID:	EFFLUENT 5/29/97		
LAB ID:	126172-0001-SA		
Matrix:	AQUEOUS	Sampled: 29 MAY 97	Received: 30 MAY 97
Authorized:	30 MAY 97	Prepared: 03 JUN 97	Analyzed: 03 JUN 97
Instrument:	GC/MS-MD	Dilution: 10	

Parameter	Result	Qualifier	RL	Units
1,2,3-Trichlorobenzene	ND		10	ug/L
1,2,4-Trichlorobenzene	ND		10	ug/L
1,1,1-Trichloroethane	ND		10	ug/L
1,1,2-Trichloroethane	ND		10	ug/L
Trichloroethene	ND		10	ug/L
Trichlorofluoromethane	ND		20	ug/L
1,2,3-Trichloropropane	ND		10	ug/L
1,2,4-Trimethylbenzene	ND		10	ug/L
1,3,5-Trimethylbenzene	ND		10	ug/L
Vinyl chloride	ND		20	ug/L
m- & p-Xylenes	ND		10	ug/L
o-Xylene	ND		10	ug/L
Acetone	430		100	ug/L
2-Butanone	ND		100	ug/L
4-Methyl-2-pentanone	ND		100	ug/L

Surrogate	Recovery		Acceptable Range
1,2-Dichloroethane-d4	92	%	80 - 120
Toluene-d8	87	%	80 - 120
Bromofluorobenzene	86	%	80 - 120

ND = Not Detected

Quanterra Environmental Services

Semivolatile Organic Compounds
Appendix IX List
Method 8270

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 5/29/97
LAB ID: 126172-0001-SA
Matrix: AQUEOUS — Sampled: 29 MAY 97 — Received: 30 MAY 97
Authorized: 30 MAY 97 — Prepared: 02 JUN 97 — Analyzed: 03 JUN 97
Instrument: GC/MS-MA — Dilution: 1.0

Parameter	Result	Qualifier	RL	Units
N-Nitrosodimethylamine	ND		10	ug/L
Aniline	ND		10	ug/L
Phenol	ND		10	ug/L
bis(2-Chloroethyl) ether	ND		10	ug/L
2-Chlorophenol	ND		10	ug/L
1,3-Dichlorobenzene	ND		10	ug/L
1,4-Dichlorobenzene	ND		10	ug/L
Benzyl alcohol	ND		10	ug/L
1,2-Dichlorobenzene	ND		10	ug/L
2-Methylphenol	ND		10	ug/L
bis(2-Chloroisopropyl)-ether	ND		10	ug/L
3/4-Methylphenol	ND		10	ug/L
N-Nitroso-di-n-propylamine	ND		10	ug/L
Hexachloroethane	ND		10	ug/L
Nitrobenzene	ND		10	ug/L
Isophorone	ND		10	ug/L
2-Nitrophenol	ND		10	ug/L
2,4-Dimethylphenol	ND		10	ug/L
Benzoic acid	ND		50	ug/L
bis(2-Chloroethoxy)-methane	ND		10	ug/L
2,4-Dichlorophenol	ND		10	ug/L
1,2,4-Trichlorobenzene	ND		10	ug/L
Naphthalene	ND		10	ug/L
4-Chloroaniline	ND		10	ug/L
Hexachlorobutadiene	ND		10	ug/L
4-Chloro-3-methylphenol	ND		10	ug/L
2-Methylnaphthalene	ND		10	ug/L
Hexachlorocyclopentadiene	ND		50	ug/L
2,4,6-Trichlorophenol	ND		10	ug/L
2,4,5-Trichlorophenol	ND		50	ug/L
2-Chloronaphthalene	ND		10	ug/L
2-Nitroaniline	ND		50	ug/L
Dimethyl phthalate	ND		10	ug/L
Acenaphthylene	ND		10	ug/L
3-Nitroaniline	ND		50	ug/L
Acenaphthene	ND		10	ug/L
2,4-Dinitrophenol	ND		50	ug/L
4-Nitrophenol	ND		50	ug/L
Dibenzofuran	ND		10	ug/L
2,4-Dinitrotoluene	ND		10	ug/L
2,6-Dinitrotoluene	ND		10	ug/L
Diethyl phthalate	ND		10	ug/L
1,2-Diphenylhydrazine	ND		50	ug/L
4-Chlorophenyl phenyl ether	ND		10	ug/L

ND = Not Detected

Quanterra Environmental Services (cont.)

Semivolatile Organic Compounds
Appendix IX List
Method 8270

Client Name:	Montgomery Watson Constructors, Inc.		
Client ID:	EFFLUENT 5/29/97		
LAB ID:	126172-0001-SA		
Matrix:	AQUEOUS	Sampled: 29 MAY 97	Received: 30 MAY 97
Authorized:	30 MAY 97	Prepared: 02 JUN 97	Analyzed: 03 JUN 97
Instrument:	GC/MS-MA	Dilution: 1.0	

Parameter	Result	Qualifier	RL	Units
Fluorene	ND		10	ug/L
4-Nitroaniline	ND		50	ug/L
4,6-Dinitro-2-methylphenol	ND		50	ug/L
N-Nitrosodiphenylamine	ND		10	ug/L
4-Bromophenyl phenyl ether	ND		10	ug/L
Hexachlorobenzene	ND		10	ug/L
Phenanthrene	ND		10	ug/L
Anthracene	ND		10	ug/L
Di-n-butyl phthalate	ND		10	ug/L
Fluoranthene	ND		10	ug/L
Pyrene	ND		10	ug/L
Butyl benzyl phthalate	ND		10	ug/L
3,3'-Dichlorobenzidine	ND		50	ug/L
Benzo(a)anthracene	ND		10	ug/L
bis(2-Ethylhexyl)-phthalate	ND		10	ug/L
Chrysene	ND		10	ug/L
Di-n-octyl phthalate	ND		10	ug/L
Benzo(b)fluoranthene	ND		10	ug/L
Benzo(k)fluoranthene	ND		10	ug/L
Benzo(a)pyrene	ND		10	ug/L
Indeno(1,2,3-c,d)pyrene	ND		10	ug/L
Dibenz(a,h)anthracene	ND		10	ug/L
Benzo(g,h,i)perylene	ND		10	ug/L
2-Picoline	ND		20	ug/L
Ethyl methanesulfonate	ND		10	ug/L
Acetophenone	ND		10	ug/L
N-Nitrosopiperidine	ND		10	ug/L
a,a-Dimethylphenethyl-amine	ND		50	ug/L
2,6-Dichlorophenol	ND		10	ug/L
N-Nitroso-di-n-butylamine	ND		10	ug/L
1,2,4,5-Tetrachloro-benzene	ND		10	ug/L
Pentachlorobenzene	ND		10	ug/L
1-Naphthylamine	ND		10	ug/L
2-Naphthylamine	ND		10	ug/L
2,3,4,6-Tetrachlorophenol	ND		50	ug/L
Phenacetin	ND		20	ug/L
4-Aminobiphenyl	ND		50	ug/L
Pronamide	ND		20	ug/L
Pentachloronitrobenzene	ND		50	ug/L
p-Dimethylaminoazobenzene	ND		20	ug/L
7,12-Dimethylbenz(a)-anthracene	ND		20	ug/L
Benzidine	ND		100	ug/L
1-Chloronaphthalene	ND		10	ug/L

ND = Not Detected

Quanterra Environmental Services

Semivolatile Organic Compounds
Appendix IX List
Method 8270

(cont.)

Client Name:	Montgomery Watson Constructors, Inc.		
Client ID:	EFFLUENT 5/29/97		
LAB ID:	126172-0001-SA		
Matrix:	AQUEOUS	Sampled: 29 MAY 97	Received: 30 MAY 97
Authorized:	30 MAY 97	Prepared: 02 JUN 97	Analyzed: 03 JUN 97
Instrument:	GC/MS-MA	Dilution: 1.0	

Parameter	Result	Qualifier	RL	Units
Dibenz(a,j)acridine	ND		20	ug/L

Surrogate	Recovery		Acceptable Range
2-Fluorophenol	47	%	21 - 100
Phenol-d5	28	%	10 - 94
Nitrobenzene-d5	72	%	34 - 114
2-Fluorobiphenyl	73	%	43 - 116
2,4,6-Tribromophenol	78	%	10 - 123
Terphenyl-d14	81	%	33 - 141

ND = Not Detected

Quanterra
Environmental Services

Semivolatile Organics
Selected Ion Monitoring
Method SW8270-SIM

Client Name:	Montgomery Watson Constructors, Inc.		
Client ID:	EFFLUENT 5/29/97		
LAB ID:	126172-0001-SA		
Matrix:	AQUEOUS	Sampled: 29 MAY 97	Received: 30 MAY 97
Authorized:	30 MAY 97	Prepared: 02 JUN 97	Analyzed: 10 JUN 97
Instrument:	GC/MS-MA	Prep Method: P-8270	Dilution: 1.0

Parameter	Result	Qualifier	RL	Units
Pentachlorophenol	ND		1.0	ug/L

ND = Not Detected

Quanterra Environmental Services

METALS
(Water)

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 5/29/97
LAB ID: 126172-0001-SA
Matrix: AQUEOUS — Sampled: 29 MAY 97 — Received: 30 MAY 97
Authorized: 30 MAY 97 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Qual	DIL	RL	Units	Method	Prep Date	Analyzed Date
Arsenic	ND		1.0	0.010	mg/L	6010A	04 JUN 97	06 JUN 9
Beryllium	ND		1.0	0.0050	mg/L	6010A	04 JUN 97	06 JUN 9
Cadmium	ND		1.0	0.0020	mg/L	6010A	04 JUN 97	06 JUN 9
Manganese	0.021		1.0	0.015	mg/L	6010A	04 JUN 97	06 JUN 9
Mercury	ND		1.0	0.00020	mg/L	SW7470	03 JUN 97	05 JUN 9
Selenium	ND		1.0	0.0050	mg/L	6010A	04 JUN 97	06 JUN 9
Thallium	ND		1.0	0.010	mg/L	6010A	04 JUN 97	06 JUN 9
Zinc	ND		1.0	0.020	mg/L	6010A	04 JUN 97	06 JUN 9

ND = Not Detected

Quanterra Environmental Services

GENERAL INORGANICS

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 5/29/97
LAB ID: 126172-0001-SA
Matrix: AQUEOUS — Sampled: 29 MAY 97 — Received: 30 MAY 97
Authorized: 30 MAY 97 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Qual	DIL	RL	Units	Method	Prep Date	Analyzed Date
pH	7.8		1.0	NA	units	150.1	NA	30 MAY
Total Suspended Solids	ND		1.0	10.0	mg/L	E160.2	NA	04 JUN

ND = Not Detected

E.S. BABCOCK & SONS, INC.
ESTABLISHED 1900

6100 Quail Valley Court Riverside, CA 92507
P.O. Box 432 Riverside, CA 92502
PH (909) 653-3351 FAX (909) 653-1662
Environmental Laboratory Certification #1156

2466-285940
Client:
Quanterra Environmental Services
Manny Valasquez
1721 S. Grand Avenue

Santa Ana, CA 92705

Client I.D.: LAB#126295-0001
Site: MW/ACS
Description: Effluent 06/05/97

Matrix: wastewater

Page: 1 of 1
Lab No.: L29995-001

Date Reported: 06/12/97

Collected By:
Date: 06/05/97
Time: 1000
Submitted By: PBautista
Date: 06/06/97
Time: 1615

Constituent	Result		Method	RL	Date / Analyst
Biochemical Oxygen Demand	7.	mg/L	EPA 405.1	5.	970606/TF

ND = None detected at RL (Reporting Limit). RL units same as result.

cc:

E. S. Babcock & Sons Inc.

METALS
(Water)

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 6/5/97
LAB ID: 126295-0001-SA
Matrix: AQUEOUS
Authorized: 12 JUN 97

Sampled: 05 JUN 97
Prepared: See Below

Received: 06 JUN 97
Analyzed: See Below

Parameter	Result	Qual	DIL	RL	Units	Prep Method	Test Method	Prepared Date	Analyzed Date
Arsenic	ND		1.0	0.010	mg/L	TOTREC	6010A	12 JUN 97	13 JUN 97
Beryllium	ND		1.0	0.0050	mg/L	TOTREC	6010A	12 JUN 97	13 JUN 97
Cadmium	ND		1.0	0.0020	mg/L	TOTREC	6010A	12 JUN 97	13 JUN 97
Manganese	0.056		1.0	0.015	mg/L	TOTREC	6010A	12 JUN 97	13 JUN 97
Mercury	ND		1.0	0.00020	mg/L	METHOD	SW7470	12 JUN 97	13 JUN 97
Selenium	ND		1.0	0.0050	mg/L	TOTREC	6010A	12 JUN 97	13 JUN 97
Thallium	0.0031	JB	1.0	0.010	mg/L	TOTREC	6010A	12 JUN 97	13 JUN 97
Zinc	ND		1.0	0.020	mg/L	TOTREC	6010A	12 JUN 97	13 JUN 97

B = Compound is also detected in the blank
J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

PRELIMINARY DATA
PENDING FINAL REVIEW AND APPROVAL

GENERAL INORGANICS

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 6/5/97
LAB ID: 126295-0001-SA
Matrix: AQUEOUS
Authorized: 12 JUN 97

Sampled: 05 JUN 97
Prepared: See Below

Received: 06 JUN 97
Analyzed: See Below

Parameter	Result	Qual	DIL	RL	Units	Prep Method	Test Method	Prepared Date	Analyzed Date
pH	8.0		1.0	NA	units	NONE	150.1	NA	06 JUN 97

Sp'd 6/5 @ 10:00 AM

Rec'd 6/6 @ 10:30 AM

Analyzed 6/6 @ 13:15

HT exceeded by 3hr 15 min.

PRELIMINARY DATA
PENDING QC, FINAL REVIEW AND APPROVAL

Volatile Organic Compounds
Method SW8260A

Client Name:	Montgomery Watson Constructors, Inc.		
Client ID:	EFFLUENT 6/11/97		
LAB ID:	126295-0004-SA		
Matrix:	AQUEOUS	Sampled: 11 JUN 97	Received: 12 JUN 97
Authorized:	12 JUN 97	Prepared: 13 JUN 97	Analyzed: 13 JUN 97
Instrument:	GC/MS-MC	Dilution: 10	

Parameter	Result	Qualifier	RL	Units
Benzene	ND		10	ug/L
Bromobenzene	ND		10	ug/L
Bromochloromethane	ND		10	ug/L
Bromodichloromethane	ND		10	ug/L
Bromoform	ND		10	ug/L
Bromomethane	ND		20	ug/L
n-Butylbenzene	ND		10	ug/L
sec-Butylbenzene	ND		10	ug/L
Carbon tetrachloride	ND		10	ug/L
Chlorobenzene	ND		10	ug/L
Chloroethane	450		20	ug/L
Chloroform	ND		10	ug/L
Chloromethane	ND		20	ug/L
2-Chlorotoluene	ND		10	ug/L
Dibromochloromethane	ND		10	ug/L
1,2-Dibromo-3-chloro-propane (DBCP)	ND		20	ug/L
1,2-Dibromoethane (EDB)	ND		10	ug/L
Dibromomethane	ND		10	ug/L
1,2-Dichlorobenzene	ND		10	ug/L
1,3-Dichlorobenzene	ND		10	ug/L
1,4-Dichlorobenzene	ND		10	ug/L
Dichlorodifluoromethane	ND		20	ug/L
1,1-Dichloroethane	ND		10	ug/L
1,2-Dichloroethane	ND		10	ug/L
1,1-Dichloroethene	ND		50	ug/L
cis-1,2-Dichloroethene	ND		10	ug/L
trans-1,2-Dichloroethene	ND		10	ug/L
1,2-Dichloropropane	ND		10	ug/L
1,3-Dichloropropane	ND		10	ug/L
2,2-Dichloropropane	ND		10	ug/L
1,1-Dichloropropene	ND		10	ug/L
Ethylbenzene	ND		10	ug/L
Hexachlorobutadiene	ND		10	ug/L
Isopropylbenzene	ND		10	ug/L
Isopropyltoluene	ND		10	ug/L
Methylene chloride	110		50	ug/L
Naphthalene	ND		10	ug/L
n-Propylbenzene	ND		10	ug/L
Styrene	ND		10	ug/L
1,1,1,2-Tetrachloroethane	ND		10	ug/L
1,1,2,2-Tetrachloroethane	ND		10	ug/L
Tetrachloroethene	ND		10	ug/L
Toluene	ND		10	ug/L
1,2,3-Trichlorobenzene	ND		10	ug/L

ND = Not Detected

PRELIMINARY DATA
PENDING QC, FINAL REVIEW AND APPROVAL

Volatile Organic Compounds (cont.
Method SW8260A

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 6/11/97
LAB ID: 126295-0004-SA
Matrix: AQUEOUS Sampled: 11 JUN 97 Received: 12 JUN 97
Authorized: 12 JUN 97 Prepared: 13 JUN 97 Analyzed: 13 JUN 97
Instrument: GC/MS-MC Dilution: 10

Parameter	Result	Qualifier	RL	Units
1,2,4-Trichlorobenzene	ND		10	ug/L
1,1,1-Trichloroethane	ND		10	ug/L
1,1,2-Trichloroethane	ND		10	ug/L
Trichloroethene	ND		10	ug/L
Trichlorofluoromethane	ND		20	ug/L
1,2,3-Trichloropropane	ND		10	ug/L
1,2,4-Trimethylbenzene	ND		10	ug/L
1,3,5-Trimethylbenzene	ND		10	ug/L
Vinyl chloride	6.8	J	20	ug/L
m- & p-Xylenes	ND		10	ug/L
o-Xylene	ND		10	ug/L
Acetone	190		100	ug/L
2-Butanone	ND		100	ug/L
4-Methyl-2-pentanone	ND		100	ug/L

Surrogate	Recovery		Acceptable Range
1,2-Dichloroethane-d4	106	%	80 - 120
Toluene-d8	101	%	80 - 120
Bromofluorobenzene	98	%	80 - 120

PRELIMINARY DATA
PENDING QC, FINAL REVIEW AND APPROVAL

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Semivolatile Organic Compounds
Appendix IX List
Method 8270

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 6/11/97
LAB ID: 126295-0004-SA
Matrix: AQUEOUS Sampled: 11 JUN 97 Received: 12 JUN 97
Authorized: 12 JUN 97 Prepared: 13 JUN 97 Analyzed: 17 JUN 97
Instrument: GC/MS-MA Dilution: 1.0

Parameter	Result	Qualifier	RL	Units
N-Nitrosodimethylamine	ND		10	ug/L
Aniline	ND		10	ug/L
Phenol	2.9	J	10	ug/L
bis(2-Chloroethyl) ether	ND		10	ug/L
2-Chlorophenol	ND		10	ug/L
1,3-Dichlorobenzene	ND		10	ug/L
1,4-Dichlorobenzene	ND		10	ug/L
Benzyl alcohol	ND		10	ug/L
1,2-Dichlorobenzene	ND		10	ug/L
2-Methylphenol	ND		10	ug/L
bis(2-Chloroisopropyl)-ether	ND		10	ug/L
3/4-Methylphenol	ND		10	ug/L
N-Nitroso-di-n-propylamine	ND		10	ug/L
Hexachloroethane	ND		10	ug/L
Nitrobenzene	ND		10	ug/L
Isophorone	ND		10	ug/L
2-Nitrophenol	ND		10	ug/L
2,4-Dimethylphenol	ND		10	ug/L
Benzoic acid	ND		50	ug/L
bis(2-Chloroethoxy)-methane	ND		10	ug/L
2,4-Dichlorophenol	ND		10	ug/L
1,2,4-Trichlorobenzene	ND		10	ug/L
Naphthalene	ND		10	ug/L
4-Chloroaniline	ND		10	ug/L
Hexachlorobutadiene	ND		10	ug/L
4-Chloro-3-methylphenol	ND		10	ug/L
2-Methylnaphthalene	ND		10	ug/L
Hexachlorocyclopentadiene	ND		50	ug/L
2,4,6-Trichlorophenol	ND		10	ug/L
2,4,5-Trichlorophenol	ND		50	ug/L
2-Chloronaphthalene	ND		10	ug/L
2-Nitroaniline	ND		50	ug/L
Dimethyl phthalate	ND		10	ug/L
Acenaphthylene	ND		10	ug/L
3-Nitroaniline	ND		50	ug/L
Acenaphthene	ND		10	ug/L
2,4-Dinitrophenol	ND		50	ug/L
4-Nitrophenol	ND		50	ug/L
Dibenzofuran	ND		10	ug/L
2,4-Dinitrotoluene	ND		10	ug/L
2,6-Dinitrotoluene	ND		10	ug/L
Diethyl phthalate	ND		10	ug/L
1,2-Diphenylhydrazine	ND		50	ug/L

J - Result is detected below the reporting limit or is an estimated concentration.
ND - Not Detected

PRELIMINARY DATA
PENDING QC, FINAL REVIEW AND APPROVAL

Semivolatile Organic Compounds (cont.)
Appendix IX List
Method 8270

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 6/11/97
LAB ID: 126295-0004-SA
Matrix: AQUEOUS Sampled: 11 JUN 97 Received: 12 JUN 97
Authorized: 12 JUN 97 Prepared: 13 JUN 97 Analyzed: 17 JUN 97
Instrument: GC/MS-MA Dilution: 1.0

Parameter	Result	Qualifier	RL	Units
4-Chlorophenyl phenyl ether	ND		10	ug/L
Fluorene	ND		10	ug/L
4-Nitroaniline	ND		50	ug/L
4,6-Dinitro-2-methylphenol	ND		50	ug/L
N-Nitrosodiphenylamine	ND		10	ug/L
4-Bromophenyl phenyl ether	ND		10	ug/L
Hexachlorobenzene	ND		10	ug/L
Phenanthrene	ND		10	ug/L
Anthracene	ND		10	ug/L
Di-n-butyl phthalate	ND		10	ug/L
Fluoranthene	ND		10	ug/L
Pyrene	ND		10	ug/L
Butyl benzyl phthalate	ND		10	ug/L
3,3'-Dichlorobenzidine	ND		50	ug/L
Benzo(a)anthracene	ND		10	ug/L
bis(2-Ethylhexyl)-phthalate	ND		10	ug/L
Chrysene	ND		10	ug/L
Di-n-octyl phthalate	ND		10	ug/L
Benzo(b)fluoranthene	ND		10	ug/L
Benzo(k)fluoranthene	ND		10	ug/L
Benzo(a)pyrene	ND		10	ug/L
Indeno(1,2,3-c,d)pyrene	ND		10	ug/L
Dibenz(a,h)anthracene	ND		10	ug/L
Benzo(g,h,i)perylene	ND		10	ug/L
2-Picoline	ND		20	ug/L
Ethyl methanesulfonate	ND		10	ug/L
Acetophenone	ND		10	ug/L
N-Nitrosopiperidine	ND		10	ug/L
a,a-Dimethylphenethyl-amine	ND		50	ug/L
2,6-Dichlorophenol	ND		10	ug/L
N-Nitroso-di-n-butylamine	ND		10	ug/L
1,2,4,5-Tetrachloro-benzene	ND		10	ug/L
Pentachlorobenzene	ND		10	ug/L
1-Naphthylamine	ND		10	ug/L
2-Naphthylamine	ND		10	ug/L
2,3,4,6-Tetrachlorophenol	ND		50	ug/L
Phenacetin	ND		20	ug/L
4-Aminobiphenyl	ND		50	ug/L
Pronamide	ND		20	ug/L
Pentachloronitrobenzene	ND		50	ug/L
p-Dimethylaminoazobenzene	ND		20	ug/L
7,12-Dimethylbenz(a)-anthracene	ND		20	ug/L
Benzidine	ND		100	ug/L

ND = Not Detected

PRELIMINARY DATA
PENDING QC, FINAL REVIEW AND APPROVAL

Semivolatile Organic Compounds
Appendix IX List
Method 8270

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Client Name:	Montgomery Watson Constructors, Inc.		
Client ID:	EFFLUENT 6/11/97		
LAB ID:	126295-0004-SA		
Matrix:	AQUEOUS	Sampled: 11 JUN 97	Received: 12 JUN 97
Authorized:	12 JUN 97	Prepared: 13 JUN 97	Analyzed: 17 JUN 97
Instrument:	GC/MS-MA	Dilution: 1.0	

Parameter	Result	Qualifier	RL	Units
1-Chloronaphthalene	ND		10	ug/L
Dibenz(a,j)acridine	ND		20	ug/L

Surrogate	Recovery		Acceptable Range
2-Fluorophenol	43	%	21 - 100
Phenol-d5	26	%	10 - 94
Nitrobenzene-d5	66	%	34 - 114
2-Fluorobiphenyl	71	%	43 - 116
2,4,6-Tribromophenol	64	%	10 - 123
Terphenyl-d14	79	%	33 - 141

PRELIMINARY DATA
PENDING QC, FINAL REVIEW AND APPROVAL

ND = Not Detected

Semivolatile Organics
Selected Ion Monitoring
Method SW8270-SIM

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 6/11/97
LAB ID: 126295-0004-SA
Matrix: AQUEOUS
Authorized: 12 JUN 97
Instrument: GC/MS-MA

Sampled: 11 JUN 97
Prepared: 13 JUN 97
Dilution: 1.0

Received: 12 JUN 97
Analyzed: 17 JUN 97

Parameter	Result	Qualifier	RL	Units
Pentachlorophenol	ND		1.0	ug/L

PRELIMINARY DATA
PENDING QC, FINAL REVIEW AND APPROVAL

ND = Not Detected

GENERAL INORGANICS

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 6/11/97
LAB ID: 126295-0004-SA
Matrix: AQUEOUS
Authorized: 12 JUN 97

Sampled: 11 JUN 97
Prepared: See Below

Received: 12 JUN 97
Analyzed: See Below

Parameter	Result	Qual	DIL	RL	Units	Prep Method	Test Method	Prepared Date	Analyzed Date
Total Suspended Solids	ND		1.0	10.0	mg/L	NONE	E160.2	NA	13 JUN 97

ND = Not Detected

PRELIMINARY DATA
PENDING QC, FINAL REVIEW AND APPROVAL

GENERAL INORGANICS

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 6/18/97
LAB ID: 126510-0001-SA
Matrix: AQUEOUS
Authorized: 19 JUN 97

Sampled: 18 JUN 97
Prepared: See Below

Received: 19 JUN 97
Analyzed: See Below

Parameter	Result	Qual	DIL	RL	Units	Method	Prep Date	Analyzed Date
pH	8.2		1.0	NA	units	150.1	NA	19 JUN 9
Total Suspended Solids	ND		1.0	10.0	mg/L	E160.2	NA	20 JUN 9

ND = Not Detected

PRELIMINARY DATA
PENDING QC, FINAL REVIEW AND APPROVAL

Semivolatile Organics
Selected Ion Monitoring
Method SW8270-SIM

Client Name:	Montgomery Watson Constructors, Inc.		
Client ID:	EFFLUENT 6/18/97		
LAB ID:	126510-0001-SA		
Matrix:	AQUEOUS	Sampled: 18 JUN 97	Received: 19 JUN 97
Authorized:	19 JUN 97	Prepared: 20 JUN 97	Analyzed: 24 JUN 97
Instrument:	GC/MS-MA	Dilution: 1.0	

Parameter	Result	Qualifier	RL	Units
Pentachlorophenol	ND		1.0	ug/L
Hexachlorobenzene	ND		1.0	ug/L
Benzo(a)pyrene	ND		0.20	ug/L

PRELIMINARY DATA
PENDING QC, FINAL REVIEW AND APPROVAL

ND = Not Detected

METALS
(Water)

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 6/18/97
LAB ID: 126510-0001-SA
Matrix: AQUEOUS
Authorized: 19 JUN 97

Sampled: 18 JUN 97
Prepared: See Below

Received: 19 JUN 97
Analyzed: See Below

Parameter	Result	Qual	DIL	RL	Units	Method	Prep Date	Analyzed Date
Arsenic	ND		1.0	0.010	mg/L	6010A	19 JUN 97	20 JUN 97
Beryllium	0.00051	J	1.0	0.0050	mg/L	6010A	19 JUN 97	20 JUN 97
Cadmium	ND		1.0	0.0020	mg/L	6010A	19 JUN 97	20 JUN 97
Manganese	0.051		1.0	0.015	mg/L	6010A	19 JUN 97	20 JUN 97
Mercury	ND		1.0	0.00020	mg/L	SW7470	20 JUN 97	20 JUN 97
Selenium	ND		1.0	0.0050	mg/L	6010A	19 JUN 97	20 JUN 97
Thallium	ND		1.0	0.010	mg/L	6010A	19 JUN 97	20 JUN 97
Zinc	0.0064	J	1.0	0.020	mg/L	6010A	19 JUN 97	20 JUN 97

PRELIMINARY DATA
PENDING QC, FINAL REVIEW AND APPROVAL

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

E.S. BABCOCK & SONS, INC.

6100 Quail Valley Court Riverside, CA 92507
P.O. Box 432 Riverside, CA 92502
PH (909) 653-3351 FAX (909) 653-1662
Environmental Laboratory Certification #1156

2466-1
Client:
Quanterra Environmental Services
Manny Valasquez
1721 S. Grand Avenue

Santa Ana, CA 92705

Client I.D.: 126510-0001
Site: MW/ACS823
Description: Effluent

Matrix: wastewater

Page 1 of 1
Lab No: 630424-001

Date Reported: 06/27/97

Collected By:
Date: 06/18/97
Time: 1530
Submitted By: MC
Date: 06/19/97
Time: 1500

Constituent	Result		Method	RL	Date / Analyst
Biochemical Oxygen Demand	8.	mg/L	EPA 405.1	5.	970620/KOS

ND = None detected at RL (Reporting Limit). RL units same as result.

cc:

S. S. Babcock & Sons Inc.

Volatile Organic Compounds
Method SW8260A

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 6/18/97
LAB ID: 126510-0001-SA
Matrix: AQUEOUS — Sampled: 18 JUN 97 — Received: 19 JUN 97
Authorized: 19 JUN 97 — Prepared: 19 JUN 97 — Analyzed: 19 JUN 97
Instrument: GC/MS-MD — Dilution: 10

Parameter	Result	Qualifier	RL	Units
Benzene	ND		10	ug/L
Bromobenzene	ND		10	ug/L
Bromochloromethane	ND		10	ug/L
Bromodichloromethane	ND		10	ug/L
Bromoform	ND		10	ug/L
Bromomethane	ND		20	ug/L
n-Butylbenzene	ND		10	ug/L
sec-Butylbenzene	ND		10	ug/L
Carbon tetrachloride	ND		10	ug/L
Chlorobenzene	ND		10	ug/L
Chloroethane	580		20	ug/L
Chloroform	ND		10	ug/L
Chloromethane-	ND		20	ug/L
2-Chlorotoluene	ND		10	ug/L
Dibromochloromethane	ND		10	ug/L
1,2-Dibromo-3-chloro-propane (DBCP)	ND		20	ug/L
1,2-Dibromoethane (EDB)	ND		10	ug/L
Dibromomethane	ND		10	ug/L
1,2-Dichlorobenzene	ND		10	ug/L
1,3-Dichlorobenzene	ND		10	ug/L
1,4-Dichlorobenzene	ND		10	ug/L
Dichlorodifluoromethane	ND		20	ug/L
1,1-Dichloroethane	4.1	J	10	ug/L
1,2-Dichloroethane	ND		10	ug/L
1,1-Dichloroethene	ND		50	ug/L
cis-1,2-Dichloroethene	3.3	J	10	ug/L
trans-1,2-Dichloroethene	ND		10	ug/L
1,2-Dichloropropane	ND		10	ug/L
1,3-Dichloropropane	ND		10	ug/L
2,2-Dichloropropane	ND		10	ug/L
1,1-Dichloropropene	ND		10	ug/L
Ethylbenzene	ND		10	ug/L
Hexachlorobutadiene	ND		10	ug/L
Isopropylbenzene	ND		10	ug/L
Isopropyltoluene	ND		10	ug/L
Methylene chloride	58		50	ug/L
Naphthalene	ND		10	ug/L
n-Propylbenzene	ND		10	ug/L
Styrene	ND		10	ug/L
1,1,1,2-Tetrachloroethane	ND		10	ug/L
1,1,2,2-Tetrachloroethane	ND		10	ug/L
Tetrachloroethene	ND		10	ug/L
Toluene	ND		10	ug/L

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

PRELIMINARY DATA
PENDING QC, FINAL REVIEW AND APPROVAL

Volatile Organic Compounds
Method SW8260A

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Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 6/18/97
LAB ID: 126510-0001-SA
Matrix: AQUEOUS Sampled: 18 JUN 97 Received: 19 JUN 97
Authorized: 19 JUN 97 Prepared: 19 JUN 97 Analyzed: 19 JUN 97
Instrument: GC/MS-MD Dilution: 10

Parameter	Result	Qualifier	RL	Units
1,2,3-Trichlorobenzene	ND		10	ug/L
1,2,4-Trichlorobenzene	ND		10	ug/L
1,1,1-Trichloroethane	ND		10	ug/L
1,1,2-Trichloroethane	ND		10	ug/L
Trichloroethene	ND		10	ug/L
Trichlorofluoromethane	ND		20	ug/L
1,2,3-Trichloropropane	ND		10	ug/L
1,2,4-Trimethylbenzene	ND		10	ug/L
1,3,5-Trimethylbenzene	ND		10	ug/L
Vinyl chloride	37		20	ug/L
m- & p-Xylenes	ND		10	ug/L
o-Xylene	ND		10	ug/L
Acetone	70	J	100	ug/L
2-Butanone	ND		100	ug/L
4-Methyl-2-pentanone	ND		100	ug/L

Surrogate	Recovery		Acceptable Range
1,2-Dichloroethane-d4	83	%	80 - 120
Toluene-d8	100	%	80 - 120
Bromofluorobenzene	93	%	80 - 120

PRELIMINARY DATA
PENDING QC, FINAL REVIEW AND APPROVAL

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Semivolatile Organic Compounds
Appendix IX List
Method 8270

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 6/18/97
LAB ID: 126510-0001-SA
Matrix: AQUEOUS Sampled: 18 JUN 97 Received: 19 JUN 97
Authorized: 19 JUN 97 Prepared: 20 JUN 97 Analyzed: 20 JUN 97
Instrument: GC/MS-MI Dilution: 1.0

Parameter	Result	Qualifier	RL	Units
N-Nitrosodimethylamine	ND		10	ug/L
Aniline	ND		10	ug/L
Phenol	9.3	J	10	ug/L
bis(2-Chloroethyl) ether	ND		10	ug/L
2-Chlorophenol	ND		10	ug/L
1,3-Dichlorobenzene	ND		10	ug/L
1,4-Dichlorobenzene	ND		10	ug/L
Benzyl alcohol	ND		10	ug/L
1,2-Dichlorobenzene	ND		10	ug/L
2-Methylphenol	ND		10	ug/L
bis(2-Chloroisopropyl)-ether	ND		10	ug/L
3/4-Methylphenol	ND		10	ug/L
N-Nitroso-di-n-propylamine	ND		10	ug/L
Hexachloroethane	ND		10	ug/L
Nitrobenzene	ND		10	ug/L
Isophorone	ND		10	ug/L
2-Nitrophenol	ND		10	ug/L
2,4-Dimethylphenol	ND		10	ug/L
Benzoic acid	ND		50	ug/L
bis(2-Chloroethoxy)-methane	ND		10	ug/L
2,4-Dichlorophenol	ND		10	ug/L
1,2,4-Trichlorobenzene	ND		10	ug/L
Naphthalene	ND		10	ug/L
4-Chloroaniline	ND		10	ug/L
Hexachlorobutadiene	ND		10	ug/L
4-Chloro-3-methylphenol	ND		10	ug/L
2-Methylnaphthalene	ND		10	ug/L
Hexachlorocyclopentadiene	ND		50	ug/L
2,4,6-Trichlorophenol	ND		10	ug/L
2,4,5-Trichlorophenol	ND		50	ug/L
2-Chloronaphthalene	ND		10	ug/L
2-Nitroaniline	ND		50	ug/L
Dimethyl phthalate	ND		10	ug/L
Acenaphthylene	ND		10	ug/L
3-Nitroaniline	ND		50	ug/L
Acenaphthene	ND		10	ug/L
2,4-Dinitrophenol	ND		50	ug/L
4-Nitrophenol	ND		50	ug/L
Dibenzofuran	ND		10	ug/L
2,4-Dinitrotoluene	ND		10	ug/L
2,6-Dinitrotoluene	ND		10	ug/L
Diethyl phthalate	ND		10	ug/L
1,2-Diphenylhydrazine	ND		50	ug/L

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

PRELIMINARY DATA
PENDING QC, FINAL REVIEW AND APPROVAL

(cont)

Semivolatile Organic Compounds
Appendix IX List
Method 8270

Client Name:	Montgomery Watson Constructors, Inc.		
Client ID:	EFFLUENT 6/18/97		
LAB ID:	126510-0001-SA		
Matrix:	AQUEOUS	Sampled: 18 JUN 97	Received: 19 JUN 97
Authorized:	19 JUN 97	Prepared: 20 JUN 97	Analyzed: 20 JUN 97
Instrument:	GC/MS-MI	Dilution: 1.0	

Parameter	Result	Qualifier	RL	Units
4-Chlorophenyl phenyl ether	ND		10	ug/L
Fluorene	ND		10	ug/L
4-Nitroaniline	ND		50	ug/L
4,6-Dinitro-2-methylphenol	ND		50	ug/L
N-Nitrosodiphenylamine	ND		10	ug/L
4-Bromophenyl phenyl ether	ND		10	ug/L
Hexachlorobenzene	ND		10	ug/L
Phenanthrene	ND		10	ug/L
Anthracene	ND		10	ug/L
Di-n-butyl phthalate	ND		10	ug/L
Fluoranthene	ND		10	ug/L
Pyrene	ND		10	ug/L
Butyl benzyl phthalate	ND		10	ug/L
3,3'-Dichlorobenzidine	ND		50	ug/L
Benzo(a)anthracene	ND		10	ug/L
bis(2-Ethylhexyl)-phthalate	ND		10	ug/L
Chrysene	ND		10	ug/L
Di-n-octyl phthalate	ND		10	ug/L
Benzo(b)fluoranthene	ND		10	ug/L
Benzo(k)fluoranthene	ND		10	ug/L
Benzo(a)pyrene	ND		10	ug/L
Indeno(1,2,3-c,d)pyrene	ND		10	ug/L
Dibenz(a,h)anthracene	ND		10	ug/L
Benzo(g,h,i)perylene	ND		10	ug/L
2-Picoline	ND		20	ug/L
Ethyl methanesulfonate	ND		10	ug/L
Acetophenone	ND		10	ug/L
N-Nitrosopiperidine	ND		10	ug/L
a,a-Dimethylphenethyl-amine	ND		50	ug/L
2,6-Dichlorophenol	ND		10	ug/L
N-Nitroso-di-n-butylamine	ND		10	ug/L
1,2,4,5-Tetrachloro-benzene	ND		10	ug/L
Pentachlorobenzene	ND		10	ug/L
1-Naphthylamine	ND		10	ug/L
2-Naphthylamine	ND		10	ug/L
2,3,4,6-Tetrachlorophenol	ND		50	ug/L
Phenacetin	ND		20	ug/L
4-Aminobiphenyl	ND		50	ug/L
Pronamide	ND		20	ug/L
Pentachloronitrobenzene	ND		50	ug/L
p-Dimethylaminoazobenzene	ND		20	ug/L
7,12-Dimethylbenz(a)-anthracene	ND		20	ug/L
Benzidine	ND		100	ug/L

ND = Not Detected

PRELIMINARY DATA
PENDING QC, FINAL REVIEW AND APPROVAL

Semivolatile Organic Compounds
Appendix IX List
Method 8270

(cont.)

Client Name:	Montgomery Watson Constructors, Inc.		
Client ID:	EFFLUENT 6/18/97		
LAB ID:	126510-0001-SA		
Matrix:	AQUEOUS	Sampled: 18 JUN 97	Received: 19 JUN 97
Authorized:	19 JUN 97	Prepared: 20 JUN 97	Analyzed: 20 JUN 97
Instrument:	GC/MS-MI	Dilution: 1.0	

Parameter	Result	Qualifier	RL	Units
1-Chloronaphthalene	ND		10	ug/L
Dibenz(a,j)acridine	ND		20	ug/L

Surrogate	Recovery		Acceptable Range
2-Fluorophenol	36	%	21 - 100
Phenol-d5	26	%	10 - 94
Nitrobenzene-d5	58	%	34 - 114
2-Fluorobiphenyl	61	%	43 - 116
2,4,6-Tribromophenol	53	%	10 - 123
Terphenyl-d14	67	%	33 - 141

ND = Not Detected

PRELIMINARY DATA
PENDING QC, FINAL REVIEW AND APPROVAL

Volatile Organic Compounds
Method SW8260A

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 6/23/97
LAB ID: 126580-C002-SA
Matrix: AQUEOUS — Sampled: 23 JUN 97 — Received: 24 JUN 97
Authorized: 24 JUN 97 — Prepared: 26 JUN 97 — Analyzed: 26 JUN 97
Instrument: GC/MS-MO — Prep Method: SW5030 — Dilution: 2.5

Parameter	Result	Qualifier	RL	Units
Benzene	1.7	J	2.5	ug/L
Bromobenzene	ND		2.5	ug/L
Bromochloromethane	ND		2.5	ug/L
Bromodichloromethane	ND		2.5	ug/L
Bromoform	ND		2.5	ug/L
Bromomethane	ND		5.0	ug/L
n-Butylbenzene	ND		2.5	ug/L
sec-Butylbenzene	ND		2.5	ug/L
Carbon tetrachloride	ND		2.5	ug/L
Chlorobenzene	ND		2.5	ug/L
Chloroethane	130		5.0	ug/L
Chloroform	ND		2.5	ug/L
Chloromethane	0.78	J	5.0	ug/L
2-Chlorotoluene	ND		2.5	ug/L
Dibromochloromethane	ND		2.5	ug/L
1,2-Dibromo-3-chloro-propane (DBCP)	ND		5.0	ug/L
1,2-Dibromoethane (EDB)	ND		2.5	ug/L
Dibromomethane	ND		2.5	ug/L
1,2-Dichlorobenzene	ND		2.5	ug/L
1,3-Dichlorobenzene	ND		2.5	ug/L
1,4-Dichlorobenzene	ND		2.5	ug/L
Dichlorodifluoromethane	ND		5.0	ug/L
1,1-Dichloroethane	ND		2.5	ug/L
1,2-Dichloroethane	ND		2.5	ug/L
1,1-Dichloroethene	ND		12	ug/L
cis-1,2-Dichloroethene	ND		2.5	ug/L
trans-1,2-Dichloroethene	ND		2.5	ug/L
1,2-Dichloropropane	ND		2.5	ug/L
1,3-Dichloropropane	ND		2.5	ug/L
2,2-Dichloropropane	ND		2.5	ug/L
1,1-Dichloropropene	ND		2.5	ug/L
Ethylbenzene	ND		2.5	ug/L
Hexachlorobutadiene	ND		2.5	ug/L
Isopropylbenzene	ND		2.5	ug/L
Isopropyltoluene	ND		2.5	ug/L
Methylene chloride	13		12	ug/L
Naphthalene	ND		2.5	ug/L
n-Propylbenzene	ND		2.5	ug/L
Styrene	ND		2.5	ug/L
1,1,1,2-Tetrachloroethane	ND		2.5	ug/L
1,1,2,2-Tetrachloroethane	ND		2.5	ug/L
Tetrachloroethene	ND		2.5	ug/L
Toluene	ND		2.5	ug/L

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

PRELIMINARY DATA
PENDING QC, FINAL REVIEW AND APPROVAL

Volatile Organic Compounds (cont.)
Method SW8260A

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 6/23/97
LAB ID: 126580-0002-SA
Matrix: AQUEOUS Sampled: 23 JUN 97 Received: 24 JUN 97
Authorized: 24 JUN 97 Prepared: 26 JUN 97 Analyzed: 26 JUN 97
Instrument: GC/MS-MD Prep Method: SW5030 Dilution: 2.5

Parameter	Result	Qualifier	RL	Units
1,2,3-Trichlorobenzene	ND		2.5	ug/L
1,2,4-Trichlorobenzene	ND		2.5	ug/L
1,1,1-Trichloroethane	ND		2.5	ug/L
1,1,2-Trichloroethane	ND		2.5	ug/L
Trichloroethene	ND		2.5	ug/L
Trichlorofluoromethane	ND		5.0	ug/L
1,2,3-Trichloropropane	ND		2.5	ug/L
1,2,4-Trimethylbenzene	ND		2.5	ug/L
1,3,5-Trimethylbenzene	ND		2.5	ug/L
Vinyl chloride	1.6	J	5.0	ug/L
m- & p-Xylenes	ND		2.5	ug/L
o-Xylene	ND		2.5	ug/L
Acetone	ND		25	ug/L
2-Butanone	ND		25	ug/L
4-Methyl-2-pentanone	ND		25	ug/L

Surrogate	Recovery		Acceptable Range
1,2-Dichloroethane-d4	92	%	80 - 120
Toluene-d8	104	%	80 - 120
Bromofluorobenzene	96	%	80 - 120

PRELIMINARY DATA
PENDING QC, FINAL REVIEW AND APPROVAL

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Volatile Organic Compounds
Method SW8260A

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 6/27/97
LAB ID: 126667-0001-SA
Matrix: AQUEOUS
Authorized: 28 JUN 97
Instrument: GC/MS-MD

Sampled: 27 JUN 97
Prepared: 30 JUN 97
Dilution: 1.0

Received: 28 JUN 97
Analyzed: 30 JUN 97

Parameter	Result	Qualifier	RL	Units
Benzene	ND		1.0	ug/L
Bromobenzene	ND		1.0	ug/L
Bromochloromethane	ND		1.0	ug/L
Bromodichloromethane	ND		1.0	ug/L
Bromoform	ND		1.0	ug/L
Bromomethane	ND		2.0	ug/L
n-Butylbenzene	ND		1.0	ug/L
sec-Butylbenzene	ND		1.0	ug/L
Carbon tetrachloride	ND		1.0	ug/L
Chlorobenzene	ND		1.0	ug/L
Chloroethane	0.72	J	2.0	ug/L
Chloroform	ND		1.0	ug/L
Chloromethane	ND		2.0	ug/L
2-Chlorotoluene	ND		1.0	ug/L
Dibromochloromethane	ND		1.0	ug/L
1,2-Dibromo-3-chloro-propane (DBCP)	ND		2.0	ug/L
1,2-Dibromoethane (EDB)	ND		1.0	ug/L
Dibromomethane	ND		1.0	ug/L
1,2-Dichlorobenzene	ND		1.0	ug/L
1,3-Dichlorobenzene	ND		1.0	ug/L
1,4-Dichlorobenzene	ND		1.0	ug/L
Dichlorodifluoromethane	ND		2.0	ug/L
1,1-Dichloroethane	ND		1.0	ug/L
1,2-Dichloroethane	ND		1.0	ug/L
1,1-Dichloroethene	ND		5.0	ug/L
cis-1,2-Dichloroethene	ND		1.0	ug/L
trans-1,2-Dichloroethene	ND		1.0	ug/L
1,2-Dichloropropane	ND		1.0	ug/L
1,3-Dichloropropane	ND		1.0	ug/L
2,2-Dichloropropane	ND		1.0	ug/L
1,1-Dichloropropene	ND		1.0	ug/L
Ethylbenzene	ND		1.0	ug/L
Hexachlorobutadiene	ND		1.0	ug/L
Isopropylbenzene	ND		1.0	ug/L
Isopropyltoluene	ND		1.0	ug/L
Methylene chloride	ND		5.0	ug/L
Naphthalene	ND		1.0	ug/L
n-Propylbenzene	ND		1.0	ug/L
Styrene	ND		1.0	ug/L
1,1,1,2-Tetrachloroethane	ND		1.0	ug/L
1,1,2,2-Tetrachloroethane	ND		1.0	ug/L
Tetrachloroethene	ND		1.0	ug/L
Toluene	ND		1.0	ug/L

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

PRELIMINARY DATA
PENDING QC, FINAL REVIEW AND APPROVAL

Volatile Organic Compounds (cont.)
Method SW8260A

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 6/27/97
LAB ID: 126667-0001-SA
Matrix: AQUEOUS Sampled: 27 JUN 97 Received: 28 JUN 97
Authorized: 28 JUN 97 Prepared: 30 JUN 97 Analyzed: 30 JUN 97
Instrument: GC/MS-MD Dilution: 1.0

Parameter	Result	Qualifier	RL	Units
1,2,3-Trichlorobenzene	ND		1.0	ug/L
1,2,4-Trichlorobenzene	ND		1.0	ug/L
1,1,1-Trichloroethane	ND		1.0	ug/L
1,1,2-Trichloroethane	ND		1.0	ug/L
Trichloroethene	ND		1.0	ug/L
Trichlorofluoromethane	ND		2.0	ug/L
1,2,3-Trichloropropane	ND		1.0	ug/L
1,2,4-Trimethylbenzene	ND		1.0	ug/L
1,3,5-Trimethylbenzene	ND		1.0	ug/L
Vinyl chloride	ND		2.0	ug/L
m- & p-Xylenes	ND		1.0	ug/L
o-Xylene	ND		1.0	ug/L
Acetone	ND		10	ug/L
2-Butanone	9.3	J	10	ug/L
4-Methyl-2-pentanone	ND		10	ug/L

Surrogate	Recovery		Acceptable Range
1,2-Dichloroethane-d4	96	%	80 - 120
Toluene-d8	108	%	80 - 120
Bromofluorobenzene	104	%	80 - 120

PRELIMINARY DATA
PENDING QC, FINAL REVIEW AND APPROVAL

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

METALS
(Water)

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 6/27/97
LAB ID: 126567-0001-SA
Matrix: AQUEOUS Sampled: 27 JUN 97 Received: 28 JUN 97
Authorized: 28 JUN 97 Prepared: See Below Analyzed: See Below

Parameter	Result	Qual	DIL	RL	Units	Method	Prep Date	Analyzed Date
Arsenic	0.17		1.0	0.010	mg/L	6010A	30 JUN 97	01 JUL
Beryllium	0.00035	J	1.0	0.0050	mg/L	6010A	30 JUN 97	01 JUL
Cadmium	ND		1.0	0.0020	mg/L	6010A	30 JUN 97	01 JUL
Manganese	0.0066	J	1.0	0.015	mg/L	6010A	30 JUN 97	01 JUL
Mercury	ND		1.0	0.00020	mg/L	SW7470	30 JUN 97	30 JUN
Selenium	ND		1.0	0.0050	mg/L	6010A	30 JUN 97	01 JUL
Thallium	0.0071	B	1.0	0.010	mg/L	6010A	30 JUN 97	01 JUL
Zinc	0.0073	B	1.0	0.020	mg/L	6010A	30 JUN 97	01 JUL

PRELIMINARY DATA
PENDING QC FINAL REVIEW AND APPROVAL

B = Compound is also detected in the blank.
J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Semivolatile Organic Compounds
Appendix IX List
Method 8270

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 6/27/97
LAB ID: 126667-0001-SA
Matrix: AQUEOUS Sampled: 27 JUN 97 Received: 28 JUN 97
Authorized: 28 JUN 97 Prepared: 30 JUN 97 Analyzed: 01 JUL 97
Instrument: GC/MS-ME Dilution: 1.0

Parameter	Result	Qualifier	RL	Units
N-Nitrosodimethylamine	ND		10	ug/L
Aniline	ND		10	ug/L
Phenol	ND		10	ug/L
bis(2-Chloroethyl) ether	ND		10	ug/L
2-Chlorophenol	ND		10	ug/L
1,3-Dichlorobenzene	ND		10	ug/L
1,4-Dichlorobenzene	ND		10	ug/L
Benzyl alcohol	ND		10	ug/L
1,2-Dichlorobenzene	ND		10	ug/L
2-Methylphenol	ND		10	ug/L
bis(2-Chloroisopropyl)-ether	ND		10	ug/L
3/4-Methylphenol	ND		10	ug/L
N-Nitroso-di-n-propylamine	ND		10	ug/L
Hexachloroethane	ND		10	ug/L
Nitrobenzene	ND		10	ug/L
Isophorone	ND		10	ug/L
2-Nitrophenol	ND		10	ug/L
2,4-Dimethylphenol	ND		10	ug/L
Benzoic acid	ND		50	ug/L
bis(2-Chloroethoxy)-methane	ND		10	ug/L
2,4-Dichlorophenol	ND		10	ug/L
1,2,4-Trichlorobenzene	ND		10	ug/L
Naphthalene	ND		10	ug/L
4-Chloroaniline	ND		10	ug/L
Hexachlorobutadiene	ND		10	ug/L
4-Chloro-3-methylphenol	ND		10	ug/L
2-Methylnaphthalene	ND		10	ug/L
Hexachlorocyclopentadiene	ND		50	ug/L
2,4,6-Trichlorophenol	ND		10	ug/L
2,4,5-Trichlorophenol	ND		50	ug/L
2-Chloronaphthalene	ND		10	ug/L
2-Nitroaniline	ND		50	ug/L
Dimethyl phthalate	ND		10	ug/L
Acenaphthylene	ND		10	ug/L
3-Nitroaniline	ND		50	ug/L
Acenaphthene	ND		10	ug/L
2,4-Dinitrophenol	ND		50	ug/L
4-Nitrophenol	ND		50	ug/L
Dibenzofuran	ND		10	ug/L
2,4-Dinitrotoluene	ND		10	ug/L
2,6-Dinitrotoluene	ND		10	ug/L
Diethyl phthalate	ND		10	ug/L
1,2-Diphenylhydrazine	ND		50	ug/L
4-Chlorophenyl phenyl ether	ND		10	ug/L

ND = Not Detected

PRELIMINARY DATA
PENDING QC, FINAL REVIEW AND APPROVAL

Semivolatile Organic Compounds (cont.)
Appendix IX List
Method 8270

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 6/27/97
LAB ID: 126667-0001-SA
Matrix: AQUEOUS Sampled: 27 JUN 97 Received: 28 JUN 97
Authorized: 28 JUN 97 Prepared: 30 JUN 97 Analyzed: 01 JUL 97
Instrument: GC/MS-MZ Dilution: 1.0

Parameter	Result	Qualifier	RL	Units
Fluorene	ND		10	ug/L
4-Nitroaniline	ND		50	ug/L
4,6-Dinitro-2-methylphenol	ND		50	ug/L
N-Nitrosodiphenylamine	ND		10	ug/L
4-Bromophenyl phenyl ether	ND		10	ug/L
Hexachlorobenzene	ND		10	ug/L
Phenanthrene	ND		10	ug/L
Anthracene	ND		10	ug/L
Di-n-butyl phthalate	ND		10	ug/L
Fluoranthene	ND		10	ug/L
Pyrene	ND		10	ug/L
Butyl benzyl phthalate	ND		10	ug/L
3,3'-Dichlorobenzidine	ND		50	ug/L
Benzo(a)anthracene	ND		10	ug/L
bis(2-Ethylhexyl)-phthalate	ND		10	ug/L
Chrysene	ND		10	ug/L
Di-n-octyl phthalate	ND		10	ug/L
Benzo(b)fluoranthene	ND		10	ug/L
Benzo(k)fluoranthene	ND		10	ug/L
Benzo(a)pyrene	ND		10	ug/L
Indeno(1,2,3-c,d)pyrene	ND		10	ug/L
Dibenz(a,h)anthracene	ND		10	ug/L
Benzo(g,h,i)perylene	ND		10	ug/L
2-Picoline	ND		20	ug/L
Ethyl methanesulfonate	ND		10	ug/L
Acetophenone	ND		10	ug/L
N-Nitrosopiperidine	ND		10	ug/L
a,a-Dimethylphenethyl-amine	ND		50	ug/L
2,6-Dichlorophenol	ND		10	ug/L
N-Nitroso-di-n-butylamine	ND		10	ug/L
1,2,4,5-Tetrachloro-benzene	ND		10	ug/L
Pentachlorobenzene	ND		10	ug/L
1-Naphthylamine	ND		10	ug/L
2-Naphthylamine	ND		10	ug/L
2,3,4,6-Tetrachlorophenol	ND		50	ug/L
Phenacetin	ND		20	ug/L
4-Aminobiphenyl	ND		50	ug/L
Pronamide	ND		20	ug/L
Pentachloronitrobenzene	ND		50	ug/L
p-Dimethylaminoazobenzene	ND		20	ug/L
7,12-Dimethylbenz(a)-anthracene	ND		20	ug/L
Benzidine	ND		100	ug/L
1-Chloronaphthalene	ND		10	ug/L

ND = Not Detected

PRELIMINARY DATA
PENDING QC, FINAL REVIEW AND APPROVAL

Semivolatile Organic Compounds (cont.)
Appendix IX List
Method 8270

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 6/27/97
LAB ID: 126667-0001-SA
Matrix: AQUEOUS Sampled: 27 JUN 97 Received: 28 JUN 97
Authorized: 28 JUN 97 Prepared: 30 JUN 97 Analyzed: 01 JUL 97
Instrument: GC/MS-MI Dilution: 1.0

Parameter	Result	Qualifier	RL	Units
Dibenz(a,j)acridine	ND		20	ug/L

Surrogate	Recovery		Acceptable Range
2-Fluorophenol	34	%	21 - 100
Phenol-d5	20	%	10 - 94
Nitrobenzene-d5	50	%	34 - 114
2-Fluorobiphenyl	65	%	43 - 116
2,4,6-Tribromophenol	70	%	10 - 123
Terphenyl-d14	57	%	33 - 141

PRELIMINARY DATA
PENDING QC, FINAL REVIEW AND APPROVAL

ND = Not Detected

** TOTAL PAGE.03E **

GENERAL INORGANICS

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 6/27/97
LAB ID: 126567-0001-EA
Matrix: AQUEOUS
Authorized: 28 JUN 97

Sampled: 27 JUN 97
Prepared: See Below

Received: 28 JUN 97
Analyzed: See Below

Parameter	Result	Qual	DIL	RL	Units	Method	Prep Date	Analyzed Date
pH	10.0		1.0	NA	units	150.1	NA	28 JUN 9
Total Suspended Solids	ND		1.0	10.0	mg/L	E160.2	NA	30 JUN 9

ND = Not Detected

Industrial & Environmental Analysts, Inc. (IEA)
GC SEMIVOLATILE SW-846 METHOD 8080 PCB in WATER

IEA Project Number:	2240-061	Date Received:	06/28/97
IEA Sample Number:	9706575-01	Date Sampled:	06/27/97
Client Name:	Montgomery Watson	Date Extracted:	07/02/97
Client Project ID:	ACS-#89	Date Analyzed:	07/02/97
Sample Identification:	EFFLUENT 6/27/97	Analysis By:	Briggs
Associated QC Blank:	PB510	Dilution Factor:	1.0
QC Batch ID#:	510	Matrix:	Water

Number	Compound	Quantitation Limit (ug/L)	Results Concentration (ug/L)
1	Aroclor 1016	0.50	BQL
2	Aroclor 1221	0.50	BQL
3	Aroclor 1232	0.50	BQL
4	Aroclor 1242	0.50	BQL
5	Aroclor 1248	0.50	BQL
6	Aroclor 1254	1.0	BQL
7	Aroclor 1260	1.0	BQL

Surrogate Compounds:	Acceptance Criteria	% Recovery
Tetrachloro-m-xylene	60 - 150	88
Decachlorobiphenyl	60 - 150	104

Comments:
Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor and/or moisture correction factor where reported.
BQL = Below Quantitation Limit

Quanterra
Environmental Services

GENERAL INORGANICS

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 7-10-97
LAB ID: 126843-0001-SA
Matrix: AQUEOUS — Sampled: 10 JUL 97 — Received: 11 JUL 9
Authorized: 11 JUL 97 — Prepared: See Below — Analyzed: See Belo

Parameter	Result	Qual	DIL	RL	Units	Method	Prep Date	Analyze Date
pH	9.0		1.0	NA	units	150.1	NA	11 JUL
Total Suspended Solids	ND		1.0	10.0	mg/L	E160.2	NA	11 JUL

ND = Not Detected

Quanterra
Environmental Services

METALS
(Water)

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 7-10-97
LAB ID: 126843-0001-SA
Matrix: AQUEOUS — Sampled: 10 JUL 97 — Received: 11 JUL 97
Authorized: 11 JUL 97 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Qual	DIL	RL	Units	Method	Prep Date	Analyzed Date
Arsenic	0.061		1.0	0.010	mg/L	6010A	14 JUL 97	14 JUL 97
Beryllium	0.00043	J	1.0	0.0050	mg/L	6010A	14 JUL 97	14 JUL 97
Cadmium	ND		1.0	0.0020	mg/L	6010A	14 JUL 97	14 JUL 97
Manganese	0.015		1.0	0.015	mg/L	6010A	14 JUL 97	14 JUL 97
Mercury	ND		1.0	0.00020	mg/L	SW7470	14 JUL 97	14 JUL 97
Selenium	ND		1.0	0.0050	mg/L	6010A	14 JUL 97	14 JUL 97
Thallium	0.0038	JB	1.0	0.010	mg/L	6010A	14 JUL 97	14 JUL 97
Zinc	0.019	J	1.0	0.020	mg/L	6010A	14 JUL 97	14 JUL 97

B = Compound is also detected in the blank.
J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Quanterra
Environmental Services

Semivolatile Organics
Selected Ion Monitoring
Method SW8270-SIM

Client Name:	Montgomery Watson Constructors, Inc.		
Client ID:	EFFLUENT 7-10-97		
LAB ID:	126843-0001-SA		
Matrix:	AQUEOUS	Sampled: 10 JUL 97	Received: 11 JUL 97
Authorized:	11 JUL 97	Prepared: 11 JUL 97	Analyzed: 14 JUL 97
Instrument:	GC/MS-MA	Dilution: 1.0	

Parameter	Result	Qualifier	RL	Units
Pentachlorophenol	ND		1.0	ug/L

ND = Not Detected

Quanterra
Environmental Services

Volatile Organic Compounds
Method SW8260A

Client Name:	Montgomery Watson Constructors, Inc.		
Client ID:	EFFLUENT 7-10-97		
LAB ID:	126843-0001-SA		
Matrix:	AQUEOUS	Sampled: 10 JUL 97	Received: 11 JUL 97
Authorized:	11 JUL 97	Prepared: 14 JUL 97	Analyzed: 14 JUL 97
Instrument:	GC/MS-MD	Dilution: 1.0	

Parameter	Result	Qualifier	RL	Units
Benzene	ND		1.0	ug/L
Bromobenzene	ND		1.0	ug/L
Bromochloromethane	ND		1.0	ug/L
Bromodichloromethane	ND		1.0	ug/L
Bromoform	ND		1.0	ug/L
Bromomethane	ND		2.0	ug/L
n-Butylbenzene	ND		1.0	ug/L
sec-Butylbenzene	ND		1.0	ug/L
Carbon tetrachloride	ND		1.0	ug/L
Chlorobenzene	ND		1.0	ug/L
Chloroethane	ND		2.0	ug/L
Chloroform	ND		1.0	ug/L
Chloromethane	ND		2.0	ug/L
2-Chlorotoluene	ND		1.0	ug/L
Dibromochloromethane	ND		1.0	ug/L
1,2-Dibromo-3-chloro-propane (DBCP)	ND		2.0	ug/L
1,2-Dibromoethane (EDB)	ND		1.0	ug/L
Dibromomethane	ND		1.0	ug/L
1,2-Dichlorobenzene	ND		1.0	ug/L
1,3-Dichlorobenzene	ND		1.0	ug/L
1,4-Dichlorobenzene	ND		1.0	ug/L
Dichlorodifluoromethane	ND		2.0	ug/L
1,1-Dichloroethane	ND		1.0	ug/L
1,2-Dichloroethane	ND		1.0	ug/L
1,1-Dichloroethene	ND		5.0	ug/L
cis-1,2-Dichloroethene	ND		1.0	ug/L
trans-1,2-Dichloroethene	ND		1.0	ug/L
1,2-Dichloropropane	ND		1.0	ug/L
1,3-Dichloropropane	ND		1.0	ug/L
2,2-Dichloropropane	ND		1.0	ug/L
1,1-Dichloropropene	ND		1.0	ug/L
Ethylbenzene	ND		1.0	ug/L
Hexachlorobutadiene	ND		1.0	ug/L
Isopropylbenzene	ND		1.0	ug/L
Isopropyltoluene	ND		1.0	ug/L
Methylene chloride	ND		5.0	ug/L
Naphthalene	ND		1.0	ug/L
n-Propylbenzene	ND		1.0	ug/L
Styrene	ND		1.0	ug/L
1,1,1,2-Tetrachloroethane	ND		1.0	ug/L
1,1,2,2-Tetrachloroethane	ND		1.0	ug/L
Tetrachloroethene	ND		1.0	ug/L
Toluene	ND		1.0	ug/L
1,2,3-Trichlorobenzene	ND		1.0	ug/L

ND = Not Detected

Quanterra
Environmental Services

Volatile Organic Compounds
Method SW8260A

(cont.)

Client Name:	Montgomery Watson Constructors, Inc.		
Client ID:	EFFLUENT 7-10-97		
LAB ID:	126843-0001-SA		
Matrix:	AQUEOUS	Sampled: 10 JUL 97	Received: 11 JUL 97
Authorized:	11 JUL 97	Prepared: 14 JUL 97	Analyzed: 14 JUL 97
Instrument:	GC/MS-MD	Dilution: 1.0	

Parameter	Result	Qualifier	RL	Units
1,2,4-Trichlorobenzene	ND		1.0	ug/L
1,1,1-Trichloroethane	ND		1.0	ug/L
1,1,2-Trichloroethane	ND		1.0	ug/L
Trichloroethene	ND		1.0	ug/L
Trichlorofluoromethane	ND		2.0	ug/L
1,2,3-Trichloropropane	ND		1.0	ug/L
1,2,4-Trimethylbenzene	ND		1.0	ug/L
1,3,5-Trimethylbenzene	ND		1.0	ug/L
Vinyl chloride	ND		2.0	ug/L
m- & p-Xylenes	ND		1.0	ug/L
o-Xylene	ND		1.0	ug/L
Acetone	ND		10	ug/L
2-Butanone	ND		10	ug/L
4-Methyl-2-pentanone	ND		10	ug/L

Surrogate	Recovery		Acceptable Range
1,2-Dichloroethane-d4	104	%	80 - 120
Toluene-d8	99	%	80 - 120
Bromofluorobenzene	109	%	80 - 120

ND = Not Detected

Quanterra
Environmental Services

Semivolatile Organic Compounds
Appendix IX List
Method 8270

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 7-10-97
LAB ID: 126843-0001-SA
Matrix: AQUEOUS Sampled: 10 JUL 97 Received: 11 JUL 97
Authorized: 11 JUL 97 Prepared: 11 JUL 97 Analyzed: 11 JUL 97
Instrument: GC/MS-ME Dilution: 1.0

Parameter	Result	Qualifier	RL	Units
N-Nitrosodimethylamine	ND		10	ug/L
Aniline	ND		10	ug/L
Phenol	ND		10	ug/L
bis(2-Chloroethyl) ether	ND		10	ug/L
2-Chlorophenol	ND		10	ug/L
1,3-Dichlorobenzene	ND		10	ug/L
1,4-Dichlorobenzene	ND		10	ug/L
Benzyl alcohol	ND		10	ug/L
1,2-Dichlorobenzene	ND		10	ug/L
2-Methylphenol	ND		10	ug/L
bis(2-Chloroisopropyl)-ether	ND		10	ug/L
3/4-Methylphenol	ND		10	ug/L
N-Nitroso-di-n-propylamine	ND		10	ug/L
Hexachloroethane	ND		10	ug/L
Nitrobenzene	ND		10	ug/L
Isophorone	ND		10	ug/L
2-Nitrophenol	ND		10	ug/L
2,4-Dimethylphenol	ND		10	ug/L
Benzoic acid	ND		50	ug/L
bis(2-Chloroethoxy)-methane	ND		10	ug/L
2,4-Dichlorophenol	ND		10	ug/L
1,2,4-Trichlorobenzene	ND		10	ug/L
Naphthalene	ND		10	ug/L
4-Chloroaniline	ND		10	ug/L
Hexachlorobutadiene	ND		10	ug/L
4-Chloro-3-methylphenol	ND		10	ug/L
2-Methylnaphthalene	ND		10	ug/L
Hexachlorocyclopentadiene	ND		50	ug/L
2,4,6-Trichlorophenol	ND		10	ug/L
2,4,5-Trichlorophenol	ND		50	ug/L
2-Chloronaphthalene	ND		10	ug/L
2-Nitroaniline	ND		50	ug/L
Dimethyl phthalate	ND		10	ug/L
Acenaphthylene	ND		10	ug/L
3-Nitroaniline	ND		50	ug/L
Acenaphthene	ND		10	ug/L
2,4-Dinitrophenol	ND		50	ug/L
4-Nitrophenol	ND		50	ug/L
Dibenzofuran	ND		10	ug/L
2,4-Dinitrotoluene	ND		10	ug/L
2,6-Dinitrotoluene	ND		10	ug/L
Diethyl phthalate	ND		10	ug/L
1,2-Diphenylhydrazine	ND		50	ug/L
4-Chlorophenyl phenyl ether	ND		10	ug/L

ND = Not Detected

Quanterra Environmental Services

Semivolatile Organic Compounds (cont.)
Appendix IX List
Method 8270

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 7-10-97
LAB ID: 126843-0001-SA
Matrix: AQUEOUS Sampled: 10 JUL 97 Received: 11 JUL 97
Authorized: 11 JUL 97 Prepared: 11 JUL 97 Analyzed: 11 JUL 97
Instrument: GC/MS-ME Dilution: 1.0

Parameter	Result	Qualifier	RL	Units
Fluorene	ND		10	ug/L
4-Nitroaniline	ND		50	ug/L
4,6-Dinitro-2-methylphenol	ND		50	ug/L
N-Nitrosodiphenylamine	ND		10	ug/L
4-Bromophenyl phenyl ether	ND		10	ug/L
Hexachlorobenzene	ND		10	ug/L
Phenanthrene	ND		10	ug/L
Anthracene	ND		10	ug/L
Di-n-butyl phthalate	ND		10	ug/L
Fluoranthene	ND		10	ug/L
Pyrene	ND		10	ug/L
Butyl benzyl phthalate	ND		10	ug/L
3,3'-Dichlorobenzidine	ND		50	ug/L
Benzo(a)anthracene	ND		10	ug/L
bis(2-Ethylhexyl)-phthalate	ND		10	ug/L
Chrysene	ND		10	ug/L
Di-n-octyl phthalate	ND		10	ug/L
Benzo(b)fluoranthene	ND		10	ug/L
Benzo(k)fluoranthene	ND		10	ug/L
Benzo(a)pyrene	ND		10	ug/L
Indeno(1,2,3-c,d)pyrene	ND		10	ug/L
Dibenz(a,h)anthracene	ND		10	ug/L
Benzo(g,h,i)perylene	ND		10	ug/L
2-Picoline	ND		20	ug/L
Ethyl methanesulfonate	ND		10	ug/L
Acetophenone	ND		10	ug/L
N-Nitrosopiperidine	ND		10	ug/L
a,a-Dimethylphenethyl-amine	ND		50	ug/L
2,6-Dichlorophenol	ND		10	ug/L
N-Nitroso-di-n-butylamine	ND		10	ug/L
1,2,4,5-Tetrachloro-benzene	ND		10	ug/L
Pentachlorobenzene	ND		10	ug/L
1-Naphthylamine	ND		10	ug/L
2-Naphthylamine	ND		10	ug/L
2,3,4,6-Tetrachlorophenol	ND		50	ug/L
Phenacetin	ND		20	ug/L
4-Aminobiphenyl	ND		50	ug/L
Pronamide	ND		20	ug/L
Pentachloronitrobenzene	ND		50	ug/L
p-Dimethylaminoazobenzene	ND		20	ug/L
7,12-Dimethylbenz(a)-anthracene	ND		20	ug/L
Benzidine	ND		100	ug/L
1-Chloronaphthalene	ND		10	ug/L

ND = Not Detected

Quanterra Environmental Services

Semivolatile Organic Compounds (cont.)
Appendix IX List
Method 8270

Client Name:	Montgomery Watson Constructors, Inc.		
Client ID:	EFFLUENT 7-10-97		
LAB ID:	126843-0001-SA		
Matrix:	AQUEOUS	Sampled: 10 JUL 97	Received: 11 JUL 97
Authorized:	11 JUL 97	Prepared: 11 JUL 97	Analyzed: 11 JUL 97
Instrument:	GC/MS-ME	Dilution: 1.0	

Parameter	Result	Qualifier	RL	Units
Dibenz(a,j)acridine	ND		20	ug/L

Surrogate	Recovery		Acceptable Range
2-Fluorophenol	32	%	21 - 100
Phenol-d5	20	%	10 - 94
Nitrobenzene-d5	54	%	34 - 114
2-Fluorobiphenyl	62	%	43 - 116
2,4,6-Tribromophenol	67	%	10 - 123
Terphenyl-d14	56	%	33 - 141

ND = Not Detected

Quanterra
Environmental Services

METALS
(Water)

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 7/16/97
LAB ID: 126944-0001-SA
Matrix: AQUEOUS — Sampled: 16 JUL 97 — Received: 17 JUL 9
Authorized: 17 JUL 97 — Prepared: See Below — Analyzed: See Belo

Parameter	Result	Qual	DIL	RL	Units	Method	Prep Date	Analyze Date
Arsenic	0.024		1.0	0.010	mg/L	6010A	17 JUL 97	22 JUL

METALS
(Water)

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 7/29/97
LAB ID: 127191-0001-SA
Matrix: AQUEOUS Sampled: 29 JUL 97 Received: 30 JUL 97
Authorized: 30 JUL 97 Prepared: See Below Analyzed: See Below

Parameter	Result	Qual	DIL	RL	Units	Prep Method	Test Method	Prepared Date	Analyzed Date
Arsenic	ND		1.0	0.010	mg/L	FLDFLT	6010A	31 JUL 97	31 JUL 97
Beryllium	ND		1.0	0.0050	mg/L	FLDFLT	6010A	31 JUL 97	31 JUL 97
Cadmium	ND		1.0	0.0020	mg/L	FLDFLT	6010A	31 JUL 97	31 JUL 97
Manganese	0.21		1.0	0.015	mg/L	FLDFLT	6010A	31 JUL 97	31 JUL 97
Mercury	ND		1.0	0.00020	mg/L	METHOD	SW7470	31 JUL 97	31 JUL 97
Selenium	ND		1.0	0.0050	mg/L	FLDFLT	6010A	31 JUL 97	31 JUL 97
Thallium	0.0046	J	1.0	0.010	mg/L	FLDFLT	6010A	31 JUL 97	31 JUL 97
Zinc	0.017	JB	1.0	0.020	mg/L	FLDFLT	6010A	31 JUL 97	31 JUL 97

B = Compound is also detected in the blank.
J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

GENERAL INORGANICS

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 7/29/97
LAB ID: 127191-0001-SA
Matrix: AQUEOUS — Sampled: 29 JUL 97 — Received: 30 JUL 97
Authorized: 30 JUL 97 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Qual	DIL	RL	Units	Prep Method	Test Method	Prepared Date	Analyzed Date
pH	9.9		1.0	NA	units	NONE	150.1	NA	30 JUL 97
Total Suspended Solids	96.0		1.0	10.0	mg/L	NONE	E160.2	NA	31 JUL 97

Volatile Organic Compounds
Method SW8260A

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 7/29/97
LAB ID: 127191-0001-SA
Matrix: AQUEOUS Sampled: 29 JUL 97 Received: 30 JUL 97
Authorized: 30 JUL 97 Prepared: 31 JUL 97 Analyzed: 31 JUL 97
Instrument: GC/MS-MD Prep Method: SW5030 Dilution: 1.0

Parameter	Result	Qualifier	RL	Units
Benzene	ND		1.0	ug/L
Bromobenzene	ND		1.0	ug/L
Bromochloromethane	ND		1.0	ug/L
Bromodichloromethane	ND		1.0	ug/L
Bromoform	ND		1.0	ug/L
Bromomethane	ND		2.0	ug/L
n-Butylbenzene	ND		1.0	ug/L
sec-Butylbenzene	ND		1.0	ug/L
Carbon tetrachloride	ND		1.0	ug/L
Chlorobenzene	ND		1.0	ug/L
Chloroethane	ND		2.0	ug/L
Chloroform	ND		1.0	ug/L
Chloromethane	ND		2.0	ug/L
2-Chlorotoluene	ND		1.0	ug/L
Dibromochloromethane	ND		1.0	ug/L
1,2-Dibromo-3-chloro-propane (DBCP)	ND		2.0	ug/L
1,2-Dibromoethane (EDB)	ND		1.0	ug/L
Dibromomethane	ND		1.0	ug/L
1,2-Dichlorobenzene	ND		1.0	ug/L
1,3-Dichlorobenzene	ND		1.0	ug/L
1,4-Dichlorobenzene	ND		1.0	ug/L
Dichlorodifluoromethane	ND		2.0	ug/L
1,1-Dichloroethane	ND		1.0	ug/L
1,2-Dichloroethane	ND		1.0	ug/L
1,1-Dichloroethene	ND		5.0	ug/L
cis-1,2-Dichloroethene	ND		1.0	ug/L
trans-1,2-Dichloroethene	ND		1.0	ug/L
1,2-Dichloropropane	ND		1.0	ug/L
1,3-Dichloropropane	ND		1.0	ug/L
2,2-Dichloropropane	ND		1.0	ug/L
1,1-Dichloropropene	ND		1.0	ug/L
Ethylbenzene	ND		1.0	ug/L
Hexachlorobutadiene	ND		1.0	ug/L
Isopropylbenzene	ND		1.0	ug/L
Isopropyltoluene	ND		1.0	ug/L
Methylene chloride	ND		5.0	ug/L
Naphthalene	ND		1.0	ug/L
n-Propylbenzene	ND		1.0	ug/L
Styrene	ND		1.0	ug/L
1,1,1,2-Tetrachloroethane	ND		1.0	ug/L
1,1,2,2-Tetrachloroethane	ND		1.0	ug/L
Tetrachloroethene	ND		1.0	ug/L
Toluene	ND		1.0	ug/L
1,2,3-Trichlorobenzene	ND		1.0	ug/L

ND = Not Detected

Volatile Organic Compounds (cont
Method SW8260A

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 7/29/97
LAB ID: 127191-0001-SA
Matrix: AQUEOUS Sampled: 29 JUL 97 Received: 30 JUL 97
Authorized: 30 JUL 97 Prepared: 31 JUL 97 Analyzed: 31 JUL 97
Instrument: GC/MS-ND Prep Method: SW5030 Dilution: 1.0

Parameter	Result	Qualifier	RL	Units
1,2,4-Trichlorobenzene	ND		1.0	ug/L
1,1,1-Trichloroethane	ND		1.0	ug/L
1,1,2-Trichloroethane	ND		1.0	ug/L
Trichloroethene	ND		1.0	ug/L
Trichlorofluoromethane	ND		2.0	ug/L
1,2,3-Trichloropropane	ND		1.0	ug/L
1,2,4-Trimethylbenzene	ND		1.0	ug/L
1,3,5-Trimethylbenzene	ND		1.0	ug/L
Vinyl chloride	ND		2.0	ug/L
m- & p-Xylenes	ND		1.0	ug/L
o-Xylene	ND		1.0	ug/L
Acetone	ND		10	ug/L
2-Butanone	ND		10	ug/L
4-Methyl-2-pentanone	ND		10	ug/L

Surrogate	Recovery		Acceptable Range
1,2-Dichloroethane-d4	106	%	80 - 120
Toluene-d8	107	%	80 - 120
Bromofluorobenzene	102	%	80 - 120

ND = Not Detected

Semivolatile Organic Compounds
Appendix IX List
Method 8270

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 7/29/97
LAB ID: 127191-0001-SA
Matrix: AQUEOUS Sampled: 29 JUL 97 Received: 30 JUL 97
Authorized: 30 JUL 97 Prepared: 30 JUL 97 Analyzed: 07 AUG 97
Instrument: GC/MS-ME Dilution: 1.0

Parameter	Result	Qualifier	RL	Units
N-Nitrosodimethylamine	ND		10	ug/L
Aniline	ND		10	ug/L
Phenol	ND		10	ug/L
bis(2-Chloroethyl) ether	ND		10	ug/L
2-Chlorophenol	ND		10	ug/L
1,3-Dichlorobenzene	ND		10	ug/L
1,4-Dichlorobenzene	ND		10	ug/L
Benzyl alcohol	ND		10	ug/L
1,2-Dichlorobenzene	ND		10	ug/L
2-Methylphenol	ND		10	ug/L
bis(2-Chloroisopropyl)-ether	ND		10	ug/L
3/4-Methylphenol	ND		10	ug/L
N-Nitroso-di-n-propylamine	ND		10	ug/L
Hexachloroethane	ND		10	ug/L
Nitrobenzene	ND		10	ug/L
Isophorone	ND		10	ug/L
2-Nitrophenol	ND		10	ug/L
2,4-Dimethylphenol	ND		10	ug/L
Benzoic acid	ND		50	ug/L
bis(2-Chloroethoxy)-methane	ND		10	ug/L
2,4-Dichlorophenol	ND		10	ug/L
1,2,4-Trichlorobenzene	ND		10	ug/L
Naphthalene	ND		10	ug/L
4-Chloroaniline	ND		10	ug/L
Hexachlorobutadiene	ND		10	ug/L
4-Chloro-3-methylphenol	ND		10	ug/L
2-Methylnaphthalene	ND		10	ug/L
Hexachlorocyclopentadiene	ND		50	ug/L
2,4,6-Trichlorophenol	ND		10	ug/L
2,4,5-Trichlorophenol	ND		50	ug/L
2-Chloronaphthalene	ND		10	ug/L
2-Nitroaniline	ND		50	ug/L
Dimethyl phthalate	ND		10	ug/L
Acenaphthylene	ND		10	ug/L
3-Nitroaniline	ND		50	ug/L
Acenaphthene	ND		10	ug/L
2,4-Dinitrophenol	ND		50	ug/L
4-Nitrophenol	ND		50	ug/L
Dibenzofuran	ND		10	ug/L
2,4-Dinitrotoluene	ND		10	ug/L
2,6-Dinitrotoluene	ND		10	ug/L
Diethyl phthalate	ND		10	ug/L
1,2-Diphenylhydrazine	ND		50	ug/L
4-Chlorophenyl phenyl ether	ND		10	ug/L

ND = Not Detected

PRELIMINARY DATA
PENDING QC, FINAL REVIEW AND APPROVAL

Semivolatile Organic Compounds
Appendix IX List
Method 8270

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 7/29/97
LAB ID: 127191-0001-SA
Matrix: AQUEOUS Sampled: 29 JUL 97 Received: 30 JUL 97
Authorized: 30 JUL 97 Prepared: 30 JUL 97 Analyzed: 07 AUG 97
Instrument: GC/MS-MZ Dilution: 1.0

Parameter	Result	Qualifier	RL	Units
Fluorene	ND		10	ug/L
4-Nitroaniline	ND		50	ug/L
4,6-Dinitro-2-methylphenol	ND		50	ug/L
N-Nitrosodiphenylamine	ND		10	ug/L
4-Bromophenyl phenyl ether	ND		10	ug/L
Hexachlorobenzene	ND		10	ug/L
Phenanthrene	ND		10	ug/L
Anthracene	ND		10	ug/L
Di-n-butyl phthalate	0.94	J	10	ug/L
Fluoranthene	ND		10	ug/L
Pyrene	ND		10	ug/L
Butyl benzyl phthalate	ND		10	ug/L
3,3'-Dichlorobenzidine	ND		50	ug/L
Benzo(a)anthracene	ND		10	ug/L
bis(2-Ethylhexyl)-phthalate	ND		10	ug/L
Chrysene	ND		10	ug/L
Di-n-octyl phthalate	ND		10	ug/L
Benzo(b)fluoranthene	ND		10	ug/L
Benzo(k)fluoranthene	ND		10	ug/L
Benzo(a)pyrene	ND		10	ug/L
Indeno(1,2,3-c,d)pyrene	ND		10	ug/L
Dibenz(a,h)anthracene	ND		10	ug/L
Benzo(g,h,i)perylene	ND		10	ug/L
2-Picoline	ND		20	ug/L
Ethyl methanesulfonate	ND		10	ug/L
Acetophenone	ND		10	ug/L
N-Nitrosopiperidine	ND		10	ug/L
a,a-Dimethylphenethyl-amine	ND		50	ug/L
2,6-Dichlorophenol	ND		10	ug/L
N-Nitroso-di-n-butylamine	ND		10	ug/L
1,2,4,5-Tetrachloro-benzene	ND		10	ug/L
Pentachlorobenzene	ND		10	ug/L
1-Naphthylamine	ND		10	ug/L
2-Naphthylamine	ND		10	ug/L
2,3,4,6-Tetrachlorophenol	ND		50	ug/L
Phenacetin	ND		20	ug/L
4-Aminobiphenyl	ND		50	ug/L
Pronamide	ND		20	ug/L
Pentachloronitrobenzene	ND		50	ug/L
p-Dimethylaminoazobenzene	ND		20	ug/L
7,12-Dimethylbenz(a)-anthracene	ND		20	ug/L
Benzidine	ND		100	ug/L

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

PRELIMINARY DATA
PENDING QC, FINAL REVIEW AND ACCEPTANCE

Semivolatile Organic Compounds
Appendix IX List
Method 8270

(cont.)

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 7/29/97
LAB ID: 127191-0001-SA
Matrix: AQUEOUS
Authorized: 30 JUL 97
Instrument: GC/MS-ME

Sampled: 29 JUL 97
Prepared: 30 JUL 97
Dilution: 1.0

Received: 30 JUL 97
Analyzed: 07 AUG 97

Parameter	Result	Qualifier	RL	Units
1-Chloronaphthalene	ND		10	ug/L
Dibenz(a,j)acridine	ND		20	ug/L

Surrogate	Recovery		Acceptable Range
2-Fluorophenol	27	%	21 - 100
Phenol-d5	17	%	10 - 94
Nitrobenzene-d5	48	%	34 - 114
2-Fluorobiphenyl	56	%	43 - 116
2,4,6-Tribromophenol	67	%	10 - 123
Terphenyl-d14	58	%	33 - 141

ND = Not Detected

PRELIMINARY DATA
PENDING QC, FINAL REVIEW AND APPROVAL

Semivolatile Organics
Selected Ion Monitoring
Method SW8270-SIM

Client Name:	Montgomery Watson Constructors, Inc.		
Client ID:	EFFLUENT 7/29/97		
LAB ID:	127191-0001-SA		
Matrix:	AQUEOUS	Sampled: 29 JUL 97	Received: 30 JUL 97
Authorized:	30 JUL 97	Prepared: 30 JUL 97	Analyzed: 01 AUG 97
Instrument:	GC/MS-MA	Dilution: 1.0	

Parameter	Result	Qualifier	RL	Units
Pentachlorophenol	ND		1.0	ug/L

ND = Not Detected

PRELIMINARY DATA
PENDING QC, FINAL REVIEW AND APPROVAL

E.S. BABCOCK & SONS, INC.

6100 Quail Valley Court Riverside, CA 92507
P.O. Box 432 Riverside, CA 92502
PH (909) 653-3351 FAX (909) 653-1662
Environmental Laboratory Certification #1156

2466-1
Client:
Quanterra Environmental Services
Manny Valasquez
1721 S. Grand Avenue

Santa Ana, CA 92705

Client I.D.: 127342-0001 SA
Site: MW/ACS 89
Description: Effluent 8/7/97- 8-4-97

Matrix: wastewater

Page: 1 of 1
Lab No.: L31819-001

Date Reported: 08/12/97

Collected By:
Date: 08/04/97
Time: 1400
Submitted By: Courier
Date: 08/05/97
Time: 1530

Constituent	Result		Method	RL	Date / Analyst
Biochemical Oxygen Demand	ND	mg/L	EPA 405.1	5.	970806/JB

ND = None detected at RL (Reporting Limit). RL units same as result.

cc:

E. S. Babcock & Sons Inc.

GENERAL INORGANICS

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 8/5/97
LAB ID: 127361-0003-SA
Matrix: AQUEOUS
Authorized: 06 AUG 97

Sampled: 05 AUG 97
Prepared: See Below

Received: 06 AUG 97
Analyzed: See Below

Parameter	Result	Qual	DIL	RL	Units	Method	Prep Date	Analyzed Date
pH	7.4		1.0	NA	units	150.1	NA	06 AUG 9
Total Suspended Solids	ND		1.0	10.0	mg/L	E160.2	NA	07 AUG 9

ND = Not Detected

PRELIMINARY DATA
PENDING QC, FINAL REVIEW AND APPROVAL

METALS
(Water)

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 8/4/97
LAB ID: 127342-0001-SA
Matrix: AQUEOUS — Sampled: 04 AUG 97 — Received: 05 AUG 97
Authorized: 05 AUG 97 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Qual	DIL	RL	Units	Prep Method	Test Method	Prepared Date	Analyzed Date
Arsenic	ND		1.0	0.010	mg/L	FLDFLT	6010A	05 AUG 97	05 AUG 97
Beryllium	ND		1.0	0.0050	mg/L	FLDFLT	6010A	05 AUG 97	05 AUG 97
Cadmium	ND		1.0	0.0020	mg/L	FLDFLT	6010A	05 AUG 97	05 AUG 97
Manganese	0.12		1.0	0.015	mg/L	FLDFLT	6010A	05 AUG 97	05 AUG 97
Mercury	ND		1.0	0.00020	mg/L	METHOD	SW7470	05 AUG 97	06 AUG 97
Selenium	ND		1.0	0.0050	mg/L	FLDFLT	6010A	05 AUG 97	05 AUG 97
Thallium	ND		1.0	0.010	mg/L	FLDFLT	6010A	05 AUG 97	05 AUG 97
Zinc	0.038		1.0	0.020	mg/L	FLDFLT	6010A	05 AUG 97	05 AUG 97

ND = Not Detected

Volatile Organic Compounds
Method SW8260A

Client Name:	Montgomery Watson Constructors, Inc.		
Client ID:	EFFLUENT 8/4/97		
LAB ID:	127342-0001-SA		
Matrix:	AQUEOUS	Sampled: 04 AUG 97	Received: 05 AUG 97
Authorized:	05 AUG 97	Prepared: 08 AUG 97	Analyzed: 08 AUG 97
Instrument:	GC/MS-MD	Dilution: 1.0	

Parameter	Result	Qualifier	RL	Units
√Benzene	ND		1.0	ug/L
Bromobenzene	ND		1.0	ug/L
Bromochloromethane	ND		1.0	ug/L
Bromodichloromethane	ND		1.0	ug/L
Bromoform	ND		1.0	ug/L
Bromomethane	ND		2.0	ug/L
n-Butylbenzene	ND		1.0	ug/L
sec-Butylbenzene	ND		1.0	ug/L
Carbon tetrachloride	ND		1.0	ug/L
Chlorobenzene	ND		1.0	ug/L
√Chloroethane	ND		2.0	ug/L
Chloroform	ND		1.0	ug/L
Chloromethane	ND		2.0	ug/L
2-Chlorotoluene	ND		1.0	ug/L
Dibromochloromethane	ND		1.0	ug/L
1,2-Dibromo-3-chloro-propane (DBCP)	ND		2.0	ug/L
1,2-Dibromoethane (EDB)	ND		1.0	ug/L
Dibromomethane	ND		1.0	ug/L
1,2-Dichlorobenzene	ND		1.0	ug/L
1,3-Dichlorobenzene	ND		1.0	ug/L
√1,4-Dichlorobenzene	ND		1.0	ug/L
Dichlorodifluoromethane	ND		2.0	ug/L
√1,1-Dichloroethane	ND		1.0	ug/L
√1,2-Dichloroethane	ND		1.0	ug/L
1,1-Dichloroethene	ND		5.0	ug/L
cis-1,2-Dichloroethene	ND		1.0	ug/L
trans-1,2-Dichloroethene	ND		1.0	ug/L
1,2-Dichloropropane	ND		1.0	ug/L
1,3-Dichloropropane	ND		1.0	ug/L
2,2-Dichloropropane	ND		1.0	ug/L
1,1-Dichloropropene	ND		1.0	ug/L
√Ethylbenzene	ND		1.0	ug/L
Hexachlorobutadiene	ND		1.0	ug/L
Isopropylbenzene	ND		1.0	ug/L
Isopropyltoluene	ND		1.0	ug/L
√Methylene chloride	ND		5.0	ug/L
Naphthalene	ND		1.0	ug/L
n-Propylbenzene	ND		1.0	ug/L
Styrene	ND		1.0	ug/L
1,1,1,2-Tetrachloroethane	ND		1.0	ug/L
1,1,2,2-Tetrachloroethane	ND		1.0	ug/L
√Tetrachloroethene	ND		1.0	ug/L
Toluene	ND		1.0	ug/L
1,2,3-Trichlorobenzene	ND		1.0	ug/L

— = Not Detected

PRELIMINARY DATA
PENDING QC, FINAL REVIEW AND APPROVAL

Volatile Organic Compounds (cont.)
Method SW8260A

Client Name:	Montgomery Watson Constructors, Inc.		
Client ID:	EFFLUENT 8/4/97		
LAB ID:	127342-0001-SA		
Matrix:	AQUEOUS	Sampled: 04 AUG 97	Received: 05 AUG 97
Authorized:	05 AUG 97	Prepared: 08 AUG 97	Analyzed: 08 AUG 97
Instrument:	GC/MS-MD	Dilution: 1.0	

Parameter	Result	Qualifier	RL	Units
1,2,4-Trichlorobenzene	ND		1.0	ug/L
1,1,1-Trichloroethane	ND		1.0	ug/L
1,1,2-Trichloroethane	ND		1.0	ug/L
√Trichloroethene	ND		1.0	ug/L
Trichlorofluoromethane	ND		2.0	ug/L
1,2,3-Trichloropropane	ND		1.0	ug/L
1,2,4-Trimethylbenzene	ND		1.0	ug/L
1,3,5-Trimethylbenzene	ND		1.0	ug/L
√Vinyl chloride	ND		2.0	ug/L
m- & p-Xylenes	ND		1.0	ug/L
o-Xylene	ND		1.0	ug/L
√Acetone	ND		10	ug/L
√2-Butanone	ND		10	ug/L
√4-Methyl-2-pentanone	ND		10	ug/L

Surrogate	Recovery		Acceptable Range
1,2-Dichloroethane-d4	107	%	80 - 120
Toluene-d8	102	%	80 - 120
Bromofluorobenzene	98	%	80 - 120

ND = Not Detected

PRELIMINARY DATA
PENDING QC, FINAL REVIEW AND APPROVAL

Semivolatile Organic Compounds
Appendix IX List
Method 8270

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 8/4/97
LAB ID: 127342-0001-SA
Matrix: AQUEOUS Sampled: 04 AUG 97 Received: 05 AUG 97
Authorized: 05 AUG 97 Prepared: 05 AUG 97 Analyzed: 07 AUG 97
Instrument: GC/MS-MA Dilution: 1.0

Parameter	Result	Qualifier	RL	Units
4-Chlorophenyl phenyl ether	ND		10	ug/L
Fluorene	ND		10	ug/L
4-Nitroaniline	ND		50	ug/L
4,6-Dinitro-2-methylphenol	ND		50	ug/L
N-Nitrosodiphenylamine	ND		10	ug/L
4-Bromophenyl phenyl ether	ND		10	ug/L
Hexachlorobenzene	ND		10	ug/L
Phenanthrene	ND		10	ug/L
Anthracene	ND		10	ug/L
Di-n-butyl phthalate	ND		10	ug/L
Fluoranthene	0.56	J	10	ug/L
Pyrene	ND		10	ug/L
Butyl benzyl phthalate	ND		10	ug/L
3,3'-Dichlorobenzidine	3.3	J	50	ug/L
Benzo(a)anthracene	0.82	J	10	ug/L
bis(2-Ethylhexyl)-phthalate	ND		10	ug/L
Chrysene	0.71	J	10	ug/L
Di-n-octyl phthalate	ND		10	ug/L
Benzo(b)fluoranthene	ND		10	ug/L
Benzo(k)fluoranthene	ND		10	ug/L
Benzo(a)pyrene	ND		10	ug/L
Indeno(1,2,3-c,d)pyrene	ND		10	ug/L
Dibenz(a,h)anthracene	ND		10	ug/L
Benzo(g,h,i)perylene	ND		10	ug/L
2-Picoline	ND		20	ug/L
Ethyl methanesulfonate	ND		10	ug/L
Acetophenone	ND		10	ug/L
N-Nitrosopiperidine	ND		10	ug/L
a,a-Dimethylphenethyl-amine	ND		50	ug/L
2,6-Dichlorophenol	ND		10	ug/L
N-Nitroso-di-n-butylamine	ND		10	ug/L
1,2,4,5-Tetrachloro-benzene	ND		10	ug/L
Pentachlorobenzene	ND		10	ug/L
1-Naphthylamine	ND		10	ug/L
2-Naphthylamine	ND		10	ug/L
2,3,4,6-Tetrachlorophenol	ND		50	ug/L
Phenacetin	ND		20	ug/L
4-Aminobiphenyl	4.0	J	50	ug/L
Pronamide	ND		20	ug/L
Pentachloronitrobenzene	ND		50	ug/L
p-Dimethylaminoazobenzene	ND		20	ug/L
7,12-Dimethylbenz(a)-anthracene	ND		20	ug/L

* = Result is detected below the reporting limit or is an estimated concentration.
D = Not Detected

PRELIMINARY DATA
PENDING QC, FINAL REVIEW AND APPROVAL

Semivolatile Organic Compounds
Appendix IX List
Method 8270

Client Name:	Montgomery Watson Constructors, Inc.		
Client ID:	EFFLUENT 8/4/97		
LAB ID:	127342-0001-SA		
Matrix:	AQUEOUS	Sampled: 04 AUG 97	Received: 05 AUG 97
Authorized:	05 AUG 97	Prepared: 05 AUG 97	Analyzed: 07 AUG 97
Instrument:	GC/MS-MA	Dilution: 1.0	

Parameter	Result	Qualifier	RL	Units
N-Nitrosodimethylamine	ND		10	ug/L
Aniline	9.7	J	10	ug/L
Phenol	ND		10	ug/L
bis(2-Chloroethyl) ether	ND		10	ug/L
2-Chlorophenol	ND		10	ug/L
1,3-Dichlorobenzene	ND		10	ug/L
1,4-Dichlorobenzene	ND		10	ug/L
Benzyl alcohol	ND		10	ug/L
1,2-Dichlorobenzene	ND		10	ug/L
2-Methylphenol	ND		10	ug/L
bis(2-Chloroisopropyl)-ether	ND		10	ug/L
3/4-Methylphenol	ND		10	ug/L
N-Nitroso-di-n-propylamine	ND		10	ug/L
Hexachloroethane	ND		10	ug/L
Nitrobenzene	ND		10	ug/L
Isophorone	ND		10	ug/L
2-Nitrophenol	ND		10	ug/L
2,4-Dimethylphenol	ND		10	ug/L
Benzoic acid	ND		50	ug/L
bis(2-Chloroethoxy)-methane	ND		10	ug/L
2,4-Dichlorophenol	ND		10	ug/L
1,2,4-Trichlorobenzene	ND		10	ug/L
Naphthalene	ND		10	ug/L
4-Chloroaniline	7.1	J	10	ug/L
Hexachlorobutadiene	ND		10	ug/L
4-Chloro-3-methylphenol	ND		10	ug/L
2-Methylnaphthalene	ND		10	ug/L
Hexachlorocyclopentadiene	ND		50	ug/L
2,4,6-Trichlorophenol	ND		10	ug/L
2,4,5-Trichlorophenol	ND		50	ug/L
2-Chloronaphthalene	ND		10	ug/L
2-Nitroaniline	ND		50	ug/L
Dimethyl phthalate	ND		10	ug/L
Acenaphthylene	ND		10	ug/L
3-Nitroaniline	ND		50	ug/L
Acenaphthene	ND		10	ug/L
2,4-Dinitrophenol	ND		50	ug/L
4-Nitrophenol	ND		50	ug/L
Dibenzofuran	ND		10	ug/L
2,4-Dinitrotoluene	ND		10	ug/L
2,6-Dinitrotoluene	ND		10	ug/L
Diethyl phthalate	ND		10	ug/L
1,2-Diphenylhydrazine	ND		50	ug/L

= Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

PRELIMINARY DATA
PENDING QC, FINAL REVIEW AND APPROVAL

Semivolatile Organic Compounds
Appendix IX List
Method 8270

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 8/4/97
LAB ID: 127342-0001-SA
Matrix: AQUEOUS Sampled: 04 AUG 97 Received: 05 AUG 97
Authorized: 05 AUG 97 Prepared: 05 AUG 97 Analyzed: 07 AUG 97
Instrument: GC/MS-MA Dilution: 1.0

Parameter	Result	Qualifier	RL	Units
Benzidine	ND		100	ug/L
1-Chloronaphthalene	ND		10	ug/L
Dibenz(a,j)acridine	ND		20	ug/L

Surrogate	Recovery		Acceptable Range
2-Fluorophenol	36	%	21 - 100
Phenol-d5	21	%	10 - 94
Nitrobenzene-d5	66	%	34 - 114
2-Fluorobiphenyl	78	%	43 - 116
2,4,6-Tribromophenol	61	%	10 - 123
Terphenyl-d14	69	%	33 - 141

PRELIMINARY DATA
PENDING QC, FINAL REVIEW AND APPROVAL

J = Not Detected

Semivolatile Organics
Selected Ion Monitoring
Method SW8270-SIM

Client Name:	Montgomery Watson Constructors, Inc.		
Client ID:	EFFLUENT 8/4/97		
LAB ID:	127342-0001-SA		
Matrix:	AQUEOUS	Sampled: 04 AUG 97	Received: 05 AUG 97
Authorized:	05 AUG 97	Prepared: 05 AUG 97	Analyzed: 08 AUG 97
Instrument:	GC/MS-MA	Dilution: 1.0	

Parameter	Result	Qualifier	RL	Units
Pentachlorophenol	ND		1.0	ug/L

PRELIMINARY DATA
PENDING QC, FINAL REVIEW AND APPROVAL

ND = Not Detected

Industrial & Environmental Analysts, Inc. (IEA)
PCB IN WATER

IEA Project Number:	2240-074	Date Received:	08/05/97
IEA Sample Number:	9708089-01	Date Sampled:	08/04/97
Client Name:	Montgomery Watson	Date Extracted:	08/05/97
Client Project I.D.:	ACS #89 (Superfund)	Date Analyzed:	08/06/97
Sample Identification:	EFFLUENT	Analysis By:	Briggs
Matrix:	Water	Dilution Factor:	1.0

Number	Compound	Quantitation Limit (ug/L)	Results Concentration (ug/L)
1	Aroclor 1016	0.50	BQL
2	Aroclor 1221	0.50	BQL
3	Aroclor 1232	0.50	BQL
4	Aroclor 1242	0.50	BQL
5	Aroclor 1248	0.50	BQL
6	Aroclor 1254	1.0	BQL
7	Aroclor 1260	1.0	BQL

Comments:
Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor.
BQL - Below Quantitation Limit

FORM PCBW Rev. 030293

E.S. BABCOCK & SONS, INC.

6100 Quail Valley Court Riverside, CA 92507
P.O. Box 432 Riverside, CA 92502
PH (909) 653-3351 FAX (909) 653-1662
Environmental Laboratory Certification #1158

3466-1
Client:
Quanterra Environmental Services
Manny Velasquez
1721 S. Grand Avenue

Santa Ana, CA 92705

Client I.D.: 127482-0001 SA
Site: MW/ACS
Description: Effluent 8-11-97

Matrix: wastewater

Date Reported: 08/20/97

Collected By:
Date: 08/11/97
Time: 0800
Submitted By: Courier
Date: 08/12/97
Time: 1545

Constituent	Result		Method	RL	Date / Analyst
Biochemical Oxygen Demand	ND	mg/L	EPA 403.1	5.	970813/JB

ND = None detected at RL (Reporting Limit). RL units same as result.

cc:

Postal Fax Note 7671

To [illegible]	Date 8-20
Co./Dept. [illegible]	From Babcock Lab
Phone #	Co.
Fax # 714 258-3618	Phone #
	Fax #

E. S. Babcock & Sons Inc.
Lawrence Chapel

GENERAL INORGANICS

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 8-11-97
LAB ID: 127482-0001-SA
Matrix: AQUEOUS Sampled: 11 AUG 97 Received: 12 AUG 97
Authorized: 12 AUG 97 Prepared: See Below Analyzed: See Below

Parameter	Result	Qual	DIL	RL	Units	Prep Method	Test Method	Prepared Date	Analyzed Date
pH	7.8		1.0	NA	units	NONE	150.1	NA	12 AUG 97
Total Suspended Solids	ND		1.0	10.0	mg/L	NONE	E160.2	NA	13 AUG 97

ND = Not Detected

Reviewed by T. Tutein
8-25-97
RL - ok except for Hg
IN compliance

METALS
(Water)

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 8-11-97
LAB ID: 127482-0001-SA
Matrix: AQUEOUS — Sampled: 11 AUG 97 — Received: 12 AUG 97
Authorized: 12 AUG 97 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Qual	DIL	RL	Units	Method	Prep Date	Analyzed Date
Arsenic	ND		1.0	0.010	mg/L	6010A	12 AUG 97	14 AUG 9
Beryllium	0.00032	J	1.0	0.0050	mg/L	6010A	12 AUG 97	14 AUG 9
Cadmium	ND		1.0	0.0020	mg/L	6010A	12 AUG 97	14 AUG 9
Manganese	0.096		1.0	0.015	mg/L	6010A	12 AUG 97	14 AUG 9
Mercury	ND		1.0	0.00020	mg/L	SW7470	13 AUG 97	14 AUG 9
Selenium	ND		1.0	0.0050	mg/L	6010A	12 AUG 97	14 AUG 9
Thallium	0.0054	J	1.0	0.010	mg/L	6010A	12 AUG 97	14 AUG 9
Zinc	0.025		1.0	0.020	mg/L	6010A	12 AUG 97	14 AUG 9

Need 0.00002

PRELIMINARY DATA
PENDING QC, FINAL REVIEW AND APPROVAL

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Reviewed by T. Tutein 8-25-97
RL - OK
IN compliance

Volatile Organic Compounds
Method SW8260A

Client Name:	Montgomery Watson Constructors, Inc.		
Client ID:	EFFLUENT 8-11-97		
LAB ID:	127482-0001-SA		
Matrix:	AQUEOUS	Sampled: 11 AUG 97	Received: 12 AUG 97
Authorized:	12 AUG 97	Prepared: 14 AUG 97	Analyzed: 14 AUG 97
Instrument:	GC/MS-MC	Prep Method: SW5030	Dilution: 1.0

Parameter	Result	Qualifier	RL	Units
√ Benzene	ND		1.0	ug/L
Bromobenzene	ND		1.0	ug/L
Bromochloromethane	ND		1.0	ug/L
Bromodichloromethane	ND		1.0	ug/L
Bromoform	ND		1.0	ug/L
Bromomethane	ND		2.0	ug/L
n-Butylbenzene	ND		1.0	ug/L
sec-Butylbenzene	ND		1.0	ug/L
Carbon tetrachloride	ND		1.0	ug/L
Chlorobenzene	ND		1.0	ug/L
Chloroethane	ND		2.0	ug/L
Chloroform	ND		1.0	ug/L
√ Chloromethane	ND		2.0	ug/L
2-Chlorotoluene	ND		1.0	ug/L
Dibromochloromethane	ND		1.0	ug/L
1,2-Dibromo-3-chloro-propane (DBCP)	ND		2.0	ug/L
1,2-Dibromoethane (EDB)	ND		1.0	ug/L
Dibromomethane	ND		1.0	ug/L
1,2-Dichlorobenzene	ND		1.0	ug/L
1,3-Dichlorobenzene	ND		1.0	ug/L
√ 1,4-Dichlorobenzene	ND		1.0	ug/L
Dichlorodifluoromethane	ND		2.0	ug/L
√ 1,1-Dichloroethane	ND		1.0	ug/L
1,2-Dichloroethane	ND		1.0	ug/L
1,1-Dichloroethene	ND		5.0	ug/L
√ cis-1,2-Dichloroethene	ND		1.0	ug/L
trans-1,2-Dichloroethene	ND		1.0	ug/L
1,2-Dichloropropane	ND		1.0	ug/L
1,3-Dichloropropane	ND		1.0	ug/L
2,2-Dichloropropane	ND		1.0	ug/L
1,1-Dichloropropene	ND		1.0	ug/L
√ Ethylbenzene	ND		1.0	ug/L
Hexachlorobutadiene	ND		1.0	ug/L
Isopropylbenzene	ND		1.0	ug/L
Isopropyltoluene	ND		1.0	ug/L
√ Methylene chloride	ND		5.0	ug/L
Naphthalene	ND		1.0	ug/L
n-Propylbenzene	ND		1.0	ug/L
Styrene	ND		1.0	ug/L
1,1,1,2-Tetrachloroethane	ND		1.0	ug/L
1,1,2,2-Tetrachloroethane	ND		1.0	ug/L
√ Tetrachloroethene	ND		1.0	ug/L
Toluene	ND		1.0	ug/L
1,2,3-Trichlorobenzene	ND		1.0	ug/L

ND = Not Detected

Volatile Organic Compounds
Method SW8260A

(cont.)

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 8-11-97
LAB ID: 127482-0001-SA
Matrix: AQUEOUS — Sampled: 11 AUG 97 — Received: 12 AUG 97
Authorized: 12 AUG 97 — Prepared: 14 AUG 97 — Analyzed: 14 AUG 97
Instrument: GC/MS-MC — Prep Method: SW5030 — Dilution: 1.0

Parameter	Result	Qualifier	RL	Units
1,2,4-Trichlorobenzene	ND		1.0	ug/L
1,1,1-Trichloroethane	ND		1.0	ug/L
1,1,2-Trichloroethane	ND		1.0	ug/L
Trichloroethene	ND		1.0	ug/L
Trichlorofluoromethane	ND		2.0	ug/L
1,2,3-Trichloropropane	ND		1.0	ug/L
1,2,4-Trimethylbenzene	ND		1.0	ug/L
1,3,5-Trimethylbenzene	ND		1.0	ug/L
Vinyl chloride	ND		2.0	ug/L
m- & p-Xylenes	ND		1.0	ug/L
o-Xylene	ND		1.0	ug/L
Acetone	ND		10	ug/L
2-Butanone	ND		10	ug/L
4-Methyl-2-pentanone	ND		10	ug/L

Surrogate	Recovery		Acceptable Range
1,2-Dichloroethane-d4	113	%	80 - 120
Toluene-d8	103	%	80 - 120
Bromofluorobenzene	98	%	80 - 120

ND = Not Detected

Volatile Organic Compounds
Method SW8260A

Client Name: Montgomery Watson Constructors, Inc.
Client ID: 1ST GAC EFFLUENT
LAB ID: 127482-0002-SA
Matrix: AQUEOUS — Sampled: 11 AUG 97 — Received: 12 AUG 97
Authorized: 12 AUG 97 — Prepared: 14 AUG 97 — Analyzed: 14 AUG 97
Instrument: GC/MS-MC — Prep Method: SW5030 — Dilution: 1.0

Parameter	Result	Qualifier	RL	Units
Benzene	0.46	J	1.0	ug/L
Bromobenzene	ND		1.0	ug/L
Bromochloromethane	ND		1.0	ug/L
Bromodichloromethane	ND		1.0	ug/L
Bromoform	ND		1.0	ug/L
Bromomethane	ND		2.0	ug/L
n-Butylbenzene	ND		1.0	ug/L
sec-Butylbenzene	ND		1.0	ug/L
Carbon tetrachloride	ND		1.0	ug/L
Chlorobenzene	ND		1.0	ug/L
Chloroethane	ND		2.0	ug/L
Chloroform	ND		1.0	ug/L
Chloromethane	ND		2.0	ug/L
2-Chlorotoluene	ND		1.0	ug/L
Dibromochloromethane	ND		1.0	ug/L
1,2-Dibromo-3-chloro-propane (DBCP)	ND		2.0	ug/L
1,2-Dibromoethane (EDB)	ND		1.0	ug/L
Dibromomethane	ND		1.0	ug/L
1,2-Dichlorobenzene	ND		1.0	ug/L
1,3-Dichlorobenzene	ND		1.0	ug/L
1,4-Dichlorobenzene	ND		1.0	ug/L
Dichlorodifluoromethane	ND		2.0	ug/L
1,1-Dichloroethane	ND		1.0	ug/L
1,2-Dichloroethane	ND		1.0	ug/L
1,1-Dichloroethene	ND		5.0	ug/L
cis-1,2-Dichloroethene	ND		1.0	ug/L
trans-1,2-Dichloroethene	ND		1.0	ug/L
1,2-Dichloropropane	ND		1.0	ug/L
1,3-Dichloropropane	ND		1.0	ug/L
2,2-Dichloropropane	ND		1.0	ug/L
1,1-Dichloropropene	ND		1.0	ug/L
Ethylbenzene	ND		1.0	ug/L
Hexachlorobutadiene	ND		1.0	ug/L
Isopropylbenzene	ND		1.0	ug/L
Isopropyltoluene	ND		1.0	ug/L
Methylene chloride	ND		5.0	ug/L
Naphthalene	ND		1.0	ug/L
n-Propylbenzene	ND		1.0	ug/L
Styrene	ND		1.0	ug/L
1,1,1,2-Tetrachloroethane	ND		1.0	ug/L
1,1,2,2-Tetrachloroethane	ND		1.0	ug/L
Tetrachloroethene	ND		1.0	ug/L
Toluene	ND		1.0	ug/L

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Volatile Organic Compounds
Method SW8260A

(cont.)

Client Name: Montgomery Watson Constructors, Inc.
Client ID: 1ST GAC EFFLUENT
LAB ID: 127482-0002-SA
Matrix: AQUEOUS Sampled: 11 AUG 97 Received: 12 AUG 97
Authorized: 12 AUG 97 Prepared: 14 AUG 97 Analyzed: 14 AUG 97
Instrument: GC/MS-MC Prep Method: SW5030 Dilution: 1.0

Parameter	Result	Qualifier	RL	Units
1,2,3-Trichlorobenzene	ND		1.0	ug/L
1,2,4-Trichlorobenzene	ND		1.0	ug/L
1,1,1-Trichloroethane	ND		1.0	ug/L
1,1,2-Trichloroethane	ND		1.0	ug/L
Trichloroethene	ND		1.0	ug/L
Trichlorofluoromethane	ND		2.0	ug/L
1,2,3-Trichloropropane	ND		1.0	ug/L
1,2,4-Trimethylbenzene	ND		1.0	ug/L
1,3,5-Trimethylbenzene	ND		1.0	ug/L
Vinyl chloride	ND		2.0	ug/L
m- & p-Xylenes	ND		1.0	ug/L
o-Xylene	ND		1.0	ug/L
Acetone	1.7	J	10	ug/L
2-Butanone	ND		10	ug/L
4-Methyl-2-pentanone	ND		10	ug/L

Surrogate	Recovery		Acceptable Range
1,2-Dichloroethane-d4	112	%	80 - 120
Toluene-d8	102	%	80 - 120
Bromofluorobenzene	96	%	80 - 120

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Semivolatile Organic Compounds
Appendix IX List
Method 8270

Client Name: Montgomery Watson Constructors, Inc.
Client ID: SEWLUNPT 8-11-97
LAB ID: 127482-0001-8A
Matrix: AQUEOUS
Authorized: 12 AUG 97
Instrument: GC/MS-MZ

Sampled: 11 AUG 97
Prepared: 12 AUG 97
Prep Method: SW3510

Received: 12 AUG 97
Analyzed: 13 AUG 97
Dilution: 1.0

Parameter	Result	Qualifier	RL	Units
N-Nitrosodimethylamine	ND		10	ug/L
Aniline	ND		10	ug/L
Phenol	0.85	J	10	ug/L
bis(2-Chloroethyl) ether	ND		10	ug/L
2-Chlorophenol	ND		10	ug/L
1,3-Dichlorobenzene	ND		10	ug/L
1,4-Dichlorobenzene	ND		10	ug/L
Benzyl alcohol	ND		10	ug/L
1,2-Dichlorobenzene	ND		10	ug/L
2-Methylphenol	ND		10	ug/L
bis(2-Chloroisopropyl)-ether	ND		10	ug/L
3/4-Methylphenol	ND		10	ug/L
N-Nitroso-di-n-propylamine	ND		10	ug/L
Hexachloroethane	ND		10	ug/L
Nitrobenzene	ND		10	ug/L
Isophorone	ND		10	ug/L
2-Nitrophenol	ND		10	ug/L
2,4-Dimethylphenol	ND		10	ug/L
Benzoic acid	ND		50	ug/L
Bis(2-Chloroethoxy)-methane	ND		10	ug/L
2,4-Dichlorophenol	ND		10	ug/L
1,2,4-Trichlorobenzene	ND		10	ug/L
Naphthalene	ND		10	ug/L
4-Chloroaniline	ND		10	ug/L
Hexachlorobutadiene	ND		10	ug/L
4-Chloro-3-methylphenol	ND		10	ug/L
2-Methylnaphthalene	ND		10	ug/L
Hexachlorocyclopentadiene	ND		50	ug/L
2,4,6-Trichlorophenol	ND		10	ug/L
2,4,5-Trichlorophenol	ND		50	ug/L
2-Chloronaphthalene	ND		10	ug/L
2-Nitroaniline	ND		50	ug/L
Dimethyl phthalate	ND		10	ug/L
Acenaphthylene	ND		10	ug/L
3-Nitroaniline	ND		50	ug/L
Acenaphthene	ND		10	ug/L
2,4-Dinitrophenol	ND		50	ug/L
4-Nitrophenol	ND		50	ug/L
Dibenzofuran	ND		10	ug/L
2,4-Dinitrotoluene	ND		10	ug/L
2,6-Dinitrotoluene	ND		10	ug/L
Diethyl phthalate	ND		10	ug/L
1,2-Diphenylhydrazine	ND		50	ug/L

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Semivolatile Organic Compounds (cont.)
Appendix IX List
Method 8270

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 8-11-97
LAB ID: 127482-0001-SA
Matrix: AQUEOUS
Authorized: 12 AUG 97
Instrument: GC/MS-MZ

Sampled: 11 AUG 97
Prepared: 12 AUG 97
Prep Method: SW3510

Received: 12 AUG 97
Analyzed: 13 AUG 97
Dilution: 1.0

Parameter	Result	Qualifier	RL	Units
4-Chlorophenyl phenyl ether	ND		10	ug/L
Fluorene	ND		10	ug/L
4-Nitroaniline	ND		50	ug/L
4,6-Dinitro-2-methylphenol	ND		50	ug/L
N-Nitrosodiphenylamine	ND		10	ug/L
4-Bromophenyl phenyl ether	ND		10	ug/L
Hexachlorobenzene	ND		10	ug/L
Phenanthrene	ND		10	ug/L
Anthracene	ND		10	ug/L
Di-n-butyl phthalate	ND		10	ug/L
Fluoranthene	ND		10	ug/L
Pyrene	ND		10	ug/L
Butyl benzyl phthalate	ND		10	ug/L
3,3'-Dichlorobenzidine	ND		50	ug/L
Benzo(a)anthracene	ND		10	ug/L
bis(2-Ethylhexyl)-phthalate	ND		10	ug/L
Chrysene	ND		10	ug/L
Di-n-octyl phthalate	ND		10	ug/L
Benzo(b)fluoranthene	ND		10	ug/L
Benzo(k)fluoranthene	ND		10	ug/L
Benzo(a)pyrene	ND		10	ug/L
Indeno(1,2,3-c,d)pyrene	ND		10	ug/L
Dibenz(a,h)anthracene	ND		10	ug/L
Benzo(g,h,i)perylene	ND		10	ug/L
2-Picoline	ND		20	ug/L
Ethyl methanesulfonate	ND		10	ug/L
Acetophenone	ND		10	ug/L
N-Nitrosopiperidine	ND		10	ug/L
a,a-Dimethylphenethyl-amine	ND		50	ug/L
2,6-Dichlorophenol	ND		10	ug/L
N-Nitroso-di-n-butylamine	ND		10	ug/L
1,2,4,5-Tetrachloro-benzene	ND		10	ug/L
Pentachlorobenzene	ND		10	ug/L
1-Naphthylamine	ND		10	ug/L
2-Naphthylamine	ND		10	ug/L
2,3,4,6-Tetrachlorophenol	ND		50	ug/L
Phenacetin	ND		20	ug/L
4-Aminobiphenyl	ND		50	ug/L
Pronamide	ND		20	ug/L
Pentachloronitrobenzene	ND		50	ug/L
p-Dimethylaminoazobenzene	ND		20	ug/L
7,12-Dimethylbenz(a)-anthracene	ND		20	ug/L
Benzidine	ND		100	ug/L
1-Chloronaphthalene	ND		10	ug/L

ND = Not Detected

Semivolatile Organic Compounds (cont.)
Appendix IX List
Method 8270

Client Name: Montgomery Watson Constructors, Inc.
Client ID: [illegible] 8-11-97
LAB ID: 127482-0001-8A
Matrix: AQUEOUS
Sampled: 11 AUG 97 Received: 12 AUG 97
Authorized: 12 AUG 97 Prepared: 12 AUG 97 Analyzed: 13 AUG 97
Instrument: GC/MS-MS Prep Method: SW3510 Dilution: 1.0

Parameter	Result	Qualifier	RL	Units
Dibenz(a,j)acridine	ND		20	ug/L

Surrogate	Recovery		Acceptable Range
2-Fluorophenol	37	%	21 - 100
Phenol-d5	24	%	10 - 94
Nitrobenzene-d5	69	%	34 - 114
2-Fluorobiphenyl	69	%	43 - 116
2,4,6-Tribromophenol	70	%	10 - 123
Terphenyl-d14	59	%	33 - 141

ND = Not Detected

Semivolatile Organics
Selected Ion Monitoring
Method SW8270-SIM

Client Name:	Montgomery Watson Constructors, Inc.		
Client ID:	EFFLUENT 8-11-97		
LAB ID:	127482-0001-SA		
Matrix:	AQUEOUS	Sampled: 11 AUG 97	Received: 12 AUG 97
Authorized:	12 AUG 97	Prepared: 12 AUG 97	Analyzed: 28 AUG 97
Instrument:	GC/MS-MA	Prep Method: SW3510	Dilution: 1.0

Parameter	Result	Qualifier	RL	Units
Pentachlorophenol	ND		1.0	ug/L

ND = Not Detected

E.S.Babcock TEL No.1-909-653-1662 Aug 28.97 15:12 No.008 P.01

E.S. BABCOCK & SONS, INC.

6100 Quail Valley Court Riverside, CA 92507
P.O. Box 432 Riverside, CA 92502
PH (909) 653-3351 FAX (909) 653-1662
Environmental Laboratory Certification #1156

2466-1
Client:
Quanterra Environmental Services
Manny Valasquez
1721 S. Grand Avenue

Santa Ana, CA 92705

Page 1 of 1
Lab No.: L32590-001

Date Reported: 08/28/97

Collected By:
Date: 08/18/97
Time: 0800
Submitted By: EDimalanta
Date: 08/21/97
Time: 0850

Client I.D.: LAB#127629-0001 SA
Site: MW/ACS
Description: Effluent Grab

Matrix: wastewater

Constituent	Result		Method	RL	Date / Analyst
Biochemical Oxygen Demand	12.	mg/L	EPA 405.1	5.	970821/TF

ND = None detected at RL (Reporting Limit). RL units same as result.

cc:

Post-it Fax Note 7671 | Date 8-28 | # of pages 2
To Sharon Mares | From
Co./Dept. Quanterra | Co. Babcock Lab
Phone # | Phone #
Fax # 714 258-8618 | Fax #

E. S. Babcock & Sons Inc.
Lorenz Chytel

Reviewed by T. Tutsin
8-25-97
RL- ok except Hg
In compliance

METALS
(Water)

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 8-18-97
LAB ID: 127629-0001-SA
Matrix: AQUEOUS — Sampled: 18 AUG 97 — Received: 20 AUG 97
Authorized: 20 AUG 97 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Qual	DIL	RL	Units	Method	Prep Date	Analyzed Date
Arsenic	0.0043	J	1.0	0.010	mg/L	6010A	20 AUG 97	20 AUG 97
Beryllium	ND		1.0	0.0050	mg/L	6010A	20 AUG 97	20 AUG 97
Cadmium	ND		1.0	0.0020	mg/L	6010A	20 AUG 97	20 AUG 97
Manganese	0.42		1.0	0.015	mg/L	6010A	20 AUG 97	20 AUG 97
Mercury	ND		1.0	0.00020	mg/L	SW7470	20 AUG 97	20 AUG 97
Selenium	ND		1.0	0.0050	mg/L	6010A	20 AUG 97	20 AUG 97
Thallium	0.0038	JB	1.0	0.010	mg/L	6010A	20 AUG 97	20 AUG 97
Zinc	0.014	J	1.0	0.020	mg/L	6010A	20 AUG 97	20 AUG 97

PRELIMINARY DATA
PENDING QC, FINAL REVIEW AND APPROVAL

B = Compound is also detected in the blank.
J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

OK
T. Tufein
8-25-97

GENERAL INORGANICS

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 8-18-97
LAB ID: 127629-0001-SA
Matrix: AQUEOUS
Authorized: 20 AUG 97

Sampled: 18 AUG 97
Prepared: See Below

Received: 20 AUG 97
Analyzed: See Below

Parameter	Result	Qual	DIL	RL	Units	Method	Prep Date	Analyzed Date
pH	8.2		1.0	NA	units	150.1	NA	20 AUG 9
Total Suspended Solids	13.0		1.0	10.0	mg/L	E160.2	NA	20 AUG 9

PRELIMINARY DATA
PENDING QC, FINAL REVIEW AND APPROVAL

Volatile Organic Compounds
Method SW8260A

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 8-18-97
LAB ID: 127629-0001-SA
Matrix: AQUEOUS
Authorized: 20 AUG 97
Instrument: GC/MS-M

Sampled: 18 AUG 97
Prepared: 21 AUG 97
Dilution: 1.0

Received: 20 AUG 97
Analyzed: 21 AUG 97

Parameter	Result	Qualifier	RL	Units
Benzene	0.73	J	1.0	ug/L
Bromobenzene	ND		1.0	ug/L
Bromochloromethane	ND		1.0	ug/L
Bromodichloromethane	ND		1.0	ug/L
Bromoform	ND		1.0	ug/L
Bromomethane	ND		2.0	ug/L
n-Butylbenzene	ND		1.0	ug/L
sec-Butylbenzene	ND		1.0	ug/L
Carbon tetrachloride	ND		1.0	ug/L
Chlorobenzene	ND		1.0	ug/L
Chloroethane	ND		2.0	ug/L
Chloroform	ND		1.0	ug/L
Chloromethane	ND		2.0	ug/L
2-Chlorotoluene	ND		1.0	ug/L
Dibromochloromethane	ND		1.0	ug/L
1,2-Dibromo-3-chloro-propane (DBCP)	ND		2.0	ug/L
1,2-Dibromoethane (EDB)	ND		1.0	ug/L
Dibromomethane	ND		1.0	ug/L
1,2-Dichlorobenzene	ND		1.0	ug/L
1,3-Dichlorobenzene	ND		1.0	ug/L
1,4-Dichlorobenzene	ND		1.0	ug/L
Dichlorodifluoromethane	ND		2.0	ug/L
1,1-Dichloroethane	ND		1.0	ug/L
1,2-Dichloroethane	ND		1.0	ug/L
1,1-Dichloroethene	ND		5.0	ug/L
cis-1,2-Dichloroethene	ND		1.0	ug/L
trans-1,2-Dichloroethene	ND		1.0	ug/L
1,2-Dichloropropane	ND		1.0	ug/L
1,3-Dichloropropane	ND		1.0	ug/L
2,2-Dichloropropane	ND		1.0	ug/L
1,1-Dichloropropene	ND		1.0	ug/L
Ethylbenzene	ND		1.0	ug/L
Hexachlorobutadiene	ND		1.0	ug/L
Isopropylbenzene	ND		1.0	ug/L
Isopropyltoluene	ND		1.0	ug/L
Methylene chloride	ND		5.0	ug/L
Naphthalene	ND		1.0	ug/L
n-Propylbenzene	ND		1.0	ug/L
Styrene	ND		1.0	ug/L
1,1,1,2-Tetrachloroethane	ND		1.0	ug/L
1,1,2,2-Tetrachloroethane	ND		1.0	ug/L
Tetrachloroethene	ND		1.0	ug/L
Toluene	ND		1.0	ug/L

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Volatile Organic Compounds
Method SW8260A

(cont.)

Client Name:	Montgomery Watson Constructors, Inc.		
Client ID:	EFFLUENT 8-18-97		
LAB ID:	127629-0001-SA		
Matrix:	AQUEOUS	Sampled: 18 AUG 97	Received: 20 AUG 97
Authorized:	20 AUG 97	Prepared: 21 AUG 97	Analyzed: 21 AUG 97
Instrument:	GC/MS-MD	Dilution: 1.0	

Parameter	Result	Qualifier	RL	Units
1,2,3-Trichlorobenzene	ND		1.0	ug/L
1,2,4-Trichlorobenzene	ND		1.0	ug/L
1,1,1-Trichloroethane	ND		1.0	ug/L
1,1,2-Trichloroethane	ND		1.0	ug/L
Trichloroethene	ND		1.0	ug/L
Trichlorofluoromethane	ND		2.0	ug/L
1,2,3-Trichloropropane	ND		1.0	ug/L
1,2,4-Trimethylbenzene	ND		1.0	ug/L
1,3,5-Trimethylbenzene	ND		1.0	ug/L
Vinyl chloride	ND		2.0	ug/L
m- & p-Xylenes	ND		1.0	ug/L
o-Xylene	ND		1.0	ug/L
Acetone	ND		10	ug/L
2-Butanone	ND		10	ug/L
4-Methyl-2-pentanone	ND		10	ug/L

Surrogate	Recovery		Acceptable Range
1,2-Dichloroethane-d4	109	%	80 - 120
Toluene-d8	109	%	80 - 120
Bromofluorobenzene	104	%	80 - 120

ND = Not Detected

~~Missing 4-Methyl-2-pentanone~~
IN COMPLIANCE
T. TUYEIN 8-25-97

Semivolatile Organic Compounds
Appendix IX List
Method 8270

Client Name:	Montgomery Watson Constructors, Inc.		
Client ID:	EFFLUENT 8-18-97		
LAB ID:	127629-0001-SA		
Matrix:	AQUEOUS	Sampled: 18 AUG 97	Received: 20 AUG 97
Authorized:	20 AUG 97	Prepared: 21 AUG 97	Analyzed: 21 AUG 97
Instrument:	GC/MS-ME	Dilution: 1.0	

Parameter	Result	Qualifier	RL	Units
N-Nitrosodimethylamine	ND		10	ug/L
Aniline	ND		10	ug/L
Phenol	5.1	J	10	ug/L
√ bis(2-Chloroethyl) ether	ND		10	ug/L
2-Chlorophenol	ND		10	ug/L
1,3-Dichlorobenzene	ND		10	ug/L
1,4-Dichlorobenzene	ND		10	ug/L
Benzyl alcohol	ND		10	ug/L
1,2-Dichlorobenzene	ND		10	ug/L
2-Methylphenol	ND		10	ug/L
bis(2-Chloroisopropyl)-ether	ND		10	ug/L
√ 3/4-Methylphenol	ND		10	ug/L
N-Nitroso-di-n-propylamine	ND		10	ug/L
Hexachloroethane	ND		10	ug/L
Nitrobenzene	ND		10	ug/L
√ Isophorone	ND		10	ug/L
2-Nitrophenol	ND		10	ug/L
2,4-Dimethylphenol	ND		10	ug/L
Benzoic acid	ND		50	ug/L
bis(2-Chloroethoxy)-methane	ND		10	ug/L
2,4-Dichlorophenol	ND		10	ug/L
1,2,4-Trichlorobenzene	ND		10	ug/L
Naphthalene	ND		10	ug/L
4-Chloroaniline	ND		10	ug/L
Hexachlorobutadiene	ND		10	ug/L
4-Chloro-3-methylphenol	ND		10	ug/L
2-Methylnaphthalene	ND		10	ug/L
Hexachlorocyclopentadiene	ND		50	ug/L
2,4,6-Trichlorophenol	ND		10	ug/L
2,4,5-Trichlorophenol	ND		50	ug/L
2-Chloronaphthalene	ND		10	ug/L
2-Nitroaniline	ND		50	ug/L
Dimethyl phthalate	ND		10	ug/L
Acenaphthylene	ND		10	ug/L
3-Nitroaniline	ND		50	ug/L
Acenaphthene	ND		10	ug/L
2,4-Dinitrophenol	ND		50	ug/L
4-Nitrophenol	ND		50	ug/L
Dibenzofuran	ND		10	ug/L
2,4-Dinitrotoluene	ND		10	ug/L
2,6-Dinitrotoluene	ND		10	ug/L
Diethyl phthalate	ND		10	ug/L
1,2-Diphenylhydrazine	ND		50	ug/L

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

PRELIMINARY DATA
PENDING QC, FINAL REVIEW AND APPROVAL

Semivolatile Organic Compounds (cont.)
Appendix IX List
Method 8270

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 8-18-97
LAB ID: 127629-0001-SA
Matrix: AQUEOUS Sampled: 18 AUG 97 Received: 20 AUG 97
Authorized: 20 AUG 97 Prepared: 21 AUG 97 Analyzed: 21 AUG 97
Instrument: GC/MS-ME Dilution: 1.0

Parameter	Result	Qualifier	RL	Units
4-Chlorophenyl phenyl ether	ND		10	ug/L
Fluorene	ND		10	ug/L
4-Nitroaniline	ND		50	ug/L
4,6-Dinitro-2-methylphenol	ND		50	ug/L
N-Nitrosodiphenylamine	ND		10	ug/L
4-Bromophenyl phenyl ether	ND		10	ug/L
Hexachlorobenzene	ND		10	ug/L
Phenanthrene	ND		10	ug/L
Anthracene	ND		10	ug/L
Di-n-butyl phthalate	ND		10	ug/L
Fluoranthene	ND		10	ug/L
Pyrene	ND		10	ug/L
Butyl benzyl phthalate	ND		10	ug/L
3,3'-Dichlorobenzidine	ND		50	ug/L
Benzo(a)anthracene	ND		10	ug/L
bis(2-Ethylhexyl)-phthalate	0.84	J	10	ug/L
Chrysene	ND		10	ug/L
Di-n-octyl phthalate	ND		10	ug/L
Benzo(b)fluoranthene	ND		10	ug/L
Benzo(k)fluoranthene	ND		10	ug/L
Benzo(a)pyrene	ND		10	ug/L
Indeno(1,2,3-c,d)pyrene	ND		10	ug/L
Dibenz(a,h)anthracene	ND		10	ug/L
Benzo(g,h,i)perylene	ND		10	ug/L
2-Picoline	ND		20	ug/L
Ethyl methanesulfonate	ND		10	ug/L
Acetophenone	ND		10	ug/L
N-Nitrosopiperidine	ND		10	ug/L
a,a-Dimethylphenethyl-amine	ND		50	ug/L
2,6-Dichlorophenol	ND		10	ug/L
N-Nitroso-di-n-butylamine	ND		10	ug/L
1,2,4,5-Tetrachloro-benzene	ND		10	ug/L
Pentachlorobenzene	ND		10	ug/L
1-Naphthylamine	ND		10	ug/L
2-Naphthylamine	ND		10	ug/L
2,3,4,6-Tetrachlorophenol	ND		50	ug/L
Phenacetin	ND		20	ug/L
4-Aminobiphenyl	ND		50	ug/L
Pronamide	ND		20	ug/L
Pentachloronitrobenzene	ND		50	ug/L
p-Dimethylaminoazobenzene	ND		20	ug/L
7,12-Dimethylbenz(a)-anthracene	ND		20	ug/L

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

PRELIMINARY DATA
PENDING QC FINAL REVIEW AND APPROVAL

Semivolatile Organic Compounds
Appendix IX List
Method 8270

(cont.)

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 8-18-97
LAB ID: 127629-0001-SA
Matrix: AQUEOUS
Authorized: 20 AUG 97
Instrument: GC/MS-ME

Sampled: 18 AUG 97
Prepared: 21 AUG 97
Dilution: 1.0

Received: 20 AUG 97
Analyzed: 21 AUG 97

Parameter	Result	Qualifier	RL	Units
Benzidine	ND		100	ug/L
1-Chloronaphthalene	ND		10	ug/L
Dibenz(a,j)acridine	ND		20	ug/L

Surrogate	Recovery		Acceptable Range
2-Fluorophenol	39	%	21 - 100
Phenol-d5	22	%	10 - 94
Nitrobenzene-d5	64	%	34 - 114
2-Fluorobiphenyl	60	%	43 - 116
2,4,6-Tribromophenol	70	%	10 - 123
Terphenyl-d14	53	%	33 - 141

ND = Not Detected

PRELIMINARY DATA
PENDING QC, FINAL REVIEW AND APPROVAL

Semivolatile Organics
Selected Ion Monitoring
Method SW8270-SIM

Client Name:	Montgomery Watson Constructors, Inc.		
Client ID:	EFFLUENT 8-18-97		
LAB ID:	127629-0001-SA		
Matrix:	AQUEOUS	Sampled: 18 AUG 97	Received: 20 AUG 97
Authorized:	20 AUG 97	Prepared: 21 AUG 97	Analyzed: 28 AUG 97
Instrument:	GC/MS-MA	Prep Method: SW3510	Dilution: 1.0

Parameter	Result	Qualifier	RL	Units
Pentachlorophenol	ND		1.0	ug/L

= Not Detected

METALS
(Water)

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 8-28-97
LAB ID: 127823-0001-SA
Matrix: AQUEOUS Sampled: 28 AUG 97 Received: 29 AUG 97
Authorized: 29 AUG 97 Prepared: See Below Analyzed: See Below

Parameter	Result	Qual	DIL	RL	Units	Method	Prep Date	Analyzed Date
Arsenic	0.0044	J	1.0	0.010	mg/L	6010A	02 SEP 97	02 SEP 97
Beryllium	0.0013	JB	1.0	0.0050	mg/L	6010A	02 SEP 97	02 SEP 97
Cadmium	ND		1.0	0.0020	mg/L	6010A	02 SEP 97	02 SEP 97
Manganese	0.27		1.0	0.015	mg/L	6010A	02 SEP 97	02 SEP 97
Mercury	ND		1.0	0.00020	mg/L	SW7470	02 SEP 97	02 SEP 97
Selenium	ND		1.0	0.0050	mg/L	6010A	02 SEP 97	02 SEP 97
Thallium	ND		1.0	0.010	mg/L	6010A	02 SEP 97	02 SEP 97
Zinc	0.021	B	1.0	0.020	mg/L	6010A	02 SEP 97	02 SEP 97

B = Compound is also detected in the blank.
J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

GENERAL INORGANICS

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 8-28-97
LAB ID: 127823-0001-SA
Matrix: AQUEOUS — Sampled: 28 AUG 97 — Received: 29 AUG 9
Authorized: 29 AUG 97 — Prepared: See Below — Analyzed: See Belo

Parameter	Result	Qual	DIL	RL	Units	Method	Prep Date	Analyze Date
pH	8.1		1.0	NA	units	150.1	NA	29 AUG
Total Suspended Solids	ND		1.0	10.0	mg/L	E160.2	NA	29 AUG

ND = Not Detected

Volatile Organic Compounds
Method SW8260A

Client Name: Montgomery Watson Constructors, Inc.
Client ID: EFFLUENT 8-28-97
LAB ID: 127823-0001-SA
Matrix: AQUEOUS Sampled: 28 AUG 97 Received: 29 AUG 97
Authorized: 29 AUG 97 Prepared: 29 AUG 97 Analyzed: 29 AUG 97
Instrument: GC/MS-MF Dilution: 1.0

Parameter	Result	Qualifier	RL	Units
Benzene	0.75	J	1.0	ug/L
Bromobenzene	ND		1.0	ug/L
Bromochloromethane	ND		1.0	ug/L
Bromodichloromethane	ND		1.0	ug/L
Bromoform	ND		1.0	ug/L
Bromomethane	0.11	J	2.0	ug/L
n-Butylbenzene	ND		1.0	ug/L
sec-Butylbenzene	ND		1.0	ug/L
Carbon tetrachloride	ND		1.0	ug/L
Chlorobenzene	ND		1.0	ug/L
Chloroethane	ND		2.0	ug/L
Chloroform	ND		1.0	ug/L
Chloromethane	0.33	J	2.0	ug/L
2-Chlorotoluene	ND		1.0	ug/L
Dibromochloromethane	ND		1.0	ug/L
1,2-Dibromo-3-chloro-propane (DBCP)	ND		2.0	ug/L
1,2-Dibromoethane (EDB)	ND		1.0	ug/L
Dibromomethane	ND		1.0	ug/L
1,2-Dichlorobenzene	ND		1.0	ug/L
1,3-Dichlorobenzene	ND		1.0	ug/L
1,4-Dichlorobenzene	ND		1.0	ug/L
Dichlorodifluoromethane	ND		2.0	ug/L
1,1-Dichloroethane	ND		1.0	ug/L
1,2-Dichloroethane	ND		1.0	ug/L
1,1-Dichloroethene	ND		5.0	ug/L
cis-1,2-Dichloroethene	ND		1.0	ug/L
trans-1,2-Dichloroethene	ND		1.0	ug/L
1,2-Dichloropropane	ND		1.0	ug/L
1,3-Dichloropropane	ND		1.0	ug/L
2,2-Dichloropropane	ND		1.0	ug/L
1,1-Dichloropropene	ND		1.0	ug/L
Ethylbenzene	ND		1.0	ug/L
Hexachlorobutadiene	ND		1.0	ug/L
Isopropylbenzene	ND		1.0	ug/L
Isopropyltoluene	ND		1.0	ug/L
Methylene chloride	0.24	J	5.0	ug/L
Naphthalene	ND		1.0	ug/L
n-Propylbenzene	ND		1.0	ug/L
Styrene	ND		1.0	ug/L
1,1,1,2-Tetrachloroethane	ND		1.0	ug/L
1,1,2,2-Tetrachloroethane	ND		1.0	ug/L
Tetrachloroethene	ND		1.0	ug/L
Toluene	ND		1.0	ug/L

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Volatile Organic Compounds
Method SW8260A

(cont)

Client Name:	Montgomery Watson Constructors, Inc.		
Client ID:	EFFLUENT 8-28-97		
LAB ID:	127823-0001-SA		
Matrix:	AQUEOUS	Sampled: 28 AUG 97	Received: 29 AUG 97
Authorized:	29 AUG 97	Prepared: 29 AUG 97	Analyzed: 29 AUG 97
Instrument:	GC/MS-MP	Dilution: 1.0	

Parameter	Result	Qualifier	RL	Units
1,2,3-Trichlorobenzene	0.20	J	1.0	ug/L
1,2,4-Trichlorobenzene	ND		1.0	ug/L
1,1,1-Trichloroethane	ND		1.0	ug/L
1,1,2-Trichloroethane	ND		1.0	ug/L
Trichloroethene	0.54	J	1.0	ug/L
Trichlorofluoromethane	ND		2.0	ug/L
1,2,3-Trichloropropane	ND		1.0	ug/L
1,2,4-Trimethylbenzene	ND		1.0	ug/L
1,3,5-Trimethylbenzene	ND		1.0	ug/L
Vinyl chloride	ND		2.0	ug/L
m- & p-Xylenes	ND		1.0	ug/L
o-Xylene	ND		1.0	ug/L
Acetone	ND		10	ug/L
2-Butanone	ND		10	ug/L
4-Methyl-2-pentanone	ND		10	ug/L

Surrogate	Recovery		Acceptable Range
1,2-Dichloroethane-d4	95	%	80 - 120
Toluene-d8	97	%	80 - 120
Bromofluorobenzene	110	%	80 - 120

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Semivolatile Organics
Selected Ion Monitoring
Method SW8270-SIM

Client Name:	Montgomery Watson Constructors, Inc.		
Client ID:	EFFLUENT 8-28-97		
LAB ID:	127823-0001-SA		
Matrix:	AQUEOUS	Sampled: 28 AUG 97	Received: 29 AUG 97
Authorized:	29 AUG 97	Prepared: 29 AUG 97	Analyzed: 04 SEP 97
Instrument:	GC/MS-MA	Dilution: 1.0	

Parameter	Result	Qualifier	RL	Units
Pentachlorophenol	ND		1.0	ug/L

ND = Not Detected

APPENDIX F

BWES DATA

ACS
Groundwater Treatment Plant - SVOCs

GW Source	Date	N-Nitrosodimethylamine	Aniline	Phenol	bis (2-Chloroethyl) ether	2-Chlorophenol	1,3-Dichlorobenzene
EW #10	18-Aug-97	ND	ND	109	32	ND	ND
EW #12	24-Sep-97	ND	ND	235	45.6	ND	ND
EW #13	11-Jun-97	ND	ND	ND	2600	ND	ND
EW #15	20-Aug-97	ND	ND	10	6.0	ND	2.1
EW #16	20-Aug-97	ND	ND	1.5	3.3	ND	ND
EW #17	19-Aug-97	ND	ND	7.2	ND	ND	ND
EW #18	18-Aug-97	ND	ND	17	182	ND	2.1

GW Source	Date	1,4-Dichlorobenzene	Benzyl alcohol	1,2-Dichlorobenzene	2-Methylphenol	bis(2-Chloroisopropyl) -ether	3/4 - Methylphenol
EW #10	18-Aug-97	ND	ND	ND	ND	ND	24
EW #12	24-Sep-97	ND	ND	ND	285	ND	1270
EW #13	11-Jun-97	ND	ND	ND	ND	ND	ND
EW #15	20-Aug-97	12	ND	71	ND	ND	ND
EW #16	20-Aug-97	2.4	ND	14	ND	8.2	ND
EW #17	19-Aug-97	ND	ND	ND	ND	ND	ND
EW #18	18-Aug-97	11	ND	94	ND	156	76

GW Source	Date	N-Nitroso-di-n-propylamine	Hexachloroethane	Nitrobenzene	Isophorone	2-Nitrophenol	2,4-Dimethylphenol
EW #10	18-Aug-97	ND	ND	ND	23	ND	23
EW #12	24-Sep-97	ND	ND	ND	1.9	ND	1570
EW #13	11-Jun-97	ND	ND	ND	15000	ND	ND
EW #15	20-Aug-97	ND	ND	ND	1.2	ND	14
EW #16	20-Aug-97	ND	ND	ND	0.9	ND	ND
EW #17	19-Aug-97	ND	ND	ND	ND	ND	ND
EW #18	18-Aug-97	ND	ND	ND	5.1	ND	45

GW Source	Date	Benzoic acid	bis(2-Chloroethoxy)-methane	2,4-Dichlorophenol	1,2,4-Trichlorobenzene	Naphthalene	4-Chloroaniline
EW #10	18-Aug-97	ND	ND	ND	ND	2.1	ND
EW #12	24-Sep-97	ND	ND	ND	ND	1.2	ND
EW #13	11-Jun-97	ND	ND	ND	ND	200	ND
EW #15	20-Aug-97	ND	ND	ND	ND	1190	ND
EW #16	20-Aug-97	ND	ND	ND	ND	37	ND
EW #17	19-Aug-97	ND	ND	ND	ND	ND	ND
EW #18	18-Aug-97	ND	ND	ND	29	43	ND

GW Source	Date	Hexachlorobutadiene	2,4,6-Trichlorophenol	2,4,5-Trichlorophenol	2-Chloroaniline	2-Nitroaniline	Dimethyl phthalate
EW #10	18-Aug-97	ND	ND	ND	ND	ND	ND
EW #12	24-Sep-97	ND	ND	ND	ND	ND	ND
EW #13	11-Jun-97	ND	ND	ND	ND	ND	550
EW #15	20-Aug-97	ND	ND	ND	ND	ND	ND
EW #16	20-Aug-97	ND	ND	ND	ND	ND	ND
EW #17	19-Aug-97	ND	ND	ND	ND	ND	ND
EW #18	18-Aug-97	ND	ND	ND	ND	ND	ND

ACS
ndwater Treatment Plant - SVOCs

GW Source	Date	Acenaphthylene	3-Nitroaniline
EW #10	18-Aug-97	ND	ND
EW #12	24-Sep-97	ND	ND
EW #13	11-Jun-97	ND	ND
EW #15	20-Aug-97	ND	ND
EW #16	20-Aug-97	ND	ND
EW #17	19-Aug-97	ND	ND
EW #18	18-Aug-97	ND	ND

GW Source	Date	2,6-Dinitrotoluene	Diethyl phthalate
EW #10	18-Aug-97	ND	ND
EW #12	24-Sep-97	ND	ND
EW #13	11-Jun-97	ND	0.00
EW #15	20-Aug-97	ND	1.2
EW #16	20-Aug-97	ND	ND
EW #17	19-Aug-97	ND	ND
EW #18	18-Aug-97	ND	20

GW Source	Date	4,6-Dinitro-2-methylphenol	N-Nitrosodiphenylamine
EW #10	18-Aug-97	ND	ND
EW #12	24-Sep-97	ND	ND
EW #13	11-Jun-97	ND	ND
EW #15	20-Aug-97	ND	ND
EW #16	20-Aug-97	ND	ND
EW #17	19-Aug-97	ND	ND
EW #18	18-Aug-97	ND	ND

GW Source	Date	Di-n-butyl phthalate	Fluoranthene
EW #10	18-Aug-97	29	ND
EW #12	24-Sep-97	ND	ND
EW #13	11-Jun-97	ND	ND
EW #15	20-Aug-97	0.6	ND
EW #16	20-Aug-97	ND	ND
EW #17	19-Aug-97	ND	ND
EW #18	18-Aug-97	28	ND

GW Source	Date	bis(2-Ethylhexyl) - phthalate	Chrysene
EW #10	18-Aug-97	ND	ND
EW #12	24-Sep-97	ND	ND
EW #13	11-Jun-97	ND	ND
EW #15	20-Aug-97	ND	ND
EW #16	20-Aug-97	ND	ND
EW #17	19-Aug-97	ND	ND
EW #18	18-Aug-97	ND	ND

Grou	2,4-Dinitrophenol	4-Nitrophenol	Dibenzofuran	2,4-Dinitrotoluene
	ND	ND	ND	ND
	ND	ND	ND	ND
	ND	ND	ND	ND
	ND	ND	ND	ND
	ND	ND	ND	ND
	ND	ND	ND	ND
	ND	ND	ND	ND

	1,2-Diphenylhydrazine	4-Chlorophenyl phenyl ether	Fluorene	4-Nitroaniline
	ND	ND	ND	ND
	ND	ND	ND	ND
	ND	ND	ND	ND
	ND	ND	1.1	ND
	ND	ND	ND	ND
	ND	ND	ND	ND
	ND	ND	ND	ND

	4-Bromophenyl phenyl ether	Hexachlorobenzene	Phenanthrene	Anthracene
	ND	ND	ND	ND
	ND	ND	ND	ND
	ND	ND	ND	ND
	ND	ND	0.2	ND
	ND	ND	ND	ND
	ND	ND	0.2	ND
	ND	ND	0.2	ND

	Pyrene	Butyl benzyl phthalate	3,3'-Dichlorobenzidene	Benzo(a)anthracene
	ND	ND	ND	ND
	ND	ND	ND	ND
	ND	ND	ND	ND
	ND	ND	ND	ND
	ND	ND	ND	ND
	ND	ND	ND	ND
	ND	ND	ND	ND

	Di-n-octyl phthalate	Benzo(b) fluoranthene	Benzo(k) fluoranthene	Benzo(a) pyrene
	ND	ND	ND	ND
	ND	ND	ND	ND
	ND	ND	ND	ND
	ND	ND	ND	ND
	ND	ND	ND	ND
	ND	ND	ND	ND
	ND	ND	ND	ND

ACS
Groundwater Treatment Plant - SVOCs

GW Source	Date	Indeno (1,2,3-c,d) pyrene	Dibenz(a,h) anthracene	Benzo(g,h,i) perylene	2-Picoline	Ethyl methanesulfonate	Acetophenone
EW #10	18-Aug-97	ND	ND	ND	ND	ND	ND
EW #12	24-Sep-97	ND	ND	ND	ND	ND	ND
EW #13	11-Jun-97	ND	ND	ND	ND	ND	ND
EW #15	20-Aug-97	ND	ND	ND	ND	ND	ND
EW #16	20-Aug-97	ND	ND	ND	ND	ND	ND
EW #17	19-Aug-97	ND	ND	ND	ND	ND	ND
EW #18	18-Aug-97	ND	ND	ND	ND	ND	ND

GW Source	Date	N-Nitrosopiperidine	a,a-Dimethylphenethyl-amine	2,6_Dichlorophenol	N-Nitroso-di-n-butylamine	1,2,4,5-Tetrachloro-benzene	Pentachlorobenzene
EW #10	18-Aug-97	ND	ND	ND	ND	ND	ND
EW #12	24-Sep-97	ND	ND	ND	ND	ND	ND
EW #13	11-Jun-97	ND	ND	ND	ND	ND	ND
EW #15	20-Aug-97	ND	ND	ND	ND	ND	ND
EW #16	20-Aug-97	ND	ND	ND	ND	ND	ND
EW #17	19-Aug-97	ND	ND	ND	ND	ND	ND
EW #18	18-Aug-97	ND	ND	ND	ND	ND	ND

GW Source	Date	1-Naphthylamine	2-Naphthylamine	2,3,4,6-Tetrachlorophenol	Phenacetin	4-Aminobiphenyl	Pronamide
EW #10	18-Aug-97	ND	ND	ND	ND	ND	ND
EW #12	24-Sep-97	ND	ND	ND	ND	ND	ND
EW #13	11-Jun-97	ND	ND	ND	ND	ND	ND
EW #15	20-Aug-97	ND	ND	ND	ND	ND	ND
EW #16	20-Aug-97	ND	ND	ND	ND	ND	ND
EW #17	19-Aug-97	ND	ND	ND	ND	ND	ND
EW #18	18-Aug-97	ND	ND	ND	ND	ND	ND

GW Source	Date	Pentachloronitrobenzene	p-Dimethylaminoazobenzene	7,12-Dimethylbenz(a)-anthracene	Benzidene	1-Chloronaphthalene	Dibenz(a,j) acridine
EW #10	18-Aug-97	ND	ND	ND	ND	ND	ND
EW #12	24-Sep-97	ND	ND	ND	ND	ND	ND
EW #13	11-Jun-97	ND	ND	ND	ND	ND	ND
EW #15	20-Aug-97	ND	ND	ND	ND	ND	ND
EW #16	20-Aug-97	ND	ND	ND	ND	ND	ND
EW #17	19-Aug-97	ND	ND	ND	ND	ND	ND
EW #18	18-Aug-97	ND	ND	ND	ND	ND	ND

GW Source	Date	2_Fluorophenol	Phenol-d5	Nitrobenzene-d5	2-Fluorobiphenyl	2,4,6-Tribromophenol	Terphenyl-d14
EW #10	18-Aug-97	ND	ND	ND	ND	ND	ND
EW #12	24-Sep-97	ND	ND	ND	ND	ND	ND
EW #13	11-Jun-97						
EW #15	20-Aug-97	ND	ND	ND	ND	ND	ND
EW #16	20-Aug-97	ND	ND	ND	ND	ND	ND
EW #17	19-Aug-97	ND	ND	ND	ND	ND	ND
EW #18	18-Aug-97	ND	ND	ND	ND	ND	ND

ACB
Groundwater Treatment Plant - SVOCs

GW Source	Date	Pentachlorophenol
EW #10	18-Aug-97	ND
EW #12	24-Sep-97	ND
EW #13	11-Jun-97	
EW #15	20-Aug-97	0.5
EW #16	20-Aug-97	ND
EW #17	19-Aug-97	ND
EW #18	18-Aug-97	ND

ACS
Groundwater Treatment Plant - VOCs

GW Source	Date	Benzene	Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform	Bromomethane
EW #10	18-Aug-97	1960	ND	ND	ND	ND	ND
EW #12	24-Sep-97	2800	ND	ND	ND	ND	ND
EW #13	11-Jun-97	3500	ND	ND	ND	ND	ND
EW #15	20-Aug-97	5410	ND	ND	ND	ND	ND
EW #16	20-Aug-97	1830	ND	ND	ND	ND	ND
EW #17	19-Aug-97	770	ND	ND	ND	ND	ND
EW #18	18-Aug-97	7220	ND	ND	ND	ND	ND

GW Source	Date	n-Butylbenzene	sec-Butylbenzene	Carbon tetrachloride	Chlorobenzene	Chloroethane	Chloroform
EW #10	18-Aug-97	ND	ND	ND	14.6	860	5.5
EW #12	24-Sep-97	ND	ND	ND	ND	ND	130
EW #13	11-Jun-97	ND	ND	ND	ND	670 J	ND
EW #15	20-Aug-97	ND	ND	ND	ND	ND	287
EW #16	20-Aug-97	ND	ND	ND	ND	ND	ND
EW #17	19-Aug-97	ND	ND	ND	1270	ND	ND
EW #18	18-Aug-97	ND	ND	ND	18.1	1330	24.0

GW Source	Date	Chloromethane	2-Chlorotoluene	Dibromochloromethane	1,2-Dibromo-3-chloro-propane (DBCP)	1,2-Dibromomethane (EDB)	Dibromomethane
EW #10	18-Aug-97	ND	ND	ND	ND	ND	ND
EW #12	24-Sep-97	5.2	ND	ND	ND	ND	ND
EW #13	11-Jun-97	ND	ND	ND	ND	ND	ND
EW #15	20-Aug-97	ND	ND	ND	ND	ND	ND
EW #16	20-Aug-97	ND	ND	ND	ND	ND	ND
EW #17	19-Aug-97	ND	ND	ND	ND	ND	ND
EW #18	18-Aug-97	ND	ND	ND	ND	ND	ND

GW Source	Date	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	Dichlorodifluoromethane	1,1-Dichloroethane	1,2-Dichloroethane
EW #10	18-Aug-97	ND	ND	ND	ND	19.9	6.2
EW #12	24-Sep-97	ND	ND	ND	ND	676	346
EW #13	11-Jun-97	ND	ND	ND	ND	130 J	1200
EW #15	20-Aug-97	ND	ND	ND	ND	889	24.2
EW #16	20-Aug-97	ND	ND	ND	ND	139	ND
EW #17	19-Aug-97	ND	ND	ND	ND	ND	ND
EW #18	18-Aug-97	ND	ND	ND	ND	903	27.9

ACS
Groundwater Treatment Plant - VOCs

GW Source	Date	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	1,2-Dichloropropane	1,3-Dichloropropane	2,2-Dichloropropane
EW #10	18-Aug-97	ND	47.9	ND	ND	ND	ND
EW #12	24-Sep-97	101	ND	15.9	ND	ND	ND
EW #13	11-Jun-97	ND	2700	ND	220	ND	ND
EW #15	20-Aug-97	ND	2970	ND	ND	ND	ND
EW #16	20-Aug-97	ND	3090	ND	ND	ND	ND
EW #17	19-Aug-97	ND	ND	ND	ND	ND	ND
EW #18	18-Aug-97	45.3	10600	29.2	ND	ND	ND

GW Source	Date	1,1-Dichloropropene	Ethylbenzene	Hexachlorobutadiene	Isopropylbenzene	Isopropyltoluene	Methylene chloride
EW #10	18 Aug 97	ND	619	ND	ND	ND	4.3
EW #12	24 Sep 97	ND	206	ND	ND	ND	ND
EW #13	11 Jun 97	ND	1200	ND	ND	ND	360
EW #15	20 Aug 97	ND	4470	ND	ND	ND	84.1
EW #16	20 Aug 97	ND	408	ND	ND	ND	97.0
EW #17	19 Aug 97	ND	346	ND	ND	ND	ND
EW #18	18 Aug 97	ND	1460	ND	ND	ND	156

GW Source	Date	Naphthalene	n Propylbenzene	Styrene	1,1,1,2 Tetrachloroethane	1,1,2,2 Tetrachloroethane	Tetrachloroethene
EW #10	18 Aug 97	ND	ND	ND	ND	ND	5.9
EW #12	24 Sep 97	ND	ND	ND	ND	ND	107
EW #13	11 Jun 97	ND	ND	ND	ND	ND	ND
EW #15	20 Aug 97	ND	ND	ND	ND	ND	ND
EW #16	20 Aug 97	ND	ND	ND	ND	ND	ND
EW #17	19 Aug 97	ND	ND	ND	ND	ND	ND
EW #18	18 Aug 97	ND	ND	ND	ND	ND	16.4

GW Source	Date	Toluene	1,2,3-Trichlorobenzene	1,2,4-Trichlorobenzene	1,1,1-Trichloroethane	1,1,2-Trichloroethene	Trichloroethene
EW #10	18-Aug-97	1320	ND	ND	3.8	ND	8.4
EW #12	24-Sep-97	1880	ND	ND	390	13.2	144
EW #13	11-Jun-97	8400	ND	ND	ND	ND	430
EW #15	20-Aug-97	9600	ND	ND	877	ND	ND
EW #16	20-Aug-97	715	ND	ND	95.7	ND	ND
EW #17	19-Aug-97	175	ND	ND	ND	ND	ND
EW #18	18-Aug-97	3390	ND	ND	207	ND	10.7

ACS

Groundwater Treatment Plant - VOCs

GW Source	Date	Trichlorofluoromethane	1,2,3-Trichloropropane	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Vinyl chloride	m- & p-Xylenes
EW #10	18-Aug-97	ND	ND	ND	ND	26.3	ND
EW #12	24-Sep-97	ND	ND	ND	ND	122	ND
EW #13	11-Jun-97	ND	ND	320	ND	ND	5000
EW #15	20-Aug-97	ND	ND	ND	ND	1400	ND
EW #16	20-Aug-97	ND	ND	ND	ND	1050	ND
EW #17	19-Aug-97	ND	ND	ND	ND	ND	ND
EW #18	18-Aug-97	ND	ND	ND	ND	1630	ND

GW Source	Date	o-Xylene	Acetone	2-Butanone	4-Methyl-2-pentanone
EW #10	18-Aug-97	ND	ND	ND	ND
EW #12	24-Sep-97	ND	2000	2750	ND
EW #13	11-Jun-97	2000	14000	49000	46000
EW #15	20-Aug-97	ND	ND	ND	ND
EW #16	20-Aug-97	ND	ND	ND	ND
EW #17	19-Aug-97	ND	1080	ND	ND
EW #18	18-Aug-97	ND	9320	ND	ND

ACS
Groundwater Treatment Plant - Conventionals

GW Source	Date	pH	TSS	BOD	COD
EW #10	18-Aug-97	6.97	100		157
EW #12	24-Sep-97	7.81	88		447
EW #13	05-Jun-97			1600	4370
EW #13	11-Jun-97	6.5	143		
EW #15	20-Aug-97	6.74	112		157
EW #16	20-Aug-97	6.99	44		30
EW #17	19-Aug-97	7.16	594		596
EW #18	18-Aug-97	6.79	96		303

ACS

Groundwater Treatment Plant - Metals

GW Source	Date	Calcium	Arsenic	Beryllium	Cadmium	Iron	Manganese
EW #10	18-Aug-97	101	ND	ND	ND	16.4	1.20
EW #12	24-Sep-97	94.9	ND	ND	ND	6	0.56
EW #13	05-Jun-97					97.9	
EW #15	20-Aug-97	149	ND	ND	ND	27.4	1.92
EW #16	20-Aug-97	119	ND	ND	ND	6.99	3.19
EW #17	19-Aug-97	172	ND	ND	ND	12.3	2.29
EW #18	18-Aug-97	184	ND	ND	ND	41	1.65

GW Source	Date	Potassium	Mercury	Selenium	Thallium	Zinc
EW #10	18-Aug-97	8.92	ND	ND	ND	ND
EW #12	24-Sep-97	43.8	ND	ND	ND	ND
EW #13	05-Jun-97					
EW #15	20-Aug-97	4.92	ND	ND	ND	ND
EW #16	20-Aug-97	4.95	ND	ND	ND	ND
EW #17	19-Aug-97	20.2	ND	ND	ND	ND
EW #18	18-Aug-97	11.7	ND	ND	ND	ND

ACS
Groundwater Treatment Plant - PCBs

GW Source	Date	PCB1221	PCB1232	PCB 1016 (1242)	PCB 1248	PCB 1254	PCB 1260	Total PCB
EW #10	18-Aug-97	ND	ND	0.64	ND	0.49	0.15	1.28
EW #12	24-Sep-97	ND	ND	ND	ND	ND	ND	ND
EW #15	20-Aug-97	ND	ND	0.37	ND	0.43	0.10	0.90
EW #16	20-Aug-97	ND	ND	ND	ND	ND	ND	ND
EW #17	19-Aug-97	ND	ND	0.16	ND	0.16	ND	0.32
EW #18	18-Aug-97	ND	ND	ND	ND	ND	ND	ND