Engineers
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Portland Office

November 21, 1994

OPE39435.C5.A1

Wacker Siltronic Corporation
7200 N.W. Front Ave
Portland OR 97210

Attention: Thomas McCue/Environmental Health and Safety Manager
Chip Bloomer/Environmental Engineer

Subject: Management Plan for Excavated Soil at the Wacker Fab 2 Facility

Attached is the Management Plan for Excavated Soil at the Wacker Fab 2 Facility. As requested by Wacker, the electronic version of this management plan including CH2M HILL's Health and Safety Plan (HASP) is also attached.

The management plan was written by CH2M HILL for Wacker Siltronic Corporation (Wacker). A draft version of the document, dated October 1994, was modified to address comments listed in the memorandum to Jack Payne/IDC from Chip Bloomer/Wacker dated November 2, 1994. These comments have been resolved and, where appropriate, incorporated into the final document.

This management plan has been prepared exclusively for the use of Wacker for specific application to excavated soil management during construction of the Wacker Fab 2 Facility, in accordance with generally accepted engineering practice. No other warranty, express or implied, is made. The analysis and interpretation contained in this report are based on data available at the time of preparation. CH2M HILL is not responsible for any claims, damages, or liability associated with interpretation of soil management practices, reuse, or modifications of the plan.

Modifications to the electronic version of the Management Plan for Excavated Soil or the HASP will be done at the sole risk and responsibility of Wacker.

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SCOEPA00021846

Sincerely,

CH2M HILL

John L. Childs

John L. Childs, P.E.
Project Manager

c: Jack Payne/IDC w/o electronic file
Dick Crim/CH2M HILL w/o electronic file

Management Plan for Excavated Soil at the Wacker Fab 2 Facility

Prepared for
Wacker Siltronic Corporation
Portland, Oregon

Prepared by

CH2M HILL

November 1994

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Introduction

Purpose of Document

The purpose of this excavated soil management plan is to describe the procedures necessary to handle, characterize, and dispose of excavated soil during site work for the Fab 2 project at the Wacker Siltronic site in Portland, Oregon.

Background

Wacker Siltronic Corporation is located at the west end of Front Street in the northwest part of Portland, Oregon, and manufactures high-purity silicon wafers, the raw material for the electronics industry. Environmental studies of the site have shown that some of the existing soil onsite is contaminated with volatile organic compounds (VOCs) and semi-VOCs.

The Fab 2 structure is rectangular shaped, approximately 200 by 325 feet on a side, and will consist of a three-story building and associated support facilities. Contaminated soil may be encountered during construction of underground utilities.

In June 1990, Wacker sampled the site using a two-phase approach. The Phase 1 investigation consisted of sampling subsurface soils for chemical analysis during geotechnical drilling. The Phase 2 investigation consisted of sampling groundwater and soil gas using probes pushed below the top of the groundwater table.

Excavation Activities

Soil Management

Contaminated soils may be generated during subsurface excavation activities. Installation of underground utilities and excavation of two elevator shafts are potential activities that could generate contaminated soils. Wacker staff will oversee the excavation activities and will determine whether the soil has potential contamination.

If Wacker staff determine that a soil is potentially contaminated, then the soil management program will be implemented. The contractor will excavate soil under the guidance of Wacker staff using this waste management plan.

Potentially contaminated soil that is excavated as part of the building construction will be placed into roll-off boxes that will be used to stage the waste onsite as defined in 40 CFR 265.170 through 265.177, Subpart I. Roll-off boxes of the waste shall, at a minimum, meet the following requirements:

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- Be in good condition and be free of rust and structural defects and be leakproof and infiltration proof
- Be closed during storage except to add or remove waste
- Be inspected at least once per week while staged onsite for leaking or deterioration of containers
- Shall not contain free liquids
- Be placed in an area that will drain and remove precipitation, or be elevated or protected from contact with accumulated liquid
- Be cleaned of all waste and decontaminated prior to demobilization of the roll-off boxes

Containers used to store waste generated during the construction excavations shall be labeled with the words "Potential Hazardous Waste" and with the date that the waste was placed in the container. Hazardous waste shall be staged onsite for less than 90 days, in accordance with 40 CFR 262.34. Solid waste shall be staged for less than 30 days, in accordance with DEQ policy. If solid waste is required to be staged for more than 30 days, DEQ will be notified.

Training Requirements

Personnel associated with excavation, utility construction, handling, or exposure to potentially contaminated soil at the Wacker Fab 2 facility should follow hazardous waste operations and emergency response procedures as defined in 29 CFR 1910.120. The CH2M HILL Health and Safety Plan is provided in Appendix A.

Waste Characterization

Sampling Procedure

Each roll-off box will be individually sampled, and the samples will be analyzed for disposal purposes. The sampling and analysis will determine whether the waste is characterized as a solid waste or hazardous waste. To collect a representative sample for proper characterization, a systematic-random, two-dimensional sampling grid will be used. One representative sample will be collected from each roll-off box.

Each roll-off box will be numbered consecutively and divided into six grids (Figure 1). One-third of the sample volume will be collected from grid locations 1, 2, and 3. The locations of grids 1, 2, and 3 will be determined by matching the roll-off box number with the grid locations, as shown on Figure 1. For example, roll-off box number 4 will be sampled from

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grids located in the upper right corner (1), lower left corner (2), and the grid located in the middle on the right side (3) (Figure 1).

Soil samples will be collected using disposable stainless steel spoons. A new spoon shall be used at each grid location in each roll-off box. Each sample will be prepared as specified in the Analytical Methods section of this plan. Each sample will be labeled using the following notation:

WSC-BOX #
01/01/00
Sampled by:

where,

WSC = Wacker Siltronic Corporation
BOX # = Roll-off box number (1,2,3...)
01/01/00 = Date of Sample Collection
Sampled by = Person collecting sample

After each representative sample has been collected and labeled, the sample jar will be placed in a Ziploc bag and secured. Each sample will be placed in a metal or plastic cooler and cooled to 4°Celsius. Samples will be delivered to the analytical laboratory using chain-of-custody procedures.

Analytical Methods

Analysis of each sample will be conducted in a phased approach. The first phase of characterization will determine whether the soil is a hazardous waste. The second phase will determine whether the soil can potentially be accepted at the Hillsboro Landfill. A summary of analytical methods, sample containers, and holding times is shown in Table 1. One 16-ounce glass sample container will be sufficient to perform the analyses of Phase 1 and Phase 2.

Phase 1 will include toxicity characteristic leaching procedure (TCLP) extraction using EPA Method 1311 and analysis of benzene and 2,4-D using EPA Method 8020 and EPA Method 8150, respectively. The 2,4-D herbicide will be analyzed as part of the characterization process because of the historical presence of 2,4-D on adjacent sites. The material should also be analyzed to determine the flash point of the waste, using EPA Method 1010, and pH, using EPA Method 9040. If the waste meets any of the following criteria, it must be handled and disposed of as a RCRA hazardous waste in accordance with 40 CFR 268.

- TCLP benzene greater than 0.5 mg/kg
- TCLP 2,4-D greater than 10 mg/kg
- Flash point below 140°Fahrenheit
- pH less than or equal to 2 or greater than or equal to 12.5

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ROLL-OFF BOX NO.	GRID	
1	2	1
	5	6
	3	4
2	3	1
	4	5
	2	6
3	1	4
	2	6
	5	3
4	6	1
	5	3
	2	4
5	6	3
	1	5
	4	2

ROLL-OFF BOX NO.	GRID	
6	4	3
	1	2
	6	5
7	5	1
	4	6
	2	3
8	5	1
	6	4
	2	3
9	6	4
	3	2
	5	1
10	5	3
	6	1
	2	4

Figure 1
SCHEMATIC-RANDOM NUMBER SAMPLING SCHEMATIC
WACKER SILTRONIC CORPORATION
PORTLAND, OREGON

CH2MHILL

9435FG01.DWG

Table 1 Analytical Summary				
Analysis	**Analytical Method (EPA)**	**Sample Container**	**Preservative**	**Holding Time**
Phase 1				
TCLP benzene	1311/8020 or 1311/8240	16-ounce glass	None	14 days to extraction and 14 days to analysis
TCLP 2,4-D	1311/8150	16-ounce glass	None	14 days to extraction, 7 days to solvent extraction, and 40 days to analysis
Flash point	1010	16-ounce glass	None	14 days
pH	9040	16-ounce glass	None	Analyze immediately
Phase 2				
TPH-G	Oregon TPH-gasoline	16-ounce glass	None	14 days
TPH-D	418.1 modified	16-ounce glass	None	14 days

If the material meets none of these criteria, it should be handled and disposed as a solid waste. Phase 2 analysis will include testing required for acceptance at a solid waste landfill in Oregon. Phase 2 consists of TPH analysis. TPH-gasoline will be quantified using Oregon TPH-G; diesel and heavy oil will be quantified using EPA Method 418.1. Laboratory results from each characterization sample will indicate the disposal method for the material contained in the respective roll-off box.

Waste Disposal

Hazardous Waste

If analytical results indicate that the waste is hazardous, or exceeds the criteria for Hillsboro Landfill, the soil should be disposed of at a RCRA permitted landfill in accordance with 40 CFR 268. Wacker Siltronic has approved the Chemical Waste Management (CWM) hazardous waste landfill, located in Arlington, Oregon. A disposal application and a sample of the soil should be submitted to Chemical Waste Management as early as possible. Approval of the landfill application can take up to 3 weeks.

Solid Waste

In order to dispose of the soil as solid waste, laboratory analysis must indicate, at a minimum, all of the following:

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- EPA 418.1 <50,000 milligrams per kilogram (mg/kg)
- Oregon TPH-Gasoline <10,000 mg/kg
- TCLP benzene <0.5 mg/L
- TCLP 2,4-D <10 mg/L
- Flash point >140°F

Wacker has approved the Hillsboro Landfill, located in Hillsboro, Oregon, as an acceptable solid waste landfill. In addition to the analytical criteria listed above, a Hillsboro Landfill application must be completed and approved by landfill staff in order to dispose of material at the landfill.

At the time of disposal, Wacker may choose to investigate costs for disposal of petroleum-contaminated soil at a low temperature thermal desorption unit.

Disposal Costs

Estimated unit excavation, transportation, and disposal costs are outlined in a memorandum from Dave Dailer, CH2M HILL, to Jack Payne, IDC, dated August 12, 1994. As described in the memorandum, costs for excavation, transportation, and disposal of solid waste is estimated at $80 to $100 per ton; and excavation, transportation, and disposal of hazardous waste is estimated at $200 to $250 per ton.

New Regulations

In the September 19, 1994, Federal Register, EPA finalized Phase II of the Land Disposal Restrictions (LDRs) for new and existing waste, effective December 19, 1994. The LDRs established stringent standards prescribing how hazardous wastes must be treated before they can be disposed in or on the land.

Currently there are no treatment standards for benzene or 2,4-D characteristic hazardous waste. Therefore, benzene and 2,4-D characteristic hazardous waste can be landfilled without treatment. Beginning December 19, 1994, benzene and 2,4-D will be required to undergo treatment prior to disposal. In addition, if a waste is hazardous, underlying hazardous constituents will be required to meet the universal treatment standard listed in 40 CFR 268.48.

References

Bensen, Jill. Letter to Michael J. Downs. June 14, 1990.

Bensen, Jill. Letter to John Pittman. March 27, 1991.

Bensen, Jill. Technical memorandum to Bill Matsukado. January 24, 1991.

CH2M HILL Site Safety Plan for Wacker Siltronic Corporation. June 4, 1990.

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Downs, Mike. Letter to Christy Shoen. June 7, 1990.

Shoen, Christy. Letter to Michael J. Downs. May 22, 1990.

Shoen, Christy. Letter to Michael J. Downs. August 21, 1990.

Shoen, Christy. Letter to Bill Matsukado. August 3, 1990.

Shoen, Christy. Letter to Bill Matsukado. September 19, 1990.

Shoen, Christy. Memorandum to John Pittman. June 28, 1990.

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Appendix A
CH2M HILL Health and Safety Plan

CH2M HILL HEALTH AND SAFETY PLAN

This plan will be kept onsite during field activities and will be reviewed and updated as necessary. This plan adopts, by reference, the standards of practice (SOP) contained in the CH2M HILL *Corporate Health and Safety Program, Program and Training Manual, Volumes 1 and 2,* and other applicable CH2M HILL SOPs as appropriate. The Site Safety Coordinator (SSC) is to be familiar with these SOPs. In addition, this plan adopts procedures contained in the work plan for the project.

1.0 PROJECT INFORMATION AND DESCRIPTION

CLIENT OR OWNER: Wacker Siltronics Corporation **PROJECT NO:** OPE39~~43~~5.C5.A2

PROJECT MANAGER: John Childs/PDX **OFFICE:** PDX

SITE NAME: Wacker-Proposed FAB 2 Facility

SITE ADDRESS: 7200 NW Front Avenue, Portland, OR

DATE HEALTH AND SAFETY PLAN PREPARED: October 11, 1994

DATE(S) OF INITIAL VISIT: June 1990

DATE(S) OF SITE WORK:

SITE ACCESS:

SITE SIZE:

SITE TOPOGRAPHY:

SITE DESCRIPTION AND HISTORY: An oily substance was noted in 1977 soil boring logs. These borings were conducted to collect design information for the existing Process and Headquarters buildings that are located to the north of the proposed FAB 2 structure. Soil borings were drilled in 1990 at locations within the footprint of the proposed FAB 2 structure. Results indicated the presence of BTEX and PAH materials in the soil.

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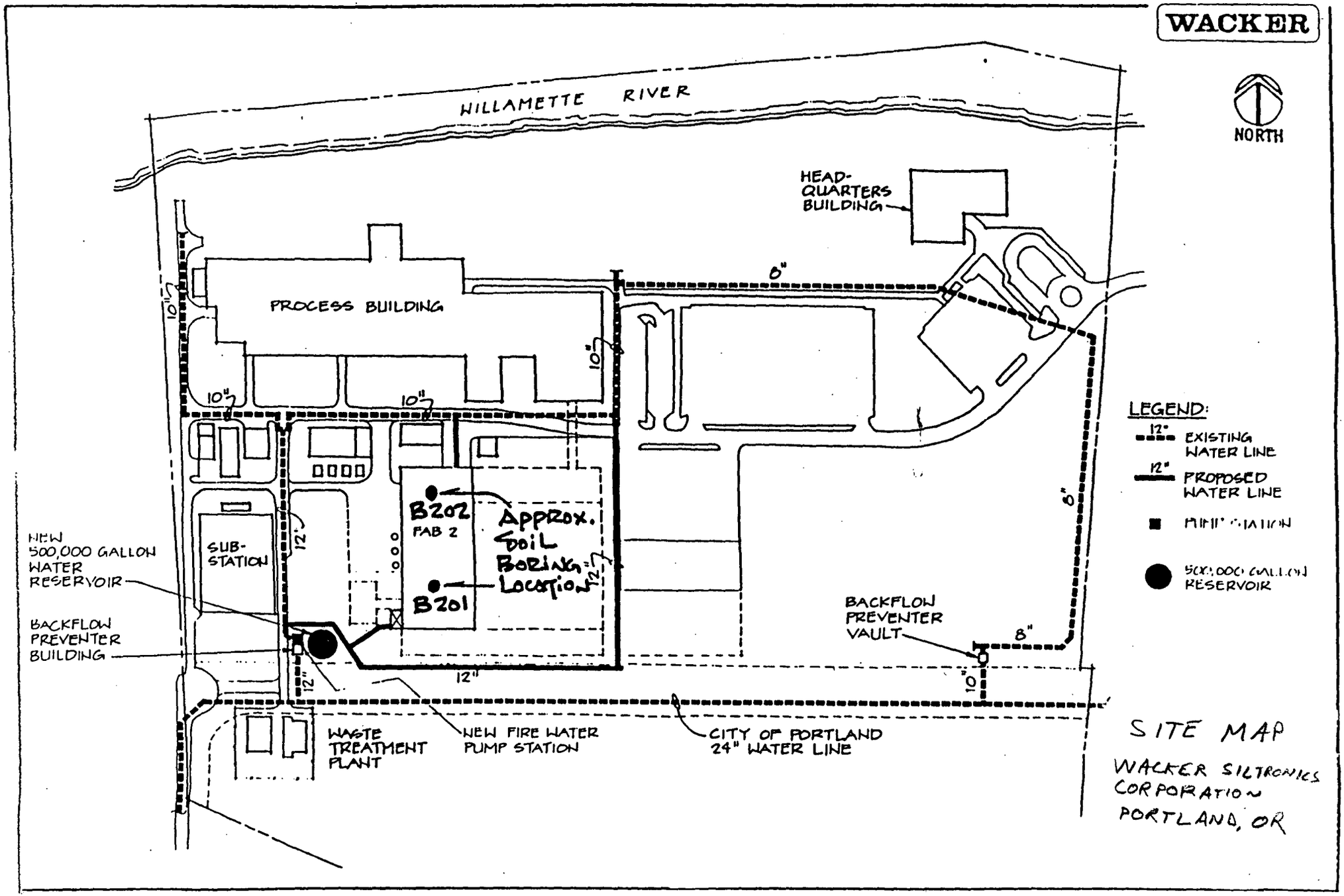
WACKER
WILLAMETTE RIVER
NORTH
HEAD-QUARTERS BUILDING
PROCESS BUILDING
10"
10"
10"
10"
6"
8"
8"
10"
12"
12"
12"
12"
B202
FAB 2
Approx. Soil Boring Location
B201
SUB-STATION
NEW 500,000 GALLON WATER RESERVOIR
BACKFLOW PREVENTER BUILDING
BACKFLOW PREVENTER VAULT
WASTE TREATMENT PLANT
NEW FIRE WATER PUMP STATION
CITY OF PORTLAND 24" WATER LINE
LEGEND:
12" EXISTING WATER LINE
12" PROPOSED WATER LINE
MONITORING WELL
500,000 GALLON RESERVOIR
SITE MAP
WACKER SILTRONICS CORPORATION
PORTLAND, OR

2.0 PROJECT ORGANIZATION AND TASKS TO BE PERFORMED UNDER THIS PLAN

2.1 PROJECT ORGANIZATION

Project Manager: John Childs/PDX

2.2 DESCRIPTION OF TASKS

Observation of excavation for utilities corridor and elevator shafts.

2.3 DESCRIPTION OF SUBCONTRACTORS

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3.0 HAZARD EVALUATION AND CONTROL

3.1 HEAT AND COLD STRESS (REFERENCE CH2M HILL SOP HS-09)

3.1.1 GUIDELINES FOR WORKING IN TEMPERATURE EXTREMES WHILE WEARING PERSONAL PROTECTIVE EQUIPMENT (PPE)

Temperature	Work Cycle	Rest Cycle	Control Measures
<32° F or <55° F & raining	2 hrs	15 min	Review cold stress in safety meeting. Rest in a warm area. Drink at least 8 ounces of warm non-caffeinated, non-alcoholic beverage at each rest break. Schedule a mid-day lunch break of at least 30 minutes in a warm area to begin not later than 5 hours after startup.
72° to 77° F	2 hrs	5 min	Review heat stress in safety meeting. Take resting pulse rate before beginning work. Drink 8 ounces of cool water before beginning work, and 4 ounces at rest break. Have ice available.
77° to 82° F	2 hrs	5 min	As above, but seated rest break. Monitor pulse rate. (See below.)
82° to 87° F	60 min	15 min	As above, but rest area to be shaded.
87° to 90° F	30 min	15 min	As above. Try to provide a shaded work area.
>90° F	15 min	15 min	As above. Provide a shaded area with seats in the work area for team members to use as needed. Try to reschedule work to avoid mid-day heat.

PULSE CRITERIA. Take resting radial (wrist) pulse at start of work day; record it. Measure radial pulse for 30 seconds as rest period begins. Pulse not to exceed 110 beats per minute (bpm), or 20 bpm above resting pulse. If pulse exceeds this criteria, reduce work load and/or shorten the work cycle by one third, and observe for signs of heat stress. No team member is to return to work until his/her pulse has returned to <110 bpm, or resting pulse +20 bpm.

3.1.2 SYMPTOMS AND TREATMENT OF HEAT AND COLD STRESS

Heat Stroke	Heat Exhaustion	Frostbite	Hypothermia
Red, hot, dry skin; dizziness; confusion; rapid breathing and pulse; high body temperature.	Pale, clammy, moist skin; profuse sweating; weakness; normal temperature; headache; dizzy; vomiting.	Blanched, white, waxy skin, but tissue resilient; tissue cold and pale.	Shivering, apathy, sleepiness; rapid drop in body temperature; glassy stare; slow pulse; slow respiration.
Cool victim rapidly by soaking in cool (not cold) water. Get medical attention immediately!!	Remove victim to a cool, air conditioned place. Loosen clothing, place in head low position. Have victim drink cool (not cold) water.	Remove victim to a warm place. Rewarm area quickly in warm (not hot) water. Have victim drink warm fluids--not coffee or alcohol. Do not break any blisters. Elevate the injured area and get medical attention.	Remove victim to a warm place. Have victim drink warm fluids--not coffee or alcohol. Get medical attention.

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3.2 PHYSICAL (SAFETY) HAZARDS AND CONTROLS (REFERENCE CH2M HILL SOP HS-03)

Hazard	Engineering or Administrative Controls
Flying debris/objects	Provide shielding and PPE.
Noise > 85 dBA	Noise protection and monitoring required.
Steep terrain/unstable surface	Brace and shore equipment.
Build-up of explosive gases	Provide 20 lb A,B,C fire extinguisher and ventilation.
Build-up of static electricity	No spark sources within 50 feet of an excavation, heavy equipment, or UST removal. Ground as appropriate.
Gas cylinders	Make certain gas cylinders are properly anchored and chained. Keep cylinders away from ignition sources.
High pressure hose rupture	Check to see that fitting and pressurized lines are in good repair before using.
Electrical shock	Make certain third wire is properly grounded. Do not tamper with electrical wiring unless qualified to do so.
Suspended loads	Work not permitted under suspended loads.
Moving vehicles	Back-up alarm required for heavy equipment. Observer remains in contact with operator and signals safe back-up. Personnel to remain outside of turning radius.
Overhead electrical wires	Heavy equipment (e.g. drill rig) to remain at least 15 feet from overhead powerline for powerlines of 50 kV or less. For each Kv > 50 increase distance 1/2 foot.
Buried utilities, drums, tanks, and so forth.	Locate buried utilities, drums, tanks, etc. prior to digging or drilling and mark location.
Slip, trip, fall hazards due to muddy work areas	Use wood pallets or similar devices in muddy work areas.
Back injury	Use proper lifting techniques, or provide mechanical lifting aids.
Confined space entry	Permit and safety plan required (reference CH2M HILL SOP HS-17).
Trenches/excavations	Make certain trench meets OSHA standard before entering. All excavations > 5 feet deep must be sloped or shored. Excavations > 4 feet deep must have a ladder every 25 feet. If not entering trench, remain 2 feet from edge of trench at all times.
Protruding objects	Flag visible objects.

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3.3 PROCEDURES TO LOCATE BURIED UTILITIES

Contact local Utility Locator Service before any excavation and mark utility lines.

3.4 BIOLOGICAL HAZARDS AND CONTROLS

Hazards	Location and Control Measures
Bloodborne Pathogens (Hepatitis B and HIV)	Personnel trained in First Aid and/or CPR must also be trained in bloodborne pathogens. If an exposure occurs human resources must be notified immediately.

3.5 TICK BITES, LYME DISEASE, AND ROCKY MOUNTAIN SPOTTED FEVER (RMSF)

Check often for tick bites. If bitten, carefully remove tick with tweezers, making certain to remove pincers, being careful not to crush the tick. After removing the tick, wash your hands. Disinfect area, and dress. If the tick resists or cannot be completely removed, seek medical attention.

Look for symptoms of lyme disease or RMSF. Lyme: rash that looks like a "bulls-eye", with small welt in center, several days to weeks after tick bite. RMSF: Rash comprising red spots under skin, 3 to 10 days after tick bite. For both, chills, fever, headache, fatigue, stiff neck, bone pain. If symptoms appear, seek medical attention.

3.6 RADIOLOGICAL HAZARDS AND CONTROLS

Refer to the CH2M HILL *Corporate Health and Safety Program, Program and Training Manual, Volume 2* for standards of practice for operating in contaminated areas.

Hazards	Controls
None Anticipated.	N/A

3.7 HAZARDS POSED BY CHEMICALS BROUGHT ONSITE

Refer to CH2M HILL *Hazard Communication Program Manual* which is available from the Corporate Human Resources Department in Denver. The Project Manager is to request Material Safety Data Sheets (MSDSs) from the client, or contractors and subcontractors for chemicals that CH2M HILL employees are potentially exposed to.

Chemical	Location

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3.8 KNOWN CONTAMINANTS OF CONCERN ON THE WACKER SILTRONICS CORPORATION SITE

Contaminant	Location and Highest Concentration (solid media: mg/kg or liquid media: ug/l)	PEL, REL, or TLV (ppm)	IDLH (ppm)	Symptoms and Effects of Exposure	PIP
2,3,4,6-Tetrachlorophenol		NL	NL	Poisonous by ingestion, skin contact, and subcutaneously	NL
2,4,5-Trichlorophenol		NL	NL	Moderately toxic by ingestion and subcutaneous routes	NL
2,4,6-Trichlorophenol		NL	NL	Skin and eye irritation	NL
2,4-D		10 mg/m3	500 mg/m3	Weakness, stupor, muscle twitching, dermatitis	?
2-Methyl-1,4-dinitrophenol		0.2 mg/m3	NL	Sense of well being, headache, fever, lassitude, sweating, excessive thirst, coughing, shortness of breath	NL
2-chlorophenol				A poison by intraperitoneal and subcutaneous routes.	NL
Acenaphthene	450 mg/kg (S)	NL	NL	Eye and skin irritation	NL
Acetophenone		NL	NL	Toxic by ingestion	NL
Anthracene	430 mg/kg (S)	0.2 mg/m3	NL	Skin irritation	NL
Benzene	29 mg/kg (S)	0.1 ppm	Ca (3,000 ppm)	Eye, nose, and respiratory irritation; headache; nausea; dermatitis; fatigue; giddiness	9.24
Benzo(a)anthracene	210 mg/kg (S)	NL	NL	Experimental carcinogen	NL
Benzo(a)pyrene	210 mg/kg (S)	0.2 mg/m3	NL	Chronic dermatitis	NL
Benzo(b)fluoranthene	140 mg/kg (S)	NL	NL	No information found in literature	NL
Benzo(g,h,i)perylene	140 mg/kg (S)	NL	NL	No information found in literature	NL
Benzo(k)fluoranthene	120 mg/kg (S)	NL	NL	No information found in literature	NL
Chrysene	280 mg/kg (S)	0.2 mg/m3	NL	Carcinogenic	NL
Dibenzo(a,h)anthracene		NL	NL	Absorbed dermally	NL
Dibenzofuran	52 mg/kg (S)	NL	NL	Headache, eye irritation, nausea, vomiting	NL

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3.8 KNOWN CONTAMINANTS OF CONCERN ON THE WACKER SILTRONICS CORPORATION SITE

Contaminant	Location and Highest Concentration (solid media: mg/kg or liquid media: ug/l)	PEL, REL, or TLV (ppm)	IDLH (ppm)	Symptoms and Effects of Exposure	PIP
Ethyl Benzene	55 mg/kg (S)	100 ppm	2,000 ppm	Eye and mucous membrane irritation, headache, dermatitis, narcotic	8.76
Fluoranthene	780 mg/kg (S)	NL	NL	Toxic by ingestion and skin contact	NL
Fluorene	350 mg/kg (S)	NL	NL	Toxic through inhalation, ingestion, dermal contact, and absorption	NL
Indeno(1,2,3)pyrene		NL	NL	No information found in literature	NL
Naphthalene	3,000 mg/kg (S)	10 ppm	500 ppm	Eye irritation, headache, confusion, excitement, nausea, vomiting, abdominal pain, irritation of the bladder, profuse sweating	8.12
Phenanthrene	1,900 mg/kg (S)	0.2 mg/m3	NL	Irritation	NL
Phenol		5 ppm	250 ppm	Eye, nose, and throat irritation; weakness; muscle ache; dark urine; dermatitis; convulsions	8.50
Pyrene	890 mg/kg (S)	0.2 mg/m3	NL	Irritation	NL
Toluene	26 mg/kg (S)	100 ppm	2,000 ppm	Fatigue, weakness, confusion, dizziness, headache, dilated pupils, muscle fatigue, dermatitis	8.82
Xylenes, o, m, & p		100 ppm	1,000 ppm	Dizziness; excitement; drowsiness; staggering gait; eyes, nose, and throat irritation; nausea; vomiting; dermatitis	8.44 - 8.56

Note 1: PIP=Photoinonization potential
Note 2: (S)=Analysis performed on soil

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4.0 PERSONNEL

4.1 CH2M HILL EMPLOYEES (SEE CH2M HILL SOPs HS-01 AND HS-02)

Employees listed below are enrolled in the CH2M HILL chemical protection program (CPP) and meet the medical surveillance, 40-hour initial training, 3-day on-the-job experience, and 8-hour annual refresher training requirements of OSHA 29CFR1910.120. Employees designated "SSC" have received 8 hours of supervisor and 8 hours of instrument training and can serve as site safety coordinator (SSC) for the level of protection indicated. There must be one SSC present during any task performed in exclusion or decontamination zones with the potential for exposure to safety and health hazards. Employees designated "FA-CPR" are currently certified by the American Red Cross, or equivalent, in first aid and CPR. There must be one FA-CPR designated employee present during any task performed in exclusion or decontamination zones with the potential for exposure to safety and health hazards. The "buddy system" requirements of OSHA 29CFR1910.120 are to be met at all times.

Employee Name	Office	Responsibility	SSC/FA-CPR
John Childs	PDX	SSC; field team leader	SSC Level D SSC; FA-CPR
Rocky Oetken	PDX	Field team member	SSC Level C; FA-CPR
Bill Griffin	PDX	Field team member	SSC Level C SSC; FA-CPR
Michael Abbott	PDX	Field team member	SSC Level D; FA-CPR
Janeen Adamo	PDX	Field team member	FA-CPR
Lauren Bradford	PDX	Field team member	SSC Level D; FA-CPR
Pamela Brody	PDX	Field team member	FA-CPR
Dean Harris	PDX	Field team member	SSC Level D; FA-CPR
Heidi Hoffmann	PDX	Field team member	SSC Level C; FA-CPR
Richard Johns	PDX	Field team member	SSC Level D; FA-CPR
Mike Keating	PDX	Field team member	FA-CPR
Robert Koster	PDX	Field team member	FA-CPR
Marcus Krekos	PDX	Field team member	SSC Level B; FA-CPR
Stephen O'Malley	PDX	Field team member	SSC Level D; FA-CPR
John Porcello	PDX	Field team member	SSC Level C; FA-CPR
Steve Reynolds	PDX	Field team member	FA
Ross Rieke	PDX	Project manager	FA-CPR
Dawn Sanders	PDX	Field team member	SSC Level C; FA-CPR
Andrea Volkman	PDX	Field team member	SSC Level D; FA-CPR
Jay Celorie	CVO	Field team member	FA

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Barry Collom	CVO	Field team member	SSC Level C; FA-CPR
Jacqueline Frizenschaf	CVO	Field team member	SSC Level D; FA-CPR
Michele Hoy	CVO	Field team member	SSC Level D; FA-CPR
Bill Mason	CVO	Field team member	FA
Scott McKinley	CVO	Field team member	FA
Calvin Noling	CVO	Field team member	FA-CPR
Susan Adams	CVO	Field team member	---
Tim Maloney	CVO	Field team member	---

Note [1]: After completion of the SSC course on August 25 and 26, 1994, Steve O'Malley will be Level D SSC.

4.2 HEALTH AND SAFETY AND FIELD TEAM CHAIN OF COMMAND AND PROCEDURES

4.2.1 CLIENT

Wacker Siltronics Corporation
Steve Beiswenger
503/243-2020

4.2.2 CH2M HILL

4.2.3 SUBCONTRACTOR

SCOEPA00021868

5.0 PERSONAL PROTECTIVE EQUIPMENT (PPE) SPECIFICATION[1] (REFERENCE CH2M HILL SOP HS-07 and HS-08)

Task	Level	Body	Foot	Head[2]	Eye	Hand	Respirator
Observation of Excavation	D	Cotton coveralls	Steel toe/steel shank neoprene boots	Hardhat	Safety glasses	Nitrile gloves with latex or nitrile inner gloves	None required.
Observation of Excavation	C	Polycoated coveralls	Steel toe/steel shank neoprene boots	Hardhat	Provided by Full Face Respiratory Protection	Nitrile gloves with latex or mitrile inner gloves	APR, full face, MSA Ultratwin or equivalent, cartridges: GMC-H, Organic/Acid Gas with HEPA filter

Note 1: Modifications: Specified by Site Safety Coordinator
Note 2: The SSC shall specify hardhat areas.
Note 3: **THIS PLAN IS NOT APPOVED FOR LEVEL B.**

5.1 REASONS TO UPGRADE OR DOWNGRADE LEVEL OF PROTECTION

Upgrade	Downgrade
• Request of individual performing task. • Change in work task that will increase contact or potential contact with hazardous materials. • Occurrence or likely occurence of gas or vapor emission. • Known or suspected presence of dermal hazards. • Instrument action levels (Section 6.0) exceeded.	• New information indicating that situation is less hazardous than originally thought. • Change in site conditions that decreases the hazard. • Change in work task that will reduce contact with hazardous materials.

SCOEPA00021869

6.0 AIR MONITORING EQUIPMENT SPECIFICATION (REFERENCE CH2M HILL SOP HS-06)

Instrument	Tasks	Action Levels		Frequency	Calibration
CGI:	All Excavation	0-10% LEL 10-25% LEL >25% LEL	No expl.[1] hazard Pot.[2] expl. hazard Expl. hazard; evacuate or vent	At the beginning of each shift and routinely during excavation	Daily with 0.75% Pentane according to Manufacturers Instructions
0_2 meter:	All Excavation	> 25.0% O_2 20.9% O_2 < 19.5% O_2	Expl. hazard; evacuate or vent Normal O_2 O_2 def.[3]; vent or use SCBA	At the beginning of each shift and routinely during excavation	Daily with atmospheric air away from excavation
Photoionization Detector (PID): 10.2 eV lamp HNu or OVM	All Excavation	<1 ppm[ab4] >1-5 ppm[ab] > 5 ppm[ab]	Level D Level C Stop work; re-evaluate	At the beginning of each shift and routinely during excavation. Multiply Action Levels by a factor of 5 if Benzene is not detected by detector tubes.	Daily with 100 ppm Isobutylene according to Manufacturers Instructions
Colorimetric Tube: Benzene	All Excavation	<1 ppm[ab] >1-10 ppm[ab] >10 ppm[ab]	Level D Level C Stop work; re-evaluate	When PID reading are elevated. Take reading in the breathing zone.	Check Pump Daily for leakage. Check to see tubes are not out of date.

Note 1: expl = explosion Note 2: pot = potential Note 3: def = deficient Note 4: ab = above background
Note 5: N/A = not applicable

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6.1 CALIBRATION SPECIFICATION

Instrument	Gas	Span	Reading	Method
PID: HNU, 10.2 ev probe	100 ppm isobutylene	9.8 ± 2.0	55 ppm	1.5 l/m reg T-tubing 0.25 l/m reg direct tubing
CGI: MSA 260, 261, 360, or 361	0.75% pentane	N/A	50% LEL ± 5 % LEL	1.5 l/m reg direct tubing

6.2 AIR SAMPLING

Method and Description: Combustible gas and PID readings will be taken at the beginning of each shift and on a routine basis during operations and whenever heavy discoloration of the soil is discovered.

Personnel: None Anticipated

Areas: In the vicinity of the excavation activity.

Results to be interpreted by: OMI health and safety representative

SCOEPA00021871

7.0 DECONTAMINATION SPECIFICATION (REFERENCE CH2M HILL SOP HS-13)

Personnel	Sample Equipment	Heavy Equipment
• Boot wash/rinse	• Wash/rinse equipment	• Power wash
• Glove wash/rinse	• Solvent rinse equipment	• Steam clean
• Outer glove removal	• Solvent disposal method:	• Water disposal method:
• Inner glove removal		
• Respirator removal		
• Hand wash/rinse		
• Face wash/rinse		
• Shower ASAP		
• PPE disposal method:		
• Water disposal method:		

7.1 PERSONNEL DECONTAMINATION LINE

Wash boots and outer gloves in soap and water, remove outer gloves. Remove coveralls and respirator if worn. Dispose of cartridges and sanitize respirator. Remove inner gloves. Wash hands and face with clean water and soap.

8.0 SPILL CONTAINMENT PROCEDURES

9.0 CONFINED SPACE ENTRY

Confined space entry requires an additional health and safety plan and a permit. Refer to CH2M HILL SOP HS-17, contained in the *Corporate Health and Safety Program—Program and Training Manual, Volume 1.*

SCOEPA00021872

10.0 WORK PROCEDURES

10.1 WORK PRACTICES

- No spark sources within exclusion or decontamination zones.
- Avoid visibly contaminated areas.
- No eating, drinking, or smoking in contaminated areas, or exclusion or decontamination zones.
- SSC to establish areas for eating, drinking, smoking.
- No contact lenses in exclusion or decontamination zones.
- No facial hair that would interfere with respirator fit if Level C or B is anticipated.
- Site work will be performed during daylight hours whenever possible. Any work conducted during hours of darkness will require enough illumination intensity "to read a newspaper without difficulty."

10.2 SITE CONTROL MEASURES

- Site safety coordinator (SSC) to conduct site safety briefing (see below) before starting field activities, or as tasks and site conditions change.
- SSC records safety briefing attendance in logbook, and documents topics discussed.
- Post OSHA job site poster in a central and conspicuous location at the site.
- Determine wind direction.
- Establish work zones: support, decontamination, and exclusion zones, and delineate work zones with flagging or cones as appropriate. Support zone upwind of site.
- Establish decontamination procedures, including respirator decontamination procedures, and test.
- Utilize access control at the entry and exit from each work zone.
- Chemicals to be stored in proper containers.
- MSDSs are available for onsite chemicals employees exposed to.
- Establish onsite communications. These should consist of:
  - Line of sight/hand signals
  - Air horn
  - Two-way radio or cellular phone if available
- Establish emergency signals. For example:
  - Grasping throat with hand--EMERGENCY--HELP ME
  - Grasping buddy wrist--LEAVE AREA NOW
  - Thumbs up--OK, UNDERSTOOD
  - Two short blasts on air horn--ALL CLEAR
  - Continuous air horn--EMERGENCY--EVACUATE
- Establish offsite communications.
- Establish "buddy" system.
- Establish procedures for disposal of material generated onsite.
- Initial air monitoring conducted by SSC in appropriate level of protection.
- SSC to conduct periodic inspections of work practices to determine effectiveness of this plan. Deficiencies to be noted, reported to DHSM or RHSM, and corrected.
- Site safety briefing topics: general discussion of health and safety plan; site specific hazards; location of work zones; PPE requirements; equipment; special procedures; emergencies.

SCOEPA00021873

11.0 EMERGENCY RESPONSE PLAN (REFERENCE CH2M HILL SOP HS-12)

11.1 PRE-EMERGENCY PLANNING

The SSC performs the applicable pre-emergency planning tasks before starting field activities and coordinates emergency response with the facility and local emergency service providers as appropriate.

- Locate nearest telephone to the site and inspect onsite communications.
- Locate chemical, safety, radiological, biological hazards.
- Confirm and post emergency telephone numbers and route to hospital.
- Post site map marked with location of emergency equipment and supplies.
- Review emergency response plan for applicability to any changed site conditions, alterations in onsite operations, or personnel availability.
- Evaluate capabilities of local response teams.
- Where appropriate and acceptable to the client, inform emergency room/ambulance service and emergency response teams of anticipated types of site emergencies.
- Designate one vehicle as the emergency vehicle; place hospital directions and map inside; keep keys in ignition during field activities.
- Inventory and check site emergency equipment and supplies.
- Review emergency procedures for personnel injury, exposures, fires, explosions, chemical and vapor releases with field personnel.
- Locate onsite emergency equipment and supplies of clean water.
- Verify local emergency contacts, hospital routes, evacuation routes, and assembly points.
- Drive route to hospital.
- Review names of onsite personnel trained in first aid and CPR.
- Review notification procedures for contacting CH2M HILL's medical consultant and team member's occupational physician.
- Rehearse the emergency response plan once prior to site activities.
- Brief new workers on the emergency response plan.

11.2 EMERGENCY EQUIPMENT AND SUPPLIES

The SSC marks the locations of emergency equipment on the site map and posts the map in the support zone.

- 20 lb ABC fire extinguisher
- Industrial first aid kit
- Mobile telephone

SCOEPA00021874

11.3 EMERGENCY MEDICAL TREATMENT

- The SSC will assume charge during a medical emergency until the ambulance arrives, or the injured person is admitted to the emergency room.
- Prevent further injury.
- Initiate first aid and CPR.
- Call the ambulance and hospital.
- Determine if decontamination will make injury worse. Yes--seek medical treatment immediately.
- Make certain that injured person is accompanied to emergency room.
- Notify the Project Manager of the injury.
- Notify the District or Regional Health and Safety Manager.
- Notify the injured person's human resources department.
- Prepare an incident report. Submit this to the Corporate Director Health and Safety (WDC) and Corporate Human Resources Department (DEN) within 48 hours.

11.4 EVACUATION

- Evacuation routes will be designated by SSC prior to beginning of work.
- Onsite and offsite assembly points will be designated prior to beginning of work.
- Personnel will exit the exclusion zone and assemble at the onsite assembly point upon hearing the emergency signal for evacuation of the exclusion zone.
- Personnel will assemble at the offsite point upon hearing the emergency signal for a site evacuation.
- The SSC and a "buddy" will remain onsite after the site has been evacuated (if possible) to assist local responders and advise them of the nature and location of the incident.
- SSC accounts for all personnel in the onsite assembly zone.
- A person designated by the SSC (prior to work) will account for personnel at the offsite assembly area.
- The SSC is to write up the incident as soon as possible after it occurs, and submit a report to the Corporate Director Health and Safety.

11.5 EVACUATION ROUTES AND ASSEMBLY POINTS

11.6 EVACUATION SIGNALS

Exclusion Zone	Site
Buddy system	Buddy system

SCOEPA00021875

12.0 EMERGENCY RESPONSE TELEPHONE NUMBERS

SITE ADDRESS: 7200 NW Front Avenue Portland, OR	**Phone:** 503/243-2020
Police:	**Phone:** 911
Fire:	**Phone:** 911
Ambulance:	**Phone:** 911
Water: Portland Water Bureau	**Phone:** 503/796-7770
Gas: Northwest Natural Gas	**Phone:** 503/226-4211
Electric: Portland General Electric	**Phone:** 503/228-6322

Hospital: Good Samaritan **Phone:** 503/229-7260
Address:

Route To Hospital: (Refer to map Page 17.)

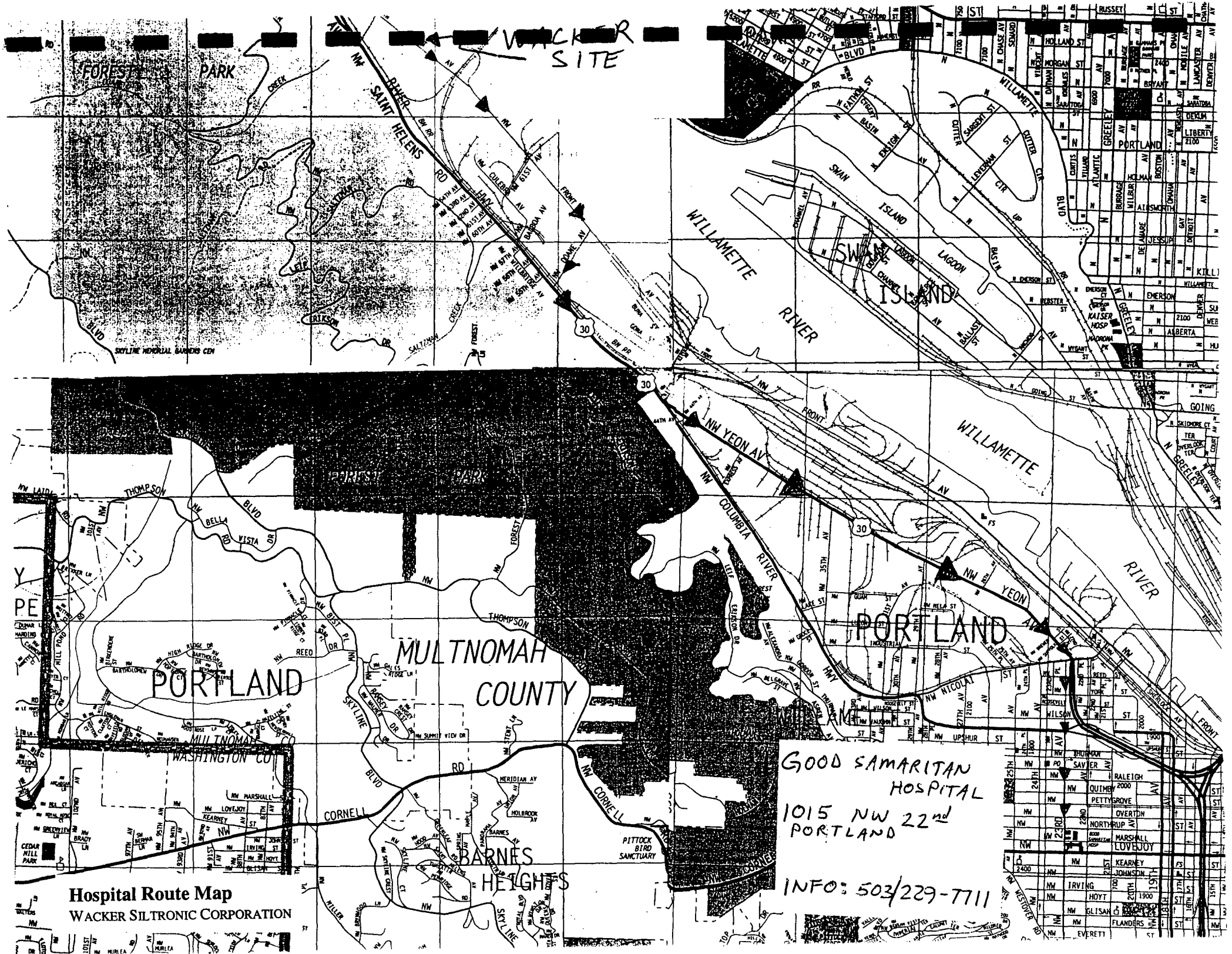
12.1 GOVERNMENT AGENCIES INVOLVED IN PROJECT

Federal: NA

State: NA

Local: NA

SCOEPA00021876



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13.0 EMERGENCY CONTACTS

CH2M HILL Medical Consultant Dr. Elayne Theriault Environmental Medicine Resources 800/229-3674	**Occupational Physician (Regional or Local)** Dr. Kirby Griffin Northwest Occupational Health Associates 9370 Southwest Greenburg Road, Suite 101 Portland, OR 97223 503/246-7030
Corporate Director Health and Safety	**Site Safety Coordinator (SSC)** Name: John Childs/PDX Phone: 503/235-5000
Health and Safety Manager (HSM) Name: Mollie Netherland/SEA Phone: 206/453-5000	**Regional Manager** Name: Ray Topping/CVO Phone: 503/752-4271
	Project Manager Name: John Childs/PDX Phone: 503/235-5000
Radiation Health Manager (RHM) Name: Frank Petelka/ORO Phone: 615/483-9032	**Portland Human Resources Department** Name: Kristen Lensen/PDX Phone: 503/235-5000
Client: Wacker Siltronics Corporation	**Corporate Human Resources Department** Name: Suzanne Thomas/DEN Phone: 303/771-0952 If an injury occurs, notify the injured person's personnel office as soon as possible after obtaining medical attention for the injured. Notification MUST be made within 24 hours of the injury.

SCOEPA00021878

14.0 PLAN APPROVAL

This site safety plan has been written for use by CH2M HILL. CH2M HILL claims no responsibility for its use by others, unless specified and defined in project or contract documents. The plan is written for the specific site conditions, purposes, dates, and personnel specified and must be amended if these conditions change.

PLAN WRITTEN BY: Cyndi Carel **DATE:**October 1994

PLAN APPROVED BY: Robert Nash/SCO **DATE:**October 14, 1994

14.1 PLAN AMENDMENTS

DATE: CHANGES MADE BY:

CHANGES TO PLAN:

APPROVED: **DATE:**

14.2 PLAN AMENDMENTS

DATE: CHANGES MADE BY:

CHANGES TO PLAN:

APPROVED: **DATE:**

15.0 ATTACHMENTS TO PLAN

Attachment 1: Employee signoff

Attachment 2: Applicable MSDSs

Note: Once approved, a copy of this plan should be forwarded to Cindy Carr/WDC.

SCOEPA00021879

ATTACHMENT 1

EMPLOYEE SIGNOFF

The employees listed below have been provided a copy of this health and safety plan, have read and understood it, and agree to abide by its provisions.

EMPLOYEE NAME	EMPLOYEE SIGNATURE / DATE

SCOEPA00021880

Table 3
TYPICAL BTEX CONCENTRATIONS IN GASOLINE (a)

Component	Regular Gasoline (Six Samples) (μg/L)	Unleaded Gasoline (Three Samples) (μg/L)
Benzene	4,700,000 - 36,000,000	2,000,000 - 32,000,000
Toluene	34,000,000 - 100,000,000	44,000,000 - 120,000,000
Ethyl-Benzene	15,000,000 - 31,000,000	18,000,000 - 47,000,000
Xylene	54,000,000 - 110,000,000	74,000,000 - 160,000,000

(a) Source: Patton, R. H., and T. Stevens. March 1984. Petroleum Fuels Characterization, Summary of Current Data. Internal Report, Florida Department of Environmental Regulations.

Note: Patton and Stevens reported the values in percent by weight units. These units have been converted to μg/L for comparison purposes.

pdx937/003.wk1

Table 1
(Continued)

Sample Location Number	Sample Collection Date	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	M,P - Xylene (µg/L)	O - Xylene (µg/L)	TPH (µg/L)
GW-26	10/15/90	5,920.00	910.00	584.00	580.00	301.00	12,040.00
GW-27-A	10/15/90	10,300.00	627.00	1,220.00	1,250.00	597.00	16,300.00
GW-27-B	10/15/90	11,400.00	320.00	1,340.00	1,430.00	656.00	20,800.00
GW-28	10/15/90	349.00	9.70	< 0.10	6.20	16.20	328.00
GW-29	10/16/90	541.00	< 0.10	263.00	< 0.10	19.40	735.00

(a) The letters "A," "B," and "C" following the sample location number indicate duplicate analysis.
(b) Sample was too concentrated for instrument calibration setting.
(c) Groundwater sample not collected at this location.

Notes:
GW = groundwater sample; SG = soil gas sample.
Detection Limits for groundwater = 0.10 µg/L; Soil gas detection limits = 0.01 µg/L.
< = Analyte not detected at concentration posted.

All groundwater samples collected at 25 feet below ground surface.
All samples analyzed by Hydro Geo Chem Mobile Lab, using modified EPA Method 8015.

Table 1
(Continued)

Sample Location Number	Sample Collection Date	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	M,P - Xylene (µg/L)	O - Xylene (µg/L)	TPH (µg/L)
SG-12(c)	10/12/90	500.00	58.20	279.00	237.00	70.80	1,760.00
SG-13(c)	10/13/90	1.28	< 0.01	< 0.01	< 0.01	< 0.01	687.00
GW-14	10/12/90	8.60	< 0.10	< 0.10	< 0.10	< 0.10	74.70
GW-15	10/12/90	23.20	< 0.10	75.90	< 0.10	21.30	1,330.00
GW-16	10/13/90	12,600.00	214.00	1,680.00	1,180.00	738.00	21,400.00
GW-17-A	10/13/90	11,300.00	662.00	1,680.00	1,690.00	768.00	24,900.00
GW-17-B	10/13/90	10,930.00	574.00	1,370.00	1,410.00	632.00	19,400.00
GW-18	10/13/90	250.00	20.40	64.20	58.50	28.80	623.00
GW-19	10/13/90	52.40	< 0.10	13.00	12.60	8.00	148.00
GW-20-A	10/13/90	2,920.00	80.60	1,690.00	1,230.00	673.00	16,600.00
GW-20-B	10/13/90	3,120.00	85.60	1,720.00	1,230.00	667.00	14,500.00
GW-21	10/13/90	2,510.00	349.00	37.60	66.60	33.00	3,140.00
GW-22-A	10/14/90	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	12.10
GW-22-B	10/14/90	1.00	0.70	< 0.10	< 0.10	< 0.10	18.10
GW-23	10/14/90	335.00	< 0.10	419.00	67.30	24.60	635.00
GW-24	10/14/90	4,780.00	594.00	926.00	1,050.00	500.00	6,330.00
GW-25-A	10/15/90	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	26.80
GW-25-B	10/15/90	3.70	< 0.10	< 0.10	1.70	1.90	25.30

pdx937/001.wk1

Table 1
MOBILE LABORATORY ANALYTICAL TEST RESULTS
GROUNDWATER AND SOIL GAS SAMPLES

Sample Location Number	Sample Collection Date	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	M,P - Xylene (µg/L)	O - Xylene (µg/L)	TPH (µg/L)
GW-01	10/10/90	221.00	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
GW-02	10/10/90	181.00	< 0.10	< 0.10	< 0.10	< 0.10	131.00
GW-03	10/11/90	13.50	1.80	1.50	3.30	2.30	43.60
GW-04-A(a)	10/11/90	391.00	< 0.10	68.00	23.00	22.00	406.00
GW-04-B	10/11/90	384.00	7.10	75.00	30.00	25.00	397.00
SG-05 (b,c)	—	—	—	—	—	—	—
GW-06	10/11/90	59.80	4.60	196.00	4.10	13.80	657.00
GW-07	10/11/90	17,560.00	13.10	126.00	124.00	52.60	17,000.00
GW-08	10/11/90	285.00	< 0.10	129.00	33.10	32.30	369.00
GW-09	10/11/90	371.00	13.10	74.40	34.20	32.40	791.00
GW-10	10/12/90	1,820.00	23.90	471.00	240.00	187.00	5,090.00
GW-11-A	10/12/90	18,100.00	3,910.00	2,520.00	2,380.00	1,130.00	56,500.00
GW-11-B	10/12/90	23,300.00	5,960.00	4,680.00	4,450.00	2,000.00	89,140.00
GW-11-C	10/12/90	18,470.00	5,590.00	4,510.00	4,372.00	2,050.00	88,240.00

pdx937/001.wk1

SCOEPA00021884

Pacific Environmental Laboratory Inc.

9405 S.W. Nimbus Ave. Beaverton, OR 97005 (503) 644-0660
FAX # (503) 644-2202

July 3, 1990

CH2M Hill-Portland
2020 SW 4th, 2nd Floor
Portland, OR 97201

Attn: Christy Shoen

Re: JOB #PDX30425.A0
PEL #90-1696 Final

Enclosed is the final lab report for your samples which were received on June 20, 1990.

I. Sample Description

Two Soil Samples

The samples were received under a chain of custody.

The samples were received in containers consistent with EPA protocol.

II. Quality Control

No project specific QC was requested. In-house QC data is available upon request.

III. Analytical Results

Test methods may include minor modifications of published methods such as detection limits or parameter lists. Solid and waste samples are reported on an "as received" basis unless otherwise noted.

Compounds not detected are listed under results as ND.

Sincerely,

Howard Holmes
Lab Manager

Howard Boorse
QA/QC Manager

pacific environmental laboratory inc.

PEL REPORT NUMBER: 90-1696 Final
CLIENT: CH2M Hill-Portland
JOB REFERENCE: PDX30425.A0
DATE: July 3, 1990
ITEMS: Two Soil Samples

METHOD: EPA 8240
Results in ug/kg (ppb)

Compound	B201*	B202	Lab Blank	Detection Limit
Acetone	ND	ND	ND	2,500
Acrolein	ND	ND	ND	5,000
Acrylonitrile	ND	ND	ND	5,000
Benzene	29,000	1,000	ND	250
Bromodichloromethane	ND	ND	ND	250
Bromoform	ND	ND	ND	250
Bromomethane	ND	ND	ND	500
2-Butanone	ND	ND	ND	5,000
Carbon disulfide	ND	ND	ND	250
Carbon tetrachloride	ND	ND	ND	250
Chlorobenzene	1,400	370	ND	250
Chlorodibromomethane	ND	ND	ND	250
Chloroethane	ND	ND	ND	500
Chloroform	ND	ND	ND	250
Chloromethane	ND	ND	ND	5,000
Dibromomethane	ND	ND	ND	250
Dichlorobenzenes	ND	ND	ND	250
Dichlorodifluoromethane	ND	ND	ND	250
1,1-Dichloroethane	ND	ND	ND	250
1,2-Dichloroethane	ND	ND	ND	250
1,1-Dichloroethene	ND	ND	ND	250
cis-1,2-Dichloroethene	ND	ND	ND	250
trans-1,2-Dichloroethene	ND	ND	ND	250
1,2-Dichloropropane	ND	ND	ND	250
cis-1,3-Dichloropropene	ND	ND	ND	250
trans-1,3-Dichloropropene	ND	ND	ND	250
Ethanol	ND	ND	ND	5,000
Ethylbenzene	55,000	3,600	ND	250
2-Hexanone	ND	ND	ND	2,500
Methylene chloride	ND	ND	ND	250
4-Methyl-2-pentanone	ND	ND	ND	5,000
Styrene	1,300	490	ND	250
1,1,2,2-Tetrachloroethane	ND	ND	ND	250
Tetrachloroethene	ND	ND	ND	250
Toluene	26,000	2,800	ND	250
1,1,1-Trichloroethane	ND	ND	ND	250
1,1,2-Trichloroethane	ND	ND	ND	250
Trichloroethene	ND	ND	ND	250
Trichlorofluoromethane	ND	ND	ND	250
1,2,3,-Trichloropropane	ND	ND	ND	250
Vinyl acetate	ND	ND	ND	2,500
Vinyl chloride	ND	ND	ND	500
Xylene	57,000	6,800	ND	250

* Detection Limits for this sample are 4 times the listed values.

SCOEPA00021886

pacific environmental laboratory inc

PEL REPORT NUMBER: 90-1696 Final
CLIENT: CH2M Hill-Portland
JOB REFERENCE: PDX30425.A0
DATE: July 3, 1990
ITEMS: Two Soil Samples

METHOD: BNA's by EPA 8270
Results in mg/kg (ppm)

Compound	B201*	B202	Lab Blank	Detection Limit
Acenaphthene	450	120	ND	10
Acenaphthylene	170	240	ND	10
Anthracene	430	250	ND	10
bis(2-Chloroethyl) ether	ND	ND	ND	10
bis(2-Chloroisopropyl) ether	ND	ND	ND	10
bis(2-Chloroethoxy) methane	ND	ND	ND	10
bis(2-ethylhexyl)phthalate	ND	ND	ND	10
Benzoic Acid	ND	ND	ND	10
Benzo(a)anthracene	210	190	ND	10
Benzo(a)pyrene	210	240	ND	10
Benzo(b)fluoranthene	140	180	ND	10
Benzo(k)fluoranthene	120	120	ND	10
Benzo(g,h,i)perylene	140	190	ND	10
Benzyl Alcohol	ND	ND	ND	10
4-Bromophenyl phenyl ether	ND	ND	ND	10
Butylbenzyl phthalate	ND	ND	ND	10
Chrysene	280	260	ND	10
4-Chloroaniline	ND	ND	ND	10
4-Chloro-3-methylphenol	ND	ND	ND	10
2-Chloronaphthalene	ND	ND	ND	10
2-Chlorophenol	ND	ND	ND	10
4-Chlorophenylphenyl ether	ND	ND	ND	10
Dibenz(a,h)anthracene	ND	ND	ND	10
Dibenzofuran	52	28	ND	10
1,2-Dichlorobenzene	ND	ND	ND	10
1,3-Dichlorobenzene	ND	ND	ND	10
1,4-Dichlorobenzene	ND	ND	ND	10
3,3'-Dichlorobenzidine	ND	ND	ND	50
2,4-Dichlorophenol	ND	ND	ND	10
2,4-Dimethylphenol	ND	ND	ND	10
Diethylphthalate	ND	ND	ND	10
Di-n-butylphthalate	ND	ND	ND	10
Di-n-octylphthalate	ND	ND	ND	10
Dimethylphthalate	ND	ND	ND	10
4,6-Dinitro-2-methylphenol	ND	ND	ND	50
2,4-Dinitrophenol	ND	ND	ND	50
2,4-Dinitrotoluene	ND	ND	ND	10
2,6-Dinitrotoluene	ND	ND	ND	10
Fluoranthene	780	760	ND	10
Fluorene	350	210	ND	10
Hexachlorobenzene	ND	ND	ND	10
Hexachlorobutadiene	ND	ND	ND	10
Hexachlorocyclopentadiene	ND	ND	ND	50
Hexachloroethane	ND	ND	ND	50

PEL REPORT NUMBER: 90-1696 Final
CLIENT: CH2M Hill-Portland
JOB REFERENCE: PDX30425.A0
DATE: July 3, 1990
ITEMS: Two Soil Samples

METHOD: BNA's by EPA 8270-Continued
Results in mg/kg (ppm)

Compound	B201*	B202	Lab Blank	Detection Limit
Indeno(1,2,3-cd)pyrene	ND	160	ND	10
Isophorone	ND	ND	ND	10
2-Methylnaphthalene	900	330	ND	10
2-Methylphenol	ND	ND	ND	10
4-Methylphenol	ND	ND	ND	10
Naphthalene	3,000	840	ND	10
2-Nitroaniline	ND	ND	ND	10
3-Nitroaniline	ND	ND	ND	10
4-Nitroaniline	ND	ND	ND	10
2-Nitrophenol	ND	ND	ND	10
4-Nitrophenol	ND	ND	ND	10
N-Nitrosodiphenylamine	ND	ND	ND	10
N-Nitroso-Di-N-propylamine	ND	ND	ND	50
Nitrobenzene	ND	ND	ND	50
Pentachlorophenol	ND	ND	ND	50
Phenanthrene	1,900	1,200	ND	50
Phenol	ND	ND	ND	50
Pyrene	890	800	ND	50
1,2,4-Trichlorobenzene	ND	ND	ND	50
2,4,5-Trichlorophenol	ND	ND	ND	50
2,4,6-Trichlorophenol	ND	ND	ND	50

* Detection Limits for this sample are 5 times the listed value due to sample extract dilution.

METHOD: Flashpoint (PMCC) per EPA 1010

Sample I.D.	Flashpoint
B201	No flash to 200°F

SCOEPA00021888

PEL REPORT NUMBER: 90-1696 Final
CLIENT: CH2M Hill-Portland
JOB REFERENCE: PDX30425.A0
DATE: July 3, 1990
ITEMS: Two Soil Samples

METHOD: Total Metals per EPA 3005, 6010, 7000 series
Results in mg/kg (ppm)

Compound	B201	Lab Blank	Detection Limit
Antimony	8	ND	2
Arsenic	1.8	ND	0.01
Beryllium	ND	ND	0.5
Cadmium	0.9	ND	0.5
Chromium	10	ND	0.5
Copper	15	ND	0.5
Lead	16	ND	2
Mercury	0.86	ND	0.01
Nickel	14	ND	2
Selenium	ND	ND	0.1
Silver	ND	ND	0.5
Thallium	14	ND	5
Zinc	46	ND	0.5

METHOD: HCID by GC/FID
Sample numbers B201 and B202

Result:

Both samples show evidence of petroleum distillate con-tamination in the C_6 to C_{24} range. The retention times of the major peaks indicate the presence of Polynuclear Aro-matic Hydrocarbons. This type of pattern is indicative of the presence of coal tar derivatives.

The HCID results show no evidence of contamination by gasoline, jet fuel or diesel fuel.

CH2M HILL QUALITY ANALYTICS

CHAIN OF CUSTODY RECORD

PROJECT NUMBER	PDX30425.A4
PROJECT NAME	WACKER - FAB 2
CLIENT NAME	CH2M Hill / PDX
PROJECT MANAGER	Jill Bensen
COPY TO:	Rick Gariepy
REQUESTED COMP. DATE	5 day (std.) Turn-Around
SAMPLING REQUIREMENTS	SDWA ☐ NPDES ☐ RCRA ☐ OTHER ____
CLIENT ADDRESS AND PHONE NUMBER	2020 SW 4th AVE 2nd Floor PORTLAND OR 97201

ANALYSES REQUESTED

	STA NO.	DATE	TIME	COMP	GRAB	SOIL	SAMPLE DESCRIPTIONS (12 CHARACTERS)	# OF CONTAINERS	SW 6010 Priority Metals (13)	SW 8240 Volatiles	SW 8270 Semi-Vol Complete List	Pesticides + PCBs	Ignitability						LAB ID
1	B201	6.18	2PM	X			WSC-SB201:15-25	5	X	X	X								
2	B202	6.20	3PM	X			WSC-SB202:15-25	5	[redacted] JKB	X	X								

FOR LAB USE ONLY

LAB#

LAB#

PROJECT NO.

ACK | VERIFIED

QUOTE# | BS

NO. OF SAMP | PG | OF

REMARKS

Please fax test results to: Christy Shoen / CH2M @ 503) 295-4446 and Rick Gariepy @ 503) 226-0052 Also send hard copy to CH2M Hill / PDX and Rick Gariepy Wacker Siltronics @ PO Box 83180 Portland OR 97283

Thanks.

ALL SAMPLES WILL BE DISPOSED OF 30 DAYS AFTER RECEIPT

SAMPLED BY AND TITLE: J. G. Bensen Proj. Manager	DATE/TIME: 6/18 - 6/20/90	RELINQUISHED BY: J. G. Bensen	DATE/TIME: 6/20/90 Spm.
RECEIVED BY:	DATE/TIME	RELINQUISHED BY:	DATE/TIME
RECEIVED BY:	DATE/TIME	RELINQUISHED BY:	DATE/TIME
RECEIVED BY LAB: Philip Neuenberg	DATE/TIME: 6-20-90 5:05	SAMPLE SHIPPED VIA: UPS BUS FED-EX HAND OTHER ____	AIR BILL#

HAZWRAP/NEESA Y N

QC LEVEL 1 2 3

COC | ICE

ANA REQ | TEMP

CUST SEAL | Ph

SAMPLE COND.

REMARKS: PEL # 90-1696

ENTERED INTO LIMS ____ COC REVIEWED ____

temp ok ✓ containers ok ✓

REV 6/89 FORM 340

SCOEPA00021890

Wacker Siltronic Corporation

WACKER

TO: John Pittman

FROM: Chip Bloomer

SUBJECT: FAB 2 Excavation

DATE: December 9, 1994

He have hit contaminated soil at two locations. Preliminary lab results indicate that the soil can be disposed of at the landfill (Complete analytical results should be available Monday morning).

Location of Contamination

Hit contamination at manhole SD 3-1 (8 feet down) and at 40 feet east of manhole SD4-1 (10 feet down) - See attached drawing. It appears that when excavating the storm line from SD 3-1 to SD 4-1 and over 40 feet that we will generate approximately 105 cubic yards of material.(Only the contaminated soil below 8 and above 10 feet).

We did not find any contamination at the pothole for the domestic water tie in or at a hole for SD 2-1.

Preliminary Lab results

		Oregon STDs.
TCLP Benzene	.3 ppm limit .5 ppm for HW and Landfill	0.5 ppm
EPA 418.1 (Diesel)	14,000 ppm <50,000 ppm for landfill	100 ppm
Oregon Gasoline	200 ppm <10,000 ppm for landfill	40 ppm

We will have the complete TCLP (additional violatiles and metals) on Monday

Estimated disposal cost for this part of excavation only:

$18,000 to Landfill
$45,000 to Arlington (Benzene greater than >.5 ppm but < 15ppm
$200,000 if incinerated

Note: Currently expenses related to this part of excavation are being charged to the WWTP. We have talked to Ed Fransen and have set up FAB 2 cost centers, but no one over here has signature authority to charge to FAB 2.

No Date

PROJECT SITE SAFETY AND HEALTH PLAN

WACKER SILTRONIC CORP.
7200 N.W. FRONT AVE.
PORTLAND, OREGON

PREPARED BY:
PEMCO
437 N. COLUMBIA BLVD.
PORTLAND, OR 97217

SCOEPA00021892

LEGACY GOOD SAMARITAN HOSPITAL

1015 N.W. 22nd AVE.

PORTLAND

PHONE # 229-7711

SCOEPA00021893

PEMCO
SITE SPECIFIC SAFETY AND HEALTH PLAN

Project: **WACKER SILTRONIC CORP.**
7200 N.W. FRONT AVE.
PORTLAND, OREGON

Summary of Work

The project consists of thermally treating approximately 3,000 tons of petroleum contaminated soil. The contamination is from medium concentrations of diesel and heating oil.

POTENTIAL ACCIDENT EXPOSURES

1. **General Project Site**
2. **Oxygen deficit atmospheres (confined space)**
3. **Noise**
4. **Dust**
5. **Personal protective equipment**
6. **Employee training/certification**
7. **Housekeeping**
8. **Material handling**

PROCEDURES TO MINIMIZE EXPOSURES

1. GENERAL PROJECT SITE

A) Keep vehicles and equipment at a minimum on the project.

B) A material and supply job trailer is provided. At the end of each day, remove all materials and supplies from the project and return to the trailer.

C) Dispose of all refuse and debris generated on the project at the end of each work day.

D) Post list of personal protective equipment required within the project site.

2. OXYGEN DEFICIENT ATMOSPHERES

A) Allow a good supply of fresh air to enter enclosed or confined areas before entering.

B) Exchange the air in the enclosure or confined space with a ventilation system.

C) Determine that the oxygen contain is within a safety level of between 19.5 to 23.0 percent with the oxygen meter.

3. NOISE CONTROL

A) As a general rule of thumb, hearing protection is to be used whenever the noise level exceeds the hearing level of normal conversation.

B) Notify all personnel who may be working in close proximity of the high noise level in advance of performing the operation which is causing the excessive noise.

C) Plan the work in a manner which will minimize the duration of the excessive noise.

4. DUST CONTROL

A) Considering the wind factor, plan the work to minimize the spreading of dust when in dusty conditions.

B) Personnel shall wear dust masks whenever dusty conditions are present.

5. PERSONAL PROTECTIVE EQUIPMENT(Required on projects)

A) Hard hats shall be worn at all times.

B) Each person entering the project site shall have safety glasses or goggles in their possession.

C) Hearing protection shall be available on the project site at all times.

D) If the operation or weather elements create a dusty situation, wear a respirator with particulate filters or a dust mask.

6. EMPLOYEE TRAINING/CERTIFICATION

A) All personnel shall be certified as required by 29 CFR 1910.120, Hazardous Material and Emergency Response.

B) All project personnel shall be familiar with 296-155, Washington State safety standards for construction work.

C) All project personnel will have received training regarding "Hazard Communication, Employee Right To Know."

D) The project supervisor will be First Aid and CPR certified.

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WACKER SILTRONIC CORP.
7200 N.W. FRONT AVE.
PORTLAND, OREGON

GENERAL SAFETY GUIDELINES

TOOLS AND EQUIPMENT

1. All tools, including hand tools, air-powered, electrically-powered and power-actuated fastening devices must be maintained in good condition.

2. All defective tools and equipment should be tagged "Out of Service" until properly repaired and restored to service. Report all defective tools and equipment immediately to your supervisor.

3. Tools and materials should not be placed where they may fall or be kicked off to a lower level. Such activity can cause injuries to individuals working below and can damage the tools, material and job site.

4. Tools which are used in elevated positions should be suitably protected and barricaded to protect individuals working at lower levels.

5. Tools, equipment, and materials should not be thrown up or down from one working level to another. They should be carried or sent up sand down through the use of a hand line or other safe, practical means.

6. All guards on hand tools, machinery, and equipment must be maintained in position.

7. When using air hoses, be sure they have a safety pin or locking device to keep the hose from coming loose and "whipping".

8. Air pressure should be bled at the tool before breaking connections.

9. Protect tools from accidental operation.

10. Pneumatic tools should not be pulled or lifted by their hoses.

Portable Electric Hand Tools and Extension Cords

1. Power to electric hand tools used in conductive environments should be supplied through either a ground fault interrupter or operated at a maximum of 12 volts.

2. When using electric hand tools, except those which are double insulated, be sure

they are case-grounded and equipped with three conductor service cords.

3. Before using a tool, guards should be in place.

4. Do not use extension cords and service cords to lift your tools and equipment.

5. Defective and frayed electrical cords and extension cords should be tagged "Out of Service" until properly repaired and restored to service.

6. Electric tools should not be used where flammable and/or combustible liquids are present.

Material Handling

1. When manually handling materials, lift and carry properly to avoid back and muscle strains.

2. If the material or object you must handle manually is either too heavy or too awkward to grasp properly, obtain help.

3. The rigging for the material handled should be inspected prior to each use.

4. Tag lines should be used to control the load being lifted.

5. Make certain that nay loose parts or pieces are firmly secured before lifting or moving.

6. When handling hazardous materials or chemicals, the proper personal protection equipment for that particular substance should be worn.

7. Walking or standing under suspended loads is prohibited.

8. Riding on a suspended load, a hoist hook, or a material hoist is prohibited.

9. No one should ride on moving equipment unless specifically authorized and then only when places are provided for this purpose.

10. Use the proper tools and equipment to adequately and safely perform the material handling job.

Rigging

1. Do not use the chain on hoists or come-alongs as a sling.

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2. Inspect rigging equipment each time you use it. If you find any defect in the equipment, report it to your supervisor.

3. When rigging equipment is not in use, store it in an area where it will be protected from welding sparks, excessive moisture and excessive heat.

4. Keep your hands away from pinch points.

5. When attaching hoists or come-alongs to any structure, make sure they will support the load you are lifting.

6. Use softeners (spacer blocks) to pad sharp-edged corners of materials to be lifted to protect slings, chokers, etc.

7. Use safety latches on chainhoists and come-alongs that are so equipped.

8. Either screw eyebolts all the way down to the bolt shoulder or use spacers.

9. Be sure to center the laod in the throat of the hook.

Grinding, Buffing, Cutting and Tapering

1. Personal protection equipment should be worn while using a grinder, saw, buffing wheel or tapering tool.

2. Never adjust a work rest while the wheel is in motion.

3. Use an approved respirator when grinding or cutting operations produce an excessive amount of dust.

4. Use only the face of the grinding wheel wxxcept when using a wheel designed for side grinding. Never grind soft metals on regular grinding wheels.

5. Do not use grinding wheels or blades that are excessively worn, out of balance, or damaged. Handle grinding wheels and saws carefully to prevent damage.

6. Stand to the side of the grinder or saw during startup and wait until the blade has reached maximum speed before starting work.

Compressed Gas Cylinders

1. Repairs or alteration to cylinders or safety relief devices are not permitted.

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2. Cylinders should be hoisted only in a cradle, cart or on a pallet.

3. Do not use cylinders for any purpose other than their proper and designated use.

4. Know the contents of the compressed gas cylinder you are using.

5. Keep valve protection covers in place when cylinders are not connected for use.

6. Make sure the threads on a regulator or union correspond with those on the cylinder valves outlet. Do not force connections.

7. Be sure to open cylinder valves slowly.

8. All cylinders should be handled carefully and treated as full.

9. Transport cylinders by hand-truck or mechanical means, if possible.

10. During vehicle transport, cylinders must remain in an upright position.

11. Report any leaking cylinder to your supervisor.

12. The valves of all compressed gas cylinders must be turned to the "off" position whenever they're not being used.

Welding and Cutting

1. Only employees authorized by their supervisor are permitted to perform welding and cutting operations.

2. Welding and cutting on lines and tanks that are under pressure or contain flammable liquids or gases is strictly forbidden except under approved, controlled conditions.

3. All lines or vessels should be properly cleared and purged, if applicable, before welding or cutting is permitted.

4. Suitable clothing and protective devices should be worn by welders.

5. Oxygen cylinders and associated apparatuses should be kept free of oil and greasy substances.

6. Do not lay welding leads or supply hoses on walkways or stairways.

7. Place screens around welding areas when other employees may be exposed to electric arc flash burns.

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8. Use fire blankets and/or catchments to prevent sparks and hot slag from creating fire and personal injury hazards. Do not leave the work area until a check is made for potential smoldering fires. Check the areas where sparks and hot slag may have fallen.

9. Use respiratory equipment in areas of confinement with poor ventilation. Protect against breathing welding rod fumes.

10. Make sure welding leads, stinger, whip, hoses and gauges are in good operable condition and are safely placed.

11. Keep a charged fire extinguisher close to welding and cutting operations.

12. When not in use, welding leads shall be removed from the stinger.

Flammable and Combustible Liquids

1. Never use gasoline for starting fires or for cleaning purposes.

2. Do not dispense gasoline for any purpose unless a safety can or tank designed for that purpose is used.

3. Do not place flammable or combustible liquids near open flames, welding operations or other sources of ignition.

4. Shut off all portable and mobile equipment, and gasoline and diesel engines when refueling.

5. Store flammable or combustible liquids in approved storage cabinets or rooms.

Forklift Operations

1. Only the driver is permitted to ride on forklift trucks.

2. The loads handled by a forklift truck must not exceed the rated capacity of the truck.

3. Keep the forks down. Do not operate a lift truck with the forks raised above the minimum height to clear obstructions.

4. If a load is too high or too wide to see around, operate the lift truck in reverse.

5. When you park the lift truck, lower the forks to the ground and set the

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parking brake.

6. Back down a ramp or incline. Always use low gear. Never turn sideways on an incline.

7. When a forklift truck is needed to provide access to an elevation, an approved safety work platform must be used.

Heavy Equipment Operation

1. Only authorized employees are permitted to operate heavy equipment, i.e., backhoes, trackhoes, dumptrucks, etc.

2. Unauthorized employees are not permitted to ride in cabs of heavy equipment.

3. Lower moveable buckets when you stop the vehicle.

4. Always block moveable buckets if maintenance or inspections are being performed with the bucket in the "up" position.

5. Operators should report all equipment malfunctions immediately.

6. Maintenance or repair work is not permitted with the engine running unless a positive means has been established to ensure the equipment remains stationary.

Warning Signs and Barriers

1. All warning signs and barriers must be strictly observed.

2. If your work assignment creates a physical hazard, you are responsible for adequately barricading and placarding the hazard as an integral part of the work. If more than one employee is involved in creating a physical hazard, each employee is responsible for ensuring that appropriate safe-guards are taken.

Energy Source Lockout/Tagout

The following lockout/tagout procedure shall be utilized whenever an employee performs maintenance or servicing work on equipment that is operated by a source of energy.

1. Identify the sources of energy, i.e., electrical, air, hydraulic, steam, etc.

2. Disengage the energy at its source and attach a lockout/tagout device to the switch, valve, handle, etc. Make sure the device is secure and in view of

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anyone else who may be in the area.

3. If more than one energy source is needed to be disengaged at any one time, each energy source is required to be lockedout/taggedout separately.

4. If more than one employee is working on the same equipment, each employee shall attach his lockout/tagout device to the disengaged energy source.

5. Before the lockout/tagout device is removed and the energy restored to the equipment, ensure that all employees have been safely positioned or moved away from the equipment.

6. Each lockout/tagout device affixed to an energy source shall be removed by the original employee who installed it.

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SCOEPA00021903

PEMCO

437 N. Columbia Blvd.
P.O. Box 11569
Portland, Oregon 97211
Office (503) 283-2151
FAX (503) 283-6388

CONFINED SPACE ENTRY PERMIT

PROJECT NAME_____ LOCATION_____

CONFINED SPACE TO BE ENTERED_____

PURPOSE OF ENTRY_____

LIST HAZARD CONDITIONS Oxygen Deficient Explosive/Flammable

Carbon Monoxide Hydrogen Sulfide

Chlorinated Solvent Hot Work

MEASURES TO CONTROL HAZARD_____

REQUIRED PPE TO ENTER SPACE Respirator Organic Vapor Filters

Chemical Splash Suit Rubber Boots

Eye Protection Inner/outer gloves

Hearing Protection Rescue Harness

SCBA Emergency Alarm

TRAINED & AUTHORIZED ENTRANTS_____ _____

TRAINED & AUTHORIZED ATTENDANTS_____ _____

SIGNATURE OF SUPERVISOR WHO AUTHORIZED ENTRY_____

ACCEPTABLE ENTRY CONDITIONS Oxygen - 19.5-23% Explosive <10%LEL

CO - <20 H^2S - <20

RESULTS OF ATMOSPHERIC TESTS							
DATE	TIME	O^2	LEL	CO	H^2S	CHLORIDE	BY WHOM

TIME OF ENTRY_____ TIME OF EXIT_____ TOTAL_____

EMERGENCY RESPONSE PHONE NUMBER_____

ADDRESS OF NEAREST MEDICAL FACILITY_____

FORWARD COMPLETED PERMIT TO SAFETY DIRECTOR

SCOEPA00021904

PEMCO
HOT WORK PERMIT FORM

PROJECT:_____ DATE:_____

DESCRIPTION OF HOT WORK:_____

HOT WORK EXAMPLES:

STEEL CUTTING/BURNING	WELDING
SAW CUTTING CONCRETE	WELL DRILLING
OPEN FLAMES OR EQUIP.	GRINDING

Note: The Hot Work Permit shall be valid for 1 Work Day. If the work requiring hot work continues beyond 1 work day, a separate hot work permit shall be required for each additional day.

THE FOLLOWING QUESTIONS SHOULD BE ANSWERED YES OR N/A:

	Yes	N/A
Has the Facility Operator or his representative been notified of the intended work?		
Has the intended work been coordinated with any other contractors who may be working on the site to make them aware of any safety hazards and the scope of the work to be done?		
Have as-built drawings been checked for underground utilities and product piping/storage locations?		
Has all related equipment been identified, isolated, and locked out - tagged out before the start of the project?		
Has all testing equipment (i.e. explosimeters etc.) and fire fighting equipment (i.e. fire extinguishers etc.) been checked to ensure proper operation and calibration before the start of this project?		
Has proper personal protective equipment been identified and provided?		
Have ignition sources been identified and precautions taken to prevent ignition before the start of the project?		
Have possible fuel sources been identified and protected, i.e., product piping, vapor piping, containment boxes and/or drain openings, before the start of the project?		
Has the area been restricted with proper barriers and signs, before the start of the project?		
Has the area been tested to be certain that, there is no explosive mixture (explosive vapors) present before starting hot work?		
Has a schedule been developed for continued testing for an explosive mixture during the course of the project, i.e., after breaks, after lunch, changing conditions (wind, humidity, etc.)?		
Have safe escape routes been identified before starting hot work?		
Has consideration been given to the safety of the Public, Customers & Facility Employees?		
Do all employees know how to contact emergency response?		

SIGNED BY:_____

PEMCO
SOIL REMEDIATION DIVISION SAFETY MEETING

PROJECT (if on one) _____ DATE _____

TOPICS DISCUSSED: 1._____
2._____
ACCIDENTS REVIEWED: 3._____
4._____

PEMCO EMPLOYEES	SUB-CONTRACT EMPLOYEES/COMPANY
1._____	1._____
2._____	2._____
3._____	3._____
4._____	4._____
5._____	5._____
6._____	6._____
7._____	7._____
8._____	8._____
9._____	9._____
10._____	10._____
11._____	11._____
12._____	12._____
13._____	13._____
14._____	14._____
15._____	15._____

SUGGESTIONS / CONCERNS

1._____
2._____
3._____
4._____
5._____
6._____

MEETING CHAIRMAN_____

Forward a copy to Safety Director

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PEMCO PROJECT COMPLAINT LOG

PROJECT TITLE_____ LOCATION_____

COMPLAINT DATE	COMPLAINT FILED BY	TELEPHONE NUMBER	DESCRIPTION OF COMPLAINT
1.			
2.			
3.			
4.			
5.			

ACTION TAKEN TO RESOLVE COMPLAINT	DATE	BY WHOM
1.		
2.		
3.		
4.		
5.		

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SCOEPA00021907

EMERGENCY CONTINGENCY PLAN

A. In the event of any injury, fire, spill or explosion, an alarm procedure will be activated. Alarm will be vocal in nature.

B. In the UNLIKELY EVENT of hazardous material into the environment, a fire or explosion which may present a threat to human health or the environment, the Safety and Health Officer will assess the hazard presented by the incident, and notify all facility personnel. He will then notify the Project Manager and the Director of Safety for PEMCO.

C. If there has been a release of contaminated material into the environment outside of the project site, the Safety and Health Officer will immediately notify the following agencies:

Oregon Department of Environmental Quality (503) 229-6142

and/or in case of other emergencies:

Police	**911**
Fire	**911**
Medical Assistance	**911**

If in Washington

Washington State Department of Ecology (206) 649-7000

D. In case of any emergency, all personnel will evacuate the project and assemble for reporting purposes.

E. No one shall be allowed back onto the project until the Safety Officer has evaluated the emergency situation and determined that it is safe to return.

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ENVIRONMENTAL CLEANUP SITE INFORMATION
SITE SUMMARY REPORT

December 13, 1991 09:34 am

SITE ID: 183 SITE NAME: Wacker Siltronic Corp. CERCLIS NO: 096253737

ADDRESS: 7200 NW Front Ave, Portland,

COMMENTS: Between Front Ave and Hwy 30 (St. Helens Rd) at the NW 7200 Block

COUNTY: MULTNOMAH REGION: NWR STATUS: Active

PROPERTY: TWNSHP/RANGE/SECT: 1N,1W,13 TAX LOTS: 1

LATITUDE: 0 deg.0'0" LONGITUDE: 0 deg.0'0" SITE SIZE: 84.6 acres

SITE CONTACT: Rudolf Staudigl
President
Wacker Siltronic Corp
P.O. Box 83180
Portland, OR 97283-0180
PHONE: (503)243-2020

PROGRAM CONTACTS: RCRA,

FACILITIES: Semiconductor products

YEARS OF OPERATION: SIC CODES: 3674,

PERMITS:	PERMIT NO.	PERMIT TYPE	ISSUED BY	COMMENTS
	Unknown	Unknown	Unknown	generates more than 1000 kg/mo

RELEASE AREAS:

HAZARDOUS SUBSTANCES/WASTE TYPES:

PAHs, xylene, toluene, phenols, benzene, ethylbenzene, 2,4-D

CONTAMINATION INFORMATION:

Much of the soil contamination (especially PAHs) is from the past practice of placing industrial wastes on the site for fill or disposal - Portland Gas & Coke. BTEX contamination probably results from coal tar wastes placed on the site and leaks or spills from a pipeline that crosses the site.

SITE ID: 183 Wacker Siltronic Corp. SITE SUMMARY REPORT

OTHER INFORMATION:

Soil and groundwater contamination, possibly surface water and groundwater hazards.

ASSOCIATED PARTIES

PARTY NAME AND ADDRESS	AFFILIATION	DATES OF AFFILIATION*	INFORMATION AS OF DATE
Northwest Natural Gas Northwest Natural Gas 220 N.W. 2nd Ave. Portland, OR COMMENTS:	Owner/Operator	Prior	02-MAY-88
Wacker Siltronic Corp. Rudolf Staudigl President Wacker Siltronic Corp P.O. Box 83180 Portland, OR 97283-0180 (503)243-2020 COMMENTS:	Legal Owner	Current	06-AUG-91
Wacker-Chemie GNBH Wacker-Chemie, GNBH Prinzregentenstrasse 22 800 Munich 22, COMMENTS:	Owner	Current	02-MAY-88

* indicates approximate dates

INFORMATION REVIEWED:
- "A Preliminary Report Soil Investigation for Proposed Polysilicon Plant" by CH2M Hill, June 1985.
- Preliminary Assessment Report prepared by Ecology and Environment, Inc., Oct., 1987.
- Laboratory data, Pacific Environmental Laboratory, Inc., July 25, 1990
- "Findings Report Groundwater and Soil Gas Investigation" prepared by CH2M Hill, December, 1990

DATA SOURCES: CERCLIS File Program: , Region: HQ

SCOEPA00021910

HAZARDOUS SUBSTANCES

SUBSTANCE	RELEASE AREAS	COMMENTS
BENZENE ( )		Date released: Unknown Quantity Released: Unknown Effective Date of Data: 07-AUG-91
BENZO(a)PYRENE		Effective Date of Data: 02-MAY-88
CHLOROPHENOL (3&4-chlorophenol)		Date released: Unknown Quantity Released: Unknown Effective Date of Data: 02-MAY-88
DIMETHYLPHENOL,2,4- ( )		Date released: Unknown Quantity Released: Unknown Effective Date of Data: 07-AUG-91
ETHYLBENZENE		Date released: Unknown Quantity Released: Unknown Effective Date of Data: 02-MAY-88
PENTACHLOROPHENOL		Date released: Unknown Quantity Released: Unknown Effective Date of Data: 02-MAY-88
PETROLEUM HYDROCARBONS (Total petroleum hydrocarbons (TPH))		Date released: Unknown Quantity Released: Unknown Effective Date of Data: 07-AUG-91
POLYNUCLEAR AROMATIC HYDROCARBONS (PAH) ( )		Date released: Unknown Quantity Released: Unknown Effective Date of Data: 07-AUG-91
TETRACHLOROETHYLENE (1,1,2,2-tetrachloroethylene)		Date released: Unknown Quantity Released: Unknown Effective Date of Data: 02-MAY-88
TOLUENE		Date released: unknown Quantity Released: unknown Effective Date of Data: 02-MAY-88
TOLUENEDIAMINE,2,4- (2,4-D)		Date released: Unknown Quantity Released: Unknown Effective Date of Data: 02-MAY-88
XYLENEs (xylene)		Date released: unknown Quantity Released: unknown

SITE ID: 183 Wacker Siltronic Corp. SITE SUMMARY REPORT

Effective Date of Data: 02-MAY-88

SUBSTANCE CONTAMINATION

SUBSTANCE	MEDIA CONTAMINATED	CONCENTRATION LEVEL	CERT	EVIDENCE	OBSERV. DATE
BENZENE	Groundwater	Up to 23,300 ug/l	E	Laboratory Data	
	Soil	Up to 29 mg/kg	E	Laboratory Data	
BENZO(a)PYRENE	Groundwater	Up to 760 ug/l	E	Laboratory Data	
	Soil	Up to 240 mg/kg	E	Laboratory Data	
CHLOROPHENOL	Soil	17.5 mg/kg	E	Laboratory Data	
DIMETHYLPHENOL,2,4-	Groundwater	Up to 27 ug/l	E	Laboratory Data	
	Soil	Up to 3.1 mg/kg	E	Laboratory Data	
ETHYLBENZENE	Groundwater	Up to 4680 ug/l	E	Laboratory Data	
	Soil	Up to 55 mg/kg	E	Laboratory Data	
PENTACHLOROPHENOL	Soil	Up to 6.9 mg/kg	E	Laboratory Data	
PETROLEUM HYDROCARBONS	Groundwater	Up to 89 mg/l	E	Laboratory Data	
POLYNUCLEAR AROMATIC HYDROCARBONS (PAH)	Groundwater	Up to 11,800 ug/l (total PAHs)	E	Laboratory Data	
	Soil	Up to 9970 mg/kg (total PAHs)	E	Laboratory Data	
TETRACHLOROETHYLENE	Soil	Up to 11 mg/kg	E	Laboratory Data	
TOLUENE	Groundwater	Up to 5960 ug/l	E	Laboratory Data	
	Soil	Up to 26 mg/kg	E	Laboratory Data	
TOLUENEDIAMINE,2,4-	Soil	Up to 160 mg/kg	E	Laboratory Data	
XYLENEs	Groundwater	Up to 6450 ug/l	E	Laboratory Data	
	Soil	Up to 146 mg/kg	E	Laboratory Data	

Certainty = (E)st. (C)ert. (U)ncert. (N)ot Assigned

ENVIRONMENTAL/HEALTH THREATS:

Site is located in heavy industrial area. Significant soil and groundwater contamination, but contaminated soil is under surface and groundwater not used. Greatest threat may be to Willamette River and to on-site workers who dig into contaminated soil without adequate personal safety equipment.

MANNER OF RELEASE:

Past practices.

TIME PERIOD OF RELEASE:

Unknown

STATUS OF INVESTIGATIVE OR REMEDIAL ACTION:

Responsible party investigation

REMEDIAL ACTION FUNDING:

Owner, operator or other person under agreement, order or consent decree under ORS 465.200 or 465.420.

INVESTIGATIVE AND REMEDIAL ACTIONS

ACTION	START DATE	COMPL. DATE	RESP. STAFF	LEAD SECT.

ADMINISTRATIVE ACTIONS

ACTION	DATE	RESPONSIBLE STAFF	LEAD SECT.	COMMENTS
Site Discovery	02-MAY-88	Michael Zollitsch	SAS	DEQ contact: Mike Downs
Listing Review Completed	06-AUG-91	Mike Downs	SRS	
Recommend proposing for Confirmed Release List	07-AUG-91	Mike Downs	SRS	
Recommend proposing for Inventory	07-AUG-91	Mike Downs	SRS	
Facility proposed for Confirmed Release List	15-NOV-91	Mike Downs	SRS	
Facility proposed for Inventory List	15-NOV-91	Mike Downs	SRS	

SITE ID: 183 Wacker Siltronic Corp. SITE SUMMARY REPORT

NOTIFICATION ACTIONS

NOTIFICATION DESCRIPTION	DATE SENT	PARTY NAME
	30-NOV-88	Wacker Siltronic Corp.

LAST UPDATED BY: OPS$DMC DATE: 07-NOV-91

(site_report.rpt)

PRELIMINARY ASSESSMENT REPORT
WACKER SILTRONIC CORPORATION
PORTLAND, OREGON

TDD F10-8709-17

Report Prepared by: Ecology and Environment, Inc.
Date: October 1987

Submitted to: J.E. Osborn, Regional Project Officer
Field Operations and Technical Support Branch
U.S. Environmental Protection Agency
Region X
Seattle, Washington

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101 YESLER WAY, SEATTLE, WASHINGTON, 98104, TEL. 206/624-9537
International Specialists in the Environment
recycled paper

SCOEPA00021915

ecology and environment, inc.
101 YESLER WAY, SEATTLE, WASHINGTON, 98104, TEL. 206/624-9537
International Specialists in the Environment

MEMORANDUM

DATE: November 9, 1987

TO: John Osborn, FIT-RPO, USEPA, Region X

THRU: David Buecker, FIT-OM, E&E, Seattle

FROM: Timothy L. Syverson, FIT-SM, E&E, Seattle

SUBJ: Preliminary Assessment Report for
Wacker Siltronic Corporation
Portland, Oregon

REF: TDD F10-8709-17

CC: Deborah Flood, HWD-SM, USEPA, Region X
Jeffrey Villnow, FIT-PM, E&E, Seattle
Thomas Tobin, E&E, Seattle

1. Introduction and Purpose of the Preliminary Assessment:

Pursuant to U.S. Environmental Protection Agency (EPA) Contract No. 68-01-7347 and Technical Directive Document (TDD) F10-8709-17, Ecology and Environment, Inc. (E&E) conducted a Preliminary Assessment (PA) of the Wacker Siltronic Corporation in Portland, Oregon. The PA represents the second of a three-step assessment process which begins with Site Discovery and concludes, if necessary, with a Site Inspection. The assessment process, in general, is intended to identify, compare, and rank the potential hazards associated with a particular site relative to other sites across the nation for the purpose of identifying priority sites requiring remedial responses. It does not include extensive or complete site characterization, contaminant fate determination, or quantitative risk assessment.

The Wacker Siltronic Corporation Site PA was conducted to identify potential public health and/or environmental hazards related to the site and, if present, evaluate the need for additional investigative action. The PA is based on data derived from available files pertaining to the site, and conversations with state and local officials (1-19). Information developed during the PA is summarized in Appendix A on EPA Form 2070-12.

2. Information Obtained During the Preliminary Assessment:

- Site Location and Description - The Wacker Siltronic Corporation Site is located at 7200 N.W. Front Street, in the northwest portion of the City of Portland, in Multnomah County, Oregon (Figure 1). The 85 acre Wacker Siltronic Site is bordered on the east by the Willamette River, on the west by Highway 30 (St. Helen's Road), on the north by Koppers, Inc. and Northwest Natural Gas, and on the south by the Burlington Northern Railroad Bridge. Wacker has a processing plant and offices in two buildings adjacent to the river, and a wastewater treatment facility along the northwest boundary of the property (Figure 2). A Portland General Electric (PGE) substation is located between the treatment facility and the process building. The southwestern portion of the site is undeveloped, but is the proposed location for Wacker's Polysilicon Plant. Access to the site is limited due to the site's close proximity to the river and the railroad grades that border the site on two sides (Figure 3). The active portions of the site are fenced, and the area is patrolled by private security personnel.

- Site History / Potential Problem(s) at Site - The Wacker Siltronic Site is located in the northwest industrial district of Portland (Figure 3) commonly referred to as "Doane's Lake". The Doane's Lake area previously included two lakes: Doane's Lake to the north, and Guild Lake to the south. Near the turn of the century, the area was filled with dredge sands and mud from the Willamette River, and industrial wastes to provide additional land for development (1). The land now owned by Wacker is a portion of the old Portland Gas and Coke (PG&C) site. The PG&C plant was in operation from 1913 to 1956. Since 1956, the PG&C property has been owned by Northwest Natural Gas (NNG) (2). In 1976 Wacker purchased the southeast portion of the property, and began construction of their facility (1).

  The Wacker Siltronic Corporation manufactures silicon wafers used in the production of integrated circuits. The plant grows and processes single crystals of silicon from high purity polycrystalline silicon. The Wacker facility is listed under the Resource Conservation and Recovery Act (RCRA) as a generator of industrial wastes (3). The facility has an NPDES permit for the processing and discharge of wastewater to the Willamette River, and an air contaminant discharge permit. Both permits are issued by the Oregon Department of Environmental Quality (DEQ) (4, 5).

  Currently, the Doane Lake area includes a number of industrial plants including Gould Battery, Pennwalt, Rhone-Poulenc, Koppers, Inc., Northwest Natural Gas, and an ESCO landfill. These companies

have produced or handled numerous toxic materials over the past 40 years, including creosote, flammable hydrogen gas, hydrochloric acid, and dioxin-tainted chemicals (6). The Gould Battery site is listed on the EPA's National Priorities List.

The Doane Lake Area has a history of waste disposal problems. Prior to regulatory action by the Oregon Department of Environmental Quality (DEQ) and the EPA, wastes from local industry were discharged to the air, to the ground and surface water, and landfilled in the immediate area (1). Wastes from the old PG&C plant's production of coal gas were landfilled on the lots now occupied by Wacker and Koppers (1) (Figure 3). DEQ has identified abandoned coal tar disposal pits on the Koppers Site, but the history and extent of past waste disposal on the Wacker Site has never been detailed (7).

Wacker Siltronic discovered oil in the ground water and soil of their property twice since 1976. In 1979, oil was found in two excavations in the northwest corner of their property adjacent to the Koppers Site. The oil seepage was contained, and thought to be isolated to the northwest portion of the site (8). Test borings in 1985, for a proposed plant expansion, encountered petroleum products, coal tar, and pesticides at 7 locations in the western portion of the site (9). Generally the contaminants were encountered at depths of 10-20 feet below ground surface, and did not appear to be migrating toward the river approximately 1,400 feet to the east (6, 9). Analyses of ground water samples from monitoring wells completed in the test borings detected low levels of volatile organics and base neutral extractables (10). Wacker proposed that the low levels of contaminants posed no threat to human health or to the environment, but the DEQ did not agree with their assessment and is requesting further work at the site (10, 11).

The Wacker Siltronic Corporation has had at least six incidents since 1976 involving the discharge of hazardous materials from their facility. These discharges have included chromic acid (07/80, 12/80, 05/84), TCE (12/83, 12/84), and wastewater (06/87). Contamination of soil, ground water, and surface water have resulted from these spills or leakages at the Wacker facility (16, 17, 18, 19). The cumulative effect of on-site spills of hazardous materials by Wacker is unknown.

Currently, Wacker Siltronic, Koppers Inc., and Northwest Natural Gas are working under DEQ guidance to develop a plan for a comprehensive study of past practices in the North Doane's Lake area (sites north of the Burlington Northern Railroad bridge) (12).

- Physical Environment - The Wacker Site is located adjacent to the Willamette River at an elevation of 10-25 feet above mean sea level. The immediate area is generally flat, but the bluffs to the east across St. Helen's Road rise to 1,000 feet. The site is underlain by river sediments and mechanically deposited fill. The depth to ground water beneath the site is less than 10 feet below the ground surface (9).

  In the Portland area the Willamette River flows north-west and is extensively used for commercial shipping and recreational purposes. Recreational activities on the river include boating and sport fishing.

  Drinking water for the site area is provided by the City of Portland. The primary source for the Portland public water supply is the Bullrun Watershed located approximately 27 miles east of the city. The city has a secondary source of water from a field of 26 wells located along the Columbia River approximately seven miles northeast of the Wacker Site (13).

  The Portland area has a mild climate with wet winters, and warm dry summers. Total annual precipitation is about 40 inches, and the annual lake evaporation is about 26 inches (14). The one-year 24 hour rainfall for the Portland area is 2.5-3 inches (15).

- Waste Types, Quantities, and Characteristics - Hazardous materials at the Wacker Site include both wastes from past disposal practices in the site area, and wastes generated by current Wacker operations. The petroleum products, coal tar, and pesticides found in the 1985 soil borings represent past disposal at the site or contamination from adjacent sites, because Wacker's operation has never handled these substances.

  As a regulated RCRA generator, Wacker Siltronic generates three waste streams during the normal course of business: waste freon, waste trichloroethylene (TCE), and chromic acid sludge (3).

  TCE is used to clean silicon wafers before a wax coating is applied. Currently about 4,000 gallons per month of waste TCE is recycled through Van Waters and Rogers, a DEQ approved facility. Waste TCE is pumped from the process building to an outside holding tank. This tank and other waste tanks are equipped with level indicators, and are diked to contain spills and leakage (3).

  Waste freon is generated in Wacker's silicon wafer manufacturing process. Currently five to ten, 55 gallon drums per month of waste freon are sent to McClary Columbia (also a DEQ approved facility) for recycling. The waste freon is also stored in an outside storage tank (3).

Chromic acid is used during the etching of silicon wafers. Waste chromic acid is pumped from the processing plant to a treatment building where the acid is neutralized and reduced to trivalent chrome. The liquid portion is pumped to Wacker's wastewater treatment unit (WWTU). The sludge is dried and sent to Chem Security Systems Incorporated for disposal. Wacker generates approximately one, 55 gallon drum of sludge per month (3).

Wastewater from Wacker's processing plant is sent to the WWTU, and then discharged to the city sewer system or to the Willamette River under NPDES permit (4).

- o Pollutants, Mobilization, Pathways, and Risks- Common characteristics of the chemical constituents of petroleum products found at the Wacker Site include high chemical stability, low water solubility, low vapor pressure, and a high affinity to soil (7). As a result, these substances are relatively immobile in the subsurface environment. Subsurface contamination by petroleum products may have a long term affect on soil and ground water due to their high organic content and low solubility (7). The 1985 soil borings and ground water analysis confirm the presence and persistence of materials disposed at the site during past industrial practices. The effect of these contaminants on the public health and the environment is unknown.

  The site has a history of soil, ground and surface water contamination, and there have been reports of skin and eye irritation due to air-borne contaminants (11). The site is composed of fill material of unknown permeability. The contamination of soil and ground water does not pose a direct threat to local drinking water supplies. However, the site's close proximity to the Willamette River makes the potential for contamination of the river by surface runoff or seepage through the soil high. Any releases to the river pose a direct threat to the environment, and an indirect threat to the large population using the river for recreation.

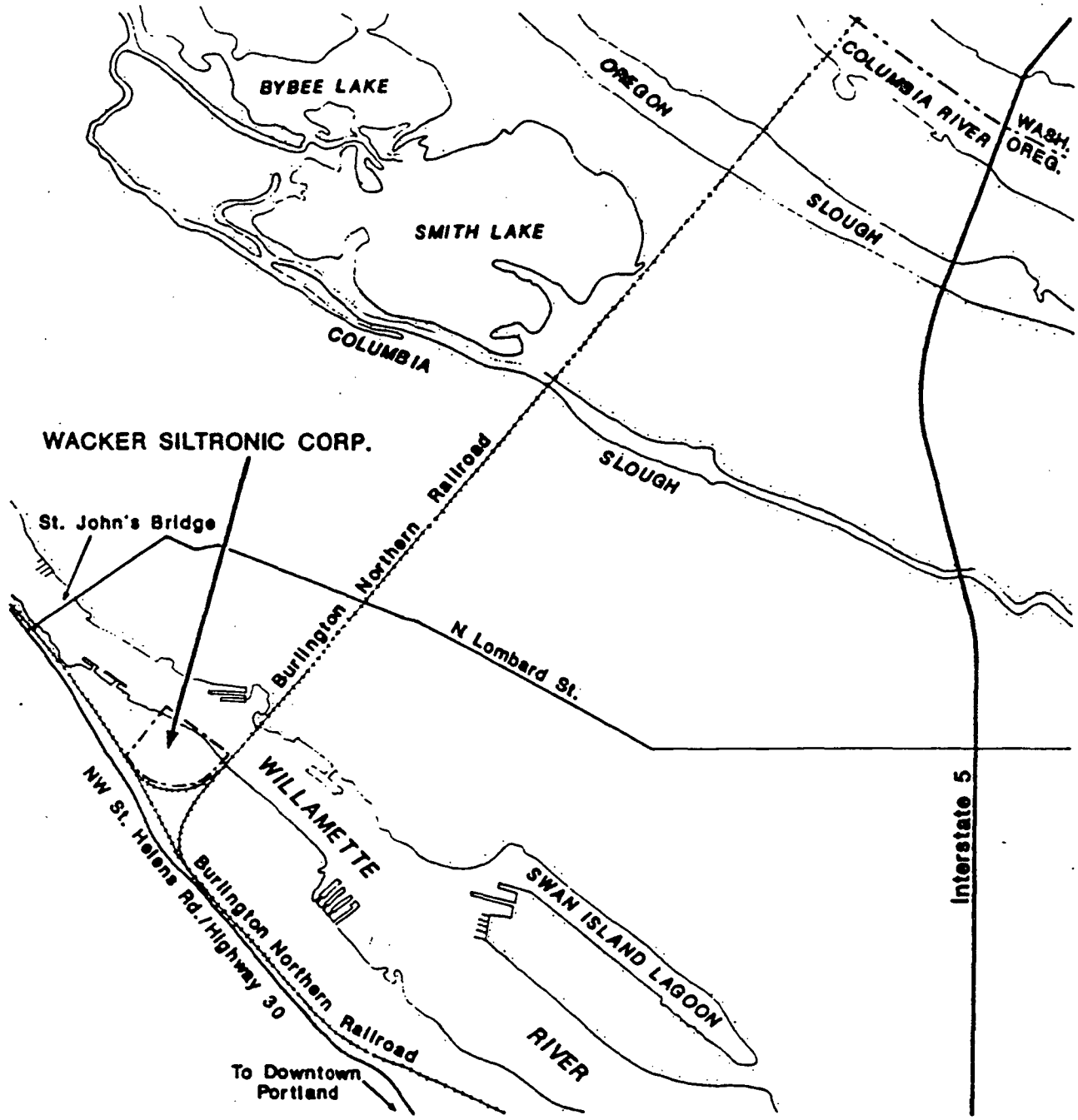
3. Priority Assessment:

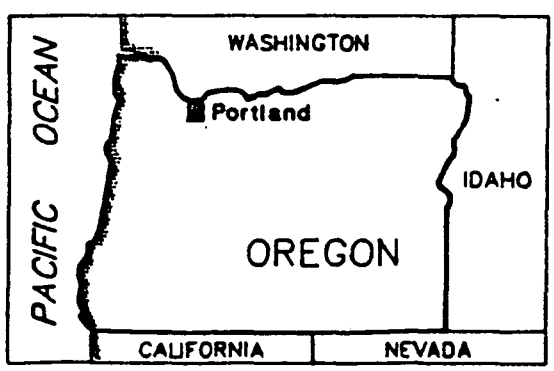
No further action is appropriate by the pre-remedial program. However, the site should continue to be assessed as part of the Doane Lake Investigation.

4. Follow-up Recommendations:

The Wacker Siltronic Site is located in a heavily industrialized area with a long history of waste disposal problems. Based on the fact that there is no target population drinking ground or surface water in the site area, and the on-going monitoring of the site by DEQ under RCRA, no further action under CERCLA is recommended. Results from this PA are in agreement

with DEQ's recommendation that a comprehensive study is needed to characterize the extent of contamination at the Wacker Siltronic Site, and in the North Doane Lake Area. The area-wide study should target both past and present waste handling practices to assess the potential impact of site contamination on the Willamette River, and the threat to human health during any future construction in the area.

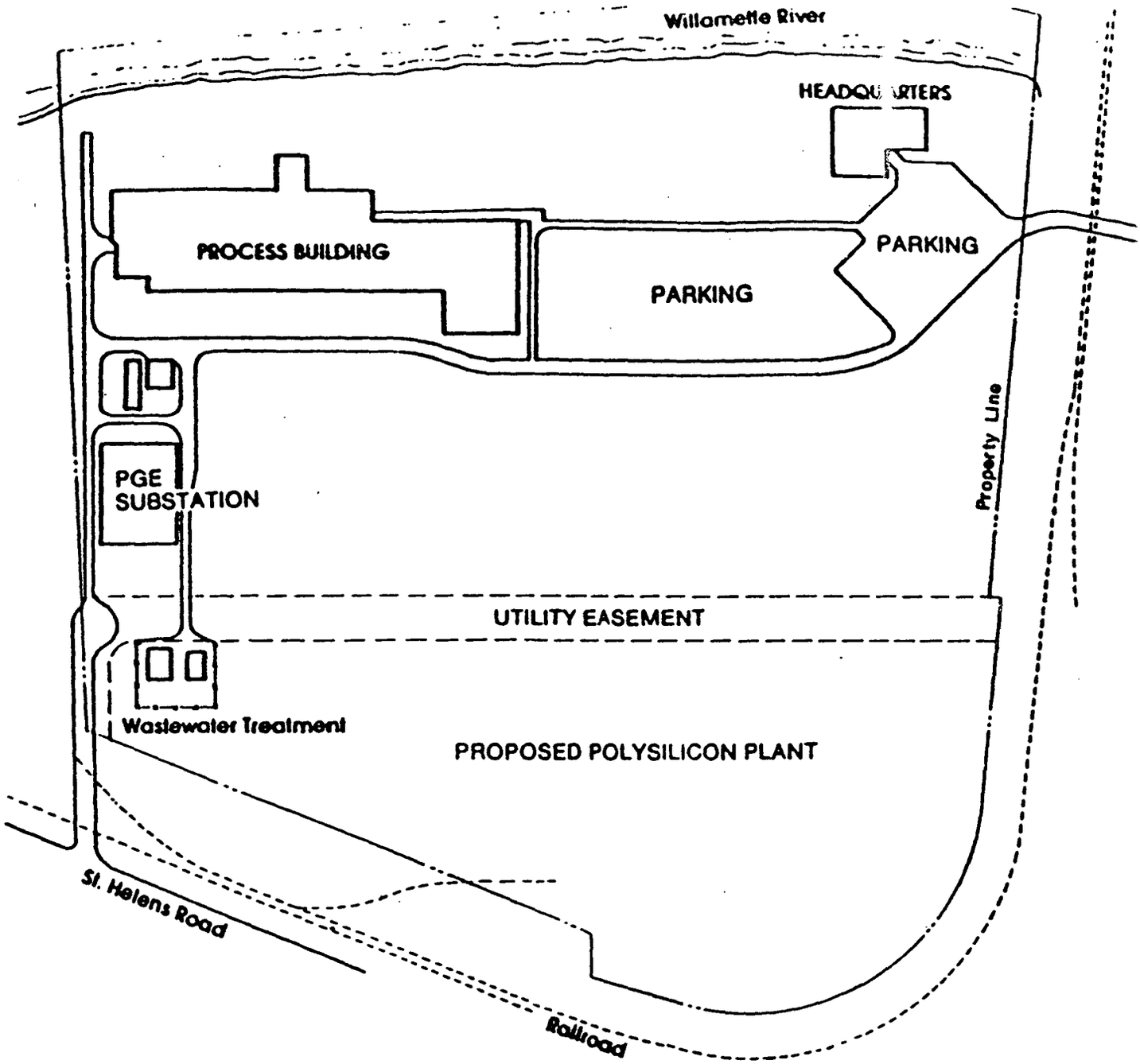




ecology & environment, inc.	
Job: F10-8709-17	Waste Site: OR 0192
Drawn by: B.T.	Date: 10/26/1987

FIGURE 1
LOCATION MAP
WACKER SILTRONIC CORP.
Portland, OR

SCOEPA00021922

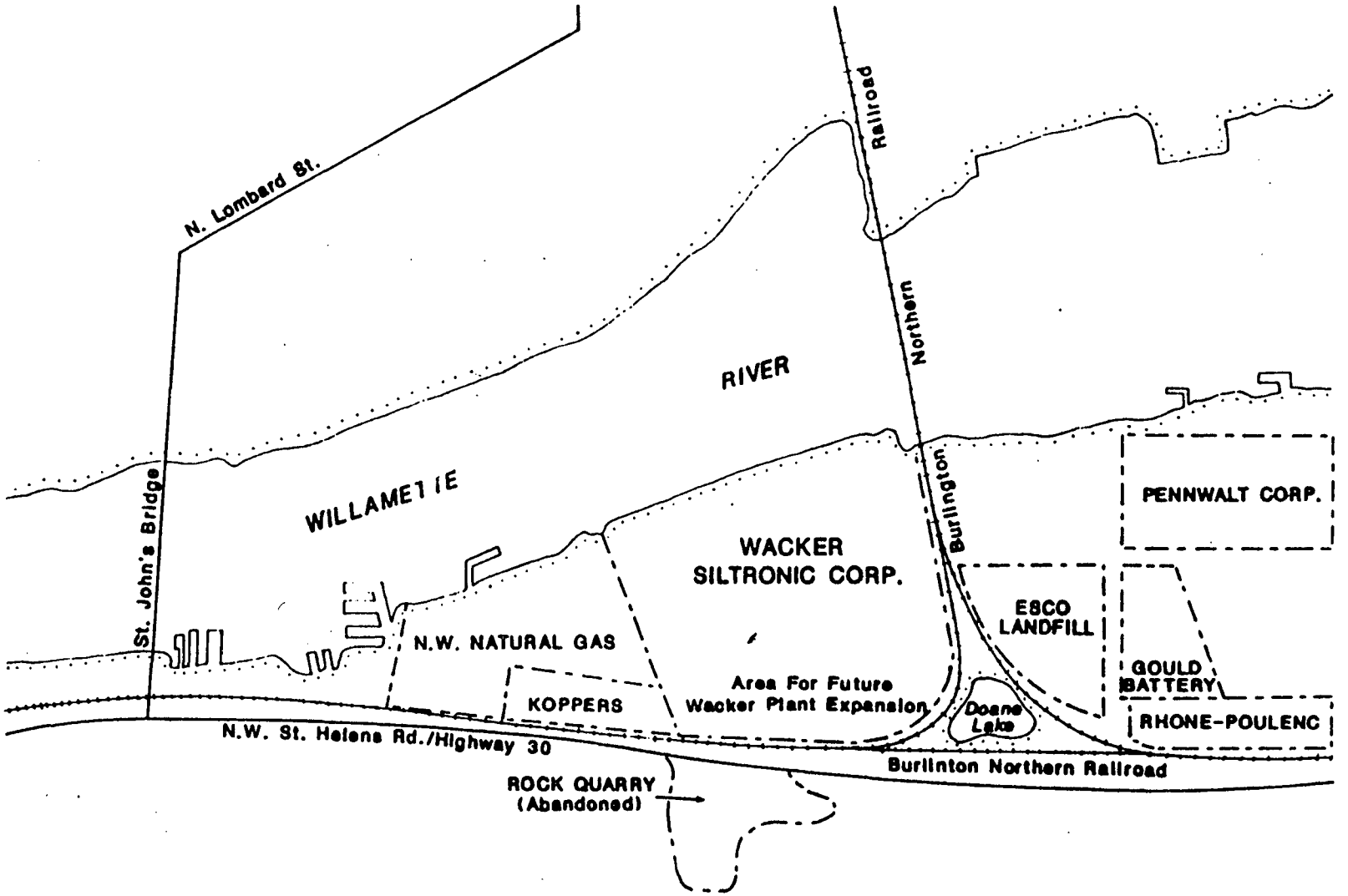


ecology & environment, Inc.	
Job: F10-8709-17	Waste Site: OR 0192
Drawn by: B.T.	Date: 10/26/1987

FIGURE 2
SITE MAP
WACKER SILTRONIC CORP.
Portland, OR

Source: CH2M Hill

SCOEPA00021923



ecology & environment, inc.	
Job: F10-8708-17	Waste Site: OR 0192
Drawn by: B.T.	Date: 10/27/1987

FIGURE 3
VICINITY MAP (1983)
WACKER SILTRONIC CORP.
Portland, OR

SCOEPA00021924

REFERENCES

1. Memo from F. Hansen to Governor V. Atiyeh, June 19, 1985. ODEQ Site Files.

2. Willamette Week, Vol. 11, No. 4, August 8-14, 1985. Portland's Toxic Armpit. USEPA Region X, Gould, Inc. Superfund Site File.

3. Memo and RCRA inspection checklist from E. Woods to File, September 4, 1987. ODEQ Site Files.

4. Correspondence from F. Hansen to J. Pittman, February 18, 1987. ODEQ Site Files.

5. Correspondence from M. Tilson to G. Davis, February 11, 1987. ODEQ Site Files.

6. The Oregonian, June 24, 1985. Wacker plant deferment points to other problems. USEPA, Region X, Gould, Inc. Superfund Site File.

7. Ecology and Environment, Inc. (E&E), 1987. Preliminary Assessment Report for Koppers Site, Portland, Oregon. TDD F10-8709-09, Draft Copy.

8. Memo from S. Carter to File, February 12, 1979. ODEQ Site Files.

9. CH$_2$M Hill Northwest, Inc., June 1985. A Preliminary Report Soil Investigation for Proposed Polysilicon Plant, Wacker Siltronic Corporation, Portland, Oregon. ODEQ Site Files.

10. Memo from C. Humphrey to P. Storm, October 23, 1985. USEPA Region X, Gould, Inc. Superfund Site File.

11. Personal Communication, Tom Miller, ODEQ, October 20, 1987.

12. Memo from R. Bach to F. Hansen, July 14, 1985. ODEQ Site Files.

13. Personal Communication, Todd Humphrey, Engineer, City of Portland, October 28, 1987.

14. U.S. Department of Commerce, NOAA, Climatic Atlas of the United States, 1968.

15. U.S. Department of Commerce, Rainfall Frequency Atlas of the United States, Technical Paper No. 40, 1963.

16. Correspondences from J. Ellis to S. Carter, July 14, 1980 and December 22, 1980. ODEQ Site Files.

17. Correspondences from G. Carr to C. Clinton, January 6, 1984 and June 4, 1984. ODEQ Site Files.

SCOEPA00021925

REFERENCES (Cont.)

18. Correspondence from J. Gillaspie to J. Ellis, April 16, 1985. ODEQ Site Files.

19. Correspondence from M. Tilson to G. Davis, July 2, 1987. ODEQ Site Files.

SCOEPA00021926

APPENDIX A

EPA FORM 2070-12

SCOEPA00021927

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 1 - SITE INFORMATION AND ASSESSMENT

I. IDENTIFICATION
01 State: OR | 02 Site Numb: 0096253737

II. SITE NAME AND LOCATION

01 Site Name (Legal, common, or descriptive name of site)	02 Street, Route No., or Specific Location Identifier				
Wacker Siltronic Corporation	7200 N. W. Front Avenue				
03 City	04 State	05 Zip Code	06 County	07 County Code	08 C D
Portland	OR	97229	Multnomah	051	0

09 Coordinates

Latitude	Longitude
45° 35' 18.0"	122° 45' 39.0"

10 Directions to Site (Starting from nearest public road)
Highway 30 NW from downtown Portland, approximately 5 miles. Highway 30 becomes St. Helens Road. Wacker is loc in the 7000 block of N.W. Front Street, 2 blocks north of St. Helens Road past the railroad bridge and 1 mile SE St. Johns Bridge in the North Doane Lake industrial area.

III. RESPONSIBLE PARTIES

01 Owner (if known)	02 Street (Business, mailing, residential)			
Wacker Siltronic Corporation	7200 N. W. Front Avenue			
03 City	04 State	05 Zip Code	06 Telephone Number	
Portland	OR	97229	(503) 243-2020	
07 Operator (if known and different from owner)	08 Street (Business, mailing, residential)			
09 City	10 State	11 Zip Code	12 Telephone Number	
			( )	

13 Type of Ownership (Check one)
[X] A. Private [ ] B. Federal _____ (agency name) [ ] C. State [ ] C. County [ ] E. Municipal
[ ] F. Other _____ (specify) [ ] G. Unknown

14 Owner/Operator Notification on File (Check all that apply)
[ ] A. RCRA 3001 Date Received: / / (Month Day Year) [X] B. Uncontrolled Waste Site (CERCLA 103c) Date Received: 06 / 14 / 85 (Month Day Year) [ ] C. None

IV. CHARACTERIZATION OF POTENTIAL HAZARD

01 On-Site Inspection
[ ] Yes Date / / (Month Day Year)
[X] No
[ ] A. EPA [ ] B. EPA Contractor [ ] C. State [ ] D. Other Contractor
[ ] E. Local Health Official [ ] F. Other _____ (specify)
Contractor Names(s): _____

02 Site Status (Check one)
[X] A. Active [ ] B. Inactive [ ] C. Unknown

03 Years of Operation
Unknown - may be as early as 1940s (Beginning Year) Present (Ending Year) [ ] Unknown

04 Description of Substances Possibly Present, Known, or Alleged
Wastes and spillage from industrial activities in the Doane Lake area, including petroleum products, coal tar, pesticides. Compounds of concern include: polyaromatic hydrocarbons; 2,4-dichlorophenol; 2,4-D; lead; benzene and toluene.

05 Description of Potential Hazard to Environment and/or Population
Ground water contamination, possible seepage to the Willamette River and potential direct contact to workers du construction at the site.

V. PRIORITY ASSESSMENT

01 Priority for Inspection (Check one. If high or medium is checked, complete Part 2 - Waste Information and Part Description of Hazardous Conditions and Incidents)
[ ] A. High (Inspection required promptly) [ ] B. Medium (Inspection required) [ ] C. Low (Inspect on time available basis) [X] D. None (No further action needed, complete current disposition f

VI. INFORMATION AVAILABLE FROM

01 Contact	02 Of (Agency/Organization)		03 Telephone
Deborah Flood	USEPA Region X, Superfund		(206) 442-2
04 Person Responsible for Assessment	05 Agency	06 Organization	07 Telephone No.	08 Date
Timothy L. Syverson	EPA/FIT	E&E, Inc.	(206)624-9537	09 /22 (Month Day)

SCOEPA00021928

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION	
01 State	02 Site Numb
OR	D096253737

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 Physical States (Check all that apply)

- [ ] A. Solid
- [ ] B. Powder, Fines
- [X] C. Sludge
- [X] D. Other Unknown (Specify)
- [ ] E. Slurry
- [X] F. Liquid
- [ ] G. Gas

02 Waste Quantity at Site (Measure of waste quantities must be independent)

Tons _____

Cubic Yards Unknown

No. of Drums _____

03 Waste Characteristics (Check all that apply)

- [X] A. Toxic
- [ ] B. Corrosive
- [ ] C. Radioactive
- [X] D. Persistent
- [ ] E. Soluble
- [ ] F. Infectious
- [ ] G. Flammable
- [ ] H. Ignitable
- UNKNOWN
- [ ] I. Highly Volati
- [ ] J. Explos
- [ ] K. Reacti
- [ ] L. Incomp ible
- [ ] M. Not Applic

III. WASTE TYPE

Category	Substance Name	01 Gross Amount	02 Unit of Measure	03 Comments
SLU	Sludge	Unknown		Industrial wastes and spillage including petroleum products, coa tar, and pesticides. Materials disposed of on site prior to owne ship by Wacker. *Current waste generated on site includes Trichloroethylene, Freon and Chromic Acid.
OLW	Oily Waste	Unknown		
SOL	Solvents	Unknown		
PSD	Pesticides	Unknown		
OCC	Other Organic Chemicals	Unknown		
IOC	Inorganic Chemicals			
ACD	Acids			
BAS	Bases			
MES	Heavy Metals			

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

01 Category	02 Substance Name	03 CAS Number	04 Storage/Disposal Method	05 Concentration	06 Measure Concentrat
*	Waste Trichloroethylene		Recycled through VanWaters and Rogers.		4,000 gal per month
*	Waste Freon		Recycled through McClary Columbia.		5 - 10 dr per month
*	Chromic Acid		Acid is neutralized and reduced to Cr+3. Liquid fraction is pumped to the wastewater treatment unit. Sludge is dried and sent to Arlington.		2 - 3 dr per year

NOTE: Wacker has a wastewater treatment unit (WWTV) on site. WWTV discharge to the city sewer and the Willamett River are included under NPDS Permit #99527 issued by the Oregon DEQ.

V. FEEDSTOCKS (See Appendix for CAS Numbers)

Category	01 Feedstock Name	02 CAS Number	Category	01 Feedstock Name	02 CAS Numb
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

Oregon Department of Environmental Quality, RCRA Generator Inspection, 09/04/87.
CH_2M Hill Northwest, Inc.; A Preliminary Report Soil Investigation for Proposed Polysilicon Plant, Wacker Siltronic Corporation, Portland, Oregon, 06/85.

SCOEPA00021929

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 State	02 Site Number
OR	D096253737

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 [X] A. Ground Water Contamination
03 Population Potentially Affected: Unknown
02 [X] Observed (Date: approx. 1940's to Present) [ ] Potential [ ] Alle
04 Narrative Description

Disposal of petroleum products, coal tar, and pesticides during industrial activity in the North Doane Lake area Recent spills (post 1980) include Trichloroethylene (TCE) and Chromic Acid. Sampling (1985) of shallow monitori wells (<40') in the undeveloped southern portion of the site detected low levels of semi-volatile organics. Dep to ground water is < 15 feet.

01 [X] B. Surface Water Contamination
03 Population Potentially Affected: Unknown
02 [X] Observed (Date: 1980 - Present) [ ] Potential [ ] Alle
04 Narrative Description

The site is adjacent to the Willamette River. Leakage and spills at the Wacker facility enter the river via out from the plant's wastewater treatment unit. Documented spills of hazardous materials to the river include: Chr Acid (07/80, 12/80, and 05/84); TCE (12/83 anid 12/84); and wastewater (06/87).

01 [X] C. Contamination of Air
03 Population Potentially Affected: Unknown
02 [X] Observed (Date: Unknown-Present) [ ] Potential [ ] Alle
04 Narrative Description

The Wacker facility has an Air Contaminant Discharge Permit (#26-3002) issued by the Oregon DEQ. However, there reports of odors and skin irritation from fumes originating from wastes landfilled at the site and in the adjace Doane Lake.

01 [X] D. Fire/Explosive Conditions
03 Population Potentially Affected: Unknown
02 [ ] Observed (Date:) [X] Potential [ ] Alle
04 Narrative Description

Petroleum products of an unknown type and quantity have been landfilled at the site.

01 [X] E. Direct Contact
03 Population Potentially Affected: Unknown
02 [X] Observed (Date: Present) [ ] Potential [ ] Alle
04 Narrative Description

Skin and eye irritation have been reported in the site area. The potential exists for exposure to buried pesti- cides, and petroleum products, if excavation is conducted at the site.

01 [X] F. Contamination of Soil
03 Area Potentially Affected (Acres) Unknown
02 [X] Observed (Date: approx. 1940's to Present) [ ] Potential [ ] All
04 Narrative Description

Petroleum products, coal tar, and pesticides were disposed of and/or spilled at the site. Soil borings done in confirm the presence of petroleum products and pesticides in sediments < 20 feet below the surface.

01 [ ] G. Drinking Water Contamination
03 Population Potentially Affected:
02 [ ] Observed (Date:) [ ] Potential [ ] All
04 Narrative Description

The area is served by the City of Portland public water supply. Contamination of ground water at the site is unlikely to affect local drinking water supplies.

01 [X] H. Worker Exposure/Injury
03 Workers Potentially Affected: Unknown
02 [ ] Observed (Date:) [X] Potential [ ] All
04 Narrative Description

Direct contact with buried wastes is possible for workers during any construction or excavation at the site.

01 [X] I. Population Exposure/Injury
03 Population Potentially Affected: Unknown
02 [X] Observed (Date: Present) [X] Potential [ ] All
04 Narrative Description

The Doane Lake area has a history of waste disposal problems. The potential exists for exposure if there are a uncontained or unknown disposal areas.

SCOEPA00021930

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION
01 State: OR | 02 Site Number: D096253737

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 ☐ J. Damage to Flora — 02 ☐ Observed (Date: _____) ☐ Potential ☐ Alleg
04 Narrative Description

None reported, observed, or suspected.

01 ☐ K. Damage to Fauna — 02 ☐ Observed (Date: _____) ☐ Potential ☐ Alleg
04 Narrative Description (include name(s) of species)

None reported, observed, or suspected.

01 ☐ L. Contamination of Food Chain — 02 ☐ Observed (Date: _____) ☐ Potential ☐ Alleg
04 Narrative Description

None reported or observed. Contamination of the Willamette River has the potential to affect fishing resources.

01 ☒ M. Unstable Containment of Wastes (Spills/runoff/standing liquids, leaking drums) — 02 ☐ Observed (Date: _____) ☐ Potential ☐ Alleg
03 Population Potentially Affected: _____ 04 Narrative Description

Petroleum products and coal tar were landfilled at, or adjacent to, the site causing soil contamination.

01 ☒ N. Damage to Off-site Property — 02 ☐ Observed (Date: _____) ☒ Potential ☐ Alleg
04 Narrative Description

Adjacent property has the potential to be affected by subsurface migration of wastes.

01 ☒ O. Contamination of Sewers, Storm Drains, WWTPs — 02 ☒ Observed (Date: 12/27/83) ☐ Potential ☐ Alleg
04 Narrative Description

Wastewater spill at the facility was diverted to the municipal sewer system. The water contained 2.02 ppm chrom

01 ☒ P. Illegal/Unauthorized Dumping — 02 ☐ Observed (Date: approx. 1940's to 1980) ☐ Potential ☐ Alleg
04 Narrative Description

The exact quantity and types of materials disposed of or spilled on site during past practices are unknown.

05 Description of Any Other Known, Potential, or Alleged Hazards

Due to the long history of petroleum and chemical manufacturing in the site area, and unknown waste handling practices, the potential exists for the discovery of additional hazardous materials and conditions in the site ar

III. TOTAL POPULATION POTENTIALLY AFFECTED: Unknown

IV. COMMENTS

The Wacker site is located in the heavily industrialized North Doane Lake area of northwest Portland. East of th site is the Gould, Inc. Superfund site. The Doane Lake area has a history of waste disposal and operational problems. The Wacker site will be included in a North Doane Lake study, to be conducted by Wacker, Northwest Natural Gas, and Koppers, Inc., under the guidance of the Oregon DEQ.

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

CH_2M Hill N.W., Inc., A Preliminary Soil Investigation, Wacker Siltronic Corporation, 06/85; Memos from J. Ellis, Wacker Siltronic, to S. Carter, ODEQ, dated 07/14/80 and 12/22/80; Memo from G. Carr, Wacker Siltronic, to C. Carter, ODEQ, dated 06/04/84; Memo from G. Carr, Wacker Siltronic, to C. Clinton, ODEQ, dated 01/06/84; Memo f J. Gillaspie, ODEQ, to J. Ellis, Wacker Siltronic, dated 04/16/85; Memo from M. Tillson, Wacker Siltronic, to G. Davis, ODEQ, dated 07/02/87; Memo from M. Tillson, Wacker Siltronic, to G. Davis, ODEQ, dated 02/11/87; Tom Mille ODEQ, Personal Communication, 10/20/87.

SCOEPA00021931

PRELIMINARY ASSESSMENT REPORT
WACKER SILTRONIC CORPORATION
PORTLAND, OREGON

TDD F10-8709-17

Report Prepared by: Ecology and Environment, Inc.
Date: October 1987

Submitted to: J.E. Osborn, Regional Project Officer
Field Operations and Technical Support Branch
U.S. Environmental Protection Agency
Region X
Seattle, Washington

ecology and environment, inc.
101 YESLER WAY, SEATTLE, WASHINGTON, 98104, TEL. 206/624-9537
International Specialists in the Environment

SCOEPA00021932

ecology and environment, inc.
101 YESLER WAY, SEATTLE, WASHINGTON, 98104, TEL. 206/624-9537
International Specialists in the Environment

MEMORANDUM

DATE: November 9, 1987

TO: John Osborn, FIT-RPO, USEPA, Region X

THRU: David Buecker, FIT-OM, E&E, Seattle

FROM: Timothy L. Syverson, FIT-SM, E&E, Seattle

SUBJ: Preliminary Assessment Report for
Wacker Siltronic Corporation
Portland, Oregon

REF: TDD F10-8709-17

CC: Deborah Flood, HWD-SM, USEPA, Region X
Jeffrey Villnow, FIT-PM, E&E, Seattle
Thomas Tobin, E&E, Seattle

1. Introduction and Purpose of the Preliminary Assessment:

Pursuant to U.S. Environmental Protection Agency (EPA) Contract No. 68-01-7347 and Technical Directive Document (TDD) F10-8709-17, Ecology and Environment, Inc. (E&E) conducted a Preliminary Assessment (PA) of the Wacker Siltronic Corporation in Portland, Oregon. The PA represents the second of a three-step assessment process which begins with Site Discovery and concludes, if necessary, with a Site Inspection. The assessment process, in general, is intended to identify, compare, and rank the potential hazards associated with a particular site relative to other sites across the nation for the purpose of identifying priority sites requiring remedial responses. It does not include extensive or complete site characterization, contaminant fate determination, or quantitative risk assessment.

The Wacker Siltronic Corporation Site PA was conducted to identify potential public health and/or environmental hazards related to the site and, if present, evaluate the need for additional investigative action. The PA is based on data derived from available files pertaining to the site, and conversations with state and local officials (1-19). Information developed during the PA is summarized in Appendix A on EPA Form 2070-12.

SCOEPA00021933

2. Information Obtained During the Preliminary Assessment:

- Site Location and Description - The Wacker Siltronic Corporation Site is located at 7200 N.W. Front Street, in the northwest portion of the City of Portland, in Multnomah County, Oregon (Figure 1). The 85 acre Wacker Siltronic Site is bordered on the east by the Willamette River, on the west by Highway 30 (St. Helen's Road), on the north by Koppers, Inc. and Northwest Natural Gas, and on the south by the Burlington Northern Railroad Bridge. Wacker has a processing plant and offices in two buildings adjacent to the river, and a wastewater treatment facility along the northwest boundary of the property (Figure 2). A Portland General Electric (PGE) substation is located between the treatment facility and the process building. The southwestern portion of the site is undeveloped, but is the proposed location for Wacker's Polysilicon Plant. Access to the site is limited due to the site's close proximity to the river and the railroad grades that border the site on two sides (Figure 3). The active portions of the site are fenced, and the area is patrolled by private security personnel.

- Site History / Potential Problem(s) at Site - The Wacker Siltronic Site is located in the northwest industrial district of Portland (Figure 3) commonly referred to as "Doane's Lake". The Doane's Lake area previously included two lakes: Doane's Lake to the north, and Guild Lake to the south. Near the turn of the century, the area was filled with dredge sands and mud from the Willamette River, and industrial wastes to provide additional land for development (1). The land now owned by Wacker is a portion of the old Portland Gas and Coke (PG&C) site. The PG&C plant was in operation from 1913 to 1956. Since 1956, the PG&C property has been owned by Northwest Natural Gas (NNG) (2). In 1976 Wacker purchased the southeast portion of the property, and began construction of their facility (1).

  The Wacker Siltronic Corporation manufactures silicon wafers used in the production of integrated circuits. The plant grows and processes single crystals of silicon from high purity polycrystalline silicon. The Wacker facility is listed under the Resource Conservation and Recovery Act (RCRA) as a generator of industrial wastes (3). The facility has an NPDES permit for the processing and discharge of wastewater to the Willamette River, and an air contaminant discharge permit. Both permits are issued by the Oregon Department of Environmental Quality (DEQ) (4, 5).

  Currently, the Doane Lake area includes a number of industrial plants including Gould Battery, Pennwalt, Rhone-Poulenc, Koppers, Inc., Northwest Natural Gas, and an ESCO landfill. These companies

have produced or handled numerous toxic materials over the past 40 years, including creosote, flammable hydrogen gas, hydrochloric acid, and dioxin-tainted chemicals (6). The Gould Battery site is listed on the EPA's National Priorities List.

The Doane Lake Area has a history of waste disposal problems. Prior to regulatory action by the Oregon Department of Environmental Quality (DEQ) and the EPA, wastes from local industry were discharged to the air, to the ground and surface water, and landfilled in the immediate area (1). Wastes from the old PG&C plant's production of coal gas were landfilled on the lots now occupied by Wacker and Koppers (1) (Figure 3). DEQ has identified abandoned coal tar disposal pits on the Koppers Site, but the history and extent of past waste disposal on the Wacker Site has never been detailed (7).

Wacker Siltronic discovered oil in the ground water and soil of their property twice since 1976. In 1979, oil was found in two excavations in the northwest corner of their property adjacent to the Koppers Site. The oil seepage was contained, and thought to be isolated to the northwest portion of the site (8). Test borings in 1985, for a proposed plant expansion, encountered petroleum products, coal tar, and pesticides at 7 locations in the western portion of the site (9). Generally the contaminants were encountered at depths of 10-20 feet below ground surface, and did not appear to be migrating toward the river approximately 1,400 feet to the east (6, 9). Analyses of ground water samples from monitoring wells completed in the test borings detected low levels of volatile organics and base neutral extractables (10). Wacker proposed that the low levels of contaminants posed no threat to human health or to the environment, but the DEQ did not agree with their assessment and is requesting further work at the site (10, 11).

The Wacker Siltronic Corporation has had at least six incidents since 1976 involving the discharge of hazardous materials from their facility. These discharges have included chromic acid (07/80, 12/80, 05/84), TCE (12/83, 12/84), and wastewater (06/87). Contamination of soil, ground water, and surface water have resulted from these spills or leakages at the Wacker facility (16, 17, 18, 19). The cumulative effect of on-site spills of hazardous materials by Wacker is unknown.

Currently, Wacker Siltronic, Koppers Inc., and Northwest Natural Gas are working under DEQ guidance to develop a plan for a comprehensive study of past practices in the North Doane's Lake area (sites north of the Burlington Northern Railroad bridge) (12).

- Physical Environment - The Wacker Site is located adjacent to the Willamette River at an elevation of 10-25 feet above mean sea level. The immediate area is generally flat, but the bluffs to the east across St. Helen's Road rise to 1,000 feet. The site is underlain by river sediments and mechanically deposited fill. The depth to ground water beneath the site is less than 10 feet below the ground surface (9).

  In the Portland area the Willamette River flows north-west and is extensively used for commercial shipping and recreational purposes. Recreational activities on the river include boating and sport fishing.

  Drinking water for the site area is provided by the City of Portland. The primary source for the Portland public water supply is the Bullrun Watershed located approximately 27 miles east of the city. The city has a secondary source of water from a field of 26 wells located along the Columbia River approximately seven miles northeast of the Wacker Site (13).

  The Portland area has a mild climate with wet winters, and warm dry summers. Total annual precipitation is about 40 inches, and the annual lake evaporation is about 26 inches (14). The one-year 24 hour rainfall for the Portland area is 2.5-3 inches (15).

- Waste Types, Quantities, and Characteristics - Hazardous materials at the Wacker Site include both wastes from past disposal practices in the site area, and wastes generated by current Wacker operations. The petroleum products, coal tar, and pesticides found in the 1985 soil borings represent past disposal at the site or contamination from adjacent sites, because Wacker's operation has never handled these substances.

  As a regulated RCRA generator, Wacker Siltronic generates three waste streams during the normal course of business: waste freon, waste trichloroethylene (TCE), and chromic acid sludge (3).

  TCE is used to clean silicon wafers before a wax coating is applied. Currently about 4,000 gallons per month of waste TCE is recycled through Van Waters and Rogers, a DEQ approved facility. Waste TCE is pumped from the process building to an outside holding tank. This tank and other waste tanks are equipped with level indicators, and are diked to contain spills and leakage (3).

  Waste freon is generated in Wacker's silicon wafer manufacturing process. Currently five to ten, 55 gallon drums per month of waste freon are sent to McClary Columbia (also a DEQ approved facility) for recycling. The waste freon is also stored in an outside storage tank (3).

Chromic acid is used during the etching of silicon wafers. Waste chromic acid is pumped from the processing plant to a treatment building where the acid is neutralized and reduced to trivalent chrome. The liquid portion is pumped to Wacker's wastewater treatment unit (WWTU). The sludge is dried and sent to Chem Security Systems Incorporated for disposal. Wacker generates approximately one, 55 gallon drum of sludge per month (3).

Wastewater from Wacker's processing plant is sent to the WWTU, and then discharged to the city sewer system or to the Willamette River under NPDES permit (4).

- o Pollutants, Mobilization, Pathways, and Risks- Common characteristics of the chemical constituents of petroleum products found at the Wacker Site include high chemical stability, low water solubility, low vapor pressure, and a high affinity to soil (7). As a result, these substances are relatively immobile in the subsurface environment. Subsurface contamination by petroleum products may have a long term affect on soil and ground water due to their high organic content and low solubility (7). The 1985 soil borings and ground water analysis confirm the presence and persistence of materials disposed at the site during past industrial practices. The effect of these contaminants on the public health and the environment is unknown.

  The site has a history of soil, ground and surface water contamination, and there have been reports of skin and eye irritation due to air-borne contaminants (11). The site is composed of fill material of unknown permeability. The contamination of soil and ground water does not pose a direct threat to local drinking water supplies. However, the site's close proximity to the Willamette River makes the potential for contamination of the river by surface runoff or seepage through the soil high. Any releases to the river pose a direct threat to the environment, and an indirect threat to the large population using the river for recreation.

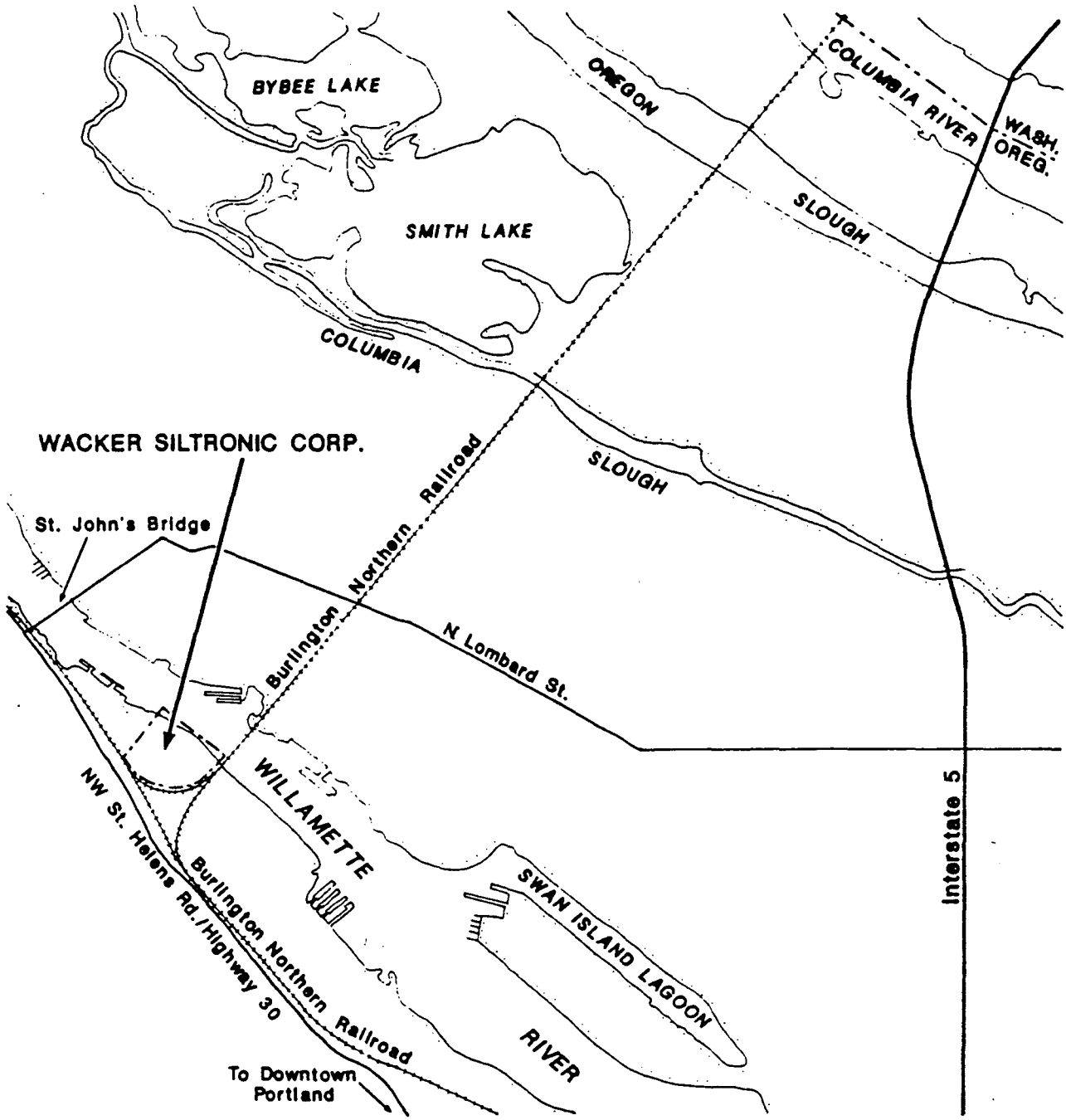
3. Priority Assessment:

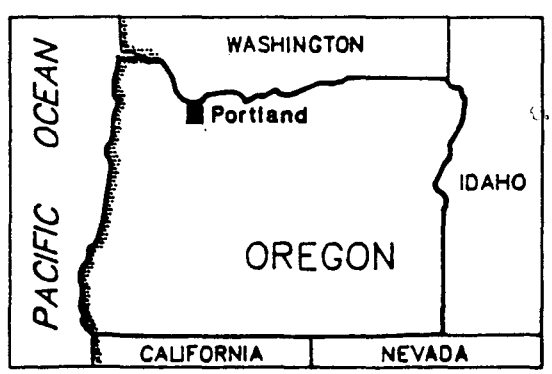
No further action is appropriate by the pre-remedial program. However, the site should continue to be assessed as part of the Doane Lake Investigation.

4. Follow-up Recommendations:

The Wacker Siltronic Site is located in a heavily industrialized area with a long history of waste disposal problems. Based on the fact that there is no target population drinking ground or surface water in the site area, and the on-going monitoring of the site by DEQ under RCRA, no further action under CERCLA is recommended. Results from this PA are in agreement

with DEQ's recommendation that a comprehensive study is needed to characterize the extent of contamination at the Wacker Siltronic Site, and in the North Doane Lake Area. The area-wide study should target both past and present waste handling practices to assess the potential impact of site contamination on the Willamette River, and the threat to human health during any future construction in the area.

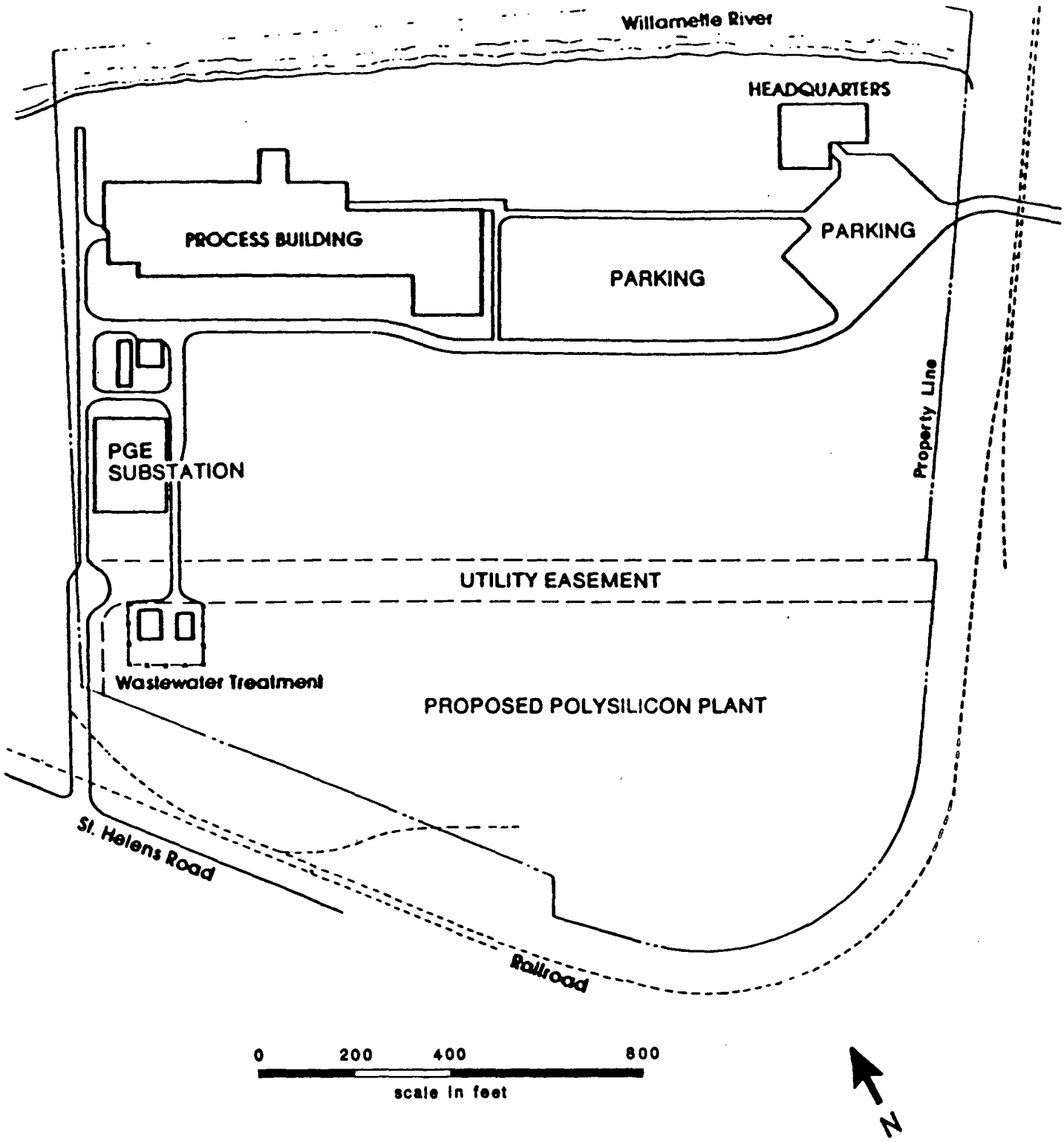




ecology & environment, Inc.	
Job: F10-8709-17	Waste Site: OR 0192
Drawn by: B.T.	Date: 10/26/1987

FIGURE 1
LOCATION MAP
WACKER SILTRONIC CORP.
Portland, OR

SCOEPA00021939

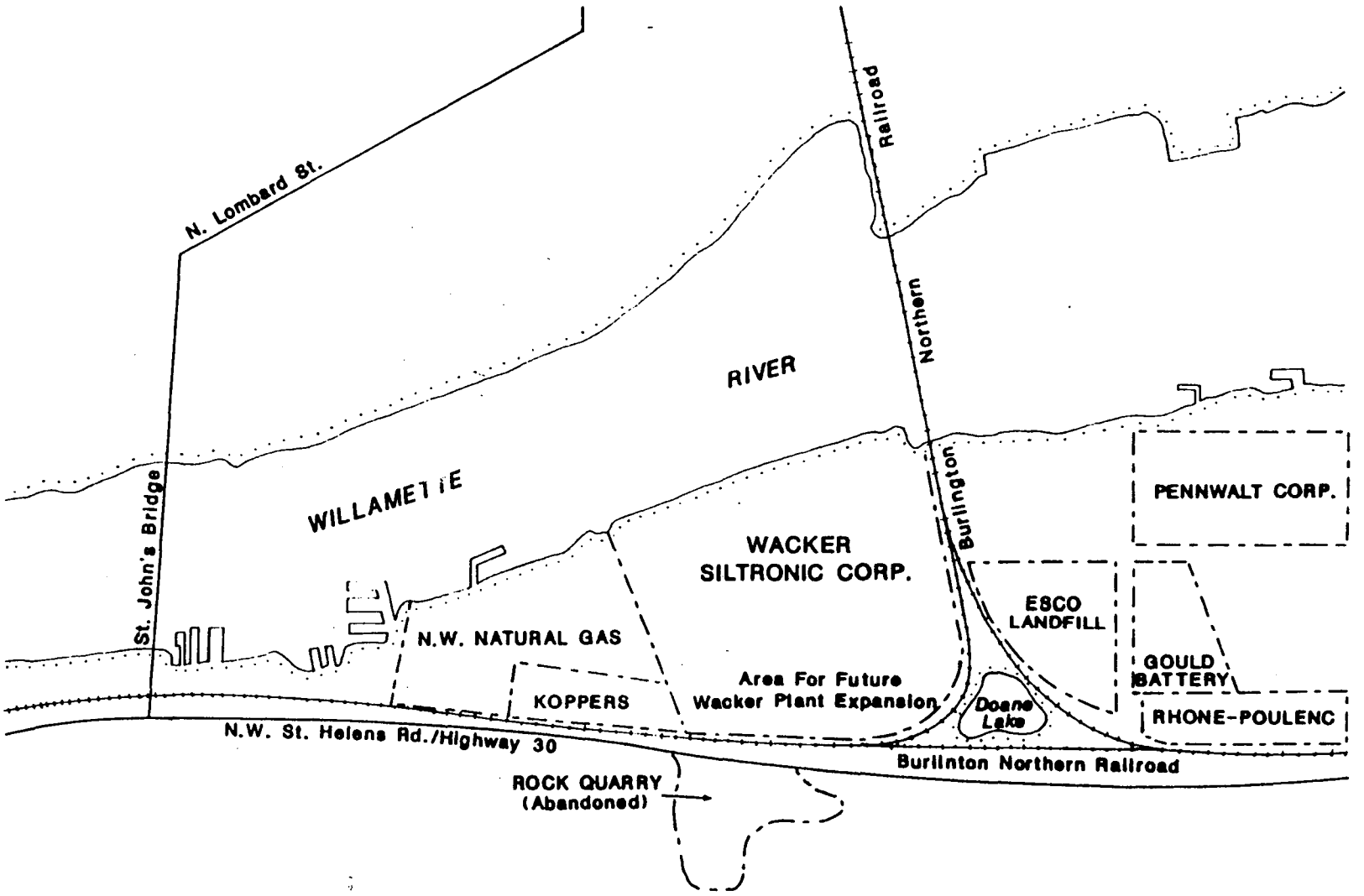


ecology & environment, inc.	
Job: F10-8709-17	Waste Site: OR 0192
Drawn by: B.T.	Date: 10/26/1987

FIGURE 2
SITE MAP
WACKER SILTRONIC CORP.
Portland, OR

Source: CH2M Hill

SCOEPA00021940



LEGEND

- - - - - Property line

0 500 1000 2000

scale in feet

N

ecology & environment, Inc.	
Job: F10-8709-17	Waste Site: OR 0192
Drawn by: B.T.	Date: 10/27/1987

FIGURE 3
VICINITY MAP (1983)
WACKER SILTRONIC CORP.
Portland, OR

SCOEPA00021941

REFERENCES

1. Memo from F. Hansen to Governor V. Atiyeh, June 19, 1985. ODEQ Site Files.

2. Willamette Week, Vol. 11, No. 4, August 8-14, 1985. Portland's Toxic Armpit. USEPA Region X, Gould, Inc. Superfund Site File.

3. Memo and RCRA inspection checklist from E. Woods to File, September 4, 1987. ODEQ Site Files.

4. Correspondence from F. Hansen to J. Pittman, February 18, 1987. ODEQ Site Files.

5. Correspondence from M. Tilson to G. Davis, February 11, 1987. ODEQ Site Files.

6. The Oregonian, June 24, 1985. Wacker plant deferment points to other problems. USEPA, Region X, Gould, Inc. Superfund Site File.

7. Ecology and Environment, Inc. (E&E), 1987. Preliminary Assessment Report for Koppers Site, Portland, Oregon. TDD F10-8709-09, Draft Copy.

8. Memo from S. Carter to File, February 12, 1979. ODEQ Site Files.

9. CH_2M Hill Northwest, Inc., June 1985. A Preliminary Report Soil Investigation for Proposed Polysilicon Plant, Wacker Siltronic Corporation, Portland, Oregon. ODEQ Site Files.

10. Memo from C. Humphrey to P. Storm, October 23, 1985. USEPA Region X, Gould, Inc. Superfund Site File.

11. Personal Communication, Tom Miller, ODEQ, October 20, 1987.

12. Memo from R. Bach to F. Hansen, July 14, 1985. ODEQ Site Files.

13. Personal Communication, Todd Humphrey, Engineer, City of Portland, October 28, 1987.

14. U.S. Department of Commerce, NOAA, Climatic Atlas of the United States, 1968.

15. U.S. Department of Commerce, Rainfall Frequency Atlas of the United States, Technical Paper No. 40, 1963.

16. Correspondences from J. Ellis to S. Carter, July 14, 1980 and December 22, 1980. ODEQ Site Files.

17. Correspondences from G. Carr to C. Clinton, January 6, 1984 and June 4, 1984. ODEQ Site Files.

SCOEPA00021942

REFERENCES (Cont.)

18. Correspondence from J. Gillaspie to J. Ellis, April 16, 1985. ODEQ Site Files.

19. Correspondence from M. Tilson to G. Davis, July 2, 1987. ODEQ Site Files.

SCOEPA00021943

APPENDIX A

EPA FORM 2070-12

SCOEPA00021944

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 1 - SITE INFORMATION AND ASSESSMENT

I. IDENTIFICATION	
01 State	02 Site Number
OR	D096253737

II. SITE NAME AND LOCATION

01 Site Name (Legal, common, or descriptive name of site)	02 Street, Route No., or Specific Location Identifier				
Wacker Siltronic Corporation	7200 N. W. Front Avenue				
03 City	04 State	05 Zip Code	06 County	07 County Code	08 C D 0
Portland	OR	97229	Multnomah	051	

09 Coordinates	
Latitude	Longitude
45° 35' 18.0"	122° 45' 39.0"

10 Directions to Site (Starting from nearest public road)
Highway 30 NW from downtown Portland, approximately 5 miles. Highway 30 becomes St. Helens Road. Wacker is loc in the 7000 block of N.W. Front Street, 2 blocks north of St. Helens Road past the railroad bridge and 1 mile SE St. Johns Bridge in the North Doane Lake industrial area.

III. RESPONSIBLE PARTIES

01 Owner (if known)	02 Street (Business, mailing, residential)			
Wacker Siltronic Corporation	7200 N. W. Front Avenue			
03 City	04 State	05 Zip Code	06 Telephone Number	
Portland	OR	97229	(503) 243-2020	
07 Operator (if known and different from owner)	08 Street (Business, mailing, residential)			
09 City	10 State	11 Zip Code	12 Telephone Number	
			( )	

13 Type of Ownership (Check one)
[X] A. Private [ ] B. Federal _____ (agency name) [ ] C. State [ ] C. County [ ] E. Municipal
[ ] F. Other _____ (specify) [ ] G. Unknown

14 Owner/Operator Notification on File (Check all that apply)
[ ] A. RCRA 3001 Date Received: / / (Month Day Year) [X] B. Uncontrolled Waste Site (CERCLA 103c) Date Received: 06 / 14 / 85 (Month Day Year) [ ] C. None

IV. CHARACTERIZATION OF POTENTIAL HAZARD

01 On-Site Inspection
[ ] Yes Date / / (Month Day Year) [X] No
[ ] A. EPA [ ] B. EPA Contractor [ ] C. State [ ] D. Other Contractor
[ ] E. Local Health Official [ ] F. Other _____ (specify)
Contractor Names(s): _____

02 Site Status (Check one)	03 Years of Operation		
[X] A. Active [ ] B. Inactive [ ] C. Unknown	Unknown - may be as early as 1940s (Beginning Year)	Present (Ending Year)	[ ] Unknown

04 Description of Substances Possibly Present, Known, or Alleged
Wastes and spillage from industrial activities in the Doane Lake area, including petroleum products, coal tar, pesticides. Compounds of concern include: polyaromatic hydrocarbons; 2,4-dichlorophenol; 2,4-D; lead; benzene and toluene.

05 Description of Potential Hazard to Environment and/or Population
Ground water contamination, possible seepage to the Willamette River and potential direct contact to workers du construction at the site.

V. PRIORITY ASSESSMENT

01 Priority for Inspection (Check one. If high or medium is checked, complete Part 2 - Waste Information and Part Description of Hazardous Conditions and Incidents)
[ ] A. High (Inspection required promptly) [ ] B. Medium (Inspection required) [ ] C. Low (Inspect on time available basis) [X] D. None (No further action needed, complete current disposition f

VI. INFORMATION AVAILABLE FROM

01 Contact	02 Of (Agency/Organization)		03 Telephone
Deborah Flood	USEPA Region X, Superfund		(206) 442-27
04 Person Responsible for Assessment	**05 Agency**	**06 Organization**	**07 Telephone No.** / **08 Date**
Timothy L. Syverson	EPA/FIT	E&E, Inc.	(206)624-9537 / 09 /22 / (Month Day)

SCOEPA00021945

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION	
01 State	02 Site Numb
OR	D096253737

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 Physical States (Check all that apply)

- [ ] A. Solid
- [ ] B. Powder, Fines
- [X] C. Sludge
- [X] D. Other Unknown (Specify)
- [ ] E. Slurry
- [X] F. Liquid
- [ ] G. Gas

02 Waste Quantity at Site (Measure of waste quantities must be independent)

Tons _____

Cubic Yards Unknown

No. of Drums _____

03 Waste Characteristics (Check all that apply)

- [X] A. Toxic
- [ ] B. Corrosive
- [ ] C. Radioactive
- [X] D. Persistent
- [ ] E. Soluble
- [ ] F. Infectious
- [ ] G. Flammable
- [ ] H. Ignitable
- UNKNOWN
- [ ] I. Highly Volati
- [ ] J. Explos
- [ ] K. Reacti
- [ ] L. Incomp ible
- [ ] M. Not Applic

III. WASTE TYPE

Category	Substance Name	01 Gross Amount	02 Unit of Measure	03 Comments
SLU	Sludge	Unknown		Industrial wastes and spillage including petroleum products, coa tar, and pesticides. Materials disposed of on site prior to owne ship by Wacker. *Current waste generated on site includes Trichloroethylene, Freon and Chromic Acid.
OLW	Oily Waste	Unknown		
SOL	Solvents	Unknown		
PSD	Pesticides	Unknown		
OCC	Other Organic Chemicals	Unknown		
IOC	Inorganic Chemicals			
ACD	Acids			
BAS	Bases			
MES	Heavy Metals			

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

01 Category	02 Substance Name	03 CAS Number	04 Storage/Disposal Method	05 Concentration	06 Measure Concentrat
*	Waste Trichloroethylene		Recycled through VanWaters and Rogers.		4,000 gal per month
*	Waste Freon		Recycled through McClary Columbia.		5 - 10 dr per month
*	Chromic Acid		Acid is neutralized and reduced to Cr+3. Liquid fraction is pumped to the wastewater treatment unit. Sludge is dried and sent to Arlington.		2 - 3 dru per year

NOTE: Wacker has a wastewater treatment unit (WWTV) on site. WWTV discharge to the city sewer and the Willamette River are included under NPDS Permit #99527 issued by the Oregon DEQ.

V. FEEDSTOCKS (See Appendix for CAS Numbers)

Category	01 Feedstock Name	02 CAS Number	Category	01 Feedstock Name	02 CAS Numb
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

Oregon Department of Environmental Quality, RCRA Generator Inspection, 09/04/87.
CH_2M Hill Northwest, Inc.; A Preliminary Report Soil Investigation for Proposed Polysilicon Plant, Wacker Siltronic Corporation, Portland, Oregon, 06/85.

SCOEPA00021946

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 State	02 Site Number
OR	D096253737

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 [X] A. Ground Water Contamination
02 [X] Observed (Date: approx. 1940's to Present) [ ] Potential [ ] Alle
03 Population Potentially Affected: Unknown
04 Narrative Description

Disposal of petroleum products, coal tar, and pesticides during industrial activity in the North Doane Lake area Recent spills (post 1980) include Trichloroethylene (TCE) and Chromic Acid. Sampling (1985) of shallow monitori wells (<40') in the undeveloped southern portion of the site detected low levels of semi-volatile organics. Dep to ground water is < 15 feet.

01 [X] B. Surface Water Contamination
02 [X] Observed (Date: 1980 - Present) [ ] Potential [ ] Alle
03 Population Potentially Affected: Unknown
04 Narrative Description

The site is adjacent to the Willamette River. Leakage and spills at the Wacker facility enter the river via out from the plant's wastewater treatment unit. Documented spills of hazardous materials to the river include: Chr Acid (07/80, 12/80, and 05/84); TCE (12/83 anid 12/84); and wastewater (06/87).

01 [X] C. Contamination of Air
02 [X] Observed (Date: Unknown-Present) [ ] Potential [ ] Alle
03 Population Potentially Affected: Unknown
04 Narrative Description

The Wacker facility has an Air Contaminant Discharge Permit (#26-3002) issued by the Oregon DEQ. However, there reports of odors and skin irritation from fumes originating from wastes landfilled at the site and in the adjace Doane Lake.

01 [X] D. Fire/Explosive Conditions
02 [ ] Observed (Date:) [X] Potential [ ] Alle
03 Population Potentially Affected: Unknown
04 Narrative Description

Petroleum products of an unknown type and quantity have been landfilled at the site.

01 [X] E. Direct Contact
02 [X] Observed (Date: Present) [ ] Potential [ ] Alle
03 Population Potentially Affected: Unknown
04 Narrative Description

Skin and eye irritation have been reported in the site area. The potential exists for exposure to buried pesti- cides, and petroleum products, if excavation is conducted at the site.

01 [X] F. Contamination of Soil
02 [X] Observed (Date: approx. 1940's to Present) [ ] Potential [ ] Alle
03 Area Potentially Affected (Acres) Unknown
04 Narrative Description

Petroleum products, coal tar, and pesticides were disposed of and/or spilled at the site. Soil borings done in confirm the presence of petroleum products and pesticides in sediments < 20 feet below the surface.

01 [ ] G. Drinking Water Contamination
02 [ ] Observed (Date:) [ ] Potential [ ] Alle
03 Population Potentially Affected:
04 Narrative Description

The area is served by the City of Portland public water supply. Contamination of ground water at the site is unlikely to affect local drinking water supplies.

01 [X] H. Worker Exposure/Injury
02 [ ] Observed (Date:) [X] Potential [ ] All
03 Workers Potentially Affected: Unknown
04 Narrative Description

Direct contact with buried wastes is possible for workers during any construction or excavation at the site.

01 [X] I. Population Exposure/Injury
02 [X] Observed (Date: Present) [X] Potential [ ] All
03 Population Potentially Affected: Unknown
04 Narrative Description

The Doane Lake area has a history of waste disposal problems. The potential exists for exposure if there are a uncontained or unknown disposal areas.

SCOEPA00021947

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION
01 State: OR | 02 Site Number: D096253737

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 [ ] J. Damage to Flora — 02 [ ] Observed (Date: _____) [ ] Potential [ ] Allege
04 Narrative Description

None reported, observed, or suspected.

01 [ ] K. Damage to Fauna — 02 [ ] Observed (Date: _____) [ ] Potential [ ] Allege
04 Narrative Description (include name(s) of species)

None reported, observed, or suspected.

01 [ ] L. Contamination of Food Chain — 02 [ ] Observed (Date: _____) [ ] Potential [ ] Allege
04 Narrative Description

None reported or observed. Contamination of the Willamette River has the potential to affect fishing resources.

01 [X] M. Unstable Containment of Wastes (Spills/runoff/standing liquids, leaking drums) — 02 [ ] Observed (Date: _____) [ ] Potential [ ] Allege
03 Population Potentially Affected: _____ 04 Narrative Description

Petroleum products and coal tar were landfilled at, or adjacent to, the site causing soil contamination.

01 [X] N. Damage to Off-site Property — 02 [ ] Observed (Date: _____) [X] Potential [ ] Allege
04 Narrative Description

Adjacent property has the potential to be affected by subsurface migration of wastes.

01 [X] O. Contamination of Sewers, Storm Drains, WWTPs — 02 [X] Observed (Date: 12/27/83) [ ] Potential [ ] Allege
04 Narrative Description

Wastewater spill at the facility was diverted to the municipal sewer system. The water contained 2.02 ppm chromi

01 [X] P. Illegal/Unauthorized Dumping — 02 [ ] Observed (Date: approx. 1940's to 1980) [ ] Potential [ ] Allege
04 Narrative Description

The exact quantity and types of materials disposed of or spilled on site during past practices are unknown.

05 Description of Any Other Known, Potential, or Alleged Hazards

Due to the long history of petroleum and chemical manufacturing in the site area, and unknown waste handling practices, the potential exists for the discovery of additional hazardous materials and conditions in the site are

III. TOTAL POPULATION POTENTIALLY AFFECTED: Unknown

IV. COMMENTS

The Wacker site is located in the heavily industrialized North Doane Lake area of northwest Portland. East of the site is the Gould, Inc. Superfund site. The Doane Lake area has a history of waste disposal and operational problems. The Wacker site will be included in a North Doane Lake study, to be conducted by Wacker, Northwest Natural Gas, and Koppers, Inc., under the guidance of the Oregon DEQ.

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

CH2M Hill N.W., Inc., A Preliminary Soil Investigation, Wacker Siltronic Corporation, 06/85; Memos from J. Ellis, Wacker Siltronic, to S. Carter, ODEQ, dated 07/14/80 and 12/22/80; Memo from G. Carr, Wacker Siltronic, to C. Carter, ODEQ, dated 06/04/84; Memo from G. Carr, Wacker Siltronic, to C. Clinton, ODEQ, dated 01/06/84; Memo fr J. Gillaspie, ODEQ, to J. Ellis, Wacker Siltronic, dated 04/16/85; Memo from M. Tillson, Wacker Siltronic, to G. Davis, ODEQ, dated 07/02/87; Memo from M. Tillson, Wacker Siltronic, to G. Davis, ODEQ, dated 02/11/87; Tom Mille ODEQ, Personal Communication, 10/20/87.

SCOEPA00021948

STATE OF OREGON
DEPARTMENT OF ENVIRONMENTAL QUALITY

Rick Reiter
6/3

Memorandum

To: LDPatterson, RPReiter
RFGates

Date: 20 June 1985

From: JAGillaspie jag

HW 9.50 (New file)

Subject: Wacker Siltronics Sampling - Attached Preliminary Numbers

The attached monitoring results show the level of various contaminants in the soil at varying depths at the Wacker Siltronics site. Soil samples were done because the company plans on building a new facility on this piece of property.

Please call me or Chuck Clinton with your thoughts.

We have also asked Michael Heumann at the Health Division to scan the national data bases for information about these chemicals at these concentrations.

JAG/mb
Attachments
cc: Michael Heumann

Hazardous & Solid Waste Division
Dept. of Environmental Quality
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DEQ-4

SCOEPA00021949

Project: Wacker Siltronic, Poly Building Soils Investigation
Source: Coffey Laboratories, Inc.
Date: May 14, 1985

PRELIMINARY

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NORTHWEST REGION

CHEMICAL COMPOUNDS	MW-1, S-3 (15-16.5 ft.)	MW-2, S-4 (20-21.5 ft.)	MW-3, S-5 (25-26.5 ft.)	MW-4, S-1 (5 - 6.5 ft.)	MW-4, S-7 (35-36.5 ft.)	MW-5, S-2 (10-11.5 ft.)	MW-6, S-3 (15-16.5 ft.)	MW-7, S-5 (25-26.5 ft.)	MW-7, S-8 (40-41.5 ft.)	Detection Limits	Reference Criteria
Organic Analyses											
o Volatile Compounds											
Chloromethane											DO
Bromomethane											DO
Vinyl Chloride											DO, PDW(*)
Chloroethane											DO
Methylene Chloride											DO
Trichlorofluoromethane											DO
1,1-Dichloroethene											DO, PDW(*)
1,1-Dichloroethane											DO
Trans-1,2-Dichloroethene											DO
Chloroform											DO, PDW
1,2-Dichloropropane											DO
1,1,1-Trichloroethane	0.01	BD	BD	BD	BD	BD	BD	BD	BD	0.01	DO, PDW(*)
Carbon Tetrachloride											DO, PDW(*)
Bromodichloromethane											DO, PDW
1,2-Dichloroethane	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.01	DO, PDW(*)
Trans-1,3-Dichloropropene											DO
Trichloroethylene											DO, PDW(*)
Benzene											DO, PDW(*)
Dibromochloromethane											DO
1,1,2-Trichloroethane											DO
Cis-1,2-Dichloropropene											DO
2-Chloroethyl vinyl ether											DO
Bromoform											DO, PDW
1,1,2,2-Tetrachloroethane	2.2	11	BD	BD	BD	0.14	BD	BD	BD	0.05	DO
Tetrachloroethylene											DO, PDW(*)
Toluene	1.2	28	0.11	BD	BD	0.2	BD	BD	BD	0.1	DO
Chlorobenzene	0.24	BD	BD	BD	BD	BD	BD	BD	BD	0.04	DO
Ethyl Benzene	17	5.4	BD	BD	BD	BD	BD	BD	0.05	0.04	DO
Acrylonitrile											DO
Acrolein											DO
Dichlorodifluoromethane											DO
o Acid Extractables											
Phenol	0.35	3.1	0.2	0.3	0.17	2.27	0.25	0.06	0.08	NR	DO, SWD
2-Chlorophenol	ND	7.8	ND	ND	ND	ND	0.13	ND	0.14	NR	DO, SWD
2-Nitrophenol	ND	0.2	ND	ND	ND	ND	ND	ND	ND	NR	DO, SWD
2,4-Dimethylphenol	ND	3.1	ND	ND	ND	0.22	0.17	ND	ND	NR	DO, SWD
2,4-Dichlorophenol	ND	2.7	0.09	0.26	ND	0.24	ND	ND	ND	NR	DO, SWD
p-Chloro-m-cresol	ND	ND	ND	ND	ND	ND	ND	ND	ND	NR	DO
2,4,6-Trichlorophenol	ND	ND	ND	ND	ND	0.22	ND	ND	ND	NR	DO, SWD
2,4-Dinitrophenol	ND	ND	ND	ND	ND	0.81	ND	ND	ND	NR	DO, SWD
4-Nitrophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	NR	DO, SWD
4,6-Dinitro-o-cresol	ND	ND	ND	ND	ND	ND	ND	ND	ND	NR	DO
Pentachlorophenol	ND	ND	ND	ND	0.31	6.9	5.1	ND	ND	NR	DO, SWD, SHW

NOTE: The values indicated on this page have not been subjected to Quality Assurance/Quality Control Procedures. For this reason, all data shown must be considered preliminary and must be used only for purposes consistent with this reporting data.

SCOEPA00021950

Project: Wacker Siltronic, Poly Building Soils Investigation
Source: Coffey Laboratories, Inc.
Date: May 14, 1985

PRELIMINARY

CHEMICAL COMPOUNDS	MW-1, S-3 (15-16.5 ft.)	MW-2, S-4 (20-21.5 ft.)	MW-3, S-5 (25-26.5 ft.)	MW-4, S-1 (5 - 6.5 ft.)	MW-4, S-7 (35-36.5 ft.)	MW-5, S-2 (10-11.5 ft.)	MW-6, S-3 (15-16.5 ft.)	MW-7, S-5 (25-26.5 ft.)	MW-7, S-8 (40-41.5 ft.)	Detection Limits	Reference Criteria
Miscellaneous Analysis											
o Non-PP Phenols/Cresols											
3-Chlorophenol											SHW, SWQ
4-Chlorophenol	0.44	17.5	0.2			1.7	2.32				SHW, SWQ
2,4,5-Trichlorophenol		1.9									SHW, SWQ
2,3,4,5-Tetrachlorophenol	4.9	256		0.4		0.83	4.7	0.06	0.25		SHW, SWQ
2,3,4,6-Tetrachlorophenol	0.24			0.58				1			SHW, SWQ
2,3,5,6-Tetrachlorophenol		4			0.11	0.33	0.55		0.46		SHW, SWQ
o-Cresol	0.04	3.4		0.02		0.19	2.25				
m-Cresol (***)											
p-Cresol (***)	0.226			0.08							
o Non-PP Pesticides - (EP Toxicity)											
Methoxychlor	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.1	SHW, PDW
2,4-D	BD	BD	BD	BD	BD	12	152	BD	BD	12	SHW, PDW
2,4,5-TP (Silvex)	BD	BD	BD	BD	BD	BD	BD	BD	BD	1	SHW, PDW
o Non-PP Volatiles											
Xylene	146	116	BD	BD	BD	1.5	BD	2.6	1.2	1	
o Non-PP Inorganics											
Barium											SHW, SWQ
Boron											SWQ
Fluoride											PDW, SWQ
Iron											SWQ
Manganese											SWQ
o Misc. Constituents/Parameters											
pH											
Specific Conductivity (mhos)											
Total Organic Carbon											
Total Dissolved Solids											
Redox Potential											

Notes:
PP - Priority Pollutant
PDW- National Interim Primary Drinking Water Regulations
PDW(*)- Proposed N.I.P.D.W.R.
SDW- National Secondary Drinking Water Regulations
SHW- State of Oregon Hazardous Waste Administrative Rules
SWQ- State of Oregon Water Quality Administrative Rules

Unless otherwise specified, all units are mg/kg (mg/L).
BD- Parameter detected, but below analytical quantification limits.
ND- Analyzed, but not detected.
NR- Not reported.
(***)- Reported as sum of two compounds.

NOTE: The values indicated on this page have not been subjected to Quality Assurance/Quality Control Procedures. For this reason, all data shown must be considered preliminary and must be used only for purposes consistent with this reporting data.

SCOEPA00021951

Project: Wacker Siltronic, Poly Building Soils Investigation
Source: Roffey Laboratories, Inc.
Date: May 14, 1985

PRELIMINARY

PRELIMINARY

CHEMICAL COMPOUNDS	MW-1, S-3 (15-16.5 ft.)	MW-2, S-4 (20-21.5 ft.)	MW-3, S-5 (25-26.5 ft.)	MW-4, S-1 (5 - 6.5 ft.)	MW-4, S-7 (35-36.5 ft.)	MW-5, S-2 (10-11.5 ft.)	MW-6, S-3 (15-16.5 ft.)	MW-7, S-5 (25-26.5 ft.)	MW-7, S-8 (40-41.5 ft.)	Detection Limits	Reference Criteria
N-nitrosodimethylamine											DD
Bis (chloroethyl) ether											DD
o Pesticides (EP Toxicity)											
Alpha BHC											DD
Beta BHC											DD
Gamma BHC (Lindane)	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.24	DD, SHW, PDW
Delta BHC											DD
Chlordane											DD
4,4'-DDD											DD
4,4'-DDE											DD
4,4'-DDT											DD
Dieldrin											DD
Alpha Endosulfan											DD
Beta Endosulfan											DD
Endosulfan Sulfate											DD
Endrin	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.222	DD
Endrin Aldehyde											DD
Heptachlor											DD
Heptachlor Epoxide											DD
Toxaphene	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.25	DD
o PCBs											
1016											DD
1221											DD
1232											DD
1242											DD
1248											DD
1254											DD
1260											DD
Inorganic Analyses (EP Toxicity)											
Antimony											DD
Arsenic	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	DD, SHW, SWD, PDW
Beryllium											DD
Cadmium	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	DD, SHW, SWD, PDW
Chromium	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	DD, SHW, SWD, PDW
Copper											DD, SWD, SDW
Nickel											DD
Lead	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	DD, SHW, SWD, PDW
Zinc											DD, SWD, SDW
Thallium											DD
Selenium	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	DD, SHW, PDW
Mercury	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	DD, SHW, PDW
Silver	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.25	DD, SHW, PDW
Cyanides											DD, SWD

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SCOEPA00021952

PRELIMINARY

Project: Wacker Siltronic, Poly Building Soils Investigation
Source: Coffey Laboratories, Inc.
Date: May 14, 1985

CHEMICAL COMPOUNDS	MW-1, S-3 (15-16.5 ft.)	MW-2, S-4 (20-21.5 ft.)	MW-3, S-5 (25-26.5 ft.)	MW-4, S-1 (5 - 6.5 ft.)	MW-4, S-7 (35-36.5 ft.)	MW-5, S-2 (10-11.5 ft.)	MW-6, S-3 (15-16.5 ft.)	MW-7, S-5 (25-26.5 ft.)	MW-7, S-8 (40-41.5 ft.)	Detection Limits	Reference Criteria
o Base Neutral Extractables											
Bis (2-chloroethyl)ether											DD
1,3-Dichlorobenzene											DD
1,4-Dichlorobenzene											DD, DDW(*)
1,2-Dichlorobenzene											DD
Bis (2-Chloroisopropyl)ether											DD
Hexachloroethane											DD
N-nitroso-di-n-propylamine											DD
Nitrobenzene											DD
Isophorone											DD
Bis (2-Chloroethoxy)methane											DD
1,2,4-Trichlorobenzene											DD
Naphthalene	6.7	360	BD	BD	BD	230	BD	BD	BD	1	DD
Hexachlorobutadiene											DD
Hexachlorocyclopentadiene											DD
2-Chloronaphthalene											DD
Acenaphthalene	5.6	230	BD	BD	BD	24	BD	BD	BD	1	DD
Dimethylphthalate											DD
2,6-Dinitrotoluene											DD
Acenaphthene	8	560	BD	BD	BD	28	BD	BD	BD	1	DD
2,4-Dinitrotoluene											DD
Fluorene	5	290	BD	BD	BD	20	BD	BD	BD	1	DD
4-Chlorophenyl phenyl ether											DD
Diethyl phthalate											DD
N-nitrosodiphenylamine											DD
1,2-Diphenylhydrazine											DD
4-Bromophenyl phenyl ether											DD
Hexachlorobenzene											DD
Phenanthrene (***)											DD
Anthracene (***)	32	1400	3	BD	BD	150	BD	1.6	BD	1	DD
Dibutyl phthalate											DD
Fluoranthene	16	530	BD	BD	BD	50	BD	1.1	BD	1	DD
Pyrene	18	550	BD	BD	BD	57	BD	1.2	BD	1	DD
Benzidine											DD
Butyl benzyl phthalate											DD
2,3,7,8-Tetrachlorodibenzo-p-dioxin											DD
Benzo (a) anthracene											DD
Chrysene	12	92	BD	BD	BD	36	BD	1.7	BD	1	DD
3,3'-Dichlorobenzidine											DD
Bis (2-ethylhexyl) phthalate											DD
Di-n-octyl phthalate											DD
Benzo (b) fluoranthene (***)											DD
Benzo (k) fluoranthene (***)	6	120	BD	BD	BD	200	BD	BD	BD	1	DD
Benzo (a) pyrene	19	120	BD	BD	BD	100	BD	BD	BD	1	DD
Indeno (1,2,3-CD) pyrene (***)											DD
Dibenzo (a,b) anthracene (***)	BD	270	BD	BD	BD	7	BD	BD	BD	1	DD
Benzo (ghi) perylene	BD	360	BD	BD	BD	25	BD	BD	BD	1	DD

NOTE: The values indicated on this page have not been subjected to Quality Assurance/Quality Control Procedures. For this reason, all data shown must be considered preliminary and must be used only for purposes consistent with this reporting status.

Dept of Environmental Quality

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JUN 20 1985

NORTHWEST REGION

Project: Wacker Siltronic, Poly Building Soils Investigation
Source: Coffey Laboratories, Inc.
Date: May 14, 1985

PRELIMINARY

RCO CHG

HW 9.50
Wacker Siltronic
Ry

CHEMICAL COMPOUNDS	MW-1, S-3 (15-16.5 ft.)	MW-2, S-4 (20-21.5 ft.)	MW-3, S-5 (25-26.5 ft.)	MW-4, S-1 (5 - 6.5 ft.)	MW-4, S-7 (35-36.5 ft.)	MW-5, S-2 (10-11.5 ft.)	MW-6, S-3 (15-16.5 ft.)	MW-7, S-5 (25-26.5 ft.)	MW-7, S-8 (40-41.5 ft.)	Detection Limits	Reference Criteria
Organic Analyses											
o Volatile Compounds											
Chloromethane											PD
Bromomethane											PD
Vinyl Chloride											PD, PDW(*)
Chloroethane											PD
Methylene Chloride											PD
Trichlorofluoromethane											PD
1,1-Dichloroethene											PD, PDW(*)
1,1-Dichloroethane											PD
Trans-1,2-Dichloroethene											PD
Chloroform											PD, PDW
1,2-Dichloropropane											PD
1,1,1-Trichloroethane	0.01	BD	BD	BD	BD	BD	BD	BD	BD	0.01	PD, PDW(*)
Carbon Tetrachloride											PD, PDW(*)
Bromodichloromethane											PD, PDW
1,2-Dichloroethane	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.01	PD, PDW(*)
Trans-1,3-Dichloropropene											PD
Trichloroethylene											PD, PDW(*)
Benzene											PD, PDW(*)
Dibromochloromethane											PD
1,1,2-Trichloroethane											PD
Cis-1,2-Dichloropropene											PD
2-Chloroethyl vinyl ether											PD
Bromoform											PD, PDW
1,1,2,2-Tetrachloroethane	2.2	11	BD	BD	BD	0.14	BD	BD	BD	0.05	PD
Tetrachloroethylene											PD, PDW(*)
Toluene	1.2	28	0.11	BD	BD	0.2	BD	BD	BD	0.1	PD
Chlorobenzene	0.24	BD	BD	BD	BD	BD	BD	BD	BD	0.04	PD
Ethyl Benzene	17	5.4	BD	BD	BD	BD	BD	BD	0.05	0.04	PD
Acrylonitrile											PD
Acrolein											PD
Dichlorodifluoromethane											PD
o Acid Extractables											
Phenol	0.35	3.1	0.2	0.3	0.17	0.27	0.25	0.26	0.08	NR	PD, SWD
2-Chlorophenol	ND	7.8	ND	ND	ND	ND	0.13	ND	0.14	NR	PD, SWD
2-Nitrophenol	ND	0.2	ND	ND	ND	ND	ND	ND	ND	NR	PD, SWD
2,4-Dimethylphenol	ND	3.1	ND	ND	ND	0.22	0.17	ND	ND	NR	PD, SWD
2,4-Dichlorophenol	ND	2.7	0.09	0.26	ND	0.24	ND	ND	ND	NR	PD, SWD
p-Chloro-m-cresol	ND	ND	ND	ND	ND	ND	ND	ND	ND	NR	PD
2,4,6-Trichlorophenol	ND	ND	ND	ND	ND	0.22	ND	ND	ND	NR	PD, SWD
2,4-Dinitrophenol	ND	ND	ND	ND	ND	0.81	ND	ND	ND	NR	PD, SWD
4-Nitrophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	NR	PD, SWD
4,6-Dinitro-o-cresol	ND	ND	ND	ND	ND	ND	ND	ND	ND	NR	PD
Pentachlorophenol	ND	ND	ND	ND	0.31	6.9	5.1	ND	ND	NR	PD, SWD, SAM

NOTE: The values indicated on this page have not been subjected to Quality Assurance/Quality Control Procedures. For this reason, all data shown must be considered preliminary and must be used only for purposes consistent with this reporting data.

SCOEPA00021954

PRELIMINARY

Project: Wacker Siltronic, Poly Building Soils Investigation
Source: Coffey Laboratories, Inc.
Date: May 14, 1995

CHEMICAL COMPOUNDS	MW-1, S-3 (15-16.5 ft.)	MW-2, S-4 (20-21.5 ft.)	MW-3, S-5 (25-26.5 ft.)	MW-4, S-1 (5 - 6.5 ft.)	MW-4, S-7 (35-36.5 ft.)	MW-5, S-2 (10-11.5 ft.)	MW-6, S-3 (15-16.5 ft.)	MW-7, S-5 (25-26.5 ft.)	MW-7, S-8 (40-41.5 ft.)	Detection Limits	Reference Criteria
Miscellaneous Analysis											
o Non-PP Phenols/Cresols											
3-Chlorophenol											SHW, SWQ
4-Chlorophenol	0.44	17.5	0.2			1.7	2.32				SHW, SWQ
2,4,5-Trichlorophenol		1.9									SHW, SWQ
2,3,4,5-Tetrachlorophenol	4.9	256		0.4		0.23	4.7	0.05	0.25		SHW, SWQ
2,3,4,6-Tetrachlorophenol	0.24			0.58				1			SHW, SWQ
2,3,5,6-Tetrachlorophenol		4			0.11	0.32	0.55		0.46		SHW, SWQ
o-Cresol	0.04	3.4		0.02		0.19	0.05				
m-Cresol (***)											
p-Cresol (***)	0.288			0.08							
o Non-PP Pesticides (EP Toxicity)											
Methoxychlor	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.1	SHW, PDW
2,4-D	BD	BD	BD	BD	BD	10	152	BD	BD	10	SHW, PDW
2,4,5-TP (Silvex)	BD	BD	BD	BD	BD	BD	BD	53	BD	1	SHW, PDW
o Non-PP Volatiles											
Xylene	146	116	BD	BD	BD	1.5	BD	2.8	1.2	1	
o Non-PP Inorganics											
Barium											SHW, SWQ
Boron											SWQ
Fluorine											PDW, SWQ
Iron											SWQ
Manganese											SWQ
o Misc. Constituents/Parameters											
pH											
Specific Conductivity (mmos)											
Total Organic Carbon											
Total Dissolved Solids											
Redox Potential											

Notes:
PP - Priority Pollutant
PDW- National Interim Primary Drinking Water Regulations
PDW(*)- Proposed N.J.P.D.W.R.
SDW- National Secondary Drinking Water Regulations
SHW- State of Oregon Hazardous Waste Administrative Rules
SWQ- State of Oregon Water Quality Administrative Rules

Unless otherwise specified, all units are ug/kg (mg/L).
BD- Parameter detected, but below analytical quantification limits.
ND- Analyzed, but not detected.
NR- Not reported.
(***)- Reported as sum of two compounds.

NOTE: The values indicated on this page have not been subjected to Quality Assurance/Quality Control Procedures. For this reason, all data shown must be considered preliminary and must be used only for purposes consistent with this reporting data.

SCOEPA00021955

Project: Wacker Siltronic, Poly Building Soils Investigation
Source: Coffey Laboratories, Inc.
Date: May 14, 1985

PRELIMINARY

PRELIMINARY

CHEMICAL COMPOUNDS	MW-1, S-3 (15-16.5 ft.)	MW-2, S-4 (20-21.5 ft.)	MW-3, S-5 (25-26.5 ft.)	MW-4, S-1 (5 - 6.5 ft.)	MW-4, S-7 (35-36.5 ft.)	MW-5, S-2 (10-11.5 ft.)	MW-6, S-3 (15-16.5 ft.)	MW-7, S-5 (25-26.5 ft.)	MW-7, S-8 (40-41.5 ft.)	Detection Limits	Reference Criteria
N-nitrosodimethylamine											PP
Bis (chloromethyl) ether											PP
o Pesticides (EP Toxicity)											
Aldrin											PP
Alpha BHC											PP
Beta BHC											PP
Gamma BHC (Lindane)	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.04	PP, SHW, PDW
Delta BHC											PP
Chlordane											PP
4,4'-DDD											PP
4,4'-DDE											PP
4,4'-DDT											PP
Dieldrin											PP
Alpha Endosulfan											PP
Beta Endosulfan											PP
Endosulfan Sulfate											PP
Endrin	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.002	PP
Endrin Aldehyde											PP
Heptachlor											PP
Heptachlor Epoxide											PP
Toxaphene	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	PP
o PCBs											
1016											PP
1221											PP
1232											PP
1242											PP
1248											PP
1254											PP
1260											PP
Inorganic Analyses (EP Toxicity)											
Antimony											PP
Arsenic	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	PP, SHW, SWQ, PDW
Beryllium											PP
Cadmium	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	PP, SHW, SWQ, PDW
Chromium	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	PP, SHW, SWQ, PDW
Copper											PP, SWQ, SDW
Nickel											PP
Lead	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	PP, SHW, SWQ, PDW
Zinc											PP, SWQ, SDW
Thallium											PP
Selenium	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	PP, SHW, PDW
Mercury	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	PP, SHW, PDW
Silver	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	PP, SHW, PDW
Cyanides											PP, SWQ

NOTE: The values indicated on this page have not been subjected to Quality Assurance/Quality Control Procedures. For this reason, all data shown must be considered preliminary and must be used only for purposes consistent with this reporting data.

Project: Wacker Siltronic, Poly Building Soils Investigation
Source: Coffey Laboratories, Inc.
Date: May 14, 1985

PRELIMINARY

CHEMICAL COMPOUNDS	MW-1, S-3 (15-16.5 ft.)	MW-2, S-4 (20-21.5 ft.)	MW-3, S-5 (25-26.5 ft.)	MW-4, S-1 (5 - 6.5 ft.)	MW-4, S-7 (35-36.5 ft.)	MW-5, S-2 (10-11.5 ft.)	MW-6, S-3 (15-16.5 ft.)	MW-7, S-5 (25-26.5 ft.)	MW-7, S-8 (40-41.5 ft.)	Detection Limits	Reference Criteria
c Base Neutral Extractables											
Bis (2-chloroethyl)ether											DD
1,3-Dichlorobenzene											DD
1,4-Dichlorobenzene											DD, PDW(*)
1,2-Dichlorobenzene											DD
Bis (2-Chloroisopropyl)ether											DD
Hexachloroethane											DD
N-nitrosodi-n-propylamine											DD
Nitrobenzene											DD
Isophorone											DD
Bis (2-Chloroethoxy)methane											DD
1,2,4-Trichlorobenzene											DD
Naphthalene	6.7	360	BD	BD	BD	230	BD	BD	BD	1	DD
Hexachlorobutadiene											DD
Hexachlorocyclopentadiene											DD
2-Chloronaphthalene											DD
Acenaphthalene	5.6	230	BD	BD	BD	24	BD	BD	BD	1	DD
Dimethylphthalate											DD
2,6-Dinitrotoluene											DD
Acenaphthene	8	560	BD	BD	BD	28	BD	BD	BD	1	DD
2,4-Dinitrotoluene											DD
Fluorene	5	290	BD	BD	BD	20	BD	BD	BD	1	DD
4-Chlorophenyl phenyl ether											DD
Diethyl phthalate											DD
N-nitrosodiphenylamine											DD
1,2-Diphenylhydrazine											DD
4-Bromophenyl phenyl ether											DD
Hexachlorobenzene											DD
Phenanthrene (***)											DD
Anthracene (***)	32	1400	3	BD	BD	150	BD	1.6	BD	1	DD
Dibutyl phthalate											DD
Fluoranthene	16	530	BD	BD	BD	50	BD	1.1	BD	1	DD
Pyrene	18	550	BD	BD	BD	57	BD	1.2	BD	1	DD
Benzidine											DD
Butyl benzyl phthalate											DD
2,3,7,8-Tetrachlorodibenzo-p-dioxin											DD
Benzo (a) anthracene											DD
Chrysene	12	92	BD	BD	BD	36	BD	1.7	BD	1	DD
3,3'-Dichlorobenzidine											DD
Bis (2-ethylhexyl) phthalate											DD
Di-n-octyl phthalate											DD
Benzo (b) fluoranthene (***)											DD
Benzo (k) fluoranthene (***)	6	120	BD	BD	BD	200	BD	BD	BD	1	DD
Benzo (a) pyrene	19	120	BD	BD	BD	100	BD	BD	BD	1	DD
Indeno (1,2,3-CD) pyrene (***)											DD
Dibenzo (a,b) anthracene (***)	BD	270	BD	BD	BD	7	BD	BD	BD	1	DD
Benzo (ghi) perylene	BD	360	BD	BD	BD	25	BD	BD	BD	1	DD

NOTE: The values indicated on this page have not been subjected to Quality Assurance/Quality Control Procedures. For this reason, all data shown must be considered preliminary and must be used only for purposes consistent with this reporting status.

pacific environmental laboratory inc.

9405 S.W. Nimbus Ave. Beaverton, OR 97005 (503) 644-0660
FAX # (503) 644-2202

July 3, 1990

CH2M Hill-Portland
2020 SW 4th, 2nd Floor
Portland, OR 97201

Attn: Christy Shoen

Re: JOB #PDX30425.A0
PEL #90-1696 Final

Enclosed is the final lab report for your samples which were received on June 20, 1990.

I. Sample Description

Two Soil Samples

The samples were received under a chain of custody.

The samples were received in containers consistent with EPA protocol.

II. Quality Control

No project specific QC was requested. In-house QC data is available upon request.

III. Analytical Results

Test methods may include minor modifications of published methods such as detection limits or parameter lists. Solid and waste samples are reported on an "as received" basis unless otherwise noted.

Compounds not detected are listed under results as ND.

Sincerely,

Howard Holmes
Lab Manager

Howard Boorse
QA/QC Manager

pacific environmental laboratory inc

PEL REPORT NUMBER: 90-1696 Final
CLIENT: CH2M Hill-Portland
JOB REFERENCE: PDX30425.A0
DATE: July 3, 1990
ITEMS: Two Soil Samples

METHOD: EPA 8240
Results in ug/kg (ppb)

Compound	B201*	B202	Lab Blank	Detection Limit
Acetone	ND	ND	ND	2,500
Acrolein	ND	ND	ND	5,000
Acrylonitrile	ND	ND	ND	5,000
Benzene	29,000	1,000	ND	250
Bromodichloromethane	ND	ND	ND	250
Bromoform	ND	ND	ND	250
Bromomethane	ND	ND	ND	500
2-Butanone	ND	ND	ND	5,000
Carbon disulfide	ND	ND	ND	250
Carbon tetrachloride	ND	ND	ND	250
Chlorobenzene	1,400	370	ND	250
Chlorodibromomethane	ND	ND	ND	250
Chloroethane	ND	ND	ND	500
Chloroform	ND	ND	ND	250
Chloromethane	ND	ND	ND	5,000
Dibromomethane	ND	ND	ND	250
Dichlorobenzenes	ND	ND	ND	250
Dichlorodifluoromethane	ND	ND	ND	250
1,1-Dichloroethane	ND	ND	ND	250
1,2-Dichloroethane	ND	ND	ND	250
1,1-Dichloroethene	ND	ND	ND	250
cis-1,2-Dichloroethene	ND	ND	ND	250
trans-1,2-Dichloroethene	ND	ND	ND	250
1,2-Dichloropropane	ND	ND	ND	250
cis-1,3-Dichloropropene	ND	ND	ND	250
trans-1,3-Dichloropropene	ND	ND	ND	250
Ethanol	ND	ND	ND	5,000
Ethylbenzene	55,000	3,600	ND	250
2-Hexanone	ND	ND	ND	2,500
Methylene chloride	ND	ND	ND	250
4-Methyl-2-pentanone	ND	ND	ND	5,000
Styrene	1,300	490	ND	250
1,1,2,2-Tetrachloroethane	ND	ND	ND	250
Tetrachloroethene	ND	ND	ND	250
Toluene	26,000	2,800	ND	250
1,1,1-Trichloroethane	ND	ND	ND	250
1,1,2-Trichloroethane	ND	ND	ND	250
Trichloroethene	ND	ND	ND	250
Trichlorofluoromethane	ND	ND	ND	250
1,2,3,-Trichloropropane	ND	ND	ND	250
Vinyl acetate	ND	ND	ND	2,500
Vinyl chloride	ND	ND	ND	500
Xylene	57,000	6,800	ND	250

* Detection Limits for this sample are 4 times the listed values.

SCOEPA00021959

pacific environmental laboratory inc.

PEL REPORT NUMBER: 90-1696 Final
CLIENT: CH2M Hill-Portland
JOB REFERENCE: PDX30425.A0
DATE: July 3, 1990
ITEMS: Two Soil Samples

METHOD: BNA's by EPA 8270
Results in mg/kg (ppm)

Compound	B201*	B202	Lab Blank	Detection Limit
Acenaphthene	450	120	ND	10
Acenaphthylene	170	240	ND	10
Anthracene	430	250	ND	10
bis(2-Chloroethyl) ether	ND	ND	ND	10
bis(2-Chloroisopropyl) ether	ND	ND	ND	10
bis(2-Chloroethoxy) methane	ND	ND	ND	10
bis(2-ethylhexyl)phthalate	ND	ND	ND	10
Benzoic Acid	ND	ND	ND	10
Benzo(a)anthracene	210	190	ND	10
Benzo(a)pyrene	210	240	ND	10
Benzo(b)fluoranthene	140	180	ND	10
Benzo(k)fluoranthene	120	120	ND	10
Benzo(g,h,i)perylene	140	190	ND	10
Benzyl Alcohol	ND	ND	ND	10
4-Bromophenyl phenyl ether	ND	ND	ND	10
Butylbenzyl phthalate	ND	ND	ND	10
Chrysene	280	260	ND	10
4-Chloroaniline	ND	ND	ND	10
4-Chloro-3-methylphenol	ND	ND	ND	10
2-Chloronaphthalene	ND	ND	ND	10
2-Chlorophenol	ND	ND	ND	10
4-Chlorophenylphenyl ether	ND	ND	ND	10
Dibenz(a,h)anthracene	ND	ND	ND	10
Dibenzofuran	52	28	ND	10
1,2-Dichlorobenzene	ND	ND	ND	10
1,3-Dichlorobenzene	ND	ND	ND	10
1,4-Dichlorobenzene	ND	ND	ND	10
3,3'-Dichlorobenzidine	ND	ND	ND	50
2,4-Dichlorophenol	ND	ND	ND	10
2,4-Dimethylphenol	ND	ND	ND	10
Diethylphthalate	ND	ND	ND	10
Di-n-butylphthalate	ND	ND	ND	10
Di-n-octylphthalate	ND	ND	ND	10
Dimethylphthalate	ND	ND	ND	10
4,6-Dinitro-2-methylphenol	ND	ND	ND	50
2,4-Dinitrophenol	ND	ND	ND	50
2,4-Dinitrotoluene	ND	ND	ND	10
2,6-Dinitrotoluene	ND	ND	ND	10
Fluoranthene	780	760	ND	10
Fluorene	350	210	ND	10
Hexachlorobenzene	ND	ND	ND	10
Hexachlorobutadiene	ND	ND	ND	10
Hexachlorocyclopentadiene	ND	ND	ND	50
Hexachloroethane	ND	ND	ND	50

PACIFIC environmental laboratory inc.

PEL REPORT NUMBER: 90-1696 Final
CLIENT: CH2M Hill-Portland
JOB REFERENCE: PDX30425.A0
DATE: July 3, 1990
ITEMS: Two Soil Samples

METHOD: BNA's by EPA 8270-Continued
Results in mg/kg (ppm)

Compound	B201*	B202	Lab Blank	Detection Limit
Indeno(1,2,3-cd)pyrene	ND	160	ND	10
Isophorone	ND	ND	ND	10
2-Methylnaphthalene	900	330	ND	10
2-Methylphenol	ND	ND	ND	10
4-Methylphenol	ND	ND	ND	10
Naphthalene	3,000	840	ND	10
2-Nitroaniline	ND	ND	ND	10
3-Nitroaniline	ND	ND	ND	10
4-Nitroaniline	ND	ND	ND	10
2-Nitrophenol	ND	ND	ND	10
4-Nitrophenol	ND	ND	ND	10
N-Nitrosodiphenylamine	ND	ND	ND	10
N-Nitroso-Di-N-propylamine	ND	ND	ND	50
Nitrobenzene	ND	ND	ND	50
Pentachlorophenol	ND	ND	ND	50
Phenanthrene	1,900	1,200	ND	50
Phenol	ND	ND	ND	50
Pyrene	890	800	ND	50
1,2,4-Trichlorobenzene	ND	ND	ND	50
2,4,5-Trichlorophenol	ND	ND	ND	50
2,4,6-Trichlorophenol	ND	ND	ND	50

* Detection Limits for this sample are 5 times the listed value due to sample extract dilution.

METHOD: Flashpoint (PMCC) per EPA 1010

Sample I.D.	Flashpoint
B201	No flash to 200°F

PEL REPORT NUMBER: 90-1696 Final
CLIENT: CH2M Hill-Portland
JOB REFERENCE: PDX30425.A0
DATE: July 3, 1990
ITEMS: Two Soil Samples

METHOD: Total Metals per EPA 3005, 6010, 7000 series
Results in mg/kg (ppm)

Compound	B201	Lab Blank	Detection Limit
Antimony	8	ND	2
Arsenic	1.8	ND	0.01
Beryllium	ND	ND	0.5
Cadmium	0.9	ND	0.5
Chromium	10	ND	0.5
Copper	15	ND	0.5
Lead	16	ND	2
Mercury	0.86	ND	0.01
Nickel	14	ND	2
Selenium	ND	ND	0.1
Silver	ND	ND	0.5
Thallium	14	ND	5
Zinc	46	ND	0.5

METHOD: HCID by GC/FID
Sample numbers B201 and B202

Result:

Both samples show evidence of petroleum distillate con-tamination in the C_6 to C_{24} range. The retention times of the major peaks indicate the presence of Polynuclear Aro-matic Hydrocarbons. This type of pattern is indicative of the presence of coal tar derivatives.

The HCID results show no evidence of contamination by gasoline, jet fuel or diesel fuel.

CH2M H.. QUALITY ANALYTICS

CHAIN OF CUSTODY RECORD

PROJECT NUMBER	PROJECT NAME
PDX30425.A4	WACKER - FAB 2

CLIENT NAME: CH2M Hill / PDX

PROJECT MANAGER: Jill Bensen

COPY TO: Rick Gariepy

REQUESTED COMP. DATE: 5 day (Std.) Turn-Around

SAMPLING REQUIREMENTS: SDWA ☐ NPDES ☐ RCRA ☐ OTHER ____

CLIENT ADDRESS AND PHONE NUMBER: 2020 SW 4th AVE 2nd Floor PORTLAND OR 97201

ANALYSES REQUESTED

	STA NO.	DATE	TIME	COMP	GRAB	SOIL	SAMPLE DESCRIPTIONS (12 CHARACTERS)	# OF CONTAINERS	SW 6010 Priority Metals (13)	SW 8240 Volatiles	SW 8270 Semi-Vol Complete List Pesticides + PCBs	Ignitability						LAB ID
1	B201	6.18	2 PM	X			WSC-SB201:15-25	5	X	X	X							
2	B202	6.20	3 PM	X			WSC-SB202:15-25	5	[redacted] JKB	X	X							

FOR LAB USE ONLY

LAB#

LAB#

PROJECT NO.

ACK | VERIFIED

QUOTE# | BS

NO. OF SAMP | PG | OF

REMARKS

Please fax test results to: Christy Shoen / CH2M H @ 503) 295-4446 and Rick Gariepy @ 503) 226-0052 Also send hard copy to CH2M Hill / PDX and Rick Gariepy Wacker Siltronics @ PO Box 83180 Portland OR 97283

Thanks.

ALL SAMPLES WILL BE DISPOSED OF 30 DAYS AFTER RECEIPT

SAMPLED BY AND TITLE	DATE/TIME	RELINQUISHED BY	DATE/TIME
J. G. Bauer Proj. Manager	6/18 - 6/20/90	J. G. Bauer	6/20/90 5pm.
RECEIVED BY:	DATE/TIME	RELINQUISHED BY:	DATE/TIME
RECEIVED BY:	DATE/TIME	RELINQUISHED BY:	DATE/TIME
RECEIVED BY LAB: Philip Neuenberg	DATE/TIME 6-20-90 5:05	SAMPLE SHIPPED VIA UPS BUS FED-EX HAND OTHER ____	AIR BILL#

HAZWRAP/NEESA Y N

QC LEVEL 1 2 3

COC | ICE

ANA REQ | TEMP

CUST SEAL | Ph

SAMPLE COND.

REMARKS: PEL # 90-1696

ENTERED INTO LIMS ____ COC REVIEWED ____

temp ok ✓ containers ok ✓

REV 6/89 FORM 340

SCOEPA00021963

COFFMAN
EXCAVATION

April 24, 1995

Garnet Cooke
OSHA
1225 Ferry Street SE
Salem, Oregon 97310

RE: Complaint Number 075860767

Environmental Health Management has been retained from the project inception for the purpose of establishing and monitoring employee safety with regard to on-site contaminants.

The attached list of test data details the results of their analysis.

Any questions regarding this alleged violation should be addressed to:

Environmental Health Management
Attn: John Ruddick
P.O. Box 1746
Lake Oswego, Oregon 97035

Phone: 638-1611

Sincerely,

Carl T. Coffman fr

Carl T. Coffman

CTC:fr
500osha

enclosure

cc: Vic Rennie/Hoffman
Ann Schowalter/Wacker Siltronics
John Ruddick/Environmental Health Management

P.O. BOX 687 ■ OREGON CITY, OR 97045 ■ (503) 656-7000 FAX (503) 656-0686

SCOEPA00021964

COFFMAN EXCAVATION
WACKER SILTRONICS FAB 2 PROJECT
AIR MONITORING RESULTS
Through 2/26/1995

DATE	NUMBER	TYPE	LOCATION OR PERSONNEL	AIR CONTAMINANT	CONCENTRATION (PPM)	COMMENTS
2-Dec	1	TWA	Brian - Setting pipe	Benzene	Not Detected	
2-Dec	2	TWA	Jim - Hoe Operator	Benzene	Not Detected	
2-Dec	3	STEL	24" SD @ West end of loading dock - AM	Benzene	Not Detected	
2-Dec	4	STEL	24" SD @ West end of loading dock - PM	Benzene	Not Detected	
5-Dec	1	TWA	Jim - Hoe Operator	Benzene	Not Detected	
5-Dec	2	TWA	Brian - Setting pipe	Benzene	Not Detected	
5-Dec	3	STEL	24" SD SE of waste storage building - AM	Benzene	Not Detected	
5-Dec	4	STEL	24" SD SE of waste storage building - PM	Benzene	Not Detected	
6-Dec	1	TWA	Area sample in FAB 2 footprint	Benzene	Not Detected	
6-Dec	2	TWA	Area sample in FAB 2 footprint	Benzene	Not Detected	
6-Dec	3	STEL	FAB 2 footprint near 24" SD South of waste storage	Benzene	Not Detected	
6-Dec	4	STEL	FAB 2 footprint near preload piles	Benzene	Not Detected	
7-Dec	1	TWA	Brian - Setting pipe	Benzene	Not Detected	
7-Dec	2	TWA	Jim - Hoe Operator	Benzene	Not Detected	
7-Dec	3	STEL	24" SD SW of waste storage building - AM	Benzene	Not Detected	
8-Dec	1	TWA	Brian - Setting pipe	Benzene	Not Detected	
8-Dec	2	TWA	Jim - Hoe Operator	Benzene	Not Detected	
8-Dec	3	STEL	24" SD South of gas pad (east of slab) AM	Benzene	0.25 ppm	STEL limit = 5.0 ppm
8-Dec	4	STEL	24" SD South of gas pad (under slab)	Benzene	Not Detected	
8-Dec	5	TWA	24" SD South of gas pad (east of slab)	Light Hydrocarbon (naphtha)	Not Detected	
9-Dec	1	TWA	Brian - Setting pipe	Benzene	Not Detected	
9-Dec	2	TWA	Jim - Hoe Operator	Benzene	Not Detected	
9-Dec	3	STEL	18" SD - South end manhole SD2-1	Benzene	Not Detected	
9-Dec	4	STEL	15" SD west end manhole SD1-1	Benzene	Not Detected	
10-Dec	None					Project Down - Weekend
11-Dec	None					Project Down - Weekend
12-Dec	None					Project Down - Evaluating site
13-Dec	None					Project Down - Evaluating site
14-Dec	1	TWA	Dudley Gee - Grade Checker - FAB 2 area	Benzene	Not Detected	
14-Dec	1	TWA	Dudley Gee - Grade Checker - FAB 2 area	Petroleum Distillate (Naphtha)	Not Detected	
14-Dec	2	TWA	Jeremy Conroy - Hoe operator - FAB 2 area	Benzene	Not Detected	
14-Dec	2	TWA	Jeremy Conroy - Hoe operator - FAB 2 area	Petroleum Distillate (Naphtha)	Not Detected	
14-Dec	3	STEL	In FAB 2 Building Footprint - Downwind from Excav. AM	Benzene	Not Detected	
14-Dec	4	STEL	In FAB 2 Building Footprint - Downwind from Excav. AM	Hydrocarbon (10 - 300 ppm)	Not Detected	
14-Dec	5	STEL	In FAB 2 Building Footprint - Downwind from Excav. PM	Benzene	Not Detected	
14-Dec	6	STEL	In FAB 2 Building Footprint - Downwind from Excav. PM	Hydrocarbon (10 - 300 ppm)	Not Detected	
15-Dec	1	TWA	Dudley Gee - Grade Checker - FAB 2 area	Benzene	Not Detected	
15-Dec	1	TWA	Dudley Gee - Grade Checker - FAB 2 area	Petroleum Distillate (Naphtha)	Not Detected	
15-Dec	2	TWA	Jason Bloom - Grade Checker - FAB 2 area	Benzene	Not Detected	
15-Dec	2	TWA	Jason Bloom - Grade Checker - FAB 2 area	Petroleum Distillate (Naphtha)	Not Detected	
15-Dec	3	STEL	In FAB 2 Building Footprint - Downwind from Excav. AM	Benzene	Not Detected	
15-Dec	4	STEL	In FAB 2 Building Footprint - Downwind from Excav. AM	Hydrocarbon (10 - 300 ppm)	Trace	Estimated @ less than 1.0 ppm
15-Dec	5	STEL	In FAB 2 Building Footprint - Downwind from Excav. PM	Benzene	Not Detected	
15-Dec	6	STEL	In FAB 2 Building Footprint - Downwind from Excav. PM	Hydrocarbon (10 - 300 ppm)	Not Detected	
16-Dec	1	TWA	Dudley Gee - Grade Checker - FAB 2 area	Benzene	Not Detected	
16-Dec	1	TWA	Dudley Gee - Grade Checker - FAB 2 area	Petroleum Distillate (Naphtha)	Not Detected	
16-Dec	2	TWA	Jason Bloom - Grade Checker - FAB 2 area	Benzene	Not Detected	
16-Dec	2	TWA	Jason Bloom - Grade Checker - FAB 2 area	Petroleum Distillate (Naphtha)	Not Detected	
16-Dec	3	STEL	In FAB 2 Building Footprint - Downwind from Excav. AM	Benzene	Not Detected	
16-Dec	4	STEL	In FAB 2 Building Footprint - Downwind from Excav. AM	Hydrocarbon (10 - 300 ppm)	Not Detected	
16-Dec	5	STEL	In FAB 2 Building Footprint - Downwind from Excav. PM	Benzene	Not Detected	
16-Dec	6	STEL	In FAB 2 Building Footprint - Downwind from Excav. PM	Hydrocarbon (10 - 300 ppm)	Not Detected	
17-Dec	None					Project Down - Weekend
18-Dec	None					Project Down - Weekend
19-Dec	1	TWA	Brian -Setting pipe - 36" SD, North end	PAH	Not Detected	
19-Dec	2	STEL	36" SD manhole SD2-3	Benzene	Not Detected	
20-Dec	1	STEL	SD manhole SD2-3	Benzene	Not Detected	
20-Dec	2	STEL	SD manhole SD2-3	Benzene	Not Detected	
20-Dec	3	STEL	SD manhole SD2-3	Benzene	Not Detected	
20-Dec	4	STEL	SD manhole SD2-3	Hydrocarbon (10 - 300 ppm)	Not Detected	
20-Dec	5	STEL	SD manhole SD2-3	Hydrocarbon (10 - 300 ppm)	Not Detected	
20-Dec	6	STEL	SD manhole SD2-3	Hydrocarbon (10 - 300 ppm)	Not Detected	
20-Dec	7	STEL	SD manhole SD2-3	Hydrocarbon (100 - 2500 ppm)	Not Detected	
20-Dec	8	STEL	SD manhole SD2-3	Hydrocarbon (100 - 2500 ppm)	Not Detected	
20-Dec	9	STEL	SD manhole SD2-3	Hydrocarbon (100 - 2500 ppm)	Not Detected	
20-Dec	10	TWA	Brian -Setting pipe - 36" SD, North end	Benzene	Not Detected	
20-Dec	10	TWA	Brian -Setting pipe - 36" SD, North end	Petroleum Distillate (Naphtha)	Not Detected	
20-Dec	10	TWA	Brian -Setting pipe - 36" SD, North end	PAH	0.00012 mg/Cu M	TWA limit = 0.2 mg/Cu M
20-Dec	11	TWA	Dave - Top Man, 36" SD, North end	Benzene	Not Detected	
20-Dec	11	TWA	Dave - Top Man, 36" SD, North end	Petroleum Distillate (Naphtha)	Not Detected	
20-Dec	12	TWA	Harley - Hoe Operator - 36" SD, North end	Benzene	Not Detected	
20-Dec	12	TWA	Harley - Hoe Operator - 36" SD, North end	Petroleum Distillate (Naphtha)	Not Detected	
21-Dec	1	STEL	SE of manhole SD3-1	Benzene	Not Detected	
21-Dec	2	STEL	SE of manhole SD3-1	Benzene	Not Detected	
21-Dec	3	STEL	SE of manhole SD3-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
21-Dec	4	STEL	SE of manhole SD3-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
21-Dec	5	STEL	SE of manhole SD3-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
21-Dec	6	STEL	SE of manhole SD3-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
21-Dec	7	STEL	SE of manhole SD3-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
21-Dec	8	TWA	Brian -Setting pipe - 18" SD SE of Manhole SD3-1	Benzene	Not Detected	
21-Dec	8	TWA	Brian -Setting pipe - 18" SD SE of Manhole SD3-1	Petroleum Distillate (Naphtha)	Not Detected	
21-Dec	8	TWA	Brian -Setting pipe - 18" SD SE of Manhole SD3-1	PAH	0.00016 mg/Cu M	TWA limit = 0.2 mg/Cu M
21-Dec	9	TWA	Harley - Hoe Operator - 18" SD SE of Manhole SD3-1	Benzene	Not Detected	
21-Dec	9	TWA	Harley - Hoe Operator - 18" SD SE of Manhole SD3-1	Petroleum Distillate (Naphtha)	Not Detected	
22-Dec	1	STEL	SD manhole SD3-1	Benzene	Not Detected	

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22-Dec	2	STEL	SD manhole SD3-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
22-Dec	3	TWA	Brian -Setting pipe - 18" SD Manhole SD3-1	Benzene	Not Detected	
22-Dec	3	TWA	Brian -Setting pipe - 18" SD Manhole SD3-1	Petroleum Distillate (Naphtha)	Not Detected	
22-Dec	3	TWA	Brian -Setting pipe - 18" SD Manhole SD3-1	PAH	0.00004 mg/Cu M	TWA limit = 0.2 mg/Cu M
22-Dec	4	TWA	Harley - Hoe Operator - 18" SD Manhole SD3-1	Benzene	Not Detected	
22-Dec	4	TWA	Harley - Hoe Operator - 18" SD Manhole SD3-1	Petroleum Distillate (Naphtha)	Not Detected	
23-Dec	1	STEL	SW of SD manhole SD3-1	Benzene	Not Detected	
23-Dec	2	STEL	SW of SD manhole SD3-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
23-Dec	3	TWA	Brian -Setting pipe - 18" SD S of Manhole SD3-1	Benzene	Not Detected	
23-Dec	3	TWA	Brian -Setting pipe - 18" SD S of Manhole SD3-1	Petroleum Distillate (Naphtha)	Not Detected	
23-Dec	3	TWA	Brian -Setting pipe - 18" SD S of Manhole SD3-1	PAH	Not Detected	
23-Dec	4	TWA	Harley - Hoe Operator - 18" SD S of Manhole SD3-1	Benzene	Not Detected	
23-Dec	4	TWA	Harley - Hoe Operator - 18" SD S of Manhole SD3-1	Petroleum Distillate (Naphtha)	Not Detected	
24-Dec	None					Project Down - Weekend
25-Dec	None					Project Down - Weekend
26-Dec	1	STEL	36" SD excavation, NW end of parking lot	Benzene	Not Detected	Holiday
26-Dec	2	STEL	36" SD excavation, NW end of parking lot	Hydrocarbon (10 - 300 ppm)	Not Detected	
26-Dec	3	STEL	Potable water tie in (near trailers)	Benzene	Not Detected	
26-Dec	4	STEL	Potable water tie in (near trailers)	Hydrocarbon (10 - 300 ppm)	Not Detected	
26-Dec	5	TWA	Brian -Setting pipe - 36" SD - NW end of parking lot	Benzene	Not Detected	
26-Dec	5	TWA	Brian -Setting pipe - 36" SD - NW end of parking lot	Petroleum Distillate (Naphtha)	Not Detected	
26-Dec	6	TWA	Harley - Hoe Operator - 36" SD - NW end of parking lot	Benzene	Not Detected	
26-Dec	6	TWA	Harley - Hoe Operator - 36" SD - NW end of parking lot	Petroleum Distillate (Naphtha)	Not Detected	
26-Dec	7	TWA	Jerry Linden - 36" SD - NW end of parking lot	Benzene	Not Detected	Wacker Personnel
26-Dec	7	TWA	Jerry Linden - 36" SD - NW end of parking lot	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
26-Dec	7	TWA	Jerry Linden - 36" SD - NW end of parking lot	PAH	Not Detected	Wacker Personnel
27-Dec	1	STEL	36" SD excavation, center of parking lot	Hydrocarbon (10 - 300 ppm)	Not Detected	
27-Dec	2	STEL	36" SD excavation, center of parking lot	Hydrocarbon (10 - 300 ppm)	Not Detected	
27-Dec	3	STEL	Electrical vault	Benzene	Trace	Probable Interference
27-Dec	4	TWA	Jerry Linden - 36" SD - NW end of parking lot	Benzene	Not Detected	Wacker Personnel
27-Dec	4	TWA	Jerry Linden - 36" SD - NW end of parking lot	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
27-Dec	5	TWA	Brian -Setting pipe - 36" SD - NW end of parking lot	PAH	Not Detected	
28-Dec	1	STEL	36" SD excavation, NW of road	Benzene	Trace	Probable Interference
28-Dec	2	STEL	36" SD excavation, NW of road	Hydrocarbon (10 - 300 ppm)	Not Detected	
28-Dec	3	STEL	36" SD excavation, NW of road	Benzene	Trace	Probable Interference
28-Dec	4	STEL	36" SD excavation, NW of road	Hydrocarbon (10 - 300 ppm)	Not Detected	
28-Dec	5	STEL	10" fire main, 2nd 90 deg. angle	Benzene	Trace	Probable Interference
28-Dec	6	STEL	10" fire main, 2nd 90 deg. angle	Hydrocarbon (10 - 300 ppm)	Not Detected	
28-Dec	7	TWA	Brian -Setting pipe - 36" SD - NW of road	Benzene	Not Detected	
28-Dec	7	TWA	Brian -Setting pipe - 36" SD - NW of road	Petroleum Distillate (Naphtha)	Not Detected	
28-Dec	7	TWA	Brian -Setting pipe - 36" SD - NW of road	PAH	Not Detected	
28-Dec	8	TWA	Harley - Hoe Operator - 36" SD - NW of road	Benzene	Not Detected	
28-Dec	8	TWA	Harley - Hoe Operator - 36" SD - NW of road	Petroleum Distillate (Naphtha)	Not Detected	
28-Dec	9	TWA	Jerry Linden - 36" SD - NW of road	Benzene	Not Detected	Wacker Personnel
28-Dec	9	TWA	Jerry Linden - 36" SD - NW of road	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
28-Dec	9	TWA	Jerry Linden - 36" SD - NW of road	PAH	Not Detected	Wacker Personnel
29-Dec	1	STEL	36" SD excavation , SD1-3	Hydrocarbon (10 - 300 ppm)	Not Detected	
29-Dec	2	STEL	36" SD excavation , SD1-3	Benzene	Trace	Probable Interference
29-Dec	3	STEL	36" SD excavation , SD1-3	Hydrocarbon (10 - 300 ppm)	Not Detected	
29-Dec	4	TWA	Brian -Setting pipe - 36" SD - manhole SD1-3	Benzene	Not Detected	
29-Dec	4	TWA	Brian -Setting pipe - 36" SD - manhole SD1-3	Petroleum Distillate (Naphtha)	Not Detected	
29-Dec	4	TWA	Brian -Setting pipe - 36" SD - manhole SD1-3	PAH	Not Detected	
29-Dec	5	TWA	Harley - Hoe Operator - 36" SD - manhole SD1-3	Benzene	Not Detected	
29-Dec	5	TWA	Harley - Hoe Operator - 36" SD - manhole SD1-3	Petroleum Distillate (Naphtha)	Not Detected	
29-Dec	6	TWA	Jerry Linden - 36" SD - manhole SD1-3	Benzene	Not Detected	Wacker Personnel
29-Dec	6	TWA	Jerry Linden - 36" SD - manhole SD1-3	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
29-Dec	6	TWA	Jerry Linden - 36" SD - manhole SD1-3	PAH	Not Detected	Wacker Personnel
30-Dec	1	TWA	Brian -Setting pipe - 36" SD - SW of road	Benzene	Not Detected	
30-Dec	1	TWA	Brian -Setting pipe - 36" SD - SW of road	Petroleum Distillate (Naphtha)	9.0 ppm	TWA limit = 400 ppm
30-Dec	1	TWA	Brian -Setting pipe - 36" SD - SW of road	PAH	Not Detected	
30-Dec	2	TWA	Jim - Hoe Operator - 36" SD - SW of road	Benzene	Not Detected	
30-Dec	2	TWA	Jim - Hoe Operator - 36" SD - SW of road	Petroleum Distillate (Naphtha)	Not Detected	
31-Dec	None					Project Down - Weekend
1-Jan	None					Project Down - Weekend
2-Jan	None					Project Down - Holiday
3-Jan	1	STEL	Bore pit to plan-modified SS manhole (near trailers)	Benzene	Not Detected	
3-Jan	2	STEL	Bore pit to plan-modified SS manhole (near trailers)	Hydrocarbon (10 - 300 ppm)	Not Detected	
3-Jan	3	STEL	36" SD excavation, NE end of SW parking lot	Benzene	Not Detected	
3-Jan	4	STEL	36" SD excavation, NE end of SW parking lot	Hydrocarbon (10 - 300 ppm)	Not Detected	
3-Jan	5	TWA	Harley - Hoe Operator - 18 " SD	Benzene	Not Detected	
3-Jan	5	TWA	Harley - Hoe Operator - 18 " SD	Petroleum Distillate (Naphtha)	Not Detected	
3-Jan	6	TWA	Dave - Setting Pipe - 18" SD	Benzene	Not Detected	
3-Jan	6	TWA	Dave - Setting Pipe - 18" SD	Petroleum Distillate (Naphtha)	Not Detected	
3-Jan	7	TWA	Jim - Hoe Operator - 36" SD	Benzene	Not Detected	
3-Jan	7	TWA	Jim - Hoe Operator - 36" SD	Petroleum Distillate (Naphtha)	Not Detected	
3-Jan	8	TWA	Brian -Setting pipe - 36" SD - SW of road	Benzene	Not Detected	
3-Jan	8	TWA	Brian -Setting pipe - 36" SD - SW of road	Petroleum Distillate (Naphtha)	Not Detected	
3-Jan	8	TWA	Brian -Setting pipe - 36" SD - SW of road	PAH	Not Detected	
3-Jan	9	TWA	Jerry Linden - 36" SD	Benzene	Not Detected	Wacker Personnel
3-Jan	9	TWA	Jerry Linden - 36" SD	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
3-Jan	9	TWA	Jerry Linden - 36" SD	PAH	Not Detected	Wacker Personnel
4-Jan	1	STEL	18" excavation ~30' from SD3-1	Benzene	Not Detected	
4-Jan	2	STEL	18" excavation ~30' from SD3-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
4-Jan	3	STEL	18" excavation, halfway between SD3-1 and SD2-1	Benzene	Not Detected	
4-Jan	4	STEL	18" excavation, halfway between SD3-1 and SD2-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
4-Jan	5	STEL	18" excavation, halfway between SD3-1 and SD2-1	Benzene	Not Detected	
4-Jan	6	STEL	18" excavation, halfway between SD3-1 and SD2-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
4-Jan	7	STEL	36" SD excavation, middle of SW parking lot	Benzene	Not Detected	
4-Jan	8	STEL	36" SD excavation, middle of SW parking lot	Hydrocarbon (10 - 300 ppm)	Not Detected	
4-Jan	9	STEL	36" SD excavation, SW end of SW parking lot	Benzene	Not Detected	
4-Jan	10	STEL	36" SD excavation, SW end of SW parking lot	Hydrocarbon (10 - 300 ppm)	Not Detected	
4-Jan	11	TWA	Harley - Hoe Operator - 18" SD	Benzene	Not Detected	

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4-Jan	11	TWA	Harley - Hoe Operator - 18" SD	Petroleum Distillate (Naphtha)	Not Detected	
4-Jan	12	TWA	Dave - Setting Pipe - 18" SD	Benzene	Not Detected	
4-Jan	12	TWA	Dave - Setting Pipe - 18" SD	Petroleum Distillate (Naphtha)	Not Detected	
4-Jan	13	TWA	Jim - Hoe Operator - 36" SD	Benzene	Not Detected	
4-Jan	13	TWA	Jim - Hoe Operator - 36" SD	Petroleum Distillate (Naphtha)	Not Detected	
4-Jan	14	TWA	Chip Bloomer - Wacker Environmental	Benzene	Not Detected	Wacker Personnel
4-Jan	14	TWA	Chip Bloomer - Wacker Environmental	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
4-Jan	15	TWA	Aaron Ruddick - IH Technician	Benzene	Not Detected	
4-Jan	15	TWA	Aaron Ruddick - IH Technician	Petroleum Distillate (Naphtha)	Not Detected	
4-Jan	15	TWA	Brian -Setting pipe - 36" SD - SW of road	PAH	Not Detected	
4-Jan	16	TWA	Jerry Linden - Wacker	Benzene	Not Detected	Wacker Personnel
4-Jan	16	TWA	Jerry Linden - Wacker	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
4-Jan	16	TWA	Jerry Linden - Wacker	PAH	Not Detected	Wacker Personnel
5-Jan	1	STEL	18" excavation, ~15' NE of SD2-1	Benzene	Not Detected	
5-Jan	2	STEL	18" excavation, ~15' NE of SD2-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
5-Jan	3	STEL	Storm sewer manhole SD7-1	Benzene	Not Detected	
5-Jan	4	STEL	Storm sewer manhole SD7-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
5-Jan	5	TWA	Dave - Setting Pipe - 18" SD	Benzene	Not Detected	
5-Jan	5	TWA	Dave - Setting Pipe - 18" SD	Petroleum Distillate (Naphtha)	Not Detected	
5-Jan	6	TWA	Brian -Setting pipe - 36" SD	Benzene	Not Detected	
5-Jan	6	TWA	Brian -Setting pipe - 36" SD	Petroleum Distillate (Naphtha)	Not Detected	
5-Jan	6	TWA	Brian -Setting pipe - 36" SD	PAH	Not Detected	
5-Jan	7	TWA	Jerry Linden	Benzene	Not Detected	Wacker Personnel
5-Jan	7	TWA	Jerry Linden	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
5-Jan	7	TWA	Jerry Linden	PAH	Not Detected	Wacker Personnel
6-Jan	1	STEL	24" Storm sewer immediately NW of SD7-1	Benzene	Not Detected	
6-Jan	2	STEL	24" Storm sewer immediately NW of SD7-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
6-Jan	3	TWA	Jerry Linden	Benzene	Not Detected	Wacker Personnel
6-Jan	3	TWA	Jerry Linden	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
6-Jan	3	TWA	Jerry Linden	PAH	Not Detected	Wacker Personnel
9-Jan	None					Project Down - Weather
10-Jan	1	STEL	10" D.I.P. SS Near Bore Hole	Benzene		
10-Jan	2	STEL	10" D.I.P. SS Near Bore Hole	Hydrocarbon (10 - 300 ppm)		
10-Jan	3	TWA	Brian -Setting pipe - 24" SD South of Road	Benzene	Sample Lost - leaked @ Lab	
10-Jan	3	TWA	Brian -Setting pipe - 24" SD South of Road	Petroleum Distillate (Naphtha)	Sample Lost - leaked @ Lab	
10-Jan	3	TWA	Brian -Setting pipe - 24" SD South of Road	PAH		
10-Jan	4	TWA	Dave - Setting pipe - 10" D.I.P. SS Near Bore Hole	Benzene	Sample Lost - leaked @ Lab	
10-Jan	4	TWA	Dave - Setting pipe - 10" D.I.P. SS Near Bore Hole	Petroleum Distillate (Naphtha)	Sample Lost - leaked @ Lab	
10-Jan	4	TWA	Dave - Setting pipe - 10" D.I.P. SS Near Bore Hole	PAH		
10-Jan	5	TWA	Jerry Linden	Benzene		Wacker Personnel
10-Jan	5	TWA	Jerry Linden	Petroleum Distillate (Naphtha)		Wacker Personnel
11-Jan	1	STEL	15" SD East of Manhole SD1-1	Benzene		
11-Jan	2	STEL	15" SD East of Manhole SD1-1	Hydrocarbon (10 - 300 ppm)		
11-Jan	3	TWA	Brian -Setting pipe - 24" SD South of Road	Benzene		
11-Jan	3	TWA	Brian -Setting pipe - 24" SD South of Road	Petroleum Distillate (Naphtha)		
11-Jan	3	TWA	Brian -Setting pipe - 24" SD South of Road	PAH		
11-Jan	4	TWA	Dave - Setting pipe - 15" SD	Benzene	Sample Lost - leaked @ Lab	
11-Jan	4	TWA	Dave - Setting pipe - 15" SD	Petroleum Distillate (Naphtha)	Sample Lost - leaked @ Lab	
11-Jan	4	TWA	Dave - Setting pipe - 15" SD	PAH		
12-Jan	1	TWA	Brian -Setting pipe - 24" SD NE Corner of lot	Benzene	Not Detected	
12-Jan	1	TWA	Brian -Setting pipe - 24" SD NE Corner of lot	Petroleum Distillate (Naphtha)	Not Detected	
12-Jan	2	TWA	Dave - Setting pipe - 10" SS	Benzene	Not Detected	
12-Jan	2	TWA	Dave - Setting pipe - 10" SS	Petroleum Distillate (Naphtha)	Not Detected	
12-Jan	2	TWA	Dave - Setting pipe - 10" SS	PAH	Not Detected	
12-Jan	3	TWA	Jerry Linden	Benzene	Not Detected	Wacker Personnel
12-Jan	3	TWA	Jerry Linden	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
12-Jan	3	TWA	Jerry Linden	PAH	Not Detected	Wacker Personnel
13-Jan	1	STEL	Manhole SS3-1	Benzene	Not Detected	
13-Jan	2	STEL	Manhole SS3-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
13-Jan	3	TWA	Dave - Setting pipe - 10" SS near SS3-1	Benzene	Not Detected	REVISED - Lab error orig. report
13-Jan	3	TWA	Dave - Setting pipe - 10" SS near SS3-1	Petroleum Distillate (Naphtha)	Not Detected	
13-Jan	4	TWA	Jerry Linden	Benzene	Not Detected	REVISED - Lab error orig. report
13-Jan	4	TWA	Jerry Linden	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
13-Jan	4	TWA	Jerry Linden	PAH	Not Detected	Wacker Personnel
16-Jan	1	STEL	NW of manhole SS4-1	Benzene	Not Detected	
16-Jan	2	STEL	NW of manhole SS4-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
16-Jan	3	TWA	Brian -Setting pipe - 24" SD South of Road	Benzene	Not Detected	
16-Jan	3	TWA	Brian -Setting pipe - 24" SD South of Road	Petroleum Distillate (Naphtha)	Not Detected	
16-Jan	4	TWA	Dave - Setting pipe - 15" SD	Benzene	Not Detected	
16-Jan	4	TWA	Dave - Setting pipe - 15" SD	Petroleum Distillate (Naphtha)	Not Detected	
16-Jan	4	TWA	Dave - Setting pipe - 15" SD	PAH	Not Detected	
17-Jan	1	TWA	Brian -Setting pipe - 24" SD South of Road	Benzene	Not Detected	
17-Jan	1	TWA	Brian -Setting pipe - 24" SD South of Road	Petroleum Distillate (Naphtha)	Not Detected	
17-Jan	2	TWA	Dave - Setting pipe - 15" SD	Benzene	Not Detected	
17-Jan	2	TWA	Dave - Setting pipe - 15" SD	Petroleum Distillate (Naphtha)	Not Detected	
17-Jan	2	TWA	Dave - Setting pipe - 15" SD	PAH	Not Detected	
18-Jan	1	STEL	10" SS, 20' NE of SD1A-2	Benzene	Not Detected	
18-Jan	2	STEL	10" SS, 20' NE of SD1A-2	Hydrocarbon (10 - 300 ppm)	Not Detected	
18-Jan	3	TWA	Brian -Setting pipe - 24" SD South of Road	Benzene	Not Detected	
18-Jan	3	TWA	Brian -Setting pipe - 24" SD South of Road	Petroleum Distillate (Naphtha)	Not Detected	
18-Jan	4	TWA	Dave - Setting pipe - 15" SD	Benzene	Not Detected	
18-Jan	4	TWA	Dave - Setting pipe - 15" SD	Petroleum Distillate (Naphtha)	Not Detected	
18-Jan	4	TWA	Dave - Setting pipe - 15" SD	PAH	Not Detected	
19-Jan	1	STEL	36" SD NE of SD3-3	Benzene	Not Detected	
19-Jan	2	STEL	36" SD NE of SD3-3	Hydrocarbon (10 - 300 ppm)	Not Detected	
19-Jan	3	TWA	Brian -Setting pipe - 24" SD South of Road	Benzene	Not Detected	
19-Jan	3	TWA	Brian -Setting pipe - 24" SD South of Road	Petroleum Distillate (Naphtha)	Not Detected	
19-Jan	4	TWA	Dave - Setting pipe - 15" SD	Benzene	Not Detected	
19-Jan	4	TWA	Dave - Setting pipe - 15" SD	Petroleum Distillate (Naphtha)	Not Detected	
19-Jan	4	TWA	Dave - Setting pipe - 15" SD	PAH	Not Detected	
20-Jan	1	STEL	FAB-2, West Footing	Benzene	Not Detected	
20-Jan	2	STEL	FAB-2, West Footing	Hydrocarbon (10 - 300 ppm)	Not Detected	

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20-Jan	3	TWA	Brian -Setting pipe - 24" SD South of Road	Benzene	Not Detected	
20-Jan	3	TWA	Brian -Setting pipe - 24" SD South of Road	Petroleum Distillate (Naphtha)	Not Detected	
20-Jan	3	TWA	Brian -Setting pipe - 24" SD South of Road	PAH	Not Detected	
20-Jan	4	TWA	Dave - Setting pipe - 15" SD	Benzene	Not Detected	
20-Jan	4	TWA	Dave - Setting pipe - 15" SD	Petroleum Distillate (Naphtha)	Not Detected	
20-Jan	4	TWA	Dave - Setting pipe - 15" SD	PAH	Not Detected	
20-Jan	5	TWA	Jerry Linden	Benzene	Not Detected	Wacker Personnel
20-Jan	5	TWA	Jerry Linden	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
21-Jan	None					No Potential Exposures
23-Jan	1	STEL	FAB-2, West Footing	Hydrocarbon (10 - 300 ppm)	Not Detected	
23-Jan	2	STEL	FAB-2, West Footing	Benzene	Not Detected	
23-Jan	3	TWA	Brian -Setting pipe - 36" SD N of SD3-3	Benzene	Not Detected	
23-Jan	3	TWA	Brian -Setting pipe - 36" SD N of SD3-3	Petroleum Distillate (Naphtha)	Not Detected	
24-Jan	1	TWA	Brian -Setting pipe - 36" SD S of SD3-3	Benzene	Not Detected	
24-Jan	2	TWA	Brian -Setting pipe - 36" SD S of SD3-3	Petroleum Distillate (Naphtha)	Not Detected	
25-Jan	1	STEL	Elevator Bore Hole - E corner of FAB-2	Benzene	2 ppm	DeWitt (STEL limit = 5.0 ppm
25-Jan	2	STEL	Elevator Bore Hole - E corner of FAB-2	Benzene	Not Detected	DeWitt
25-Jan	3	STEL	Elevator Bore Hole - E corner of FAB-2	Benzene	Not Detected	DeWitt - Swing Shift
25-Jan	4	STEL	Elevator Bore Hole - E corner of FAB-2	Benzene	10 ppm	DeWitt - Swing Shift
25-Jan	5	STEL	Elevator Bore Hole - E corner of FAB-2	Hydrocarbon (10 - 300 ppm)	Not Detected	DeWitt
25-Jan	6	STEL	Elevator Bore Hole - E corner of FAB-2	Hydrocarbon (10 - 300 ppm)	Not Detected	DeWitt
25-Jan	7	STEL	Elevator Bore Hole - E corner of FAB-2	Hydrocarbon (10 - 300 ppm)	Not Detected	DeWitt - Swing Shift
25-Jan	8	STEL	Elevator Bore Hole - E corner of FAB-2	Hydrocarbon (10 - 300 ppm)	Not Detected	DeWitt - Swing Shift
25-Jan	9	STEL	Elevator Bore Hole - E corner of FAB-2	Hydrocarbon (10 - 300 ppm)	Not Detected	DeWitt - Swing Shift
25-Jan	10	TWA	Guy Kollenburn - Drilling Elevator Shaft Hole	Benzene	Not Detected	DeWitt - Swing Shift
25-Jan	11	TWA	Guy Kollenburn - Drilling Elevator Shaft Hole	Petroleum Distillate (Naphtha)	Not Detected	DeWitt - Swing Shift
25-Jan	12	TWA	Guy Kollenburn - Drilling Elevator Shaft Hole	PAH	Not Detected	DeWitt - Swing Shift
25-Jan	13	TWA	Chip Bloomer - @ Elevator Shaft Hole	Benzene	Not Detected	Wacker Personnel
25-Jan	14	TWA	Chip Bloomer - @ Elevator Shaft Hole	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
25-Jan	15	TWA	Jerry Linden - Supervising Elevator Bore Hole	Benzene	Not Detected	Wacker Personnel
25-Jan	16	TWA	Jerry Linden - Supervising Elevator Bore Hole	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
27-Jan	1	TWA	Harley - Potholing vault near facility addition	Benzene	Not Detected	
27-Jan	2	TWA	Harley - Potholing vault near facility addition	Petroleum Distillate (Naphtha)	Not Detected	
27-Jan	3	TWA	Jerry Linden	Benzene	Not Detected	Wacker Personnel
27-Jan	4	TWA	Jerry Linden	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
30-Jan	1	TWA	Brian - 18" SD SW of Parking Lot	Benzene	Not Detected	
30-Jan	2	TWA	Brian - 18" SD SW of Parking Lot	Petroleum Distillate (Naphtha)	Not Detected	
30-Jan	3	TWA	Jerry Linden	Benzene	Not Detected	Wacker Personnel
30-Jan	4	TWA	Jerry Linden	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
31-Jan	1	STEL	36" Storm Sewer Outfall	Benzene	Not Detected	
31-Jan	2	STEL	36" Storm Sewer Outfall	Hydrocarbon (10 - 300 ppm)	Not Detected	
31-Jan	3	TWA	Brian - 36" Storm Sewer Outfall	Benzene	Not Detected	
31-Jan	4	TWA	Brian - 36" Storm Sewer Outfall	Petroleum Distillate (Naphtha)	Not Detected	
31-Jan	5	TWA	Dave - Laterals from FAB2 sub-slab to 24" SD	Benzene	Not Detected	
31-Jan	6	TWA	Dave - Laterals from FAB2 sub-slab to 24" SD	Petroleum Distillate (Naphtha)	Not Detected	
1-Feb	1	TWA	Dave - Laterals from FAB2 sub-slab to 24" SD	Benzene	Not Detected	
1-Feb	2	TWA	Dave - Laterals from FAB2 sub-slab to 24" SD	Petroleum Distillate (Naphtha)	Not Detected	
1-Feb	3	TWA	Dave - Laterals from FAB2 sub-slab to 24" SD	PAH	Not Detected	
2-Feb	3	TWA	Brian - Backfilling and relaying at 36" SD Outfall	Benzene	Not Detected	
2-Feb	3	TWA	Brian - Backfilling and relaying at 36" SD Outfall	Petroleum Distillate (Naphtha)	Not Detected	
2-Feb	4	TWA	Dave - Setting pipe - 36" Outfall	Benzene	Not Detected	
2-Feb	4	TWA	Dave - Setting pipe - 36" Outfall	Petroleum Distillate (Naphtha)	Not Detected	
2-Feb	4	TWA	Dave - Setting pipe - 36" Outfall	PAH	Not Detected	
3-Feb	1	STEL	10" Fire Protection Water near E gate	Benzene	Not Detected	
3-Feb	2	STEL	10" Fire Protection Water near E gate	Hydrocarbon (10 - 300 ppm)	Not Detected	
3-Feb	3	TWA	Brian - 10" Fire Protection System	Benzene	Not Detected	
3-Feb	3	TWA	Brian - 10" Fire Protection System	Petroleum Distillate (Naphtha)	Not Detected	
3-Feb	4	TWA	Dave - 10" Fire Protection System	Benzene	Not Detected	
3-Feb	4	TWA	Dave - 10" Fire Protection System	Petroleum Distillate (Naphtha)	Not Detected	
3-Feb	4	TWA	Dave - 10" Fire Protection System	PAH	Not Detected	
6-Feb	1	STEL	Electrical Conduit, near Vault HM-HV-21	Hydrocarbon (10 - 300 ppm)	Not Detected	
6-Feb	2	STEL	Electrical Conduit, near Vault HM-HV-21	Benzene	Not Detected	
6-Feb	3	TWA	Brian -Setting pipe - 24" SD South of Road	Benzene	Not Detected	
6-Feb	4	TWA	Brian - 18" SD to W of SD3-2	Petroleum Distillate (Naphtha)	Not Detected	
6-Feb	5	TWA	Brian - 18" SD to W of SD3-2	Benzene	Not Detected	
6-Feb	6	TWA	Brian - 18" SD to W of SD3-2	PAH	Not Detected	
6-Feb	7	TWA	Dave - Laterals from sub-slab to SD N of FAB2	Benzene	Not Detected	
6-Feb	8	TWA	Dave - Laterals from sub-slab to SD N of FAB2	Petroleum Distillate (Naphtha)	Not Detected	
6-Feb	9	TWA	Jerry Linden	Benzene	Not Detected	Wacker Personnel
6-Feb	10	TWA	Jerry Linden	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
7-Feb	1	STEL	Electrical Conduit, ~ 20' from Vault HM-HV-21	Hydrocarbon (10 - 300 ppm)	Not Detected	
7-Feb	2	STEL	Electrical Conduit, ~ 20' from Vault HM-HV-21	Benzene	Not Detected	
7-Feb	3	TWA	Chuck - Laying sand near Vault MH-HV-21	Petroleum Distillate (Naphtha)	Not Detected	
7-Feb	4	TWA	Chuck - Laying sand near Vault MH-HV-21	Benzene	Not Detected	
7-Feb	5	TWA	Chuck - Laying sand near Vault MH-HV-21	PAH	Not Detected	Sample mislabelled "Dave"
7-Feb	6	TWA	Bill Matthews - Laying conduit near Vault MH-HV-21	Benzene	Not Detected	Christiansen Personnel
7-Feb	7	TWA	Bill Matthews - Laying conduit near Vault MH-HV-21	Petroleum Distillate (Naphtha)	Not Detected	Christiansen Personnel
7-Feb	8	TWA	Bill Matthews - Laying conduit near Vault MH-HV-21	PAH	Not Detected	Christiansen Personnel
8-Feb	1	TWA	Bill Matthews - Laying conduit 35 ft past Vault MH-HV-21	Petroleum Distillate (Naphtha)	Not Detected	Christiansen Personnel
8-Feb	2	TWA	Bill Matthews - Laying conduit 35 ft past Vault MH-HV-21	Benzene	Not Detected	Christiansen Personnel
8-Feb	3	TWA	Bill Matthews - Laying conduit 35 ft past Vault MH-HV-21	PAH	Not Detected	Christiansen Personnel
8-Feb	4	TWA	Dave - grading plumbing under central facilities bldg	Benzene	Not Detected	
8-Feb	5	TWA	Dave - grading plumbing under central facilities bldg	Petroleum Distillate (Naphtha)	Not Detected	
8-Feb	6	TWA	Chuck - Laying sand 35 ft past Vault MH-HV-21	Benzene	Not Detected	
8-Feb	7	TWA	Chuck - Laying sand 35 ft past Vault MH-HV-21	Petroleum Distillate (Naphtha)	Not Detected	
9-Feb	1	STEL	Main electrical vault NE of substation	Hydrocarbon (10 - 300 ppm)	Not Detected	
9-Feb	2	STEL	Main electrical vault NE of substation	Benzene	Not Detected	
9-Feb	3	TWA	Peter Thomas - Laying conduit near road	Petroleum Distillate (Naphtha)	Not Detected	Christiansen Personnel
9-Feb	4	TWA	Peter Thomas - Laying conduit near road	Benzene	Not Detected	Christiansen Personnel
9-Feb	5	TWA	Peter Thomas - Laying conduit near road	PAH	Not Detected	Christiansen Personnel
9-Feb	6	TWA	Brian - Grading electrical conduit line near road	Benzene	Not Detected	
9-Feb	7	TWA	Brian - Grading electrical conduit line near road	Petroleum Distillate (Naphtha)	Not Detected	

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10-Feb	6	TWA	Chuck - Backfilling electrical conduit near road	Benzene	Not Detected	
10-Feb	7	TWA	Chuck - Backfilling electrical conduit near road	Petroleum Distillate (Naphtha)	Not Detected	
11-Feb	none					Down - Weekend
12-Feb	none					Down - Weekend
13-Feb	none					Down - Snow
14-Feb	none					Down - Snow
15-Feb	none					Down - Snow
16-Feb	1	TWA	Brian -Fire protect. water SW of parking lot to recharge	Petroleum Distillate (Naphtha)	Not Detected	
16-Feb	2	TWA	Brian -Fire protect. water SW of parking lot to recharge	Benzene	Not Detected	
16-Feb	3	TWA	Brian -Fire protect. water SW of parking lot to recharge	PAH	Not Detected	
16-Feb	4	TWA	Bill Matthews - Laying conduit N of substation	Benzene	Not Detected	Christiansen Personnel
16-Feb	5	TWA	Bill Matthews - Laying conduit N of substation	Petroleum Distillate (Naphtha)	Not Detected	Christiansen Personnel
17-Feb	1	STEL	18" SD, ~ 2 sections NW of SD3-2	Hydrocarbon (10 - 300 ppm)	Not Detected	
17-Feb	2	STEL	18" SD, ~ 2 sections NW of SD3-2	Benzene	Not Detected	
17-Feb	3	TWA	Brian - 18" SD near SD3-2	Petroleum Distillate (Naphtha)	Not Detected	
17-Feb	4	TWA	Brian - 18" SD near SD3-2	Benzene	Not Detected	
17-Feb	5	TWA	Brian - 18" SD near SD3-2	PAH	Not Detected	
17-Feb	6	TWA	Guy - Driving casing for elevator shaft SW FAB2	Benzene	Not Detected	DeWitt Personnel
17-Feb	7	TWA	Guy - Driving casing for elevator shaft SW FAB2	Petroleum Distillate (Naphtha)	Not Detected	DeWitt Personnel
20-Feb	1	STEL	Elevator Bore hole SW corner of FAB2	Hydrocarbon (10 - 300 ppm)	Not Detected	
20-Feb	2	STEL	Elevator Bore hole SW corner of FAB2	Benzene	Not Detected	
20-Feb	3	STEL	Elevator Bore hole SW corner of FAB2	Hydrocarbon (10 - 300 ppm)	Not Detected	
20-Feb	4	TWA	Brian - 18" SD SE of recharge pile	Petroleum Distillate (Naphtha)	Not Detected	
20-Feb	5	TWA	Brian - 18" SD SE of recharge pile	Benzene	Not Detected	
20-Feb	6	TWA	Brian - 18" SD SE of recharge pile	PAH	Not Detected	
20-Feb	7	TWA	Guy - in hole at elevator shaft boring - SW FAB2	Petroleum Distillate (Naphtha)	Not Detected	DeWitt Personnel
20-Feb	8	TWA	Guy - in hole at elevator shaft boring - SW FAB2	Benzene	Not Detected	DeWitt Personnel
20-Feb	9	TWA	Guy - in hole at elevator shaft boring - SW FAB2	PAH	Not Detected	DeWitt Personnel
20-Feb	10	TWA	Chuck - loading cuttings into drop box at elevator shaft	Benzene	Not Detected	
20-Feb	11	TWA	Chuck - loading cuttings into drop box at elevator shaft	Petroleum Distillate (Naphtha)	Not Detected	
20-Feb	12	TWA	Ed - Operating boring rig at elevator shaft	Benzene	Not Detected	DeWitt Personnel
20-Feb	13	TWA	Ed - Operating boring rig at elevator shaft	Petroleum Distillate (Naphtha)	Not Detected	DeWitt Personnel
21-Feb	1	STEL	Electrical Trench SW of center of FAB2	Hydrocarbon (10 - 300 ppm)	Not Detected	
21-Feb	2	STEL	Electrical Trench SW of center of FAB2	Benzene	Not Detected	
21-Feb	3	TWA	Brian - laying pipe SD2-2A to SD2-2	Petroleum Distillate (Naphtha)	1.23 ppm	TWA = 400 ppm
21-Feb	4	TWA	Brian - laying pipe SD2-2A to SD2-2	Benzene	Not Detected	
21-Feb	5	TWA	Brian - laying pipe SD2-2A to SD2-2	PAH	Not Detected	
22-Feb	1	STEL	18" SD SW of recharge pile	Hydrocarbon (10 - 300 ppm)	Not Detected	
22-Feb	2	STEL	18" SD SW of recharge pile	Benzene	Not Detected	
22-Feb	3	STEL	Electrical conduit excavation W corner of FAB2	Hydrocarbon (10 - 300 ppm)	Not Detected	
22-Feb	4	STEL	Electrical conduit excavation W corner of FAB2	Benzene	Not Detected	
22-Feb	5	TWA	Brian - 18" SD S of Recharge Pile	Petroleum Distillate (Naphtha)	Not Detected	
22-Feb	6	TWA	Brian - 18" SD S of Recharge Pile	Benzene	Not Detected	
23-Feb	1	STEL	18" SD SW of S corner of FAB2	Hydrocarbon (10 - 300 ppm)	Not Detected	
23-Feb	2	STEL	18" SD SW of S corner of FAB2	Benzene	Not Detected	
23-Feb	3	TWA	Brian - SD and FP S of SE corner FAB2	Petroleum Distillate (Naphtha)	1.50 ppm	TWA = 400 ppm
23-Feb	4	TWA	Brian - SD and FP S of SE corner FAB2	Benzene	Not Detected	
24-Feb	1	STEL	10" FP - W of SW center of FAB2	Hydrocarbon (10 - 300 ppm)	Trace	
24-Feb	2	STEL	10" FP - W of SW center of FAB2	Benzene	Not Detected	
24-Feb	3	TWA	Brian - 10" FP near road SE of FAB2	Petroleum Distillate (Naphtha)	1.94 ppm	TWA = 400 ppm
24-Feb	4	TWA	Brian - 10" FP near road SE of FAB2	Benzene	Not Detected	
24-Feb	5	TWA	Brian - 10" FP near road SE of FAB2	PAH	Not Detected	
24-Feb	6	TWA	Chuck - Electical conduit SE corner FAB2	Benzene	Not Detected	
24-Feb	7	TWA	Chuck - Electical conduit SE corner FAB2	Petroleum Distillate (Naphtha)	Not Detected	
25-Feb	none					Down - Weekend
26-Feb	none					Down - Weekend

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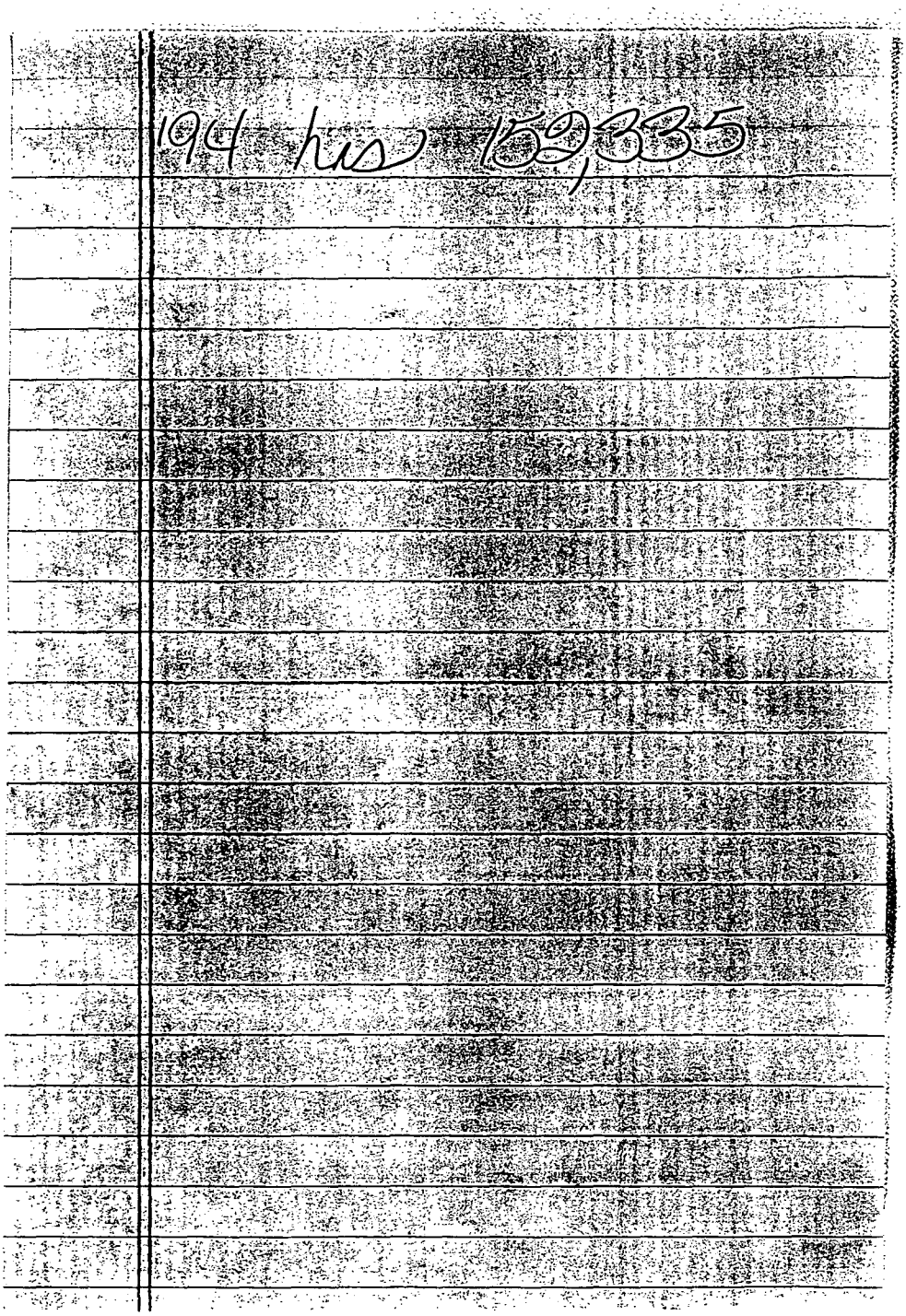

SCOEPA00021970

Wacker Siltronic Corporation

WACKER

TO: File

FROM: Ann Schowalter

SUBJECT: Addendum to WSC Fab 2 site safety plan

DATE: March 24, 1995

I am amending WSC's Fab 2 site safety plan as follows:

(1) **Termination of routine air monitoring for Benzene and PAHs on WSC personnel involved in the Fab 2 excavation.**

In reviewing WSC's air monitoring obligations under 1910.120 (c) and (h), I am opting to discontinue air monitoring based on the following rationale discussed with Mike Fajer, CIH, OR-OSHA Technical Section.

Site characterization, including contaminant identification and quantification, has been ongoing since December 1994, and includes an initial site characterization completed in 1990 by CH2M Hill. There have been no significant changes in characterization over this time period. Mike stated characterization must also include physical aspects of potential excavation sites as well as contaminant identification and quantification, e.g. the trenches on site would be considered different from the fire tank pit and forwarding sump though we've not encountered any new contaminants.

Daily air monitoring, both personal and area grab and integrated samples for benzene, PAHs, and petroleum distillates, has been ongoing from 2 December through the present on Fab 2 subcontractors working within a designated hot zone and work areas within the hot zone; 434 sampling outcomes have been documented through 13 March. With the exception of one outcome above the STEL for Benzene (direct-read area sample taken from an unoccupied elevator bore hole), all sample outcomes have been below published PEL/TLVs. All personal sample results have been recorded for employees whose jobs involve active work in the hot zone. WSC's role in the excavation involves characterization of the soils and monitoring of dewatering activities which take place outside of trenches and pits. WSC activities require WSC employees to be on site ~ six times per work shift for 10-15 minutes per visit. Though WSC employees will conduct their activities primarily in the contamination reduction zone, there may be an occasional need to enter the hot zone.

Mike did emphatically stipulate that a decision to discontinue air monitoring on WSC personnel is independent of the need to observe hot zone PPE requirements, i.e. all WSC personnel entering the area defined as "hot zone" will be protected.

To facilitate WSC employee excavation activities, I will request that Environmental Health Management defines the hot zone, i.e.the area of highest contamination as defined by soil and air sampling outcomes, as narrowly as possible. Based on that definition, WSC personnel will observe PPE requirements.

I may elect to perform additional air monitoring on WSC personnel if there are changes to any of those conditions outlined above, e.g. when excavation of the forwarding sump begins.

(2) **Review method and PPE used by WSC personnel in taking soil samples from drop boxes.**

The only reason for bodily entering a drop box will involve the lining of an empty box.

WSC personnel involved in extracting soil samples from drop boxes, will obtain samples while standing outside of the drop box using the scoop provided.

These people may potentially be exposed, via contact to hands and eyes, to irritating, toxic material. PPE for drop box sampling includes gloves, safety glasses, and hardhats. The type of glove will not be dictated as for hot zone activities (neoprene and silver shield) because exposure to the hands in drop box sampling is expected to be both brief (e.g. minutes) and, at worst, incidental. The gloves will be disposed of after each drop box has been sampled and the employee will observe personal hygiene practices.

cc: WSC Site Safety Plan
Tom McCue
Jerry Linden
Chip Bloomer
Sandee Archer
Environmental Health Management

Environmental Health Management, Inc.

Evaluation and Control of Hazardous Substances
Health & Safety Training and Planning

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March 20, 1995

Ms. Ann Schowalter
Wacker Siltronic Corporation
PO Box 83180
Portland, Oregon 97283-0180

Dear Ann:

Enclosed is a copy of the air monitoring results at the FAB2 project. We are currently monitoring only on an as-needed basis. We are planning to monitor Coffman's personnel during the construction of the forwarding sump and will be attending the meeting at Wacker on this subject on Thursday. I hope to see you there.

Sincerely,

John Ruddick

SCOEPA00021973

WACKER SILTRONICS FAB 2 PROJECT
AIR MONITORING RESULTS
Through 3/13/1995

DATE	NUMBER	TYPE	LOCATION OR PERSONNEL	AIR CONTAMINANT	CONCENTRATION (PPM)	COMMENTS
2-Dec	1	TWA	Brian - Setting pipe	Benzene	Not Detected	
2-Dec	2	TWA	Jim - Hoe Operator	Benzene	Not Detected	
2-Dec	3	STEL	24" SD @ West end of loading dock - AM	Benzene	Not Detected	
2-Dec	4	STEL	24" SD @ West end of loading dock - PM	Benzene	Not Detected	
5-Dec	1	TWA	Jim - Hoe Operator	Benzene	Not Detected	
5-Dec	2	TWA	Brian - Setting pipe	Benzene	Not Detected	
5-Dec	3	STEL	24" SD SE of waste storage building - AM	Benzene	Not Detected	
5-Dec	4	STEL	24" SD SE of waste storage building - PM	Benzene	Not Detected	
6-Dec	1	TWA	Area sample in FAB 2 footprint	Benzene	Not Detected	
6-Dec	2	TWA	Area sample in FAB 2 footprint	Benzene	Not Detected	
6-Dec	3	STEL	FAB 2 footprint near 24" SD South of waste storage	Benzene	Not Detected	
6-Dec	4	STEL	FAB 2 footprint near preload piles	Benzene	Not Detected	
7-Dec	1	TWA	Brian - Setting pipe	Benzene	Not Detected	
7-Dec	2	TWA	Jim - Hoe Operator	Benzene	Not Detected	
7-Dec	3	STEL	24" SD SW of waste storage building - AM	Benzene	Not Detected	
8-Dec	1	TWA	Brian - Setting pipe	Benzene	Not Detected	
8-Dec	2	TWA	Jim - Hoe Operator	Benzene	Not Detected	
8-Dec	3	STEL	24" SD South of gas pad (east of slab) AM	Benzene	0.25 ppm	STEL limit = 5.0 ppm
8-Dec	4	STEL	24" SD South of gas pad (under slab)	Benzene	Not Detected	
8-Dec	5	TWA	24" SD South of gas pad (east of slab)	Light Hydrocarbon (naphtha)	Not Detected	
9-Dec	1	TWA	Brian - Setting pipe	Benzene	Not Detected	
9-Dec	2	TWA	Jim - Hoe Operator	Benzene	Not Detected	
9-Dec	3	STEL	18" SD - South end manhole SD2-1	Benzene	Not Detected	
9-Dec	4	STEL	15" SD west end manhole SD1-1	Benzene	Not Detected	
10-Dec	None					Project Down - Weekend
11-Dec	None					Project Down - Weekend
12-Dec	None					Project Down - Evaluating site
13-Dec	None					Project Down - Evaluating site
14-Dec	1	TWA	Dudley Gee - Grade Checker - FAB 2 area	Benzene	Not Detected	
14-Dec	2	TWA	Dudley Gee - Grade Checker - FAB 2 area	Petroleum Distillate (Naphtha)	Not Detected	
14-Dec	3	TWA	Jeremy Conroy - Hoe operator - FAB 2 area	Benzene	Not Detected	
14-Dec	4	TWA	Jeremy Conroy - Hoe operator - FAB 2 area	Petroleum Distillate (Naphtha)	Not Detected	
14-Dec	5	STEL	In FAB 2 Building Footprint - Downwind from Excav. AM	Benzene	Not Detected	
14-Dec	6	STEL	In FAB 2 Building Footprint - Downwind from Excav. AM	Hydrocarbon (10 - 300 ppm)	Not Detected	
14-Dec	7	STEL	In FAB 2 Building Footprint - Downwind from Excav. PM	Benzene	Not Detected	
14-Dec	8	STEL	In FAB 2 Building Footprint - Downwind from Excav. PM	Hydrocarbon (10 - 300 ppm)	Not Detected	
15-Dec	1	TWA	Dudley Gee - Grade Checker - FAB 2 area	Benzene	Not Detected	
15-Dec	2	TWA	Dudley Gee - Grade Checker - FAB 2 area	Petroleum Distillate (Naphtha)	Not Detected	
15-Dec	3	TWA	Jason Bloom - Grade Checker - FAB 2 area	Benzene	Not Detected	
15-Dec	4	TWA	Jason Bloom - Grade Checker - FAB 2 area	Petroleum Distillate (Naphtha)	Not Detected	
15-Dec	5	STEL	In FAB 2 Building Footprint - Downwind from Excav. AM	Benzene	Not Detected	
15-Dec	6	STEL	In FAB 2 Building Footprint - Downwind from Excav. AM	Hydrocarbon (10 - 300 ppm)	Trace	Estimated @ less than 1.0 ppm
15-Dec	7	STEL	In FAB 2 Building Footprint - Downwind from Excav. PM	Benzene	Not Detected	
15-Dec	8	STEL	In FAB 2 Building Footprint - Downwind from Excav. PM	Hydrocarbon (10 - 300 ppm)	Not Detected	
16-Dec	1	TWA	Dudley Gee - Grade Checker - FAB 2 area	Benzene	Not Detected	
16-Dec	2	TWA	Dudley Gee - Grade Checker - FAB 2 area	Petroleum Distillate (Naphtha)	Not Detected	
16-Dec	3	TWA	Jason Bloom - Grade Checker - FAB 2 area	Benzene	Not Detected	
16-Dec	4	TWA	Jason Bloom - Grade Checker - FAB 2 area	Petroleum Distillate (Naphtha)	Not Detected	
16-Dec	5	STEL	In FAB 2 Building Footprint - Downwind from Excav. AM	Benzene	Not Detected	
16-Dec	6	STEL	In FAB 2 Building Footprint - Downwind from Excav. AM	Hydrocarbon (10 - 300 ppm)	Not Detected	
16-Dec	7	STEL	In FAB 2 Building Footprint - Downwind from Excav. PM	Benzene	Not Detected	

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16-Dec	8	STEL	In FAB 2 Building Footprint - Downwind from Excav. PM	Hydrocarbon (10 - 300 ppm)	Not Detected	
17-Dec	None					Project Down - Weekend
18-Dec	None					Project Down - Weekend
19-Dec	1	TWA	Brian -Setting pipe - 36" SD, North end	PAH	Not Detected	
19-Dec	2	STEL	36" SD manhole SD2-3	Benzene	Not Detected	
20-Dec	1	STEL	SD manhole SD2-3	Benzene	Not Detected	
20-Dec	2	STEL	SD manhole SD2-3	Benzene	Not Detected	
20-Dec	3	STEL	SD manhole SD2-3	Benzene	Not Detected	
20-Dec	4	STEL	SD manhole SD2-3	Hydrocarbon (10 - 300 ppm)	Not Detected	
20-Dec	5	STEL	SD manhole SD2-3	Hydrocarbon (10 - 300 ppm)	Not Detected	
20-Dec	6	STEL	SD manhole SD2-3	Hydrocarbon (10 - 300 ppm)	Not Detected	
20-Dec	7	STEL	SD manhole SD2-3	Hydrocarbon (100 - 2500 ppm)	Not Detected	
20-Dec	8	STEL	SD manhole SD2-3	Hydrocarbon (100 - 2500 ppm)	Not Detected	
20-Dec	9	STEL	SD manhole SD2-3	Hydrocarbon (100 - 2500 ppm)	Not Detected	
20-Dec	10	TWA	Brian -Setting pipe - 36" SD, North end	Benzene	Not Detected	
20-Dec	11	TWA	Brian -Setting pipe - 36" SD, North end	Petroleum Distillate (Naphtha)	Not Detected	
20-Dec	12	TWA	Brian -Setting pipe - 36" SD, North end	PAH	0.00012 mg/Cu M	TWA limit = 0.2 mg/Cu M
20-Dec	13	TWA	Dave - Top Man, 36" SD, North end	Benzene	Not Detected	
20-Dec	14	TWA	Dave - Top Man, 36" SD, North end	Petroleum Distillate (Naphtha)	Not Detected	
20-Dec	15	TWA	Harley - Hoe Operator - 36" SD, North end	Benzene	Not Detected	
20-Dec	16	TWA	Harley - Hoe Operator - 36" SD, North end	Petroleum Distillate (Naphtha)	Not Detected	
21-Dec	1	STEL	SE of manhole SD3-1	Benzene	Not Detected	
21-Dec	2	STEL	SE of manhole SD3-1	Benzene	Not Detected	
21-Dec	3	STEL	SE of manhole SD3-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
21-Dec	4	STEL	SE of manhole SD3-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
21-Dec	5	STEL	SE of manhole SD3-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
21-Dec	6	STEL	SE of manhole SD3-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
21-Dec	7	STEL	SE of manhole SD3-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
21-Dec	8	TWA	Brian -Setting pipe - 18" SD SE of Manhole SD3-1	Benzene	Not Detected	
21-Dec	9	TWA	Brian -Setting pipe - 18" SD SE of Manhole SD3-1	Petroleum Distillate (Naphtha)	Not Detected	
21-Dec	10	TWA	Brian -Setting pipe - 18" SD SE of Manhole SD3-1	PAH	0.00016 mg/Cu M	TWA limit = 0.2 mg/Cu M
21-Dec	11	TWA	Harley - Hoe Operator - 18" SD SE of Manhole SD3-1	Benzene	Not Detected	
21-Dec	12	TWA	Harley - Hoe Operator - 18" SD SE of Manhole SD3-1	Petroleum Distillate (Naphtha)	Not Detected	
22-Dec	1	STEL	SD manhole SD3-1	Benzene	Not Detected	
22-Dec	2	STEL	SD manhole SD3-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
22-Dec	3	TWA	Brian -Setting pipe - 18" SD Manhole SD3-1	Benzene	Not Detected	
22-Dec	4	TWA	Brian -Setting pipe - 18" SD Manhole SD3-1	Petroleum Distillate (Naphtha)	Not Detected	
22-Dec	5	TWA	Brian -Setting pipe - 18" SD Manhole SD3-1	PAH	0.00004 mg/Cu M	TWA limit = 0.2 mg/Cu M
22-Dec	6	TWA	Harley - Hoe Operator - 18" SD Manhole SD3-1	Benzene	Not Detected	
22-Dec	7	TWA	Harley - Hoe Operator - 18" SD Manhole SD3-1	Petroleum Distillate (Naphtha)	Not Detected	
23-Dec	1	STEL	SW of SD manhole SD3-1	Benzene	Not Detected	
23-Dec	2	STEL	SW of SD manhole SD3-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
23-Dec	3	TWA	Brian -Setting pipe - 18" SD S of Manhole SD3-1	Benzene	Not Detected	
23-Dec	4	TWA	Brian -Setting pipe - 18" SD S of Manhole SD3-1	Petroleum Distillate (Naphtha)	Not Detected	
23-Dec	5	TWA	Brian -Setting pipe - 18" SD S of Manhole SD3-1	PAH	Not Detected	
23-Dec	6	TWA	Harley - Hoe Operator - 18" SD S of Manhole SD3-1	Benzene	Not Detected	
23-Dec	7	TWA	Harley - Hoe Operator - 18" SD S of Manhole SD3-1	Petroleum Distillate (Naphtha)	Not Detected	
24-Dec	None					Project Down - Weekend
25-Dec	None					Project Down - Weekend
26-Dec	1	STEL	36" SD excavation, NW end of parking lot	Benzene	Not Detected	Holiday
26-Dec	2	STEL	36" SD excavation, NW end of parking lot	Hydrocarbon (10 - 300 ppm)	Not Detected	
26-Dec	3	STEL	Potable water tie in (near trailers)	Benzene	Not Detected	
26-Dec	4	STEL	Potable water tie in (near trailers)	Hydrocarbon (10 - 300 ppm)	Not Detected	
26-Dec	5	TWA	Brian -Setting pipe - 36" SD - NW end of parking lot	Benzene	Not Detected	
26-Dec	6	TWA	Brian -Setting pipe - 36" SD - NW end of parking lot	Petroleum Distillate (Naphtha)	Not Detected	
26-Dec	7	TWA	Harley - Hoe Operator - 36" SD - NW end of parking lot	Benzene	Not Detected	
26-Dec	8	TWA	Harley - Hoe Operator - 36" SD - NW end of parking lot	Petroleum Distillate (Naphtha)	Not Detected	
26-Dec	9	TWA	Jerry Linden - 36" SD - NW end of parking lot	Benzene	Not Detected	Wacker Personnel

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26-Dec	10	TWA	Jerry Linden - 36" SD - NW end of parking lot	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
26-Dec	11	TWA	Jerry Linden - 36" SD - NW end of parking lot	PAH	Not Detected	Wacker Personnel
27-Dec	1	STEL	36" SD excavation, center of parking lot	Hydrocarbon (10 - 300 ppm)	Not Detected	
27-Dec	2	STEL	36" SD excavation, center of parking lot	Hydrocarbon (10 - 300 ppm)	Not Detected	
27-Dec	3	STEL	Electrical vault	Benzene	Trace	Probable Interference
27-Dec	4	TWA	Jerry Linden - 36" SD - NW end of parking lot	Benzene	Not Detected	Wacker Personnel
27-Dec	5	TWA	Jerry Linden - 36" SD - NW end of parking lot	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
27-Dec	6	TWA	Brian -Setting pipe - 36" SD - NW end of parking lot	PAH	Not Detected	
28-Dec	1	STEL	36" SD excavation, NW of road	Benzene	Trace	Probable Interference
28-Dec	2	STEL	36" SD excavation, NW of road	Hydrocarbon (10 - 300 ppm)	Not Detected	
28-Dec	3	STEL	36" SD excavation, NW of road	Benzene	Trace	Probable Interference
28-Dec	4	STEL	36" SD excavation, NW of road	Hydrocarbon (10 - 300 ppm)	Not Detected	
28-Dec	5	STEL	10" fire main, 2nd 90 deg. angle	Benzene	Trace	Probable Interference
28-Dec	6	STEL	10" fire main, 2nd 90 deg. angle	Hydrocarbon (10 - 300 ppm)	Not Detected	
28-Dec	7	TWA	Brian -Setting pipe - 36" SD - NW of road	Benzene	Not Detected	
28-Dec	8	TWA	Brian -Setting pipe - 36" SD - NW of road	Petroleum Distillate (Naphtha)	Not Detected	
28-Dec	9	TWA	Brian -Setting pipe - 36" SD - NW of road	PAH	Not Detected	
28-Dec	10	TWA	Harley - Hoe Operator - 36" SD - NW of road	Benzene	Not Detected	
28-Dec	11	TWA	Harley - Hoe Operator - 36" SD - NW of road	Petroleum Distillate (Naphtha)	Not Detected	
28-Dec	12	TWA	Jerry Linden - 36" SD - NW of road	Benzene	Not Detected	Wacker Personnel
28-Dec	13	TWA	Jerry Linden - 36" SD - NW of road	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
28-Dec	14	TWA	Jerry Linden - 36" SD - NW of road	PAH	Not Detected	Wacker Personnel
29-Dec	1	STEL	36" SD excavation , SD1-3	Hydrocarbon (10 - 300 ppm)	Not Detected	
29-Dec	2	STEL	36" SD excavation , SD1-3	Benzene	Trace	Probable Interference
29-Dec	3	STEL	36" SD excavation , SD1-3	Hydrocarbon (10 - 300 ppm)	Not Detected	
29-Dec	4	TWA	Brian -Setting pipe - 36" SD - manhole SD1-3	Benzene	Not Detected	
29-Dec	5	TWA	Brian -Setting pipe - 36" SD - manhole SD1-3	Petroleum Distillate (Naphtha)	Not Detected	
29-Dec	6	TWA	Brian -Setting pipe - 36" SD - manhole SD1-3	PAH	Not Detected	
29-Dec	7	TWA	Harley - Hoe Operator - 36" SD - manhole SD1-3	Benzene	Not Detected	
29-Dec	8	TWA	Harley - Hoe Operator - 36" SD - manhole SD1-3	Petroleum Distillate (Naphtha)	Not Detected	
29-Dec	9	TWA	Jerry Linden - 36" SD - manhole SD1-3	Benzene	Not Detected	Wacker Personnel
29-Dec	10	TWA	Jerry Linden - 36" SD - manhole SD1-3	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
29-Dec	11	TWA	Jerry Linden - 36" SD - manhole SD1-3	PAH	Not Detected	Wacker Personnel
30-Dec	1	TWA	Brian -Setting pipe - 36" SD - SW of road	Benzene	Not Detected	
30-Dec	2	TWA	Brian -Setting pipe - 36" SD - SW of road	Petroleum Distillate (Naphtha)	9.0 ppm	TWA limit = 400 ppm
30-Dec	3	TWA	Brian -Setting pipe - 36" SD - SW of road	PAH	Not Detected	
30-Dec	4	TWA	Jim - Hoe Operator - 36" SD - SW of road	Benzene	Not Detected	
30-Dec	5	TWA	Jim - Hoe Operator - 36" SD - SW of road	Petroleum Distillate (Naphtha)	Not Detected	
31-Dec	None					Project Down - Weekend
1-Jan	None					Project Down - Weekend
2-Jan	None					Project Down - Holiday
3-Jan	1	STEL	Bore pit to plan-modified SS manhole (near trailers)	Benzene	Not Detected	
3-Jan	2	STEL	Bore pit to plan-modified SS manhole (near trailers)	Hydrocarbon (10 - 300 ppm)	Not Detected	
3-Jan	3	STEL	36" SD excavation, NE end of SW parking lot	Benzene	Not Detected	
3-Jan	4	STEL	36" SD excavation, NE end of SW parking lot	Hydrocarbon (10 - 300 ppm)	Not Detected	
3-Jan	5	TWA	Harley - Hoe Operator - 18 " SD	Benzene	Not Detected	
3-Jan	6	TWA	Harley - Hoe Operator - 18 " SD	Petroleum Distillate (Naphtha)	Not Detected	
3-Jan	7	TWA	Dave - Setting Pipe - 18" SD	Benzene	Not Detected	
3-Jan	8	TWA	Dave - Setting Pipe - 18" SD	Petroleum Distillate (Naphtha)	Not Detected	
3-Jan	9	TWA	Jim - Hoe Operator - 36" SD	Benzene	Not Detected	
3-Jan	10	TWA	Jim - Hoe Operator - 36" SD	Petroleum Distillate (Naphtha)	Not Detected	
3-Jan	11	TWA	Brian -Setting pipe - 36" SD - SW of road	Benzene	Not Detected	
3-Jan	12	TWA	Brian -Setting pipe - 36" SD - SW of road	Petroleum Distillate (Naphtha)	Not Detected	
3-Jan	13	TWA	Brian -Setting pipe - 36" SD - SW of road	PAH	Not Detected	
3-Jan	14	TWA	Jerry Linden - 36" SD	Benzene	Not Detected	Wacker Personnel
3-Jan	15	TWA	Jerry Linden - 36" SD	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
3-Jan	16	TWA	Jerry Linden - 36" SD	PAH	Not Detected	Wacker Personnel
4-Jan	1	STEL	18" excavation ~30' from SD3-1	Benzene	Not Detected	

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4-Jan	2	STEL	18" excavation ~30' from SD3-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
4-Jan	3	STEL	18" excavation, halfway between SD3-1 and SD2-1	Benzene	Not Detected	
4-Jan	4	STEL	18" excavation, halfway between SD3-1 and SD2-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
4-Jan	5	STEL	18" excavation, halfway between SD3-1 and SD2-1	Benzene	Not Detected	
4-Jan	6	STEL	18" excavation, halfway between SD3-1 and SD2-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
4-Jan	7	STEL	36" SD excavation, middle of SW parking lot	Benzene	Not Detected	
4-Jan	8	STEL	36" SD excavation, middle of SW parking lot	Hydrocarbon (10 - 300 ppm)	Not Detected	
4-Jan	9	STEL	36" SD excavation, SW end of SW parking lot	Benzene	Not Detected	
4-Jan	10	STEL	36" SD excavation, SW end of SW parking lot	Hydrocarbon (10 - 300 ppm)	Not Detected	
4-Jan	11	TWA	Harley - Hoe Operator - 18" SD	Benzene	Not Detected	
4-Jan	12	TWA	Harley - Hoe Operator - 18" SD	Petroleum Distillate (Naphtha)	Not Detected	
4-Jan	13	TWA	Dave - Setting Pipe - 18" SD	Benzene	Not Detected	
4-Jan	14	TWA	Dave - Setting Pipe - 18" SD	Petroleum Distillate (Naphtha)	Not Detected	
4-Jan	15	TWA	Jim - Hoe Operator - 36" SD	Benzene	Not Detected	
4-Jan	16	TWA	Jim - Hoe Operator - 36" SD	Petroleum Distillate (Naphtha)	Not Detected	
4-Jan	14	TWA	Chip Bloomer - Wacker Environmental	Benzene	Not Detected	Wacker Personnel
4-Jan	18	TWA	Chip Bloomer - Wacker Environmental	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
4-Jan	19	TWA	Aaron Ruddick - IH Technician	Benzene	Not Detected	
4-Jan	20	TWA	Aaron Ruddick - IH Technician	Petroleum Distillate (Naphtha)	Not Detected	
4-Jan	21	TWA	Brian -Setting pipe - 36" SD - SW of road	PAH	Not Detected	
4-Jan	22	TWA	Jerry Linden - Wacker	Benzene	Not Detected	Wacker Personnel
4-Jan	23	TWA	Jerry Linden - Wacker	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
4-Jan	24	TWA	Jerry Linden - Wacker	PAH	Not Detected	Wacker Personnel
5-Jan	1	STEL	18" excavation, ~15' NE of SD2-1	Benzene	Not Detected	
5-Jan	2	STEL	18" excavation, ~15' NE of SD2-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
5-Jan	3	STEL	Storm sewer manhole SD7-1	Benzene	Not Detected	
5-Jan	4	STEL	Storm sewer manhole SD7-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
5-Jan	5	TWA	Dave - Setting Pipe - 18" SD	Benzene	Not Detected	
5-Jan	6	TWA	Dave - Setting Pipe - 18" SD	Petroleum Distillate (Naphtha)	Not Detected	
5-Jan	7	TWA	Brian -Setting pipe - 36" SD	Benzene	Not Detected	
5-Jan	8	TWA	Brian -Setting pipe - 36" SD	Petroleum Distillate (Naphtha)	Not Detected	
5-Jan	9	TWA	Brian -Setting pipe - 36" SD	PAH	Not Detected	
5-Jan	10	TWA	Jerry Linden	Benzene	Not Detected	Wacker Personnel
5-Jan	11	TWA	Jerry Linden	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
5-Jan	12	TWA	Jerry Linden	PAH	Not Detected	Wacker Personnel
6-Jan	1	STEL	24" Storm sewer immediately NW of SD7-1	Benzene	Not Detected	
6-Jan	2	STEL	24" Storm sewer immediately NW of SD7-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
6-Jan	3	TWA	Jerry Linden	Benzene	Not Detected	Wacker Personnel
6-Jan	4	TWA	Jerry Linden	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
6-Jan	5	TWA	Jerry Linden	PAH	Not Detected	Wacker Personnel
9-Jan	None					Project Down - Weather
10-Jan	1	STEL	10" D.I.P. SS Near Bore Hole	Benzene		
10-Jan	2	STEL	10" D.I.P. SS Near Bore Hole	Hydrocarbon (10 - 300 ppm)		
10-Jan	3	TWA	Brian -Setting pipe - 24" SD South of Road	Benzene	Sample Lost - leaked @ Lab	
10-Jan	4	TWA	Brian -Setting pipe - 24" SD South of Road	Petroleum Distillate (Naphtha)	Sample Lost - leaked @ Lab	
10-Jan	5	TWA	Brian -Setting pipe - 24" SD South of Road	PAH		
10-Jan	6	TWA	Dave - Setting pipe - 10" D.I.P. SS Near Bore Hole	Benzene	Sample Lost - leaked @ Lab	
10-Jan	7	TWA	Dave - Setting pipe - 10" D.I.P. SS Near Bore Hole	Petroleum Distillate (Naphtha)	Sample Lost - leaked @ Lab	
10-Jan	8	TWA	Dave - Setting pipe - 10" D.I.P. SS Near Bore Hole	PAH		
10-Jan	9	TWA	Jerry Linden	Benzene		Wacker Personnel
10-Jan	10	TWA	Jerry Linden	Petroleum Distillate (Naphtha)		Wacker Personnel
11-Jan	1	STEL	15" SD East of Manhole SD1-1	Benzene		
11-Jan	2	STEL	15" SD East of Manhole SD1-1	Hydrocarbon (10 - 300 ppm)		
11-Jan	3	TWA	Brian -Setting pipe - 24" SD South of Road	Benzene		
11-Jan	4	TWA	Brian -Setting pipe - 24" SD South of Road	Petroleum Distillate (Naphtha)		
11-Jan	5	TWA	Brian -Setting pipe - 24" SD South of Road	PAH		
11-Jan	6	TWA	Dave - Setting pipe - 15" SD	Benzene	Sample Lost - leaked @ Lab	
11-Jan	7	TWA	Dave - Setting pipe - 15" SD	Petroleum Distillate (Naphtha)	Sample Lost - leaked @ Lab	

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11-Jan	8	TWA	Dave - Setting pipe - 15" SD	PAH		
12-Jan	1	TWA	Brian -Setting pipe - 24" SD NE Corner of lot	Benzene	Not Detected	
12-Jan	2	TWA	Brian -Setting pipe - 24" SD NE Corner of lot	Petroleum Distillate (Naphtha)	Not Detected	
12-Jan	3	TWA	Dave - Setting pipe - 10" SS	Benzene	Not Detected	
12-Jan	4	TWA	Dave - Setting pipe - 10" SS	Petroleum Distillate (Naphtha)	Not Detected	
12-Jan	5	TWA	Dave - Setting pipe - 10" SS	PAH	Not Detected	
12-Jan	6	TWA	Jerry Linden	Benzene	Not Detected	Wacker Personnel
12-Jan	7	TWA	Jerry Linden	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
12-Jan	8	TWA	Jerry Linden	PAH	Not Detected	Wacker Personnel
13-Jan	1	STEL	Manhole SS3-1	Benzene	Not Detected	
13-Jan	2	STEL	Manhole SS3-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
13-Jan	3	TWA	Dave - Setting pipe - 10" SS near SS3-1	Benzene	Not Detected	REVISED - Lab error orig. report
13-Jan	4	TWA	Dave - Setting pipe - 10" SS near SS3-1	Petroleum Distillate (Naphtha)	Not Detected	
13-Jan	5	TWA	Jerry Linden	Benzene	Not Detected	REVISED - Lab error orig. report
13-Jan	6	TWA	Jerry Linden	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
13-Jan	7	TWA	Jerry Linden	PAH	Not Detected	Wacker Personnel
16-Jan	1	STEL	NW of manhole SS4-1	Benzene	Not Detected	
16-Jan	2	STEL	NW of manhole SS4-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
16-Jan	3	TWA	Brian -Setting pipe - 24" SD South of Road	Benzene	Not Detected	
16-Jan	4	TWA	Brian -Setting pipe - 24" SD South of Road	Petroleum Distillate (Naphtha)	Not Detected	
16-Jan	5	TWA	Dave - Setting pipe - 15" SD	Benzene	Not Detected	
16-Jan	6	TWA	Dave - Setting pipe - 15" SD	Petroleum Distillate (Naphtha)	Not Detected	
16-Jan	7	TWA	Dave - Setting pipe - 15" SD	PAH	Not Detected	
17-Jan	1	TWA	Brian -Setting pipe - 24" SD South of Road	Benzene	Not Detected	
17-Jan	2	TWA	Brian -Setting pipe - 24" SD South of Road	Petroleum Distillate (Naphtha)	Not Detected	
17-Jan	3	TWA	Dave - Setting pipe - 15" SD	Benzene	Not Detected	
17-Jan	4	TWA	Dave - Setting pipe - 15" SD	Petroleum Distillate (Naphtha)	Not Detected	
17-Jan	5	TWA	Dave - Setting pipe - 15" SD	PAH	Not Detected	
18-Jan	1	STEL	10" SS, 20' NE of SD1A-2	Benzene	Not Detected	
18-Jan	2	STEL	10" SS, 20' NE of SD1A-2	Hydrocarbon (10 - 300 ppm)	Not Detected	
18-Jan	3	TWA	Brian -Setting pipe - 24" SD South of Road	Benzene	Not Detected	
18-Jan	4	TWA	Brian -Setting pipe - 24" SD South of Road	Petroleum Distillate (Naphtha)	Not Detected	
18-Jan	5	TWA	Dave - Setting pipe - 15" SD	Benzene	Not Detected	
18-Jan	6	TWA	Dave - Setting pipe - 15" SD	Petroleum Distillate (Naphtha)	Not Detected	
18-Jan	7	TWA	Dave - Setting pipe - 15" SD	PAH	Not Detected	
19-Jan	1	STEL	36" SD NE of SD3-3	Benzene	Not Detected	
19-Jan	2	STEL	36" SD NE of SD3-3	Hydrocarbon (10 - 300 ppm)	Not Detected	
19-Jan	3	TWA	Brian -Setting pipe - 24" SD South of Road	Benzene	Not Detected	
19-Jan	4	TWA	Brian -Setting pipe - 24" SD South of Road	Petroleum Distillate (Naphtha)	Not Detected	
19-Jan	5	TWA	Dave - Setting pipe - 15" SD	Benzene	Not Detected	
19-Jan	6	TWA	Dave - Setting pipe - 15" SD	Petroleum Distillate (Naphtha)	Not Detected	
19-Jan	7	TWA	Dave - Setting pipe - 15" SD	PAH	Not Detected	
20-Jan	1	STEL	FAB-2, West Footing	Benzene	Not Detected	
20-Jan	2	STEL	FAB-2, West Footing	Hydrocarbon (10 - 300 ppm)	Not Detected	
20-Jan	3	TWA	Brian -Setting pipe - 24" SD South of Road	Benzene	Not Detected	
20-Jan	4	TWA	Brian -Setting pipe - 24" SD South of Road	Petroleum Distillate (Naphtha)	Not Detected	
20-Jan	5	TWA	Brian -Setting pipe - 24" SD South of Road	PAH	Not Detected	
20-Jan	6	TWA	Dave - Setting pipe - 15" SD	Benzene	Not Detected	
20-Jan	7	TWA	Dave - Setting pipe - 15" SD	Petroleum Distillate (Naphtha)	Not Detected	
20-Jan	8	TWA	Dave - Setting pipe - 15" SD	PAH	Not Detected	
20-Jan	9	TWA	Jerry Linden	Benzene	Not Detected	Wacker Personnel
20-Jan	10	TWA	Jerry Linden	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
21-Jan	None					No Potential Exposures
23-Jan	1	STEL	FAB-2, West Footing	Hydrocarbon (10 - 300 ppm)	Not Detected	
23-Jan	2	STEL	FAB-2, West Footing	Benzene	Not Detected	
23-Jan	3	TWA	Brian -Setting pipe - 36" SD N of SD3-3	Benzene	Not Detected	
23-Jan	4	TWA	Brian -Setting pipe - 36" SD N of SD3-3	Petroleum Distillate (Naphtha)	Not Detected	
24-Jan	1	TWA	Brian -Setting pipe - 36" SD S of SD3-3	Benzene	Not Detected	

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24-Jan	2	TWA	Brian -Setting pipe - 36" SD S of SD3-3	Petroleum Distillate (Naphtha)	Not Detected	
25-Jan	1	STEL	Elevator Bore Hole - E corner of FAB-2	Benzene	2 ppm	DeWitt (STEL limit = 5.0 ppm)
25-Jan	2	STEL	Elevator Bore Hole - E corner of FAB-2	Benzene	Not Detected	DeWitt
25-Jan	3	STEL	Elevator Bore Hole - E corner of FAB-2	Benzene	Not Detected	DeWitt - Swing Shift
25-Jan	4	STEL	Elevator Bore Hole - E corner of FAB-2	Benzene	10 ppm	DeWitt - Swing Shift
25-Jan	5	STEL	Elevator Bore Hole - E corner of FAB-2	Hydrocarbon (10 - 300 ppm)	Not Detected	DeWitt
25-Jan	6	STEL	Elevator Bore Hole - E corner of FAB-2	Hydrocarbon (10 - 300 ppm)	Not Detected	DeWitt
25-Jan	7	STEL	Elevator Bore Hole - E corner of FAB-2	Hydrocarbon (10 - 300 ppm)	Not Detected	DeWitt - Swing Shift
25-Jan	8	STEL	Elevator Bore Hole - E corner of FAB-2	Hydrocarbon (10 - 300 ppm)	Not Detected	DeWitt - Swing Shift
25-Jan	9	STEL	Elevator Bore Hole - E corner of FAB-2	Hydrocarbon (10 - 300 ppm)	Not Detected	DeWitt - Swing Shift
25-Jan	10	TWA	Guy Kollenburn - Drilling Elevator Shaft Hole	Benzene	Not Detected	DeWitt - Swing Shift
25-Jan	11	TWA	Guy Kollenburn - Drilling Elevator Shaft Hole	Petroleum Distillate (Naphtha)	Not Detected	DeWitt - Swing Shift
25-Jan	12	TWA	Guy Kollenburn - Drilling Elevator Shaft Hole	PAH	Not Detected	DeWitt - Swing Shift
25-Jan	13	TWA	Chip Bloomer - @ Elevator Shaft Hole	Benzene	Not Detected	Wacker Personnel
25-Jan	14	TWA	Chip Bloomer - @ Elevator Shaft Hole	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
25-Jan	15	TWA	Jerry Linden - Supervising Elevator Bore Hole	Benzene	Not Detected	Wacker Personnel
25-Jan	16	TWA	Jerry Linden - Supervising Elevator Bore Hole	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
27-Jan	1	TWA	Harley - Potholing vault near facility addition	Benzene	Not Detected	
27-Jan	2	TWA	Harley - Potholing vault near facility addition	Petroleum Distillate (Naphtha)	Not Detected	
27-Jan	3	TWA	Jerry Linden	Benzene	Not Detected	Wacker Personnel
27-Jan	4	TWA	Jerry Linden	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
30-Jan	1	TWA	Brian - 18" SD SW of Parking Lot	Benzene	Not Detected	
30-Jan	2	TWA	Brian - 18" SD SW of Parking Lot	Petroleum Distillate (Naphtha)	Not Detected	
30-Jan	3	TWA	Jerry Linden	Benzene	Not Detected	Wacker Personnel
30-Jan	4	TWA	Jerry Linden	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
31-Jan	1	STEL	36" Storm Sewer Outfall	Benzene	Not Detected	
31-Jan	2	STEL	36" Storm Sewer Outfall	Hydrocarbon (10 - 300 ppm)	Not Detected	
31-Jan	3	TWA	Brian - 36" Storm Sewer Outfall	Benzene	Not Detected	
31-Jan	4	TWA	Brian - 36" Storm Sewer Outfall	Petroleum Distillate (Naphtha)	Not Detected	
31-Jan	5	TWA	Dave - Laterals from FAB2 sub-slab to 24" SD	Benzene	Not Detected	
31-Jan	6	TWA	Dave - Laterals from FAB2 sub-slab to 24" SD	Petroleum Distillate (Naphtha)	Not Detected	
1-Feb	1	TWA	Dave - Laterals from FAB2 sub-slab to 24" SD	Benzene	Not Detected	
1-Feb	2	TWA	Dave - Laterals from FAB2 sub-slab to 24" SD	Petroleum Distillate (Naphtha)	Not Detected	
1-Feb	3	TWA	Dave - Laterals from FAB2 sub-slab to 24" SD	PAH	Not Detected	
2-Feb	1	TWA	Brian - Backfilling and relaying at 36" SD Outfall	Benzene	Not Detected	
2-Feb	2	TWA	Brian - Backfilling and relaying at 36" SD Outfall	Petroleum Distillate (Naphtha)	Not Detected	
2-Feb	3	TWA	Dave - Setting pipe - 36" Outfall	Benzene	Not Detected	
2-Feb	4	TWA	Dave - Setting pipe - 36" Outfall	Petroleum Distillate (Naphtha)	Not Detected	
2-Feb	5	TWA	Dave - Setting pipe - 36" Outfall	PAH	Not Detected	
3-Feb	1	STEL	10" Fire Protection Water near E gate	Benzene	Not Detected	
3-Feb	2	STEL	10" Fire Protection Water near E gate	Hydrocarbon (10 - 300 ppm)	Not Detected	
3-Feb	3	TWA	Brian - 10" Fire Protection System	Benzene	Not Detected	
3-Feb	4	TWA	Brian - 10" Fire Protection System	Petroleum Distillate (Naphtha)	Not Detected	
3-Feb	5	TWA	Dave - 10" Fire Protection System	Benzene	Not Detected	
3-Feb	6	TWA	Dave - 10" Fire Protection System	Petroleum Distillate (Naphtha)	Not Detected	
3-Feb	7	TWA	Dave - 10" Fire Protection System	PAH	Not Detected	
6-Feb	1	STEL	Electrical Conduit, near Vault HM-HV-21	Hydrocarbon (10 - 300 ppm)	Not Detected	
6-Feb	2	STEL	Electrical Conduit, near Vault HM-HV-21	Benzene	Not Detected	
6-Feb	3	TWA	Brian -Setting pipe - 24" SD South of Road	Benzene	Not Detected	
6-Feb	4	TWA	Brian - 18" SD to W of SD3-2	Petroleum Distillate (Naphtha)	Not Detected	
6-Feb	5	TWA	Brian - 18" SD to W of SD3-2	Benzene	Not Detected	
6-Feb	6	TWA	Brian - 18" SD to W of SD3-2	PAH	Not Detected	
6-Feb	7	TWA	Dave - Laterals from sub-slab to SD N of FAB2	Benzene	Not Detected	
6-Feb	8	TWA	Dave - Laterals from sub-slab to SD N of FAB2	Petroleum Distillate (Naphtha)	Not Detected	
6-Feb	9	TWA	Jerry Linden	Benzene	Not Detected	Wacker Personnel
6-Feb	10	TWA	Jerry Linden	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
7-Feb	1	STEL	Electrical Conduit, ~ 20' from Vault HM-HV-21	Hydrocarbon (10 - 300 ppm)	Not Detected	
7-Feb	2	STEL	Electrical Conduit, ~ 20' from Vault HM-HV-21	Benzene	Not Detected	

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7-Feb	3	TWA	Chuck - Laying sand near Vault MH-HV-21	Petroleum Distillate (Naphtha)	Not Detected	
7-Feb	4	TWA	Chuck - Laying sand near Vault MH-HV-21	Benzene	Not Detected	
7-Feb	5	TWA	Chuck - Laying sand near Vault MH-HV-21	PAH	Not Detected	Sample mislabelled "Dave"
7-Feb	6	TWA	Bill Matthews - Laying conduit near Vault MH-HV-21	Benzene	Not Detected	Christiansen Personnel
7-Feb	7	TWA	Bill Matthews - Laying conduit near Vault MH-HV-21	Petroleum Distillate (Naphtha)	Not Detected	Christiansen Personnel
7-Feb	8	TWA	Bill Matthews - Laying conduit near Vault MH-HV-21	PAH	Not Detected	Christiansen Personnel
8-Feb	1	TWA	Bill Matthews - Laying conduit 35 ft past Vault MH-HV-21	Petroleum Distillate (Naphtha)	Not Detected	Christiansen Personnel
8-Feb	2	TWA	Bill Matthews - Laying conduit 35 ft past Vault MH-HV-21	Benzene	Not Detected	Christiansen Personnel
8-Feb	3	TWA	Bill Matthews - Laying conduit 35 ft past Vault MH-HV-21	PAH	Not Detected	Christiansen Personnel
8-Feb	4	TWA	Dave - grading plumbing under central facilities bldg	Benzene	Not Detected	
8-Feb	5	TWA	Dave - grading plumbing under central facilities bldg	Petroleum Distillate (Naphtha)	Not Detected	
8-Feb	6	TWA	Chuck - Laying sand 35 ft past Vault MH-HV-21	Benzene	Not Detected	
8-Feb	7	TWA	Chuck - Laying sand 35 ft past Vault MH-HV-21	Petroleum Distillate (Naphtha)	Not Detected	
9-Feb	1	STEL	Main electrical vault NE of substation	Hydrocarbon (10 - 300 ppm)	Not Detected	
9-Feb	2	STEL	Main electrical vault NE of substation	Benzene	Not Detected	
9-Feb	3	TWA	Peter Thomas - Laying conduit near road	Petroleum Distillate (Naphtha)	Not Detected	Christiansen Personnel
9-Feb	4	TWA	Peter Thomas - Laying conduit near road	Benzene	Not Detected	Christiansen Personnel
9-Feb	5	TWA	Peter Thomas - Laying conduit near road	PAH	Not Detected	Christiansen Personnel
9-Feb	6	TWA	Brian - Grading electrical conduit line near road	Benzene	Not Detected	
9-Feb	7	TWA	Brian - Grading electrical conduit line near road	Petroleum Distillate (Naphtha)	Not Detected	
9-Feb	8	TWA	Chuck - excavating and laying sand @ conduit near road	Benzene	Not Detected	
9-Feb	9	TWA	Chuck - excavating and laying sand @ conduit near road	Petroleum Distillate (Naphtha)	Not Detected	
10-Feb	1	TWA	Bill Matthews - Laying conduit N of substation	Petroleum Distillate (Naphtha)	Not Detected	Christiansen Personnel
10-Feb	2	TWA	Bill Matthews - Laying conduit N of substation	Benzene	Not Detected	Christiansen Personnel
10-Feb	3	TWA	Bill Matthews - Laying conduit N of substation	PAH	Not Detected	Christiansen Personnel
10-Feb	4	TWA	Brian - excavating @ electrical conduit N of substation	Benzene	Not Detected	
10-Feb	5	TWA	Brian - excavating @ electrical conduit N of substation	Petroleum Distillate (Naphtha)	Not Detected	
10-Feb	6	TWA	Chuck - Backfilling electrical conduit near road	Benzene	Not Detected	
10-Feb	7	TWA	Chuck - Backfilling electrical conduit near road	Petroleum Distillate (Naphtha)	Not Detected	
11-Feb	none					Down - Weekend
12-Feb	none					Down - Weekend
13-Feb	none					Down - Snow
14-Feb	none					Down - Snow
15-Feb	none					Down - Snow
16-Feb	1	TWA	Brian -Fire protect. water SW of parking lot to recharge	Petroleum Distillate (Naphtha)	Not Detected	
16-Feb	2	TWA	Brian -Fire protect. water SW of parking lot to recharge	Benzene	Not Detected	
16-Feb	3	TWA	Brian -Fire protect. water SW of parking lot to recharge	PAH	Not Detected	
16-Feb	4	TWA	Bill Matthews - Laying conduit N of substation	Benzene	Not Detected	Christiansen Personnel
16-Feb	5	TWA	Bill Matthews - Laying conduit N of substation	Petroleum Distillate (Naphtha)	Not Detected	Christiansen Personnel
17-Feb	1	STEL	18" SD, ~ 2 sections NW of SD3-2	Hydrocarbon (10 - 300 ppm)	Not Detected	
17-Feb	2	STEL	18" SD, ~ 2 sections NW of SD3-2	Benzene	Not Detected	
17-Feb	3	TWA	Brian - 18" SD near SD3-2	Petroleum Distillate (Naphtha)	Not Detected	
17-Feb	4	TWA	Brian - 18" SD near SD3-2	Benzene	Not Detected	
17-Feb	5	TWA	Brian - 18" SD near SD3-2	PAH	Not Detected	
17-Feb	6	TWA	Guy - Driving casing for elevator shaft SW FAB2	Benzene	Not Detected	DeWitt Personnel
17-Feb	7	TWA	Guy - Driving casing for elevator shaft SW FAB2	Petroleum Distillate (Naphtha)	Not Detected	DeWitt Personnel
20-Feb	1	STEL	Elevator Bore hole SW corner of FAB2	Hydrocarbon (10 - 300 ppm)	Not Detected	
20-Feb	2	STEL	Elevator Bore hole SW corner of FAB2	Benzene	Not Detected	
20-Feb	3	STEL	Elevator Bore hole SW corner of FAB2	Hydrocarbon (10 - 300 ppm)	Not Detected	
20-Feb	4	TWA	Brian - 18" SD SE of recharge pile	Petroleum Distillate (Naphtha)	Not Detected	
20-Feb	5	TWA	Brian - 18" SD SE of recharge pile	Benzene	Not Detected	
20-Feb	6	TWA	Brian - 18" SD SE of recharge pile	PAH	Not Detected	
20-Feb	7	TWA	Guy - in hole at elevator shaft boring - SW FAB2	Petroleum Distillate (Naphtha)	Not Detected	DeWitt Personnel
20-Feb	8	TWA	Guy - in hole at elevator shaft boring - SW FAB2	Benzene	Not Detected	DeWitt Personnel
20-Feb	9	TWA	Guy - in hole at elevator shaft boring - SW FAB2	PAH	Not Detected	DeWitt Personnel
20-Feb	10	TWA	Chuck - loading cuttings into drop box at elevator shaft	Benzene	Not Detected	
20-Feb	11	TWA	Chuck - loading cuttings into drop box at elevator shaft	Petroleum Distillate (Naphtha)	Not Detected	
20-Feb	12	TWA	Ed - Operating boring rig at elevator shaft	Benzene	Not Detected	DeWitt Personnel

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20-Feb	13	TWA	Ed - Operating boring rig at elevator shaft	Petroleum Distillate (Naphtha)	Not Detected	DeWitt Personnel
21-Feb	1	STEL	Electrical Trench SW of center of FAB2	Hydrocarbon (10 - 300 ppm)	Not Detected	
21-Feb	2	STEL	Electrical Trench SW of center of FAB2	Benzene	Not Detected	
21-Feb	3	TWA	Brian - laying pipe SD2-2A to SD2-2	Petroleum Distillate (Naphtha)	1.23 ppm	TWA = 400 ppm
21-Feb	4	TWA	Brian - laying pipe SD2-2A to SD2-2	Benzene	Not Detected	
21-Feb	5	TWA	Brian - laying pipe SD2-2A to SD2-2	PAH	Not Detected	
22-Feb	1	STEL	18" SD SW of recharge pile	Hydrocarbon (10 - 300 ppm)	Not Detected	
22-Feb	2	STEL	18" SD SW of recharge pile	Benzene	Not Detected	
22-Feb	3	STEL	Electrical conduit excavation W corner of FAB2	Hydrocarbon (10 - 300 ppm)	Not Detected	
22-Feb	4	STEL	Electrical conduit excavation W corner of FAB2	Benzene	Not Detected	
22-Feb	5	TWA	Brian - 18" SD S of Recharge Pile	Petroleum Distillate (Naphtha)	Not Detected	
22-Feb	6	TWA	Brian - 18" SD S of Recharge Pile	Benzene	Not Detected	
23-Feb	1	STEL	18" SD SW of S corner of FAB2	Hydrocarbon (10 - 300 ppm)	Not Detected	
23-Feb	2	STEL	18" SD SW of S corner of FAB2	Benzene	Not Detected	
23-Feb	3	TWA	Brian - SD and FP S of SE corner FAB2	Petroleum Distillate (Naphtha)	1.50 ppm	TWA = 400 ppm
23-Feb	4	TWA	Brian - SD and FP S of SE corner FAB2	Benzene	Not Detected	
24-Feb	1	STEL	10" FP - W of SW center of FAB2	Hydrocarbon (10 - 300 ppm)	Trace	
24-Feb	2	STEL	10" FP - W of SW center of FAB2	Benzene	Not Detected	
24-Feb	3	TWA	Brian - 10" FP near road SE of FAB2	Petroleum Distillate (Naphtha)	1.94 ppm	TWA = 400 ppm
24-Feb	4	TWA	Brian - 10" FP near road SE of FAB2	Benzene	Not Detected	
24-Feb	5	TWA	Brian - 10" FP near road SE of FAB2	PAH	Not Detected	
24-Feb	6	TWA	Chuck - Electical conduit SE corner FAB2	Benzene	Not Detected	
24-Feb	7	TWA	Chuck - Electical conduit SE corner FAB2	Petroleum Distillate (Naphtha)	Not Detected	
25-Feb	none					Down - Weekend
26-Feb	none					Down - Weekend
27-Feb	1	TWA	Brian -Fire protect. water SW of parking lot to recharge	Petroleum Distillate (Naphtha)	Not Detected	
27-Feb	2	TWA	Brian -Fire protect. water SW of parking lot to recharge	Benzene	Not Detected	
27-Feb	3	TWA	Brian -Fire protect. water SW of parking lot to recharge	PAH	Not Detected	
27-Feb	4	TWA	Bill Matthews - Laying conduit N of substation	Petroleum Distillate (Naphtha)	Not Detected	Christiansen Personnel
27-Feb	5	TWA	Bill Matthews - Laying conduit N of substation	Benzene	Not Detected	Christiansen Personnel
27-Feb	6	TWA	Bill Matthews - Laying conduit N of substation	PAH	Not Detected	Christiansen Personnel
28-Feb	1	STEL	Electical Cond. Excavation @ W Corner FAB2	Hydrocarbon (10 - 300 ppm)	Not Detected	
28-Feb	2	STEL	Electical Cond. Excavation @ W Corner FAB2	Benzene	Not Detected	No TWA benzene and HCs -
28-Feb	3	TWA	Brian - 10" NW Tx line @ fence	PAH	Not Detected	PDMs leaked at lab
28-Feb	4	TWA	Brian Treacy -@ Electrical conduit excavation	PAH	Not Detected	Christiansen Personnel
1-Mar	1	TWA	Brian - Between SS4-1 to SS4-1A	Petroleum Distillate (Naphtha)	Not Detected	
1-Mar	2	TWA	Brian - Between SS4-1 to SS4-1A	Benzene	Not Detected	
1-Mar	3	TWA	Brian - Between SS4-1 to SS4-1A	PAH	Not Detected	
1-Mar	4	TWA	Ron Martin - @ electrical conduit excavation	Petroleum Distillate (Naphtha)	Not Detected	Christiansen Personnel
1-Mar	5	TWA	Ron Martin - @ electrical conduit excavation	Benzene	Not Detected	Christiansen Personnel
1-Mar	6	TWA	Ron Martin - @ electrical conduit excavation	PAH	Not Detected	Christiansen Personnel
2-Mar	1	TWA	Brian - 10" SS from SS4-1a	Petroleum Distillate (Naphtha)	Not Detected	
2-Mar	2	TWA	Brian - 10" SS from SS4-1a	Benzene	Not Detected	
2-Mar	3	TWA	Brian - 10" SS from SS4-1a	PAH	Not Detected	
2-Mar	4	TWA	Darrell Lane - @ Electrical Conduit Excavation	Petroleum Distillate (Naphtha)	Not Detected	Christiansen Personnel
2-Mar	5	TWA	Darrell Lane - @ Electrical Conduit Excavation	Benzene	Not Detected	Christiansen Personnel
2-Mar	6	TWA	Darrell Lane - @ Electrical Conduit Excavation	PAH	Not Detected	Christiansen Personnel
3-Mar	1	TWA	Darrell Lane - @ Electrical Conduit Excavation	Petroleum Distillate (Naphtha)	Not Detected	Christiansen Personnel
3-Mar	2	TWA	Darrell Lane - @ Electrical Conduit Excavation	Benzene	Not Detected	Christiansen Personnel
3-Mar	3	TWA	Darrell Lane - @ Electrical Conduit Excavation	PAH	Not Detected	Christiansen Personnel
6-Mar	1	TWA	Darrell Lane - @ Electrical Conduit Excavation	Petroleum Distillate (Naphtha)	Not Detected	Christiansen Personnel
6-Mar	2	TWA	Darrell Lane - @ Electrical Conduit Excavation	Benzene	Not Detected	Christiansen Personnel
6-Mar	3	TWA	Darrell Lane - @ Electrical Conduit Excavation	PAH	Not Detected	Christiansen Personnel
13-Mar	1	TWA	Tim Nance - @ Electical Conduit Excavation	Petroleum Distillate (Naphtha)	Not Detected	Christiansen Personnel
13-Mar	2	TWA	Tim Nance - @ Electical Conduit Excavation	Benzene	Not Detected	Christiansen Personnel
13-Mar	3	TWA	Tim Nance - @ Electical Conduit Excavation	PAH	Not Detected	Christiansen Personnel

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Environmental Health Management, Inc.

Evaluation and Control of Hazardous Substances
Health & Safety Training and Planning

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March 1, 1995

TO:	Mr. Jim Shannon	Coffman Excavation
	Mr. Victor Rennie	Hoffman Construction (w/ cc to Christiansen)
	✓ Ms. Ann Schowalter	Wacker Siltronic
	Mr. Guy Banks	DeWitt Construction
FROM:	John Ruddick	Environmental Health Management
RE:	Industrial Hygiene Monitoring Results - Wacker Siltronic FAB2 Project	

Enclosed are the results of air monitoring samples collected through Sunday, February 26, 1995. Since the last report data was issue (2/7/95) three samples tested positive for petroleum naphthas at concentrations well below the permissible TWA limit of 400 ppm. No action is necessary at the levels observed and the exposures do not represent an inhalation hazard.

Please post or otherwise make these results available to your employees working on this project.

Thanks,

COFFMAN EXCAVATION
WACKER SILTRONICS FAB 2 PROJECT
AIR MONITORING RESULTS
Through 2/26/1995

DATE	NUMBER	TYPE	LOCATION OR PERSONNEL	AIR CONTAMINANT	CONCENTRATION (PPM)	COMMENTS
2-Dec	1	TWA	Brian - Setting pipe	Benzene	Not Detected	
2-Dec	2	TWA	Jim - Hoe Operator	Benzene	Not Detected	
2-Dec	3	STEL	24" SD @ West end of loading dock - AM	Benzene	Not Detected	
2-Dec	4	STEL	24" SD @ West end of loading dock - PM	Benzene	Not Detected	
5-Dec	1	TWA	Jim - Hoe Operator	Benzene	Not Detected	
5-Dec	2	TWA	Brian - Setting pipe	Benzene	Not Detected	
5-Dec	3	STEL	24" SD SE of waste storage building - AM	Benzene	Not Detected	
5-Dec	4	STEL	24" SD SE of waste storage building - PM	Benzene	Not Detected	
6-Dec	1	TWA	Area sample in FAB 2 footprint	Benzene	Not Detected	
6-Dec	2	TWA	Area sample in FAB 2 footprint	Benzene	Not Detected	
6-Dec	3	STEL	FAB 2 footprint near 24" SD South of waste stomge	Benzene	Not Detected	
6-Dec	4	STEL	FAB 2 footprint near preload piles	Benzene	Not Detected	
7-Dec	1	TWA	Brian - Setting pipe	Benzene	Not Detected	
7-Dec	2	TWA	Jim - Hoe Operator	Benzene	Not Detected	
7-Dec	3	STEL	24" SD SW of waste storage building - AM	Benzene	Not Detected	
8-Dec	1	TWA	Brian - Setting pipe	Benzene	Not Detected	
8-Dec	2	TWA	Jim - Hoe Operator	Benzene	Not Detected	
8-Dec	3	STEL	24" SD South of gas pad (east of slab) AM	Benzene	0.25 ppm	STEL limit = 5.0 ppm
8-Dec	4	STEL	24" SD South of gas pad (under slab)	Benzene	Not Detected	
8-Dec	5	TWA	24" SD South of gas pad (east of slab)	Light Hydrocarbon (naphtha)	Not Detected	
9-Dec	1	TWA	Brian - Setting pipe	Benzene	Not Detected	
9-Dec	2	TWA	Jim - Hoe Operator	Benzene	Not Detected	
9-Dec	3	STEL	18" SD - South end manhole SD2-1	Benzene	Not Detected	
9-Dec	4	STEL	15" SD west end manhole SD1-1	Benzene	Not Detected	
10-Dec	None					Project Down - Weekend
11-Dec	None					Project Down - Weekend
12-Dec	None					Project Down - Evaluating site
13-Dec	None					Project Down - Evaluating site
14-Dec	1	TWA	Dudley Gee - Grade Checker - FAB 2 area	Benzene	Not Detected	
14-Dec	1	TWA	Dudley Gee - Grade Checker - FAB 2 area	Petroleum Distillate (Naphtha)	Not Detected	
14-Dec	2	TWA	Jeremy Conroy - Hoe operator - FAB 2 area	Benzene	Not Detected	
14-Dec	2	TWA	Jeremy Conroy - Hoe operator - FAB 2 area	Petroleum Distillate (Naphtha)	Not Detected	
14-Dec	3	STEL	In FAB 2 Building Footprint - Downwind from Excav. AM	Benzene	Not Detected	
14-Dec	4	STEL	In FAB 2 Building Footprint - Downwind from Excav. AM	Hydrocarbon (10 - 300 ppm)	Not Detected	
14-Dec	5	STEL	In FAB 2 Building Footprint - Downwind from Excav. PM	Benzene	Not Detected	
14-Dec	6	STEL	In FAB 2 Building Footprint - Downwind from Excav. PM	Hydrocarbon (10 - 300 ppm)	Not Detected	
15-Dec	1	TWA	Dudley Gee - Grade Checker - FAB 2 area	Benzene	Not Detected	
15-Dec	1	TWA	Dudley Gee - Grade Checker - FAB 2 area	Petroleum Distillate (Naphtha)	Not Detected	
15-Dec	2	TWA	Jason Bloom - Grade Checker - FAB 2 area	Benzene	Not Detected	
15-Dec	2	TWA	Jason Bloom - Grade Checker - FAB 2 area	Petroleum Distillate (Naphtha)	Not Detected	
15-Dec	3	STEL	In FAB 2 Building Footprint - Downwind from Excav. AM	Benzene	Not Detected	
15-Dec	4	STEL	In FAB 2 Building Footprint - Downwind from Excav. AM	Hydrocarbon (10 - 300 ppm)	Trace	Estimated @ less than 1.0 ppm
15-Dec	5	STEL	In FAB 2 Building Footprint - Downwind from Excav. PM	Benzene	Not Detected	
15-Dec	6	STEL	In FAB 2 Building Footprint - Downwind from Excav. PM	Hydrocarbon (10 - 300 ppm)	Not Detected	
16-Dec	1	TWA	Dudley Gee - Grade Checker - FAB 2 area	Benzene	Not Detected	
16-Dec	1	TWA	Dudley Gee - Grade Checker - FAB 2 area	Petroleum Distillate (Naphtha)	Not Detected	
16-Dec	2	TWA	Jason Bloom - Grade Checker - FAB 2 area	Benzene	Not Detected	
16-Dec	2	TWA	Jason Bloom - Grade Checker - FAB 2 area	Petroleum Distillate (Naphtha)	Not Detected	
16-Dec	3	STEL	In FAB 2 Building Footprint - Downwind from Excav. AM	Benzene	Not Detected	
16-Dec	4	STEL	In FAB 2 Building Footprint - Downwind from Excav. AM	Hydrocarbon (10 - 300 ppm)	Not Detected	
16-Dec	5	STEL	In FAB 2 Building Footprint - Downwind from Excav. PM	Benzene	Not Detected	
16-Dec	6	STEL	In FAB 2 Building Footprint - Downwind from Excav. PM	Hydrocarbon (10 - 300 ppm)	Not Detected	
17-Dec	None					Project Down - Weekend
18-Dec	None					Project Down - Weekend
19-Dec	1	TWA	Brian -Setting pipe - 36" SD, North end	PAH	Not Detected	
19-Dec	2	STEL	36" SD manhole SD2-3	Benzene	Not Detected	
20-Dec	1	STEL	SD manhole SD2-3	Benzene	Not Detected	
20-Dec	2	STEL	SD manhole SD2-3	Benzene	Not Detected	
20-Dec	3	STEL	SD manhole SD2-3	Benzene	Not Detected	
20-Dec	4	STEL	SD manhole SD2-3	Hydrocarbon (10 - 300 ppm)	Not Detected	
20-Dec	5	STEL	SD manhole SD2-3	Hydrocarbon (10 - 300 ppm)	Not Detected	
20-Dec	6	STEL	SD manhole SD2-3	Hydrocarbon (10 - 300 ppm)	Not Detected	
20-Dec	7	STEL	SD manhole SD2-3	Hydrocarbon (100 - 2500 ppm)	Not Detected	
20-Dec	8	STEL	SD manhole SD2-3	Hydrocarbon (100 - 2500 ppm)	Not Detected	
20-Dec	9	STEL	SD manhole SD2-3	Hydrocarbon (100 - 2500 ppm)	Not Detected	
20-Dec	10	TWA	Brian -Setting pipe - 36" SD, North end	Benzene	Not Detected	
20-Dec	10	TWA	Brian -Setting pipe - 36" SD, North end	Petroleum Distillate (Naphtha)	Not Detected	
20-Dec	10	TWA	Brian -Setting pipe - 36" SD, North end	PAH	0.00012 mg/Cu M	TWA limit = 0.2 mg/Cu M
20-Dec	11	TWA	Dave - Top Man, 36" SD, North end	Benzene	Not Detected	
20-Dec	11	TWA	Dave - Top Man, 36" SD, North end	Petroleum Distillate (Naphtha)	Not Detected	
20-Dec	12	TWA	Harley - Hoe Operator - 36" SD, North end	Benzene	Not Detected	
20-Dec	12	TWA	Harley - Hoe Operator - 36" SD, North end	Petroleum Distillate (Naphtha)	Not Detected	
21-Dec	1	STEL	SE of manhole SD3-1	Benzene	Not Detected	
21-Dec	2	STEL	SE of manhole SD3-1	Benzene	Not Detected	
21-Dec	3	STEL	SE of manhole SD3-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
21-Dec	4	STEL	SE of manhole SD3-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
21-Dec	5	STEL	SE of manhole SD3-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
21-Dec	6	STEL	SE of manhole SD3-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
21-Dec	7	STEL	SE of manhole SD3-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
21-Dec	8	TWA	Brian -Setting pipe - 18" SD SE of Manhole SD3-1	Benzene	Not Detected	
21-Dec	8	TWA	Brian -Setting pipe - 18" SD SE of Manhole SD3-1	Petroleum Distillate (Naphtha)	Not Detected	
21-Dec	8	TWA	Brian -Setting pipe - 18" SD SE of Manhole SD3-1	PAH	0.00016 mg/Cu M	TWA limit = 0.2 mg/Cu M
21-Dec	9	TWA	Harley - Hoe Operator - 18" SD SE of Manhole SD3-1	Benzene	Not Detected	
21-Dec	9	TWA	Harley - Hoe Operator - 18" SD SE of Manhole SD3-1	Petroleum Distillate (Naphtha)	Not Detected	
22-Dec	1	STEL	SD manhole SD3-1	Benzene	Not Detected	

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22-Dec	2	STEL	SD manhole SD3-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
22-Dec	3	TWA	Brian -Setting pipe - 18" SD Manhole SD3-1	Benzene	Not Detected	
22-Dec	3	TWA	Brian -Setting pipe - 18" SD Manhole SD3-1	Petroleum Distillate (Naphtha)	Not Detected	
22-Dec	3	TWA	Brian -Setting pipe - 18" SD Manhole SD3-1	PAH	0.00004 mg/Cu M	TWA limit = 0.2 mg/Cu M
22-Dec	4	TWA	Harley - Hoe Operator - 18" SD Manhole SD3-1	Benzene	Not Detected	
22-Dec	4	TWA	Harley - Hoe Operator - 18" SD Manhole SD3-1	Petroleum Distillate (Naphtha)	Not Detected	
23-Dec	1	STEL	SW of SD manhole SD3-1	Benzene	Not Detected	
23-Dec	2	STEL	SW of SD manhole SD3-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
23-Dec	3	TWA	Brian -Setting pipe - 18" SD S of Manhole SD3-1	Benzene	Not Detected	
23-Dec	3	TWA	Brian -Setting pipe - 18" SD S of Manhole SD3-1	Petroleum Distillate (Naphtha)	Not Detected	
23-Dec	3	TWA	Brian -Setting pipe - 18" SD S of Manhole SD3-1	PAH	Not Detected	
23-Dec	4	TWA	Harley - Hoe Operator - 18" SD S of Manhole SD3-1	Benzene	Not Detected	
23-Dec	4	TWA	Harley - Hoe Operator - 18" SD S of Manhole SD3-1	Petroleum Distillate (Naphtha)	Not Detected	
24-Dec	None					Project Down - Weekend
25-Dec	None					Project Down - Weekend
26-Dec	1	STEL	36" SD excavation, NW end of parking lot	Benzene	Not Detected	Holiday
26-Dec	2	STEL	36" SD excavation, NW end of parking lot	Hydrocarbon (10 - 300 ppm)	Not Detected	
26-Dec	3	STEL	Potable water tie in (near trailers)	Benzene	Not Detected	
26-Dec	4	STEL	Potable water tie in (near trailers)	Hydrocarbon (10 - 300 ppm)	Not Detected	
26-Dec	5	TWA	Brian -Setting pipe - 36" SD - NW end of parking lot	Benzene	Not Detected	
26-Dec	5	TWA	Brian -Setting pipe - 36" SD - NW end of parking lot	Petroleum Distillate (Naphtha)	Not Detected	
26-Dec	6	TWA	Harley - Hoe Operator - 36" SD - NW end of parking lot	Benzene	Not Detected	
26-Dec	6	TWA	Harley - Hoe Operator - 36" SD - NW end of parking lot	Petroleum Distillate (Naphtha)	Not Detected	
26-Dec	7	TWA	Jerry Linden - 36" SD - NW end of parking lot	Benzene	Not Detected	Wacker Personnel
26-Dec	7	TWA	Jerry Linden - 36" SD - NW end of parking lot	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
26-Dec	7	TWA	Jerry Linden - 36" SD - NW end of parking lot	PAH	Not Detected	Wacker Personnel
27-Dec	1	STEL	36" SD excavation, center of parking lot	Hydrocarbon (10 - 300 ppm)	Not Detected	
27-Dec	2	STEL	36" SD excavation, center of parking lot	Hydrocarbon (10 - 300 ppm)	Not Detected	
27-Dec	3	STEL	Electrical vault	Benzene	Trace	Probable Interference
27-Dec	4	TWA	Jerry Linden - 36" SD - NW end of parking lot	Benzene	Not Detected	Wacker Personnel
27-Dec	4	TWA	Jerry Linden - 36" SD - NW end of parking lot	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
27-Dec	5	TWA	Brian -Setting pipe - 36" SD - NW end of parking lot	PAH	Not Detected	
28-Dec	1	STEL	36" SD excavation, NW of road	Benzene	Trace	Probable Interference
28-Dec	2	STEL	36" SD excavation, NW of road	Hydrocarbon (10 - 300 ppm)	Not Detected	
28-Dec	3	STEL	36" SD excavation, NW of road	Benzene	Trace	Probable Interference
28-Dec	4	STEL	36" SD excavation, NW of road	Hydrocarbon (10 - 300 ppm)	Not Detected	
28-Dec	5	STEL	10" fire main, 2nd 90 deg. angle	Benzene	Trace	Probable Interference
28-Dec	6	STEL	10" fire main, 2nd 90 deg. angle	Hydrocarbon (10 - 300 ppm)	Not Detected	
28-Dec	7	TWA	Brian -Setting pipe - 36" SD - NW of road	Benzene	Not Detected	
28-Dec	7	TWA	Brian -Setting pipe - 36" SD - NW of road	Petroleum Distillate (Naphtha)	Not Detected	
28-Dec	7	TWA	Brian -Setting pipe - 36" SD - NW of road	PAH	Not Detected	
28-Dec	8	TWA	Harley - Hoe Operator - 36" SD - NW of road	Benzene	Not Detected	
28-Dec	8	TWA	Harley - Hoe Operator - 36" SD - NW of road	Petroleum Distillate (Naphtha)	Not Detected	
28-Dec	9	TWA	Jerry Linden - 36" SD - NW of road	Benzene	Not Detected	Wacker Personnel
28-Dec	9	TWA	Jerry Linden - 36" SD - NW of road	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
28-Dec	9	TWA	Jerry Linden - 36" SD - NW of road	PAH	Not Detected	Wacker Personnel
29-Dec	1	STEL	36" SD excavation , SD1-3	Hydrocarbon (10 - 300 ppm)	Not Detected	
29-Dec	2	STEL	36" SD excavation , SD1-3	Benzene	Trace	Probable Interference
29-Dec	3	STEL	36" SD excavation , SD1-3	Hydrocarbon (10 - 300 ppm)	Not Detected	
29-Dec	4	TWA	Brian -Setting pipe - 36" SD - manhole SD1-3	Benzene	Not Detected	
29-Dec	4	TWA	Brian -Setting pipe - 36" SD - manhole SD1-3	Petroleum Distillate (Naphtha)	Not Detected	
29-Dec	4	TWA	Brian -Setting pipe - 36" SD - manhole SD1-3	PAH	Not Detected	
29-Dec	5	TWA	Harley - Hoe Operator - 36" SD - manhole SD1-3	Benzene	Not Detected	
29-Dec	5	TWA	Harley - Hoe Operator - 36" SD - manhole SD1-3	Petroleum Distillate (Naphtha)	Not Detected	
29-Dec	6	TWA	Jerry Linden - 36" SD - manhole SD1-3	Benzene	Not Detected	Wacker Personnel
29-Dec	6	TWA	Jerry Linden - 36" SD - manhole SD1-3	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
29-Dec	6	TWA	Jerry Linden - 36" SD - manhole SD1-3	PAH	Not Detected	Wacker Personnel
30-Dec	1	TWA	Brian -Setting pipe - 36" SD - SW of road	Benzene	Not Detected	
30-Dec	1	TWA	Brian -Setting pipe - 36" SD - SW of road	Petroleum Distillate (Naphtha)	9.0 ppm	TWA limit = 400 ppm
30-Dec	1	TWA	Brian -Setting pipe - 36" SD - SW of road	PAH	Not Detected	
30-Dec	2	TWA	Jim - Hoe Operator - 36" SD - SW of road	Benzene	Not Detected	
30-Dec	2	TWA	Jim - Hoe Operator - 36" SD - SW of road	Petroleum Distillate (Naphtha)	Not Detected	
31-Dec	None					Project Down - Weekend
1-Jan	None					Project Down - Weekend
2-Jan	None					Project Down - Holiday
3-Jan	1	STEL	Bore pit to plan-modified SS manhole (near trailers)	Benzene	Not Detected	
3-Jan	2	STEL	Bore pit to plan-modified SS manhole (near trailers)	Hydrocarbon (10 - 300 ppm)	Not Detected	
3-Jan	3	STEL	36" SD excavation, NE end of SW parking lot	Benzene	Not Detected	
3-Jan	4	STEL	36" SD excavation, NE end of SW parking lot	Hydrocarbon (10 - 300 ppm)	Not Detected	
3-Jan	5	TWA	Harley - Hoe Operator - 18" SD	Benzene	Not Detected	
3-Jan	5	TWA	Harley - Hoe Operator - 18" SD	Petroleum Distillate (Naphtha)	Not Detected	
3-Jan	6	TWA	Dave - Setting Pipe - 18" SD	Benzene	Not Detected	
3-Jan	6	TWA	Dave - Setting Pipe - 18" SD	Petroleum Distillate (Naphtha)	Not Detected	
3-Jan	7	TWA	Jim - Hoe Operator - 36" SD	Benzene	Not Detected	
3-Jan	7	TWA	Jim - Hoe Operator - 36" SD	Petroleum Distillate (Naphtha)	Not Detected	
3-Jan	8	TWA	Brian -Setting pipe - 36" SD - SW of road	Benzene	Not Detected	
3-Jan	8	TWA	Brian -Setting pipe - 36" SD - SW of road	Petroleum Distillate (Naphtha)	Not Detected	
3-Jan	8	TWA	Brian -Setting pipe - 36" SD - SW of road	PAH	Not Detected	
3-Jan	9	TWA	Jerry Linden - 36" SD	Benzene	Not Detected	Wacker Personnel
3-Jan	9	TWA	Jerry Linden - 36" SD	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
3-Jan	9	TWA	Jerry Linden - 36" SD	PAH	Not Detected	Wacker Personnel
4-Jan	1	STEL	18" excavation ~30' from SD3-1	Benzene	Not Detected	
4-Jan	2	STEL	18" excavation ~30' from SD3-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
4-Jan	3	STEL	18" excavation, halfway between SD3-1 and SD2-1	Benzene	Not Detected	
4-Jan	4	STEL	18" excavation, halfway between SD3-1 and SD2-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
4-Jan	5	STEL	18" excavation, halfway between SD3-1 and SD2-1	Benzene	Not Detected	
4-Jan	6	STEL	18" excavation, halfway between SD3-1 and SD2-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
4-Jan	7	STEL	36" SD excavation, middle of SW parking lot	Benzene	Not Detected	
4-Jan	8	STEL	36" SD excavation, middle of SW parking lot	Hydrocarbon (10 - 300 ppm)	Not Detected	
4-Jan	9	STEL	36" SD excavation, SW end of SW parking lot	Benzene	Not Detected	
4-Jan	10	STEL	36" SD excavation, SW end of SW parking lot	Hydrocarbon (10 - 300 ppm)	Not Detected	
4-Jan	11	TWA	Harley - Hoe Operator - 18" SD	Benzene	Not Detected	

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4-Jan	11	TWA	Harley - Hoe Operator - 18" SD	Petroleum Distillate (Naphtha)	Not Detected	
4-Jan	12	TWA	Dave - Setting Pipe - 18" SD	Benzene	Not Detected	
4-Jan	12	TWA	Dave - Setting Pipe - 18" SD	Petroleum Distillate (Naphtha)	Not Detected	
4-Jan	13	TWA	Jim - Hoe Operator - 36" SD	Benzene	Not Detected	
4-Jan	13	TWA	Jim - Hoe Operator - 36" SD	Petroleum Distillate (Naphtha)	Not Detected	
4-Jan	14	TWA	Chip Bloomer - Wacker Environmental	Benzene	Not Detected	Wacker Personnel
4-Jan	14	TWA	Chip Bloomer - Wacker Environmental	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
4-Jan	15	TWA	Aaron Ruddick - IH Technician	Benzene	Not Detected	
4-Jan	15	TWA	Aaron Ruddick - IH Technician	Petroleum Distillate (Naphtha)	Not Detected	
4-Jan	15	TWA	Brian -Setting pipe - 36" SD - SW of road	PAH	Not Detected	
4-Jan	16	TWA	Jerry Linden - Wacker	Benzene	Not Detected	Wacker Personnel
4-Jan	16	TWA	Jerry Linden - Wacker	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
4-Jan	16	TWA	Jerry Linden - Wacker	PAH	Not Detected	Wacker Personnel
5-Jan	1	STEL	18" excavation, ~15' NE of SD2-1	Benzene	Not Detected	
5-Jan	2	STEL	18" excavation, ~15' NE of SD2-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
5-Jan	3	STEL	Storm sewer manhole SD7-1	Benzene	Not Detected	
5-Jan	4	STEL	Storm sewer manhole SD7-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
5-Jan	5	TWA	Dave - Setting Pipe - 18" SD	Benzene	Not Detected	
5-Jan	5	TWA	Dave - Setting Pipe - 18" SD	Petroleum Distillate (Naphtha)	Not Detected	
5-Jan	6	TWA	Brian -Setting pipe - 36" SD	Benzene	Not Detected	
5-Jan	6	TWA	Brian -Setting pipe - 36" SD	Petroleum Distillate (Naphtha)	Not Detected	
5-Jan	6	TWA	Brian -Setting pipe - 36" SD	PAH	Not Detected	
5-Jan	7	TWA	Jerry Linden	Benzene	Not Detected	Wacker Personnel
5-Jan	7	TWA	Jerry Linden	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
5-Jan	7	TWA	Jerry Linden	PAH	Not Detected	Wacker Personnel
6-Jan	1	STEL	24" Storm sewer immediately NW of SD7-1	Benzene	Not Detected	
6-Jan	2	STEL	24" Storm sewer immediately NW of SD7-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
6-Jan	3	TWA	Jerry Linden	Benzene	Not Detected	Wacker Personnel
6-Jan	3	TWA	Jerry Linden	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
6-Jan	3	TWA	Jerry Linden	PAH	Not Detected	Wacker Personnel
9-Jan	None					Project Down - Weather
10-Jan	1	STEL	10" D.I.P. SS Near Bore Hole	Benzene		
10-Jan	2	STEL	10" D.I.P. SS Near Bore Hole	Hydrocarbon (10 - 300 ppm)		
10-Jan	3	TWA	Brian -Setting pipe - 24" SD South of Road	Benzene	Sample Lost - leaked @ Lab	
10-Jan	3	TWA	Brian -Setting pipe - 24" SD South of Road	Petroleum Distillate (Naphtha)	Sample Lost - leaked @ Lab	
10-Jan	3	TWA	Brian -Setting pipe - 24" SD South of Road	PAH		
10-Jan	4	TWA	Dave - Setting pipe - 10" D.I.P. SS Near Bore Hole	Benzene	Sample Lost - leaked @ Lab	
10-Jan	4	TWA	Dave - Setting pipe - 10" D.I.P. SS Near Bore Hole	Petroleum Distillate (Naphtha)	Sample Lost - leaked @ Lab	
10-Jan	4	TWA	Dave - Setting pipe - 10" D.I.P. SS Near Bore Hole	PAH		
10-Jan	5	TWA	Jerry Linden	Benzene		Wacker Personnel
10-Jan	5	TWA	Jerry Linden	Petroleum Distillate (Naphtha)		Wacker Personnel
11-Jan	1	STEL	15" SD East of Manhole SD1-1	Benzene		
11-Jan	2	STEL	15" SD East of Manhole SD1-1	Hydrocarbon (10 - 300 ppm)		
11-Jan	3	TWA	Brian -Setting pipe - 24" SD South of Road	Benzene		
11-Jan	3	TWA	Brian -Setting pipe - 24" SD South of Road	Petroleum Distillate (Naphtha)		
11-Jan	3	TWA	Brian -Setting pipe - 24" SD South of Road	PAH		
11-Jan	4	TWA	Dave - Setting pipe - 15" SD	Benzene	Sample Lost - leaked @ Lab	
11-Jan	4	TWA	Dave - Setting pipe - 15" SD	Petroleum Distillate (Naphtha)	Sample Lost - leaked @ Lab	
11-Jan	4	TWA	Dave - Setting pipe - 15" SD	PAH		
12-Jan	1	TWA	Brian -Setting pipe - 24" SD NE Corner of lot	Benzene	Not Detected	
12-Jan	1	TWA	Brian -Setting pipe - 24" SD NE Corner of lot	Petroleum Distillate (Naphtha)	Not Detected	
12-Jan	2	TWA	Dave - Setting pipe - 10" SS	Benzene	Not Detected	
12-Jan	2	TWA	Dave - Setting pipe - 10" SS	Petroleum Distillate (Naphtha)	Not Detected	
12-Jan	2	TWA	Dave - Setting pipe - 10" SS	PAH	Not Detected	
12-Jan	3	TWA	Jerry Linden	Benzene	Not Detected	Wacker Personnel
12-Jan	3	TWA	Jerry Linden	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
12-Jan	3	TWA	Jerry Linden	PAH	Not Detected	Wacker Personnel
13-Jan	1	STEL	Manhole SS3-1	Benzene	Not Detected	
13-Jan	2	STEL	Manhole SS3-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
13-Jan	3	TWA	Dave - Setting pipe - 10" SS near SS3-1	Benzene	Not Detected	REVISED - Lab error orig. report
13-Jan	3	TWA	Dave - Setting pipe - 10" SS near SS3-1	Petroleum Distillate (Naphtha)	Not Detected	
13-Jan	4	TWA	Jerry Linden	Benzene	Not Detected	REVISED - Lab error orig. report
13-Jan	4	TWA	Jerry Linden	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
13-Jan	4	TWA	Jerry Linden	PAH	Not Detected	Wacker Personnel
16-Jan	1	STEL	NW of manhole SS4-1	Benzene	Not Detected	
16-Jan	2	STEL	NW of manhole SS4-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
16-Jan	3	TWA	Brian -Setting pipe - 24" SD South of Road	Benzene	Not Detected	
16-Jan	3	TWA	Brian -Setting pipe - 24" SD South of Road	Petroleum Distillate (Naphtha)	Not Detected	
16-Jan	4	TWA	Dave - Setting pipe - 15" SD	Benzene	Not Detected	
16-Jan	4	TWA	Dave - Setting pipe - 15" SD	Petroleum Distillate (Naphtha)	Not Detected	
16-Jan	4	TWA	Dave - Setting pipe - 15" SD	PAH	Not Detected	
17-Jan	1	TWA	Brian -Setting pipe - 24" SD South of Road	Benzene	Not Detected	
17-Jan	1	TWA	Brian -Setting pipe - 24" SD South of Road	Petroleum Distillate (Naphtha)	Not Detected	
17-Jan	2	TWA	Dave - Setting pipe - 15" SD	Benzene	Not Detected	
17-Jan	2	TWA	Dave - Setting pipe - 15" SD	Petroleum Distillate (Naphtha)	Not Detected	
17-Jan	2	TWA	Dave - Setting pipe - 15" SD	PAH	Not Detected	
18-Jan	1	STEL	10" SS, 20' NE of SD1A-2	Benzene	Not Detected	
18-Jan	2	STEL	10" SS, 20' NE of SD1A-2	Hydrocarbon (10 - 300 ppm)	Not Detected	
18-Jan	3	TWA	Brian -Setting pipe - 24" SD South of Road	Benzene	Not Detected	
18-Jan	3	TWA	Brian -Setting pipe - 24" SD South of Road	Petroleum Distillate (Naphtha)	Not Detected	
18-Jan	4	TWA	Dave - Setting pipe - 15" SD	Benzene	Not Detected	
18-Jan	4	TWA	Dave - Setting pipe - 15" SD	Petroleum Distillate (Naphtha)	Not Detected	
18-Jan	4	TWA	Dave - Setting pipe - 15" SD	PAH	Not Detected	
19-Jan	1	STEL	36" SD NE of SD3-3	Benzene	Not Detected	
19-Jan	2	STEL	36" SD NE of SD3-3	Hydrocarbon (10 - 300 ppm)	Not Detected	
19-Jan	3	TWA	Brian -Setting pipe - 24" SD South of Road	Benzene	Not Detected	
19-Jan	3	TWA	Brian -Setting pipe - 24" SD South of Road	Petroleum Distillate (Naphtha)	Not Detected	
19-Jan	4	TWA	Dave - Setting pipe - 15" SD	Benzene	Not Detected	
19-Jan	4	TWA	Dave - Setting pipe - 15" SD	Petroleum Distillate (Naphtha)	Not Detected	
19-Jan	4	TWA	Dave - Setting pipe - 15" SD	PAH	Not Detected	
20-Jan	1	STEL	FAB-2, West Footing	Benzene	Not Detected	
20-Jan	2	STEL	FAB-2, West Footing	Hydrocarbon (10 - 300 ppm)	Not Detected	

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20-Jan	3	TWA	Brian -Setting pipe - 24" SD South of Road	Benzene	Not Detected	
20-Jan	3	TWA	Brian -Setting pipe - 24" SD South of Road	Petroleum Distillate (Naphtha)	Not Detected	
20-Jan	3	TWA	Brian -Setting pipe - 24" SD South of Road	PAH	Not Detected	
20-Jan	4	TWA	Dave - Setting pipe - 15" SD	Benzene	Not Detected	
20-Jan	4	TWA	Dave - Setting pipe - 15" SD	Petroleum Distillate (Naphtha)	Not Detected	
20-Jan	4	TWA	Dave - Setting pipe - 15" SD	PAH	Not Detected	
20-Jan	5	TWA	Jerry Linden	Benzene	Not Detected	Wacker Personnel
20-Jan	5	TWA	Jerry Linden	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
21-Jan	None					No Potential Exposures
23-Jan	1	STEL	FAB-2, West Footing	Hydrocarbon (10 - 300 ppm)	Not Detected	
23-Jan	2	STEL	FAB-2, West Footing	Benzene	Not Detected	
23-Jan	3	TWA	Brian -Setting pipe - 36" SD N of SD3-3	Benzene	Not Detected	
23-Jan	3	TWA	Brian -Setting pipe - 36" SD N of SD3-3	Petroleum Distillate (Naphtha)	Not Detected	
24-Jan	1	TWA	Brian -Setting pipe - 36" SD S of SD3-3	Benzene	Not Detected	
24-Jan	2	TWA	Brian -Setting pipe - 36" SD S of SD3-3	Petroleum Distillate (Naphtha)	Not Detected	
25-Jan	1	STEL	Elevator Bore Hole - E corner of FAB-2	Benzene	2 ppm	DeWitt (STEL limit = 5.0 ppm
25-Jan	2	STEL	Elevator Bore Hole - E corner of FAB-2	Benzene	Not Detected	DeWitt
25-Jan	3	STEL	Elevator Bore Hole - E corner of FAB-2	Benzene	Not Detected	DeWitt - Swing Shift
25-Jan	4	STEL	Elevator Bore Hole - E corner of FAB-2	Benzene	10 ppm	DeWitt - Swing Shift
25-Jan	5	STEL	Elevator Bore Hole - E corner of FAB-2	Hydrocarbon (10 - 300 ppm)	Not Detected	DeWitt
25-Jan	6	STEL	Elevator Bore Hole - E corner of FAB-2	Hydrocarbon (10 - 300 ppm)	Not Detected	DeWitt
25-Jan	7	STEL	Elevator Bore Hole - E corner of FAB-2	Hydrocarbon (10 - 300 ppm)	Not Detected	DeWitt - Swing Shift
25-Jan	8	STEL	Elevator Bore Hole - E corner of FAB-2	Hydrocarbon (10 - 300 ppm)	Not Detected	DeWitt - Swing Shift
25-Jan	9	STEL	Elevator Bore Hole - E corner of FAB-2	Hydrocarbon (10 - 300 ppm)	Not Detected	DeWitt - Swing Shift
25-Jan	10	TWA	Guy Kollenburn - Drilling Elevator Shaft Hole	Benzene	Not Detected	DeWitt - Swing Shift
25-Jan	11	TWA	Guy Kollenburn - Drilling Elevator Shaft Hole	Petroleum Distillate (Naphtha)	Not Detected	DeWitt - Swing Shift
25-Jan	12	TWA	Guy Kollenburn - Drilling Elevator Shaft Hole	PAH	Not Detected	DeWitt - Swing Shift
25-Jan	13	TWA	Chip Bloomer - @ Elevator Shaft Hole	Benzene	Not Detected	Wacker Personnel
25-Jan	14	TWA	Chip Bloomer - @ Elevator Shaft Hole	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
25-Jan	15	TWA	Jerry Linden - Supervising Elevator Bore Hole	Benzene	Not Detected	Wacker Personnel
25-Jan	16	TWA	Jerry Linden - Supervising Elevator Bore Hole	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
27-Jan	1	TWA	Harley - Potholing vault near facility addition	Benzene	Not Detected	
27-Jan	2	TWA	Harley - Potholing vault near facility addition	Petroleum Distillate (Naphtha)	Not Detected	
27-Jan	3	TWA	Jerry Linden	Benzene	Not Detected	Wacker Personnel
27-Jan	4	TWA	Jerry Linden	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
30-Jan	1	TWA	Brian - 18" SD SW of Parking Lot	Benzene	Not Detected	
30-Jan	2	TWA	Brian - 18" SD SW of Parking Lot	Petroleum Distillate (Naphtha)	Not Detected	
30-Jan	3	TWA	Jerry Linden	Benzene	Not Detected	Wacker Personnel
30-Jan	4	TWA	Jerry Linden	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
31-Jan	1	STEL	36" Storm Sewer Outfall	Benzene	Not Detected	
31-Jan	2	STEL	36" Storm Sewer Outfall	Hydrocarbon (10 - 300 ppm)	Not Detected	
31-Jan	3	TWA	Brian - 36" Storm Sewer Outfall	Benzene	Not Detected	
31-Jan	4	TWA	Brian - 36" Storm Sewer Outfall	Petroleum Distillate (Naphtha)	Not Detected	
31-Jan	5	TWA	Dave - Laterals from FAB2 sub-slab to 24" SD	Benzene	Not Detected	
31-Jan	6	TWA	Dave - Laterals from FAB2 sub-slab to 24" SD	Petroleum Distillate (Naphtha)	Not Detected	
1-Feb	1	TWA	Dave - Laterals from FAB2 sub-slab to 24" SD	Benzene	Not Detected	
1-Feb	2	TWA	Dave - Laterals from FAB2 sub-slab to 24" SD	Petroleum Distillate (Naphtha)	Not Detected	
1-Feb	3	TWA	Dave - Laterals from FAB2 sub-slab to 24" SD	PAH	Not Detected	
2-Feb	3	TWA	Brian - Backfilling and relaying at 36" SD Outfall	Benzene	Not Detected	
2-Feb	3	TWA	Brian - Backfilling and relaying at 36" SD Outfall	Petroleum Distillate (Naphtha)	Not Detected	
2-Feb	4	TWA	Dave - Setting pipe - 36" Outfall	Benzene	Not Detected	
2-Feb	4	TWA	Dave - Setting pipe - 36" Outfall	Petroleum Distillate (Naphtha)	Not Detected	
2-Feb	4	TWA	Dave - Setting pipe - 36" Outfall	PAH	Not Detected	
3-Feb	1	STEL	10" Fire Protection Water near E gate	Benzene	Not Detected	
3-Feb	2	STEL	10" Fire Protection Water near E gate	Hydrocarbon (10 - 300 ppm)	Not Detected	
3-Feb	3	TWA	Brian - 10" Fire Protection System	Benzene	Not Detected	
3-Feb	3	TWA	Brian - 10" Fire Protection System	Petroleum Distillate (Naphtha)	Not Detected	
3-Feb	4	TWA	Dave - 10" Fire Protection System	Benzene	Not Detected	
3-Feb	4	TWA	Dave - 10" Fire Protection System	Petroleum Distillate (Naphtha)	Not Detected	
3-Feb	4	TWA	Dave - 10" Fire Protection System	PAH	Not Detected	
6-Feb	1	STEL	Electrical Conduit, near Vault HM-HV-21	Hydrocarbon (10 - 300 ppm)	Not Detected	
6-Feb	2	STEL	Electrical Conduit, near Vault HM-HV-21	Benzene	Not Detected	
6-Feb	3	TWA	Brian -Setting pipe - 24" SD South of Road	Benzene	Not Detected	
6-Feb	4	TWA	Brian - 18" SD to W of SD3-2	Petroleum Distillate (Naphtha)	Not Detected	
6-Feb	5	TWA	Brian - 18" SD to W of SD3-2	Benzene	Not Detected	
6-Feb	6	TWA	Brian - 18" SD to W of SD3-2	PAH	Not Detected	
6-Feb	7	TWA	Dave - Laterals from sub-slab to SD N of FAB2	Benzene	Not Detected	
6-Feb	8	TWA	Dave - Laterals from sub-slab to SD N of FAB2	Petroleum Distillate (Naphtha)	Not Detected	
6-Feb	9	TWA	Jerry Linden	Benzene	Not Detected	Wacker Personnel
6-Feb	10	TWA	Jerry Linden	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
7-Feb	1	STEL	Electrical Conduit, ~ 20' from Vault HM-HV-21	Hydrocarbon (10 - 300 ppm)	Not Detected	
7-Feb	2	STEL	Electrical Conduit, ~ 20' from Vault HM-HV-21	Benzene	Not Detected	
7-Feb	3	TWA	Chuck - Laying sand near Vault MH-HV-21	Petroleum Distillate (Naphtha)	Not Detected	
7-Feb	4	TWA	Chuck - Laying sand near Vault MH-HV-21	Benzene	Not Detected	
7-Feb	5	TWA	Chuck - Laying sand near Vault MH-HV-21	PAH	Not Detected	Sample mislabelled "Dave"
7-Feb	6	TWA	Bill Matthews - Laying conduit near Vault MH-HV-21	Benzene	Not Detected	Christiansen Personnel
7-Feb	7	TWA	Bill Matthews - Laying conduit near Vault MH-HV-21	Petroleum Distillate (Naphtha)	Not Detected	Christiansen Personnel
7-Feb	8	TWA	Bill Matthews - Laying conduit near Vault MH-HV-21	PAH	Not Detected	Christiansen Personnel
8-Feb	1	TWA	Bill Matthews - Laying conduit 35 ft past Vault MH-HV-21	Petroleum Distillate (Naphtha)	Not Detected	Christiansen Personnel
8-Feb	2	TWA	Bill Matthews - Laying conduit 35 ft past Vault MH-HV-21	Benzene	Not Detected	Christiansen Personnel
8-Feb	3	TWA	Bill Matthews - Laying conduit 35 ft past Vault MH-HV-21	PAH	Not Detected	Christiansen Personnel
8-Feb	4	TWA	Dave - grading plumbing under central facilities bldg	Benzene	Not Detected	
8-Feb	5	TWA	Dave - grading plumbing under central facilities bldg	Petroleum Distillate (Naphtha)	Not Detected	
8-Feb	6	TWA	Chuck - Laying sand 35 ft past Vault MH-HV-21	Benzene	Not Detected	
8-Feb	7	TWA	Chuck - Laying sand 35 ft past Vault MH-HV-21	Petroleum Distillate (Naphtha)	Not Detected	
9-Feb	1	STEL	Main electrical vault NE of substation	Hydrocarbon (10 - 300 ppm)	Not Detected	
9-Feb	2	STEL	Main electrical vault NE of substation	Benzene	Not Detected	
9-Feb	3	TWA	Peter Thomas - Laying conduit near road	Petroleum Distillate (Naphtha)	Not Detected	Christiansen Personnel
9-Feb	4	TWA	Peter Thomas - Laying conduit near road	Benzene	Not Detected	Christiansen Personnel
9-Feb	5	TWA	Peter Thomas - Laying conduit near road	PAH	Not Detected	Christiansen Personnel
9-Feb	6	TWA	Brian - Grading electrical conduit line near road	Benzene	Not Detected	
9-Feb	7	TWA	Brian - Grading electrical conduit line near road	Petroleum Distillate (Naphtha)	Not Detected	

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10-Feb	6	TWA	Chuck - Backfilling electrical conduit near road	Benzene	Not Detected	
10-Feb	7	TWA	Chuck - Backfilling electrical conduit near road	Petroleum Distillate (Naphtha)	Not Detected	
11-Feb	none					Down - Weekend
12-Feb	none					Down - Weekend
13-Feb	none					Down - Snow
14-Feb	none					Down - Snow
15-Feb	none					Down - Snow
16-Feb	1	TWA	Brian -Fire protect. water SW of parking lot to recharge	Petroleum Distillate (Naphtha)	Not Detected	
16-Feb	2	TWA	Brian -Fire protect. water SW of parking lot to recharge	Benzene	Not Detected	
16-Feb	3	TWA	Brian -Fire protect. water SW of parking lot to recharge	PAH	Not Detected	
16-Feb	4	TWA	Bill Matthews - Laying conduit N of substation	Benzene	Not Detected	Christiansen Personnel
16-Feb	5	TWA	Bill Matthews - Laying conduit N of substation	Petroleum Distillate (Naphtha)	Not Detected	Christiansen Personnel
17-Feb	1	STEL	18" SD, ~ 2 sections NW of SD3-2	Hydrocarbon (10 - 300 ppm)	Not Detected	
17-Feb	2	STEL	18" SD, ~ 2 sections NW of SD3-2	Benzene	Not Detected	
17-Feb	3	TWA	Brian - 18" SD near SD3-2	Petroleum Distillate (Naphtha)	Not Detected	
17-Feb	4	TWA	Brian - 18" SD near SD3-2	Benzene	Not Detected	
17-Feb	5	TWA	Brian - 18" SD near SD3-2	PAH	Not Detected	
17-Feb	6	TWA	Guy - Driving casing for elevator shaft SW FAB2	Benzene	Not Detected	DeWitt Personnel
17-Feb	7	TWA	Guy - Driving casing for elevator shaft SW FAB2	Petroleum Distillate (Naphtha)	Not Detected	DeWitt Personnel
20-Feb	1	STEL	Elevator Bore hole SW corner of FAB2	Hydrocarbon (10 - 300 ppm)	Not Detected	
20-Feb	2	STEL	Elevator Bore hole SW corner of FAB2	Benzene	Not Detected	
20-Feb	3	STEL	Elevator Bore hole SW corner of FAB2	Hydrocarbon (10 - 300 ppm)	Not Detected	
20-Feb	4	TWA	Brian - 18" SD SE of recharge pile	Petroleum Distillate (Naphtha)	Not Detected	
20-Feb	5	TWA	Brian - 18" SD SE of recharge pile	Benzene	Not Detected	
20-Feb	6	TWA	Brian - 18" SD SE of recharge pile	PAH	Not Detected	
20-Feb	7	TWA	Guy - in hole at elevator shaft boring - SW FAB2	Petroleum Distillate (Naphtha)	Not Detected	DeWitt Personnel
20-Feb	8	TWA	Guy - in hole at elevator shaft boring - SW FAB2	Benzene	Not Detected	DeWitt Personnel
20-Feb	9	TWA	Guy - in hole at elevator shaft boring - SW FAB2	PAH	Not Detected	DeWitt Personnel
20-Feb	10	TWA	Chuck - loading cuttings into drop box at elevator shaft	Benzene	Not Detected	
20-Feb	11	TWA	Chuck - loading cuttings into drop box at elevator shaft	Petroleum Distillate (Naphtha)	Not Detected	
20-Feb	12	TWA	Ed - Operating boring rig at elevator shaft	Benzene	Not Detected	DeWitt Personnel
20-Feb	13	TWA	Ed - Operating boring rig at elevator shaft	Petroleum Distillate (Naphtha)	Not Detected	DeWitt Personnel
21-Feb	1	STEL	Electrical Trench SW of center of FAB2	Hydrocarbon (10 - 300 ppm)	Not Detected	
21-Feb	2	STEL	Electrical Trench SW of center of FAB2	Benzene	Not Detected	
21-Feb	3	TWA	Brian - laying pipe SD2-2A to SD2-2	Petroleum Distillate (Naphtha)	1.23 ppm	TWA = 400 ppm
21-Feb	4	TWA	Brian - laying pipe SD2-2A to SD2-2	Benzene	Not Detected	
21-Feb	5	TWA	Brian - laying pipe SD2-2A to SD2-2	PAH	Not Detected	
22-Feb	1	STEL	18" SD SW of recharge pile	Hydrocarbon (10 - 300 ppm)	Not Detected	
22-Feb	2	STEL	18" SD SW of recharge pile	Benzene	Not Detected	
22-Feb	3	STEL	Electrical conduit excavation W corner of FAB2	Hydrocarbon (10 - 300 ppm)	Not Detected	
22-Feb	4	STEL	Electrical conduit excavation W corner of FAB2	Benzene	Not Detected	
22-Feb	5	TWA	Brian - 18" SD S of Recharge Pile	Petroleum Distillate (Naphtha)	Not Detected	
22-Feb	6	TWA	Brian - 18" SD S of Recharge Pile	Benzene	Not Detected	
23-Feb	1	STEL	18" SD SW of S corner of FAB2	Hydrocarbon (10 - 300 ppm)	Not Detected	
23-Feb	2	STEL	18" SD SW of S corner of FAB2	Benzene	Not Detected	
23-Feb	3	TWA	Brian - SD and FP S of SE corner FAB2	Petroleum Distillate (Naphtha)	1.50 ppm	TWA = 400 ppm
23-Feb	4	TWA	Brian - SD and FP S of SE corner FAB2	Benzene	Not Detected	
24-Feb	1	STEL	10" FP - W of SW center of FAB2	Hydrocarbon (10 - 300 ppm)	Trace	
24-Feb	2	STEL	10" FP - W of SW center of FAB2	Benzene	Not Detected	
24-Feb	3	TWA	Brian - 10" FP near road SE of FAB2	Petroleum Distillate (Naphtha)	1.94 ppm	TWA = 400 ppm
24-Feb	4	TWA	Brian - 10" FP near road SE of FAB2	Benzene	Not Detected	
24-Feb	5	TWA	Brian - 10" FP near road SE of FAB2	PAH	Not Detected	
24-Feb	6	TWA	Chuck - Electical conduit SE corner FAB2	Benzene	Not Detected	
24-Feb	7	TWA	Chuck - Electical conduit SE corner FAB2	Petroleum Distillate (Naphtha)	Not Detected	
25-Feb	none					Down - Weekend
26-Feb	none					Down - Weekend

SCOEPA00021987

Wacker Siltronic Corporation

WACKER

TO: File

FROM: Ann Schowalter

SUBJECT: Fab 2 Contractor Hazard Communication Training and Information

DATE: January 17, 1995

On 1.16.95, 0700, a contractor training/question & answer meeting was held outside of the Fab 2 contractor offices. All Hoffman, Coffman, and Christenson Fab 2 personnel were in attendance. Representatives from WSC included: Steve Beiswenger, Tom McCue, Jerry Linden, and Ann Schowalter. Dr. John Ruddick, Toxicologist with Environmental Health Management, Inc., conducted the training and fielded questions from the assembled group. Environmental Health Management, Inc. (EHM) was hired by both Coffman and WSC to perform personal air monitoring and provide health and safety technical expertise relative to hazardous materials encountered on the Fab 2 project.

The meeting of 1.16 was called at WSC's request after two contract employees presented themselves to WSC personnel on 1.13 and 1.14 with the following physical symptoms: Dudley Gee, Coffman, swelling of feet, hands, and lips, and Bill Matthews, Christenson, contact dermatitis. Both individuals were examined by Derek Lamb, M.D., Sisters of Providence Occupational Medical Clinic.

Though an initial site-specific training session had been conducted by EHM in early December and an EHM representative has been meeting routinely with contract personnel to discuss air monitoring outcomes, personal protective equipment, and employee concerns, WSC felt it necessary to gather the entire group and review the project to-date.

The following topics were reviewed/discussed by Dr. Ruddick:

- The physical symptoms experienced by the Coffman and Christenson employees.
- Routes of exposure to hazardous materials.
- Allergy and dermatitis as potential outcomes associated with exposure to compounds known to be present in the soils of the Fab 2 site.
- Air monitoring outcomes well below permissible exposure limits or not detected.

- Personal protective equipment: its purpose, job-specific, types and chemical/structural compatiblities.
- Personal hygiene to eliminate/reduce potential for exposure via contact and/or ingestion.
- Decontamination and storage of work clothing/PPE.
- Question/answer session.

Action items and decisions resulting from the meeting include:

- Neoprene gloves (supported or not) with a silver shield liner offer maximum protection against hand contact exposures and will be worn by at-risk employees.
- Rubber boots will be worn by all employees working in excavation areas.
- Rain gear, boots, and gloves will be taped to provide continuity of protection against contact exposures.

Reference: Report from Environmental Health Management, Inc., dated _____

cc: Tom McCue, WSC
Vic Rennie, Hoffman
John Ruddick, Environmental Health Management, Inc.

HOFFMAN CONSTRUCTION

WEEKLY SAFETY MEETING

PROJECT: 9491 **DATE:** 1-16-95

INDIVIDUAL CONDUCTING SAFETY MEETING:

_____

NAME/TITLE

The following is a list of serious potential hazards that may be present during this weeks work process. Circle and discuss those applicable. The Hoffman Safety Procedures Manual should be used as a reference and training aid on these issues during the safety meeting.

FALL EXPOSURES	TRENCHING/EXCAVATION	LIFTING
CONFINED SPACES	LOCK-OUT/TAG-OUT	ELECTRICAL
CHEMICAL USE	LADDERS & SCAFFOLDS	HOUSEKEEPING
CRANES & RIGGING	NEAR MISS ACCIDENTS	INJURIES
POWER TOOLS	PERSONAL PROTECTIVE EQUIP.	AERIAL LIFTS

TOPICS DISCUSSED: WASH DOWN AREA'S (HOSE FOR RAIN GEAR) PORTABLE EYE WASH STATION. TYPE OF SOAP IN WASH RM. & AMOUNT. NOTIFACATION OF CONTAMINATED AREA'S

OTHER ISSUES: SUGGESTIONS OR HAZARDS NOTED BY EMPLOYEES

_____

_____

_____

ATTENDANCE IS USED FOR TRACKING SAFETY AWARDS
(PRINT NAME CLEARLY)

x [illegible] x PAT EASTVELD

1. x [illegible]
2. x [illegible]
3. x [illegible]
4. x Darrell Lane
5. x [illegible]
6. x RON MARTIN
7. x [illegible]
8. x [illegible]
9. x [illegible]
10. x [illegible]
11. x [illegible]
12. x [illegible]
13. x [illegible]
14. x [illegible]
15. x [illegible]
16. x Jason D Blume

x Sam W Damon x [illegible] x Mark Rapp

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HOFFMAN CONSTRUCTION

WEEKLY SAFETY MEETING

PROJECT: WACKER / FAB 2 9491 **DATE:** 1.16.95

INDIVIDUAL CONDUCTING SAFETY MEETING:

Vic Rinnie / ENVIROMENT Rep

NAME/TITLE

The following is a list of serious potential hazards that may be present during this weeks work process. Circle and discuss those applicable. The Hoffman Safety Procedures Manual should be used as a reference and training aid on these issues during the safety meeting.

FALL EXPOSURES open trench	TRENCHING/EXCAVATION	LIFTING
CONFINED SPACES	LOCK-OUT/TAG-OUT	ELECTRICAL
CHEMICAL USE	LADDERS & SCAFFOLDS	HOUSEKEEPING
CRANES & RIGGING	NEAR MISS ACCIDENTS	INJURIES
POWER TOOLS	PERSONAL PROTECTIVE EQUIP. Gloves	AERIAL LIFTS

TOPICS DISCUSSED:

Exposure to Benzene in Ground 6' deep ~~wethe~~ highest concentrates. use rubber gloves & boots neopreme (Req)

OTHER ISSUES: SUGGESTIONS OR HAZARDS NOTED BY EMPLOYEES

ATTENDANCE IS USED FOR TRACKING SAFETY AWARDS
(PRINT NAME CLEARLY)

1.	X Rosbrook Mihlik HMC	2.	
3.	X Randy Allen	4.	
5.	X Martin Winkler	6.	
7.	X Brian Winkler	8.	
9.	X Mark Kelly	10.	
11.	X Steve Brunell	12.	
13.		14.	
15.		16.	

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ann schowalter

HOFFMAN CONSTRUCTION

WEEKLY SAFETY MEETING

PROJECT: WACKER 9491 **DATE:** 1-16-95

INDIVIDUAL CONDUCTING SAFETY MEETING:

PAUL CYPHERS

NAME/TITLE

The following is a list of serious potential hazards that may be present during this weeks work process. Circle and discuss those applicable. The Hoffman Safety Procedures Manual should be used as a reference and training aid on these issues during the safety meeting.

FALL EXPOSURES	TRENCHING/EXCAVATION	LIFTING
CONFINED SPACES	LOCK-OUT/TAG-OUT	ELECTRICAL
CHEMICAL USE	LADDERS & SCAFFOLDS	HOUSEKEEPING
CRANES & RIGGING	NEAR MISS ACCIDENTS	INJURIES
POWER TOOLS	PERSONAL PROTECTIVE EQUIP.	AERIAL LIFTS

TOPICS DISCUSSED: SILVER SHIELD GLOVES RECCOMENDED IN AN EMERGENCY ALL PIPE CREWS HAVE 2WAY COMMUNICATION WITH WACKER SECURITY

OTHER ISSUES: SUGGESTIONS OR HAZARDS NOTED BY EMPLOYEES

ALSO CAN DIAL 611 FOR IMMEDIATE HELP

WATCH OUT FOR VEHICULAR TRAFFIC

ATTENDANCE IS USED FOR TRACKING SAFETY AWARDS
(PRINT NAME CLEARLY)

1.	David Christenson X	2.	Al Berling –
3.	Kurt Agnes –	4.	Wm L Matthews X
5.	?	6.	Charles D Butler X
7.	Donn Soto –	8.	
9.	Joe Nugent –	10.	
11.	Wes McNeely X	12.	
13.	Mark Sorensen –	14.	
15.	Josef Cisar X	16.	

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WEEKLY SAFETY MEETING

PROJECT: WACKER 9491 **DATE:** 1/16/95

INDIVIDUAL CONDUCTING SAFETY MEETING:

Floyd Hein PLB. G.F.

NAME/TITLE

The following is a list of serious potential hazards that may be present during this weeks work process. Circle and discuss those applicable. The Hoffman Safety Procedures Manual should be used as a reference and training aid on these issues during the safety meeting.

FALL EXPOSURES	TRENCHING/EXCAVATION	LIFTING
CONFINED SPACES	LOCK-OUT/TAG-OUT	ELECTRICAL
CHEMICAL USE	LADDERS & SCAFFOLDS	HOUSEKEEPING
CRANES & RIGGING	NEAR MISS ACCIDENTS	INJURIES
POWER TOOLS	PERSONAL PROTECTIVE EQUIP.	AERIAL LIFTS

TOPICS DISCUSSED:

OTHER ISSUES: SUGGESTIONS OR HAZARDS NOTED BY EMPLOYEES

ATTENDANCE IS USED FOR TRACKING SAFETY AWARDS
(PRINT NAME CLEARLY)

1.	Don Zielinski x	2.	[illegible] x
3.	Don Ming x	4.	[illegible] x
5.	Brad Nichols x	6.	[illegible] AARON RUDDICK
7.	Floyd Hein x	8.	
9.	Wayne Bryant x	10.	
11.	[illegible] x	12.	
13.	Bill Conroy x	14.	
15.		16.	

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ENVIRONMENTAL HEALTH MANAGEMENT, INC.
P. O. Box 1746
Lake Oswego, Oregon 97035
Telephone (503) 638-1611

January 12, 1995 12:14 PM

FACSIMILE TRANSMITTAL

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Attention: Vic Rennie or Mike Gardino
Hoffman Construction

Receiver's FAX Number: (503) 423-4668

Number of pages (including this cover sheet): 6

Sent by: John Ruddick

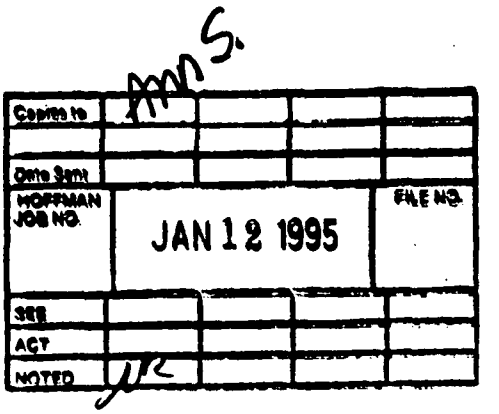
In case of errors or transmission failures contact: (503) 638-1611

Comments:

Vic or Mike:

Here is a copy of the air monitoring results through 1/5/95. We are preparing these weekly for Coffman and will deliver or fax a copy to you at that time.

John Ruddick



3-Jan	9	TWA	Jerry Linden - 36" SD	PAH	Not Detected	Wacker Personnel
4-Jan	1	STEL	18" excavation ~30' from SD3-1	Benzene	Not Detected	
4-Jan	2	STEL	18" excavation ~30' from SD3-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
4-Jan	3	STEL	18" excavation, halfway between SD3-1 and SD2-1	Benzene	Not Detected	
4-Jan	4	STEL	18" excavation, halfway between SD3-1 and SD2-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
4-Jan	5	STEL	18" excavation, halfway between SD3-1 and SD2-1	Benzene	Not Detected	
4-Jan	6	STEL	18" excavation, halfway between SD3-1 and SD2-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
4-Jan	7	STEL	36" SD excavation, middle of SW parking lot	Benzene	Not Detected	
4-Jan	8	STEL	36" SD excavation, middle of SW parking lot	Hydrocarbon (10 - 300 ppm)	Not Detected	
4-Jan	9	STEL	36" SD excavation, SW end of SW parking lot	Benzene	Not Detected	
4-Jan	10	STEL	36" SD excavation, SW end of SW parking lot	Hydrocarbon (10 - 300 ppm)	Not Detected	
4-Jan	11	TWA	Harley - Hoe Operator - 18" SD	Benzene	Not Detected	
4-Jan	11	TWA	Harley - Hoe Operator - 18" SD	Petroleum Distillate (Naphtha)	Not Detected	
4-Jan	12	TWA	Dave - Setting Pipe - 18" SD	Benzene	Not Detected	
4-Jan	12	TWA	Dave - Setting Pipe - 18" SD	Petroleum Distillate (Naphtha)	Not Detected	
4-Jan	13	TWA	Jim - Hoe Operator - 36" SD	Benzene	Not Detected	
4-Jan	13	TWA	Jim - Hoe Operator - 36" SD	Petroleum Distillate (Naphtha)	Not Detected	
4-Jan	14	TWA	Chip Bloomer - Wacker Environmental	Benzene	Not Detected	Wacker Personnel
4-Jan	14	TWA	Chip Bloomer - Wacker Environmental	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
4-Jan	15	TWA	Aaron Ruddick - IH Technician	Benzene	Not Detected	
4-Jan	15	TWA	Aaron Ruddick - IH Technician	Petroleum Distillate (Naphtha)	Not Detected	
4-Jan	15	TWA	Brian -Setting pipe - 36" SD - SW of road	PAH	Not Detected	
4-Jan	16	TWA	Jerry Linden - Wacker	Benzene	Not Detected	Wacker Personnel
4-Jan	16	TWA	Jerry Linden - Wacker	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
4-Jan	16	TWA	Jerry Linden - Wacker	PAH	Not Detected	Wacker Personnel
5-Jan	1	STEL	18" excavation, ~15' NE of SD2-1	Benzene	Not Detected	
5-Jan	2	STEL	18" excavation, ~15' NE of SD2-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
5-Jan	3	STEL	Storm sewer manhole SD7-1	Benzene	Not Detected	
5-Jan	4	STEL	Storm sewer manhole SD7-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
5-Jan	5	TWA	Dave - Setting Pipe - 18" SD	Benzene	Not Detected	
5-Jan	5	TWA	Dave - Setting Pipe - 18" SD	Petroleum Distillate (Naphtha)	Not Detected	
5-Jan	6	TWA	Brian -Setting pipe - 36" SD	Benzene	Not Detected	
5-Jan	6	TWA	Brian -Setting pipe - 36" SD	Petroleum Distillate (Naphtha)	Not Detected	
5-Jan	6	TWA	Brian -Setting pipe - 36" SD	PAH	Not Detected	
5-Jan	7	TWA	Jerry Linden	Benzene	Not Detected	Wacker Personnel
5-Jan	7	TWA	Jerry Linden	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
5-Jan	7	TWA	Jerry Linden	PAH	Not Detected	Wacker Personnel
6-Jan	1	STEL	24" Storm sewer immediately NW of SD7-1	Benzene	Not Detected	
6-Jan	2	STEL	24" Storm sewer immediately NW of SD7-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
6-Jan	3	TWA	Jerry Linden	Benzene	Not Detected	Wacker Personnel
6-Jan	3	TWA	Jerry Linden	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
6-Jan	3	TWA	Jerry Linden	PAH	Not Detected	Wacker Personnel

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28-Dec	6	STEL	10" fire main, 2nd 90 deg. angle	Hydrocarbon (10 - 300 ppm)	Not Detected	
28-Dec	7	TWA	Brian -Setting pipe - 36" SD - NW of road	Benzene	Not Detected	
28-Dec	7	TWA	Brian -Setting pipe - 36" SD - NW of road	Petroleum Distillate (Naphtha)	Not Detected	
28-Dec	7	TWA	Brian -Setting pipe - 36" SD - NW of road	PAH	Not Detected	
28-Dec	8	TWA	Harley - Hoe Operator - 36" SD - NW of road	Benzene	Not Detected	
28-Dec	8	TWA	Harley - Hoe Operator - 36" SD - NW of road	Petroleum Distillate (Naphtha)	Not Detected	
28-Dec	9	TWA	Jerry Linden - 36" SD - NW of road	Benzene	Not Detected	Wacker Personnel
28-Dec	9	TWA	Jerry Linden - 36" SD - NW of road	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
28-Dec	9	TWA	Jerry Linden - 36" SD - NW of road	PAH	Not Detected	Wacker Personnel
29-Dec	1	STEL	36" SD excavation , SD1-3	Hydrocarbon (10 - 300 ppm)	Not Detected	
29-Dec	2	STEL	36" SD excavation , SD1-3	Benzene	Trace	Probable Interference
29-Dec	3	STEL	36" SD excavation , SD1-3	Hydrocarbon (10 - 300 ppm)	Not Detected	
29-Dec	4	TWA	Brian -Setting pipe - 36" SD - manhole SD1-3	Benzene	Not Detected	
29-Dec	4	TWA	Brian -Setting pipe - 36" SD - manhole SD1-3	Petroleum Distillate (Naphtha)	Not Detected	
29-Dec	4	TWA	Brian -Setting pipe - 36" SD - manhole SD1-3	PAH	Not Detected	
29-Dec	5	TWA	Harley - Hoe Operator - 36" SD - manhole SD1-3	Benzene	Not Detected	
29-Dec	5	TWA	Harley - Hoe Operator - 36" SD - manhole SD1-3	Petroleum Distillate (Naphtha)	Not Detected	
29-Dec	6	TWA	Jerry Linden - 36" SD - manhole SD1-3	Benzene	Not Detected	Wacker Personnel
29-Dec	6	TWA	Jerry Linden - 36" SD - manhole SD1-3	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
29-Dec	6	TWA	Jerry Linden - 36" SD - manhole SD1-3	PAH	Not Detected	Wacker Personnel
30-Dec	1	TWA	Brian -Setting pipe - 36" SD - SW of road	Benzene	Not Detected	
30-Dec	1	TWA	Brian -Setting pipe - 36" SD - SW of road	Petroleum Distillate (Naphtha)	9.0 ppm	TWA limit = 400 ppm
30-Dec	1	TWA	Brian -Setting pipe - 36" SD - SW of road	PAH	Not Detected	
30-Dec	2	TWA	Jim - Hoe Operator - 36" SD - SW of road	Benzene	Not Detected	
30-Dec	2	TWA	Jim - Hoe Operator - 36" SD - SW of road	Petroleum Distillate (Naphtha)	Not Detected	
31-Dec	None					Project Down - Weekend
1-Jan	None					Project Down - Weekend
2-Jan	None					Project Down - Holiday
3-Jan	1	STEL	Bore pit to plan-modified SS manhole (near trailers)	Benzene	Not Detected	
3-Jan	2	STEL	Bore pit to plan-modified SS manhole (near trailers)	Hydrocarbon (10 - 300 ppm)	Not Detected	
3-Jan	3	STEL	36" SD excavation, NE end of SW parking lot	Benzene	Not Detected	
3-Jan	4	STEL	36" SD excavation, NE end of SW parking lot	Hydrocarbon (10 - 300 ppm)	Not Detected	
3-Jan	5	TWA	Harley - Hoe Operator - 18 " SD	Benzene	Not Detected	
3-Jan	5	TWA	Harley - Hoe Operator - 18 " SD	Petroleum Distillate (Naphtha)	Not Detected	
3-Jan	6	TWA	Dave - Setting Pipe - 18" SD	Benzene	Not Detected	
3-Jan	6	TWA	Dave - Setting Pipe - 18" SD	Petroleum Distillate (Naphtha)	Not Detected	
3-Jan	7	TWA	Jim - Hoe Operator - 36" SD	Benzene	Not Detected	
3-Jan	7	TWA	Jim - Hoe Operator - 36" SD	Petroleum Distillate (Naphtha)	Not Detected	
3-Jan	8	TWA	Brian -Setting pipe - 36" SD - SW of road	Benzene	Not Detected	
3-Jan	8	TWA	Brian -Setting pipe - 36" SD - SW of road	Petroleum Distillate (Naphtha)	Not Detected	
3-Jan	8	TWA	Brian -Setting pipe - 36" SD - SW of road	PAH	Not Detected	
3-Jan	9	TWA	Jerry Linden - 36" SD	Benzene	Not Detected	Wacker Personnel
3-Jan	9	TWA	Jerry Linden - 36" SD	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel

21-Dec	8	TWA	Brian -Setting pipe - 18" SD SE of Manhole SD3-1	Benzene	Not Detected	
21-Dec	8	TWA	Brian -Setting pipe - 18" SD SE of Manhole SD3-1	Petroleum Distillate (Naphtha)	Not Detected	
21-Dec	8	TWA	Brian -Setting pipe - 18" SD SE of Manhole SD3-1	PAH	0.00016 mg/Cu M	TWA limit = 0.2 mg/Cu M
21-Dec	9	TWA	Harley - Hoe Operator - 18" SD SE of Manhole SD3-1	Benzene	Not Detected	
21-Dec	9	TWA	Harley - Hoe Operator - 18" SD SE of Manhole SD3-1	Petroleum Distillate (Naphtha)	Not Detected	
22-Dec	1	STEL	SD manhole SD3-1	Benzene	Not Detected	
22-Dec	2	STEL	SD manhole SD3-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
22-Dec	3	TWA	Brian -Setting pipe - 18" SD Manhole SD3-1	Benzene	Not Detected	
22-Dec	3	TWA	Brian -Setting pipe - 18" SD Manhole SD3-1	Petroleum Distillate (Naphtha)	Not Detected	
22-Dec	3	TWA	Brian -Setting pipe - 18" SD Manhole SD3-1	PAH	0.00004 mg/Cu M	TWA limit = 0.2 mg/Cu M
22-Dec	4	TWA	Harley - Hoe Operator - 18" SD Manhole SD3-1	Benzene	Not Detected	
22-Dec	4	TWA	Harley - Hoe Operator - 18" SD Manhole SD3-1	Petroleum Distillate (Naphtha)	Not Detected	
23-Dec	1	STEL	SW of SD manhole SD3-1	Benzene	Not Detected	
23-Dec	2	STEL	SW of SD manhole SD3-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
23-Dec	3	TWA	Brian -Setting pipe - 18" SD S of Manhole SD3-1	Benzene	Not Detected	
23-Dec	3	TWA	Brian -Setting pipe - 18" SD S of Manhole SD3-1	Petroleum Distillate (Naphtha)	Not Detected	
23-Dec	3	TWA	Brian -Setting pipe - 18" SD S of Manhole SD3-1	PAH	Not Detected	
23-Dec	4	TWA	Harley - Hoe Operator - 18" SD S of Manhole SD3-1	Benzene	Not Detected	
23-Dec	4	TWA	Harley - Hoe Operator - 18" SD S of Manhole SD3-1	Petroleum Distillate (Naphtha)	Not Detected	
24-Dec	None					Project Down - Weekend
25-Dec	None					Project Down - Weekend
26-Dec	1	STEL	36" SD excavation, NW end of parking lot	Benzene	Not Detected	Holiday
26-Dec	2	STEL	36" SD excavation, NW end of parking lot	Hydrocarbon (10 - 300 ppm)	Not Detected	
26-Dec	3	STEL	Potable water tie in (near trailers)	Benzene	Not Detected	
26-Dec	4	STEL	Potable water tie in (near trailers)	Hydrocarbon (10 - 300 ppm)	Not Detected	
26-Dec	5	TWA	Brian -Setting pipe - 36" SD - NW end of parking lot	Benzene	Not Detected	
26-Dec	5	TWA	Brian -Setting pipe - 36" SD - NW end of parking lot	Petroleum Distillate (Naphtha)	Not Detected	
26-Dec	6	TWA	Harley - Hoe Operator - 36" SD - NW end of parking lot	Benzene	Not Detected	
26-Dec	6	TWA	Harley - Hoe Operator - 36" SD - NW end of parking lot	Petroleum Distillate (Naphtha)	Not Detected	
26-Dec	7	TWA	Jerry Linden - 36" SD - NW end of parking lot	Benzene	Not Detected	Wacker Personnel
26-Dec	7	TWA	Jerry Linden - 36" SD - NW end of parking lot	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
26-Dec	7	TWA	Jerry Linden - 36" SD - NW end of parking lot	PAH	Not Detected	Wacker Personnel
27-Dec	1	STEL	36" SD excavation, center of parking lot	Hydrocarbon (10 - 300 ppm)	Not Detected	
27-Dec	2	STEL	36" SD excavation, center of parking lot	Hydrocarbon (10 - 300 ppm)	Not Detected	
27-Dec	3	STEL	Electrical vault	Benzene	Trace	Probable Interference
27-Dec	4	TWA	Jerry Linden - 36" SD - NW end of parking lot	Benzene	Not Detected	Wacker Personnel
27-Dec	4	TWA	Jerry Linden - 36" SD - NW end of parking lot	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
27-Dec	5	TWA	Brian -Setting pipe - 36" SD - NW end of parking lot	PAH	Not Detected	
28-Dec	1	STEL	36" SD excavation, NW of road	Benzene	Trace	Probable Interference
28-Dec	2	STEL	36" SD excavation, NW of road	Hydrocarbon (10 - 300 ppm)	Not Detected	
28-Dec	3	STEL	36" SD excavation, NW of road	Benzene	Trace	Probable Interference
28-Dec	4	STEL	36" SD excavation, NW of road	Hydrocarbon (10 - 300 ppm)	Not Detected	
28-Dec	5	STEL	10" fire main, 2nd 90 deg. angle	Benzene	Trace	Probable Interference

15-Dec	1	TWA	Dudley Gee - Grade Checker - FAB 2 area	Benzene	Not Detected	
15-Dec	1	TWA	Dudley Gee - Grade Checker - FAB 2 area	Petroleum Distillate (Naphtha)	Not Detected	
15-Dec	2	TWA	Jason Bloom - Grade Checker - FAB 2 area	Benzene	Not Detected	
15-Dec	2	TWA	Jason Bloom - Grade Checker - FAB 2 area	Petroleum Distillate (Naphtha)	Not Detected	
15-Dec	3	STEL	In FAB 2 Building Footprint - Downwind from Excav. AM	Benzene	Not Detected	
15-Dec	4	STEL	In FAB 2 Building Footprint - Downwind from Excav. AM	Hydrocarbon (10 - 300 ppm)	Trace	Estimated @ less than 1.0 ppm
15-Dec	5	STEL	In FAB 2 Building Footprint - Downwind from Excav. PM	Benzene	Not Detected	
15-Dec	6	STEL	In FAB 2 Building Footprint - Downwind from Excav. PM	Hydrocarbon (10 - 300 ppm)	Not Detected	
16-Dec	1	TWA	Dudley Gee - Grade Checker - FAB 2 area	Benzene	Not Detected	
16-Dec	1	TWA	Dudley Gee - Grade Checker - FAB 2 area	Petroleum Distillate (Naphtha)	Not Detected	
16-Dec	2	TWA	Jason Bloom - Grade Checker - FAB 2 area	Benzene	Not Detected	
16-Dec	2	TWA	Jason Bloom - Grade Checker - FAB 2 area	Petroleum Distillate (Naphtha)	Not Detected	
16-Dec	3	STEL	In FAB 2 Building Footprint - Downwind from Excav. AM	Benzene	Not Detected	
16-Dec	4	STEL	In FAB 2 Building Footprint - Downwind from Excav. AM	Hydrocarbon (10 - 300 ppm)	Not Detected	
16-Dec	5	STEL	In FAB 2 Building Footprint - Downwind from Excav. PM	Benzene	Not Detected	
16-Dec	6	STEL	In FAB 2 Building Footprint - Downwind from Excav. PM	Hydrocarbon (10 - 300 ppm)	Not Detected	
17-Dec	None					Project Down - Weekend
18-Dec	None					Project Down - Weekend
19-Dec	1	TWA	Brian -Setting pipe - 36" SD, North end	PAH	Not Detected	
19-Dec	2	STEL	36" SD manhole SD2-3	Benzene	Not Detected	
20-Dec	1	STEL	SD manhole SD2-3	Benzene	Not Detected	
20-Dec	2	STEL	SD manhole SD2-3	Benzene	Not Detected	
20-Dec	3	STEL	SD manhole SD2-3	Benzene	Not Detected	
20-Dec	4	STEL	SD manhole SD2-3	Hydrocarbon (10 - 300 ppm)	Not Detected	
20-Dec	5	STEL	SD manhole SD2-3	Hydrocarbon (10 - 300 ppm)	Not Detected	
20-Dec	6	STEL	SD manhole SD2-3	Hydrocarbon (10 - 300 ppm)	Not Detected	
20-Dec	7	STEL	SD manhole SD2-3	Hydrocarbon (100 - 2500 ppm)	Not Detected	
20-Dec	8	STEL	SD manhole SD2-3	Hydrocarbon (100 - 2500 ppm)	Not Detected	
20-Dec	9	STEL	SD manhole SD2-3	Hydrocarbon (100 - 2500 ppm)	Not Detected	
20-Dec	10	TWA	Brian -Setting pipe - 36" SD, North end	Benzene	Not Detected	
20-Dec	10	TWA	Brian -Setting pipe - 36" SD, North end	Petroleum Distillate (Naphtha)	Not Detected	
20-Dec	10	TWA	Brian -Setting pipe - 36" SD, North end	PAH	0.00012 mg/Cu M	TWA limit = 0.2 mg/Cu M
20-Dec	11	TWA	Dave - Top Man, 36" SD, North end	Benzene	Not Detected	
20-Dec	11	TWA	Dave - Top Man, 36" SD, North end	Petroleum Distillate (Naphtha)	Not Detected	
20-Dec	12	TWA	Harley - Hoe Operator - 36" SD, North end	Benzene	Not Detected	
20-Dec	12	TWA	Harley - Hoe Operator - 36" SD, North end	Petroleum Distillate (Naphtha)	Not Detected	
21-Dec	1	STEL	SE of manhole SD3-1	Benzene	Not Detected	
21-Dec	2	STEL	SE of manhole SD3-1	Benzene	Not Detected	
21-Dec	3	STEL	SE of manhole SD3-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
21-Dec	4	STEL	SE of manhole SD3-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
21-Dec	5	STEL	SE of manhole SD3-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
21-Dec	6	STEL	SE of manhole SD3-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
21-Dec	7	STEL	SE of manhole SD3-1	Hydrocarbon (10 - 300 ppm)	Not Detected	

COFFMAN EXCAVATION
WACKER SILTRONICS FAB 2 PROJECT
AIR MONITORING RESULTS
Through 1/5/1995

DATE	NUMBER	TYPE	LOCATION OR PERSONNEL	AIR CONTAMINANT	CONCENTRATION (PPM)	COMMENTS
2-Dec	1	TWA	Brian - Setting pipe	Benzene	Not Detected	
2-Dec	2	TWA	Jim - Hoe Operator	Benzene	Not Detected	
2-Dec	3	STEL	24" SD @ West end of loading dock - AM	Benzene	Not Detected	
2-Dec	4	STEL	24" SD @ West end of loading dock - PM	Benzene	Not Detected	
5-Dec	1	TWA	Jim - Hoe Operator	Benzene	Not Detected	
5-Dec	2	TWA	Brian - Setting pipe	Benzene	Not Detected	
5-Dec	3	STEL	24" SD SE of waste storage building - AM	Benzene	Not Detected	
5-Dec	4	STEL	24" SD SE of waste storage building - PM	Benzene	Not Detected	
6-Dec	1	TWA	Area sample in FAB 2 footprint	Benzene	Not Detected	
6-Dec	2	TWA	Area sample in FAB 2 footprint	Benzene	Not Detected	
6-Dec	3	STEL	FAB 2 footprint near 24" SD South of waste storage	Benzene	Not Detected	
6-Dec	4	STEL	FAB 2 footprint near preload piles	Benzene	Not Detected	
7-Dec	1	TWA	Brian - Setting pipe	Benzene	Not Detected	
7-Dec	2	TWA	Jim - Hoe Operator	Benzene	Not Detected	
7-Dec	3	STEL	24" SD SW of waste storage building - AM	Benzene	Not Detected	
8-Dec	1	TWA	Brian - Setting pipe	Benzene	Not Detected	
8-Dec	2	TWA	Jim - Hoe Operator	Benzene	Not Detected	
8-Dec	3	STEL	24" SD South of gas pad (east of slab) AM	Benzene	0.25 ppm	STEL limit = 5.0 ppm
8-Dec	4	STEL	24" SD South of gas pad (under slab)	Benzene	Not Detected	
8-Dec	5	TWA	24" SD South of gas pad (east of slab)	Light Hydrocarbon (naphtha)	Not Detected	
9-Dec	1	TWA	Brian - Setting pipe	Benzene	Not Detected	
9-Dec	2	TWA	Jim - Hoe Operator	Benzene	Not Detected	
9-Dec	3	STEL	18" SD - South end manhole SD2-1	Benzene	Not Detected	
9-Dec	4	STEL	15" SD west end manhole SD1-1	Benzene	Not Detected	
10-Dec	None					Project Down - Weekend
11-Dec	None					Project Down - Weekend
12-Dec	None					Project Down - Evaluating site
13-Dec	None					Project Down - Evaluating site
14-Dec	1	TWA	Dudley Gee - Grade Checker - FAB 2 area	Benzene	Not Detected	
14-Dec	1	TWA	Dudley Gee - Grade Checker - FAB 2 area	Petroleum Distillate (Naphtha)	Not Detected	
14-Dec	2	TWA	Jeremy Conroy - Hoe operator - FAB 2 area	Benzene	Not Detected	
14-Dec	2	TWA	Jeremy Conroy - Hoe operator - FAB 2 area	Petroleum Distillate (Naphtha)	Not Detected	
14-Dec	3	STEL	In FAB 2 Building Footprint - Downwind from Excav. AM	Benzene	Not Detected	
14-Dec	4	STEL	In FAB 2 Building Footprint - Downwind from Excav. AM	Hydrocarbon (10 - 300 ppm)	Not Detected	
14-Dec	5	STEL	In FAB 2 Building Footprint - Downwind from Excav. PM	Benzene	Not Detected	
14-Dec	6	STEL	In FAB 2 Building Footprint - Downwind from Excav. PM	Hydrocarbon (10 - 300 ppm)	Not Detected	

COFFMAN EXCAVATION
WACKER SILTRONICS FAB 2 PROJECT
AIR MONITORING RESULTS
Through 1/2/1995

DATE	NUMBER	TYPE	LOCATION OR PERSONNEL	AIR CONTAMINANT	CONCENTRATION (PPM)	COMMENTS
2-Dec	1	TWA	Brian - Setting pipe	Benzene	Not Detected	
2-Dec	2	TWA	Jim - Hoe Operator	Benzene	Not Detected	
2-Dec	3	STEL	24" SD @ West end of loading dock - AM	Benzene	Not Detected	
2-Dec	4	STEL	24" SD @ West end of loading dock - PM	Benzene	Not Detected	
5-Dec	1	TWA	Jim - Hoe Operator	Benzene	Not Detected	
5-Dec	2	TWA	Brian - Setting pipe	Benzene	Not Detected	
5-Dec	3	STEL	24" SD SE of waste storage building - AM	Benzene	Not Detected	
5-Dec	4	STEL	24" SD SE of waste storage building - PM	Benzene	Not Detected	
6-Dec	1	TWA	Area sample in FAB 2 footprint	Benzene	Not Detected	
6-Dec	2	TWA	Area sample in FAB 2 footprint	Benzene	Not Detected	
6-Dec	3	STEL	FAB 2 footprint near 24" SD South of waste storage	Benzene	Not Detected	
6-Dec	4	STEL	FAB 2 footprint near preload piles	Benzene	Not Detected	
7-Dec	1	TWA	Brian - Setting pipe	Benzene	Not Detected	
7-Dec	2	TWA	Jim - Hoe Operator	Benzene	Not Detected	
7-Dec	3	STEL	24" SD SW of waste storage building - AM	Benzene	Not Detected	
8-Dec	1	TWA	Brian - Setting pipe	Benzene	Not Detected	
8-Dec	2	TWA	Jim - Hoe Operator	Benzene	Not Detected	
8-Dec	3	STEL	24" SD South of gas pad (east of slab) AM	Benzene	0.25 ppm	STEL limit = 5.0 ppm
8-Dec	4	STEL	24" SD South of gas pad (under slab)	Benzene	Not Detected	
8-Dec	5	TWA	24" SD South of gas pad (east of slab)	Light Hydrocarbon (naphtha)	Not Detected	
9-Dec	1	TWA	Brian - Setting pipe	Benzene	Not Detected	
9-Dec	2	TWA	Jim - Hoe Operator	Benzene	Not Detected	
9-Dec	3	STEL	18" SD - South end manhole SD2-1	Benzene	Not Detected	
9-Dec	4	STEL	15" SD west end manhole SD1-1	Benzene	Not Detected	
10-Dec	None					Project Down - Weekend
11-Dec	None					Project Down - Weekend
12-Dec	None					Project Down - Evaluating site
13-Dec	None					Project Down - Evaluating site
14-Dec	1	TWA	Dudley Gee - Grade Checker - FAB 2 area	Benzene	Not Detected	
14-Dec	1	TWA	Dudley Gee - Grade Checker - FAB 2 area	Petroleum Distillate (Naphtha)	Not Detected	
14-Dec	2	TWA	Jeremy Conroy - Hoe operator - FAB 2 area	Benzene	Not Detected	
14-Dec	2	TWA	Jeremy Conroy - Hoe operator - FAB 2 area	Petroleum Distillate (Naphtha)	Not Detected	
14-Dec	3	STEL	In FAB 2 Building Footprint - Downwind from Excav. AM	Benzene	Not Detected	
14-Dec	4	STEL	In FAB 2 Building Footprint - Downwind from Excav. AM	Hydrocarbon (10 - 300 ppm)	Not Detected	
14-Dec	5	STEL	In FAB 2 Building Footprint - Downwind from Excav. PM	Benzene	Not Detected	

14-Dec	6	STEL	In FAB 2 Building Footprint - Downwind from Excav. PM	Hydrocarbon (10 - 300 ppm)	Not Detected	
15-Dec	1	TWA	Dudley Gee - Grade Checker - FAB 2 area	Benzene	Not Detected	
15-Dec	1	TWA	Dudley Gee - Grade Checker - FAB 2 area	Petroleum Distillate (Naphtha)	Not Detected	
15-Dec	2	TWA	Jason Bloom - Grade Checker - FAB 2 area	Benzene	Not Detected	
15-Dec	2	TWA	Jason Bloom - Grade Checker - FAB 2 area	Petroleum Distillate (Naphtha)	Not Detected	
15-Dec	3	STEL	In FAB 2 Building Footprint - Downwind from Excav. AM	Benzene	Not Detected	
15-Dec	4	STEL	In FAB 2 Building Footprint - Downwind from Excav. AM	Hydrocarbon (10 - 300 ppm)	Trace	Estimated @ less than 1.0 ppm
15-Dec	5	STEL	In FAB 2 Building Footprint - Downwind from Excav. PM	Benzene	Not Detected	
15-Dec	6	STEL	In FAB 2 Building Footprint - Downwind from Excav. PM	Hydrocarbon (10 - 300 ppm)	Not Detected	
16-Dec	1	TWA	Dudley Gee - Grade Checker - FAB 2 area	Benzene	Not Detected	
16-Dec	1	TWA	Dudley Gee - Grade Checker - FAB 2 area	Petroleum Distillate (Naphtha)	Not Detected	
16-Dec	2	TWA	Jason Bloom - Grade Checker - FAB 2 area	Benzene	Not Detected	
16-Dec	2	TWA	Jason Bloom - Grade Checker - FAB 2 area	Petroleum Distillate (Naphtha)	Not Detected	
16-Dec	3	STEL	In FAB 2 Building Footprint - Downwind from Excav. AM	Benzene	Not Detected	
16-Dec	4	STEL	In FAB 2 Building Footprint - Downwind from Excav. AM	Hydrocarbon (10 - 300 ppm)	Not Detected	
16-Dec	5	STEL	In FAB 2 Building Footprint - Downwind from Excav. PM	Benzene	Not Detected	
16-Dec	6	STEL	In FAB 2 Building Footprint - Downwind from Excav. PM	Hydrocarbon (10 - 300 ppm)	Not Detected	
17-Dec	None					Project Down - Weekend
18-Dec	None					Project Down - Weekend
19-Dec	1	TWA	Brian -Setting pipe - 36" SD, North end	PAH	Not Detected	
19-Dec	2	STEL	36" SD manhole SD2-3	Benzene	Not Detected	
20-Dec	1	STEL	SD manhole SD2-3	Benzene	Not Detected	
20-Dec	2	STEL	SD manhole SD2-3	Benzene	Not Detected	
20-Dec	3	STEL	SD manhole SD2-3	Benzene	Not Detected	
20-Dec	4	STEL	SD manhole SD2-3	Hydrocarbon (10 - 300 ppm)	Not Detected	
20-Dec	5	STEL	SD manhole SD2-3	Hydrocarbon (10 - 300 ppm)	Not Detected	
20-Dec	6	STEL	SD manhole SD2-3	Hydrocarbon (10 - 300 ppm)	Not Detected	
20-Dec	7	STEL	SD manhole SD2-3	Hydrocarbon (100 - 2500 ppm)	Not Detected	
20-Dec	8	STEL	SD manhole SD2-3	Hydrocarbon (100 - 2500 ppm)	Not Detected	
20-Dec	9	STEL	SD manhole SD2-3	Hydrocarbon (100 - 2500 ppm)	Not Detected	
20-Dec	10	TWA	Brian -Setting pipe - 36" SD, North end	Benzene	Not Detected	
20-Dec	10	TWA	Brian -Setting pipe - 36" SD, North end	Petroleum Distillate (Naphtha)	Not Detected	
20-Dec	10	TWA	Brian -Setting pipe - 36" SD, North end	PAH	0.00012 mg/Cu M	TWA limit = 0.2 mg/Cu M
20-Dec	11	TWA	Dave - Top Man, 36" SD, North end	Benzene	Not Detected	
20-Dec	11	TWA	Dave - Top Man, 36" SD, North end	Petroleum Distillate (Naphtha)	Not Detected	
20-Dec	11	TWA	Dave - Top Man, 36" SD, North end	PAH	Not Detected	
20-Dec	12	TWA	Harley - Hoe Operator - 36" SD, North end	Benzene	Not Detected	
20-Dec	12	TWA	Harley - Hoe Operator - 36" SD, North end	Petroleum Distillate (Naphtha)	Not Detected	
20-Dec	12	TWA	Harley - Hoe Operator - 36" SD, North end	PAH	Not Detected	
21-Dec	1	STEL	SE of manhole SD3-1	Benzene	Not Detected	
21-Dec	2	STEL	SE of manhole SD3-1	Benzene	Not Detected	
21-Dec	3	STEL	SE of manhole SD3-1	Hydrocarbon (10 - 300 ppm)	Not Detected	

21-Dec	4	STEL	SE of manhole SD3-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
21-Dec	5	STEL	SE of manhole SD3-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
21-Dec	6	STEL	SE of manhole SD3-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
21-Dec	7	STEL	SE of manhole SD3-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
21-Dec	8	TWA	Brian -Setting pipe - 18" SD SE of Manhole SD3-1	Benzene	Not Detected	
21-Dec	8	TWA	Brian -Setting pipe - 18" SD SE of Manhole SD3-1	Petroleum Distillate (Naphtha)	Not Detected	
21-Dec	8	TWA	Brian -Setting pipe - 18" SD SE of Manhole SD3-1	PAH	0.00016 mg/Cu M	TWA limit = 0.2 mg/Cu M
21-Dec	9	TWA	Harley - Hoe Operator - 18" SD SE of Manhole SD3-1	Benzene	Not Detected	
21-Dec	9	TWA	Harley - Hoe Operator - 18" SD SE of Manhole SD3-1	Petroleum Distillate (Naphtha)	Not Detected	
22-Dec	1	STEL	SD manhole SD3-1	Benzene	Not Detected	
22-Dec	2	STEL	SD manhole SD3-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
22-Dec	3	TWA	Brian -Setting pipe - 18" SD Manhole SD3-1	Benzene	Not Detected	
22-Dec	3	TWA	Brian -Setting pipe - 18" SD Manhole SD3-1	Petroleum Distillate (Naphtha)	Not Detected	
22-Dec	3	TWA	Brian -Setting pipe - 18" SD Manhole SD3-1	PAH	0.00004 mg/Cu M	TWA limit = 0.2 mg/Cu M
22-Dec	4	TWA	Harley - Hoe Operator - 18" SD Manhole SD3-1	Benzene	Not Detected	
22-Dec	4	TWA	Harley - Hoe Operator - 18" SD Manhole SD3-1	Petroleum Distillate (Naphtha)	Not Detected	
23-Dec	1	STEL	SW of SD manhole SD3-1	Benzene	Not Detected	
23-Dec	2	STEL	SW of SD manhole SD3-1	Hydrocarbon (10 - 300 ppm)	Not Detected	
23-Dec	3	TWA	Brian -Setting pipe - 18" SD S of Manhole SD3-1	Benzene	Not Detected	
23-Dec	3	TWA	Brian -Setting pipe - 18" SD S of Manhole SD3-1	Petroleum Distillate (Naphtha)	Not Detected	
23-Dec	3	TWA	Brian -Setting pipe - 18" SD S of Manhole SD3-1	PAH	Not Detected	
23-Dec	4	TWA	Harley - Hoe Operator - 18" SD S of Manhole SD3-1	Benzene	Not Detected	
23-Dec	4	TWA	Harley - Hoe Operator - 18" SD S of Manhole SD3-1	Petroleum Distillate (Naphtha)	Not Detected	
24-Dec	None					Project Down - Weekend
25-Dec	None					Project Down - Weekend
26-Dec	1	STEL	36" SD excavation, NW end of parking lot	Benzene	Not Detected	Holiday
26-Dec	2	STEL	36" SD excavation, NW end of parking lot	Hydrocarbon (10 - 300 ppm)	Not Detected	
26-Dec	3	STEL	Potable water tie in (near trailers)	Benzene	Not Detected	
26-Dec	4	STEL	Potable water tie in (near trailers)	Hydrocarbon (10 - 300 ppm)	Not Detected	
26-Dec	5	TWA	Brian -Setting pipe - 36" SD - NW end of parking lot	Benzene	Not Detected	
26-Dec	5	TWA	Brian -Setting pipe - 36" SD - NW end of parking lot	Petroleum Distillate (Naphtha)	Not Detected	
26-Dec	6	TWA	Harley - Hoe Operator - 36" SD - NW end of parking lot	Benzene	Not Detected	
26-Dec	6	TWA	Harley - Hoe Operator - 36" SD - NW end of parking lot	Petroleum Distillate (Naphtha)	Not Detected	
26-Dec	7	TWA	Jerry Linden - 36" SD - NW end of parking lot	Benzene	Not Detected	Wacker Personnel
26-Dec	7	TWA	Jerry Linden - 36" SD - NW end of parking lot	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
26-Dec	7	TWA	Jerry Linden - 36" SD - NW end of parking lot	PAH	Not Detected	Wacker Personnel
27-Dec	1	STEL	36" SD excavation, center of parking lot	Hydrocarbon (10 - 300 ppm)	Not Detected	
27-Dec	2	STEL	36" SD excavation, center of parking lot	Hydrocarbon (10 - 300 ppm)	Not Detected	
27-Dec	3	STEL	Electrical vault	Benzene	Trace	Probable Interference
27-Dec	4	TWA	Jerry Linden - 36" SD - NW end of parking lot	Benzene	Not Detected	Wacker Personnel
27-Dec	4	TWA	Jerry Linden - 36" SD - NW end of parking lot	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
27-Dec	5	TWA	Brian -Setting pipe - 36" SD - NW end of parking lot	PAH	Not Detected	

28-Dec	1	STEL	36" SD excavation, NW of road	Benzene	Trace	Probable Interference
28-Dec	2	STEL	36" SD excavation, NW of road	Hydrocarbon (10 - 300 ppm)	Not Detected	
28-Dec	3	STEL	36" SD excavation, NW of road	Benzene	Trace	Probable Interference
28-Dec	4	STEL	36" SD excavation, NW of road	Hydrocarbon (10 - 300 ppm)	Not Detected	
28-Dec	5	STEL	10" fire main, 2nd 90 deg. angle	Benzene	Trace	Probable Interference
28-Dec	6	STEL	10" fire main, 2nd 90 deg. angle	Hydrocarbon (10 - 300 ppm)	Not Detected	
28-Dec	7	TWA	Brian -Setting pipe - 36" SD - NW of road	Benzene	Not Detected	
28-Dec	7	TWA	Brian -Setting pipe - 36" SD - NW of road	Petroleum Distillate (Naphtha)	Not Detected	
28-Dec	7	TWA	Brian -Setting pipe - 36" SD - NW of road	PAH	Not Detected	
28-Dec	8	TWA	Harley - Hoe Operator - 36" SD - NW of road	Benzene	Not Detected	
28-Dec	8	TWA	Harley - Hoe Operator - 36" SD - NW of road	Petroleum Distillate (Naphtha)	Not Detected	
28-Dec	9	TWA	Jerry Linden - 36" SD - NW of road	Benzene	Not Detected	Wacker Personnel
28-Dec	9	TWA	Jerry Linden - 36" SD - NW of road	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
28-Dec	9	TWA	Jerry Linden - 36" SD - NW of road	PAH	Not Detected	Wacker Personnel
29-Dec	1	STEL	36" SD excavation , SD1-3	Hydrocarbon (10 - 300 ppm)	Not Detected	
29-Dec	2	STEL	36" SD excavation , SD1-3	Benzene	Trace	Probable Interference
29-Dec	3	STEL	36" SD excavation , SD1-3	Hydrocarbon (10 - 300 ppm)	Not Detected	
29-Dec	4	TWA	Brian -Setting pipe - 36" SD - manhole SD1-3	Benzene	Not Detected	
29-Dec	4	TWA	Brian -Setting pipe - 36" SD - manhole SD1-3	Petroleum Distillate (Naphtha)	Not Detected	
29-Dec	4	TWA	Brian -Setting pipe - 36" SD - manhole SD1-3	PAH	Not Detected	
29-Dec	5	TWA	Harley - Hoe Operator - 36" SD - manhole SD1-3	Benzene	Not Detected	
29-Dec	5	TWA	Harley - Hoe Operator - 36" SD - manhole SD1-3	Petroleum Distillate (Naphtha)	Not Detected	
29-Dec	6	TWA	Jerry Linden - 36" SD - manhole SD1-3	Benzene	Not Detected	Wacker Personnel
29-Dec	6	TWA	Jerry Linden - 36" SD - manhole SD1-3	Petroleum Distillate (Naphtha)	Not Detected	Wacker Personnel
29-Dec	6	TWA	Jerry Linden - 36" SD - manhole SD1-3	PAH	Not Detected	Wacker Personnel
30-Dec	1	TWA	Brian -Setting pipe - 36" SD - SW of road	Benzene	Not Detected	
30-Dec	1	TWA	Brian -Setting pipe - 36" SD - SW of road	Petroleum Distillate (Naphtha)	9.0 ppm	TWA limit = 400 ppm
30-Dec	1	TWA	Brian -Setting pipe - 36" SD - SW of road	PAH	Not Detected	
30-Dec	2	TWA	Jim - Hoe Operator - 36" SD - SW of road	Benzene	Not Detected	
30-Dec	2	TWA	Jim - Hoe Operator - 36" SD - SW of road	Petroleum Distillate (Naphtha)	Not Detected	
31-Dec	None					Project Down - Weekend
1-Jan	None					Project Down - Weekend
2-Jan	None					Project Down - Holiday

HOFFMAN CONSTRUCTION COMPANY
OF OREGON

RECORD OF CONSTRUCTION COORDINATION MEETING

WACKER SILTRONIC CORPORATION
FAB 2 SILICON MANUFACTURING FACILITY

Our Job No. 9491

Meeting No.: 9
Date: December 15, 1994
Place: Project Field Office

Attendees:

Jerry Linden	Wacker	Tom Stein	Hoffman
Ann Schowalter	Wacker	Jim Dill	Hoffman
Chip Bloomer	Wacker	Mike Gardino	Hoffman
Cathryn Young	IDC	Brian Clarke	Hoffman

9-1-0 ACTION ITEMS

9-1-1 Submittals and DC/VRs
HCC requests review and return of outstanding submittals and DC/VRs per the attached listing.

Action: IDC
Date: 12/22/94

9-1-2 Natural Gas Service
Current design includes a 6" feeder line to Fab 2 off of the 4" main serving Fab 1. WSC requests that IDC confirm size requirement.

Action: IDC
Date: 12/22/94

1300 S.W. SIXTH AVENUE P.O. BOX 1300 PORTLAND, OREGON 97207 503 · 221 · 8811
LICENSE NO. 28417 FAX 503 · 221 · 8934

SCOEPA00022004

9-1-3 T.I. Construction Documents

HCC requests that IDC have a set of T.I. documents in their office available for HCC review between now and issue date, December 22, 1994.

Action: IDC
Date: 12/22/94

9-1-4 Contaminated Soil

Extensive discussion occurred prior to this meeting between WSC, HCC and Coffman Excavation regarding the excavation, detection and handling of contaminated soil. WSC has directed HCC to perform all work in accordance with the following documents as recently provided by WSC:

1. Environmental Health and Safety Plan as prepared by WSC dated 11/28/94.
2. Storm Water Discharge Permit issued by the Dept. of Environmental Quality on 11/8/94.
3. Storm Water Pollution Control Plan dated 8/18/93 as prepared by WSC.
4. "Attachment A, Erosion and Sediment Control Plan" for the Fab 2 project.

The aforementioned documents have not formally been incorporated into the contract documents. Coffman has encountered soil contaminated with benzene and naphtha (light hydrocarbons) as detected by EHM (Environmental Health Management). EHM has been retained by Coffman to perform air monitoring as requested by WSC and as required by WSC's Environmental Health and Safety Plan. Coffman has currently ceased excavation activities in contaminated areas. Coffman's employees are to complete 40 hours of Hazwoper Training on Saturday, December 17, 1994, and will resume earthwork in contaminated areas on Monday, December 19, 1994. WSC will sample and test excavated material for classification purposes and provide containers for disposal.

Action: Hoffman/Coffman/Wacker
Date: As Noted

9-1-5 Worker Safety Orientation

All construction workers will attend Worker Safety Orientation Training Program prepared jointly by HCC and WSC. WSC will provide a video tape that will address key issues and concerns of performing new construction in and around their existing operating plant. HCC will prepare a site/job specific slide presentation that keys on safety procedures currently employed during each particular phase of the project. The presentation will identify potential hazards such as switchgear yard, low clearance at utility bridge, and hydrogen tanks to name a few. This "living program" will be updated with each phase of construction. max 1 hr.

Action: HCC/WSC
Date: 1/2/95

9-2-0 RESOLVED ITEMS

1-2-2 Structural Steel Bid Comparison

Hoffman reviewed bid comparison no. 2 for structural steel. Wacker to review and advise.

Action: WSC
Date: 10/20/94

10/20/94: Decision forthcoming from WSC. HCC has requested that CWI provide erection bid by Friday, October 28, 1994.
10/26/94: WSC to issue approved bid comparison today.
11/4/94: Steel bid comparison for fabrication approved by WSC. HCC to schedule a visit to CWI's fab shop with WSC. IDC has offered HCC/CWI a CAD disk of steel drawings for shop drawing preparation.
11/11/94: Structural steel has been awarded; Columbia Wire is proceeding with shop drawings (CAD disk provided). IDC advises that Bulletin No. 1 will be issued today with revisions (12 sheets).
11/18/94: IDC advises that Bulletin No. 1 is to be issued today.
11/30/94: HCC advises that bids for steel erection and pricing for Bulletin No. 1 are due today.
12/7/94: HCC is finalizing pricing.
12/15/94: Bid comparison no. 23 has been issued for WSC approval.

6-2-1 Outfall Status

WSC requests that IDC provide update of outfall design/approval.

Action: IDC
Date: 12/2/94

12/7/94: Outfall revisions have been addressed within Bulletin No. 2 issued last Friday.
12/15/94: HCC has issued bulletin no. 2 for pricing and obtained the building permit from the City.

6-2-2 Site Electrical Revisions

IDC advises that revision to the site electrical package (bid comparison approved today) is forthcoming and will be issued as part of Bulletin No. 2.

Action: IDC
Date: 12/2/94

12/7/94: Site electrical revisions have been addressed within Bulletin No. 2.
12/15/94: HCC has issued bulletin no. 2 for pricing and obtained the Building permit from the City.

8-2-3 Ground Grid Installation

HCC to advise WSC of installation schedule and mutually review testing and inspection requirements. Testing of areas should proceed mat pours. "Electro Test" has been utilized for this work in the past.

Action: HCC/WSC
Date: 12/15/94

12/15/94: IDC advises that effective testing prior to mat pours is not possible. HCC will schedule pre-pour inspections with WSC to ensure ground grid is properly installed. Testing of entire grid will occur after the mat is poured.

8-2-6 Christmas Shutdown

Hoffman to provide status update on planning for Christmas shutdown.

Action: Hoffman
Date: 12/15/94

12/15/94: Critical tie-in work for Christmas 1994 is scheduled. Project construction will require a 1995 mid-year shutdown for electrical tie-in work. This will be coordinated as part of schedule development.

9-3-0 UNRESOLVED ITEMS

1-3-1 GMP Documentation Baseline

IDC advises that documents for GMP estimate will be issued no later than October 24, 1994. Hoffman will require three to four weeks to complete the estimate. Functional reviews to define any further scope definition will be conducted on October 28, 1994.

Action: IDC
Date: 10/24/94

10/20/94: Civil/Architectural/Structural documents are scheduled for issue on Monday, October 24, 1994. IDC advises that process support system design is slightly behind schedule and that these drawings and specs are scheduled for completion Wednesday, October 26, 1994, for issue on Thursday, October 27, 1994.
10/26/94: Architectural/structural plans were issued on Monday, October 24, 1994. Document review meeting is scheduled for 9:00 a.m., Friday, October 28, 1994 at IDC's office. Process support system plans are scheduled for issue on Thursday, October 27, 1994.

11/4/94: Electrical, I & C, process and mechanical review meeting is scheduled directly after this meeting. HCC requests that IDC issue a master document list for GMP documents and issue updated GMP document set including "clouded" revisions.

11/11/94: IDC advises that revised electrical, I & C, and process drawings will be released on Tuesday 11/15/94. Hoffman requests, and all parties agree, that the "GMP Baseline Drawings" should be issued as a complete drawing set.

11/18/94: Revised electrical, I & C and process drawings are to be issued today. GMP baseline plans (6 sets) to be issued the week of November 21, 1994.

11/30/94: Revised electrical, I & C and process drawings have been issued. "GMP Baseline Drawings" will be issued this week.

12/7/94: IDC advises that "GMP Baseline Drawings and Specifications" are to be issued by December 9, 1994. Hoffman to be issued six (6) sets.

12/15/94: "GMP Baseline Documents" have been received. IDC to provide updated document cross reference list.

1-3-3 Schedule/Equipment Bid Packages

The project "concept schedule" has been re-baselined to reflect current status. All parties to review and advise re-timing lead equipment bid packages. Concerns regarding extended lead times and an active manufacturer market environment were expressed.

Action: All parties
Date: 10/20/94

10/20/94: IDC to review bid package completion dates and advise team of packages that may be accelerated.

10/26/94: IDC issued revised bid package schedule, copy enclosed, on October 21, 1994. Initial pre-purchase packages are scheduled for release on October 31, 1994. IDC requests that WSC expedite their decision of who will procure equipment for drafting bid invitations and completing packages.

11/4/94: HCC will procure all equipment for the project as a portion of their scope. IDC to prepare pre-purchase package RFPs accordingly. Scheduled issue dates for long-lead electrical pre-purchase packages have been revised per the enclosed design bid package log.

11/11/94: Long lead electrical equipment pre-purchase will be ready for issue 11/15/94. Wacker requires two days for technical review.

11/18/94: Long-lead electrical equipment pre-purchase packages are to be issued the week of November 21, 1994.

11/30/94: IDC advises that all pre-purchase electrical bid packages, excluding electrical generator will be issued by 12/2/94. Pre-purchase bid packages for chillers, cooling towers and MAUs are under review and should be issued to HCC by December 7, 1994.

12/7/94: An updated Bid Package Log (copy enclosed) was issued during today's meeting. HCC/WSC requests that boilers and deaerators be specified in one pre-purchase package. HCC/IDC to examine remaining items and schedule for package issue.

12/15/94: HCC requests that IDC expedite issuance of the elevator bid package. Boiler/deaerator bid package forthcoming. HCC/IDC to examine remaining items for package issue.

3-3-1 Central Facilities Building

IDC to issue pre-purchase package for metal building (shell) on October 31, 1994. Balance of shell package due on November 14, 1994.

Action: IDC
Date: As noted

11/4/94: HCC to confirm receipt of metal building (shell) pre-purchase package. HCC advises that bidders will include Grady Harper Carlson, Grigsby Construction, Sabre Construction and Axial Building Systems. AWARD

11/11/94: Metal building purchase package received 11/7/94. Bid date is 11/30/94. Foundation will be designed by IDC following bidder design selection.

11/18/94: No change.

11/30/94: HCC advises that bids for the metal building are due today and will advise IDC of successful vendor to expedite foundation design completion.

12/7/94: HCC is awaiting final bid from Grady Harper Carlson and will forward bid comparison for approval upon receipt. Approval critical to resolving foundation design.

12/15/94: HCC is awaiting WSC approval on bid comparison no. 21; sent to Germany.

3-3-2 Site Utilities Permit

A. IDC to submit revised storm sewer calculations to the City of Portland today. Addendum scheduled for issue on Friday, October 28, 1994, which will include 36" storm sewer line north to manhole SD-3-3. IDC to expedite design and permitting of storm sewer extension to outfall.

B. IDC anticipates that Greenway and environmental review/approval will take six to eight weeks. Approval is critical to allow storm sewer work to perform during Christmas shutdown (12/24/94 at 7:00 p.m. through 12/31/94, 7:00 a.m.).

Action: IDC
Date: As noted

11/4/94: A. HCC is in receipt of Addendum No. 1. IDC advises that the addendum was submitted for Greenway review on October 31, 1994.

B. IDC anticipates submitting to the City of Portland for building permit on Monday, November 7, 1994.

11/11/94: A. Permit documents have not been submitted to City as of 11/11/94; awaiting changes per Addendum No. 2 to utility package.
B. Greenway permit for outfall work expected 12/15/94.

11/18/94: A. Bulletin No. 2 to the Site Utilities Package is to be issued 11/21/94.
B. Greenway permit expected 12/15/94.

11/30/94: A. Bulletin No. 2 to the Site Utilities Package to be issued by 12/2/94.
B. Greenway permit still expected 12/15/94. IDC to confirm.

12/7/94: A. Resolved. Bulletin No. 2 issued.
B. Greenway permit expected December 15, 1994. IDC to confirm.

12/15/94: A. Resolved (see above)
B. IDC is to record Greenway Permit by Friday, December 16, 1994.

4-3-1 Fab 3 Preload

HCC advises that the Fab 3 Preload is currently 9' high and will be approximately 11 feet high if mat foundation excavation material is placed on top of preload. There will be no excess material for trench backfill. Plans call for the pile to be 14 feet high. IDC to consider preloading in accordance with the following options:

1. 9 foot high preload
2. 11 foot high preload
3. Two phases of preloading to 14 feet high.
4. Utilizing trench excavation spoils as preload material.

IDC to also check with the City of Portland on installing new utility piping within the easement south of the site. HCC to investigate sources of inexpensive preload material and pipe zone material and confirm preload and pipe zone material quantity requirements.

Action: As Noted
Date: 11/11/94

11/11/94: Following an extended discussion of three primary options, Wacker opted toward option that completes preload in two stages without importing more gravel fill on site. Hoffman to clarify options and pricing.

11/18/94: Two stage preloading is approved by WSC per "Split Preload" sketches, copies enclosed. HCC to finalize pricing.

11/30/94: HCC to finalize pricing.

12/7/94: HCC to finalize pricing.

12/15/94: No change.

5-3-2 Submittal Process

All Hoffman submittals should be forwarded to ~~IDC~~ IDC WSC attention ~~Lisa Blanchard~~ CAROLYN COCHRAN. Hoffman to provide submittal log/summary and to clarify distribution procedures.

Action: Hoffman
Date: 11/17/94

11/18/94: HCC is to send originals to IDC (Gail Calloway) with a copy to WSC (Lisa Blanchard). HCC to provide submittal log for future meetings.

11/30/94: HCC will generate a master submittal list to help WSC determine submittals that they will be interested in reviewing. IDC requests that future submittals be forwarded to Bill Matsukado until a replacement is found for Gail Calloway.

12/7/94: IDC advises that they have drafted a preliminary list and will forward to HCC. HCC to complete list from GMP specifications.

12/15/94: GMP specifications have been issued. HCC to complete submittal list for IDC/WSC.

6-3-3 CFB Preload

Specifics relative to preloading south of the CFB are in question. IDC to check with CH_2M Hill.

Action: IDC
Date: 11/30/94

11/30/94: IDC to arrange to have Dutch cone testing performing in the absence of definitive information.

12/7/94: No change.

12/15/94: Dutch cone testing will be performed at subgrade elevation following foundation excavation. HCC to provide tentative testing date to IDC.

6-3-4 Utilities South of Preload

Plans currently show new utility lines in immediate proximity of the soil wall on the south side of Fab 3 preload. IDC to examine preload influence on new utilities. WSC to check records on easement/right-of-way to determine if moving new utilities into this area is a viable option.

Action: IDC/WSC
Date: 12/5/94

12/7/94: WSC advises that the south utility strip is an easement owned by WSC. IDC to prepare documents to locate new utility lines south of present location into the easement, and transmit to the City for approval. HCC advises that expeditious approval is critical with this scheduled to begin the week of December 26, 1994.

12/15/94: Design information forthcoming in bulletin no. 4.

8-3-1 WWTP Upgrade

WSC advises that they are reviewing design proposals for WWTP upgrade. Upgrades to existing system will be significant. WSC to keep team advised of progress and project requirements.

Action: WSC
Date: On going.

12/15/94: No change.

8-3-2 Foundation Process Piping Revisions

IDC advises that Bulletin No. 4 includes process piping additions in the mat foundation. Schedule issue date is Friday, December 9, 1994. HCC advises that the timing of this change will delay foundation work. Drain bodies are a lead-time item.

Action: IDC
Date: 12/9/94

12/15/94: Copies of Bulletin No. 3 were issued today. Considering that drain boxes have significant lead time requirements, Jerry Linden will review documents following the meeting to expedite material order. IDC to confirm current layout approval and advise HCC prior to document distribution for construction.

8-3-4 Design Revision Implementation

HCC suggests that design revisions from Wacker and/or IDC be transmitted with one of two instruction as follows. DCVR's will continue to be initiated by HCC and/or subcontractors as a means to obtain clarification of the design.

1. Design Revision: Instructing Contractor to immediately proceed with the work and provide pricing later.
2. Proposal Request: Instructing Contractor to provide pricing proposal for the work only. Work approval to follow Owner review of Contractor's proposal.

IDC to prepare draft of implementing instruction for team review.

Action: IDC
Date: 12/15/94

12/15/94: IDC memorandum forthcoming.

8-3-5 Bulletin No. 4

IDC advises that Bulletin No. 4 is forthcoming including:

1. Sanitary sewer tie-in revisions;
2. Modifications to partial flume;
3. New storm line to the CFB;
4. Relocation of new utility lines into easement area (reference meeting minute item 6-1-3).

Action: IDC
Date: Week of 12/12/94

12/15/94: IDC advises that engineering is in progress. Completion scheduled for 12/21/94.

8-3-7 Pop-out Quantity

WSC confirmed plastic pop-out quantity at 250. Hoffman to proceed accordingly.

Action: Hoffman
Date: 12/15/94

12/15/94: HCC requests that WSC confirm concrete pop-out quantity.

9-4-0 INFORMATION ITEMS

9-4-1 HCC advises that Wally Huey will be permanently on-site beginning December 19, 1994, as HCC's project engineer.

9-4-2 HCC to review the schedule of planned construction activities. HCC will be issuing "three-week look ahead" schedules in upcoming construction coordination meetings.

9-4-3 Next Meeting: The next meeting is scheduled for 8:00 a.m. Thursday, December 22, 1994 at Hoffman's field office.

Respectfully submitted,

James L. Dill
Operations Manager

JLD:gac
Attachments
pc: Attendees
John Pittman, Volker Radius, Roland Kirsh, Steve Beiswenger, Eugene Chang, & Tom McCue - Wacker Siltronic
Bill Matsukado, IDC
Bob Varney, HMC

Rec'd 12/15

HOFFMAN CONSTRUCTION COMPANY
PROJECT: WACKER, FAB 2 - HCC JOB NO. 9491

DCVR LOG/STATUS REPORT
Date: 12/12/94

DCVR NO	SUBJECT	ORIGINATOR	DATE SUBMITTED	DATE REQUESTED	DATE RETURNED
1.0	STORM DRAIN SYSTEM VALVE CLARFICATIONS	COFFMAN	11/10/94	11/17/94	
2.0	VARIOUS STEEL CLARIFICATIONS-1	CWI	11/18/94	11/24/94	12/01/94
3.0	SITE UNDERGROUND ELECTRICAL PIPE BENDS	IOC	11/21/94	11/22/94	11/17/94
4.0	VARIOUS STEEL CLARIFICATIONS-2	CWI	11/29/94	12/06/94	12/02/94
5.0	SANITARY SEWER CLARIFICATIONS	COFFMAN	12/07/94	12/14/94	12/07/94
6.0	FOUNDATION CLARIFICATIONS	HCC	12/07/94	12/14/94	12/07/94

HOFFMAN CONSTRUCTION COMPANY
PROJECT: WACKER, FAB 2 - HCC JOB NO. 9491

Page No. 1

SUBMITTAL LOG/STATUS REPORT

AA = Approved
AN = Approved as noted
RR = Revise & Resubmit

Date: 12/12/94

SUB NO	SPEC NO	WORK ITEM	SUBJECT	SUBCONTRACTOR OR VENDOR	DATE SUBMITTED	DATE REQUESTED	DATE RETURNED	
1	02220	1	SOIL WALL MATERIAL/DESIGN	COFFMAN	9/30/94	10/07/94	10/07/94	AA
2	16117	1	ELECTRICAL MANHOLES FOR SITE	CHRISTENSON	11/22/94	11/29/94	11/29/94	RR
3	03300	1	MISC CONCRETE MATERIALS DATA	HSI	11/08/94	11/15/94	11/15/94	AN
4	02660	1	UNDERGROUND WATER MATERIALS DATA	COFFMAN	11/11/94	11/18/94	11/15/94	AN
5	02720	1	STORM SEWER MATERIALS DATA	COFFMAN	11/08/94	11/15/94	11/15/94	AA
6	02605	1	CONCRETE SEWER PIPE/MANHOLE DATA	COFFMAN	11/11/94	11/18/94	11/17/94	AN
7	02660	2	UNDERGROUND FIRE WATER TANK	COFFMAN	11/11/94	11/18/94	11/22/94	AN
8	03310	1	FOUNDATION & WAFFLE SLAB DETAILS	HSI	11/17/94	11/24/94	11/22/94	RR
9	02660	3	PROCESS WATER BACKFLOW PREVENTER DATA	COFFMAN	11/18/94	11/25/94	11/29/94	RR
10	03310	2	SLAB CONSTRUCTION JOINT LOCATIONS	HSI	12/08/94	12/15/94	12/09/94	AA
11	03310	3	CONCRETE MIX DESINGS	LONE STAR	12/12/94	12/19/94		
12	02720	2	STORM LINE UNDER PEDESTRIAN WALK	COFFMAN	12/12/94	12/19/94		
13	02720	3	Storm line electrical oil separator vault	coffman	12/13/94	12/20/94		

HOFFMAN CONSTRUCTION COMPANY OF OREGON
WACKER SILTRONIC FAB 2 SILICON MANUFACTURING FACILITY
DESIGN BID PACKAGE LOG

Date: 12/15/94

Bid Pkg No	Description	Wacker Review Date	Sched Issue Date	Actual Issue Date	Issued For Bids	Issued For Permits	Date Permit Issued	Date Bids Due	Date Bids Rec'd	Bids To Wacker	Appv'd By Wacker
1	Preload Construction Documents	--	08/18/94	* 08/24/94	08/24/94	08/18/94	10/07/94	08/30/94	09/06/94	09/21/94	09/23/94
2	Structural Steel Procurement Package	--	09/01/94	09/01/94	09/15/94	--	--	09/23/94	09/30/94	10/14/94	10/27/94
3	Site Utilities Construction Documents	--	08/20/93	09/29/94	09/29/94	09/29/94	11/01/94	10/12/94	10/14/94	10/20/94	10/27/94
4	Foundation Construction Documents	--	10/12/94	10/13/94	10/14/94	10/12/94		11/04/94	11/04/94	11/11/94	11/17/94
	GMP Estimate Documents	--	10/24/94	10/24/94	--	--	--	--	--		
5	Shell Construction Documents	10/24/94	10/31/94	11/07/94	11/07/94	11/07/94	11/30/94	11/30/94	12/02/94	12/07/94	
6	TI Construction Documents (excluding CR)	**12/16/94	**12/23/94								
	Facilities Bldg. Expansion – Prepurchase	10/31/94	11/03/94	11/07/94	11/07/94		11/30/94	11/30/94	Pending		
	Med. Volt/Air Int. Switchgear – Prepurchase	11/09/94	**12/02/94	12/02/94							
	5 KV Transformers – Prepurchase	11/09/94	**12/02/94	12/02/94							
	Recirc Air Handlers – Prepurchase	11/04/94	11/09/94	11/18/94	11/18/94	--	11/30/94				
	Process Vacuum Pumps – Prepurchase	**12/16/94	**12/23/94	To be included in TI Package							
	Emerg Gen. / Transf Switch – Prepurchase	**12/16/94	**12/23/94	To be included in TI Package							
	Chillers – Prepurchase	**12/16/94	**12/23/94	To be included in TI Package (CFB)							
	Cooling Towers – Prepurchase	**12/16/94	**12/23/94	To be included in TI Package (CFB)							
	Air Compressors – Prepurchase	**12/16/94	**12/23/94	To be included in TI Package (CFB)							
	Acid Scrubbers – Prepurchase	11/11/94	11/16/94	Deleted from project design							
	Unit Substation – Prepurchase	11/09/94	**12/05/94	12/06/94	12/07/94	--	--	12/20/94			
	Low Voltage Switchboards – Prepurchase	11/09/94	**12/05/94	12/06/94	12/07/94	--	--	12/20/94			
	Makeup Air Handlers – Prepurchase	**12/05/94	**12/18/94								
8	Central Facilities Bldg. – Bld. Pkg. excl. fnd.	**12/16/94	**12/23/94								
9	Misc. Yard Construction Documents	**12/16/94	**12/23/94								
10	Cleanrooms Construction Documents	12/05/94	12/12/94								
11	Wastewater Treatment Plant Documents	01/23/95	01/30/95	Deleted from the scope of this project							
	Ultrapure Water System	**12/08/94	12/12/94								

* Addendum Issued
** Issue Date Revised

DEC-14-1994 23:41 ENVIRONMENTAL HEALTH MGT. 503 638 1611 P.05

COFFMAN EXCAVATION
WACKER SILTRONICS FAB 2 PROJECT
AIR MONITORING RESULTS
12/14/94

DATE	NUMBER	TYPE	LOCATION OR PERSONNEL	AIR CONTAMINANT	CONCENTRATION (PPM)
2-Dec	1	TWA	Brian - Setting pipe	Benzene	Not Detected
2-Dec	2	TWA	Jim - Hoe Operator	Benzene	Not Detected
2-Dec	3	STEL	24" SD @ West end of loading dock - AM	Benzene	Not Detected
2-Dec	4	STEL	24" SD @ West end of loading dock - PM	Benzene	Not Detected
5-Dec	1	TWA	Jim - Hoe Operator	Benzene	Not Detected
5-Dec	2	TWA	Brian - Setting pipe	Benzene	Not Detected
5-Dec	3	STEL	24" SD SE of waste storage building - AM	Benzene	Not Detected
5-Dec	4	STEL	24" SD SE of waste storage building - PM	Benzene	Not Detected
6-Dec	1	TWA	Brian - Setting pipe	Benzene	Not Detected
6-Dec	2	TWA	Jim - Hoe Operator	Benzene	Not Detected
6-Dec	3	STEL	24" SD South of waste storage building - PM	Benzene	Not Detected
6-Dec	4	STEL	24" SD South of waste storage building - PM	Benzene	Not Detected
7-Dec	1	TWA	Brian - Setting pipe	Benzene	Not Detected
7-Dec	2	TWA	Jim - Hoe Operator	Benzene	Not Detected
7-Dec	3	STEL	24" SD SW of waste storage building - AM	Benzene	Not Detected
8-Dec	1	TWA	Brian - Setting pipe	Benzene	Not Detected - Verbal Report
8-Dec	2	TWA	Jim - Hoe Operator	Benzene	Not Detected - Verbal Report
8-Dec	3	STEL	24" SD South of gas pad (east of slab)	Benzene	0.25
8-Dec	4	STEL	24" SD South of gas pad (under slab)	Benzene	Not Detected - Verbal Report
8-Dec	5	TWA	24" SD South of gas pad (east of slab)	Light Hydrocarbon (naphtha)	Not Detected - Verbal Report
9-Dec	1	TWA	Brian - Setting pipe	Benzene	Not Detected - Verbal Report
9-Dec	2	TWA	Jim - Hoe Operator	Benzene	Not Detected - Verbal Report
9-Dec	3	STEL	18" SD - South end	Benzene	Not Detected - Verbal Report
9-Dec	4	STEL	15" SD west end manhole	Benzene	Not Detected - Verbal Report
10-Dec	None				
11-Dec	None				
12-Dec	None				
13-Dec	None				
14-Dec	1	TWA	Dudley Gee - Grade Checker - FAB 2 area	Benzene	Pending Analysis
14-Dec	1	TWA	Dudley Gee - Grade Checker - FAB 2 area	Light Hydrocarbon (naphtha)	Pending Analysis
14-Dec	2	TWA	Jeremy Conroy - Hoe operator - FAB 2 area	Benzene	Pending Analysis
14-Dec	2	TWA	Jeremy Conroy - Hoe operator - FAB 2 area	Light Hydrocarbon (naphtha)	Pending Analysis

SCOEPA00022018

HOFFMAN CONSTRUCTION COMPANY
OF OREGON

12/12/94 SOIL MEETING

ATTENDANCE:				
	Mike Gardino	(HCCO)	Jim Conroy	(CEI)
	Jerry Linden	(WSC)	Bill Conroy	(CEI)
	Patrick Vaughan	(EHM)	Carl Coffman	(CEI)
	Brad Nichols	(CEI)	Ann Schowalter	(WSC)

DISCUSSION: Who decided what tests were required of soil excavation for utilities?

Ann Schowalter asked that Coffman provide an Industrial Hygenist or Toxoligist to monitor air quality and to monitor for benzene since this would be the contaminant of the lowest level allowable. Benzene levels are quite specific, it was a starting point. She also asked to monitor LEL's in all excavations. Ann stated that training requirements should follow 29CRF1919.120 criteria (basically 40 hour training). This information was transmitted to HCCO on 12/01/94 when Ann gave Jim Shannon (CEI) and Perry Smick (HCCO) the Enviromental Health and Safety Plan (I was downtown developing the project schedule).

Patrick Vaughan of Enviromental Health Management stated that they must monitor PAH's and analyze for specific concentrations prior to further excavation on site around the Fab area. We plan to excavate on the 36" storm system located on the east side to the out fall. He also stated that samples be taken as excavated with an air pump when a hole is first excavated.

All excavation from start to present has been witnessed by Wacker personnel Jerry Linden or Chip Bloomer. These people had instructed Coffman on what they consider contaminated soil.

The workers in excavations are wearing passive docimeters to monitor exposure levels on a daily basis. The workers who showed signs of dizziness last week, (Jim Conroy and Brian Winkler), have had thier docimeter cartridges sent in for analysis. Results to be here today.

See attached report from lab on preliminary findings of soil encountered on 12/08/94.

Carl Coffman stated that his employees will complete their 40 hour (29CRF1910.120) training, Saturday 12/17/94. He also stated that this was not a requirement for work they performed here in the past.

Mike Gardino
Project Superintendent

cc: Tom Stein
Jim Dill
Brian Clarke

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SCOEPA00022019

INCIDENT REPORT

HOFFMAN CONSTRUCTION COMPANY
OF OREGON

12/08/94

WACKER SILTRONICS FAB 2

Thursday, 12/08/94, an incident took place while excavating at the northwest corner of Fab 2. We encountered some contaminated soil. A representative from Enviromental Health Management Inc. was on site and monitoring air and soil for contaminated soil and air quality.

Two of Coffmans employees claimed to feel dizzy, light headed, and nauseous for about twenty minutes. They were asked to stop working in this area. Their names were Jim Conroy and Brian Winkler.

Wacker asked that we stop work in this area which we had already done. Jerry Linden and Chip Bloomer were getting the soil analyzed and would have results 12/09/94.

We moved our operation to the south end, west side. Less depth on 12/09/94, we had excavated a short distance when we were shut down, again, due to contaminated soil. I contacted Brian Clarke who called PBS Enviromental to check samples.

Erick Anderson and I met with Brian Clarke and Jerry Linden, until we receive the reports back we will relocate our work to areas where the soil is free from hydro-carbons.

Friday, 12/09/94, we excavated for domestic water tie-in, the ground appears to be ok according to Chip Bloomer.

I checked today with Jim Conroy and Brian Winkler, both felt ok according to Brad Nichols.

Mike Gardino
Project Superintendent

cc: JIm Dill
Brian Clarke

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SCOEPA00022020

NORTH CREEK ANALYTICAL
(Formerly Pacific Environmental Laboratory, Inc.)
0405 S.W. Nimbus Ave. • Beaverton, OR 97005 • (503) 643-9200 • FAX # (503) 644-2202

FAX TRANSMITTAL

DATE: 12-9-94

TO: Wacker Siltronic

ATTN: Thomas Rothschild

FROM: Howard Holmes

We are sending 7 pages, including this cover sheet.

DESCRIPTION NCA # 94-3749

JOB # 94-74

P.O. #

PROJECT

PRELIMINARY REPORT
This report has not yet been reviewed by the NCA Quality Control Dept. Results are subject to final review.

If you experience any problems with this transmission, please call us!

TPH-D per Oregon DEQ
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project:
Received: 12/08/1994

NCA Number: 94-3749
Matrix: soil

Sample Name	Analyte	Result	MRL	Prep Date	Analy Date
94-79	Diesel/related	14,000 *1	630	12/08	12/09
Method Blank	Diesel/related	ND	25		

PRELIMINARY REPORT
This report has not yet been reviewed by the NCA Quality Control Dept. Results are subject to final review.

MRL Method Reporting Level
ND None Detected at or above the method reporting level

SCOEPA00022022

SURROGATE RECOVERIES (%)

Client: Wacker Siltronic Corporation
Project:

NCA Number: 94-3749
Received: 12/08/1994

Sample Name	Analyte	Result	Control Limits
TPH-D per Oregon DEQ			
94-79	1-Chlorooctadecane	97	50-150

PRELIMINARY REPORT
This report has not yet been reviewed by the NCA Quality Control Dept. Results are subject to final review.

MRL Method Reporting Level
ND None Detected at or above the method reporting level

SCOEPA00022023

COMMENTS

Client: Wacker Siltronic Corporation
Project:

NCA Number: 94-3749
Received: 12/08/1994

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1. Unable to calculate surrogate recovery due to dilution necessary for analysis.

PRELIMINARY REPORT
This report has not yet been reviewed by the NCA Quality Control Dept. Results are subject to final review.

SCOEPA00022024

TPH-G per Oregon DEQ
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project:
Received: 12/08/1994

NCA Number: 94-3749
Matrix: soil

Sample Name	Analyte	Result	MRL	Prep Date	Analy Date
94-79	Gasoline	200	40	12/08	12/08
Method Blank	Gasoline	ND	2.0		

PRELIMINARY REPORT
This report has not yet been reviewed by the NCA Quality Control Dept. Results are subject to final review.

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

** 568-1

SURROGATE RECOVERIES (%)

Client: Wacker Siltronic Corporation
Project:

NCA Number: 94-3749
Received: 12/08/1994

Sample Name	Analyte	Result	Control Limits
TPH-G per Oregon DEQ			
94-79	4-Bromofluorobenzene	112	63-126
	Trifluorotoluene	-- *1	50-150

PRELIMINARY REPORT
This report has not yet been reviewed by the NCA Quality Control Dept. Results are subject to final review.

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00022026

COMMENTS

Client: Wacker Siltronic Corporation
Project:

NCA Number: 94-3749
Received: 12/08/1994

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1. Unable to calculate surrogate recovery due to dilution necessary for analysis.

PRELIMINARY REPORT
This report has not yet been reviewed by the NCA Quality Control Dept. Results are subject to final review.

SCOEPA00022027

ENVIRONMENTAL HEALTH AND SAFETY PLAN

1.0 PURPOSE OF DOCUMENT

The purpose of this excavated soil management plan is to describe the procedures necessary to handle, characterize, and dispose of excavated soil during site work for the Fab 2 project at the Wacker Siltronic site in Portland, Oregon.

This plan will be kept onsite during FAB 2 excavation activities and will be reviewed and updated as necessary. This plan adopts, by reference, the standards of practice of Wacker Siltronic's Corporate Health and Safety Program and other applicable Wacker work practices. Wacker workers and contractors are to be familiar with these practices. In addition, this plan adopts procedures contained in the work plan for the project.

1.1 PROJECT INFORMATION AND DESCRIPTION

PROJECT: FAB 2

PROJECT MANAGER: John Pittman

SITE NAME: Wacker- Fab 2 Facility and Support Structures

SITE ADDRESS: 7200 NW Front Avenue, Portland, OR

DATE HEALTH AND SAFETY PLAN PREPARED: November 28, 1994

SITE DESCRIPTION AND HISTORY:

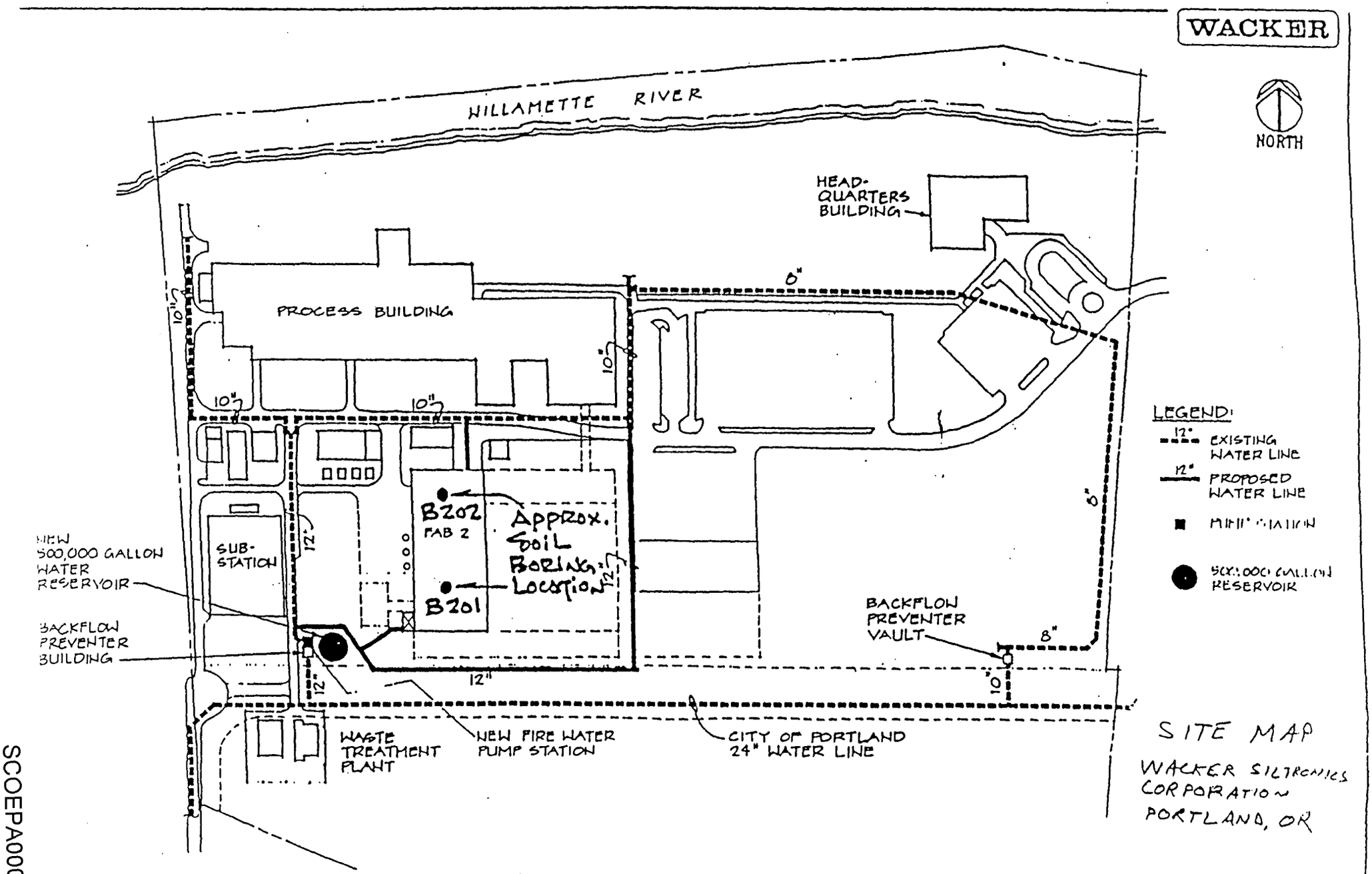
Background

Wacker Siltronic Corporation is located at the west end of Front Street in the northwest part of Portland, Oregon, and manufactures high-purity silicon wafers, the raw material for the electronics industry. Environmental studies of the site have shown that some of the existing soil onsite is contaminated with volatile organic compounds (VOCs) and semi-VOCs.

The Fab 2 structure is rectangular shaped, approximately 200 by 325 feet on a side, and will consist of a three-story building and associated support facilities. Contaminated soil may be encountered during construction of underground utilities.

In June 1990, Wacker sampled the site using a two-phase approach. The Phase 1 investigation consisted of sampling subsurface soils for chemical analysis during geotechnical drilling. The Phase 2 investigation consisted of sampling groundwater and soil gas using probes pushed below the top of the groundwater table.

SCOEPA00022028



SCOEPA0022029

2.0 PROJECT ORGANIZATION AND TASKS TO BE PERFORMED UNDER THIS PLAN

2.1 DESCRIPTION OF TASKS

Excavation for utilities corridor and elevator shafts.

2.2 SPECIAL REQUIREMENTS (Excavation Activities)

2.2.1 Soil Management

Contaminated soils may be generated during subsurface excavation activities. Installation of underground utilities and excavation of two elevator shafts are potential activities that could generate contaminated soils. Wacker staff will oversee the excavation activities and will determine whether the soil has potential contamination.

Soil determined to be potentially contaminated will be handled and disposed of per the soil management plan. Potentially contaminated soil will be identified by visual inspection, smell and monitoring equipment. Wacker environmental personnel will be contacted immediately upon the discovery of potentially contaminated soil. Potentially contaminated soil will only be removed from the ground under direct supervision of Wacker's environmental department.

Inspection methods to be used by personnel performing excavation are as follows:

Visual: Look for dark soil (Tarish or petroleum stained) or an oil sheen
Smell: Odors similar to gasoline, tar or paint
Monitoring: Air contaminants registering on monitoring equipment used for personnel monitoring

If Wacker staff determine that a soil is potentially contaminated, then the soil management program will be implemented. The contractor will excavate soil under the supervision of Wacker staff and the guidance listed below.

Potentially contaminated soil that is excavated as part of the building construction will be placed into roll-off boxes that will be used to stage the waste onsite as defined in 40 CFR 265.170 through 265.177, Subpart I. Roll-off boxes of the waste shall, at a minimum, meet the following requirements:

- Be in good condition and be free of rust and structural defects and be leakproof and infiltration proof
- Be closed during storage except to add or remove waste
- Be inspected at least once per week while staged onsite for leaking or deterioration of containers
- Shall not contain free liquids

SCOEPA00022030

- Be placed in an area that will drain and remove precipitation, or be elevated or protected from contact with accumulated liquid

- Be cleaned of all waste and decontaminated prior to demobilization of the roll-off boxes

Containers used to store waste generated during the construction excavations shall be labeled with the words "Potential Hazardous Waste" and with the date that the waste was placed in the container. Hazardous waste shall be staged onsite for less than 90 days, in accordance with 40 CFR 262.34. Solid waste shall be staged for less than 30 days, in accordance with DEQ policy. If solid waste is required to be staged for more than 30 days, DEQ will be notified.

2.2.2 DEWATERING SOIL

The method of Dewatering soil during excavation activities will be dependent on ground water levels and soil contamination evaluations performed by the environmental department.

There are three primary dewatering scenarios:

1. When excavating above the ground water table in noncontaminated soil water may be pumped onto the east side of the FAB3 loading. The loading will serve as a filter and should disperse the water evenly upon the ground.

2. When excavating below the ground water table in non contaminated areas as identified by the environmental department the water will be pumped to the OWW treatment system in a manner approved by the environmental department.

3. Dewatering in potential or contaminated areas will be evaluated on a case by case basis.

2.3 TRAINING REQUIREMENTS

Personnel associated with excavation, utility construction, handling, or exposure to potentially contaminated soil at the Wacker Fab 2 facility should follow hazardous waste operations and emergency response procedures as defined in 29 CFR 1910.120.

SCOEPA00022031

3.8 KNOWN CONTAMINANTS OF CONCERN ON THE WACKER SILTRONICS CORPORATION SITE

Contaminant	Location and Highest Concentration (solid media: mg/kg or liquid media: ug/l)	PEL, REL, or TLV (ppm)	IDLH (ppm)	Symptoms and Effects of Exposure	PIP
2,3,4,6-Tetrachlorophenol		NL	NL	Poisonous by ingestion, skin contact, and subcutaneously	NL
2,4,5-Trichlorophenol		NL	NL	Moderately toxic by ingestion and subcutaneous routes	NL
2,4,6-Trichlorophenol		NL	NL	Skin and eye irritation	NL
2,4-D		10 mg/m3	500 mg/m3	Weakness, stupor, muscle twitching, dermatitis	?
2-Methyl-1,4-dinitrophenol		0.2 mg/m3	NL	Sense of well being, headache, fever, lassitude, sweating, excessive thirst, coughing, shortness of breath	NL
2-chlorophenol				A poison by intraperitoneal and subcutaneous routes.	NL
Acenaphthene	450 mg/kg (S)	NL	NL	Eye and skin irritation	NL
Acetophenone		NL	NL	Toxic by ingestion	NL
Anthracene	430 mg/kg (S)	0.2 mg/m3	NL	Skin irritation	NL
Benzene	29 mg/kg (S)	0.1 ppm	Ca (3,000 ppm)	Eye, nose, and respiratory irritation; headache; nausea; dermatitis; fatigue; giddiness	9.24
Benzo(a)anthracene	210 mg/kg (S)	NL	NL	Experimental carcinogen	NL
Benzo(a)pyrene	210 mg/kg (S)	0.2 mg/m3	NL	Chronic dermatitis	NL
Benzo(b)fluoranthene	140 mg/kg (S)	NL	NL	No information found in literature	NL
Benzo(g,h,i)perylene	140 mg/kg (S)	NL	NL	No information found in literature	NL
Benzo(k)fluoranthene	120 mg/kg (S)	NL	NL	No information found in literature	NL
Chrysene	280 mg/kg (S)	0.2 mg/m3	NL	Carcinogenic	NL
Dibenzo(a,h)anthracene		NL	NL	Absorbed dermally	NL
Dibenzofuran	52 mg/kg (S)	NL	NL	Headache, eye irritation, nausea, vomiting	NL

SCOEPA00022032

3.8 KNOWN CONTAMINANTS OF CONCERN ON THE WACKER SILTRONICS CORPORATION SITE

Contaminant	Location and Highest Concentration (solid media: mg/kg or liquid media: ug/l)	PEL, REL, or TLV (ppm)	IDLH (ppm)	Symptoms and Effects of Exposure	PIP
Ethyl Benzene	55 mg/kg (S)	100 ppm	2,000 ppm	Eye and mucous membrane irritation, headache, dermatitis, narcotic	8.76
Fluoranthene	780 mg/kg (S)	NL	NL	Toxic by ingestion and skin contact	NL
Fluorene	350 mg/kg (S)	NL	NL	Toxic through inhalation, ingestion, dermal contact, and absorption	NL
Indeno(1,2,3)pyrene		NL	NL	No information found in literature	NL
Naphthalene	3,000 mg/kg (S)	10 ppm	500 ppm	Eye irritation, headache, confusion, excitement, nausea, vomiting, abdominal pain, irritation of the bladder, profuse sweating	8.12
Phenanthrene	1,900 mg/kg (S)	0.2 mg/m3	NL	Irritation	NL
Phenol		5 ppm	250 ppm	Eye, nose, and throat irritation; weakness; muscle ache; dark urine; dermatitis; convulsions	8.50
Pyrene	890 mg/kg (S)	0.2 mg/m3	NL	Irritation	NL
Toluene	26 mg/kg (S)	100 ppm	2,000 ppm	Fatigue, weakness, confusion, dizziness, headache, dilated pupils, muscle fatigue, dermatitis	8.82
Xylenes, o, m, & p		100 ppm	1,000 ppm	Dizziness; excitement; drowsiness; staggering gait; eyes, nose, and throat irritation; nausea; vomiting; dermatitis	8.44 - 8.56

Note 1: PIP=Photoinonization potential
Note 2: (S)=Analysis performed on soil

3.0 HAZARD EVALUATION AND CONTROL

3.1 HEAT AND COLD STRESS

3.1.1 GUIDELINES FOR WORKING IN TEMPERATURE EXTREMES WHILE WEARING PERSONAL PROTECTIVE EQUIPMENT (PPE)

Temperature	Work Cycle	Rest Cycle	Control Measures
<32° F or <55° F & raining	2 hrs	15 min	Review cold stress in safety meeting. Rest in a warm area. Drink at least 8 ounces of warm non-caffeinated, non-alcoholic beverage at each rest break. Schedule a mid-day lunch break of at least 30 minutes in a warm area to begin not later than 5 hours after startup.
72° to 77° F	2 hrs	5 min	Review heat stress in safety meeting. Take resting pulse rate before beginning work. Drink 8 ounces of cool water before beginning work, and 4 ounces at rest break. Have ice available.
77° to 82° F	2 hrs	5 min	As above, but seated rest break. Monitor pulse rate. (See below.)
82° to 87° F	60 min	15 min	As above, but rest area to be shaded.
87° to 90° F	30 min	15 min	As above. Try to provide a shaded work area.
>90° F	15 min	15 min	As above. Provide a shaded area with seats in the work area for team members to use as needed. Try to reschedule work to avoid mid-day heat.

PULSE CRITERIA. Take resting radial (wrist) pulse at start of work day; record it. Measure radial pulse for 30 seconds as rest period begins. Pulse not to exceed 110 beats per minute (bpm), or 20 bpm above resting pulse. If pulse exceeds this criteria, reduce work load and/or shorten the work cycle by one third, and observe for signs of heat stress. No team member is to return to work until his/her pulse has returned to <110 bpm, or resting pulse +20 bpm.

3.1.2 SYMPTOMS AND TREATMENT OF HEAT AND COLD STRESS

Heat Stroke	Heat Exhaustion	Frostbite	Hypothermia
Red, hot, dry skin; dizziness; confusion; rapid breathing and pulse; high body temperature.	Pale, clammy, moist skin; profuse sweating; weakness; normal temperature; headache; dizzy; vomiting.	Blanched, white, waxy skin, but tissue resilient; tissue cold and pale.	Shivering, apathy, sleepiness; rapid drop in body temperature; glassy stare; slow pulse; slow respiration.
Cool victim rapidly by soaking in cool (not cold) water. Get medical attention immediately!!	Remove victim to a cool, air conditioned place. Loosen clothing, place in head low position. Have victim drink cool (not cold) water.	Remove victim to a warm place. Rewarm area quickly in warm (not hot) water. Have victim drink warm fluids–not coffee or alcohol. Do not break any blisters. Elevate the injured area and get medical attention.	Remove victim to a warm place. Have victim drink warm fluids–not coffee or alcohol. Get medical attention.

SCOEPA00022034

3.2 PHYSICAL (SAFETY) HAZARDS AND CONTROLS (Hazardous work permits are required ...

Hazard	Engineering or Administrative Controls
Flying debris/objects	Provide shielding and PPE.
Noise > 85 dBA	Noise protection and monitoring required.
Steep terrain/unstable surface	Brace and shore equipment.
Build-up of explosive gases	Provide 20 lb A,B,C fire extinguisher and ventilation.
Build-up of static electricity	No spark sources within 50 feet of an excavation, heavy equipment, or UST removal. Ground as appropriate.
Gas cylinders	Make certain gas cylinders are properly anchored and chained. Keep cylinders away from ignition sources.
High pressure hose rupture	Check to see that fitting and pressurized lines are in good repair before using.
Electrical shock	Make certain third wire is properly grounded. Do not tamper with electrical wiring unless qualified to do so.
Suspended loads	Work not permitted under suspended loads.
Moving vehicles	Back-up alarm required for heavy equipment. Observer remains in contact with operator and signals safe back-up. Personnel to remain outside of turning radius.
Overhead electrical wires	Heavy equipment (e.g. drill rig) to remain at least 15 feet from overhead powerline for powerlines of 50 kV or less. For each Kv > 50 increase distance 1/2 foot.
Buried utilities, drums, tanks, and so forth.	Locate buried utilities, drums, tanks, etc. prior to digging or drilling and mark location.
Slip, trip, fall hazards due to muddy work areas	Use wood pallets or similar devices in muddy work areas.
Back injury	Use proper lifting techniques, or provide mechanical lifting aids.
Confined space entry	Permit required.
Trenches/excavations	Make certain trench meets OSHA standard before entering. All excavations > 5 feet deep must be sloped or shored. Excavations > 4 feet deep must have a ladder every 25 feet. If not entering trench, remain 2 feet from edge of trench at all times.
Protruding objects	Flag visible objects.

SCOEPA00022035

3.3 PROCEDURES TO LOCATE BURIED UTILITIES

Refer to FAB 2 work Plan

3.4 BIOLOGICAL HAZARDS AND CONTROLS

Hazards	Location and Control Measures
Bloodborne Pathogens (Hepatitis B and HIV)	If an exposure occurs an ERT must be notified immediately.

3.5 TICK BITES, LYME DISEASE, AND ROCKY MOUNTAIN SPOTTED FEVER (RMSF)

Check often for tick bites. If bitten, carefully remove tick with tweezers, making certain to remove pincers, being careful not to crush the tick. After removing the tick, wash your hands. Disinfect area, and dress. If the tick resists or cannot be completely removed, seek medical attention.

Look for symptoms of lyme disease or RMSF. Lyme: rash that looks like a "bulls-eye", with small welt in center, several days to weeks after tick bite. RMSF: Rash comprising red spots under skin, 3 to 10 days after tick bite. For both, chills, fever, headache, fatigue, stiff neck, bone pain. If symptoms appear, seek medical attention.

3.6 RADIOLOGICAL HAZARDS AND CONTROLS

Hazards	Controls
None.	N/A

3.7 HAZARDS POSED BY CHEMICALS BROUGHT ONSITE

Contractors and subcontractors are to maintain an indexed file of Material Safety Data Sheets (MSDSs) for chemicals that their employees are potentially exposed to. Wacker's EHS department maintains a file of MSDSs for materials used by Wacker personnel.

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4.0 AIR SAMPLING

Method and Description: Contractors to perform air sampling in accordance with 29 CFR 1910.1000. There is a potential for air borne Benzene therefore monitoring will also have to be performed per 29 CFR 1910.1028

4.1 DECONTAMINATION SPECIFICATION (When directed by Wacker environmental department)

Personnel	Sample Equipment	Heavy Equipment
• Boot wash/rinse	• Wash/rinse equipment	• Power wash
• Glove wash/rinse	• Solvent rinse equipment	• Steam clean
• Outer glove removal	• Solvent disposal method:	• Water disposal method:
• Body suit removal		
• Inner glove removal		
• Respirator removal		
• Hand wash/rinse		
• Face wash/rinse		
• Shower ASAP		
• PPE disposal method:		
• Water disposal method:		

4.2 DIAGRAM OF PERSONNEL DECONTAMINATION LINE

Wash boots and outer gloves in soap and water, remove outer gloves. Remove coveralls and respirator if worn. Dispose of cartridges and sanitize respirator. Remove inner gloves. Wash hands and face with clean water and soap.

5.0 SPILL CONTAINMENT PROCEDURES

Refer to Wacker's Emergency Preparedness and Contingency Plan

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6.0 CONFINED SPACE ENTRY

Confined space entry requires an additional health and safety permit approved by the appropriate Wacker personnel.

7.0 WORK PROCEDURES

7.1 GENERAL WORK PRACTICES

- No spark sources within exclusion or decontamination zones.
- Avoid visibly contaminated areas.
- No eating, drinking, or smoking in contaminated areas, or exclusion or decontamination zones.
- SSC to establish areas for eating, drinking, smoking.
- No contact lenses in exclusion or decontamination zones.
- No facial hair that would interfere with respirator fit if Level C or B is anticipated.
- Site work will be performed during daylight hours whenever possible. Any work conducted during hours of darkness will require enough illumination intensity "to read a newspaper without difficulty."

7.2 RECOMMENDED SITE CONTROL MEASURES

- Contractor site safety coordinators (SSC) to conduct site safety briefing (see below) before starting field activities, or as tasks and site conditions change.
- SSC records safety briefing attendance in logbook, and documents topics discussed.
- Post OSHA job site poster in a central and conspicuous location at the site.
- Determine wind direction.
- Establish work zones: support, decontamination, and exclusion zones, and delineate work zones with flagging or cones as appropriate. Support zone upwind of site.
- Establish decontamination procedures, including respirator decontamination procedures, and test.
- Utilize access control at the entry and exit from each work zone.
- Chemicals to be stored in proper containers.
- MSDSs are available for onsite chemicals employees exposed to.
- Establish onsite communications. These should consist of:
  - Line of sight/hand signals
  - Beeper
  - Two-way radio
- Establish emergency signals. For example:
  - Grasping throat with hand--EMERGENCY--HELP ME
  - Grasping buddy wrist--LEAVE AREA NOW
  - Thumbs up--OK, UNDERSTOOD
  - Two short blasts on air horn--ALL CLEAR
  - Continuous air horn--EMERGENCY--EVACUATE
- Establish offsite communications.
- Establish "buddy" system.
- Establish procedures for disposal of material generated onsite.
- Initial air monitoring conducted by SSC in appropriate level of protection.
- SSC to conduct periodic inspections of work practices to determine effectiveness of this plan. Deficiencies to be noted, reported to DHSM or RHSM, and corrected.

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- Site safety briefing topics: general discussion of health and safety plan; site specific hazards; location of work zones; PPE requirements; equipment; special procedures; emergencies.

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8.0 EMERGENCY RESPONSE PLAN

Refer to Wacker's Emergency Preparedness and Contingency Plan

8.1 PRE-EMERGENCY PLANNING

The SSC performs the applicable pre-emergency planning tasks before starting field activities and coordinates emergency response with Wacker personnel.

- Locate nearest telephone to the site and inspect onsite communications.
- Locate chemical, safety, radiological, biological hazards.
- Confirm and post emergency telephone numbers and route to hospital.
- Post site map marked with location of emergency equipment and supplies.
- Review emergency response plan for applicability to any changed site conditions, alterations in onsite operations, or personnel availability.
- Evaluate capabilities of local response teams.
- Where appropriate and acceptable to the client, inform emergency room/ambulance service and emergency response teams of anticipated types of site emergencies.
- Designate one vehicle as the emergency vehicle; place hospital directions and map inside; keep keys in ignition during field activities.
- Inventory and check site emergency equipment and supplies.
- Review emergency procedures for personnel injury, exposures, fires, explosions, chemical and vapor releases with field personnel.
- Locate onsite emergency equipment and supplies of clean water.
- Verify local emergency contacts, hospital routes, evacuation routes, and assembly points.
- Drive route to hospital.
- Review names of onsite personnel trained in first aid and CPR.
- Rehearse the emergency response plan once prior to site activities.
- Brief new workers on the emergency response plan.

8.2 EMERGENCY EQUIPMENT AND SUPPLIES

The SSC marks the locations of emergency equipment on the site map and posts the map in the support zone.

8.3 EMERGENCY MEDICAL TREATMENT

- The SSC or Wacker emergency coordinator will assume charge during a medical emergency until the ambulance arrives, or the injured person is admitted to the emergency room.
- Prevent further injury.
- Initiate first aid and CPR.
- Call 611 or notify ERTs.
- Determine if decontamination will make injury worse. Yes--seek medical treatment immediately.
- Make certain that injured person is accompanied to emergency room.
- Prepare an incident report.

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8.4 EVACUATION

- Evacuation routes will be designated by SSC prior to beginning of work.
- Onsite and offsite assembly points will be designated prior to beginning of work.
- Personnel will exit the exclusion zone and assemble at the onsite assembly point upon hearing the emergency signal for evacuation of the exclusion zone.
- Personnel will assemble at the offsite point upon hearing the emergency signal for a site evacuation.
- The SSC and a "buddy" will remain onsite after the site has been evacuated (if possible) to assist local responders and advise them of the nature and location of the incident.
- SSC accounts for all personnel in the onsite assembly zone.
- A person designated by the SSC (prior to work) will account for personnel at the offsite assembly area.
- The SSC is to write up the incident as soon as possible after it occurs, and submit a report to the Corporate Director Health and Safety.

8.5 EVACUATION ROUTES AND ASSEMBLY POINTS

8.6 EVACUATION SIGNALS

Exclusion Zone	Site

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9.0 EMERGENCY RESPONSE TELEPHONE NUMBERS (Refer to Contingency plan Chapter 2 for complete listing)	
To report an onsight emergency, all personal should dial	**Phone: 611**
SITE ADDRESS: 7200 NW Front Avenue Portland, OR	**Phone:** 503/243-2020
Police:	**Phone:** 911
Fire:	**Phone:** 911
Ambulance:	**Phone:** 911
Water: Portland Water Bureau	**Phone:** 503/796-7770
Gas: Northwest Natural Gas	**Phone:** 503/226-4211
Electric: Portland General Electric	**Phone:** 503/228-6322
Hospital: Good Samaritan **Address:**	**Phone:** 503/229-7260
Route To Hospital: (Refer to Contingency plan.)	
9.1 GOVERNMENT AGENCIES INVOLVED IN PROJECT	
Federal: NA	
State: NA	
Local: NA	

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10.0 PLAN APPROVAL
This site safety plan has been written for a guideline for Wacker contract personnel. Wacker claims no responsibility for its use by others, unless specified and defined in project or contract documents. The plan is written for the specific site conditions, purposes, dates, and personnel specified and must be amended if these conditions change.
PLAN WRITTEN BY: Chip Bloomer DATE: 11/28/94
PLAN APPROVED BY: Tom McCue DATE: 11/28/94
10.1 PLAN AMENDMENTS
DATE: CHANGES MADE BY:
CHANGES TO PLAN:
APPROVED: DATE:
14.2 PLAN AMENDMENTS
DATE: CHANGES MADE BY:
CONTRACTOR CHANGES TO PLAN:
APPROVED (Contractor SSC): DATE:
11.0 ATTACHMENTS TO PLAN
Attachment 1: Employee signoff **Attachment 2:** Applicable MSDSs

SCOEPA00022043

ATTACHMENT 1

EMPLOYEE SIGNOFF

The employees listed below have been provided a copy of this health and safety plan, have read and understood it, and agree to abide by its provisions.

EMPLOYEE NAME	EMPLOYEE SIGNATURE / DATE

SCOEPA00022044

STATE OF OREGON
DEPARTMENT OF ENVIRONMENTAL QUALITY

Memorandum

To: Staff interested in Doane's Lake
LDPatterson, CRClinton, RPReiter,
PKRessler, CYoung

Date: August 5, 1985

From: JAGillaspie

Subject: Attached Summary from Wacker

HW 9.50

Attached is the preliminary report from Wacker Siltronics on the soil sampling conducted on its property. The company and its consultants are now conducting groundwater sampling, after concluding that it was difficult to know what was happening with just soil samples. They plan on meeting with us when the groundwater sampling is completed and they know the scope of the next step.

(Newfile it one hasn't already been prepared)

JAG/emc
cc: EPA - Cherry Evans-Carmichael
EPA - Pat Storm
Multnomah County - Dr. Charles Schade
Health Division - Michael Heumann

Hazardous & Solid Waste Division
Dept. of Environmental Quality
RECEIVED
AUG 5 1985

A PRELIMINARY REPORT
SOIL INVESTIGATION FOR PROPOSED POLYSILICON PLANT

WACKER SILTRONIC CORPORATION
PORTLAND, OREGON

Prepared By

CH2M HILL NORTHWEST, INC.
2020 S.W. Fourth Avenue
Portland, Oregon 97201

Dept. of Environmental Quality
RECEIVED
JUL 24 1985
NORTHWEST REGION

JUNE 1985
P19786.A1.00

SCOEPA00022046

INTRODUCTION

Wacker Siltronic Corporation contracted CH2M HILL to conduct a soil investigation on Wacker's property located in the Northwest Industrial area of Portland, Oregon. The purpose of the investigation was to evaluate subsurface conditions within a section of the vacant portion of the site as part of the preliminary engineering for the design and construction of the proposed polysilicon plant.

The subsurface investigation was initiated based on the presence (both past and current) of industrial manufacturing and processing facilities within the Doane Lake area and recent environmental regulations--the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the Resource Conservation and Recovery Act of 1976 (RCRA). Wacker was concerned that past or current management practices of industrial wastes within the Doane Lake area may have resulted in the presence of these materials or subsequent residues on Wacker's property, which would prevent or hinder the construction of the proposed polysilicon plant and future expansions of the existing manufacturing facilities.

This preliminary report describes the soil boring, sampling, and analytical procedures and construction of the groundwater monitoring wells. It also presents the results of the laboratory analyses, which indicate the presence of chemical constituents commonly associated with petroleum products, coal tar, and pesticides. Interpretation of the results presented in this report is beyond the scope of our contract and will be included as part of future work (i.e., site environmental assessment).

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SITE DESCRIPTION

Wacker Siltronic Corporation is located in the northwest section of the City of Portland on the west bank of the Willamette River. The property, consisting of approximately 85 acres, is situated between the St. Johns Bridge and the Burlington Northern Railroad Bridge and is essentially rectangular in shape. Property boundaries are the Willamette River to the northeast; the Burlington Northern Railroad berm, which provides the approach to the railroad bridge, to the southwest; Burlington Northern track and adjacent N.W. St. Helens Road to the southwest; and the property line shared with Northwest Natural Gas and the Koppers Company to the northwest. Figure 1 shows the location of the Wacker property in relation to these landmarks and other industrial companies in the vicinity.

The project site is located in a vacant field about 400 feet south of Wacker's existing facilities, as shown in Figure 2. The site is bounded on the north by the existing Wacker plant, and is bordered on the south and east by Burlington Northern Railroad right-of-way. Underground utilities, consisting of oil, water, gasoline, natural gas, and sewer lines, as well as electric and telephone cables, are located in a 100-foot-wide easement on the north side of the site.

The site is relatively level with elevations ranging from about 40 feet National Geodetic Vertical Datum 1929 (NGVD) in the southern part to about 32 feet in the northern part. The local ground surface is deeply rutted with heavy machinery tracks and ditches. Wood debris, concrete, and other waste materials are present in small amounts across the field.

FIELD INVESTIGATION

The field investigation was performed from April 1 through 5, 8 and 9, 1985. The investigation involved collecting soil

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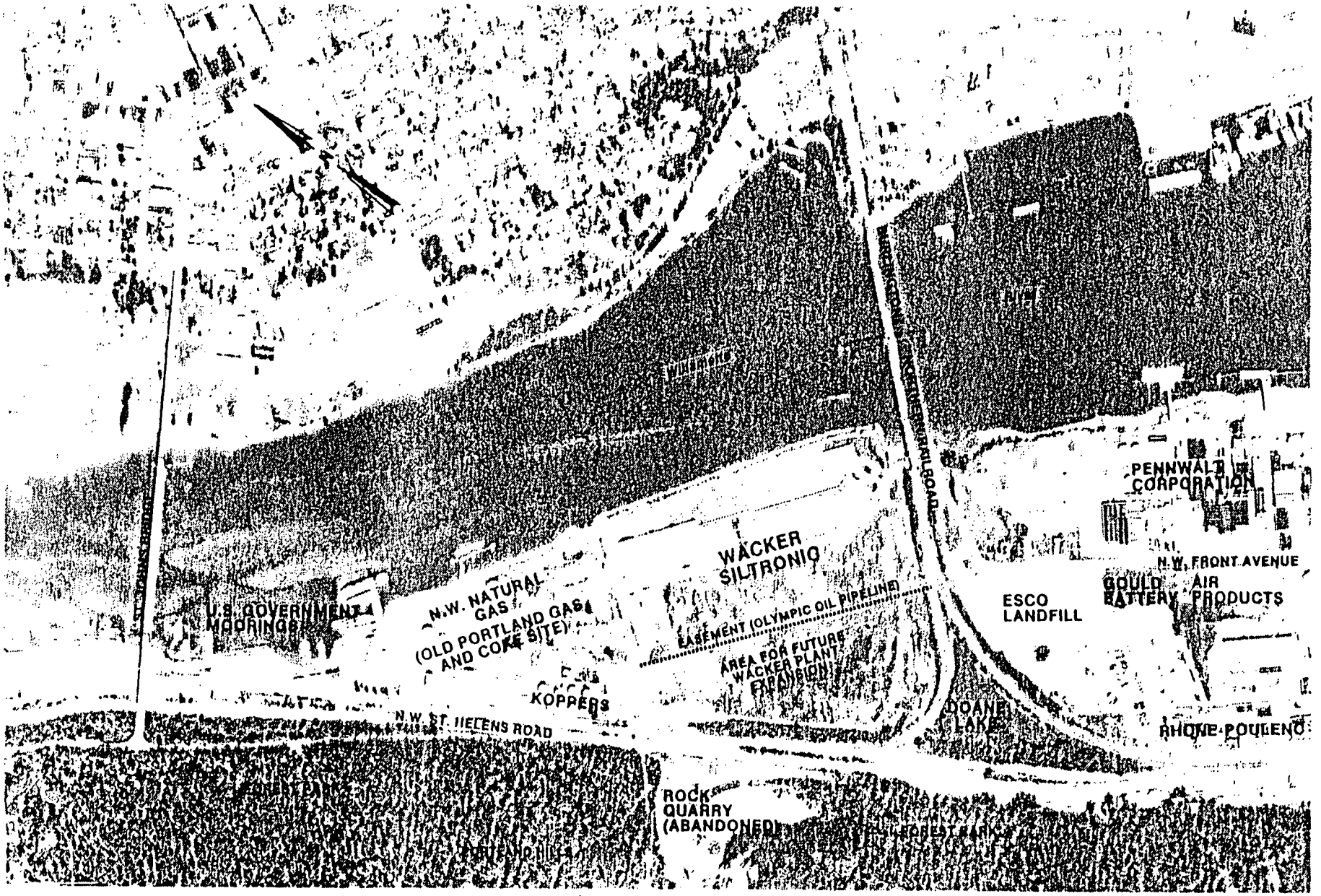

Figure 1 **WACKER SILTRONIC PLANT AND SURROUNDING VICINITY (1983)**

SCALE: 1" = 940 FEET (1 cm : 110 m)

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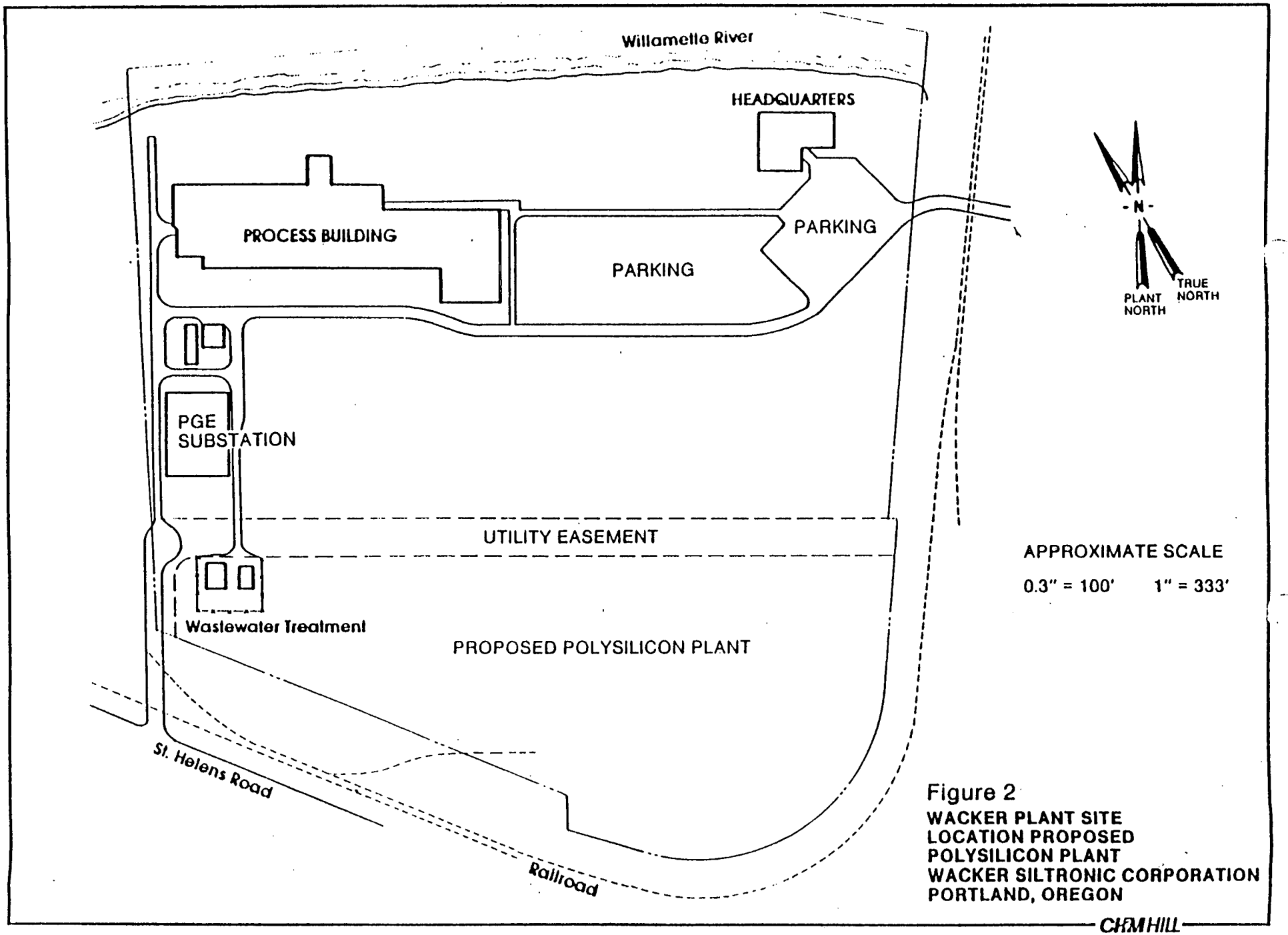

Figure 2
WACKER PLANT SITE
LOCATION PROPOSED
POLYSILICON PLANT
WACKER SILTRONIC CORPORATION
PORTLAND, OREGON

CH2MHILL

SCOEPA00022050

samples from seven soil borings, all of which were completed as monitoring wells. The locations of the borings/monitoring wells (designated MW-1 through MW-7) are shown in Figure 3. The soil borings were drilled and monitoring wells constructed by Geotech Explorations, Inc., of Beaverton, Oregon, under the field observation of a CH2M HILL hydrogeologist.

SOIL BORING AND SAMPLING

The seven soil borings were drilled using a CME-55 rotary drill rig and 6¼-inch (OD) hollow-stem augers. Soil samples were recovered at 5-foot intervals. Samples were recovered using a 2-inch split-spoon sampler following the requirements of the standard Penetration Test (ASTM D 1586). The sampler was driven 18 inches ahead of the auger bit to collect an undisturbed soil sample. The depth of soil borings ranged from 31.5 to 41.5 feet, generally between 5 and 20 feet below fill material and into native soils. The CH2M HILL hydrogeologist inspected, classified, and logged each borehole and soil sample in the field in approximate accordance with the Visual-Manual Procedure (ASTM D 2488). The log included a physical description of the soil type and a visual and odor estimate for the presence of contaminants. Sample intervals, soil types, and descriptions of the soil types and soil borings are provided in the soil boring record drawings presented in the appendix.

A composite soil sample from each split-spoon was placed in a clean 8-ounce glass jar. Each jar was filled to the top before it was sealed. The label that had been affixed to the sample container was then filled out. Information on the label included the facility name, the sample identification number, the name of the person collecting the sample, date and time of collection, and the location of the sample. The sample was then placed in a portable cooler until the end of each day when it was transferred via chain-of-custody record

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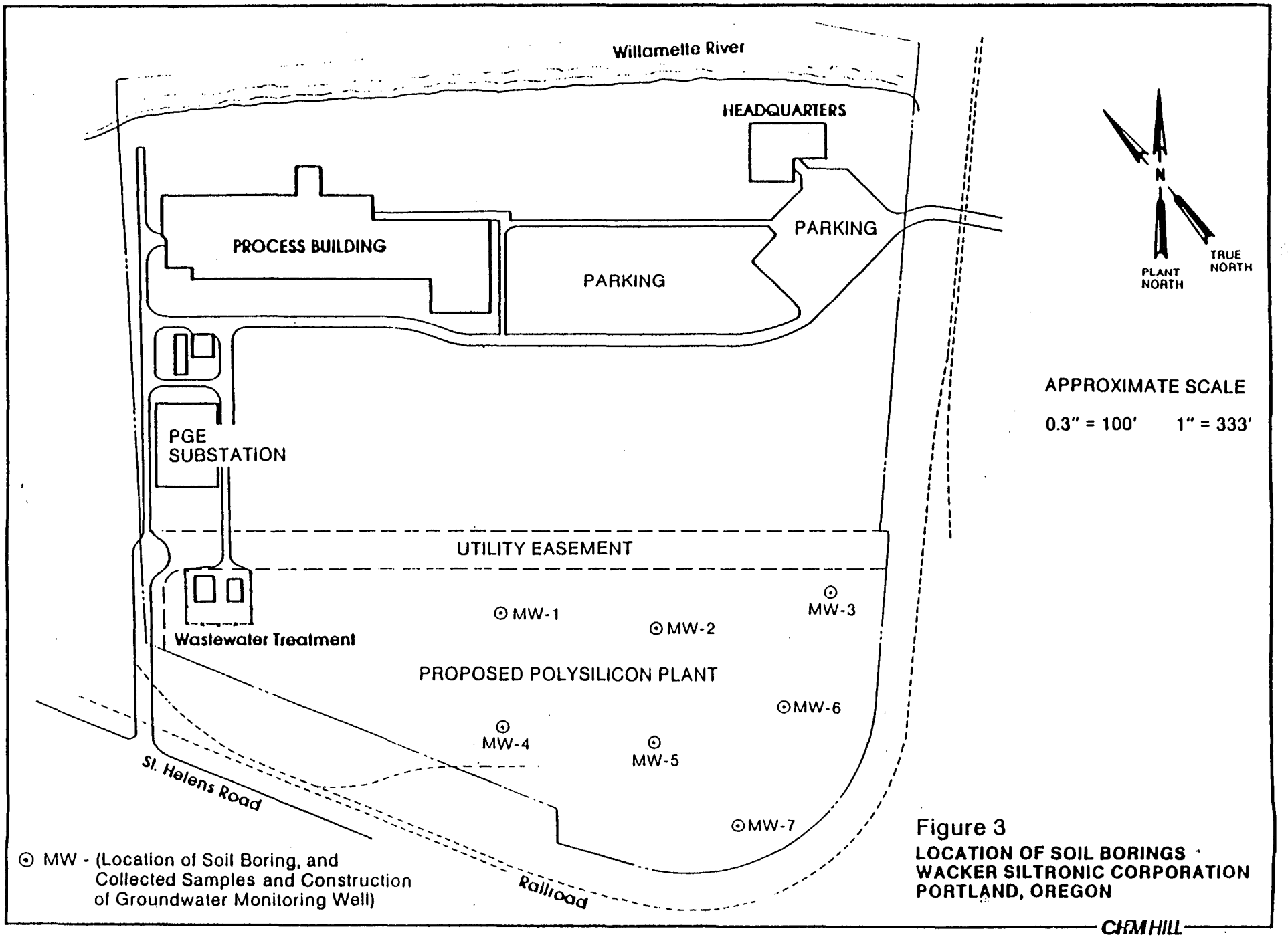

Figure 3
LOCATION OF SOIL BORINGS
WACKER SILTRONIC CORPORATION
PORTLAND, OREGON

CH2M HILL

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to a refrigerator located inside the laboratory area of Wacker's wastewater treatment building. Chain-of-custody records were kept for every sample collected. Sample custody was maintained until the samples were relinquished directly to Wacker or an outside laboratory. A sample of the chain-of-custody form used is illustrated in the appendix.

All drilling equipment was thoroughly steam-cleaned before drilling each boring. Oil and grease were not used at drill rod connection fittings to prevent contamination of the soil samples. The split-spoon soil sampler was decontaminated between each use. Decontamination steps included:

- Washing off grass, soil particles, mud smears, etc., in a bucket of tap water
- Washing in a 5 to 10 percent solution of trisodium phosphate (TSP) and tap water
- Two rinses in clean tap water
- One rinse each with distilled water and methanol

The same decontamination procedures were used for the stainless steel utensils used to transfer soil from the sampler to the jars. Utensils were stored in a new plastic bag until they were ready for use.

A number of quality control measures were performed in order to ensure that all data generated was of known precision, and accuracy and conformed to accepted procedures. Soil sample splits were collected at soil boring sites MW-2, -5, and -6. Several transfer blanks were also prepared to check for potential contamination of sample jars. Samples of water poured into the drill holes to hold back heaving sands were also collected.

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GROUNDWATER MONITORING WELL CONSTRUCTION

Seven groundwater monitoring wells were constructed by installing well screen casing assemblies into the completed drill holes.

Each assembly consisted of 2-inch diameter schedule 40 PVC. Well screens consisted of a 15-foot length of PVC with three rows of 0.010-inch machine-slotted openings. A 5-foot solid PVC sump was placed beneath each screen. Solid PVC casing was placed above the screen and extended to the ground surface. Casing lengths were connected by flush-threaded fittings; no solvents were used to connect PVC sections.

Each well screen interval was gravel-packed by pouring a coarse-grained sand into the annular space between the PVC and the hollow stem of the auger. As the auger was pulled up, the sand dropped out of the hollow stem into the well to envelop the well screen. After the sand pack was installed to 2 or 3 feet above the top of the well screen, the annular space between the PVC casing and the hollow stem was filled with 1 to 2 feet of pelletized bentonite followed by cement grout to the ground surface. A summary of the construction of each well is provided in the soil boring record drawings presented in the appendix.

Well heads were completed at approximately 2 feet above the ground surface with locking steel caps that were anchored 2 to 3 feet into the cement grout mixture. The monitoring wells were developed by the drilling contractor by blowing compressed air through an air line into the sump (tail pipe) located below the well screen. Development was considered complete when the return water became visibly less turbid. The PVC monitoring well assembly was thoroughly steam-cleaned before construction of each well. As a measure of additional quality assurance and control, samples of the sand filter

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pack material used for well construction were collected and saved.

LABORATORY ANALYSIS AND SOIL SAMPLE RESULTS

The field sample description generally provided the basis for selecting samples to be sent to the laboratory for chemical analysis. Samples in which contaminants were most apparent visually and by odor were selected for analysis. Also, at least one soil sample from each soil boring site was analyzed, as was at least one sample at every 5-foot depth (except at 30 feet) from the combination of all soil boring locations. Figure 4 shows the approximate vertical location of the collected soil samples for each monitoring well and identifies which samples were analyzed.

The selection of the chemical analyses to be performed on each soil sample was based on the past and current industrial chemical manufacturing and handling activities within the Doane Lake area (i.e., petroleum products, coal tar, creosote, pesticides, battery recycling, foundry process waste disposal). The following chemical analyses were performed on the selected soil samples by Coffey Laboratories, Inc. (located at 4914 N.E. 122nd Avenue, Portland, Oregon):

- Oil and grease
- Phenols
- Volatiles and polynuclear aromatic hydrocarbons
- E.P. toxicity for:
  --pesticides
  --herbicides
  --arsenic
  --barium
  --cadmium
  --chromium
  --lead
  --mercury
  --selenium
  --silver

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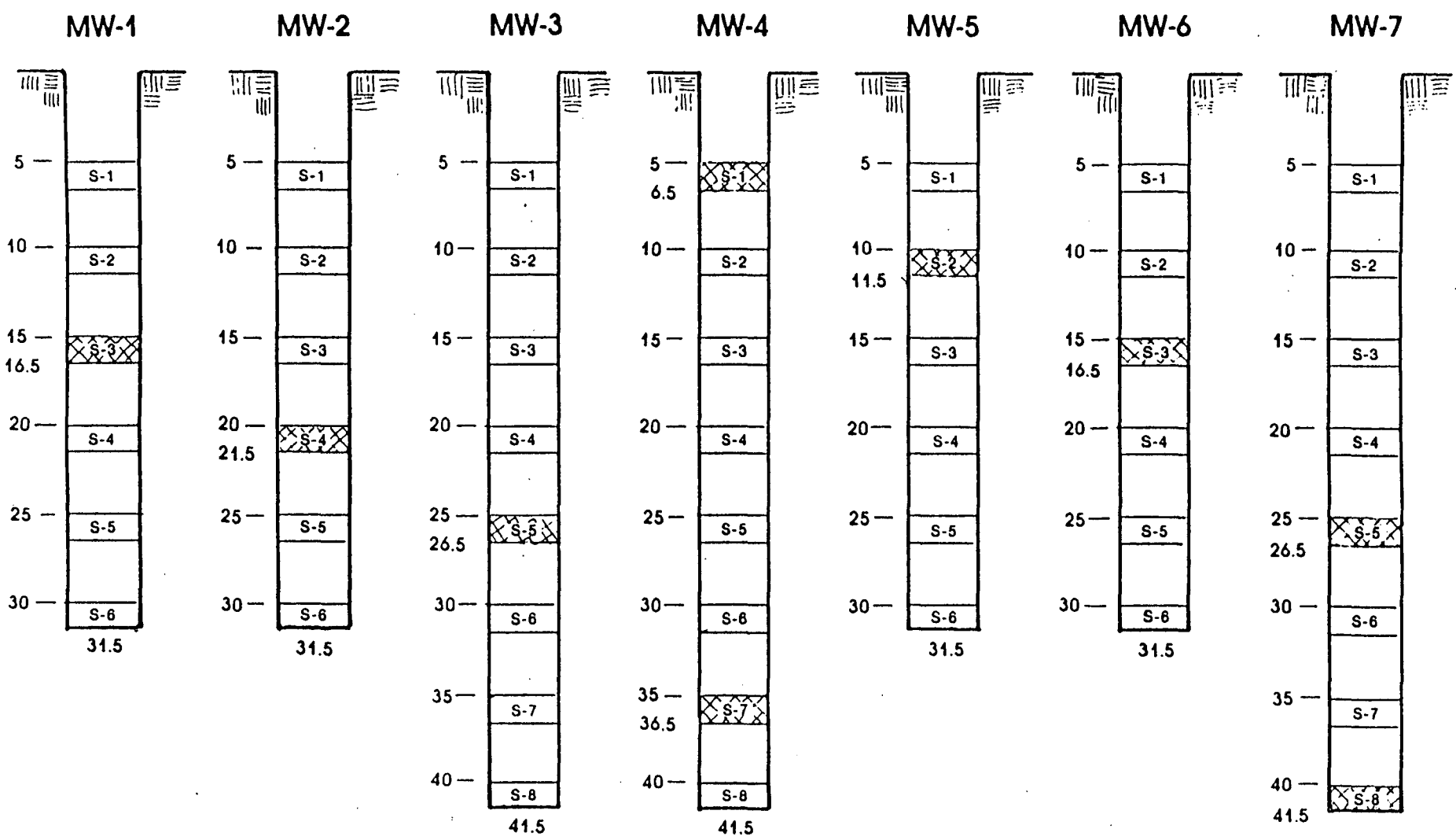

Analyzed Collected Soil Samples

(NOTE: Parallel lines denote soil samples. These were taken at 1.5 ft intervals starting every five feet)

Figure 4

GENERAL VERTICAL LOCATION COLLECTED SOIL SAMPLES WACKER SILTRONIC CORPORATION PORTLAND, OREGON

CH2M HILL

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The results of the laboratory analysis are presented in Table 1. A copy of the Coffey Laboratories, Inc., report is included in the appendix.

The field samples were analyzed for phenols, pesticides, herbicides, metals, volatiles, and aromatic hydrocarbons by EPA methods (SW-846, EPA-602, 4-79-020); the oils and grease were measured by standard methods (method 503 D).

Laboratory quality assurance procedures included method blanks, duplicates for precision measurements, and spikes for accuracy measurements. The frequency of blank, duplicate, and spike measurements was at a minimum of 10 percent per set to meet the standard requirements. The data were evaluated in view of the QC findings and found acceptable.

A review of the laboratory analysis indicates that each soil boring location contained a mixture of substances commonly associated with petroleum products, coal tar, and pesticides. The following list summarizes the principal substances found in each of the seven borings:

- MW-1 PAHs, petroleum products
- MW-2 PAHs, petroleum products
- MW-3 petroleum products
- MW-4 petroleum products
- MW-5 PAHs, petroleum products, 2,4-D
- MW-6 petroleum products, 2,4-D
- MW-7 petroleum products

Interpretation of results presented in Table 1 is beyond the scope of this report and will be included as part of future work (i.e., site environmental assessment).

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Table 1
WACKER SILTRONIC, POLYSILICON PLANT SOILS INVESTIGATION
SOURCE: COFFEY LABORATORIES, INC./APRIL 30, 1985
RESULTS OF SOILS ANALYSIS

Chemical Compounds	MW-1, S-3 (15-16.5 ft)	MW-2, S-4 (20-21.5 ft)	MW-3, S-5 (25-26.5 ft)	MW-4, S-1 (5-6.5 ft)	MW-4, S-7 (35-36.5 ft)	MW-5, S-2 (10-11.5 ft)	MW-6, S-3 (15-16.5 ft)	MW-7, S-5 (25-26.5 ft)	MW-7, S-8 (40-41.5 ft)	Detection Limits	Reference Criteria
Organic Analyses											
o Volatile Compounds											
1,1,1-Trichloroethane	0.01	BD	BD	BD	BD	BD	BD	BD	BD	0.01	pp, PDW (*)
1,2-Dichloroethane	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.01	pp, PDW (*)
1,1,2,2-Tetrachloroethylene	2.2	11	BD	BD	BD	0.14	BD	BD	BD	0.05	
Toluene	1.2	20	0.11	BD	BD	0.20	BD	BD	BD	0.1	pp
Chlorobenzene	0.04	BD	BD	BD	BD	BD	BD	BD	BD	0.04	pp
Ethyl Benzene	17	5.4	BD	BD	BD	BD	BD	BD	0.05	0.04	pp
Xylene	146	116	BD	BD	BD	1.5	BD	2.8	1.2	1.0	
o Acid Extractables											
Phenol	0.35	3.1	0.20	0.30	0.17	0.07	0.05	0.06	0.08	NR	pp, SWQ
2-Chlorophenol	ND	7.8	0.08	0.26	ND	ND	0.13	ND	0.14	NR	pp, SWQ
2-Nitrophenol	ND	0.20	ND	ND	ND	ND	ND	ND	ND	NR	pp, SWQ
2,4-Dimethylphenol	ND	3.1	ND	ND	ND	0.22	0.17	ND	ND	NR	pp, SWQ
2,4-Dichlorophenol	ND	2.7	ND	ND	ND	0.24	ND	ND	ND	NR	pp, SWQ
2,4,6-Trichlorophenol	ND	ND	ND	ND	ND	0.22	ND	ND	ND	NR	pp, SWQ
2,4-Dinitrophenol	ND	ND	ND	ND	ND	0.81	ND	ND	ND	NR	pp, SWQ
Pentachlorophenol	ND	ND	ND	ND	0.31	6.9	5.1	ND	ND	NR	pp, SWQ, SHW
o Base Neutral Extractables											
Naphthalene	6.7	360	BD	BD	BD	230	BD	BD	BD	1	pp
Acenaphthalene	5.6	230	BD	BD	BD	24	BD	BD	BD	1	pp
Acenaphthene	8.0	560	BD	BD	BD	28	BD	BD	BD	1	pp
Fluorene	5.0	290	BD	BD	BD	20	BD	BD	BD	1	pp
Phenanthrine-Anthracene (***)	32	1,400	3	BD	BD	150	BD	1.6	BD	1	pp
Fluoranthene	16	530	BD	BD	BD	50	BD	1.1	BD	1	pp
Pyrene	18	550	BD	BD	BD	57	BD	1.2	BD	1	pp
Chrysene	12	92	BD	BD	BD	36	BD	1.7	BD	1	pp
Benzo (b) + Benzo (k) Fluoranthene (***)	8	120	BD	BD	BD	200	BD	BD	BD	1	pp
Benzo (a) pyrene	19	120	BD	BD	BD	100	BD	BD	BD	1	pp
Indeno (1,2,3-CD) Pyrene + Dibenzo (a,b) Anthracene (***)	BD	270	BD	BD	BD	7	BD	BD	BD	1	
Benzo (ghi) Perylene	BD	360	BD	BD	BD	25	BD	BD	BD	1	pp
o Pesticides (EP Toxicity)											
Gamma BHC (Lindane)	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.04	pp, SHW, PDW
Endrin	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.002	pp
Toxaphene	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	pp

PDR956.031.1

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Table 1 (Continued)

Chemical Compounds	MW-1, S-3 (15-16.5 ft)	MW-2, S-4 (20-21.5 ft)	MW-3, S-5 (25-26.5 ft)	MW-4, S-1 (5-6.5 ft)	MW-4, S-7 (35-36.5 ft)	MW-5, S-2 (10-11.5 ft)	MW-6, S-3 (15-16.5 ft)	MW-7, S-5 (25-26.5 ft)	MW-7, S-8 (40-41.5 ft)	Detection Limits	Reference Criteria
Inorganic Analyses (EP Toxicity)											
Arsenic	BD	BD	BD	BD	BD	BD	BD	ND	BD	0.05	pp,SHW,SWQ,PDW
barium	0.05	0.11	0.05	0.09	BD	0.05	0.11	0.08	0.15	0.05	SHW, SWQ
Cadmium	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	pp,SHW,SWQ,PDW
Chromium	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	pp,SHW,SWQ,PDW
Lead	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	pp,SHW,SWQ,PDW
Mercury	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	pp,SHW,PDW
Selenium	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	pp,SHW,PDW
Silver	BD	BD	BD	BD	BD	BD	BD	ND	BD	0.05	pp,SHW,PDW
Miscellaneous Analysis											
o non-PP Phenols/Cresols											
3 & 4-Chlorophenol	0.44	17.5	0.06	ND	ND	1.7	0.32	ND	ND	NR	SHW, SWQ
2,4,5-Trichlorophenol	ND	1.9	ND	ND	ND	ND	ND	ND	ND	NR	SHW, SWQ
2,3,4,5-Tetrachlorophenol	4.9	256	ND	0.40	ND	0.23	4.7	0.06	0.25	NR	SHW, SWQ
2,3,4,6-Tetrachlorophenol	0.24	ND	ND	ND	ND	ND	ND	1.0	ND	NR	SHW, SWQ
2,3,5,6-Tetrachlorophenol	ND	4.0	ND	0.58	0.11	0.33	0.55	ND	0.46	NR	SHW, SWQ
o-Cresol	0.04	3.4	ND	0.02	ND	0.19	0.05	ND	ND	NR	
m- and p-Cresol (***)	0.006	ND	ND	0.08	ND	ND	ND	ND	ND	NR	
o Non-PP Pesticides (EP Toxicity)											
Methoxychlor	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.1	SHW, PDW
2,4-D	BD	BD	BD	BD	BD	10.0	160.0	BD	BD	10	SHW, PDW
2,4,5-TP (Silvex)	BD	BD	BD	BD	BD	BD	BD	BD	BD	1	SHW, PDW
o Misc. Constituents/Parameters											
Oil and Grease	0.340%	0.1498%	0.0587%	0.914%	0.0304%	0.190%	0.0539%	0.0650%	0.0586%		

Unless otherwise specified, all units are mg/kg (mg/L).
pp Priority Pollutant
PDW National Interim Primary Drinking Water Regulations
PDW(*) Proposed N.I.P.D.W.R.
SHW State of Oregon Hazardous Waste Administrative Rules
SWQ State of Oregon Water Quality Administrative Rules
BD Parameter detected, but below analytical quantification limits.
ND Analyzed, but not detected.
NR Not reported.
(***) Reported as sum of two compounds.

SCOEPA00022059

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

April 30, 1995
Log #A250410-I

Wacker Siltronics
P.O. Box 03180
Portland, Oregon 97203

Analyses Requested: Oil and Grease, Phenols, Volatiles, and Polynuclear Aromatic Hydrocarbons

Sample Identifications:
#1 - MW1, S-3 (15.0' - 16.5')
#2 - MW2, S-4 (20.0' - 21.5')
#3 - MW3, S-5 (25.0' - 26.5')
#4 - MW4, S-1 (5.0' - 6.5')
#5 - MW4, S-7 (35.0' - 36.5')
#6 - MW5, S-2 (10.0' - 11.5')
#7 - MW6, S-3 (15.0' - 16.5')
#8 - MW7, S-5 (25.0' - 26.5')
#9 - MW7, S-9 (40.0' - 41.5')

SAMPLE #	OIL AND GREASE
#1	0.340 %
#2	0.1498 %
#3	0.0587 %
#4	0.0914 %
#5	0.0304 %
#6	0.190 %
#7	0.0539 %
#8	0.0650 %
#9	0.0586 %

THIS REPORT CONTINUES

SCOEPA00022060

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

PHENOL RESULTS

ANALYSIS	SAMPLE #1 RESULTS
Phenol	0.35
O-Cresol	0.04
3 & 4 Chlorophenol	0.44
2,3,4,6 Tetrachlorophenol	0.24
2,3,4,5 Tetrachlorophenol	4.9
M & P Cresol	0.006

	SAMPLE #2 RESULTS
Phenol	3.1*
O-Cresol	3.4*
3 & 4 Chlorophenol	17.5*
2-Chlorophenol	7.8*
2-Nitrophenol	0.20
2,4 Dimethylphenol	3.1
2,4 Dichlorophenol	3.7
2,4,5 Trichlorophenol	1.9
2,3,5,6 Tetrachlorophenol	4.0
2,3,4,5 Tetrachlorophenol	356

	SAMPLE #3 RESULTS
Phenol	0.20
3 & 4 Chlorophenol	0.06
2-Chlorophenol	0.08

	SAMPLE #4 RESULTS
Phenol	0.30
2-Chlorophenol	0.25
O-Cresol	0.03
M & P Cresol	0.08
2,3,5,6 Tetrachlorophenol	0.59
2,3,4,5 Tetrachlorophenol	0.40

	SAMPLE #5 RESULTS
Phenol	0.17
2,3,5,6 Tetrachlorophenol	0.11
Pentachlorophenol	0.31

Results reported in ng/kg

THIS REPORT CONTINUED

SCOEPA00022061

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

Wacker Siltronics
Log #A850410-I

April 30, 1985
Page Three

PHENOL RESULTS

ANALYSIS	SAMPLE #6 RESULTS
Phenol	0.07
O-Cresol	0.19
2,4 Dimethylphenol	0.22
2,4 Dichlorophenol	0.24
3 & 4 Chlorophenol	1.7
2,4,6 Trichlorophenol	0.22
2,3,5,6 Tetrachlorophenol	0.33
2,3,4,5 Tetrachlorophenol	0.23
2,4 Dinitrophenol	0.81
Pentachlorophenol	6.9

	SAMPLE #7 RESULTS
Phenol	0.05
O-Cresol	0.05
2-Chlorophenol	0.13
2,4 Dimethylphenol	0.17
3 & 4 Chlorophenol	0.32
2,3,5,6 Tetrachlorophenol	0.55
2,3,4,5 Tetrachlorophenol	4.7
Pentachlorophenol	5.1

	SAMPLE #8 RESULTS
Phenol	0.05
2,3,4,6 Tetrachlorophenol	1.0
2,3,4.5 Tetrachlorophenol	0.06

	SAMPLE #9 RESULTS
Phenol	0.09
2-Chlorophenol	0.14
2,3,5,6 Tetrachlorophenol	0.45
2,3,4,5 Tetrachlorophenol	0.25

Results reported in mg/kg

THIS REPORT CONTINUED

SCOEPA00022062

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

Wacker Siltronics
Log #A850410-I

April 30, 1985
Page Four

EP TOXICITY PESTICIDES

Results below apply to the water extract of soil samples. Water extracts performed as per EPA Specification of EP-Toxicity Method.

SAMPLE #	ENDRIN	LINDANE	METHOXYCHLOR	TOXAPHENE
#1	<0.002	<0.04	<0.1	<0.05
#2	<0.002	<0.04	<0.1	<0.05
#3	<0.002	<0.04	<0.1	<0.05
#4	<0.002	<0.04	<0.1	<0.05
#5	<0.002	<0.04	<0.1	<0.05
#6	<0.002	<0.04	<0.1	<0.05
#7	<0.002	<0.04	<0.1	<0.05
#8	<0.002	<0.04	<0.1	<0.05
#9	<0.002	<0.04	<0.1	<0.05
Allowed Limits	0.02	0.4	10	0.5

< denotes "less than"

Results expressed in mg/liter

EP TOXICITY HERBICIDES

SAMPLE #	2,4-D	2,4,5 TP (SILVEX)
#1	<10 (mg/liter)	<1 (mg/liter)
#2	<10	<1
#3	<10	<1
#4	<10	<1
#5	<10	<1
#6	10.0	<1
#7	150.0	<1
#8	<10	<1
#9	<10	<1

THIS REPORT CONTINUED

SCOEPA00022063

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

Subject: E P Toxicity Test.

Method of Analysis: Federal Register/Vol.45, No.98/Monday, May 19, 1980/ Rules and Regulations: Appendix II, Page 33127

Field Data: Samples were collected and delivered by the Client

ANALYSIS	#1	#2	#3	#4	#5
Arsenic	<0.05	<0.05	<0.05	<0.05	<0.05
Barium	0.05	0.11	0.05	0.09	<0.05
Cadmium	<0.05	<0.05	<0.05	<0.05	<0.05
Chromium	<0.05	<0.05	<0.05	<0.05	<0.05
Lead	<0.05	<0.05	<0.05	<0.05	<0.05
Mercury	<0.05	<0.05	<0.05	<0.05	<0.05
Selenium	<0.05	<0.05	<0.05	<0.05	<0.05
Silver	<0.05	<0.05	<0.05	<0.05	<0.05

ANALYSIS	#6	#7	#8	#9	Limit
Arsenic	<0.05	<0.05	<0.05	<0.05	5.0
Barium	0.05	0.11	0.09	0.15	100.0
Cadmium	<0.05	<0.05	<0.05	<0.05	1.0
Chromium	<0.05	<0.05	<0.05	<0.05	5.0
Lead	<0.05	<0.05	<0.05	<0.05	5.0
Mercury	<0.05	<0.05	<0.05	<0.05	0.2
Selenium	<0.05	<0.05	<0.05	<0.05	1.0
Silver	<0.05	<0.05	<0.05	<0.05	5.0

< denotes "less than"

Results expressed in mg/liter

THIS REPORT CONTINUED

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

VOLATILES (HEADSPACE ANALYSIS)

COMPOUND	#1	#2	#3	#4	#5
1,2-Dichloro-ethane	<0.01	<0.01	<0.01	<0.01	<0.01
1,1,1-Trichloro-ethane	0.01	<0.01	<0.01	<0.01	<0.01
Toluene	1.2	20	0.11	<0.1	<0.1
1,1,2,2 Tetra-chloroethylene	2.2	11	<0.05	<0.05	<0.05
Chlorobenzene	0.04	<0.04	<0.04	<0.04	<0.04
Ethyl Benzene	17.0	5.4	<0.04	<0.04	<0.04
Xylene	146	116	<1.0	<1.0	<1.0

COMPOUND	#6	#7	#8	#9
1,2-Dichloro-ethane	<0.01	<0.01	<0.01	<0.01
1,1,1-Trichloro-ethane	<0.01	<0.01	<0.01	<0.01
Toluene	0.20	<0.1	<0.1	<0.1
1,1,2,2 Tetra-chloroethylene	0.14	<0.05	<0.05	<0.05
Chlorobenzene	<0.04	<0.04	<0.04	<0.04
Ethyl Benzene	<0.04	<0.04	<0.04	0.05
Xylene	1.5	<1.0	2.9	1.3

< denotes "less than"

Results reported in mg/kg

Some interference was encountered due to naphthalene and some of the more volatile phenols and PNA s.

THIS REPORT CONTINUES

SCOEPA00022065

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-3	SHEET 1 OF 2

SOIL BORING RECORD DRAWING

PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME GRADATION OR PLASTICITY PARTICLE SIZE DISTRIBUTION COLOR MOISTURE CONTENT RELATIVE DENSITY OR CONSISTENCY SOIL STRUCTURE MINERALOGY USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING DRILLING RATE DRILLING FLUID LOSS TESTS AND INSTRUMENTATION
	5	5.0						Silty topsoil, then sandy cuttings to 5'
		6.5	S-1	18	7-6-2 (8)	SAND, poorly graded, fine sand, ~15% fine, but some interlayers of silt, medium dense, dry, light brown, (SP), fill.		Grout to surface
								Cuttins change to dark gray silt at ±7'
								7' top of bentonite soil
								Top of sand pace 8 1/2'
	10	10.0						
		11.5	S-2	18	2-2-7 (9)	Interbedded silt and sand, sand same as above (SP), except gray, SILT, low plasticity, 10-15% sand, odor, light gray, moist, firm (ML), fill.		Screen top 12'
	15	15.0						Driller notes H_2O at ±15'
		16.5	S-3	18	1-4-10 (14)	SAND, poorly graded, same as S-1, except strong hydrocarbon odor (SP), fill.		First notice hydrocarbon odor in cutting at 15'
	20	20.0						15' schedule 40 2" 10 slot PVC screen
		21.5	S-4	18	4-4-7 (11)	Interbedded silt and sand, same as S-2, except includes partially decomposed wood fragments and mild to strong hydrocarbon odor, wet, gray, fill.		
	25	25.0						
		26.5	S.5	18	5-6-6 (12)	SAND, poorly graded, fine sand, less than 10% fine, wet, medium to dark gray, compact (SP), strong hydrocarbon odor, fill.		Screen bottom 27'
								5'- 4" Sump
	30	30.0						

REV. 11-82 FORM D1556

SCOEPA00022066

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-3	SHEET 2 OF 2

SOIL BORING RECORD DRAWING

PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
		31.5	S-6	18	4-5-5 (10)	SAND, poorly graded, fine sand, some interbedded silt in lower 2-4", medium gray, wet, medium dense, strong hydrocarbon odor, fill.		Sump bottom at 32'- 4"
								Bottom of fill at ±34 1/2'
	35	35.0				Upper 14" - mixture of sand and silt, probably washed cavings.		Augered to 35' and driller notes 3' of heave; opted to remove check ball from sampler and jet it to sample position in hopes of getting recovery; sample may be disturbed; pumped fresh water into hole (sample of water taken).
		36.5	S-7	18	8-6-6 (12)	Lower 4" - SILT, low plasticity, medium to dark gray, moist, firm (ML), slight hydrocarbon odor in upper 12", not noticeable in lower 6", sand and silt were mixed together in jar, silt is probably native soil.		
	40	40.0				Upper 12" - sand as in S-6, but is washed, probably is heaved material, discarded.		
		41.5	S-8	6"	3-3-3 (9)	Lower 6" - SILT, low plasticity, medium to dark gray, moist, firm (ML), probably native soil, no noticeable hydrocarbon odor.		
								Worst samples
								Sample choices, any of S-3, S-4, S-5, S-6.

REV. 11/82 FORM D1556

SCOEPA00022067

CH2M HILL

PROJECT NUMBER	BORING NUMBER	SHEET
P19436.A2	MW-1	1 OF 2

SOIL BORING RECORD DRAWING

PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION / DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
5	5.0						Grout to surface
							Top of bentonite at 2 1/2"
	6.5	S-1	18	1-1-1 (2)	SILT, low plasticity, medium gray with brown mottling, moist, soft (ML), fill.		Top of gravel at 5'
							Screen top at 7'
							Driller notes water at ±9';
10	10.0				Upper 16" - SILT, same as S-1, some hydrocarbon odor (Jar 1 of 2), fill.		
	11.5	S-2	0	4-4-5 (9)	Lower 8" - SAND, poorly graded, fine sand, dark gray, wet compact (SP), heavily saturated with oil, strong odor (Jar 2 of 2), fill.		Prominent oily sheen and odor to cuttings between 10' and 15'
15	15.0				SAND, poorly graded, fine sand, dark gray, wet, compact (SP), heavily saturated with oil, fill.		
	16.5	S-3	18	3-4-5 (9)			
20	20.0				SAND, same as S-3, heavily saturated with oil, fill.		
	21.5	S-4	18	4-3-4 (7)			Screen bottom at 22'
							Driller notes 3 feet of heave at 25', had to wash out hole to clean out heave
25	25.0				Upper 14" - SAND as in S-3 (SP), mild hydrocarbon odor, probably is slough from washing out heave and not representative.		
	26.5	S-5	18	3-3-4	Lower 4" - SILT, low plasticity, medium brownish gray, moist, firm (ML), no noticeable hydrocarbon odor, probably native soil.		Fill Native ±21'
							Sump bottom at 27'

SCOEPA00022068

CH2M HILL

PROJECT NUMBER	BORING NUMBER	SHEET
P19436.A2	MW-1	2 OF 2

SOIL BORING RECORD DRAWING

PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE: INTERVAL	SAMPLE: TYPE AND NUMBER	SAMPLE: RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
	30	30.0						
		31.5	S-6	18	4-4-5 (9)	SILT, low plasticity, medium brownish gray, moist to wet, includes some sandy silt in upper 6", firm (ML), no noticeable hydrocarbon odor, native soil.		Bottom gravel at 31.5'
						END MW at 31.5 feet.		

Worst samples

S-2, Jar 2 of 2 and S-3 are equally bad, more sample in S-3 for testing.

REV. 11-82 FORM D1556

SCOEPA00022069

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-2	SHEET 1 OF 2

SOIL BORING RECORD DRAWING

PROJECT **WACKER SILTRONIC CORPORATION** LOCATION **PORTLAND, OREGON**

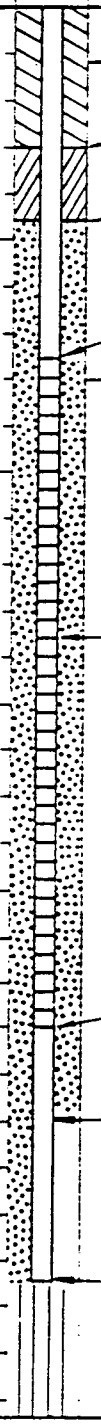
ELEVATION _____ DRILLING CONTRACTOR **GEOTECH EXPLORATIONS, BEAVERTON, OREGON**

DRILLING METHOD AND EQUIPMENT **CME-55, 6" HS AUGERS**

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION / DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME GRADATION OR PLASTICITY PARTICLE SIZE DISTRIBUTION COLOR MOISTURE CONTENT RELATIVE DENSITY OR CONSISTENCY SOIL STRUCTURE MINERALOGY USCS GROUP SYMBOL
5	5.0				
	6.5	S-1	18	1-2-3 (5)	SAND, poorly graded, fine sand, brown, moist, loose (SP), fill.
10	10.0				
	11.5	S-2	0	1-4-5	NO RECOVERY; sample tube came up oily, strong hydrocarbon odor, sandy material on outside of sampler.
15	15.0				
	16.5	S-3	18	1-1-2 (3)	SAND, poorly graded, fine sand, chalk gray, wet, loose (SP), some lenses of silt; strong hydrocarbon odor, oily material observed on sample fill.
20	20.0				
	21.5	S-4	18	5-6-6 (12)	SANDY SILT, non-plastic, ~30% fill sand, medium to dark gray, wet, firm, (ML), strong hydrocarbon odor, noticeable oil in sample fill?
25	25.0				
	26.5	S-5	18	3-5-5 (10)	Upper 14" - SAND, as in S-3, includes strong hydrocarbon odor and visible oil in sample, material may be slough from drilling and washing out heaved zone, may not be representative of 25'-26.5' interval. Lower 4" - SILT, low plasticity, medium grayish brown, firm, moist (ML), no apparent hydrocarbon, native.

SYMBOLIC LOG



COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION

- Grout to surface
- Top of bentonite at 3'
- Top of gravel at 4 1/2'
- Screen top at 7 1/2'
- Driller notes water at ±8';
- 15' screen 2" schedule 40 10 slot PVC
- Driller notes considerabe degree of oiliness to cutting from 15'-25', more than in MW-1
- Screen bottom at 22'
- 5' sump
- Driller notes 2' heave at 25', had to wash out hole
- Sump bottom at 27' 4"

REV. 11-83 FORM D1556

SCOEPA00022070

CH2M HILL

PROJECT NUMBER	BORING NUMBER	SHEET
P19436.A2	MW-2	2 OF 2

SOIL BORING RECORD DRAWING

PROJECT **WACKER SILTRONIC CORPORATION** LOCATION **PORTLAND, OREGON**

ELEVATION _____ DRILLING CONTRACTOR **GEOTECH EXPLORATIONS, BEAVERTON, OREGON**

DRILLING METHOD AND EQUIPMENT **CME-55, 6" HS AUGERS**

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION / DEPTH BELOW SURFACE (FT.)	SAMPLE: INTERVAL	SAMPLE: TYPE AND NUMBER	SAMPLE: RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
30							
	31.5	S-6	18	3-3-4 (7)	**SILT, low plasticity, grayish brown, moist, firm (ML), no noticeable hydrocarbon odor, native soil.**		
					END MW at 31.5 feet		
							Worst sample
							S-3, S-4 - about the same

SCOEPA00022071

CH2M HILL

PROJECT NUMBER	BORING NUMBER	SHEET 1 OF 2
P19436.A2	MW-4	

SOIL BORING RECORD DRAWING

PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION / DEPTH BELOW SURFACE (FT)	SAMPLE: INTERVAL	SAMPLE: TYPE AND NUMBER	SAMPLE: RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
5	5.0				Upper 9" - SAND, poorly graded, fine sand, brown, moist to wet, loose (SP).		Hole is within 20' of abandoned natural gas line Grout 5' to surface Bentonite from 5-6'
	6.5	S-1	18	5-1-2 (3)	Lower 9" - SILT, non-plastic, 10-20% fine sand, dark gray, moist, soft (ML), fill.		Screen top at 6 1/2'
10	10.0				Upper 6" - SAND, same as S-1, maybe slough.		Some gravel - like material at 8' Driller notes water at ±8';
	11.5	S-2	18	11-13-11 (24)	Lower 12" - SILT, same as above.		15' screen 10 slot 2" schedule 40 PVC
15	15.0				SAND, poorly graded, fine sand, saturated, loose, (SP), maybe slough, possible mild odor of hydrocarbon.		Piece wood jammed into end of shoe
	16.5	S-3	6"	3-3-4 (7)			
20	20.0				SILT, low plasticity, brownish gray, moist, firm, (ML), native soil; included pieces of wire, probably dragged into sample.		Fill ±20' Native
	21.5	S-4	18	1-4-4 (8)			Screen bottom at 21 1/2'
25	25.0				SILT, same as above.		5'- 4" Sump
	26.5	S-5	12	4-4-4 (8)			Tailpiece bottom at 27'
30	30.0						Bentonite from 27-28' Gravel to 41 1/2'

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-4	SHEET 2 OF 2

SOIL BORING RECORD DRAWING

PROJECT **WACKER SILTRONIC CORPORATION** LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
		31.5	S-6	18	4-5-4 (9)	SILT, low plasticity, gray with brown mottling, moist, firm (ML), includes some decomposed plant fragments.		
	35	35.0						
		36.5	S-7	8	2-3-8 (11)	SANDY SILT, non-plastic, 30-50% fine sand, brown, moist, firm (ML).		Gravel to 41 1/2'
	40	40.0						
		41.5	S-8	8		END MW at 41.5'		

Worst samples

None - all have clean appearance

REV. 11/82 FORM D1586

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-5	SHEET 1 OF 2

SOIL BORING RECORD DRAWING

PROJECT **WACKER SILTRONIC CORPORATION** LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
								Grout to surface
								Top of bentonite scale = 2'
								Top of sand at 4'
	5	5.0						Screen top at 5'
		6.5	S-1	18	4-4-8 (12)	SAND, poorly graded, fine sands, brown and gray, some 1/2" silt lenses, moist, loose; includes some oil sheen and odor.		Dark gray sandy material in cuttings from 5'-10', noticeable oily smell and sheen
	10	10.0						Driller notes water 5'-10'
		11.5	S-2	18	6-6-8 (14)	SAND, poorly graded, fine sand, dark gray, wet, loose to compact, (SP), fill, saturated with oil (split samples taken, Jar 1 and Jar 2).		
	15	15.0						
		16.5	S-3	18		SAND, same as S-2, except only has oily odor and occassional sheen in soil.		
	20	20.0						Screen bottom at 20'
		21.5	S-4	18	3-4-5 (9)	SAND, same as S-2, excet has mild odor of oil; silt in top.		Silt in tip of sampler, for S-4 fill ±21 Native
	25	25.0						Sump bottom at 25'
		26.5	S-5	9	3-5-10 (15)	SILT, low plasticity, 10-15% fine sand, medium gray with brown, yellow and reddish mottling, slightly moist, very stiff (ML), no noticeable hydrocarbon odor.		Tailpiece bottom at 25' - 4"
	30	30.0						NOTE: Driller lost steel weight for tape in hole at 30 feet, not recovered.

REV. 11-82 FORM D1586

SCOEPA00022074

CH2M HILL

PROJECT NUMBER	BORING NUMBER	SHEET 2 OF 2
P19436.A2	MW-5	

SOIL BORING RECORD DRAWING

PROJECT **WACKER SILTRONIC CORPORATION** LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION / DEPTH BELOW SURFACE (FT.)	SAMPLE: INTERVAL	SAMPLE: TYPE AND NUMBER	SAMPLE: RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
	31.5	S-6	18	4-5-5 (10)	SILT, low plasticity, about 10% fine sand, gray with brown mottling, moist, stiff (ML), no noticeable hydrocarbon odor.		
					END MW at 31.5 feet.		

Worst samples

S-2 = worst
S-3

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-6	SHEET 1 OF 2

SOIL BORING RECORD DRAWING

PROJECT **WACKER SILTRONIC CORPORATION** LOCATION **PORTLAND, OREGON**

ELEVATION _____ DRILLING CONTRACTOR **GEOTECH EXPLORATIONS, BEAVERTON, OREGON**

DRILLING METHOD AND EQUIPMENT **CME-55, 6" HS AUGERS**

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION / DEPTH BELOW SURFACE (FT.)	SAMPLE: INTERVAL	SAMPLE: TYPE AND NUMBER	SAMPLE: RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
5	5.0						Grout to surface
	6.5	S-1	18	3-8-11 (19)	SAND, poorly graded, fine sand, less than 10% fine, brown, moist, compact (SP), fill.		Bentonite to 6 1/2'
							Sand to 7 1/2'
10	10.0						Top of screen at 9'
	11.5	S-2	18	10-10-11 (21)	Primarily sand, as in S-1, but with several 1-inch silt layers; lower 6" of sample has strong hydrocarbon odor to it.		
							Driller notes water at ±12', coincident with appearance of "oily" odor from cuttings while drilling from 10-15'
15	15.0						
	16.5	S-3	18	1-1-2 (3)	SAND, as in S-1, except lower 6" have blackish discoloration and strong hydrocarbon odor; small oily splotches noticeable in soil.		
20	20.0						
	21.5	S-4	18	3-3-5 (8)	Upper 6" - SAND as in S-1, have blackish discoloration and hydrocarbon odor, fill.		A-rods came out of hold with unusual yellow discoloration from water at 20-25'
					Lower 12" - SILT, low plasticity, gray with brown mottling, firm (ML), hydrocarbon odor not noticeable.		
25	25.0						Bottom of screen at 24'
	26.5	S-5	18	9-26-26 (52)	SAND, as in S-1, but dark gray with mild hydrocarbon odor, material might be heaved sands and not representative of in-situ soil at 25'.		Driller notes 4' of heave after drilling to 25'; also, chain fell in hole, but was able to recover by retracting augers from hole; Augers moved during SPT from S-5, driller says no contact with sampler; why so high of an N value?
30	30.0						Sump to 29 1/2'

CH2M HILL

PROJECT NUMBER	BORING NUMBER	SHEET 2 OF 2
P19436.A2	MW-6	

SOIL BORING RECORD DRAWING

PROJECT **WACKER SILTRONIC CORPORATION** LOCATION **PORTLAND, OREGON**

ELEVATION _____ DRILLING CONTRACTOR **GEOTECH EXPLORATIONS, BEAVERTON, OREGON**

DRILLING METHOD AND EQUIPMENT **CME-55, 6" HS AUGERS**

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION / DEPTH BELOW SURFACE (FT.)	SAMPLE: INTERVAL	SAMPLE: TYPE AND NUMBER	SAMPLE: RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
	31.5	S-6	18	5-7-12 (19)	All 18" of soil in barrel is SAND, poorly graded, fine sand, less than 10% fine, medium to dark gray, wet, compact, (SP), probably heave or disturbed soil, not representative of 30' depth; mild hydrocarbon odor. 2" of soil in shoe of sampler is SANDY SILT, non-plastic, 30-50% fine sand, medium gray, wet, firm, (ML); no noticeable hydrocarbon odor, sandy silt is probably representative of in-situ soil.		Driller notes 3' of heave from 30-29' prior to sampling S-6; had to drill/wash out heave Sample choices S-3

CH2M HILL

PROJECT NUMBER	BORING NUMBER	SHEET
P19436.A2	MW-1	1 OF 2

SOIL BORING RECORD DRAWING

PROJECT **WACKER SILTRONIC CORPORATION** LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
5	5.0							Grout to surface
	6.5	S-1	12"	1-3-1 (4)		Lower 6" - SILT, low plasticity, moist, gray, soft (ML).		5 1/2' top of bentonite
						Upper 6" - SAND, poorly graded, fine sand, brown, wet, loose, (SP), fill.		Cavings around PVC 7-15'
10	10.0							10' of top of screen
	11.5	S-2	14	5-8-11 (19)		SAND as in upper 6" of S-1, (SP), fill.		Driller notes water at ±12'
								15' section 10 slot PVC wells
15	15.0							
	16.5	S-3	18	2-1-5		SAND, same as upper 6" of S-1 (SP), fill.		During well construction, drill hole walls began squeezing in at 5' up to 7', sand was packed in auger and walls apparently squeezed in faster than sand could drop out; tried twice unsuccessfully to jet-out sand.
20	20.0							
	21.5	S-4	18	5-5-6 (11)		Upper 6" - sand as in upper 6" of S-1, (SP), fill; mild hydrocarbon odor.		Fill / Native ±
						Lower 12" - SILT, low plasticity, medium brown with gray mottling, moist, firm, (ML); native soil.		
25	25.0							25' bottom screen
	26.5	S-5	18	4-3-4 (7)		Upper 9" - SILT, low plasticity, medium brown with gray mottling, moist, firm, (ML).		5'-4" Sump
						Lower 9" - SAND, poorly graded, fine sand, medium gray, wet, loose, (SP), strong hydrocarbon odor, visible blotches of oil (?) in both silt and sand.		Bottom of Sump = 30'
30	30.0							Driller notes heave at 30' ±4' of heave

REV. 11-83 FORM D1556

SCOEPA00022078

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-7	SHEET 2 OF 2

SOIL BORING RECORD DRAWING

PROJECT **WACKER SILTRONIC CORPORATION** LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
		31.5	S-6	18	2-1-2 (3)	Lower 9" - SAND, poorly graded, fine, brown, wet, soft, (SP),.		Reamed out heaved area from 26 to 30' with wash water and tricone bit to clear auger
						Upper 9" - SAND, very fine, brown, wet, loose, (SM); All has definite hydrocarbon (?) odor, not visible in soil, however. Sample may be distrubed, heave material.		Backfill to 32'-4"
	35	35.0						
		36.5	S-7	18	3-5-5 (10)	SANDY SILT, low plasticity, 20-30% fine sand, medium brown, moist, soft, (ML); noticeable hydrocarbon (?) odor.		
	40	40.0				Upper 7" - SILT, low plasticity, brown, wet, firm, (ML).		
		41.5	S-8	14"	8-11-17 (28)	Lower 7" - SILTY SAND, fine sand, about 30% fine, brown, wet, compact, (SM); both silt and sand have noticeable hydrocarbon (?) odor, no visible traces.		
						END MW at 41.5 feet		

Sample choices

(Ranked from worst)

*S-5
S-6
S-7 - S-8 (about the same)

*amount of odor

REV. 11-83 FORM D1886

SCOEPA00022079

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

Wacker Siltronics
Log #A850410-I

April 30, 1985
Page Seven

POLYNUCLEAR AROMATIC HYDROCARBONS

COMPOUND	#1	#2	#3	#4	#5
Naphthalene	6.7	360	< 1	< 1	< 1
Acenaphthalene	5.6	230	< 1	< 1	< 1
Acenaphthene	9.0	560	< 1	< 1	< 1
Fluorene	5.0	290	< 1	< 1	< 1
Phenanthrine-Anthracene	32	1400	3	< 1	< 1
Fluoranthrene	16	530	< 1	< 1	< 1
Pyrene	18	550	< 1	< 1	< 1
Chrysene	12	93	< 1	< 1	< 1
Benzo(b) + Benzo(k) Fluoranthrene	8.0	120	< 1	< 1	< 1
Benzo(a)Pyrene	19	120	< 1	< 1	< 1
Indeno(1,2,3-CD) Pyrene+Dibenzo (a,b)Anthracene	< 1	270	< 1	< 1	< 1
Benzo(ghi)-Perylene	< 1	360	< 1	< 1	< 1

COMPOUND	#6	#7	#8	#9
Naphthalene	230	< 1	< 1	< 1
Acenaphthalene	24	< 1	< 1	< 1
Acenaphthene	29	< 1	< 1	< 1
Fluorene	20	< 1	< 1	< 1
Phenanthrine-Anthracene	150	< 1	1.6	< 1
Fluoranthrene	50	< 1	1.1	< 1
Pyrene	57	< 1	1.2	< 1
Chrysene	36	< 1	1.7	< 1
Benzo(b)+Benzo(k) Fluoranthrene	200	< 1	< 1	< 1
Benzo(a)Pyrene	100	< 1	< 1	< 1
Indeno(1,2,3-CD Pyrene+Dibenzo (a,b)Anthracene	7	< 1	< 1	< 1
Benzo(ghi)-Perylene	35	< 1	< 1	< 1

< denotes "less than"
Results reported in mg/kg

Sincerely,

Susan M. Coffey

Susan M. Coffey
President

SMC/db

SCOEPA00022080

U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 SIXTH AVENUE
SEATTLE, WASHINGTON 98101
May 25, 1988

REPLY TO ATTN OF: HW-113

Hazardous & Solid Waste Division
Dept. of Environmental Quality
RECEIVED
MAY 27 1988
Remedial Action Section

Wacker Siltronic Corporation
7200 N.W. Front Avenue
Portland, Oregon 97229

Gentlemen:

The U.S. Environmental Protection Agency (EPA), through its contractor, Ecology and Environment, Inc. (E&E), has completed the Preliminary Assessment of the Wacker Siltronic facility. A copy of the report is enclosed.

Based on this assessment and other pertinent information, EPA finds that no further action under the Superfund pre-remedial program is appropriate. However, the facility will continue to be assessed as part of the Doane Lake investigation currently ongoing by EPA and the Oregon Department of Environmental Quality.

If you have questions regarding report content or planned actions, I may be reached at (206) 442-2722.

Sincerely,

Deborah Flood

Deborah Flood
Environmental Protection Specialist
Superfund Response & Investigations Section

Enclosure

cc: Al Goodman, EPA-000
Mary Wahl, DEQ (2 copies)
Art Bloom, Multnomah County Health Department

SCOEPA00022081

CHAIN OF CUSTODY RECORD

PROJECT NUMBER	PROJECT NAME
LABORATORY	

STA. NO.	DATE	TIME	COMP	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS										REMARKS

SAMPLED BY AND TITLE *(SIGNATURE)*	DATE/TIME	RELINQUISHED BY: *(SIGNATURE)*	DATE/TIME	RECEIVED BY: *(SIGNATURE)*
RELINQUISHED BY: *(SIGNATURE)*	DATE/TIME	RECEIVED BY: *(SIGNATURE)*	RELINQUISHED BY: *(SIGNATURE)*	DATE/TIME / RECEIVED BY LAB: *(SIGNATURE)*

REMARKS

SAMPLE SHIPPED VIA
☐ UPS ☐ BUS
☐ FEDERAL EXPRESS

AIR BUS BILL NUMBER

DISTRIBUTION: WHITE – ORIGINAL ACCOMPANIES SHIPMENT; PINK – COPY TO COORDINATOR FILE; YELLOW – [illegible]

SCOEPA00022082

No Date

Notice of Alleged Safety or H lth Hazards

Oregon D artment of Insurance & Finance
Oregon Occupa..nal Safety & Health Division (OR-OSHA)

MOD Date

priority (2)

1. Complaint Number ▶ 075860767

242

2. Employer Name
COFFMAN EXCAVATION INC

3. Site Location (Street, City, State, ZIP)
7200 NW FRONT AVE (DOANE POINT) PORTLAND, OR.

4. Mailing Address (If different) (Street, City, State, ZIP)
PO BOX 687 OREGON CITY, OR 97045

5. Management Official

6. Telephone Number
656-7000

7. Type of Business
EXCAVATING AND FOUNDATION WORK

8. Hazard Description. Describe briefly the hazard(s) which you believe exist. Include the approximate number of employees exposed to or threatened by each hazard:

EMPLOYEES ARE BEING EXPOSED TO BENZENE WHILE EXCAVATING A SITE THAT CONTAINS HAZARDOUS MATERIALS.
EMPLOYEES ARE NOT PROVIDED PERSONAL PROTECTIVE EQUIPMENT.

EMPLOYEES ARE EXPERIENCING RESPIRATORY AND SENSITIZATION PROBLEMS.

9. Hazard Location. Specify the particular building or worksite where the alleged violation exists.
WACKER SILTRONIC CORPORATION BUILDING SITE ON DOANE POINT.

SCOEPA00022083

Sandee Archer

Z 777 067 479

Receipt for Certified Mail

UNITED STATES POSTAL SERVICE

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Sent to GREG TORAN - DEQ	
Street and No. 2020 S.W. 4th Ave - Suite 400	
P.O., State and ZIP Code PORTLAND, OR. 97201-4987	
Postage	$ .32
Certified Fee	1.10
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	1.10
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	$ 2.52
Postmark or Date	APR 21 1995

PORTLAND, OREGON MAIN OFFICE

USPS

PS Form 3800, March 1993

SCOEPA00022084

STICK POSTAGE STAMPS TO ARTICLE TO COVER FIRST CLASS POSTAGE, CERTIFIED MAIL FEE, AND CHARGES FOR ANY SELECTED OPTIONAL SERVICES (see front).

1. If you want this receipt postmarked, stick the gummed stub to the right of the return address leaving the receipt attached and present the article at a post office service window or hand it to your rural carrier (no extra charge).

2. If you do not want this receipt postmarked, stick the gummed stub to the right of the return address of the article, date, detach and retain the receipt, and mail the article.

3. If you want a return receipt, write the certified mail number and your name and address on a return receipt card, Form 3811, and attach it to the front of the article by means of the gummed ends if space permits. Otherwise, affix to back of article. Endorse front of article **RETURN RECEIPT REQUESTED** adjacent to the number.

4. If you want delivery restricted to the addressee, or to an authorized agent of the addressee, endorse **RESTRICTED DELIVERY** on the front of the article.

5. Enter fees for the services requested in the appropriate spaces on the front of this receipt. If return receipt is requested, check the applicable blocks in item 1 of Form 3811.

6. Save this receipt and present it if you make inquiry.

102595-93-Z-0478

PS Form 3800, March 1993 *(Reverse)*

SCOEPA00022085

SER17:SA

April 18th, 1995

Dear Ms. Davis,

Wacker Siltronic has received the analytical data from the treated soil. I have enclosed a copy of the analytical test data. If this is acceptable to you please sign the enclosed property owners statement. I would appreciate it if you would fax it back to me at your earliest convenience (241-7599). I will be forwarding the statement to Greg Toran at DEQ.

When I spoke with you last you mention that we may need to schedule times for us transport the soil to you. Wacker does not have a very large stockpile area and would like to start hauling off the soil by Wednesday, April 19th.

If you have any questions regarding this matter please feel free to contact me at 243-2020 extension 4684.

Sincerely,

Sandee Archer
Environmental Engineer

Attached:
(a) Property owner statement
(b) Soil data

PROPERTY OWNER STATEMENT

FINAL SOIL DISPOSITION

FACILITY INFORMATION

(UST cleanup project where soils originated)

DEQ File Number assigned to site: ORD-096253737

Facility Name: Wacker Siltronic

Facility Address: 7200 N.W. Front Ave.
Portland, Oregon 97210

FINAL DISPOSITION SITE INFORMATION

(Property where treated soils will be placed once treatment is complete)

Site Address: _____

_____

Tax Lot No.(s): _____ County: _____

Approximate size of property:

Acres: _____ or Sq. Ft.: _____ or Dimensions: _____

Property Owner Name: _____

Mail Address: _____

_____

Phone Number: _____

THE PROPERTY OWNER WHERE THE TREATED SOILS WILL BE DEPOSITED MUST SIGN AND DATE THE FOLLOWING STATEMENT:

As the owner of the property listed above which will receive the treated soil from the UST cleanup project also listed above once treatment is complete, I agree to ensure that the soils will be placed on my property such that they are 1) above seasonal high groundwater levels, 2) not located near wetlands or surface water, 3) not located within a 100 year floodplain, and 4) will be placed out of human contact or possible exposure. I also understand that I may be jointly responsible and liable for any future problems arising from this soil disposition activity.

Signature: _____ Date: _____

This signed statement must be included with the Soil Treatment Plan.

DEPARTMENT OF ENVIRONMENTAL QUALITY - April, 1993

SCOEPA00022087

OAL

PEMCO
437 N. COLUMBIA BLVD.
PORTLAND, OR 97217

ANALYST REVIEW BY: RS DATE: 4/18/95

DATA PACK REVIEW BY: C. Vezzani DATE: 4.18.95

ROBYN HILLIER
283-2151/FX283-6388
PROJ. #6766

TOTAL PETROLEUM HYDROCARBONS (TPH)
BY OREGON DEQ TPH-418.1 MODIFIED

SAMPLE ID:	001
OAL ID: 25-J212-	35561
SAMPLE DATE:	4/17/95
EXTRACTION DATE:	4/18/95
ANALYSIS DATE:	4/18/95
TPH IN MG/KG	71.
ANALYST:	PL

NA = NOT ANALYZED
ND = NONE DETECTED (<5 MG/KG)

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Old Scholls Ferry Road
Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

PRINTED ON RECYCLED PAPER

SCOEPA00022088

OAL

PEMCO
437 N. COLUMBIA BLVD.
PORTLAND, OR 97217

ANALYST REVIEW BY: RJ DATE: 4/18/95
DATA PACK REVIEW BY: C.Vazzani DATE: 4-18-95

ROBYN HILLIER
283-2151/FX283-6388
PROJ. #6766

TOTAL PETROLEUM HYDROCARBONS - GASOLINE
BY OREGON DEQ TPH-G

SAMPLE ID:	001
OAL ID: 25-J212-	55961
SAMPLE DATE:	4/17/95
MATRIX:	SOIL
EXTRACTION DATE:	4/17/95
ANALYSIS DATE:	4/17/95
GASOLINE MG/KG	ND
SURR.RECOVERY %	63.
ANALYST:	RJ

BROMOFLUOROBENZENE WAS USED AS THE SURROGATE
MG/KG = PPM
ND = NONE DETECTED (REPORTING LIMIT IS 10 MG/KG)
MI = MATRIX INTERFERENCE WITH SURROGATE RECOVERY
NA = NOT ANALYZED

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PEMCO

437 N. COLUMBIA BLVD.
P.O. BOX 11569
PORTLAND, OR 97217
(503) 283-2151

CHAIN OF CUSTODY

PROJ. NO.: 6766

PROJECT NAME: Wacker Siltronics

ADDRESS: 7800 N.W. Front Ave Portland Or

SAMPLER: [illegible]

SAMPLE NUMBER	DATE	TIME	SOIL	WATER	PRODUCT	SLUDGE	ICED	SAMPLE LOCATION TANK SIZE TANK PRODUCT	DEPTH	TPH-HCID	TPH-G	TPH-D	TPH(418.1M)	EPA 418.1	BTEX 602/8020	PAH (8310)	Total Pb (7421)	EDB & EDC (8010)	TCLP(8 met)	TCLP(3 met)	PCB's 608/8080	Chlor. Solv. 601/8010	VOC's 8240	EPA 8015 Mod	Flashpt (1010)	TOX		
001	4/17/95	7:26	x					MSRU Soil Discharge	6 mb		X		X				25	J212-355	61									

Relinquished by:	Date	Time	Received by:
[illegible]	4/17/95	0:55	[illegible] #6 ANDYS
[illegible] #6 ANDYS	4-17-95	1:40	Denise Ward
Relinquished by:			

RUSH: YES NO

LAB #

SCOEPA00022090

Sandee Archer

Z 777 067 478

Receipt for Certified Mail

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Sent to GREG TORAN - DEQ	
Street and No. 2020 SW-4th AVE-SUITE400	
P.O., State and ZIP Code PORTLAND, OR. 97201-4987	
Postage	$ .32
Certified Fee	1.10
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	1.10
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	$2.52
Postmark or Date	

PS Form **3800**, March 1993

SCOEPA00022091

STICK POSTAGE STAMPS TO ARTICLE TO COVER FIRST CLASS POSTAGE, CERTIFIED MAIL FEE, AND CHARGES FOR ANY SELECTED OPTIONAL SERVICES (see front).

1. If you want this receipt postmarked, stick the gummed stub to the right of the return address leaving the receipt attached and present the article at a post office service window or hand it to your rural carrier (no extra charge).

2. If you do not want this receipt postmarked, stick the gummed stub to the right of the return address of the article, date, detach and retain the receipt, and mail the article.

3. If you want a return receipt, write the certified mail number and your name and address on a return receipt card, Form 3811, and attach it to the front of the article by means of the gummed ends if space permits. Otherwise, affix to back of article. Endorse front of article **RETURN RECEIPT REQUESTED** adjacent to the number.

4. If you want delivery restricted to the addressee, or to an authorized agent of the addressee, endorse **RESTRICTED DELIVERY** on the front of the article.

5. Enter fees for the services requested in the appropriate spaces on the front of this receipt. If return receipt is requested, check the applicable blocks in item 1 of Form 3811.

6. Save this receipt and present it if you make inquiry.

102595-93-Z-0478

PS Form 3800, March 1993 (Reverse)

SCOEPA00022092

Is your RETURN ADDRESS completed on the reverse side?

SENDER:
- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
GREG TORAN
DEPT ENVIRON. QUALITY
2020 S.W. 4th. AVE
SUITE 400
PORTLAND, OR. 97201-4987

4a. Article Number
A 777.067.478

4b. Service Type
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

7. Date of Delivery
APR 19 1995

5. Signature (Addressee)

8. Addressee's Address (Only if requested and fee is paid)

6. Signature (Agent)
Bonnie Naschek

PS Form 3811, December 1991 ☆U.S. GPO: 1993—352-714 **DOMESTIC RETURN RECEIPT**

Thank you for using Return Receipt Service.

SCOEPA00022093

UNITED STATES POSTAL SERVICE

Official Business

PENALTY FOR PRIVATE
USE TO AVOID PAYMENT
OF POSTAGE, $300

U.S. MAIL

Print your name, address and ZIP Code here

WACKER SILTRONIC CORPORATION
7200 N.W. FRONT AVENUE
P.O. BOX 83180
PORTLAND, OR 97283-0180

Attn - Sandee Archer

April 14th, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180
Phone (503) 243-2020
TDD (503) 241-7519

Greg Toran
Department of Environmental Quality
2020 SW Fourth Avenue
Suite 400
Portland, OR 97201-4987

Re: Wacker Siltronic Corp
File No. NWR-SOIL-011

Dear Mr. Toran,

I am writing in response to your letter on April 12th, 1995. The methods for dewatering soil are as follows: water from the excavation site is pumped out using a sump pump. The water goes to a holding tank at our waste water treatment plant. At the treatment plant the water is characterized and either treated to the requirements of our Industrial Discharge Permit or contracted for treatment by Spencer Environmental service. Any other water that comes into contact with the excavated contaminated soil is also contained and treated in the same manner.

Both TPH-G and TPH-D testing will be performed on the treated soil. I have spoken with Janell Davis at the St. John's Landfill and she has given a verbal approval to dispose of the soil in the St. John's Landfill pending the receipt of analytical data on the treated soil. An updated Property Owners Statement will be forwarded to you at that time.

The staging area for the soil has been sampled and a visqueen containment was been built. The contaminated soil is to be placed within the containment and covered. Once all the soil has been treated the top six inches of the staging area will be scrapped away and also treated. If necessary more soil will be removed. The treatment unit will remain on site until confirmation that the staging area has not been contaminated. The conformation test will be TPH-D and TPH-G.

If you have any additional questions or concerns please contact me at (503)243-2020 extension 4684.

Sincerely,

Sandee Archer

SCOEPA00022095

NORTH CREEK ANALYTICAL

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East 11115 Montgomery, Suite B, Spokane, WA 99206-4779 (509) 924-9200 FAX 924-9290
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2202

CHAIN OF CUSTODY REPORT

CLIENT: Wacker Siltronic
ADDRESS: 7200 N.W. Front Ave
Portland, OR
PHONE: 243-2020 x-374 FAX:

REPORT TO: Dianne Mullan
BILLING TO:
P.O. NUMBER: 31002
NCA QUOTE #:

PROJECT NAME: FAB-2
PROJECT NUMBER: Box-23
SAMPLED BY: Dianne Mullan

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: 10 | 5 | [X] 3 | 2 | 1
(Please Select One)

Fuels & Hydrocarbon Analyses: 5 | [X] 3 | 2 | 1

** Turnaround Requests less than standard will incur Rush Charges.*

FAX RESULTS BY :

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	Analysis Request: TCLP 8270	TCLP 8240	TPH-D	TCLP-Pest.	TCLP-Herb	TCLP (8)	COMMENTS & PRESERVATIVES USED	NCA SAMPLE NUMBER
1. *95-533	1-27-95/1020	S	2	X	X	X	X	X	X	held on ice	
2.											
3. 95-534-Box-23	1-27-95/1020	S	2	X	X	X	X	X	X	held on ice	
4.											
5.											
6.											
7.											
8.											
9.											
10.											

RELINQUISHED BY: Dianne E Mullan DATE: 1-27-95
PRINT NAME: Dianne Mullan FIRM: Wacker Siltronic TIME: 1145

RECEIVED BY: Sara McClurg DATE: 1-27-95
PRINT NAME: Sara McClurg FIRM: NCA TIME: 1145

RELINQUISHED BY: DATE:
PRINT NAME: FIRM: TIME:

RECEIVED BY: DATE:
PRINT NAME: FIRM: TIME:

ADDITIONAL REMARKS: TCLP-8240, 8270 & TPH-D sample 95-533 - 1 day turnaround

PAGE OF

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SCOEPA00022096

NORTH CREEK ANALYTICAL

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[redacted]st 11115 Montgomery, Suite B, Spokane, WA 99206-4779 (509) 924-9200 FAX [redacted]
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2202

CHAIN OF CUSTODY REPORT

CLIENT: Wacker Siltronic

ADDRESS: 7200 N.W. Front Ave
Portland, OR

PHONE: 243-2020 x374 FAX: 241-7599

PROJECT NAME: FAB-2

PROJECT NUMBER: Boxes

SAMPLED BY: Dianne Mullan, Gary Kent

REPORT TO: Dianne Mullan

BILLING TO:

P.O. NUMBER: 31002

NCA QUOTE #:

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: [10] [5] [3] [2] [1]

(Please Select One)

Fuels & Hydrocarbon Analyses: [5] [3] [2] [X]

* Turnaround Requests less than standard will incur Rush Charge.

FAX RESULTS BY :

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	Analysis Request: BTEX: 8020	COMMENTS & PRESERVATIVES USED	NCA SAMPLE NUMBER
95-540 - Box-5	2-24-95 1015	S	1	X		P502272
95-541 - Box-6	2-24-95 0850	S	1	X		P502273
95-542 - Box-23	2-24-95 0840	S	1	X		P502274
95-543 - Box-24	2-24-95 0820	S	1	X		P502275
95-544 - Box-25	2-24-95 0810	S	1	X		P502276
95-545 - Box-26	2-24-95 0800	S	1	X	Attempt to field on ice	P502277

RELINQUISHED BY: DATE: 2-24-95
PRINT NAME: Dianne Mullan FIRM: Wacker Siltronic TIME: 1155

RECEIVED BY: Sia McClung
PRINT NAME: Sia McClung FIRM: NCA DATE: 2-24-95 TIME: 1135

RELINQUISHED BY: DATE:
PRINT NAME: FIRM: TIME:

RECEIVED BY: DATE:
PRINT NAME: FIRM: TIME:

ADDITIONAL REMARKS:

PAGE OF

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SCOEPA00022097

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9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2202

CHAIN OF CUSTODY REPORT

CLIENT: Wacker Siltronic
ADDRESS: 7200 N.W. Front Ave Portland, OR
PHONE: 243-2020 x-374 FAX:

REPORT TO: Dianne Mullan
BILLING TO:
P.O. NUMBER: 31002
NCA QUOTE #:

PROJECT NAME: FAB-2
PROJECT NUMBER: Box-23
SAMPLED BY: Dianne Mullan

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: 10 | 5 | [X] 3 | 2 | 1 *(Please Select One)*

Fuels & Hydrocarbon Analyses: 5 | [X] 3 | 2 | 1

** Turnaround Requests less than standard will incur Rush Charges.*

FAX RESULTS BY :

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	Analysis Request: TCLP 8270	TCLP 8240	TPH-D	TCLP-Pest.	TCLP-Herb	TCLP (8)	COMMENTS & PRESERVATIVES USED	NCA SAMPLE NUMBER
1. *95-533	1-27-95/1020	S	2	X	X	X	X	X	X	held on ice	
2.											
3. 95-534-Box-23	1-27-95/1020	S	2	X	X	X	X	X	X	held on ice	
4.											
5.											
6.											
7.											
8.											
9.											
10.											

RELINQUISHED BY: Dianne E Mullan	DATE: 1-27-95	RECEIVED BY: Sara McClurg	DATE: 1-27-95
PRINT NAME: Dianne Mullan FIRM: Wacker Siltronic	TIME: 1145	PRINT NAME: Sara McClurg FIRM: NCA	TIME: 1145
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
PRINT NAME: FIRM:	TIME:	PRINT NAME: FIRM:	TIME:

ADDITIONAL REMARKS: TCLP- 8240, 8270 & TPH-D sample 95-533 - 1 day turnaround

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SCOEPA00022098

NORTH CREEK ANALYTICAL

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st 11115 Montgomery, Suite B, Spokane, WA 99206-4779 (509) 924-9200 FAX [illegible]290
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2202

CHAIN OF CUSTODY REPORT

LIENT: Wacker Siltronic

DDRESS: 7200 N.W. Front Ave
Portland, OR

HONE: 243-2020 x374 FAX: 241-7599

ROJECT NAME: FAB-2

ROJECT NUMBER: Boxes

AMPLED BY: Dianne Mullan, Gary Kent

REPORT TO: Dianne Mullan

BILLING TO:

P.O. NUMBER: 31002

NCA QUOTE #:

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: 10 | 5 | 3 | 2 | 1 (Please Select One)

Fuels & Hydrocarbon Analyses: 5 | 3 | 2 | X

* Turnaround Requests less than standard will incur Rush Charge.

FAX RESULTS BY :

Analysis Request: BTEX-8020

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	BTEX-8020	COMMENTS & PRESERVATIVES USED	NCA SAMPLE NUMBER
95-540 - Box-5	2-24-95 1015	S	1	X		P502272
95-541 - Box-6	2-24-95 0850	S	1	X		P502273
95-542 - Box-23	2-24-95 0840	S	1	X		P502274
95-543 - Box-24	2-24-95 0820	S	1	X		P502275
95-544 - Box-25	2-24-95 0810	S	1	X		P502276
95-545 - Box-26	2-24-95 0800	S	1	X		P502277

All samples held on ice

ELINQUISHED BY: DATE: 2-24-95
RINT NAME: Dianne Mullan FIRM: Wacker Siltronic TIME: 1135

RECEIVED BY: Sara McClurg DATE: 2-24-95
PRINT NAME: Sara McClurg FIRM: NCA TIME: 1135

ELINQUISHED BY: DATE:
RINT NAME: FIRM: TIME:

RECEIVED BY: DATE:
PRINT NAME: FIRM: TIME:

DDITIONAL REMARKS:

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RECEIVED FEB 10 1995

February 3, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

RE: JOB # BOX-23
P.O.# 31001
PROJECT - FAB-2

Enclosed are test results for your samples received in this lab on Jan. 27, 1995. For your reference, these analyses have been assigned our NCA # P501284.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

Please call if you have any questions.

Respectfully,

Howard Holmes
Project Manager

NORTH CREEK ANALYTICAL
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TCLP per EPA 1311, 6010, 7000 series

Results in mg/L (ppm)

RECEIVED FEB 10 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501284
Matrix: soil
Sampled: 01/27/1995
Received: 01/27/1995

Client ID	Lab ID	Analyte	Result	MRL	Date Extracted	Date Prepared	Date Analyzed
95-534-BOX-23	P501284-1	Arsenic	ND	0.50	01/27/95	01/28/95	01/30/95
		Barium	0.71	0.50			
		Cadmium	ND	0.020			
		Chromium	ND	0.020			
		Lead	ND	0.20			
		Mercury	ND	0.0050			
		Selenium	ND	0.25			
		Silver	ND	0.020			

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00022101

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RECEIVED FEB 10 1995

TPH-D per Oregon DEQ
Results in mg/kg (ppm)

Client:	Wacker Siltronic Corporation	NCA Project #:	P501284
Project:	FAB-2	Matrix:	soil
		Sampled:	01/27/1995
		Received:	01/27/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-534-BOX-23	P501284-1	Diesel/related	2,300	100	01/27/95	01/27/95

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00022102

NORTH CREEK ANALYTICAL
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East 11115 Montgomery, Suite B • Spokane, WA 99206-4776 (509) 924-9200 • FAX 924-9290
9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

TCLP VOC's per EPA 8240
Results in mg/kg (ppm)

RECEIVED FEB 10 1995

Client:	Wacker Siltronic Corporation	NCA Project #:	P501284
Project:	FAB-2	Matrix:	soil
		Received:	01/27/1995
		Sampled:	01/27/1995
		Prepared:	01/27/95
		Analyzed:	01/27/95

Client ID	Lab ID	Analyte	Result	MRL
95-534-BOX-23 *1	P501284-1	Benzene	1.4	0.25
		Carbon Tetrachloride	ND	0.25
		Chlorobenzene	ND	0.25
		Chloroform	ND	0.25
		1,4-Dichlorobenzene	ND	0.25
		1,2-Dichloroethane	ND	0.25
		1,1-Dichloroethene	ND	0.25
		Methyl Ethyl Ketone	ND	2.5
		Tetrachloroethene	ND	0.25
		Trichloroethene	ND	0.25
		Vinyl Chloride	ND	0.63

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00022103

NORTH CREEK ANALYTICAL
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RECEIVED FEB 1 0 1995

TCLP BNAs per EPA 1311, 8270
Results in mg/L (ppm)

Client:	Wacker Siltronic Corporation	NCA Project #:	P501284
Project:	FAB-2	Matrix:	soil
		Received:	01/27/1995
		Sampled:	01/27/1995
		Prepared:	01/28/95
		Analyzed:	01/30/95

Client ID	Lab ID	Analyte	Result	MRL
95-534-BOX-23	P501284-1	Cresols(total)	ND	0.0050
		1,4-Dichlorobenzene	ND	0.010
		2,4-Dinitrotoluene	ND	0.0050
		Hexachloro-1,3-butadiene	ND	0.010
		Hexachlorobenzene	ND	0.0050
		Hexachloroethane	ND	0.010
		Nitrobenzene	ND	0.0050
		Pentachlorophenol	ND	0.010
		Pyridine	ND	0.020
		2,4,5-Trichlorophenol	ND	0.0050
		2,4,6-Trichlorophenol	ND	0.0050

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00022104

NORTH CREEK ANALYTICAL
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RECEIVED FEB 10 1995

TCLP Pesticides per EPA 1311, 8080
Results in mg/L (ppm)

Client:	Wacker Siltronic Corporation	NCA Project #:	P501284
Project:	FAB-2	Matrix:	soil
		Received:	01/27/1995
		Sampled:	01/27/1995
		Extracted:	01/27/95
		Prepared:	01/28/95
		Analyzed:	01/30/95

Client ID	Lab ID	Analyte	Result	MRL
95-534-BOX-23	P501284-1	Chlordane	ND *2	0.0080
		Endrin	ND	0.00010
		Heptachlor	ND	0.00010
		Heptachlor Epoxide	ND	0.00010
		Lindane	ND	0.00010
		Methoxychlor	ND	0.00010
		Toxaphene	ND *2	0.0075

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00022105

NORTH CREEK ANALYTICAL
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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-8200 • FAX 644-2202

TCLP Herbicides per EPA 1311, 8150

Results in mg/L (ppm)

Client:	Wacker Siltronic Corporation	NCA Project #:	P501284
Project:	FAB-2	Matrix:	soil
		Received:	01/27/1995
		Sampled:	01/27/1995
		Extracted:	01/27/95
		Prepared:	01/30/95
		Analyzed:	01/31/95

Client ID	Lab ID	Analyte	Result	MRL
95-534-BOX-23	P501284-1	2,4-D	ND	0.040
		2,4,5-TP (Silvex)	ND	0.020

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00022106

NORTH CREEK ANALYTICAL
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SURROGATE RECOVERIES (%)

RECEIVED FEB 1 0 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P501284
Received: 01/27/1995

Sample Name	Analyte	Result	Control Limits
TPH-D per Oregon DEQ			
95-534-BOX-23	1-Chlorooctadecane	– *3	50-150
TCLP VOC's per EPA 1311, 8240			
95-534-BOX-23	4-Bromofluorobenzene	99	74-121
	1,2-Dichloroethane-d4	105	70-121
	Toluene-d8	104	81-117
TCLP BNAs per EPA 1311, 8270			
95-534-BOX-23	2-Fluorobiphenyl	76	43-116
	2-Fluorophenol	4.4 *4	21-100
	Nitrobenzene-d5	72	35-114
	Phenol-d6	– *3	10-94
	p-Terphenyl-d14	94	33-141
	2,4,6-Tribromophenol	– *3	10-123
TCLP Pesticides per EPA 1311, 8080			
95-534-BOX-23	Decachlorobiphenyl	50 *5	65-130
	2,4,5,6-Tetrachloro-m-xylene	115	65-130
TCLP Herbicides per EPA 1311, 8150			
95-534-BOX-23	2,4-Dichlorophenyl acetic acid	108	50-150

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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COMMENTS

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Client:	Wacker Siltronic Corporation	NCA Number:	P501284
Project:	FAB-2	Received:	01/27/1995

1. Detection limit is raised due to dilution necessary for analysis.

2. Detection limit is raised due to matrix interference.

3. Unable to calculate surrogate recovery due to matrix interference.

4. Surrogate recovery is out of control limits due to matrix interference.

5. Surrogate recovery is out of control limits. QA criteria are met when one surrogate is within control limits.

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February 3, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

Re: Quality Control Data

NCA project number P501284.

Note: Surrogate Recoveries are included in the final report.

QUALITY CONTROL DEFINITIONS

METHOD BLANK RESULTS

The method blank is an analyte-free matrix which is carried through the same analytical process as the samples. It is used to document contamination that may result from the analytical process.

SURROGATE STANDARD

A surrogate standard (i.e., a chemical compound not expected to occur in an environmental sample) is added to each sample, blank, and matrix spike sample just prior to extraction or processing. The recovery of the surrogate standard is used to monitor for unusual matrix effects, gross sample processing errors, etc. Surrogate recovery is evaluated for acceptance by determining whether the measured concentration falls within accepted limits.

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Accuracy is measured by percent recovery as in:

$$\% \text{ Recovery} = \frac{\text{(Measured Concentration)}}{\text{(Actual Concentration)}} \times 100$$

Precision is measured using duplicate tests by relative percent difference.

$$\text{RPD} = \frac{\text{(Result of Test 1 - Result of Test 2)}}{\text{(Result of Test 1 + Result of Test 2)/2}} \times 100$$

If you should have any questions concerning this report, please contact me.

Sincerely,

Howard Holmes
Project Manager

SCOEPA00022110

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BATCH QUALITY CONTROL RESULTS
TCLP per EPA 1311, 6010, 7000 series

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Client:	Wacker Siltronic Corporation	**NCA Project #:**	P501284
Project:	FAB-2	**Received:**	01/27/1995

METHOD BLANK
Batch # KR95015a
Results In mg/L (ppm)

Compound	Result	MRL
Arsenic	ND	0.50
Barium	ND	0.50
Cadmium	ND	0.020
Chromium	ND	0.020
Lead	ND	0.20
Selenium	ND	0.25
Silver	ND	0.020
Date Extracted	01/27/1995	
Date Prepared	01/28/1995	
Date Analyzed	01/30/1995	

MATRIX SPIKE
Batch # KR95015d **Spike ID P501284-1**
Results In mg/L (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS % Rec	QC Limit % Rec
Arsenic	5.0	ND	5.4	108	50-150
Barium	10	0.71	11	103	50-150
Cadmium	1.0	ND	1.1	110	50-150
Chromium	5.0	ND	5.3	106	50-150
Lead	5.0	ND	5.1	102	50-150
Selenium	1.0	ND	1.1	110	50-150
Silver	2.0	ND	2.0	100	50-150

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BATCH QUALITY CONTROL RESULTS
TCLP per EPA 1311, 6010, 7000 series

Client:	Wacker Siltronic Corporation	NCA Project #:	P501284
Project:	FAB-2	Received:	01/27/1995

RECEIVED FEB 1 0 1995

LABORATORY CONTROL SAMPLE
Batch # KR95015a
Results In mg/L (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Arsenic	5.0	5.6	112	50-150
Barium	10	10	100	50-150
Cadmium	1.0	1.0	100	50-150
Chromium	5.0	5.2	104	50-150
Lead	5.0	5.1	102	50-150
Selenium	1.0	1.1	110	50-150
Silver	2.0	1.9	95	50-150

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BATCH QUALITY CONTROL RESULTS
TCLP per EPA 1311, 6010, 7000 series

Client:	Wacker Siltronic Corporation	NCA Project #:	P501284
Project:	FAB-2	Received:	01/27/1995

RECEIVED FEB 1 0 1995

METHOD BLANK
Batch # ZT95019a
Results In mg/L (ppm)

Compound	Result	MRL
Mercury	ND	0.00050
Date Extracted	01/27/1995	
Date Prepared	01/30/1995	
Date Analyzed	01/30/1995	

MATRIX SPIKE
Batch # ZT95019c **Spike ID P501284A-1**
Results In mg/L (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS % Rec	QC Limit % Rec
Mercury	0.050	ND	0.048	96	50-150

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BATCH QUALITY CONTROL RESULTS
TCLP per EPA 1311, 6010, 7000 series

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501284
Received: 01/27/1995

RECEIVED FEB 1 0 1995

LABORATORY CONTROL SAMPLE
Batch # ZT95019a
Results in mg/L (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Mercury	0.0050	0.0051	102	50-150

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BATCH QUALITY CONTROL RESULTS
TPH-D per Oregon DEQ

RECEIVED FEB 1 0 1995

Client:	Wacker Siltronic Corporation	**NCA Project #:**	P501284
Project:	FAB-2	**Received:**	01/27/1995

METHOD BLANK
Batch # FC95002c
Results In mg/kg (ppm)

Compound	Result	MRL
Diesel/related	ND	25
Date Prepared	01/27/1995	
Date Analyzed	01/27/1995	

Surrogate Recovery (%)	Result	Control Limit
1-Chlorooctadecane	94	50-150

DUPLICATE
Batch # FC95002b **Duplicate ID P501265-1**
Results In mg/kg (ppm)

Compound	Sample Conc	Dup Conc	RPD	QC Limit RPD
Diesel/related	2,000	2,800	34	50

LABORATORY CONTROL SAMPLE
Batch # FC95002a
Results In mg/kg (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Diesel/related	120	120	100	50-150

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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

RECEIVED FEB 1 0 1995

Client:	Wacker Siltronic Corporation	**NCA Project #:**	P501284
Project:	FAB-2	**Received:**	01/27/1995

METHOD BLANK
Batch # VE95003c
Results in mg/kg (ppm)

Compound	Result	MRL
Benzene	ND	0.25
Carbon Tetrachloride	ND	0.25
Chlorobenzene	ND	0.25
Chloroform	ND	0.25
1,4-Dichlorobenzene	ND	0.25
1,2-Dichloroethane	ND	0.25
1,1-Dichloroethene	ND	0.25
Methyl Ethyl Ketone	ND	2.5
Tetrachloroethene	ND	0.25
Trichloroethene	ND	0.25
Vinyl Chloride	ND	0.63
Date Prepared	01/27/1995	
Date Analyzed	01/27/1995	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	105	74-121
1,2-Dichloroethane-d4	113	70-121
Toluene-d8	108	81-117

SCOEPA00022116

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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 8240

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501284
Received: 01/27/1995

RECEIVED FEB 1 0 1995

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE
Batch # VE95003a **Spike ID P501226-1**
Results in mg/kg (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS %Rec
Benzene	2.50	ND	2.44	98
Chlorobenzene	2.50	ND	2.30	92
1,1-Dichloroethene	2.50	ND	2.43	97
Toluene	2.50	ND	2.48	99
Trichloroethene	2.50	ND	2.93	117

Compound	Spike Added	MSD Conc	MSD % Rec	RPD	QC Limit RPD	QC Limit % Rec
Benzene	2.50	2.56	102	4.0	21	66-142
Chlorobenzene	2.50	2.43	97	5.3	21	60-133
1,1-Dichloroethene	2.50	2.70	108	11	22	59-172
Toluene	2.50	2.64	106	6.8	21	59-139
Trichloroethene	2.50	2.46	98	18	24	62-137

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BATCH QUALITY CONTROL RESULTS
TCLP BNAs per EPA 1311, 8270

Client:	Wacker Siltronic Corporation	**NCA Project #:**	P501284
Project:	FAB-2	**Received:**	01/27/1995

RECEIVED FEB 1 0 1995

METHOD BLANK
Batch # ST95002b
Results In mg/L (ppm)

Compound	Result	MRL
Cresols(total)	ND	0.0050
1,4-Dichlorobenzene	ND	0.010
2,4-Dinitrotoluene	ND	0.0050
Hexachloro-1,3-butadiene	ND	0.010
Hexachlorobenzene	ND	0.0050
Hexachloroethane	ND	0.010
Nitrobenzene	ND	0.0050
Pentachlorophenol	ND	0.010
Pyridine	ND	0.020
2,4,5-Trichlorophenol	ND	0.0050
2,4,6-Trichlorophenol	ND	0.0050
Date Prepared	01/28/1995	
Date Analyzed	01/30/1995	

Surrogate Recovery (%)	Result	Control Limit
2-Fluorobiphenyl	105	43-116
2-Fluorophenol	69	21-100
Nitrobenzene-d5	102	35-114
Phenol-d6	46	10-94
p-Terphenyl-d14	112	33-141
2,4,6-Tribromophenol	112	10-123

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BATCH QUALITY CONTROL RESULTS
TCLP BNAs per EPA 1311, 8270

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501284
Received: 01/27/1995

RECEIVED FEB 1 0 1995

MATRIX SPIKE
Batch # ST95002a
Results In ug/L (ppb)

Spike ID P501166-2

Compound	Spike Added	Sample Conc	MS Conc	MS % Rec	QC Limit % Rec
Acenaphthene	100	ND	83	83	47-145
4-Chloro-3-Methylphenol	150	ND	120	80	22-147
2-Chlorophenol	150	ND	120	80	23-134
1,4-Dichlorobenzene	100	ND	72	72	20-124
2,4-Dinitrotoluene	100	ND	80	80	39-139
4-Nitrophenol	150	ND	47	31	D-132
n-Nitroso-di-n-propylamine	100	ND	78	78	D-230
Pentachlorophenol	150	ND	100	67	14-176
Phenol	150	ND	56	37	5-112
Pyrene	100	ND	68	68	52-115
1,2,4-Trichlorobenzene	100	ND	76	76	44-142

LABORATORY CONTROL SAMPLE
Batch # ST95002b
Results In ug/L (ppb)

Compound	True	Found	% Rec	QC Limit % Rec
Acenaphthene	100	89	89	47-145
4-Chloro-3-Methylphenol	150	140	93	22-147
2-Chlorophenol	150	130	87	23-134
1,4-Dichlorobenzene	100	78	78	20-124
2,4-Dinitrotoluene	100	82	82	39-139
4-Nitrophenol	150	54	36	D-132
n-Nitroso-di-n-propylamine	100	86	86	D-230
Pentachlorophenol	150	160	107	14-176
Phenol	150	66	44	5-112
Pyrene	100	80	80	52-115
1,2,4-Trichlorobenzene	100	83	83	44-142

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BATCH QUALITY CONTROL RESULTS
TCLP Pesticides per EPA 1311, 8080

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501284
Received: 01/27/1995

RECEIVED FEB 1 0 1995

METHOD BLANK
Batch # TT95002b
Results in mg/L (ppm)

Compound	Result	MRL
Chlordane	ND	0.0050
Endrin	ND	0.00010
Heptachlor	ND	0.00010
Heptachlor Epoxide	ND	0.00010
Lindane	ND	0.00010
Methoxychlor	ND	0.00010
Toxaphene	ND	0.0050
Date Extracted	01/27/1995	
Date Prepared	01/28/1995	
Date Analyzed	01/30/1995	

Surrogate Recovery (%)	Result	Control Limit
Decachlorobiphenyl	80	65-130
2,4,5,6-Tetrachloro-m-xylene	92	65-130

MATRIX SPIKE
Batch # TT95002a **Spike ID P501166-2**
Results in mg/L (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS % Rec	QC Limit % Rec
Endrin	0.0005	ND	.00043	86	50-150
Heptachlor	0.0005	ND	.00047	94	50-150
Heptachlor Epoxide	0.0005	ND	.00046	92	50-150
Lindane	0.0005	ND	.00049	98	50-150
Methoxychlor	0.0005	ND	.00048	96	50-150

SCOEPA00022120

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BATCH QUALITY CONTROL RESULTS
TCLP Pesticides per EPA 1311, 8080

Client:	Wacker Siltronic Corporation	**NCA Project #:**	P501284
Project:	FAB-2	**Received:**	01/27/1995

RECEIVED FEB 1 0 1995

LABORATORY CONTROL SAMPLE
Batch # TT95002a
Results in mg/L (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Chlordane	0.020	0.018	90	50-150
Endrin	0.0005	.00045	90	30-147
Heptachlor	0.0005	.00050	100	34-111
Heptachlor Epoxide	0.0005	.00048	96	50-150
Lindane	0.0005	.00052	104	32-127
Methoxychlor	0.0005	.00050	100	50-150
Toxaphene	0.040	0.037	93	50-150

SCOEPA00022121

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BATCH QUALITY CONTROL RESULTS
TCLP Herbicides per EPA 1311, 8150

Client: Wacker Siltronic Corporation
Project: FAB-2
NCA Project #: P501284
Received: 01/27/1995

RECEIVED FEB 1 0 1995

METHOD BLANK
Batch # HP95003b
Results in mg/L (ppm)

Compound	Result	MRL
2,4-D	ND	0.040
2,4,5-TP (Silvex)	ND	0.020
Date Extracted	01/27/1995	
Date Prepared	01/30/1995	
Date Analyzed	01/31/1995	

Surrogate Recovery (%)	Result	Control Limit
2,4-Dichlorophenyl acetic acid	99	50-150

MATRIX SPIKE
Batch # HP95003a
Spike ID P501166-2
Results in mg/L (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS % Rec	QC Limit % Rec
2,4-D	0.020	ND	0.015	75	50-150
2,4,5-TP (Silvex)	0.062	ND	0.048	77	50-150

SCOEPA00022122

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BATCH QUALITY CONTROL RESULTS
TCLP Herbicides per EPA 1311, 8150

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501284
Received: 01/27/1995

RECEIVED FEB 1 0 1995

LABORATORY CONTROL SAMPLE
Batch # HP95003b
Results in mg/L (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
2,4-D	0.12	0.086	72	50-150
2,4,5-TP (Silvex)	0.60	0.53	88	50-150

SCOEPA00022123

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February 28, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

RE: JOB # BOXES
P.O.# 31002
PROJECT - FAB-2

Enclosed are test results for your samples received in this lab on Feb. 24, 1995. For your reference, these analyses have been assigned our NCA # P502274.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

This report will be accompanied by a separate Quality Control Data Report, unless omitted by client request.

Please call if you have any questions.

Respectfully,

Howard Holmes
Project Manager

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BTEX per EPA 8020
Results in ug/kg (ppb)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P502274
Matrix: soil
Sampled: 02/24/1995
Received: 02/24/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-542-Box-23	P502274-1	Benzene	ND	13	02/24/95	02/24/95
		Toluene	ND	13		
		Ethylbenzene	ND	13		
		Xylene (total)	ND	13		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00022125

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SURROGATE RECOVERIES (%)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P502274
Received: 02/24/1995

Sample Name	Analyte	Result	Control Limits
BTEX per EPA 8020			
95-542-Box-23	4-Bromofluorobenzene	100	63-126

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00022126

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February 28, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

Re: Quality Control Data
JOB # BOXES
P.O.# 31002
PROJECT - FAB-2

NCA project number P502274.

Note: Surrogate Recoveries are included in the final report.

QUALITY CONTROL DEFINITIONS

METHOD BLANK RESULTS

The method blank is an analyte-free matrix which is carried through the same analytical process as the samples. It is used to document contamination that may result from the analytical process.

SURROGATE STANDARD

A surrogate standard (i.e., a chemical compound not expected to occur in an environmental sample) is added to each sample, blank, and matrix spike sample just prior to extraction or processing. The recovery of the surrogate standard is used to monitor for unusual matrix effects, gross sample processing errors, etc. Surrogate recovery is evaluated for acceptance by determining whether the measured concentration falls within accepted limits.

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Accuracy is measured by percent recovery as in:

$$\% \text{ Recovery} = \frac{\text{(Measured Concentration)}}{\text{(Actual Concentration)}} \times 100$$

Precision is measured using duplicate tests by relative percent difference.

$$\text{RPD} = \frac{\text{(Result of Test 1 - Result of Test 2)}}{\text{(Result of Test 1 + Result of Test 2)/2}} \times 100$$

If you should have any questions concerning this report, please contact me.

Sincerely,

Howard Holmes
Project Manager

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BATCH QUALITY CONTROL RESULTS
BTEX per EPA 8020

Client:	Wacker Siltronic Corporation	**NCA Project #:**	P502274
Project:	FAB-2	**Received:**	02/24/1995

METHOD BLANK
Batch # BS95005d
Results in ug/kg (ppb)

Compound	Result	MRL
Benzene	ND	13
Toluene	ND	13
Ethylbenzene	ND	13
Xylene (total)	ND	13
Date Prepared	02/24/1995	
Date Analyzed	02/24/1995	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	108	63-126

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE
Batch # BS95005a **Spike ID P502225-6**
Results in ug/kg (ppb)

Compound	Spike Added	Sample Conc	MS Conc	MS %Rec
Benzene	20	ND	13.6	68
Chlorobenzene	20	ND	15.1	76
Ethylbenzene	20	ND	16.0	80
Toluene	20	0.519	17.5	85
o-Xylene	20	ND	15.8	79

Compound	Spike Added	MSD Conc	MSD % Rec	RPD	QC Limit RPD	QC Limit % Rec
Benzene	20	14.5	73	7.1	17	56-123
Chlorobenzene	20	16.1	81	6.4	16	53-124
Ethylbenzene	20	17.0	85	6.1	20	45-130
Toluene	20	18.4	89	4.6	24	54-123
o-Xylene	20	16.6	83	4.9	20	50-127

SCOEPA00022129

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BATCH QUALITY CONTROL RESULTS
BTEX per EPA 8020

Client:	Wacker Siltronic Corporation	**NCA Project #:**	P502274
Project:	FAB-2	**Received:**	02/24/1995

LABORATORY CONTROL SAMPLE
Batch # BS95005c
Results in ug/kg (ppb)

Compound	True	Found	% Rec	QC Limit % Rec
Benzene	20	17.8	89	69-138
Chlorobenzene	20	20.2	101	72-137
Ethylbenzene	20	20.8	104	61-141
Toluene	20	22.3	112	53-151
o-Xylene	20	20.6	103	62-144

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RECEIVED FEB 1 0 1995

February 3, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

RE: JOB # BOX~~-23~~
P.O.# 31002
PROJECT - FAB-2

Enclosed are test results for your samples received in this lab on Jan. 27, 1995. For your reference, these analyses have been assigned our NCA # P501283.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

Please call if you have any questions.

Respectfully,

Howard Holmes
Project Manager

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TCLP per EPA 1311, 6010, 7000 series

Results in mg/L (ppm)

RECEIVED FEB 1 0 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501283
Matrix: soil
Sampled: 01/27/1995
Received: 01/27/1995

Client ID	Lab ID	Analyte	Result	MRL	Date Extracted	Date Prepared	Date Analyzed
95-533	P501283-1	Arsenic	ND	0.50	01/27/95	01/28/95	01/30/95
		Barium	0.57	0.50			
		Cadmium	ND	0.020			
		Chromium	ND	0.020			
		Lead	ND	0.20			
		Mercury	ND	0.0050			
		Selenium	ND	0.25			
		Silver	ND	0.020			

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00022132

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TPH-D per Oregon DEQ
Results in mg/kg (ppm)

RECEIVED FEB 10 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501283
Matrix: soil
Sampled: 01/27/1995
Received: 01/27/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-533	P501283-1	Diesel/related	150,000	5000	01/27/95	01/27/95

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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TCLP VOC's per EPA 1311, 8240

Results In mg/L (ppm)

RECEIVED FEB 1 0 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501283
Matrix: soil
Received: 01/27/1995
Sampled: 01/27/1995
Extracted: 01/27/95
Prepared: 01/30/95
Analyzed: 01/30/95

Client ID	Lab ID	Analyte	Result	MRL
95-533 *[1]	P501283-1	Benzene	10	0.20
		Carbon Tetrachloride	ND	0.20
		Chlorobenzene	ND	0.20
		Chloroform	ND	0.20
		1,4-Dichlorobenzene	ND	0.20
		1,2-Dichloroethane	ND	0.20
		1,1-Dichloroethene	ND	0.20
		Methyl Ethyl Ketone	ND	0.75
		Tetrachloroethene	ND	0.20
		Trichloroethene	ND	0.20
		Vinyl Chloride	ND	0.50

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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RECEIVED FEB 1 0 1995

TCLP BNAs per EPA 1311, 8270
Results in mg/L (ppm)

Client:	Wacker Siltronic Corporation	**NCA Project #:**	P501283
Project:	FAB-2	**Matrix:**	soil
		Received:	01/27/1995
		Sampled:	01/27/1995
		Prepared:	01/28/95
		Analyzed:	01/30/95

Client ID	Lab ID	Analyte	Result	MRL
95-533 *2	P501283-1	Cresols(total)	ND	0.050
		1,4-Dichlorobenzene	ND	0.10
		2,4-Dinitrotoluene	ND	0.050
		Hexachloro-1,3-butadiene	ND	0.10
		Hexachlorobenzene	ND	0.050
		Hexachloroethane	ND	0.10
		Nitrobenzene	ND	0.050
		Pentachlorophenol	ND	0.10
		Pyridine	ND	0.20
		2,4,5-Trichlorophenol	ND	0.050
		2,4,6-Trichlorophenol	ND	0.050

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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TCLP Pesticides per EPA 1311, 8080

Results in mg/L (ppm)

RECEIVED FEB 1 0 1995

Client:	Wacker Siltronic Corporation	**NCA Project #:**	P501283
Project:	FAB-2	**Matrix:**	soil
		Received:	01/27/1995
		Sampled:	01/27/1995
		Extracted:	01/27/95
		Prepared:	01/28/95
		Analyzed:	01/30/95

Client ID	Lab ID	Analyte	Result	MRL
95-533	P501283-1	Chlordane	ND *2	0.025
		Endrin	ND	0.00010
		Heptachlor	ND	0.00010
		Heptachlor Epoxide	ND	0.00010
		Lindane	ND	0.00010
		Methoxychlor	ND	0.00010
		Toxaphene	ND *2	0.030

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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TCLP Herbicides per EPA 1311, 8150
Results in mg/L (ppm)

RECEIVED FEB 1 0 1995

Client:	Wacker Siltronic Corporation	NCA Project #:	P501283
Project:	FAB-2	Matrix:	soil
		Received:	01/27/1995
		Sampled:	01/27/1995
		Extracted:	01/27/95
		Prepared:	01/30/95
		Analyzed:	01/31/95

Client ID	Lab ID	Analyte	Result	MRL
95-533	P501283-1	2,4-D	ND	0.040
		2,4,5-TP (Silvex)	ND	0.020

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00022137

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SURROGATE RECOVERIES (%)

RECEIVED FEB 1 0 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P501283
Received: 01/27/1995

Sample Name	Analyte	Result	Control Limits
TPH-D per Oregon DEQ			
95-533	1-Chlorooctadecane	– *3	50-150
TCLP VOC's per EPA 1311, 8240			
95-533	4-Bromofluorobenzene	106	74-121
	1,2-Dichloroethane-d4	102	70-121
	Toluene-d8	100	81-117
TCLP BNAs per EPA 1311, 8270			
95-533	2-Fluorobiphenyl	106	43-116
	2-Fluorophenol	23	21-100
	Nitrobenzene-d5	30	35-114
	Phenol-d6	– *3	10-94
	p-Terphenyl-d14	104	33-141
	2,4,6-Tribromophenol	– *3	10-123
TCLP Pesticides per EPA 1311, 8080			
95-533	Decachlorobiphenyl	67	65-130
	2,4,5,6-Tetrachloro-m-xylene	124	65-130
TCLP Herbicides per EPA 1311, 8150			
95-533	2,4-Dichlorophenyl acetic acid	114	50-150

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00022138

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COMMENTS

RECEIVED FEB 10 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P501283
Received: 01/27/1995

1. Detection limit is raised due to dilution necessary for analysis.

2. Detection limit is raised due to matrix interference.

3. Unable to calculate surrogate recovery due to matrix interference.

SCOEPA00022139

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RECEIVED FEB 1 0 1995

February 3, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

Re: Quality Control Data

NCA project number P501283.

Note: Surrogate Recoveries are included in the final report.

QUALITY CONTROL DEFINITIONS

METHOD BLANK RESULTS

The method blank is an analyte-free matrix which is carried through the same analytical process as the samples. It is used to document contamination that may result from the analytical process.

SURROGATE STANDARD

A surrogate standard (i.e., a chemical compound not expected to occur in an environmental sample) is added to each sample, blank, and matrix spike sample just prior to extraction or processing. The recovery of the surrogate standard is used to monitor for unusual matrix effects, gross sample processing errors, etc. Surrogate recovery is evaluated for acceptance by determining whether the measured concentration falls within accepted limits.

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RECEIVED FEB 1 0 1995

Accuracy is measured by percent recovery as in:

$$\% \text{ Recovery} = \frac{\text{(Measured Concentration)}}{\text{(Actual Concentration)}} \times 100$$

Precision is measured using duplicate tests by relative percent difference.

$$\text{RPD} = \frac{\text{(Result of Test 1 - Result of Test 2)}}{\text{(Result of Test 1 + Result of Test 2)/2}} \times 100$$

If you should have any questions concerning this report, please contact me.

Sincerely,

Howard Holmes
Project Manager

SCOEPA00022141

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BATCH QUALITY CONTROL RESULTS
TCLP per EPA 1311, 6010, 7000 series

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501283
Received: 01/27/1995

RECEIVED FEB 1 0 1995

METHOD BLANK
Batch # KR95015a
Results In mg/L (ppm)

Compound	Result	MRL
Arsenic	ND	0.50
Barium	ND	0.50
Cadmium	ND	0.020
Chromium	ND	0.020
Lead	ND	0.20
Selenium	ND	0.25
Silver	ND	0.020
Date Extracted	01/27/1995	
Date Prepared	01/28/1995	
Date Analyzed	01/30/1995	

MATRIX SPIKE
Batch # KR95015c **Spike ID P501283-1**
Results In mg/L (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS % Rec	QC Limit % Rec
Arsenic	5.0	ND	5.7	114	50-150
Barium	10	0.57	10	94	50-150
Cadmium	1.0	ND	1.0	100	50-150
Chromium	5.0	ND	5.2	104	50-150
Lead	5.0	ND	5.2	104	50-150
Selenium	1.0	ND	1.1	110	50-150
Silver	2.0	ND	2.0	100	50-150

SCOEPA00022142

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BATCH QUALITY CONTROL RESULTS
TCLP per EPA 1311, 6010, 7000 series

RECEIVED FEB 1 0 1995

Client:	Wacker Siltronic Corporation	**NCA Project #:**	P501283
Project:	FAB-2	**Received:**	01/27/1995

LABORATORY CONTROL SAMPLE
Batch # KR95015a
Results in mg/L (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Arsenic	5.0	5.6	112	50-150
Barium	10	10	100	50-150
Cadmium	1.0	1.0	100	50-150
Chromium	5.0	5.2	104	50-150
Lead	5.0	5.1	102	50-150
Selenium	1.0	1.1	110	50-150
Silver	2.0	1.9	95	50-150

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BATCH QUALITY CONTROL RESULTS
TCLP per EPA 1311, 6010, 7000 series

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501283
Received: 01/27/1995

RECEIVED FEB 1 0 1995

METHOD BLANK
Batch # ZT95019a
Results In mg/L (ppm)

Compound	Result	MRL
Mercury	ND	0.00050
Date Extracted	01/27/1995	
Date Prepared	01/30/1995	
Date Analyzed	01/30/1995	

MATRIX SPIKE
Batch # ZT95019b
Results In mg/L (ppm)
Spike ID P501283A-1

Compound	Spike Added	Sample Conc	MS Conc	MS % Rec	QC Limit % Rec
Mercury	0.050	ND	0.050	100	50-150

LABORATORY CONTROL SAMPLE
Batch # ZT95019a
Results In mg/L (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Mercury	0.0050	0.0051	102	50-150

SCOEPA00022144

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BATCH QUALITY CONTROL RESULTS
TPH-D per Oregon DEQ

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501283
Received: 01/27/1995

RECEIVED FEB 1 0 1995

METHOD BLANK
Batch # FC95002c
Results In mg/kg (ppm)

Compound	Result	MRL
Diesel/related	ND	25
Date Prepared	01/27/1995	
Date Analyzed	01/27/1995	

Surrogate Recovery (%)	Result	Control Limit
1-Chlorooctadecane	94	50-150

DUPLICATE
Batch # FC95002b
Duplicate ID P501265-1
Results In mg/kg (ppm)

Compound	Sample Conc	Dup Conc	RPD	QC Limit RPD
Diesel/related	2,000	2,800	34	50

LABORATORY CONTROL SAMPLE
Batch # FC95002a
Results In mg/kg (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Diesel/related	120	120	100	50-150

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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 1311, 8240

Client:	Wacker Siltronic.Corporation	**NCA Project #:**	P501283
Project:	FAB-2	**Received:**	01/27/1995

RECEIVED FEB 1 0 1995

METHOD BLANK
Batch # VZ95002b
Results in mg/L (ppm)

Compound	Result	MRL
Benzene	ND	0.0030
Carbon Tetrachloride	ND	0.0020
Chlorobenzene	ND	0.0020
Chloroform	ND	0.0020
1,4-Dichlorobenzene	ND	0.0020
1,2-Dichloroethane	ND	0.0020
1,1-Dichloroethene	ND	0.0020
Methyl Ethyl Ketone	ND	0.0075
Tetrachloroethene	ND	0.0020
Trichloroethene	ND	0.0020
Vinyl Chloride	ND	0.0050
Date Extracted	01/27/1995	
Date Prepared	01/30/1995	
Date Analyzed	01/30/1995	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	105	74-121
1,2-Dichloroethane-d4	103	70-121
Toluene-d8	99	81-117

SCOEPA00022146

NORTH CREEK ANALYTICAL
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BATCH QUALITY CONTROL RESULTS
TCLP VOC's per EPA 1311, 8240

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501283
Received: 01/27/1995

RECEIVED FEB 1 9 1995

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE
Batch # VZ95002a **Spike ID P501231-2**
Results In mg/L (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS %Rec
Benzene	0.020	ND	0.0215	108
Chlorobenzene	0.020	ND	0.0204	102
1,1-Dichloroethene	0.020	ND	0.0191	96
Toluene	0.020	0.0017	0.0224	104
Trichloroethene	0.020	ND	0.0206	103

Compound	Spike Added	MSD Conc	MSD % Rec	RPD	QC Limit RPD	QC Limit % Rec
Benzene	0.020	0.0210	105	2.8	21	66-142
Chlorobenzene	0.020	0.0203	102	0	21	60-133
1,1-Dichloroethene	0.020	0.0188	94	2.1	22	59-172
Toluene	0.020	0.0221	102	1.9	21	59-139
Trichloroethene	0.020	0.0202	101	2.0	24	62-137

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BATCH QUALITY CONTROL RESULTS
TCLP BNAs per EPA 1311, 8270

Client:	Wacker Siltronic Corporation	NCA Project #:	P501283
Project:	FAB-2	Received:	01/27/1995

RECEIVED FEB 1 0 1995

METHOD BLANK
Batch # ST95002b
Results in mg/L (ppm)

Compound	Result	MRL
Cresols(total)	ND	0.0050
1,4-Dichlorobenzene	ND	0.010
2,4-Dinitrotoluene	ND	0.0050
Hexachloro-1,3-butadiene	ND	0.010
Hexachlorobenzene	ND	0.0050
Hexachloroethane	ND	0.010
Nitrobenzene	ND	0.0050
Pentachlorophenol	ND	0.010
Pyridine	ND	0.020
2,4,5-Trichlorophenol	ND	0.0050
2,4,6-Trichlorophenol	ND	0.0050
Date Prepared	01/28/1995	
Date Analyzed	01/30/1995	

Surrogate Recovery (%)	Result	Control Limit
2-Fluorobiphenyl	105	43-116
2-Fluorophenol	69	21-100
Nitrobenzene-d5	102	35-114
Phenol-d6	46	10-94
p-Terphenyl-d14	112	33-141
2,4,6-Tribromophenol	112	10-123

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BATCH QUALITY CONTROL RESULTS
TCLP BNAs per EPA 1311, 8270

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501283
Received: 01/27/1995

RECEIVED FEB 1 0 1995

MATRIX SPIKE
Batch # ST95002a
Results in ug/L (ppb)

Spike ID P501166-2

Compound	Spike Added	Sample Conc	MS Conc	MS % Rec	QC Limit % Rec
Acenaphthene	100	ND	83	83	47-145
4-Chloro-3-Methylphenol	150	ND	120	80	22-147
2-Chlorophenol	150	ND	120	80	23-134
1,4-Dichlorobenzene	100	ND	72	72	20-124
2,4-Dinitrotoluene	100	ND	80	80	39-139
4-Nitrophenol	150	ND	47	31	D-132
n-Nitroso-di-n-propylamine	100	ND	78	78	D-230
Pentachlorophenol	150	ND	100	67	14-176
Phenol	150	ND	56	37	5-112
Pyrene	100	ND	68	68	52-115
1,2,4-Trichlorobenzene	100	ND	76	76	44-142

LABORATORY CONTROL SAMPLE
Batch # ST95002b
Results in ug/L (ppb)

Compound	True	Found	% Rec	QC Limit % Rec
Acenaphthene	100	89	89	47-145
4-Chloro-3-Methylphenol	150	140	93	22-147
2-Chlorophenol	150	130	87	23-134
1,4-Dichlorobenzene	100	78	78	20-124
2,4-Dinitrotoluene	100	82	82	39-139
4-Nitrophenol	150	54	36	D-132
n-Nitroso-di-n-propylamine	100	86	86	D-230
Pentachlorophenol	150	160	107	14-176
Phenol	150	66	44	5-112
Pyrene	100	80	80	52-115
1,2,4-Trichlorobenzene	100	83	83	44-142

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BATCH QUALITY CONTROL RESULTS
TCLP Pesticides per EPA 1311, 8080

Client:	Wacker Siltronic Corporation	NCA Project #:	P501283
Project:	FAB-2	Received:	01/27/1995

RECEIVED FEB 1 0 1995

METHOD BLANK
Batch # TT95002b
Results In mg/L (ppm)

Compound	Result	MRL
Chlordane	ND	0.0050
Endrin	ND	0.00010
Heptachlor	ND	0.00010
Heptachlor Epoxide	ND	0.00010
Lindane	ND	0.00010
Methoxychlor	ND	0.00010
Toxaphene	ND	0.0050
Date Extracted	01/27/1995	
Date Prepared	01/28/1995	
Date Analyzed	01/30/1995	

Surrogate Recovery (%)	Result	Control Limit
Decachlorobiphenyl	80	65-130
2,4,5,6-Tetrachloro-m-xylene	92	65-130

MATRIX SPIKE
Batch # TT95002a **Spike ID P501166-2**
Results In mg/L (ppm)

Compound	Spike Added	Sample Conc	MS Conc	MS % Rec	QC Limit % Rec
Endrin	0.0005	ND	.00043	86	50-150
Heptachlor	0.0005	ND	.00047	94	50-150
Heptachlor Epoxide	0.0005	ND	.00046	92	50-150
Lindane	0.0005	ND	.00049	98	50-150
Methoxychlor	0.0005	ND	.00048	96	50-150

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BATCH QUALITY CONTROL RESULTS
TCLP Pesticides per EPA 1311, 8080

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501283
Received: 01/27/1995

RECEIVED FEB 1 0 1995

LABORATORY CONTROL SAMPLE
Batch # TT95002a
Results in mg/L (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
Chlordane	0.020	0.018	90	50-150
Endrin	0.0005	.00045	90	30-147
Heptachlor	0.0005	.00050	100	34-111
Heptachlor Epoxide	0.0005	.00048	96	50-150
Lindane	0.0005	.00052	104	32-127
Methoxychlor	0.0005	.00050	100	50-150
Toxaphene	0.040	0.037	93	50-150

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BATCH QUALITY CONTROL RESULTS
TCLP Herbicides per EPA 1311, 8150

Client:	Wacker Siltronic Corporation	**NCA Project #:**	P501283
Project:	FAB-2	**Received:**	01/27/1995

RECEIVED FEB 1 0 1995

METHOD BLANK
Batch # HP95003b
Results In mg/L (ppm)

Compound	Result	MRL
2,4-D	ND	0.040
2,4,5-TP (Silvex)	ND	0.020
Date Extracted	01/27/1995	
Date Prepared	01/30/1995	
Date Analyzed	01/31/1995	

Surrogate Recovery (%)	Result	Control Limit
2,4-Dichlorophenyl acetic acid	99	50-150

MATRIX SPIKE
Batch # HP95003a
Results In mg/L (ppm)

Spike ID P501166-2

Compound	Spike Added	Sample Conc	MS Conc	MS % Rec	QC Limit % Rec
2,4-D	0.020	ND	0.015	75	50-150
2,4,5-TP (Silvex)	0.062	ND	0.048	77	50-150

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BATCH QUALITY CONTROL RESULTS
TCLP Herbicides per EPA 1311, 8150

Client:	Wacker Siltronic Corporation	NCA Project #:	P501283
Project:	FAB-2	Received:	01/27/1995

RECEIVED FEB 1 0 1995

LABORATORY CONTROL SAMPLE
Batch # HP95003b
Results in mg/L (ppm)

Compound	True	Found	% Rec	QC Limit % Rec
2,4-D	0.12	0.086	72	50-150
2,4,5-TP (Silvex)	0.60	0.53	88	50-150

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CHAIN OF CUSTODY REPORT

CLIENT: Wacker Siltronic
ADDRESS: 7200 N.W. Front Ave
Portland, OR
PHONE: 243-2020 x-374 FAX:
PROJECT NAME: FAB-2
PROJECT NUMBER: Box-23
SAMPLED BY: Dianne Mullan

REPORT TO: Dianne Mullan
BILLING TO:
P.O. NUMBER: 31002
NCA QUOTE #:

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: 10 | 5 | X | 2 | 1 (Please Select One)

Fuels & Hydrocarbon Analyses: 5 | X | 2 | 1

* Turnaround Requests less than standard will incur Rush Charg

FAX RESULTS BY :

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	Analysis Request: WCLP 8270	WCLP 8240	TPH-D	WCLP-Pest.	WCLP-Herb	WCLP (8)				COMMENTS & PRESERVATIVES USED	NCA SAMPLE NUMBER
1. *95-533	1-27-95/1020	S	2	X	X	X	X	X	X				held on ice	P501283-1
2.														
3. 95-534-Box-23	1-27-95/1020	S	2	X	X	X	X	X	X				held on ice	P501284
4.														
5.														
6.														
7.														
8.														
9.														
10.														

RECEIVED FEB 10 1995

RELINQUISHED BY: Dianne E Mullan DATE: 1-27-95
PRINT NAME: Dianne Mullan FIRM: Wacker Siltronic TIME: 1145
RECEIVED BY: Sara McClurg DATE: 1-27-95
PRINT NAME: Sara McClurg FIRM: NCA TIME: 1145

RELINQUISHED BY: DATE:
PRINT NAME: FIRM: TIME:
RECEIVED BY: DATE:
PRINT NAME: FIRM: TIME:

ADDITIONAL REMARKS: WCLP- 8240, 8270 & TPH-D sample 95-533 - 1 day turnaround

PAGE OF

COC Rev 6, 10/94

SCOEPA00022154

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RECEIVED FEB 1 0 1995

February 8, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

RE: JOB # BOX~~-23~~
P.O.# 31002
PROJECT - FAB-2

Enclosed are test results for your samples received in this lab on Jan. 27, 1995. For your reference, these analyses have been assigned our NCA # P502059.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

Please call if you have any questions.

Respectfully,

Howard Holmes
Project Manager

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BTEX per EPA 8020
Results in ug/kg (ppb)

RECEIVED FEB 10 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P502059
Matrix: soil
Sampled: 01/27/1995
Received: 01/27/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-533	P502059-1	Benzene	200000	1300	02/06/95	02/07/95
		Ethylbenzene	48000	1300		
		Toluene	120000	1300		
		Xylenes (total)	99000	1300		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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SURROGATE RECOVERIES (%)

RECEIVED FEB 1 0 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P502059
Received: 01/27/1995

Sample Name	Analyte	Result	Control Limits
BTEX per EPA 8020			
95-533	4-Bromofluorobenzene	96	63-126

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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RECEIVED FEB 1 0 1995

February 8, 1995

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180

Attention: Dianne Mullan

Re: Quality Control Data

NCA project number P502059.

Note: Surrogate Recoveries are included in the final report.

QUALITY CONTROL DEFINITIONS

METHOD BLANK RESULTS

The method blank is an analyte-free matrix which is carried through the same analytical process as the samples. It is used to document contamination that may result from the analytical process.

SURROGATE STANDARD

A surrogate standard (i.e., a chemical compound not expected to occur in an environmental sample) is added to each sample, blank, and matrix spike sample just prior to extraction or processing. The recovery of the surrogate standard is used to monitor for unusual matrix effects, gross sample processing errors, etc. Surrogate recovery is evaluated for acceptance by determining whether the measured concentration falls within accepted limits.

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Accuracy is measured by percent recovery as in:

$$\% \text{ Recovery} = \frac{\text{(Measured Concentration)}}{\text{(Actual Concentration)}} \times 100$$

Precision is measured using duplicate tests by relative percent difference.

$$\text{RPD} = \frac{\text{(Result of Test 1 - Result of Test 2)}}{\text{(Result of Test 1 + Result of Test 2)/2}} \times 100$$

If you should have any questions concerning this report, please contact me.

Sincerely,

Howard Holmes
Project Manager

SCOEPA00022159

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BATCH QUALITY CONTROL RESULTS
BTEX per EPA 8020

RECEIVED FEB 1 0 1995

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P502059
Received: 01/27/1995

METHOD BLANK
Batch # BS95003c
Results in ug/kg (ppb)

Compound	Result	MRL
Benzene	ND	13
Ethylbenzene	ND	13
Toluene	ND	13
Xylenes (total)	ND	13
Date Prepared	02/06/1995	
Date Analyzed	02/06/1995	

Surrogate Recovery (%)	Result	Control Limit
4-Bromofluorobenzene	103	63-126

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE
Batch # BS95003a **Spike ID P501311-2**
Results in ug/kg (ppb)

Compound	Spike Added	Sample Conc	MS Conc	MS %Rec
Benzene	20	ND	17.2	86
Chlorobenzene	20	ND	17.4	87
Ethylbenzene	20	ND	17.2	86
Toluene	20	0.53	16.2	78
o-Xylene	20	0.61	18.4	89

Compound	Spike Added	MSD Conc	MSD % Rec	RPD	QC Limit RPD	QC Limit % Rec
Benzene	20	18.7	94	8.9	17	56-123
Chlorobenzene	20	18.2	91	4.5	16	53-124
Ethylbenzene	20	18.3	92	6.7	20	45-130
Toluene	20	18.2	88	13	24	54-123
o-Xylene	20	18.2	88	1.1	20	50-127

Wacker Siltronic Corporation

WACKER

TO: Steve Beiswenger

FROM: Dan White

SUBJECT: Air Monitoring During Fab 2 Construction

DATE: July 1, 1991

As a result of past soil and ground water sampling results at the proposed construction site for Fab 2, the safety department recommends the following:

1. The sub-contractor conducting the soil excavation should be certified for work involving hazardous waste operations and emergency response (OSHA 1910.120). This will eliminate prolonged delays if hazardous conditions developed during the work.

2. Air monitoring should be conducted on a regular basis during excavation work. Air monitoring for benzene and coal tar pitch volatiles (benzene solubles) should be conducted at least once a day. The samples should be collected during the middle of the workshift and shall be collected to represent the breathing zone of the operators.

3. Air concentrations for benzene should be below 1 ppm. If sampling results indicate levels above 1 ppm benzene; additional protective equipment must be worn by the operators. The protective equipment shall include the following:
   full face - air purifying respirator (NIOSH approved)
   polycoated coveralls
   nitrile gloves

If sampling results indicate levels above 1 ppm benzene, additional sampling shall be conducted to determine the area where elevated benzene levels occur.

4. Air concentrations for coal tar pitch volatiles (benzene solubles) should be below 0.2 mg/m^3. If sampling results indicate levels above 0.2 mg/m^3; additional protective equipment must be worn by the operators. The protective equipment shall include the following:
   full face - air purifying respirator (NIOSH approved)
   polycoated coveralls
   nitrile gloves

If sampling results indicate levels above 0.2 mg/m^3 of coal tar pitch volatiles; additional sampling shall be conducted to determine the area where elevated levels of coal tar pitch occur.

5. The normal protective clothing which shall be worn by the workers during excavation will include the following:
   steel toe chemical resistant boots
   safety glasses
   coveralls (cotton)
   hard hat

6. If air samples indicate elevated levels of benzene (1 ppm) or coal tar pitch volatiles (0.2 mg/m^3); soil samples shall be collected and analyzed to determine contamination.

7. All air and soil sample results shall be documented to show concentration, date, time, and location.

8. Air sampling results must have same day turn around time.

ec

cc: Don Crane
Tom McCue

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March 13, 1995

Thomas C. McCue
Environmental Safety Manager
Wacker Siltronic Corporation
P.O. Box 83180
Portland, Oregon 97283-0180

Dear Mr. Mc Cue:

During the month of December, 1994, Wacker Siltronic Corporation excavated soils and placed the soils in lined drop boxes. Wacker staff following EPA approved sampling protocol pulled soils from drop boxes and submitted them under official chain-of-custody record to North Creek Analytical, Inc.. Initial results indicated that benzene was present at levels above the regulatory limit in some samples. The drop boxes were re-sampled and samples were submitted in January and February ,1995. Each sampling event was separated by approximately four weeks. The concentrations of benzene detected dropped significantly at each sampling event for the samples submitted. The concentration of benzene dropped below the regulatory limits for hazardous waste.

The reduction of benzene concentrations in disturbed soils is common. Many factors and mechanisms effect the rate of loss. At the request of Wacker Siltronic Company the data files for this project were reviewed. Understanding your concern for the validity of the data ,all sample reports were examined. The quality control criteria was met for each of the soil samples submitted. The laboratory performed the test methods correctly and provided credible and defensible data to Wacker Siltronic Company. A Case Narrative for Box 5 samples has been enclosed for your review.

If you have any additional questions regarding this project please call me at 643-9200.

Sincerely,
North Creek Analytical

Kent Patton
Technical Development Manager
attachments

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Wacker Siltronic Corporation
CASE NARRATIVE

CLIENT: Wacker Siltronic Corporation
PROJECT #: FAB-2
CASE #: 94-3979, P501258,P502272

1.0 DESCRIPTION OF CASE

Three soil samples were received over the period of three months, each under a separate Chain-of-Custody. The samples were analyzed according to the analysis requests on the Chain-of-Custody Report.

Client ID	Lab ID	Date Received	Analysis
94-504	94-3979-1	12-22-94	TCLP 8310, TCLP 8240, TPH-D
95-526-BOX 5	P501258-1	01-25-95	TCLP 8240
95-540-Box-5	P502272-1	02-24-95	BTEX 8020

2.0 COMMENTS ON ANALYSIS

2.1 Sample Receipt

All samples were received intact. Samples were received on ice, properly package in precleaned wide mouth glass jars, within six hours of sampling.

2.2 Extraction

All extraction of samples were started within 24 hours of sample receipt for volatiles analysis. All methods were completed within EPA holding times.

2.3 Analysis

Ten grams of sample 94-504 was placed in a headspace vial, heated and screened by GC-FID. For sample 94-504 relatively high levels of volatiles were indicated from the screen. Due to the high detects of volatile compounds 25 grams of sample was extracted following the EPA Method 1311 TCLP Zero Head Space. The TCLP extract was then analyzed by EPA Methods 5030/8240, purge and trap GC/MS. Relatively low levels of volatiles were detected in the screen of sample 95-526-BOX

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5, therefore the TCLP procedure was not preformed. The chemist immediately analyzed the sample for total TCLP List volatiles following EPA Methods 5030/8240. In the case of sample 95-540-Box-5 the COC directed the lab to analyze the sample following EPA 5030/8020, purge and trap GC-Photoionization detector. No pre-screening was conducted for this sample. Benzene was detected in all three samples. No notable problems were encountered during analysis.

3.0 QC RESULTS

For all volatile analyses surrogate spikes, matrix spikes and blank spikes were within quality control limits. The method blanks had no detected contamination . The surrogate recoveries were in control for all samples and quality control samples. Method recommendations for calibration, instrument tuning, calibration verification and lab control parameters for precision and accuracy were met.

4.0 Data Comments

Sample results have been submitted for the samples described above. For each sample reported to Wacker Siltronic results and quality control data was provided. No errors have been found in calculating or reporting the results for these samples. The laboratory is confident in the values reported for these samples received from Wacker Siltronic.

It is noted that the headers used to report data may have been confusing to Wacker.

TCLP VOC's per EPA 1311, 8240
results in mg/kg (ppm)

TCLP in the method header is intended to indicate the list of volatile compounds analyzed in the sample. EPA 1311 is a reference for the leachate procedure and EPA 8240 indicates the method for detection. For sample 95-526-BOX 5 the header was:

TCLP VOC's per EPA 8240
results in mg/kg (ppm)

The EPA Method 1311 was not conducted on this sample. The TCLP list of compounds were analyzed by EPA 8240 and the results in mg/kg soil were reported. The confusion between the total results and leachate results could have been compounded by the header on the surrogate report, page three of three on report P501258. The header incorrectly includes the method reference EPA 1311.

The results be EPA 8020 are equal validity for this sample matrix as EPA 8240.

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The laboratory analyses thousands of samples per month. Each sample is handled following specific Standard Operating Procedures detailing sample login, storage, extraction, analysis, reporting, data review , sample storage and disposal. There were no problems indicated in the processing of Wacker samples that would place the defensibility of the reported data in doubt.

Benzene is a highly volatile compound. The literature contains many studies which demonstrate the rapid loss of Benzene for disturbed soils over short periods of time due to numerous factors. Sampling locations and collection are outside the control of NCA. NCA will not speculate on the mechanisms that are contributing the apparent decrease in benzene concentration on your site. The apparent loses from disturbed soils over a three month period are not exceptional.

" I certify that this data package is in compliance both technically and for completeness,for other than the conditions detailed above. Release of the data contained in the hard copy data packages has been authorized by the Laboratory Director or his designee, as verified by the following signature."

Kent D. Patton , Technical Development Manager

Wacker Siltronic Corporation

TO: Tom McCue

FROM: Chip Bloomer

SUBJECT: FAB2 Soils

DATE: February 28, 1995

All soils currently present on the site are not hazardous waste. Written below is a summary of the attached documents showing that the analytical results for the soil demonstrate that it is non-hazardous.

Background

Initially we were running the extraction method for TCLP organics. This method is very time consuming and costly. In early January we switched to total benzene screens for TCLP listed organics in order to turn the samples around faster and save us money. A benzene screen can be performed according to EPA protocol as long as the total analysis of the waste indicates that individual contaminants are present in such low concentrations that the appropriate regulatory thresholds could not possibly be exceeded the TCLP extraction concentrations. In this case the regulatory threshold for a total benzene screen is 10 mg/KG. (If total levels are below 10 mg/Kg than theoretically the extracted benzene can not exceed 0.5 mg/L.)

Detailed Summary of difference in reported lab results:

Initial lab results were reported as **TCLP VOC's** per EPA **1311, 8240 (mg/L)**
Screen results were **TCLP VOC's** per EPA **8240 (mg/Kg)**

TCLP VOC's	Identifies the list of contaminants tested for.
1311	Is the extraction procedure which changes the sample from solid to liquid and the produces the final units of mg/L.
8240	Is the analytical method used on both solids and liquids. This procedure without the extraction provides total benzene in units of mg/Kg.

As seen in the first analysis the results were in mg/L this is because the extraction method 1311 was used. The extraction fluid from this method is equal to 20 times the weight of the solid phase. (ie a 20 times dilution of solid sample).

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Initial Results

TCLP VOC's per EPA 1311, 8240

Results In mg/L (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: 94-3979
Matrix: soil
Sampled: 12/22/1994
Received: 12/22/1994

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
94-504	94-3979-1	Benzene	0.90	0.040	12/27/94	12/27/94
		Carbon Tetrachloride	ND	0.040		
		Chlorobenzene	ND	0.040		
		Chloroform	ND	0.040		
		1,4-Dichlorobenzene	ND	0.040		
		1,2-Dichloroethane	ND	0.040		
		1,1-Dichloroethene	ND	0.040		
		Methyl Ethyl Ketone	ND	0.15		
		Tetrachloroethene	ND	0.040		
		Trichloroethene	ND	0.080		
		Vinyl Chloride	ND	0.10		
Method Blank		Benzene	ND	0.0020		
		Carbon Tetrachloride	ND	0.0020		
		Chlorobenzene	ND	0.0020		
		Chloroform	ND	0.0020		
		1,4-Dichlorobenzene	ND	0.0020		
		1,2-Dichloroethane	ND	0.0020		
		1,1-Dichloroethene	ND	0.0020		
		Methyl Ethyl Ketone	ND	0.0075		
		Tetrachloroethene	ND	0.0020		
		Trichloroethene	ND	0.0040		
		Vinyl Chloride	ND	0.0050		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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Results From Screen

TCLP VOC's per EPA 8240
Results in mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P501258
Matrix: soil
Sampled: 01/25/1995
Received: 01/25/1995

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-526-BOX 5	P501258-1	Benzene	0.90	0.25	01/26/95	01/26/95
		Carbon Tetrachloride	ND	0.25		
		Chlorobenzene	ND	0.25		
		Chloroform	ND	0.25		
		1,4-Dichlorobenzene	ND	0.25		
		1,2-Dichloroethane	ND	0.25		
		1,1-Dichloroethene	ND	0.25		
		Methyl Ethyl Ketone	2.2	0.94		
		Tetrachloroethene	ND	0.25		
		Trichloroethene	ND	0.25		
		Vinyl Chloride	ND	0.63		
Method Blank		Benzene	ND	0.25		
		Carbon Tetrachloride	ND	0.25		
		Chlorobenzene	ND	0.25		
		Chloroform	ND	0.25		
		1,4-Dichlorobenzene	ND	0.25		
		1,2-Dichloroethane	ND	0.25		
		1,1-Dichloroethene	ND	0.25		
		Methyl Ethyl Ketone	ND	0.94		
		Tetrachloroethene	ND	0.25		
		Trichloroethene	ND	0.25		
		Vinyl Chloride	ND	0.63		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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...tion 261.30 is amended by ...ng paragraph (b) to read as ...s:

...0 General.

...dministrator will indicate his ...for listing the classes or types of ...s listed in this subpart by ...ying one or more of the following ...d Codes:

...e Waste	(I)
...ve Waste	(C)
...e Waste	(R)
... Characteristic Waste	(E)
...Hazardous Waste	(H)
...Waste	(T)

...dix VII identifies the constituent ...caused the Administrator to list ...ste as a Toxicity Characteristic ...(E) or Toxic Waste (T) in ...31 and 261.32.

...pendix II of part 261 is revised to ...follows:

Appendix II—Method 1311 Toxicity Characteristic Leaching Procedure (TCLP)

1.0 Scope and Application

1.1 The TCLP is designed to determine the mobility of both organic and inorganic contaminants present in liquid, solid, and multiphasic wastes.

1.2 If a total analysis of the waste demonstrates that individual contaminants are not present in the waste, or that they are present but at such low concentrations that the appropriate regulatory thresholds could not possibly be exceeded, the TCLP need not be run.

1.3 If an analysis of any one of the liquid fractions of the TCLP extract indicates that a regulated compound is present at such high levels that even after accounting for dilution from the other fractions of the extract the concentration would be above the regulatory threshold for that compound, then the waste is hazardous and it is not necessary to analyze the remaining fractions of the extract.

1.4 If an analysis of extract obtained using a bottle extractor shows that the concentration of any regulated volatile contaminant exceeds the regulatory threshold for that compound, then the waste is hazardous and extraction using the ZHE is not necessary. However, extract from a bottle extractor cannot be used to demonstrate that the concentration of volatile compounds is below the regulatory threshold.

2.0 Summary of Method (see Figure 1)

2.1 For liquid wastes (i.e., those containing less than 0.5 percent dry solid material), the waste, after filtration through a 0.6 to 0.8-um glass fiber filter, is defined as the TCLP extract.

2.2 For wastes containing greater than or equal to 0.5 percent solids, the liquid, if any, is separated from the solid phase and stored for later analysis; the solid phase, if necessary, is reduced in particle size. The solid phase is extracted with an amount of extraction fluid equal to 20 times the weight of the solid phase. The extraction fluid employed is a function of the alkalinity of the solid phase of the waste. A special extractor vessel is used when testing for volatile contaminants (see Table 1 for a list of volatile compounds). Following extraction, the liquid extract is separated from the solid phase by filtration through a 0.6 to 0.8-um glass fiber filter.

BILLING CODE 6560-50-M

100g/2000 ml

Excerpts from Federal Register

SCOEPA00022170

1.0 SCOPE AND APPLICATION

The TCLP is designed to determine the mobility of both organic and inorganic analytes present in liquid, solid, and multiphasic wastes.

2.0 SUMMARY OF METHOD

The TCLP consists of five steps:

1. Separation Procedure

   For liquid wastes (i.e., those containing less than 0.5% dry solid material), the waste, after filtration through a 0.6 to 0.8 um glass fiber filter, is defined as the TCLP extract. For wastes containing greater than or equal to 0.5% solids, the liquid, if any, is separated from the solid phase and stored for later analysis.

2. Particle Size Reduction

   Prior to extraction, the solid material must pass through a 9.5 mm (0.375 inch) standard sieve, have a surface area per gram of material equal to or greater than 3.1 cm2, or, be smaller than 1 cm in its narrowest dimension. If the surface area is smaller or the particle size larger than described above, the solid portion of the waste is prepared for extraction by crushing, cutting, or grinding the waste to the surface area or particle size described above.

3. Extraction of Solid Material

   The solid material from Step 2 is extracted for 18 +/- 2 hours with an amount of extraction fluid equal to 20 times the weight of the solid phase. The extraction fluid employed is a function of the alkalinity of the solid phase of the waste.

Lab's 1311 protocol matches EPA's

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FAX TRANSMITTAL

DATE: 2/28/95

TO: Chip Bloomer (241-7599)

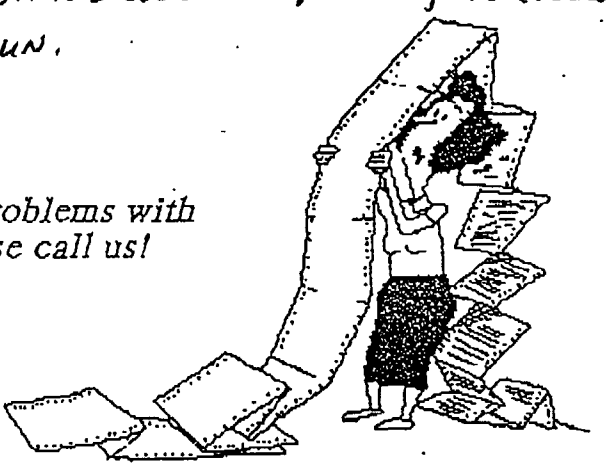
ATTN:

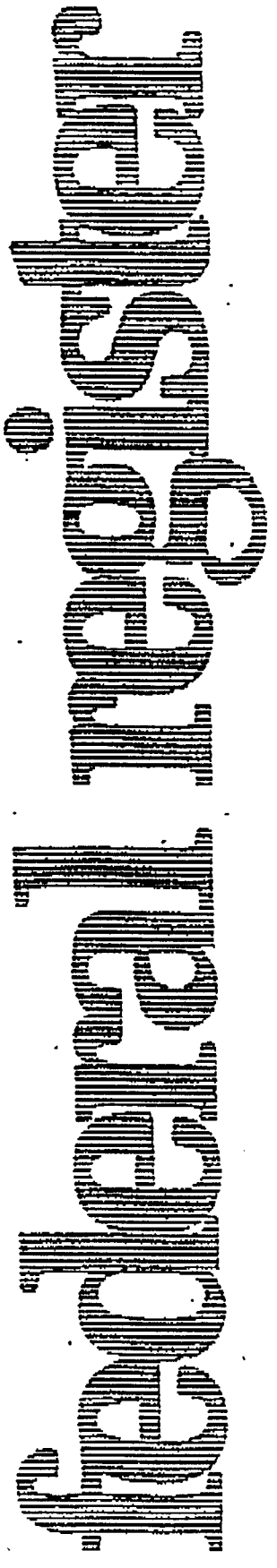
FROM: Kent Patton

We are sending 9 *pages, including this cover sheet.*

DESCRIPTION Page 11804 - Lists Regulatory Level
Page 11863 Sec. 1.0 Scope and Application
Sec. 1.2 If total analysis of the waste demonstrates that individual contaminants are not present in the waste, or they are present but at such low concentrations that the appropriate regulatory thresholds could not possibly be exceeded the TCLP need not be run.

If you experience any problems with this transmission, please call us!





Thursday
March 29, 1990

Part II

Environmental Protection Agency

40 CFR Part 261 et al.

Hazardous Waste Management System; Identification and Listing of Hazardous Waste; Toxicity Characteristics Revisions; Final Rule

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SCOEPA00022173

generators to describe on their RCRA biennial reports the efforts they have undertaken during the year to reduce the volume and toxicity of their hazardous waste and to compare these efforts to previous years.

As important as the efforts just described is the Agency's commitment to ensuring that regulations under development encourage pollution prevention, whenever possible. The TC (TC), we believe, provides significant incentives for pollution prevention. Currently, there is little incentive for industries to implement pollution prevention efforts for unregulated solid wastes. In particular, there are few controls on units handling solid wastes that have the potential for releases of hazardous constituents to groundwater. Large quantities of solid wastes containing TC constituents currently are managed in unregulated land-based units, such as surface impoundments and landfills. Many of these units are in states that are either highly dependent on groundwater for public water supply or where groundwater is hydraulically connected to surface water, or both. By subjecting management of TC wastes to subtitle C regulation, EPA is in effect requiring that waste managers rethink their practices for solid wastes that contain hazardous constituents. EPA's experience has been that hazardous waste regulations provide significant incentives for pollution prevention. For example, some listed wastestreams (e.g., bottoms from tetrachloroethylene production) are now completely recycled.

The characteristic mechanism used by EPA to identify hazardous waste is especially effective in encouraging pollution prevention because it sets a concentration level or criteria (e.g. test) that determines the point at which the waste is no longer regulated as characteristically hazardous. Because of the high cost of compliance with RCRA subtitle C requirements, members of the regulated community will have significant new incentives to reduce TC waste generation as a result of today's rule. Industries will consider substitutes for the specific chemicals on the TC list of toxicants of concern. Where substitutes are not used, there will be incentive to reduce the use of hazardous substances or otherwise limit their concentrations in wastes, in order to keep concentrations of hazardous chemicals below regulatory levels.

Pollution prevention options range from simple good housekeeping practices, e.g., keeping solvents and oils separate to facilitate recycling of each, to more extensive process reconfigurations and/or raw material substitutions. Even in cases where pollution prevention can not eliminate the need for treatment or disposal of hazardous wastes, it may reduce the generation of waste. For example, tank capacity is constrained by land area, engineering considerations, and cost. Managers of TC wastewaters that switch from surface impoundments to exempt tanks will almost certainly have to reduce volumes of hazardous waste generated, or segregate hazardous portions of their wastestreams.

In order to enhance the pollution preventions effects of this rule, EPA is incorporating pollution prevention into the communication strategy for the TC regulation. EPA will provide information targeted to small businesses specifically and industry in general through pamphlets, industry publications and conferences, on the mechanisms described above. We have found that many small businesses are turning to pollution prevention as a result of implementation of the small quantity generator regulations (see 51 FR 10146, March 24, 1986). For example, PPIC documents relate how one drycleaning operation reduced its solvent wastes to a level well below national industry standards by regularly checking for and sealing any system leaks, and installing a conditioning system and a carbon adsorption unit to recover additional solvent. With the new setup, the plant can clean four times as many clothes per drum of solvent. The Agency believes that other industries may have the potential to substitute less toxic source materials in their processes. EPA will consider whether any technical assistance could aid industry in these efforts. EPA would also be interested in suggestions from industries affected by the TC in ways that the Agency might facilitate these efforts. Inquiries should be directed to the Pollution Prevention Office, U.S. EPA, Washington, DC 20460.

In summary, the TC will alter the management of wastes that contain toxicant at hazardous levels by ending management in unregulated land-based units. As industries reassess their waste generation and management practices, many are likely to seriously consider pollution prevention options, and EPA will take steps to facilitate such efforts.

C. Summary of Final Rule

Today's rule retains many of the features of the June 1986 proposal: it replaces the EP with the TCLP; it adds 25 new organic constituents to the list of toxic constituents of concern; and it establishes regulatory levels for the organic constituents based on health-based concentration limits and a DAF developed using the subsurface fate and transport model. In response to comments received on the proposed rule and related notices, the final rule incorporates a number of modifications to the list of constituents, the leaching procedure, the chronic toxicity reference levels, the subsurface fate and transport model, and the schedule for compliance with the TC rule.

With respect to the list of constituents, the final rule includes 25 of the 38 constituents proposed in 1986. One group that has been excluded in the final rule are constituents that appreciably hydrolyze. EPA has been able to develop scientifically valid DAFs for nondegrading constituents but is still improving its approach for developing DAFs for constituents that are expected to hydrolyze appreciably during transport. In particular, the Agency does not yet have a procedure to address toxic hydrolysis byproducts that may be formed.

Second, in response to comments, the Agency has also evaluated the applicability of the steady-state condition assumed in the subsurface fate and transport model, and has determined that the assumption is valid for most of the originally proposed constituents. However, several of the original proposed constituents have been deferred from the final rule while the Agency continues to evaluate the extent to which the steady-state solution is appropriate in determining their fate and transport.

As a result, all the constituents newly regulated under today's rule are nonhydrolyzing or minimally hydrolyzing constituents, and all are constituents for which the steady-state solution is appropriate. For all these constituents, EPA has determined, based on the results of its subsurface fate and transport model, that use of a DAF of 100 is appropriate for setting regulatory levels. This DAF is sufficient to capture only those wastes that are clearly hazardous. As a result of the Agency's decision to regulate only nonhydrolyzing or minimally hydrolyzing constituents and those for which the steady-state solution is appropriate, 25 additional constituents are being regulated rather than the originally proposed 38. Regulatory levels for hydrolyzing constituents, as well as those constituents for which there remain questions as to whether the steady-state solution is appropriate, will be discussed in future notices.

The list of constituents regulated in today's rule and their respective regulatory levels are presented in Table II.2. As in the proposed rule, where the

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alculated regulatory level (i.e., the ...ic toxicity reference level ...plied by the DAF) is below the analytical quantitation limit, the quantitation limit is the final regulatory level. Note that the list of constituents in Table II.2 contains the 14 constituents currently regulated under the existing EPTC. As specified in today's rule, these constituents will continue to be regulated at their current levels.

TCLP List

TABLE II.2—TOXICITY CHARACTERISTIC CONSTITUENTS AND REGULATORY LEVELS

EPA HW No.[1]	Constituent (mg/L)	CAS No.[2]	Chronic toxicity reference level (mg/L)	Regulatory level (mg/L)
D004	Arsenic	7440-38-2	0.05	5.0
D005	Barium	7440-39-3	1.0	100.0
D018	Benzene	71-43-2	0.005	0.5
D006	Cadmium	7440-43-9	0.01	1.0
D019	Carbon tetrachloride	56-23-5	0.005	0.5
D020	Chlordane	57-74-9	0.0003	0.03
D021	Chlorobenzene	108-90-7	1	100.0
D022	Chloroform	67-66-3	0.06	6.0
D007	Chromium	7440-47-3	0.05	5.0
D023	o-Cresol	95-48-7	2	[4] 200.0
D024	m-Cresol	108-39-4	2	[4] 200.0
D025	p-Cresol	106-44-5	2	[4] 200.0
D026	Cresol		2	[4] 200.0
D016	2,4-D	94-75-7	0.1	10.0
D027	1,4-Dichlorobenzene	106-46-7	0.075	7.5
D028	1,2-Dichloroethane	107-06-2	0.005	0.5
D029	1,1-Dichloroethylene	75-35-4	0.007	0.7
D030	2,4-Dinitrotoluene	121-14-2	0.0005	[3] 0.13
D012	Endrin	72-20-8	0.0002	0.02
D031	Heptachlor (and its hydroxide)	76-44-8	0.00008	0.008
D032	Hexachlorobenzene	118-74-1	0.0002	[3] 0.13
D033	Hexachloro-1,3-butadiene	87-68-3	0.005	0.5
D034	Hexachloroethane	67-72-1	0.03	3.0
D008	Lead	7439-92-1	0.05	5.0
D013	Lindane	58-89-9	0.004	0.4
D009	Mercury	7439-97-6	0.002	0.2
D014	Methoxychlor	72-43-5	0.1	10.0
D035	Methyl ethyl ketone	78-93-3	2	200.0
D036	Nitrobenzene	98-95-3	0.02	2.0
D037	Pentachlorophenol	87-86-5	1	100.0
D038	Pyridine	110-86-1	0.04	[3] 5.0
D010	Selenium	7782-49-2	0.01	1.0
D011	Silver	7440-22-4	0.05	5.0
D039	Tetrachloroethylene	127-18-4	0.007	0.7
D015	Toxaphene	8001-35-2	0.005	0.5
D040	Trichloroethylene	79-01-6	0.005	0.5
D041	2,4,5-Trichlorophenol	95-95-4	4	400.0
D042	2,4,6-Trichlorophenol	88-06-2	0.02	2.0
D017	2,4,5-TP (Silvex)	93-72-1	0.01	1.0
D043	Vinyl chloride	75-01-4	0.002	0.2

[1] Hazardous waste number.
[2] Chemical abstracts service number.
[3] Quantitation limit is greater than the calculated regulatory level. The quantitation limit therefore becomes the regulatory level.
[4] If o-, m-, and p-cresol concentrations cannot be differentiated, the total cresol (D025) concentration is used. The regulatory level for total cresol is 200 mg/l.

The regulatory levels reflect modifications to some chronic toxicity reference levels since the original proposal. EPA has revised some of the Maximum Contaminant Levels, Risk-Specific Doses, and Reference Doses to reflect new data and better methods. In response to comments received, EPA has decided not to apportion reference doses of noncarcinogens to account for multiple routes of exposure, as was originally proposed (51 FR 21648). See section III.C for further discussion of comments on apportionment and the Agency's reasons for not including apportionment of reference doses in the final rule. Today's rule also promulgates the TCLP to replace the EP. The TCLP represents an improvement over the EP ...hat it more accurately addresses leaching potential for use in evaluating wastes containing organic constituents, and also corrects several minor technical deficiencies in the original EP. The version of the TCLP promulgated today reflects additional improvements and modifications made to the TCLP since the original proposal. The TCLP promulgated today will also replace the earlier version of the TCLP promulgated as part of the land disposal restrictions program.

Today's rule incorporates a schedule for compliance that classifies the universe of potentially affected TC waste handlers into two groups: (1) All generators of greater than 100 kg/month and less than 1,000 kg/month of hazardous waste (small-quantity generators) must come into compliance with the subtitle C requirements for management of their TC waste within 1 year; and (2) all generators of 1,000 kg/month or more of hazardous waste are required to comply with all subtitle C requirements for TC wastes within 6 months. The phased schedule for compliance is further discussed in section V.

Wastes identified as hazardous under the Toxicity Characteristic will also become hazardous substances under section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended. Today's rule amends the list of reportable quantities (RQs) in 40 CFR part 302 by adding appropriate values for each of the new 25 TC toxicants. All of the newly-

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designated TC toxicants are already listed as CERCLA hazardous substances. The RQs being promulgated are the same as those that already apply to all materials containing these hazardous substances.

Today's rule defers applicability of the TC to one type of waste and exempts another. First, the Agency is deferring the applicability of the TC to petroleum-contaminated media and debris at sites subject to the RCRA Underground Storage Tank (UST) cleanup regulations under part 280. (See section III.I.6.) Second, EPA has decided to exempt from today's rule certain polychlorinated biphenyl (PCB) wastes that are fully regulated under the Toxic Substances and Control Act (TSCA) and would be identified as hazardous because of today's rule (See section III.J.7.).

In portions of the existing codified waste regulation of title 40, chapter I, parts 251 through 265, the EPTC is named. Today's action of promulgating the TC necessitates amendment of these references to the EPTC. This amendment which replaces references to the EPTC with the words "Toxicity Characteristic" applies to the following sections of 40 CFR: 261.4(b)(6)(i) not (A),(B),(C); 261.4(b)(9), 264.301(e)(1), 265.221(d)(1) and 265.273(a).

In §§ 264.301(e)(1) and 265.221(d)(1), in addition to amending reference to the EPTC, the universe of constituents remains the same as the EPTC. To accomplish this, the constituents D004–D017, the EPTC constituents, are specifically named as those constituents which would not render the waste hazardous by the TC.

As discussed below, the Agency will continue to refine the TC in order to provide greater accuracy and comprehensiveness in identifying hazardous waste based on the waste's toxic constituents. However, the Agency believes that today's rule fulfills the statutory mandates under sections 3001(g) and 3001(h).

III. Response to Major Comments and Analysis of Issues

The Agency received many comments on the June 13, 1986 proposed rule and in response to subsequent notices. The Agency has carefully considered all comments in the preparation of this final rule. To facilitate the evaluation and response to comments, the Agency grouped the comments into ten categories. The categories are as follows:

A. General Approach
B. Constituents of Concern
C. Chronic Toxicity Reference Levels
D. Use of Generic DAFs
E. Application of a Subsurface Fate and Transport Model
F. The TCLP
G. Testing and Recordkeeping Requirements
H. Applicability to Wastes Managed in Surface Impoundments
I. Relationship to Other RCRA Regulations
J. Relationship to Other Regulatory Authorities

In this preamble, the Agency provides summaries of and responses to major comments. Readers are invited to refer to background documents (Refs. 1, 2, 3, and 4) for complete summaries and responses to all comments.

A. General Approach

1. Expanded Use of Hazardous Waste Characteristics.

The TC revisions specified in today's rule refine and expand the EPTC. Most commenters stated that increased reliance on hazardous waste characteristics is a reasonable approach to defining hazardous waste. Some commenters stated a preference for the hazardous waste characteristic mechanism over the alternative listing mechanism for identifying hazardous wastes. They noted that the characteristics are designed to measure directly the risks that subtitle C regulations are meant to control. Another advantage mentioned by commenters is that hazardous waste characteristics apply uniformly to all wastes, regardless of source.

A few commenters, however, objected to the expanded use of hazardous waste characteristics. Some of these commenters questioned the Agency's authority to develop the TC. One commenter asserted that RCRA section 3001(h) does not authorize EPA to take the action of adding the proposed organic constituents to the list of TC constituents. Another argued that the legislative history of HSWA indicates that changes in the leaching procedure should address the leaching of toxic metals only. This commenter claimed that the Agency had exceeded its statutory mandate by modifying the TC to include organics.

EPA strongly disagrees with those commenters who argued that the Agency lacks authority to expand the TC. The Agency's approach to identifying hazardous wastes through a self-implementing characteristics procedure was well established in 1984, when Congress passed HSWA. HSWA not only confirmed the validity of EPA's approach to identifying hazardous wastes by characteristics, but also directed the Agency to expand the scope of the TC. RCRA section 3001(h) states "* * * the Administrator shall promulgate regulations under this section identifying additional characteristics of hazardous waste, including measures or indicators of toxicity." Thus, the plain language of the statute authorizes EPA to broaden the TC.

Other commenters acknowledged EPA's authority to expand the TC, but offered policy arguments against the use of this mechanism for identifying hazardous wastes. Most commenters who argued against expanded use of characteristics favored use of the listing mechanism instead of an expanded TC. Some of these commenters noted that listings do not present the same technical problems of precision and accuracy as the characteristics. Others stated that listings are more easily enforced since they are not dependent upon use of a leaching procedure. Finally, some commenters claimed that by expanding the toxicity characteristic instead of listing additional wastes, EPA is unfairly shifting the burden for identifying hazardous wastes onto the shoulders of the regulated community.

The Agency maintains that the expanded use of characteristics, in addition to being consistent with the statutory mandate, offers advantages over listing for identifying broad categories of clearly hazardous waste. Establishing a characteristic allows the Agency to identify through one rule those wastes which are reasonably certain to pose a threat to human health and the environment by virtue of an inherent characteristic without expending vast Federal resources to study, characterize, and list numerous individual wastestreams. Since the Agency sets regulatory levels high enough to assure that wastes exhibiting the characteristic are hazardous, the characteristic approach does not bring wastes into the subtitle C system which do not present a substantial present or potential hazard to human health and the environment. By contrast, a listing, since it applies to all wastes that meet a listing description, may capture some individual wastestreams that do not actually pose a threat to human health and the environment. Generators may petition for delisting if this occurs; however, the delisting process can be burdensome to the petitioner and to EPA.

The Agency believes that the characteristic approach has the following advantages. First, it is less burdensome for the regulated community because the characteristic approach limits over-inclusiveness.

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Other commenters argued that the 85th percentile was not adequately protective of human health and the environment. One commenter, claiming that assumptions in the model were not conservative enough, recommended that the 95th percentile be used.

In selecting the appropriate level, the Agency recognizes that there is no consensus "correct" level for interpreting modeling results. This has resulted in a particular challenge in developing today's rule, wherein a quantitative approach is being used for guidance in answering what is a partly qualitative question—namely, "what is the human health impact of unregulated management of certain types of wastes in a 'reasonable worst-case' disposal scenario?" While the Agency believes that the 85th percentile is an appropriate choice to represent a reasonable worst-case result, consideration of the relationship of the 85th percentile DAF to other percentile DAFs is also appropriate. That is, the Agency believes that the behavior, or shape, of the upper portion of the cumulative frequency distribution curve should also be evaluated in order to determine how critical the selection of a particular frequency level is to the DAF.

Another consideration in determining the appropriate DAF value, independent of the selected cumulative frequency level, is the accuracy inherent in the data set used. Given that there is some uncertainty associated with any data set used to represent possible values for any parameter, and that the model requires values for many parameters, the Agency believes that the selected DAF value should not imply an undue degree of accuracy.

After considering the above factors, the Agency has concluded that a DAF value of 100 is appropriate for establishing the regulatory levels for the constituents included in today's rule.[1] First, the Agency believes that, considering the number of parameters for which distributions of values were established (in order to represent a "generalized" scenario), a DAF with an order-of-magnitude precision is appropriate.[2] Second, in selecting this DAF value of 100, the Agency noted that the 80th and 90th percentile DAFs, as well as the 85th percentile DAFs, indicate that constituents migrating in the modeled disposal scenario will be diluted by approximately two orders of magnitude. This is also true of the predicted DAFs from the data used for surface impoundments. Thus, EPA believes that a DAF data used for indicating dilution by two orders of magnitude (i.e. 100) is appropriate. Moreover, as the data indicate, on an order-of-magnitude scale, the predicted DAF is not extremely sensitive to the exact cumulative frequency value that was selected.

The Agency points out that the considerations leading to the use of 100 to represent the model-predicted dilution/attenuation factors are unique to today's promulgation. In other cases, different conclusions may be more appropriate. For example, when parameter values can be more narrowly defined (as in site-specific evaluations), the higher degree of precision may be appropriately ascribed to the model-predicted DAFs. Likewise, where the program goals are different (i.e. other than to identify levels that are indicative of wastes that clearly are hazardous), the selection of a value that represents a cumulative frequency value other than the 85th percentile may be warranted.

F. Toxicity Characteristic Leaching Procedure (TCLP) (Method 1311)

1. Introduction

The development of the TCLP and the role of the test in identifying a waste as hazardous were discussed at length in the June 1988 proposal (51 FR 21648). Today, EPA is promulgating the TCLP, with some improvements and modifications, as a replacement to the EP for use in the identification of hazardous waste. (The revised TCLP is promulgated in Appendix II to 40 CFR part 261 and has been designated as EPA Method 1311 and will be incorporated in "Test Methods for Evaluating Solid Waste Physical/Chemical Methods—SW-846".)

The Agency received numerous comments in response to the Federal Register notices (51 FR 1602, 51 FR 21648, 51 FR 24858, 51 FR 33297, 51 FR 40593, 51 FR 40643 and 53 FR 18792) related to the TCLP procedure. In particular, EPA received close to 140 comments on the application of the TCLP in response to the June 1988 proposal. The comments covered general issues such as the relationship to the EP, the adequacy of research supporting TCLP development and specifically, the statistical treatment of data. Commenters also addressed technical issues including the suitability of the zero head space extraction (ZHE) vessel; the types of filters, reagents, and leaching media; the quality assurance requirements; and the multiple extraction and oily waste extraction procedures. In addition, comments were received on the use of quantitation limits for establishing regulatory levels. All the comments were categorized and summarized by issue and are presented in the technical background document along with the Agency's response to these comments (Ref. 4).

In this preamble, only certain comments are discussed, which include (a) the applicability of the TCLP to specific types of waste (i.e., solidified wastes); (b) the analytical difficulties encountered during the analysis of the TCLP extract for phenolic compounds and phenoxy acid herbicides; and (c) the use of quantitation limits. The first two comment issues are presented below while the last comment and the Agency's response is given in section IV.C. of this preamble.

2. Adoption in the LDR Rulemaking and Modification from the Proposed Rule

The TCLP was promulgated in Appendix I to 40 CFR part 268 on November 7, 1986 (51 FR 40593), as part of the Land Disposal Restrictions Rule for Solvents and Dioxins. The TCLP is used in the Land Disposal Restrictions (LDR) program to determine whether certain wastes require treatment prior to land disposal and to determine whether certain treated wastes meet the applicable treatment standards. In today's rule, the Agency has incorporated two other clarifications to the TCLP as proposed on May 24, 1988 (53 FR 18792) for use in both the LDR and the TC programs.

The Agency modified the proposed TCLP as a result of the Agency's own research and comments received on the January 14, 1986 (51 FR 1602) proposal for the LDR program and the June 13, 1986 (51 FR 21648) proposal for the TC. These modifications to the TCLP were promulgated on November 7, 1986 for the LDR program. On May 24, 1988, the Agency proposed additional modifications to the TCLP for both the LDR and the TC. In today's rule, the Agency has adopted two of these proposed changes, and is promulgating the revised TCLP for use in both the LDR and TC programs.

[1] As explained previously, the Agency is not, in today's rule, promulgating regulatory levels for several of the constituents for which regulatory levels were proposed. These constituents include those that are expected to hydrolyze appreciably and those for which it has not yet been determined whether the steady-state solution to the subsurface fate and transport model is appropriate. Once the issues associated with these constituents are resolved, the Agency will promulgate or repropose (as warranted) regulatory levels for these constituents. For cases where regulatory levels are reproposed, they may incorporate dilution/attenuation factors other than 100.

[2] The health data is only valid to one order of magnitude precision and thus may control the total number of significant figures.

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The first change is the insertion of a more detailed method flow chart to explain how analysts are to perform the test. Comments expressed confusion regarding the original flow chart (e.g., that it was difficult to follow), so the Agency has added this new chart to eliminate confusion. The second change is the addition of new equipment suppliers to provide more information on the availability of suitable testing equipment. The new equipment suppliers include two manufacturers of rotary agitation devices, Environmental Machine and Design, Inc., of Lynchburg, VA, and Millipore Corporation of Bedford, MA; two manufacturers of a zero-headspace extractor (ZHE) vessel, Lars Lande of Whitmore Lake, MI and Environmental Machine and Design, Inc., of Lynchburg, VA; and three manufacturers of filter media, Millipore Corporation of Bedford, MA; Nucleopore Corporation of Pleasanton, CA; and Micro Filtration Systems of Dublin, CA. These manufacturers are listed in Tables 2, 3, and 5, respectively, of the method (i.e., Appendix II of 40 CFR 261), along with company telephone numbers and equipment model numbers.

Another more substantial proposed modification, the addition of a stainless steel cage insert to the bottle extractor, will not be added by the Agency at this time for the reasons discussed below. The Agency had proposed this modification to eliminate the requirement for particle size reduction for certain types of wastes (e.g., solidified materials).

3. Applicability of TCLP to Solidified Wastes

Some commenters expressed reservations regarding the applicability of the TCLP to specific types of wastes. The wastes of concern were solidified wastes. Numerous commenters supported the reinstatement of the structural integrity procedure (SIP) or some other stability criterion for solidified wastes. They argued that particle size reduction (i.e., "grinding") would be inappropriate in those instances where solidification of the waste is needed to meet the best demonstrated available technology (BDAT) provisions of the law and that grinding may not adequately represent the weathering process or the effect of vehicular traffic. Commenters recommended that the Agency retain the SIP. Others agreed that particle size reduction is inappropriate for stabilized monolithic wastes and produces unrepresentative results. Specifically, commenters stated that particle size reduction alters the physical character of many solidified wastes by destroying the cementitious property of these wastes in such a way that the leaching rate increases unrealistically. By increasing the surface area that is available to attack by a leaching medium, the amount and rate at which substances may be leached increases. Inasmuch as waste grinding is not normally employed in municipal landfills, particle size reduction renders the TCLP a less accurate model of leaching in a municipal landfill environment.

Since the June 13, 1988, proposal, the Agency has reviewed the use of the SIP, which uses a drop-hammer to test the integrity of the waste and to reduce its size if it fractures. The Agency found that although the SIP may simulate the potential of a monolithic waste to be degraded by vehicular traffic on a landfill, it cannot address certain other stresses acting on the waste (e.g., wet-dry and freeze-thaw cycles). In addition, the SIP can only be used for wastes that can be prepared in a sample of specified dimensions.

While evaluating the use of the SIP, the Agency found that dense, hard materials would occasionally break the glass extractor bottle. To prevent breakage of the bottles, the Agency developed a cage insert for the extractor bottle. The cage, which is designed to prevent contact between the hard sample and the sides of the bottle, is constructed of 0.25-inch stainless steel woven mesh. Experiments have shown that the use of the cage prevents bottle breakage.

While evaluating the utility of the cage, the Agency noticed that wastes that were believed to be well-solidified retained their monolithic nature in the cage during extraction, whereas wastes that were believed to be less well-stabilized (even though some of them had passed the SIP) were broken into small pieces during the extraction. Thus, these experiments led to the proposed use of the stainless steel wire cage in the extraction apparatus (53 FR 28792, May 24, 1988). The use of this device, the Agency believed, tested the physical integrity of the sample and reduces particle size appropriately.

Commenters expressed support for the cage modification—that it is a step in the appropriate direction toward a more realistic assessment of the environmental leaching potential of a solidified waste. However, commenters also had concerns that the cage was proposed prematurely—that not enough evaluation of waste samples using the cage had been done. Specifically, commenters argued that the cage could possibly leach significant quantities of nickel and chromium to contaminate metals analysis; that it would be difficult to collect representative samples in some cases; that there were problems with the configuration of the cage so that it could not be accommodated to fit a large array of bottles; that the cage's construction provided numerous crevices and a significant amount of surface area for waste residue to collect, making effective cage cleaning difficult; and that solidified samples could be molded into a shape that would cause less material to be sloughed off during extraction, leading to a less aggressive test. The Agency agrees with these commenters and has decided not to go forward with the cage modification at this time. The Agency currently has work underway to evaluate all these concerns, and will continue to evaluate modifications of the TCLP and will propose further improvements as they are developed.

4. Analytical Methods

Several comments addressed the analytical difficulties of analyzing the TCLP extract for phenolic compounds and phenoxy acid herbicides by gas chromatography/mass spectroscopy, SW-846 Method 8250 (GC/MS). These analytical difficulties include the interference of the acetate ion in the TCLP leach fluid with the column packing material of Method 8250. Removal of the acetate ion is often difficult, and equipment damage may result if the acetate is not removed (i.e., the acetate ion can destroy the column packing material).

The Agency agrees that analysis for acidic compounds by GC methods may be difficult, but not impossible. The Agency suggests the use of a bonded-phase capillary column (Method 8270) to reduce the interference from acetate. In addition, the Agency is investigating other methods for removal of the acetate ion from the extract before analysis for the phenolics and herbicide and welcomes alternative suggestions, especially when accompanied by supporting data.

The Agency had suggested the use of HPLC as an alternative to GC/MS analysis of phenolics and phenoxy acid herbicides. However, several commenters believed that an HPLC method is generally regarded as more expensive and not as readily available as GC/MS. In addition, some commenters indicated that GC/MS is a better method analytically than HPLC, and that HPLC would be more difficult to implement. The commenters expressed that, at the very least, a lengthy verification process would be

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required to determine an HPLC method's ruggedness and reproducibility and to determine the most effective cleanup steps. The commenters further suggested that even if an effective HPLC cleanup procedure is developed and approved by the Agency, it is bound to increase the analytical costs and slow down the analytical throughput. Even without considering this restriction, the procedure of leaching the organics into an aqueous medium, followed by extraction, recovery, and concentration, is bound to require more manpower and thus more money than a more direct solvent extraction of the solid itself. The commenters indicated that methods for analyzing solid waste for semi-volatile organics and phenoxyacid herbicides are already described in SW-846 and should be the preferred methods, both for practicality and as a way of providing a reliable test.

The Agency agrees that the GC/MS or GC/electron capture (GC/EC) analysis is more advantageous for the analysis of phenolics and phenoxy acid herbicides because the equipment is more readily and widely available than HPLC, despite the associated difficulties. HPLC methods for phenolic compounds are not included in the third edition of SW-846 because of a lack of validation data. The Agency will allow only the use of the GC/MS method until such time that the Agency proposes an HPLC method.

c. Testing and Recordkeeping Requirements

1. Existing Requirements for Generators

Under existing regulations, persons who generate solid waste are not specifically required to test their wastes to determine whether they exhibit the characteristic of EP toxicity or any other characteristic. Instead, solid waste generators are required to make a determination as to whether or not their wastes are hazardous (40 CFR 262.11).

If a waste is found to be excluded from regulation under § 261.4, or if it is found to be a listed hazardous waste under subpart D of 40 CFR part 261, no further determination of hazardousness is necessary. On the other hand, if a waste is neither excluded nor listed, the solid waste generator must determine whether it exhibits any of the hazardous waste characteristics in subpart C of 40 CFR part 261. This determination may be made by either testing the waste or applying knowledge of the waste, the raw materials, and the processes used in its generation.

If a waste is determined to be hazardous, the generator must keep records establishing the basis for that determination (40 CFR 262.40(c)). These records must be maintained for at least 3 years after the generator no longer handles the waste in question. Neither of these recordkeeping requirements, however, applies to solid waste generators who do not generate hazardous wastes.

Other provisions in the hazardous waste regulations make generators responsible for knowing the properties of their wastes and for documenting that knowledge. For example, generators who declare that their wastes are hazardous must nevertheless have sufficient knowledge of their wastes to complete the Uniform Hazardous Waste Manifest, to use proper labels, containers, and placards, and to satisfy all applicable reporting and recordkeeping requirements (see 45 FR 12728, February 26, 1980). In addition, all generators of hazardous waste are required under 40 CFR part 268 to determine whether their wastes are restricted from land disposal.

2. Changes Considered

In the June 13, 1986 proposal, EPA expressed concern that the current system for determining whether a solid waste is hazardous may be inadequate to ensure that wastes are characterized properly as hazardous or nonhazardous. Because of the importance of accurate hazard determinations to the RCRA subtitle C program, the Agency discussed the possibility of requiring solid waste generators to test their wastes periodically.

In the proposed rule, EPA identified three general approaches that might be adopted in the TC final rule. In the first approach, the Agency would retain the current approach, allowing generators to rely on their knowledge of materials and processes used in generating wastes as a basis for their determination. In the second approach, EPA would require the testing of wastes, at a frequency specified by regulation. Finally, in the third approach, the Agency would require testing but without specifying a particular testing frequency. Under this third approach, generators would be required to develop an appropriate testing frequency, based on Agency guidance, and to document the basis for their choice.

Commenters were heavily divided on the issue of testing and recordkeeping requirements. Many commenters, including waste management firms and a few generators, favored mandatory testing of solid wastes. Most of these commenters argued that generators typically lack sufficient information to determine accurately the composition of their wastes without testing. Indeed, one commenter claimed that with 52 constituents regulated at the part-per-million level or lower, a generator could never be sure whether a waste exhibits the TC without performing the TCLP test. The commenters concluded that testing is the only reliable method for ensuring that potentially hazardous wastes are properly identified and managed.

A few commenters offered somewhat different reasons for supporting testing requirements. For example, some commenters pointed out that mandatory testing would facilitate EPA enforcement efforts. Others claimed that mandatory testing would reduce uncertainty by making it clear to generators precisely what EPA expects of them with respect to performing hazardous waste determinations.

Another group of commenters, however, opposed the imposition of a formal testing requirement. These commenters argued that mandatory testing would place an inordinate burden on the regulated community without providing significant benefit for human health and the environment. In particular, the commenters claimed that mandatory testing is unlikely to identify wastes that were improperly characterized as nonhazardous when generators relied exclusively on their knowledge. According to these commenters, generators rely on their knowledge only when the wastes they produce are clearly hazardous or clearly nonhazardous. Whenever uncertainty exists, these commenters stated, generators either declare their wastes hazardous or perform appropriate tests. The commenters emphasized that this cautioned response results from generators' liability for making incorrect determinations, regardless of whether they test their wastes. The commenters concluded that requiring testing of all wastes would deplete resources and place a strain on limited laboratory capacity.

The Agency recognizes that there are many difficult issues related to the imposition of a testing requirement, both for the Toxicity Characteristic and the other hazardous waste characteristics. While the Agency believes that a testing requirement could improve the Agency's enforcement tools, the Agency believes that the current requirements for hazardous waste determinations are not ineffective because many generators do have sufficient knowledge to make a determination without a test. The Agency further believes that liability for incorrect determinations provides a strong incentive for not misclassifying hazardous wastes as non-hazardous. Although EPA thinks that the current

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5. Section 261.30 is amended by revising paragraph (b) to read as follows:

261.30 General.

* * * * *

(b) The Administrator will indicate his basis for listing the classes or types of wastes listed in this subpart by employing one or more of the following Hazard Codes:

Ignitable Waste	(I)
Corrosive Waste	(C)
Reactive Waste	(R)
Toxicity Characteristic Waste	(E)
Acute Hazardous Waste	(H)
Toxic Waste	(T)

Appendix VII identifies the constituent which caused the Administrator to list the waste as a Toxicity Characteristic Waste (E) or Toxic Waste (T) in §§ 261.31 and 261.32.

* * * * *

6. Appendix II of part 261 is revised to read as follows:

Appendix II—Method 1311 Toxicity Characteristic Leaching Procedure (TCLP)

1.0 Scope and Application

1.1 The TCLP is designed to determine the mobility of both organic and inorganic contaminants present in liquid, solid, and multiphasic wastes.

1.2 If a total analysis of the waste demonstrates that individual contaminants are not present in the waste, or that they are present but at such low concentrations that the appropriate regulatory thresholds could not possibly be exceeded, the TCLP need not be run.

1.3 If an analysis of any one of the liquid fractions of the TCLP extract indicates that a regulated compound is present at such high levels that even after accounting for dilution from the other fractions of the extract the concentration would be above the regulatory threshold for that compound, then the waste is hazardous and it is not necessary to analyze the remaining fractions of the extract.

1.4 If an analysis of extract obtained using a bottle extractor shows that the concentration of any regulated volatile contaminant exceeds the regulatory threshold for that compound, then the waste is hazardous and extraction using the ZHE is not necessary. However, extract from a bottle extractor cannot be used to demonstrate that the concentration of volatile compounds is below the regulatory threshold.

2.0 Summary of Method (see Figure 1)

2.1 For liquid wastes (i.e., those containing less than 0.5 percent dry solid material), the waste, after filtration through a 0.6 to 0.8-um glass fiber filter, is defined as the TCLP extract.

2.2 For wastes containing greater than or equal to 0.5 percent solids, the liquid, if any, is separated from the solid phase and stored for later analysis; the solid phase, if necessary, is reduced in particle size. The solid phase is extracted with an amount of extraction fluid equal to 20 times the weight of the solid phase. The extraction fluid employed is a function of the alkalinity of the solid phase of the waste. A special extractor vessel is used when testing for volatile contaminants (see Table 1 for a list of volatile compounds). Following extraction, the liquid extract is separated from the solid phase by filtration through a 0.6 to 0.8-um glass fiber filter.

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[15] From: Roland (WSC) Kirch at WSC-PORTLAND 2/2/95 7:18PM (2472 bytes: 1 ln)
To: Volker (WSC) Radius
cc: Helmut (WSC) Hoeller, Tom McCue, Hans (WSC) Stadler, John Pittman,
Jerry Linden, Otmar (WSC) Weiss, Chip Bloomer
Subject: Contaminated Soil
---------- Message Contents ----------

Text item 1: Text_1

Volker:

The situation regarding contaminated soil is as follows based on the information I have.

1. Soil already excavated

70 cuyd contaminated soil (hazardous!) were already excavated. The disposal costs will be approx. $140,000. It has to be shipped to the next RCRA incinerator, which is located in Illinois.

2. Forwarding sump

The pit for the forwarding tanks has a proposed size of 32'x42'x24'. Soil tests have shown two layers of contamination. The first layer is in a depth between 9' and 11', the second layer is below 19', probably down to 23'. Especielly the lower layer is heavily contaminated: 150000 ppm Diesel and 10 ppm Benzene!!

That means 300 cuyd are hazardous waste, the disposal costs in Illinois would probably end up with $1,000,000 (incl. transport).

Technical Alternatives:

Pit less than 19' deep. Tank sizes and so the retention volume would be smaller. Disposal costs in the range of $300,000.

Pit less than 9' deep. No disposal costs, but no retention volume! Very difficult to run the waste water plant. High costs for redundant equipment. Problems with quick dumps!!

Legal alternative:

We fall under the so called UST rules (Underground storage tank rules),which regulate the spill of underground oil or benzene tanks. The EPA/DEQ have to accept our argumentation and the test results have to confirm that. In this case the local incinerator (2 stages) could dispose the soil for only $100/ cuyd.
Tom McCue is in contact with our lawyers to explore this alternative before approaching the agencies. He will direct us if anything comes up.

If any questions please contact me.

Roland

Box #	ID #	WSC #	Start Date	Sampled	Shipped	Benzene	Disposition	Location	Comments	Analysis Requested	Analytical results are me	FIELD013
1	173	94-500	12/8/94	12/16/94	1/6/94	.03	Oregon Wa	:		TCLP(8), TCLP 8240, TCLP 8150, TCLP 8720, TCLP PEST. FLASH POINT, pH-EPA-9040, TPH-G, TPH-D, 418.1 MOD.	pH: 7.0, Ba: 0.68, Flash point: >150, Gasoline: 56, Diesel/related: 6,100, TPH: 1,100, Acenaphthene: 0.22, Acenaphthylene: 0.0096, Anthracene: 0.024, Dibenzofuran: 0.012, Fluoranthene: 0.018, Flourene: 0.065, 2-Methylnaphthalene: 0.36,	Napthalene: 2.4, Phenanthrene: 0.16, Pyrene: 0.017.
2	164	94-501	12/19/94	12/19/94	1/6/94	ND	Oregon Wa	Outfall		TCLP(8), TCLP 8240, TCLP 8150, TCLP 8720, TCLP PEST. FLASH POINT, pH-EPA-9040, TPH-G, TPH-D, 418.1 MOD.	pH: 6.9, Flash point: >150, Gasoline: 2.2, Diesel/related: 71, TPH: 61, Acenaphthene: 0.0089, 2-Methylnaphthalene: 0.011, Naphthalene: 0.048, Phenanthrene: 0.0089.	
3	176	94-502	12/19/94	12/20/94		ND	Oregon Wa	Outfall	Broke truck split into 17	TCLP(8), TCLP 8240, TCLP 8150, TPH-G, TPH-D, 418.1 MOD. TCLP 8270.	Gasoline: 6.0, Diesel/related: 150, TPH: 140, Acenaphthene: 0.020, Fluorene: 0.0083.	
4	165	94-503	12/21/94	12/22/94	1/9/94	.06	Oregon Wa	Hydrogen	12 cubic yards split betwe	TPH-D, TCLP 8240.	Diesel/related: 6,300	
5	163 163	94-504* 95-526	12/22/94	12/22/94 1-2595		.9	To be Deter	MH by H2	Stuck in Mud. * THIS BO	PAHS 8310, TCLP 8240, TPH-D, TCLP (8), PCB's 8081.	Diesel/related: 27,000, [*Acenaphathene: 820,000, Anathracene: 380,000, Benzo(a)anthracene: 230,000, Benzo(a)pyrene: 180,000, Benzo(b)flurathene: 120,000, Benzo(g,h,i)perylene: 140,000, Benzo(k)fluoranthene: 69,000, Chrysene: 250,000, Fluoranthene: 760,	,000 Fluorene: 390,000, Ideno(1,2,3-cd)pyrene: 98,000, Naphthalene: 3,100,000, Phenanthrene: 1,100,000*] Ba: 0.59. [*] results listed in brackets are measured in ppb.
6	172	95-505*	12/27/94	01/10/95		0.92	Oregon Wa	Electrical	Not full, * THIS BOX ALS	95-505:TCLP 8240, TPH-D. 95-519: TCLP 8240, TPH-D.	95-505: *Diesel/related: 57. 95-519:Diesel /related: 25,000.	
7	910208	95-506	12/28/94	01/04/95		0.2	Oregon Wa	SL sm pk l		TCLP 8240, TPH-D	Diesel/related: 3,300	
8	161	95-507	1/5/94	01/04/95		0.11	Oregon Wa	SL N/S by		TCLP 8240, TPH-D	Diesel/related: 1,000	
9	910206	95-508	1/4/95	01/04/95		0.017	Oregon Wa	SL sm pk l		TCLP 8240, TPH-D	Diesel/related: 3,900	

Box #	ID #	WSC #	Start Date	Sampled	Shipped	Benzene	Disposition	Location	Comments	Analysis Requested	Analytical results are me	FIELD013
10	910214	95-509	1/4/95	01/04/95		0.35	Oregon Wa	SL sm pk l		TCLP 8240, TPH-D	Diesel/related: 12,000	
11	166	95-510	1/5/95	01/05/95		0.4	Oregon Wa	SL sm pk l		TCLP 8240, TPH-D	Diesel/related: 25,000.	
12	420049	95-515	1/6/95	01/10/95	1/13/95	0.2		SL sm pk l	1 other shipped	TCLP 8240, TPH-D	Diesel/related: 30,000.	
13	910207	95-511	1/4/94	01/05/95		0.18	Oregon Wa	SL sm pk l		TCLP 8240, TPH-D	Diesel/related: 8,900.	
14	174	95-512	1/5/95	01/06/95		ND	Oregon Wa	SL N/S by		TCLP 8240, TPH-D	Diesel/related: 3,800.	
15	910212	95-513	1/4/95	01/06/95		0.018	Oregon Wa	SL N/S by		TCLP 8240, TPH-D	Diesel/related: 2,400.	
16	91020	95-520		01/17/95		0.019		SS N/S by		TCLP 8240, TPH-D	Diesel/related: 1,500.	
17	XX			XX		XX	Oregon was	Split Box 3		XXXXX	XXXX	
18	134	95-523		01/18/95		ND		SS N/S by		TCLP 8240, TPH-D	Diesel/related: 1,200.	
19	25	95-521		01/17/95		ND		SS N/S by		TCLP 8240, TPH-D	Diesel/related: 3,900.	
20	910210	95-516		01/12/95		ND		SS N/S by		TCLP 8240, TPH-D	Diesel/related: 1,200.	
21	91030	95-522		01/17/95		ND		SS N/S by		TCLP 8240, TPH-D.	Diesel/related: 790.	
22	165	95528		1-25-95				SS N/S by	2 orgeon shipped on 1/11			
23	169											

Box #	ID #	WSC #	Start Date	Sampled	Shipped	Benzene	Disposition	Location	Comments	Analysis Requested	Analytical results are me	FIELD013
24	910202	95-529		1-25-95								
25	126	95-530		1-25-95								
26	159	95-531		1-25-95								
27	124	95-532		1-25-95								
28	129	95-528		1-25-95								
29												

[50] From: Murray Tilson at WSC-PORTLAND 1/20/95 2:18PM (3359 bytes: 56 ln)
To: Jerry Schaeffer, Tom McCue, Dave Stalder, George Stevens, Jerry Linden, Justin Darr, Larry Monk
cc: Terry Dalrymple
Subject: Minutes from 1/20/95 Facilities Team Steering Committee
---------- Message Contents ----------

Those in attendance included: Jerry Schaeffer, Tom McCue, Jerry Linden, Dave Stalder, Justin Darr, Larry Monk and Murray Tilson

1. Reviewed previous action items.
   - Diane Owens set up seminar for George and Murray for 2/7 and 2/8 (Reengineering Seminar for Maint. teams)

2. Review of Mission Statement - no changes.
   Review of Ground Rules - no changes except Larry Monk and Justin Darr are members for a 6 - month period.

3. Statu of Facilities Operator position posting (1/17 - 1/23). Jerry Linden to check on status w/Jon McCloy.

4. Organization issues:
   a. Jerry Schaeffer to submit status form for Dave Stalder moving to Fab 2 team.
   b. Dave to submit status form for Larry Monk, Richard Nichols and Paul Herbst to transfer to 5310 w/George as Supervisor.
   c. Jerry Linden to submit status form for Gary Kent, Justin Darr and Oliver Price to transfer to 5320 w/Jerry Linden as Supervisor.
   d. Tom to submit status form change to Murray to promote George to Supervisor position.

   All the above to be effective 1/30/95.

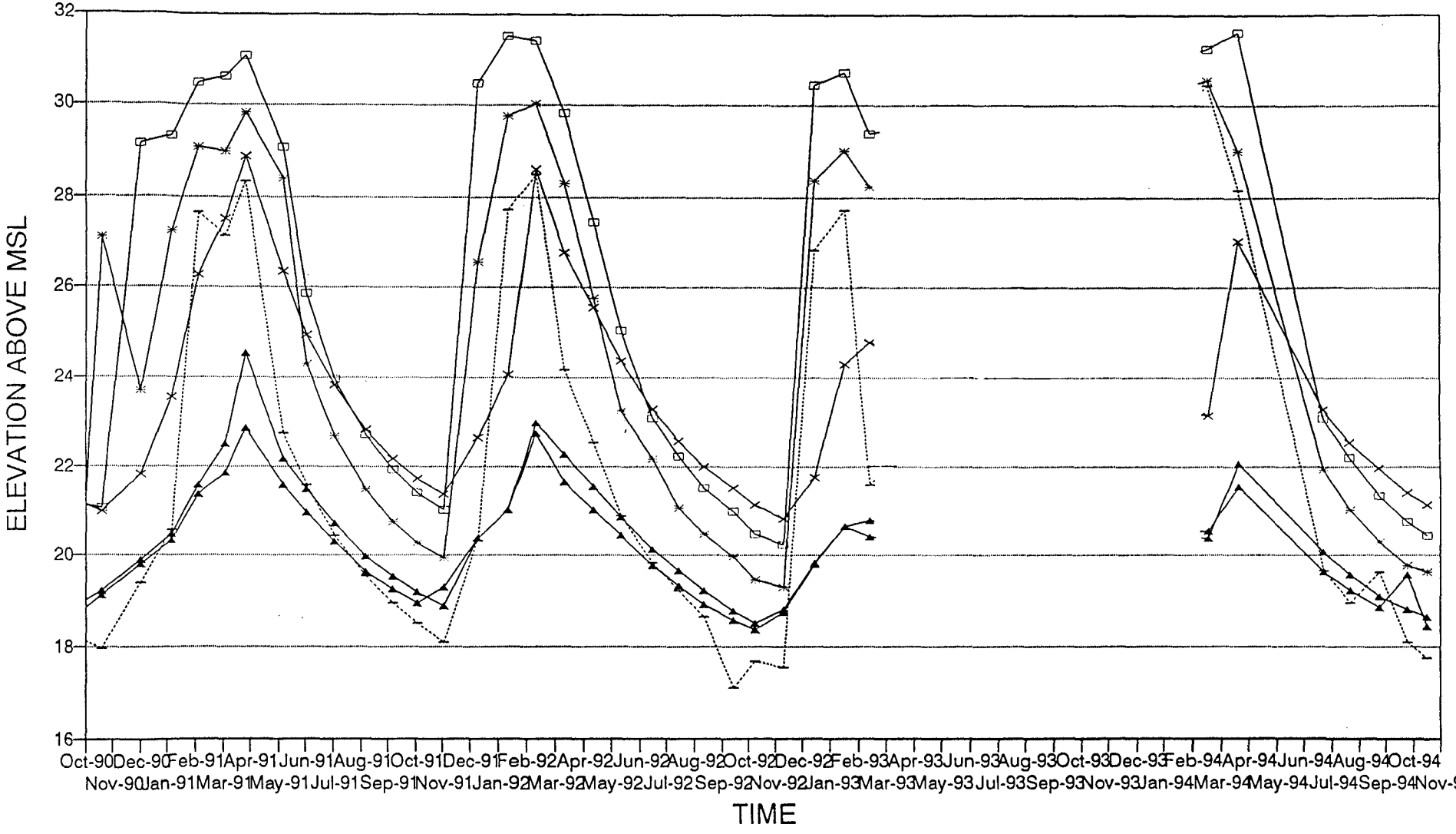
   - George Stevens will move into Dave's office as soon as he moves to the Fab 2 trailer and the WWTP will used as a satelitte office for George and his team.

5. Communications:
   a. Murray to draft message for bulletin board effective 1/27 announcing team formation.
   b. Dave Stalder to E-Mail Murray summary of recent situation w/Mfg. regarding communication problem.
   c. Murray to follow-up w/Dennis Netsch on item b.
   d. George to review with his team issue of 12 hr Night shift communication w/day time team members. (possible solutions include moving to a 8 pm to 8 am schedule, etc.)

5. Responsibility Matrix review:
   (this document was reviewed in general)
   a. Agreed to have the team meeting daily starting 1/30/95. George to inform team and committee as to details.
   b. Jerry L/George to ask Jim Long to come to days (tentative for week of 1/30 thru 2/11). This will be reviewed and modified dependent on progress of hiring a Fac. Operator to replace George.

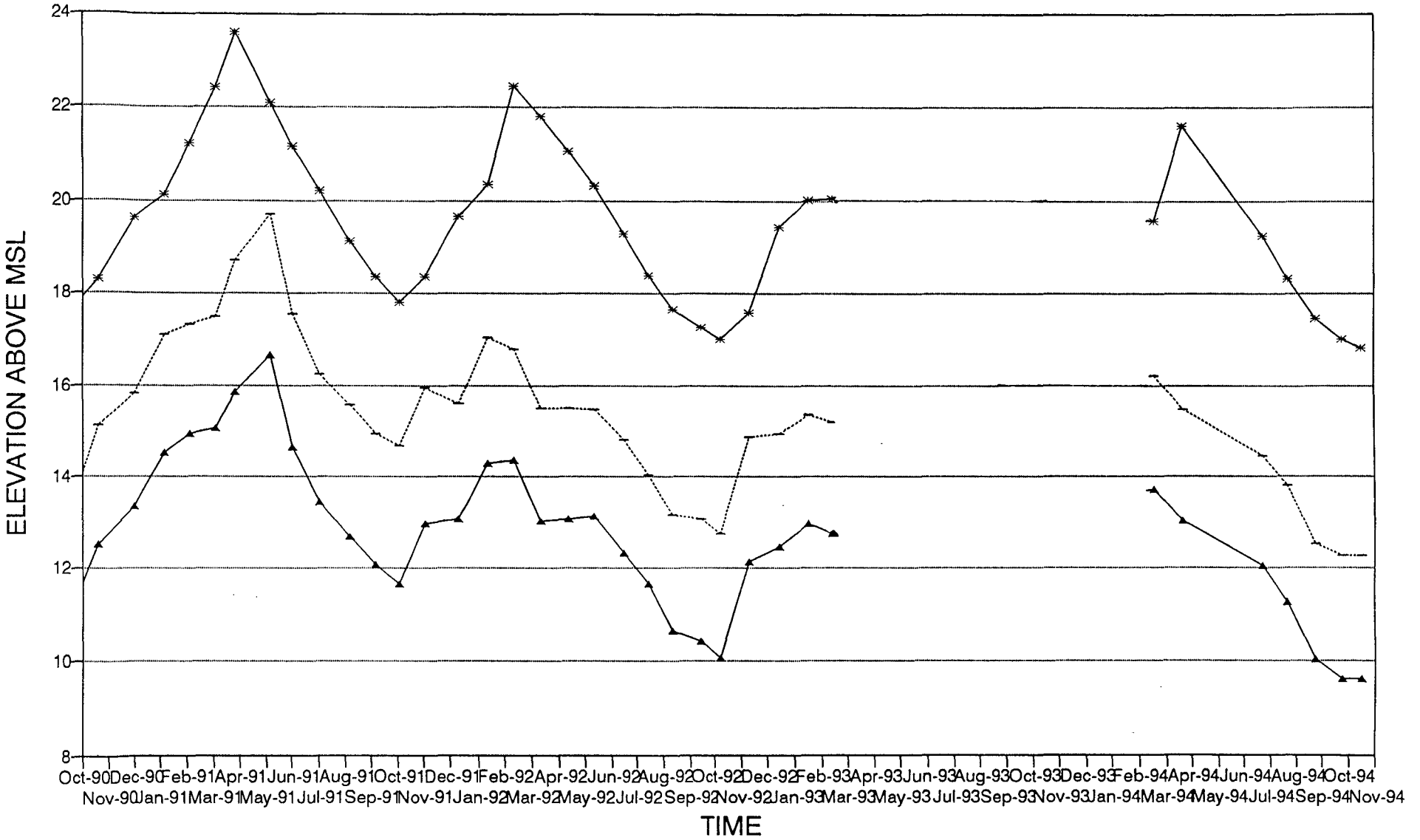
The next meeting is scheduled for Friday, 1/27 at 10 am in T.R. 2.

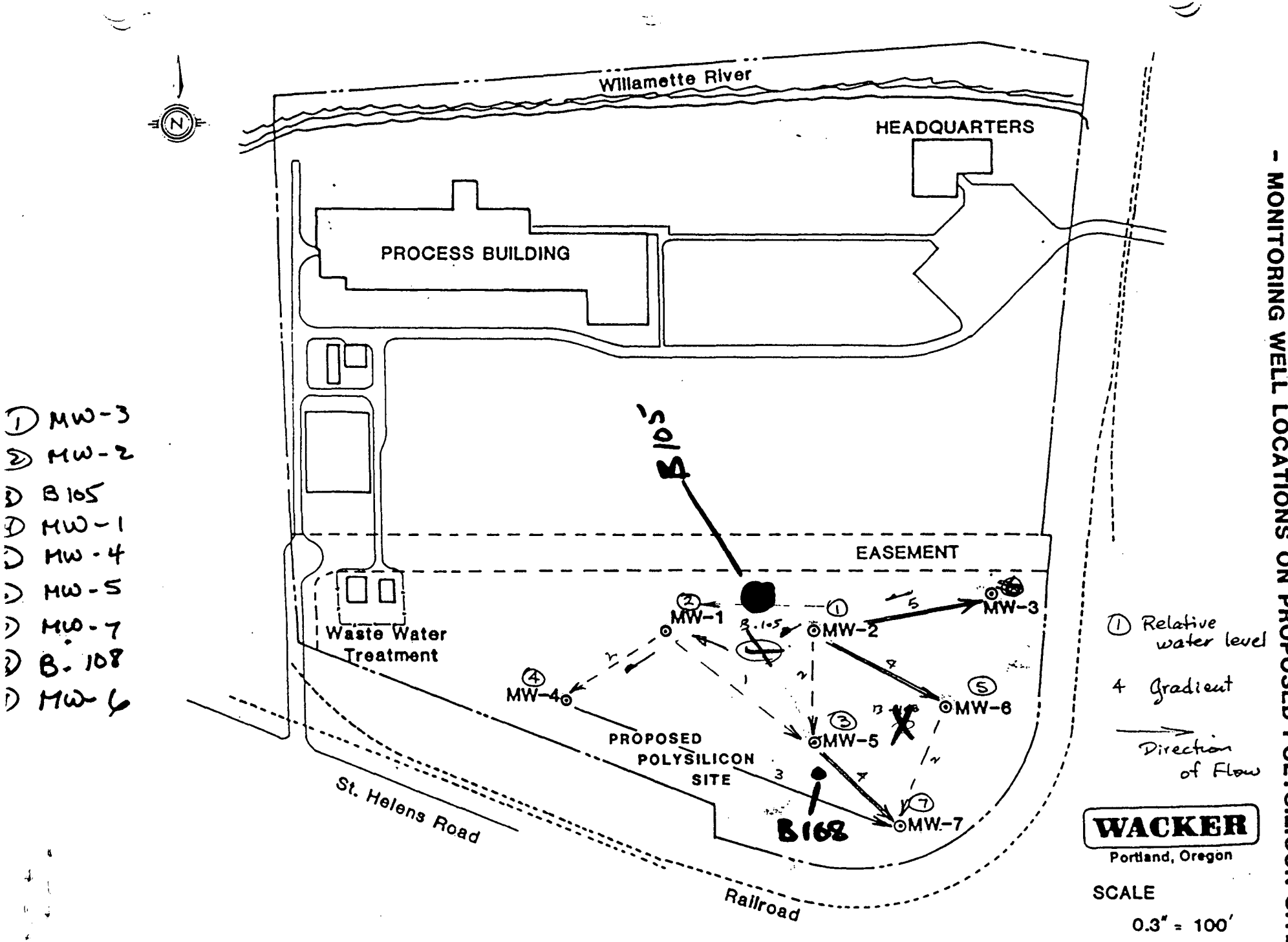
GROUNDWATER ELEVATION VS. TIME
MONITORING WELLS #1-6



MONITORING WELL #1 — MONITORING WELL #2 — MONITORING WELL #3
MONITORING WELL #4 — MONITORING WELL #5 — MONITORING WELL #6

GROUNDWATER ELEVATION VS. TIME
MONITORING WELLS #7, B105, B108

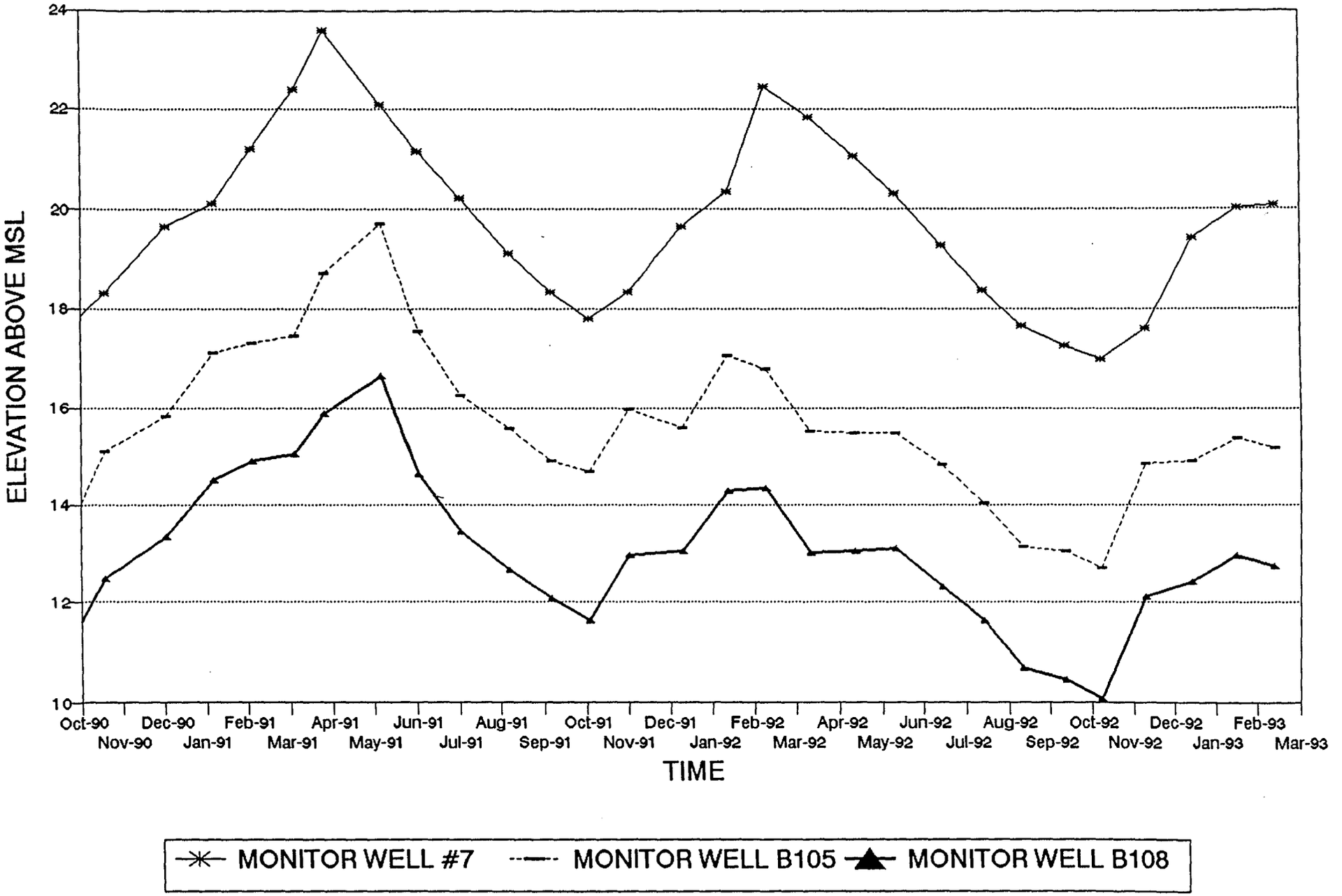




- MONITORING WELL LOCATIONS ON PROPOSED POLYSILICON SITE

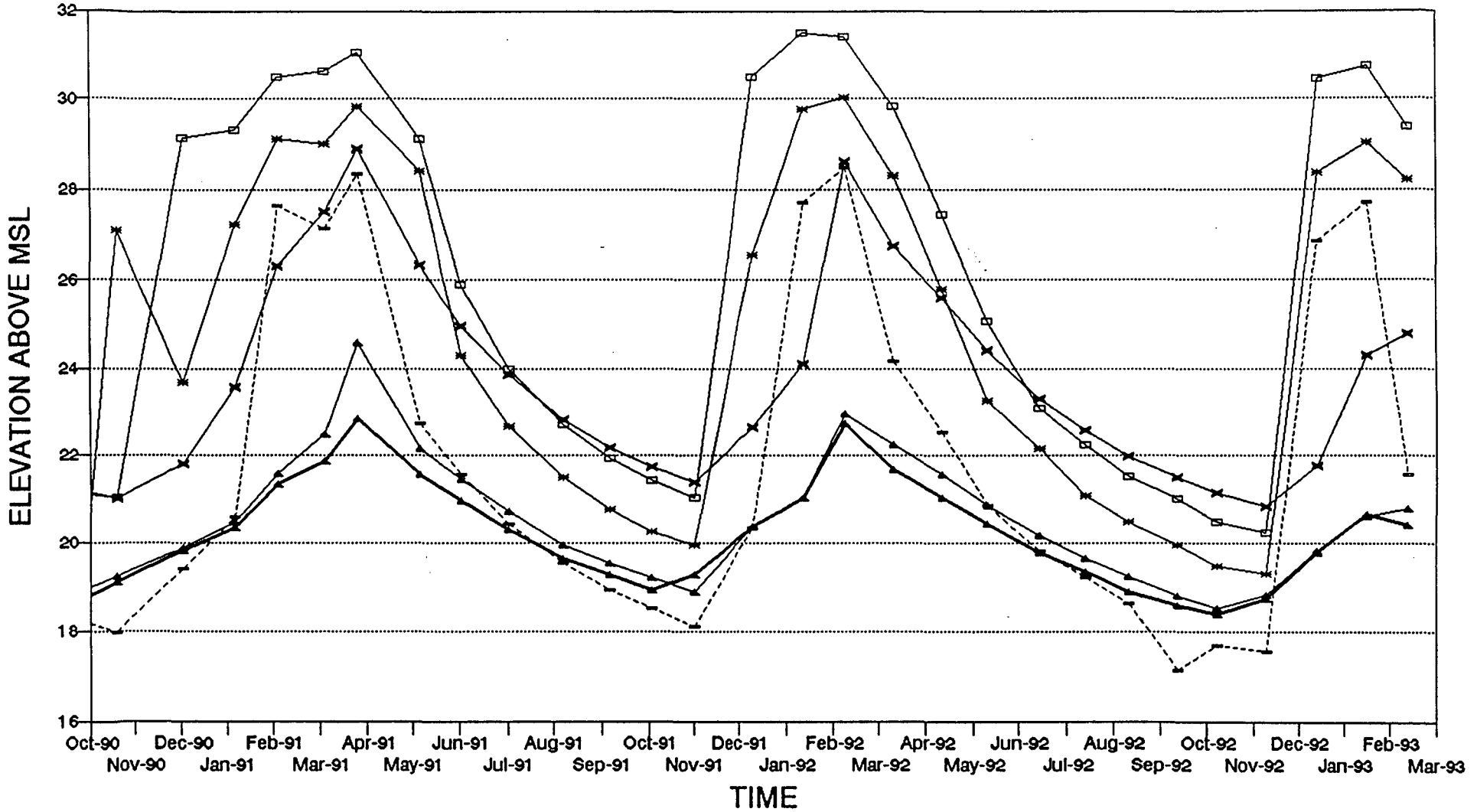
SCOEPA00022188

GROUNDWATER ELEVATION VS. TIME
MONITORING WELLS #7, B105, B108



GROUNDWATER ELEVATION VS. TIME
MONITORING WELLS #1-6

REC'D MAR 3 2 1993



MONITORING WELLS BENCHSHEET

1. Measured By: Thomas J. Rothschild
2. Date: 21 Oct 94
3. River Levels: High Level (last 24 hours): 4.8 Feet at Time: 2000 20 Oct 94
   Low Level (last 24 hours) : 1.4 Feet at Time: 1400 ↓
4. Measuring Point: Top of Standpipe.
5. Measurements: Starting Time: 1320 Ending Time: 1405

Well Point	Depth to Water (Feet/Inches) (to nearest 1/4 inch)	Depth to Water (Feet) (Decimals)
1	15' 6 1/2"	15.54
2	15' 10 3/4"	15.90
3	16' 8"	16.67
4	*	
5	15' 10 1/2"	15.88
6	16' 7 3/4" ~~15' 10 1/2"~~ ~~19' 5"~~	16.65
7	19' 5"	19.42
B105	**	
B108	**	

Comments: * Could not locate well point #4. Steve B. said it should be in raised dirt area.
** B105/B108 well points are gone

TJR 11-19-87
12-15-87 Rev

SCOEPA00022191

MONITORING WELLS BENCHSHEET

1. Measured By: Thomas J. Rothschild

2. Date: 30 Sep 94

3. River Levels: High Level (last 24 hours): 3.4 Feet at Time: 0100

   Low Level (last 24 hours) : 0.2 Feet at Time: 0900

4. Measuring Point: Top of Standpipe.

5. Measurements: Starting Time: 1304 Ending Time: 1341

Well Point	Depth to Water (Feet/Inches) (to nearest 1/4 inch)	Depth to Water (Feet) (Decimals)
1	15' 4 3/4"	15.40
2	15' 7"	15.58
3	16' 6 1/2"	15.54
4	16' 8 1/4"	16.69
5	15' 7 1/4"	15.60
6	16' 5 3/4"	16.48
7	19' 2 1/2"	19.21
B105	22' 9"	22.75
B108	25' 4 1/2"	25.38

Comments: _____

_____

_____

TJR 11-19-87
12-15-87Rev

SCOEPA00022192

MONITORING WELLS BENCHSHEET

1. Measured By: Thomas J. Rothschild

2. Date: 30 Aug 94

3. River Levels: High Level (last 24 hours): 3.5 Feet at Time: 12:00 AM

   Low Level (last 24 hours) : 0.5 Feet at Time: 9:00 AM

4. Measuring Point: Top of Standpipe.

5. Measurements: Starting Time: 1310 Ending Time: 1355

Well Point	Depth to Water (Feet/Inches) (to nearest 1/4 inch)	Depth to Water (Feet) (Decimals)
1	14' 10 1/4"	14.85
2	14' 1/4"	14.02
3	16' 3"	16.25
4	16' 1 1/4"	16.10
5	15' 1"	15.08
6	16' 2 1/4"	16.19
7	18' 9 1/4"	18.77
B105	22' 5 3/4"	22.48
B108	24' 11 1/2"	24.96

Comments: Sunny; ~ 80°F

TJR 11-19-87
12-15-87 Rev

SCOEPA00022193

MONITORING WELLS BENCHSHEET

1. Measured By: T. J. Rothschild
2. Date: 29 July 94
3. River Levels: High Level (last 24 hours): 5.1 Feet at Time: 10:00 PM
   Low Level (last 24 hours) : 2.1 Feet at Time: 6:00 PM
4. Measuring Point: Top of Standpipe.
5. Measurements: Starting Time: 1405 Ending Time: 1450

Well Point	Depth to Water (Feet/Inches) (to nearest 1/4 inch)	Depth to Water (Feet) (Decimals)
1	14' 1 3/4"	14.15
2	14' 8 1/2"	14.71
3	15' 10 1/2"	15.88
4	15' 3"	15.25
5	14' 5 3/4"	14.48
6	15' 8 1/2"	15.71
7	17' 10 3/4"	17.90
B105	21' 2 1/2"	21.21
B108	23' 9"	23.75

Comments: _____

TJR 11-19-87
12-15-87 Rev

SCOEPA00022194

MONITORING WELLS BENCHSHEET

1. Measured By: Tom Rothschild

2. Date: 30 Jun 94

3. River Levels: High Level (last 24 hours): 4.8 Feet at Time: 1200 AM

Low Level (last 24 hours) : 2.1 Feet at Time: 800 PM

4. Measuring Point: Top of Standpipe.

5. Measurements: Starting Time: 1405 Ending Time: 1450

Well Point	Depth to Water (Feet/Inches) (to nearest 1/4 inch)	Depth to Water (Feet) (Decimals)
1	13' 3"	13.25
2	14' 0"	14.00
3	15' 5 1/2"	15.46
4	14' 4 1/2"	14.38
5	13' 8 3/4"	13.73
6	15' 2 1/2"	15.21
7	16' 11 1/2"	16.96
B105	20' 6 3/4"	20.56
B108	22' 11 1/2"	22.96

Comments: _____

_____

_____

TJR 11-19-87

monitoring wells
30 Jun 94 TJR

12.00 +M
5.5 ÷
12.00 ◊M
0.46 *
12.00 =
4.5 ÷
12.00 ◊M
0.38 *
12.00 =
8.75 ÷
12.00 ◊M
0.73 *
12.00 =
2.5 ÷
12.00 ◊M
0.21 *
12.00 =
11.5 ÷
12.00 ◊M
0.96 *
12.00 =
6.75 ÷
12.00 ◊M
0.56 *
12.00 =
0 *

SCOEPA00022195

MONITORING WELLS BENCHSHEET

1. Measured By: T. J. Rothschild
2. Date: 29 Mar 94
3. River Levels: High Level (last 24 hours): 6.5 Feet at Time: 0600
   Low Level (last 24 hours) : 3.0 Feet at Time: 1500
4. Measuring Point: Top of Standpipe.
5. Measurements: Starting Time: 1400 Ending Time: 1440

Well Point	Depth to Water (Feet/Inches) (to nearest 1/4 inch)	Depth to Water (Feet) (Decimals)
1	6' 1 3/4"	6.15
2	5' 6 1/4"	5.52
3	13' 7"	13.58
4	5' 10 1/4"	5.85
5	10' 0"	10.00
6	13' 2 3/4"	13.23
7	14' 7 1/2"	14.63
B105	19' 6 1/4"	19.54
B108	21' 11 1/2"	21.96

Comments: Sunny ; ~ 70°F

TJR 11-19-87
12-15-87Rev

SCOEPA00022196

MONITORING WELLS BENCHSHEET

1. Measured By: Tom Rothschild/ —
2. Date: 25 Feb 94
3. River Levels: High Level (last 24 hours): _____ Feet at Time: _____

   Low Level (last 24 hours) : _____ Feet at Time: _____
4. Measuring Point: Top of Standpipe.
5. Measurements: Starting Time: 1345 Ending Time: 1425

Well Point	Depth to Water (Feet/Inches) (to nearest 1/4 inch)	Depth to Water (Feet) (Decimals)
1	4' 7 1/2"	4.62
2	3' 2 1/2"	3.21
3	14' 6 1/2"	14.54
4	6' 2 3/4"	6.23
5	13' 10 1/2"	13.88
6	14' 7/10 3/4"	14.90
7	16' 7 3/4"	16.65
B105	18' 9 1/2"	18.79
B108	21' 3 3/4"	21.31

Comments: Cool, cloudy, no rain.
Could not reach National Weather Service

TJR 11-19-87
12-15-87Rev

SCOEPA00022197

Wacker Siltronic Corporation

WACKER

P.O. Box 83180
Portland, Oregon 97283-0180
Phone: (503) 243-2020 ext 132
☒ ~~Fax: (503) 226-0052~~ Executive Suite
☐ ~~Fax: (503) 241-7598~~ Administration Building
■ Fax: (503) 241-7599 Process Building

FAXED
JAN 5 1995

FACSIMILE TRANSMITTAL SHEET

FAX No: 206-828-2433

DATE: 1/5/95

FROM: Chip Bloomer

TO: Mindy Gilcrest / Andrea Christman

cc:

NUMBER OF PAGES (including this page): ~~12~~ 11

MESSAGE/SPECIAL INSTRUCTIONS: Final Lab results for profile # 279893

NORTH CREEK ANALYTICAL

18939 120th Avenue N.E., Suite 101 • Bothell, WA 98011-9508 (206) 481-9200 • FAX 485-2992
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9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

pH per EPA 9045
Results In standard units

Client: Wacker Siltronic Corporation
Project: FAB-1
Received: 12/16/1994

NCA Number: 94-3888
Matrix: soil

Sample Name	Analyte	Result	MRL	Date Prepped	Date Analyzed
94-500	pH	7.0	0-14	12/20/94	12/20/94

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00022199

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TCLP per EPA 1311, 6010, 7000 series
Results in mg/L (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-1
Received: 12/16/1994

NCA Number: 94-3888
Matrix: soil

Sample Name	Analyte	Result	MRL	Date Extracted	Date Prepped	Date Analyzed
94-500	Arsenic	ND	0.50	12/18/94	12/19/94	12/20/94
	Barium	0.68	0.50			
	Cadmium	ND	0.020			
	Chromium	ND	0.020			
	Lead	ND	0.20			
	Mercury	ND	0.010			
	Selenium	ND	0.25			
	Silver	ND	0.020			
Method Blank	Arsenic	ND	0.50			
	Barium	ND	0.50			
	Cadmium	ND	0.020			
	Chromium	ND	0.020			
	Lead	ND	0.20			
	Mercury	ND	0.00050			
	Selenium	ND	0.25			
	Silver	ND	0.020			

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00022200

NORTH CREEK ANALYTICAL

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Flashpoint (PMCC)
Results In degrees F

Client: Wacker Siltronic Corporation
Project: FAB-1
Received: 12/16/1994

NCA Number: 94-3888
Matrix: soil

Sample Name	Analyte	Result	MRL	Date Prepped	Date Analyzed
94-500	No flash to	150		12/16/94	12/16/94

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00022201

NORTH CREEK ANALYTICAL

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TPH-G per Oregon DEQ
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-1
Received: 12/16/1994

NCA Number: 94-3888
Matrix: soil

Sample Name	Analyte	Result	MRL	Date Prepped	Date Analyzed
94-500	Gasoline	56	20	12/19/94	12/19/94
Method Blank	Gasoline	ND	2.0		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00022202

NORTH CREEK ANALYTICAL

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TPH-D per Oregon DEQ
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-1
Received: 12/16/1994

NCA Number: 94-3888
Matrix: soil

Sample Name	Analyte	Result	MRL	Date Prepped	Date Analyzed
94-500	Diesel/related	6,100	250	12/16/94	12/16/94
Method Blank	Diesel/related	ND	25		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00022203

NORTH CREEK ANALYTICAL

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TPH-418.1M per Oregon DEQ
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-1
Received: 12/16/1994

NCA Number: 94-3888
Matrix: soil

Sample Name	Analyte	Result	MRL	Date Prepped	Date Analyzed
94-500	TPH	1,100	20	12/16/94	12/19/94
Method Blank	TPH	ND	20		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00022204

NORTH CREEK ANALYTICAL

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TCLP VOC's per EPA 1311, 8240
Results In mg/L (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-1
Received: 12/16/1994

NCA Number: 94-3888
Matrix: soil

Sample Name	Analyte	Result	MRL
94-500 *[1]	Benzene	0.025	0.010
	Carbon Tetrachloride	ND	0.010
	Chlorobenzene	ND	0.010
	Chloroform	ND	0.010
	1,4-Dichlorobenzene	ND	0.010
	1,2-Dichloroethane	ND	0.010
	1,1-Dichloroethene	ND	0.010
	Methyl Ethyl Ketone	ND	0.038
	Tetrachloroethene	ND	0.010
	Trichloroethene	ND	0.010
	Vinyl Chloride	ND	0.025
	Date Extracted	12/19/94	
	Date Prepped	12/20/94	
	Date Analyzed	12/20/94	
Method Blank	Benzene	ND	0.0020
	Carbon Tetrachloride	ND	0.0020
	Chlorobenzene	ND	0.0020
	Chloroform	ND	0.0020
	1,4-Dichlorobenzene	ND	0.0020
	1,2-Dichloroethane	ND	0.0020
	1,1-Dichloroethene	ND	0.0020
	Methyl Ethyl Ketone	ND	0.0075
	Tetrachloroethene	ND	0.0020
	Trichloroethene	ND	0.0020
	Vinyl Chloride	ND	0.0050

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00022205

NORTH CREEK ANALYTICAL
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T.C.L.P. BNAs per EPA 1311, 8270
Results In mg/L (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-1
Received: 12/16/1994

NCA Number: 94-3888
Matrix: soil

Sample Name	Analyte	Result	MRL
94-500	Acenaphthene	0.22	0.0050
	Acenaphthylene	0.0096	0.0050
	Anthracene	0.024	0.0050
	Benzo(a)anthracene	ND	0.0050
	Benzo(a)pyrene	ND	0.0050
	Benzo(b)fluoranthene	ND	0.0050
	Benzo(g,h,i)perylene	ND	0.0050
	Benzo(k)fluoranthene	ND	0.0050
	Benzoic Acid	ND	0.010
	Benzyl Alcohol	ND	0.010
	4-Bromophenyl Phenyl Ether	ND	0.0050
	Butylbenzyl Phthalate	ND	0.0050
	4-Chloro-3-methylphenol	ND	0.0050
	4-Chloroaniline	ND	0.020
	bis(2-Chloroethoxy)methane	ND	0.010
	bis(2-Chloroethyl)ether	ND	0.0050
	bis(2-Chloroisopropyl)ether	ND	0.010
	2-Chloronaphthalene	ND	0.0050
	2-Chlorophenol	ND	0.0050
	4-Chlorophenyl Phenyl Ether	ND	0.0050
	Chrysene	ND	0.0050
	Di-n-butylphthalate	ND	0.0050
	Di-n-octylphthalate	ND	0.0050
	Dibenzo(a,h)anthracene	ND	0.0050
	Dibenzofuran	0.012	0.0050
	1,2-Dichlorobenzene	ND	0.0050
	1,3-Dichlorobenzene	ND	0.0050
	1,4-Dichlorobenzene	ND	0.010
	3,3'-Dichlorobenzidine	ND	0.0050
	2,4-Dichlorophenol	ND	0.0050
	Diethylphthalate	ND	0.0050
	2,4-Dimethylphenol	ND	0.0050
	Dimethylphthalate	ND	0.0050
	4,6-Dinitro-2-methylphenol	ND	0.010
	2,4-Dinitrophenol	ND	0.010
	2,4-Dinitrotoluene	ND	0.0050
	2,6-Dinitrotoluene	ND	0.0050
	bis(2-Ethylhexyl)phthalate	ND	0.0050
	Fluoranthene	0.018	0.0050
	Fluorene	0.065	0.0050
	Hexachlorobenzene	ND	0.0050
	Hexachlorobutadiene	ND	0.010

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00022206

NORTH CREEK ANALYTICAL

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T.C.L.P. BNAs per EPA 1311, 8270
Results In mg/L (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-1
Received: 12/16/1994

NCA Number: 94-3888
Matrix: soil

Sample Name	Analyte	Result	MRL
94-500 (continued)	Hexachlorocyclopentadiene	ND	0.010
	Hexachloroethane	ND	0.010
	Indeno(1,2,3-cd)pyrene	ND	0.0050
	Isophorone	ND	0.0050
	2-Methylnaphthalene	0.36	0.0050
	2-Methylphenol	ND	0.0050
	4-Methylphenol	ND	0.0050
	Naphthalene	2.4	0.0050
	2-Nitroaniline	ND	0.0050
	3-Nitroaniline	ND	0.010
	4-Nitroaniline	ND	0.010
	Nitrobenzene	ND	0.0050
	2-Nitrophenol	ND	0.0050
	4-Nitrophenol	ND	0.010
	N-Nitroso-di-n-propylamine	ND	0.010
	N-Nitrosodiphenylamine	ND	0.0050
	Pentachlorophenol	ND	0.010
	Phenanthrene	0.16	0.0050
	Phenol	ND	0.0050
	Pyrene	0.017	0.0050
	1,2,4-Trichlorobenzene	ND	0.0050
	2,4,5-Trichlorophenol	ND	0.0050
	2,4,6-Trichlorophenol	ND	0.0050
	Date Extracted	12/16/94	
	Date Prepped	12/19/94	
	Date Analyzed	12/20/94	

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00022207

NORTH CREEK ANALYTICAL

18939 120th Avenue N.E., Suite 101 • Bothell, WA 98011-9508 (206) 481-9200 • FAX 485-2992
East 11115 Montgomery, Suite B • Spokane, WA 99206-4776 (509) 924-9200 • FAX 924-9290
9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

TCLP Herbicides per EPA 1311, 8150
Results In mg/L (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-1
Received: 12/16/1994

NCA Number: 94-3888
Matrix: soil

Sample Name	Analyte	Result	MRL
94-500	2,4-D	ND	0.040
	2,4,5-TP (Silvex)	ND	0.020
	Date Extracted	12/16/94	
	Date Prepped	12/19/94	
	Date Analyzed	12/20/94	
Method Blank	2,4-D	ND	0.040
	2,4,5-TP (Silvex)	ND	0.020

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00022208

Portland, Oregon
Soil Recycling Facility

OREGON HYDROCARBON INC.
(a TPS Technologies Inc. company)
SOIL DATA AND CERTIFICATION SHEET

Date: 1-23-95

Generator and/or Client:
Waker Sultronics
7200 N.W. Front
Portland, Ore. 97209

Consultant/Engineering Firm:
Spencer, Inc.
9145 Mollala Ave
Oregon City, Ore. 97045

Testing Laboratory (include contact person and phone #):
North Creek Analytical
Howard Holmes (503) 241-7599

Sampling procedures and location (attach add'l sheets and map)
SEE grid
Composite Samples from Boxes

Site History (list address, describe contamination type, contamination source, how contamination was stored, past activities at site - Attach additional sheet if necessary)
Pipe line Spills / River Fill
non-Hazardous Soil

Estimated Qty (Tons):
30-200 TONS

State Classification:
non-Haz.

Please check appropriate box below and attach all required analytical reports, including test methodologies used. Unless otherwise noted, composite samples should be collected with the following frequency: One (1) sample for 250 tons or less; two (2) samples for 500 tons or less and one (1) additional sample for each 500 additional tons.

☐ I/We certify that the soil referenced herein is contaminated solely by virgin petroleum products from leaking underground storage tank(s).

Attach analysis for the following:
1. Total Petroleum Hydrocarbons ID test (Method TPH-HCID)
2. If Method TPH-HCID shows gasoline is present, perform a Total Petroleum Hydrocarbons test for gasoline (Method TPH-G or EPA Method 8020)
3. If Method TPH-HCID shows that diesel, heating oil, and/or Bunker C are present, perform Total Petroleum Hydrocarbons tests for fuel oils (EPA Method 418.1 Modified)
4. If Method TPH-HCID shows that both gasoline and diesel or heating oils are present, then both types of TPH test must be performed.

☒ I/We certify that some or all of the contaminants in the soil referenced herein is waste oil, or some other non-virgin petroleum product or virgin petroleum from something other than a leaking underground storage tank.

Attach analysis for the following:
1. Total Petroleum Hydrocarbons ID test (Method TPH-HCID)
2. If Method TPH-HCID shows gasoline is present, perform a Total Petroleum Hydrocarbons test for gasoline (Method TPH-G or EPA Method 8020)**
3. If Method TPH-HCID shows that diesel, heating oil, and/or Bunker C are present, perform Total Petroleum Hydrocarbons tests for fuel oils (EPA Method 418.1 Modified)
4. If Method TPH-HCID shows that both gasoline and diesel or heating oils are present, then both types of TPH test must be performed.
5. Halogenated Volatile Organic compounds (EPA Method 8240)
6. PCB's and Halogenated Pesticides (EPA Method 8080)
7. TCLP (EPA Method 1311) metals concentration for a) through h):
   a) arsenic c) cadmium e) lead g) selenium
   b) barium d) chromium f) mercury h) silver

** If elevated benzene levels are detected, an additional TCLP benzene test may be required in an above-ground spill or leak situation.

No soils referenced herein may be delivered until the foregoing certificate is received and approved by OHI, and OHI issues manifests and assigns a delivery date. If any soils delivered to OHI are found to be "hazardous waste" pursuant to federal or state regulations, Client shall be solely responsible for their removal. If Client fails to so remove such soils, OHI, acting as Client's agent, may arrange for such removal at Client's expense.

This is a complete and accurate description of the soil referenced herein; no deliberate or willful omissions have been made and all known or suspected hazards have been disclosed herein. I/We further hereby certify that the soil is not "hazardous" as defined by U.S. Department of Transportation (DOT), U.S. Environmental Protection Agency (EPA), State or local regulations.
All required analysis reports are attached.

Generator's Authorized Signatory: X Chip Blooker Date: 1/25/95

Print Name: Chip Blooker Title: Engr.

Engineer/Environmental Firm Authorized Signatory: Christina Cooper Date: 1-23-95

Print Name: Christina Cooper Title: Engineer

JAN 24 '95 03:48PM SPENCER ENVIRO. P.2

SCOEPA00022209

Wacker Siltronic Corporation

WACKER

P.O. Box 83180
Portland, Oregon 97283-0180
Phone: (503) 243-2020 EXT. 7132
■ Fax: (503) 241-7599 Process Building

FACSIMILE TRANSMITTAL SHEET

FAX No: 681-9618

DATE: 6/29/95

FROM: Chip Bloomer

TO: ~~Soil profile~~ Ellen Ries

cc:

NUMBER OF PAGES (including this page): 5

MESSAGE/SPECIAL INSTRUCTIONS:

Attached is a Profile sheet to dispose of some soil containing low levels of petroleum contamination. Analysis attached include TPH-D and G, TPH 418.1M and TCLP volatiles. Previous analysis of similar material have shown no metals, PCBs, Dioxins or Pesticides to be present in this material.

If have any questions please call me.

Chip Bloomer

Permit No.:

Approval Expiration:

SANIFILL NORTHWEST

Northern Wasco County Landfill, Hillsboro Landfill, Riverbend Landfill

Generator's Special Waste Profile Sheet

IMPORTANT: This form must be completed by a Representative of the Waste Generator. The information on this form must be typed or legibly printed in ink and signed by an Authorized Agent of the Generator. Completed form bearing original signature must be provided **PRIOR TO DISPOSAL.**

1.0 Generator Information

1.1 Generator Name: Wacker Siltronic

1.5 Generator's EPA ID No.: ORD-096253737

1.2 Site of Waste Generation: Wacker Siltronic

Facility Address: 7200 NW Front

1.6 Facility Phone:

City: Portland State: OR Zip: 97210 (503) 243-2020

1.3 Technical Contact: Chip Bloomer

Title: Environmental Engineer

1.7 Technical Contact Phone: (503) 243-2020-7132

1.4 General Site Activity: Manufacture Silicon Wafers

2.0 Waste Description

2.1 General Waste Description: Petroleum Contaminated Soil

2.2 Process Generating Waste: Excavation

2.3 Is this Waste "Hazardous Waste" as defined by Federal, State or Local Regulations: ___ Yes X No

2.4 Has this waste ever been "handled" or "Disposed" of as hazardous ___ Yes X No

___ Material ___ Waste ___ Disposed of via a "uniform hazardous waste manifest".

If yes, explain ___

2.4 Waste Generation Rate: 100 Tons ___ Cubic Yards ___ Other: ___

Per: ___ Day ___ Week ___ Year ___ Other X One Time Disposal? ___ Yes ___ No.

2.6 Waste will be transported in: ___ Roll Off Boxes ___ Drums (Type/Size): ___

X Dump Trucks ___ Other: ___

3.0 Waste Properties at Room Temperature

3.1 Physical State

X Solid ___ Semi Solid

___ Powder ___ Liquid

___ Combination: ___ Other: ___

3.2 Odor: X None ___ Mild ___ Strong

3.3 pH Range: NA to: ___

3.4 Color(s): Brown

3.5 Percent Solid: 100 %

3.6 Flash Point F: NA None ___ <140° F

___ 140° -199° F ___ >200° F

RETURN APPLICATION TO:
Hillsboro Landfill, Inc.
3205 SE Minter Bridge Rd.
Hillsboro, Oregon 97123
PH: 503-640-9427
FAX: 503-648-2490

4.0 Reactivity

___ Reactive with Water	___ Alkaline Reactive	___ Autopolymerizable	___ Acid Reactive
___ Explosive	___ Thermally Sensitive	___ Shock Sensitive	X None of the Above

5.0 Waste Contents

This Waste Contains:

___ Free Liquids	___ Dioxins	___ Pathogens	___ PCBs
___ Free Cyanide	___ Organic Solvents	___ OSHA Substances	
___ Free Sulfide	___ Used or Waste Oils	___ Biological Materials	
___ Free Ammonia	X Gasoline/Diesel	___ Radioactive Materials	
___ None of the Above			

6.0 Transportation

6.1 Proper U.S. DOT Shipping Name NA

6.2 U.S. DOT Hazard Class: NA

X This Waste is NOT a DOT Hazardous Material

6.3 Transporter Name: _____

Address: _____

6.4 Technical Contact: _____

Phone: _____

7.0 Attached Information

7.1 ANALYTICAL (check all that apply)

X THP Gas/Diesel/Oil	___ BTEX	___ TPH-HCID	___ TCLP Metals
___ Semivolatile Organics	___ Volatile Organics	___ Herbicides/Pesticides	X TCLP Volatiles

7.2 ___ MSDS ___ Generator Certification ___ Other: _____

8.0 Billing Information

8.1 Bill To: _____ Attention: _____

Phone No.: _____

P.O.# _____

Do you have an account with us? _____

9.0 Generator Certification

I hereby certify that all information supplied is truly representative of the above mentioned waste. I agree to notify Sanifill Northwest if there is a change in the waste stream information submitted for acceptance. I also authorize Sanifill Northwest to periodically reanalyze the waste, at my expense. I also certify that all samples were collected according to EPA Method SW-846 and the samples were analyzed by a Certified Laboratory and that the appropriate chain of custody was attached. **I further certify that the wastes submitted for disposal are not designated as Hazardous Waste by the USEPA or state regulations.**

Printed Name Chip Bloome Company Name Wacker Siltronic

Signature _____ Title Environmental Engr Date 6/29/95

TOTAL P.03

TPH-D per Oregon DEQ (C10-C28)
Results in mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2
Received: 06/23/1995

NCA Number: P506332
Matrix: soil

Sample Name	Analyte	Result	MRL	Prep Date	Analy Date
95-576-Composite	Diesel/Related	1,200	25	06/26	06/27
95-577-grab	Diesel/Related	350 *1	25	06/26	06/27
95-578-grab	Diesel/Related	100	25	06/26	06/27
95-579-grab	Diesel/Related	300	25	06/26	06/27
Method Blank	Diesel/Related	ND	25		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

6/27 ES

** 572-1

COMMENTS

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Number: P506332
Received: 06/23/1995

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1. Detected hydrocarbons in the diesel range appear to be due to overlap of heavy/oil range hydrocarbons.

2. Unable to calculate surrogate recovery due to high analyte concentration.

6/27/95 BCS

SCOEPA00022214

TPH-418.1M per Oregon DEQ
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2
Received: 06/23/1995

NCA Number: P506332
Matrix: soil

Sample Name	Analyte	Result	MRL	Prep Date	Analy Date
95-576-Composite	TPH	290	100	06/26	06/27
95-577-grab	TPH	950	500	06/26	06/27
95-578-grab	TPH	180	100	06/26	06/27
95-579-grab	TPH	670	100	06/26	06/27
Method Blank	TPH	ND	20		

6/28/95

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00022215

TPH-G per Oregon DEQ (C6-C10)
Results in mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2
Received: 06/23/1995

NCA Number: P506332
Matrix: soil

Sample Name	Analyte	Result	MRL	Prep Date	Analy Date
95-576-Composite	Gasoline/Related	6.9	2.0	06/26	06/26
95-577-grab	Gasoline/Related	7.2	2.0	06/26	06/26
95-578-grab	Gasoline/Related	ND	2.0	06/26	06/26
95-579-grab	Gasoline/Related	ND	2.0	06/26	06/26
Method Blank	Gasoline/Related	ND	2.0		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

** 568-1

TCLP VOC's per EPA 8240
Results in mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2
Received: 06/23/1995

NCA Number: P506332
Matrix: soil

Sample Name	Analyte	Result	MRL
95-576-Composite	Benzene	ND	0.010
	Carbon Tetrachloride	ND	0.010
	Chlorobenzene	ND	0.010
	Chloroform	ND	0.010
	1,4-Dichlorobenzene	ND	0.010
	1,2-Dichloroethane	ND	0.010
	1,1-Dichloroethene	ND	0.010
	Methyl Ethyl Ketone	ND	0.13
	Tetrachloroethene	ND	0.010
	Trichloroethene	ND	0.010
	Vinyl Chloride	ND	0.025
	Date Prepped	06/26/95	
	Date Analyzed	06/26/95	
95-577-grab	Benzene	ND	0.010
	Carbon Tetrachloride	ND	0.010
	Chlorobenzene	ND	0.010
	Chloroform	ND	0.010
	1,4-Dichlorobenzene	ND	0.010
	1,2-Dichloroethane	ND	0.010
	1,1-Dichloroethene	ND	0.010
	Methyl Ethyl Ketone	ND	0.13
	Tetrachloroethene	ND	0.010
	Trichloroethene	ND	0.010
	Vinyl Chloride	ND	0.025
	Date Prepped	06/26/95	
	Date Analyzed	06/26/95	

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00022217

TCLP VOC's per EPA 8240
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2
Received: 06/23/1995

NCA Number: P506332
Matrix: soil

Sample Name	Analyte	Result	MRL
95-578-grab	Benzene	ND	0.010
	Carbon Tetrachloride	ND	0.010
	Chlorobenzene	ND	0.010
	Chloroform	ND	0.010
	1,4-Dichlorobenzene	ND	0.010
	1,2-Dichloroethane	ND	0.010
	1,1-Dichloroethene	ND	0.010
	Methyl Ethyl Ketone	ND	0.13
	Tetrachloroethene	ND	0.010
	Trichloroethene	ND	0.010
	Vinyl Chloride	ND	0.025
	Date Prepped	06/26/95	
	Date Analyzed	06/26/95	
95-579-grab	Benzene	ND	0.010
	Carbon Tetrachloride	ND	0.010
	Chlorobenzene	ND	0.010
	Chloroform	ND	0.010
	1,4-Dichlorobenzene	ND	0.010
	1,2-Dichloroethane	ND	0.010
	1,1-Dichloroethene	ND	0.010
	Methyl Ethyl Ketone	ND	0.13
	Tetrachloroethene	ND	0.010
	Trichloroethene	ND	0.010
	Vinyl Chloride	ND	0.025
	Date Prepped	06/26/95	
	Date Analyzed	06/26/95	

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

** 724-2

TCLP VOC's per EPA 8240
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2
Received: 06/23/1995

NCA Number: P506332
Matrix: soil

Sample Name	Analyte	Result	MRL
Method Blank	Benzene	ND	0.0020
	Carbon Tetrachloride	ND	0.0020
	Chlorobenzene	ND	0.0020
	Chloroform	ND	0.0020
	1,4-Dichlorobenzene	ND	0.0020
	1,2-Dichloroethene	ND	0.0020
	1,1-Dichloroethene	ND	0.0020
	Methyl Ethyl Ketone	ND	0.025
	Tetrachloroethene	ND	0.0020
	Trichloroethene	ND	0.0020
	Vinyl Chloride	ND	0.0050

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

** 724-3

Wacker Siltronic Corporation

P.O. Box 83180
Portland, Oregon 97283-0180
Phone: (503) 243-2020

☐ Fax: (503) 241-7598 Administration Building
■ Fax: (503) 241-7599 Process Building
☐ Fax: (503) 241-7596 Finance/Accounting

FACSIMILE TRANSMITTAL SHEET

FAX No: 283-6388

DATE: 5/16/95

FROM: Sandee Archer

TO: Royal Proctor

ATTN:

NUMBER OF PAGES (including this page): 8

MESSAGE/SPECIAL INSTRUCTIONS:

Sample taken from current pile of soil.
Any questions please call me.

SCOEPA00022220

NORTH CREEK ANALYTICAL

18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508 (206) 481-9200 FAX 485-2992
East 11115 Montgomery, Suite B, Spokane, WA 99206-4779 (509) 924-9200 FAX 924-9290
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2202

CHAIN OF CUSTODY REPORT

CLIENT: Wacker Siltronic
ADDRESS: 7200 N. W. Front Ave
Portland, OR
PHONE: 243-2020 X 7374 FAX: 241-7589

REPORT TO: Dianne Mullan
BILLING TO:
P.O. NUMBER: 31002
NCA QUOTE #:

TURNAROUND REQUEST in Business Days *
Organic & Inorganic Analyses: 10 | 5 | 3 | X | 1
(Please Select One)
Fuels & Hydrocarbon Analyses: 5 | 3 | X | 1
* Turnaround Requests less than standard will incur Rush Charges.
FAX RESULTS BY :

PROJECT NAME: FAB-2
PROJECT NUMBER: Soil-5-10-95
SAMPLED BY:

Analysis Request: TCLP-8240 | TPH-D | TPH-G | 418.1 mod. | HCID

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	COMMENTS & PRESERVATIVES USED	NCA SAMPLE NUMBER
1. 95-568	5/10/95 0850	S	1	Samples held	P505123-1
2. 95-569	5/10/95 0852	S	1	on Ice	2
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					

RELINQUISHED BY: Dianne E Mullan — DATE: 5-10-95 — RECEIVED BY: Sara McClurg — DATE: 5-10-95
PRINT NAME: Dianne E Mullan FIRM: Wacker Siltronic — TIME: 1010 — PRINT NAME: Sara McClurg FIRM: NCA — TIME: 1010
RELINQUISHED BY: — DATE: — RECEIVED BY: — DATE:
PRINT NAME: FIRM: — TIME: — PRINT NAME: FIRM: — TIME:

ADDITIONAL REMARKS:

PAGE OF

COC Rev 4, 10/94

FROM :NORTH CREEK ANALYTICAL TO : 503 241 7599 1995.05.12 02:36PM #424 P.02

SCOEPA00022221

TPH-HCID per Oregon DEQ
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2
Received: 05/10/1995

NCA Number: P505123
Matrix: soil

Sample Name	Analyte	Result	MRL	Prep Date	Analy Date
95-568	Gasoline	ND	200	05/10	05/10
	Diesel	DET	500		
	Heavy/Oil	DET	1000		
95-569	Gasoline	ND	2000	05/10	05/10
	Diesel	DET	5000		
	Heavy/Oil	DET	10000		
Method Blank	Gasoline	ND	20		
	Diesel	ND	50		
	Heavy/Oil	ND	100		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

5/11/95 EKS

** 564-1

TPH-G per Oregon DEQ
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2
Received: 05/10/1995

NCA Number: P505123
Matrix: soil

Sample Name	Analyte	Result	MRL	Prep Date	Analy Date
95-568	Gasoline	230	20	05/12	05/12
95-569	Gasoline	1900	200	05/12	05/12
Method Blank	Gasoline	ND	5.0		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

** 588-1

5/12/95 JBI

SCOEPA00022223

TPH-D per Oregon DEQ
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2
Received: 05/10/1995

NCA Number: P505123
Matrix: soil

Sample Name	Analyte	Result	MRL	Prep Date	Analy Date
95-568	Diesel/related	6,800	1000	05/10	05/10
95-569	Diesel/related	40,000	500	05/10	05/10
Method Blank	Diesel/related	ND	25		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

5/11/95

** 572-1

TPH-418.1M per Oregon DEQ
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2
Received: 05/10/1995

NCA Number: P505123
Matrix: soil

Sample Name	Analyte	Result	MRL	Prep Date	Analy Date
95-568	TPH	1,300	80	05/10	05/10
95-569	TPH	4,600	400	05/10	05/10
Method Blank	TPH	ND	20		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

5/12/95 bmv

** 576-1

TCLP VOC's per EPA 1311, 8240
Results In mg/L (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2
Received: 05/10/1995

NCA Number: P505123
Matrix: soil

Sample Name	Analyte	Result	MRL
95-569	Benzene	0.82	0.020
	Carbon Tetrachloride	ND	0.020
	Chlorobenzene	ND	0.020
	Chloroform	ND	0.020
	1,4-Dichlorobenzene	ND	0.020
	1,2-Dichloroethane	ND	0.020
	1,1-Dichloroethene	ND	0.020
	Methyl Ethyl Ketone	ND	0.25
	Tetrachloroethene	ND	0.020
	Trichloroethene	ND	0.020
	Vinyl Chloride	ND	0.050
	Date Extracted	05/10/95	
	Date Prepped	05/11/95	
	Date Analyzed	05/11/95	
Method Blank	Benzene	ND	0.25
	Carbon Tetrachloride	ND	0.25
	Chlorobenzene	ND	0.25
	Chloroform	ND	0.25
	1,4-Dichlorobenzene	ND	0.25
	1,2-Dichloroethane	ND	0.25
	1,1-Dichloroethene	ND	0.25
	Methyl Ethyl Ketone	ND	3.1
	Tetrachloroethene	ND	0.25
	Trichloroethene	ND	0.25
	Vinyl Chloride	ND	0.63

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00022226

TCLP VOC's per EPA 8240
Results in mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2
Received: 05/10/1995

NCA Number: P505123
Matrix: soil

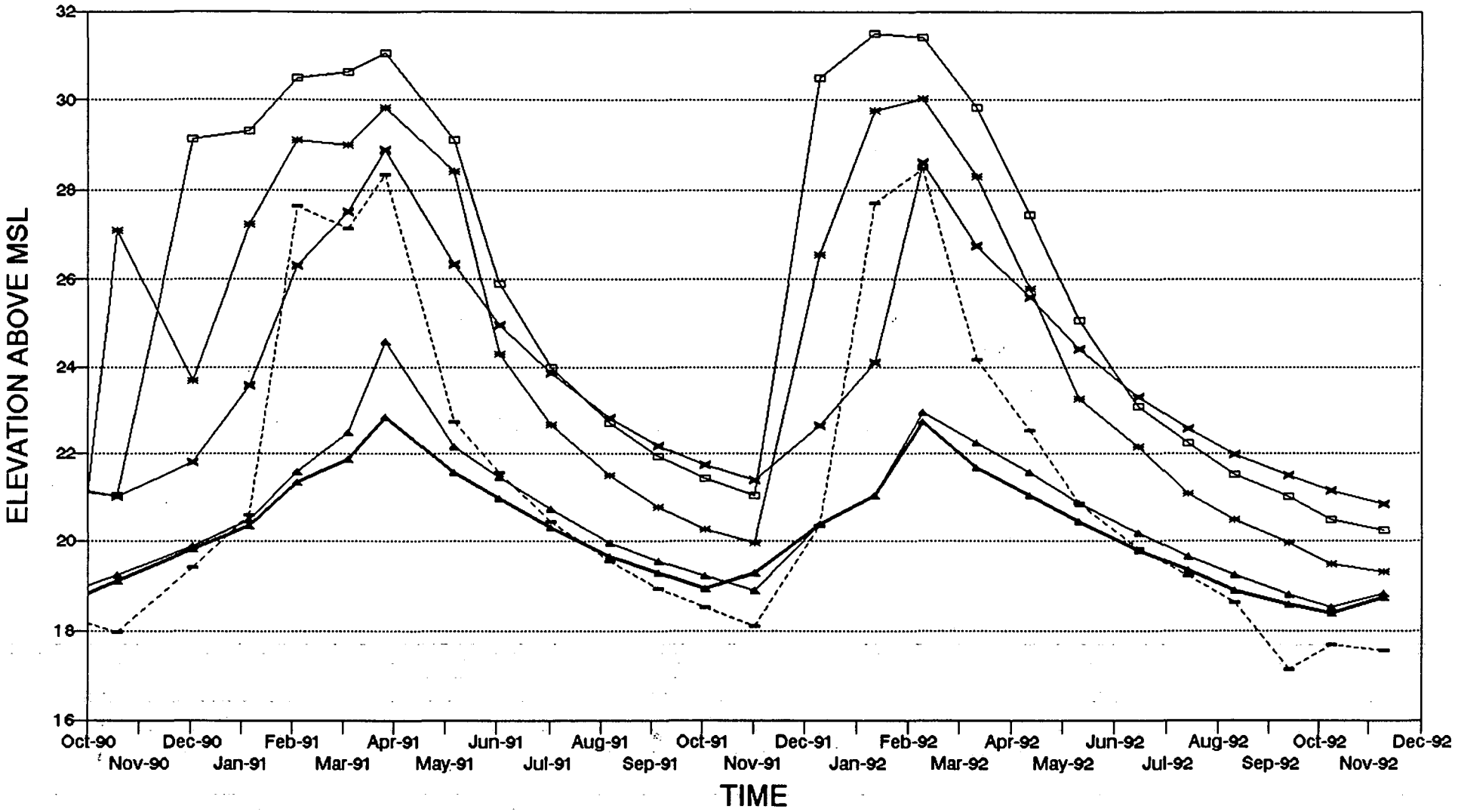
Sample Name	Analyte	Result	MRL
'15-568	Benzene	ND	0.25
	Carbon Tetrachloride	ND	0.25
	Chlorobenzene	ND	0.25
	Chloroform	ND	0.25
	1,4-Dichlorobenzene	ND	0.25
	1,2-Dichloroethane	ND	0.25
	1,1-Dichloroethene	ND	0.25
	Methyl Ethyl Ketone	ND	3.1
	Tetrachloroethene	ND	0.25
	Trichloroethene	ND	0.25
	Vinyl Chloride	ND	0.63
	Date Prepped	05/10/95	
	Date Analyzed	05/10/95	
Method Blank	Benzene	ND	0.25
	Carbon Tetrachloride	ND	0.25
	Chlorobenzene	ND	0.25
	Chloroform	ND	0.25
	1,4-Dichlorobenzene	ND	0.25
	1,2-Dichloroethane	ND	0.25
	1,1-Dichloroethene	ND	0.25
	Methyl Ethyl Ketone	ND	3.1
	Tetrachloroethene	ND	0.25
	Trichloroethene	ND	0.25
	Vinyl Chloride	ND	0.63

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

** 724-2

GROUNDWATER ELEVATION VS. TIME
MONITORING WELLS #1-6

REC'D DEC 15 1992
JJR



GROUNDWATER ELEVATION VS. TIME
MONITORING WELLS #7, B105, B108

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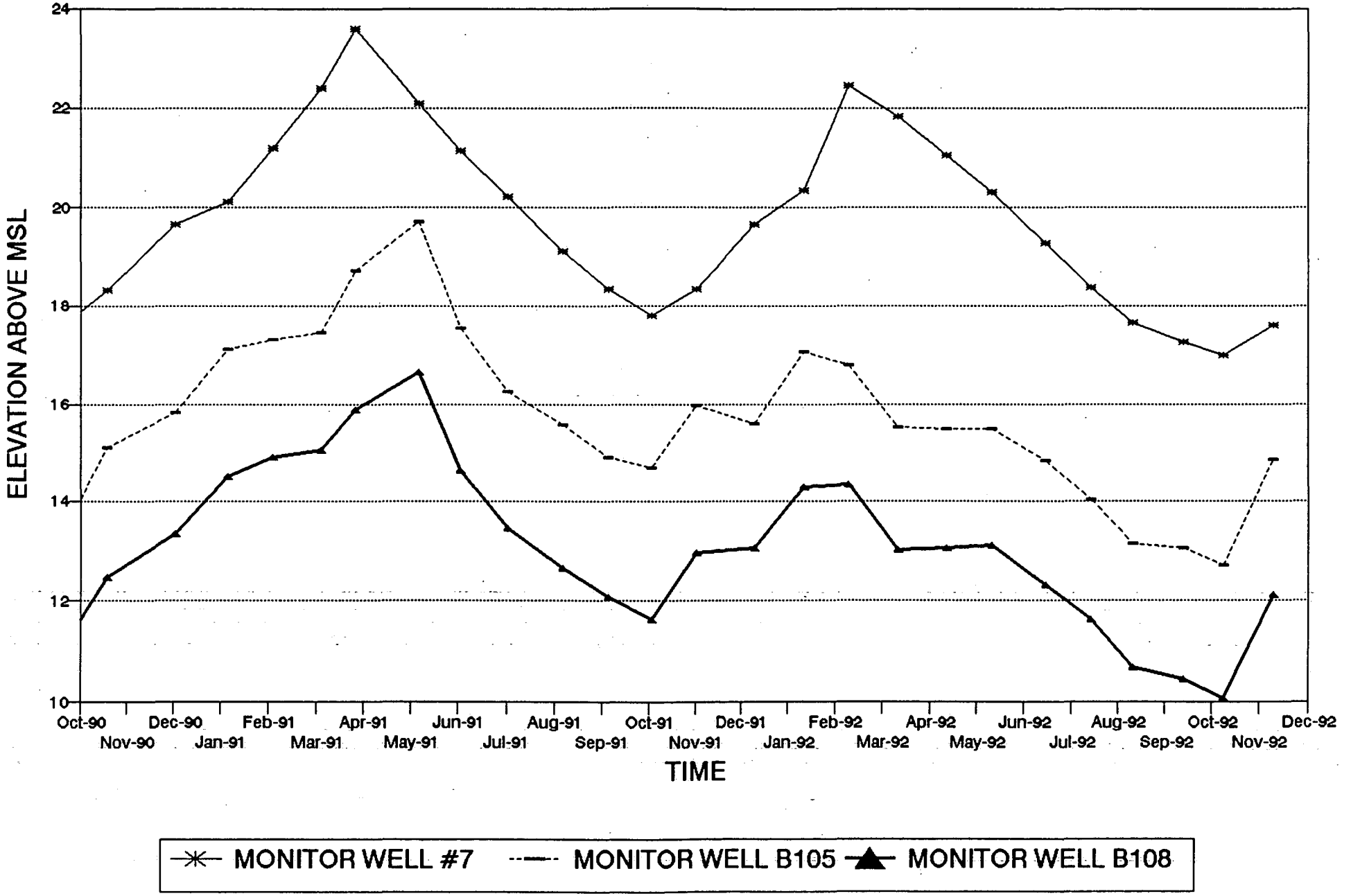

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FINDINGS REPORT
GROUNDWATER AND
SOIL GAS INVESTIGATION

Prepared for
Wacker Siltronic Corporation
Portland, Oregon

Prepared by
CH2M HILL
Portland, Oregon

December 1990

PDX937.037.51.1

SCOEPA00022230

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INTRODUCTION

PURPOSE AND SCOPE

This Groundwater and Soil Gas Investigation Report has been prepared for Wacker Siltronic Corporation (Wacker), 7200 N.W. Front Avenue, Portland, Oregon (Figure 1). The original purpose of this investigation was to determine whether subsurface contamination found in the vicinity of the proposed Fab 2 Building site could be associated with the nearby Olympic pipeline. However, before beginning the field work, Wacker shifted the focus of the investigation away from specifically investigating the origin of contamination found below the Fab 2 Building site. Instead, Wacker instructed CH2M HILL to investigate selected groundwater and soil gas constituents adjacent to a 600-foot length of the utility corridor. The revised purpose of the investigation was to assess the possibility that the Olympic pipeline (lying within the utility corridor) is a source of hydrocarbon contamination within the 600-foot-long study area. The scope of work included the following tasks:

- Review readily available existing site soil and groundwater data
- Prepare a detailed work plan specifying sampling procedures and quality control practices
- Subcontract a specialty contractor to obtain and chemically analyze samples under the direction of CH2M HILL field staff
- Conduct the investigation and chemically analyze quality control samples
- Prepare this report summarizing the results of the investigation

BACKGROUND INFORMATION

Previous explorations at the Wacker site have revealed detectable concentrations of volatile organic compounds such as benzene, toluene, ethylbenzene, and xylene (BTEX), as well as polynuclear aromatic hydrocarbons (PAHs) such as naphthalene, acenaphthalene, and phenanthrene. The BTEX compounds are primary constituents of gasoline and are typically used as indicator compounds to detect hydrocarbon contamination in soil or groundwater. Some of the contamination detected in site samples may be associated with contaminated dredge fill previously placed on Wacker's property. The dredge fill is thought to contain coal-tar wastes, which would tend to be high in PAHs. Although BTEX compounds detected in site samples may be associated with coal-tar wastes, the Olympic pipeline carries fuels such as gasoline, diesel, and jet fuel that tend to be high in BTEX compounds and low in PAHs. Consequently, BTEX compounds were selected for use as indicator compounds for this groundwater and soil gas investigation. It should be noted that there has been at least one spill from the pipeline near Wacker's treatment plant (see Figure 1) in the past.

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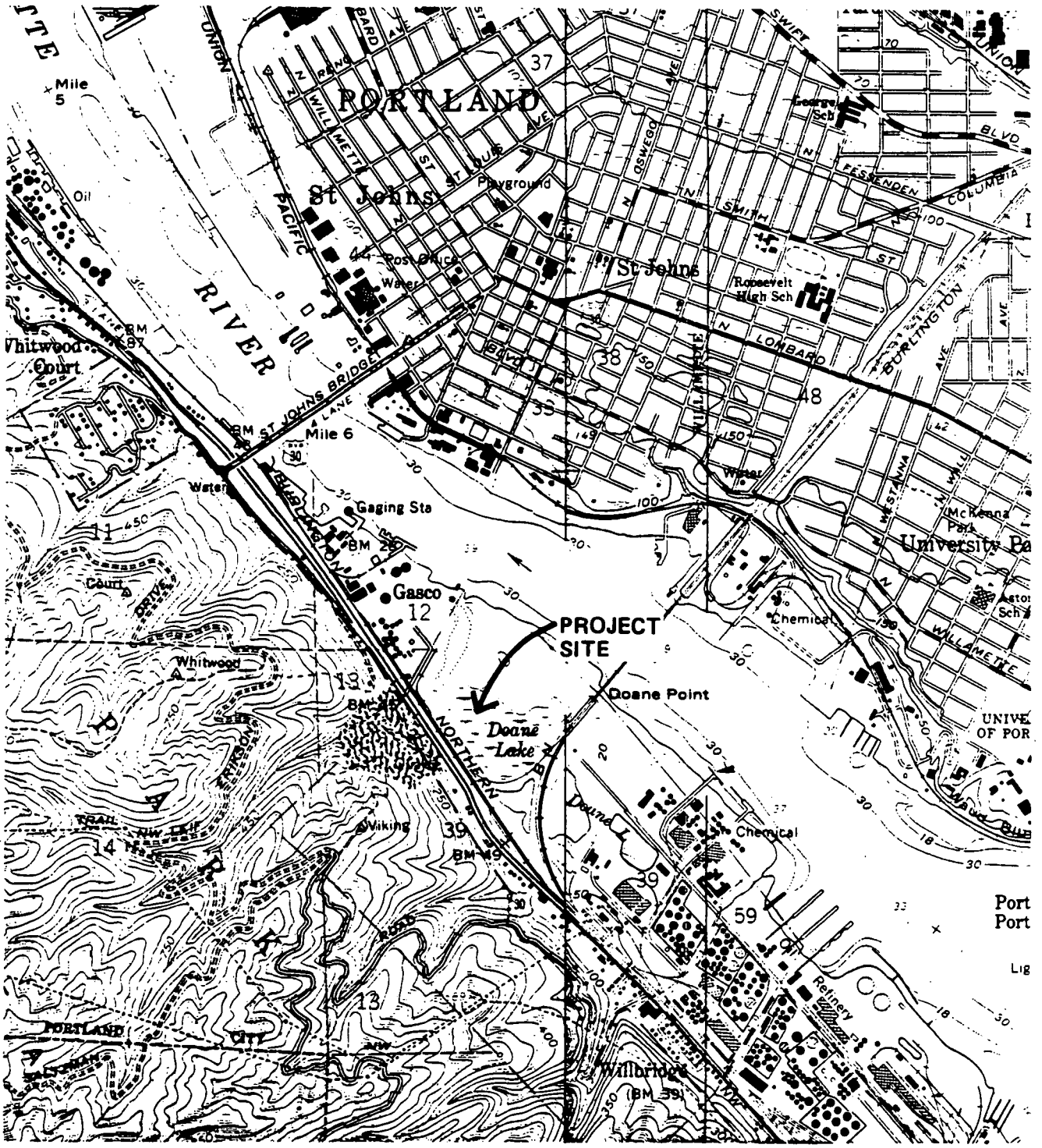

FIGURE 1
VICINITY MAP
Wacker Siltronic Corporation

As a result of these findings, a groundwater and soil gas investigation was undertaken by Wacker to explore the possibility that the Olympic pipeline is a source of hydrocarbon contamination found within the study area. This report presents a summary of the site soil and groundwater information, a description of the sampling location selection methodology, the analytical test results, and a discussion of the investigation findings.

SUBSURFACE CONDITIONS

GEOLOGY

The Wacker site is located on the northwest edge of the northwest-trending structural depression known as the Willamette Valley. The physiography of this part of the Willamette Valley is dominated by the northwest-trending Portland Hills and the flood plain of the Willamette River. The Wacker facility is situated between the base of the Portland Hills and the west bank of the Willamette River (Figure 1).

We understand that two generations of hydraulic fill have been placed on the site during the past 35 years. Fill was first placed 30 to 35 years ago and again sometime during the past 10 to 20 years. Beneath the imported hydraulic fill, the uppermost geologic unit at the site is unconsolidated alluvium deposited by the Willamette River. In the project area, the alluvium is composed of silt, sand, and combinations of these materials. Columbia River Basalt occurs at depths from approximately 85 feet to more than 200 feet beneath the site. Massive flows of Columbia River Basalt are exposed in the walls of the abandoned quarry located southwest of the site.

SOILS

The study area is located south of the Process Building along a 600-foot length of the utility corridor adjacent to the proposed Fab 2 Building site (Figure 2). The generalized soil stratigraphy in this area, described from the ground surface downward, is presented below. This information was obtained from soil boring logs for borings previously drilled at the site. The soil descriptions are generalized for correlation purposes.

Silt (Fill)

Grayish-brown fine sandy silt of soft consistency. The thickness of the silt layer ranges from about 5 to 12 feet near the study area.

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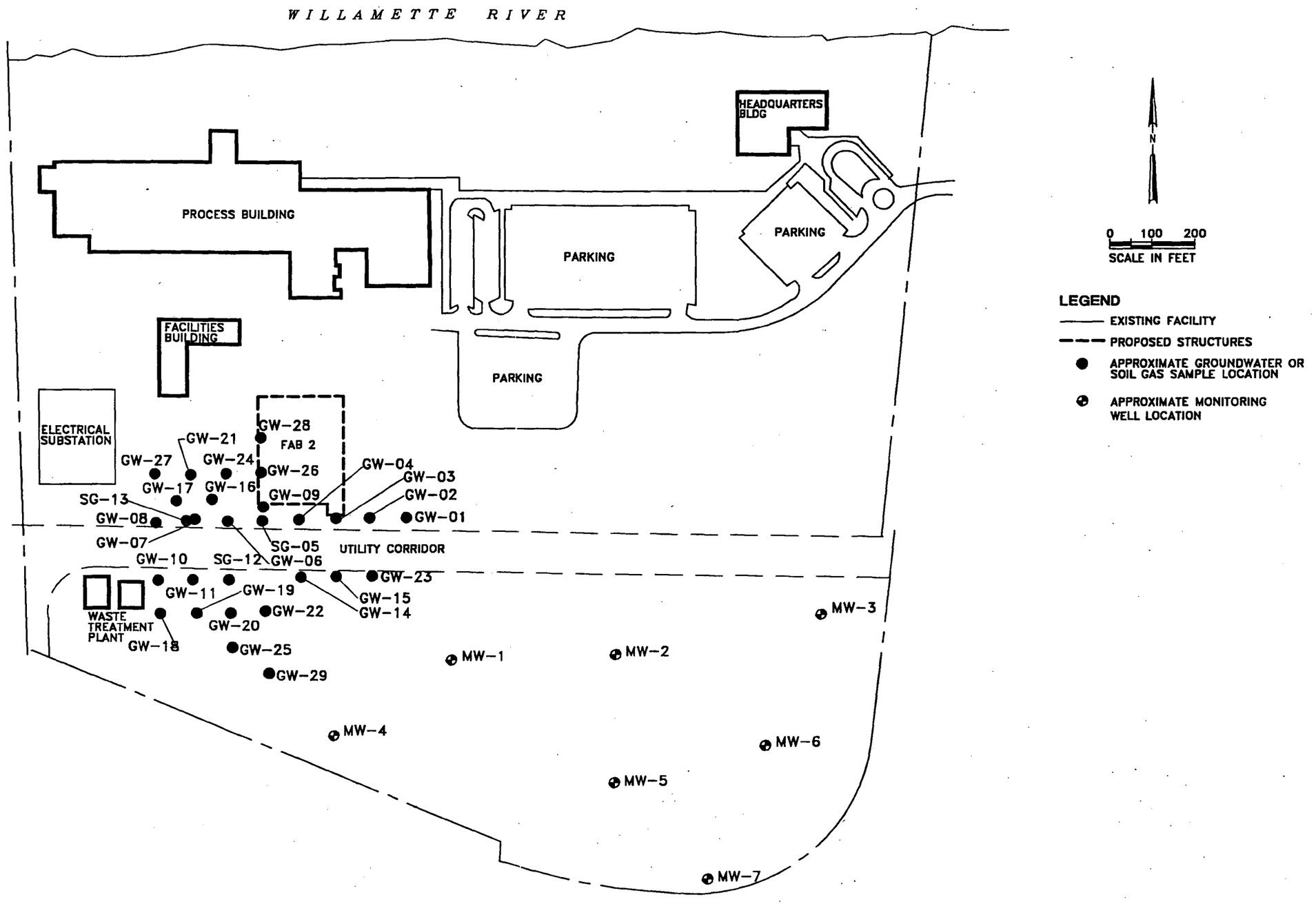

Figure 2
SITE PLAN
WACKER SILTRONIC CORPORATION
PORTLAND, OREGON

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Sand (Fill)

Brown fine to medium sand with traces of silt underlies the surface silt layer. The thickness of the sand layer ranges from about 10 to 25 feet near the study area.

Silt (Native)

Gray silt of soft to stiff consistency underlies the sand layer. The gray silt layer extends to the bottom of all soil borings drilled near the study area.

GROUNDWATER

Seven groundwater monitoring wells were previously installed southwest of the study area (Figure 2). All seven of the wells are located south of the utility corridor and screened within the sand layer and allow for monitoring of groundwater present in this shallow aquifer. Wacker has measured the depth to groundwater on a monthly basis at each of the seven wells since their construction. Only the last 5 years of data were available for CH2M HILL to review.

CH2M HILL constructed groundwater elevation contour maps for a number of the data sets; four of the contour maps are presented in Appendix A. These four contour maps were selected to show typical seasonal groundwater elevation trends. The monitoring well data indicate that the groundwater elevation within the sand layer historically has ranged from 15 to 20 feet above mean sea level. The groundwater elevation contour maps showing data between 1985 and 1990 indicate that flow directions in the area of the wells change seasonally from south-southeast in the winter toward the southeast-northeast in the summer months. Groundwater typically flows toward larger bodies of water; therefore, a northerly groundwater migration pattern is expected closer to the Willamette River. This information suggests that a groundwater divide is likely to be located between the monitoring wells and the Willamette River. Generally, the direction of groundwater flow north of the utility corridor appears to be toward a remnant of Doane Lake. North of the utility corridor, however, the direction of flow may be influenced by the Willamette River.

GROUNDWATER AND SOIL GAS SAMPLING INVESTIGATION

INVESTIGATIVE APPROACH

From October 10 to 16, 1990, a groundwater and soil gas investigation was conducted along a 600-foot length of the utility corridor adjacent to the proposed Fab 2 Building site (Figures 2 and 3). At Wacker's request, no sampling was conducted within the utility corridor itself. Also, because groundwater sample analytical test results are thought to provide better reliability than soil gas samples, this investigation sought to focus on the former technique. However, where groundwater samples could not be collected, a soil gas sample was collected to provide supplemental data.

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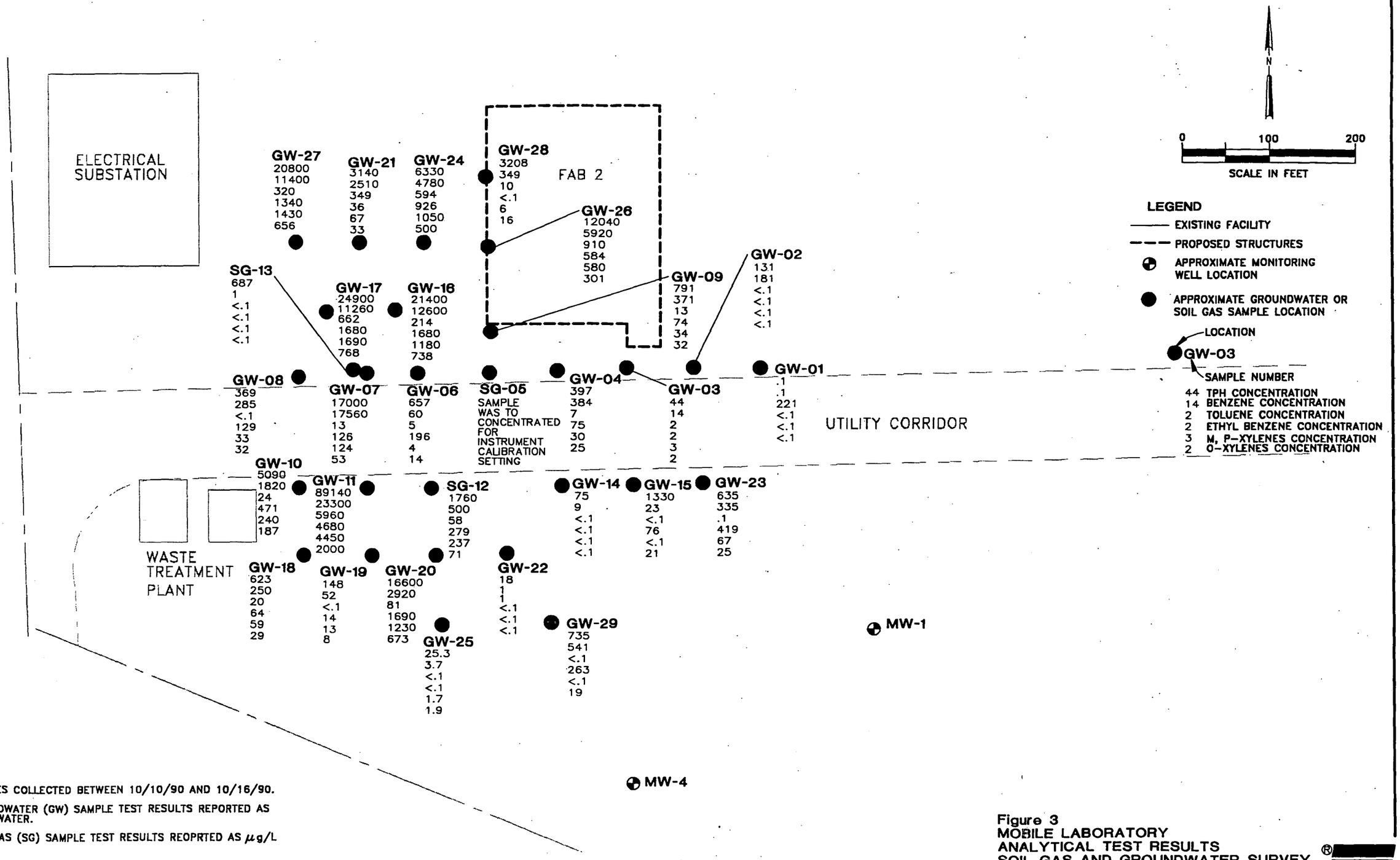

NOTES:
1. SAMPLES COLLECTED BETWEEN 10/10/90 AND 10/16/90.
2. GROUNDWATER (GW) SAMPLE TEST RESULTS REPORTED AS $\mu g/L$ WATER.
3. SOIL GAS (SG) SAMPLE TEST RESULTS REOPRTED AS $\mu g/L$ GAS.

Figure 3
MOBILE LABORATORY
ANALYTICAL TEST RESULTS
SOIL GAS AND GROUNDWATER SURVEY
WACKER SILTRONIC CORPORATION
PORTLAND, OREGON

CH2MHILL

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A CH2M HILL engineer was present in the field during the investigation to direct the sampling program and to review test data as they became available. Hydro Geo Chem, Inc. (HGC), was contracted to collect and analyze the samples in the field for this investigation.

In general, the investigation was conducted by collecting groundwater samples from just below the water table, located approximately 25 feet below ground surface. All samples were analyzed in the field for BTEX and total petroleum hydrocarbon (TPH) concentrations. Groundwater sampling procedures, equipment decontamination, analytical testing, quality control, and field safety procedures were all performed in accordance with CH2M HILL's October 1990 Work Plan. In addition, site restoration and waste management procedures were followed according to the Work Plan.

SAMPLING LOCATION SELECTION METHODOLOGY

The study area straddles the utility corridor, encompassing both its north and south sides. An initial sampling grid interval of 75 feet was used adjacent to both sides of the utility corridor. Based on initial field analytical test results, subsequent sample locations were modified to maximize data collection. When sample concentrations decreased in a consistent pattern away from a concentration high, the decision was made to discontinue further sampling in that area, thereby maximizing data collection. The study area was generally confined to within 250 feet on either side of the utility corridor. Figure 3 shows the actual soil gas and groundwater sampling locations and sample analytical test results obtained from the onsite laboratory.

As sampling proceeded east to west along the north side of the utility corridor, samples GW-1 through GW-8 were collected (Figure 3). The fifth sampling location proved problematic: a groundwater sample could not be retrieved because the bailer used for groundwater sampling became repeatedly stuck in the soil gas probe pipe. A soil gas sample was subsequently collected from this location. However, the test results for SG-5 provided limited information because the sample was too concentrated for the instrument calibration settings. Sample GW-09 was obtained at the southwest corner of the proposed Fab 2 Building site. This location was selected to augment the information obtained from the SG-5 location. In general, along the north side, the laboratory analyses indicated a trend of increasing TPH and benzene concentrations near the western portion of the study area. Sampling then continued on the south side of the corridor, where groundwater samples GW-10 and GW-11 were collected from the west end of the study area. As sampling proceeded eastward along this section of pipeline, groundwater retrieval became increasingly more difficult. A black, viscous oily substance encountered at the bottom of the soil gas probe impeded groundwater recovery altogether at location 12. However, a soil gas sample (SG-12) was successfully recovered at this location to supplement the data.

Because the TPH and benzene concentrations appeared to be elevated at location GW-07, the field team drove a sampling probe adjacent to location GW-07 in an attempt to collect a free product sample, if present, from the surface of the water table. The probe was driven to 25 feet and extracted 5 feet, thereby creating a void in the soil matrix into which

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groundwater could flow. The groundwater was allowed to recover overnight. The team returned to location 13 the following morning to find that the void below the probe rods had caved in. Again, a supplemental soil gas sample (SG-13) was collected at this site.

The sampling effort then returned to the south side of the corridor. The grid location 75 feet east of SG-12 was skipped in an attempt to avoid sampling in the black viscous substance found at location SG-12. Groundwater sample GW-14 was collected; it did not contain the black viscous substance that the samples collected farther west contained. After collecting GW-14, it appeared that BTEX concentrations decreased away from the western sampling locations. The decision was made to discontinue further investigation of this easternmost portion of the study area.

Intending to determine the BTEX distribution away from the corridor, the team crossed back to the north side of the pipeline to collect samples GW-16 and -17. Like sample GW-07, relatively elevated concentrations of BTEX were detected in these samples. The next step was to cross back over to the south side of location GW-11 to obtain further information. Samples GW-18, -19, and -20 were collected and, while they were being analyzed in the mobile laboratory, sample GW-21 was obtained from a location 75 feet north of locations GW-16 and GW-17. This sample (GW-21) was later determined to show a general decrease in BTEX concentration to the north of locations 16 and 17. Likewise, samples GW-18 and GW-19 were later determined to show a decreasing BTEX concentration pattern to the south of location GW-11, while sample GW-20 concentrations were relatively high.

In a similar manner, groundwater samples 21 through 29 were collected between October 14 and 16. The field team systematically collected and analyzed samples at locations around the peripheries of apparent high-concentration areas. A BTEX concentration distribution pattern developed as the sampling progressed (see Figures 4 and 5). The decision to terminate the sampling program was made when it became apparent that concentrations generally decreased away from the western section of the study area near the pipeline.

CONFIRMATORY SAMPLE COLLECTION

Three split groundwater samples were collected during the course of the investigation: one each from locations GW-4, -7, and -27. These samples were sent to the CH2M HILL laboratory in Redding, California, to confirm the results of the field analyses. Additionally, field duplicate and blank samples were collected and analyzed by Hydro Geo Chem in accordance with the Work Plan.

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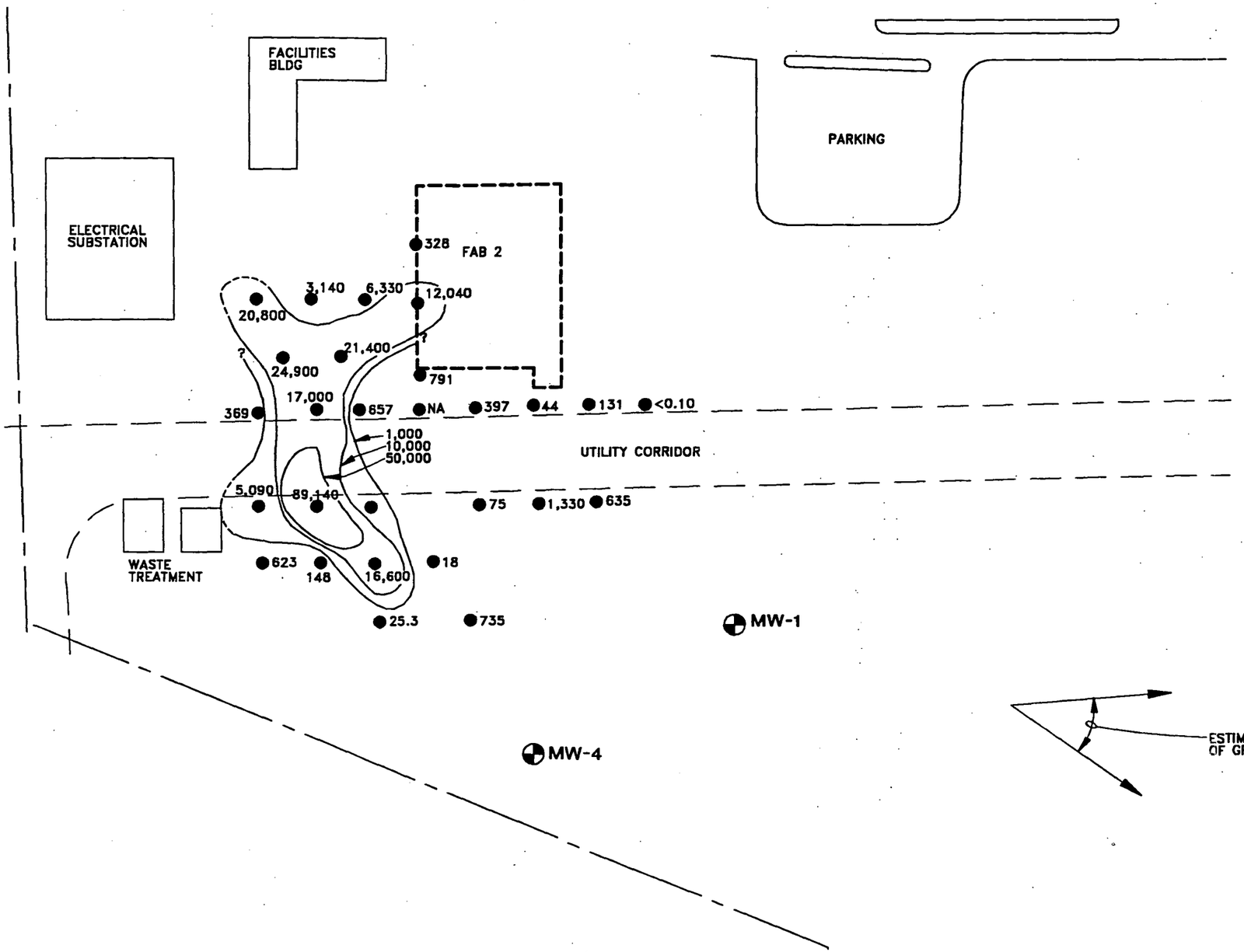

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SCALE IN FEET

LEGEND

- EXISTING FACILITY
- PROPOSED STRUCTURES
- SOIL GAS VALVE
- 44 APPROXIMATE GROUNDWATER OR SOIL GAS SAMPLE LOCATION TPH CONCENTRATION ($\mu g/L$)
- APPROXIMATE MONITORING WELL LOCATION

NOTES:
1. TPH VALUES SHOWN ARE $\mu g/L$ UNITS
2. SAMPLES COLLECTED BETWEEN 10/10/90 AND 10/16/90

Figure 4
ESTIMATED GROUNDWATER TPH CONCENTRATION CONTOURS
WACKER SILTRONIC CORPORATION
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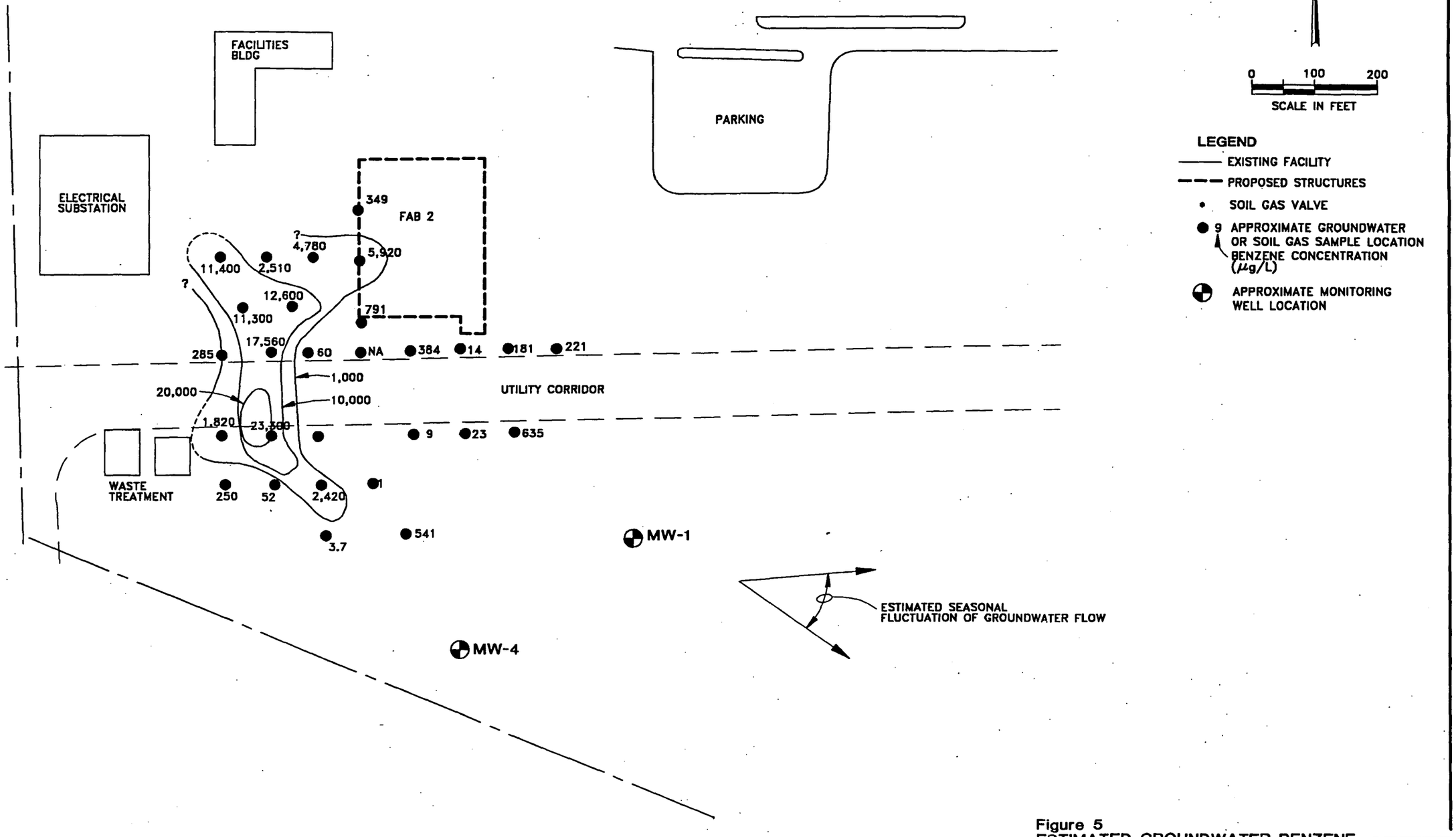

NOTES:
1. BENZENE VALUES SHOWN ARE µg/L UNITS
2. SAMPLES COLLECTED BETWEEN 10/10/90 AND 10/16/90

Figure 5
ESTIMATED GROUNDWATER BENZENE CONCENTRATION CONTOURS
WACKER SILTRONIC CORPORATION
PORTLAND, OREGON

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INVESTIGATION RESULTS

FIELD ANALYTICAL TEST RESULTS

Analytical results provided by Hydro Geo Chem's mobile laboratory unit are presented in Table 1 (see Appendix B for Hydro Geo Chem's report). The reported values for BTEX and TPH compounds are well above detection limits. In general, detected benzene concentrations ranged from 1 to 23,300 μg/L and TPH concentrations from 18 to 89,140 μg/L throughout the study area.

Concentration contour maps are presented in Figures 4 and 5 for TPH and benzene, respectively. The contours for toluene, ethylbenzene, and xylene generally follow the same trends shown in Figures 4 and 5. Both contour maps indicate a concentration high located around GW-11 and extending northward. Seasonal fluctuation in groundwater flow and a change in groundwater flow direction toward the Willamette River, north of the utility corridor, are possible explanations for the apparent BTEX migration toward the south.

QUALITY CONTROL ANALYSES

Hydro Geo Chem performed duplicate analyses in the field on 7 of the 29 samples collected. The test results for the duplicate analyses are reported in Table 1, along with the other mobile laboratory test results. As shown, the results of the duplicate analyses are fairly close in value, typically within one order of magnitude. The results also provide an indication of typical variations in test results for the analyses performed.

Analytical results for the three confirmatory samples are presented in Table 2. The CH2M HILL analytical data are shown in combination with the Hydro Geo Chem findings for comparison. Some variation between CH2M HILL laboratory and Hydro Geo Chem field findings is apparent. However, some variation of analytical data is expected when the field sampling methodology includes groundwater collection through driven soil-gas probes, as opposed to monitoring well purge and sample collection techniques. While the findings provide an indication of site conditions, they are limited to order-of-magnitude comparisons and, consequently, cannot be considered strictly quantitative values. It is CH2M HILL's opinion that the analytical findings from both laboratories fall within an acceptable range of variation (see Appendices C and D for the field sampling data sheets and CH2M HILL laboratory reports, respectively).

DISCUSSION OF FINDINGS

The data indicate elevated concentrations of BTEX and TPH surrounding locations GW-11 and GW-7 and appear to generally decrease in areas away from the detected concentration high. The concentrations of BTEX detected in the groundwater samples are typical of those associated with a gasoline spill or leak. Because the highest detected concentrations of BTEX and TPH are located adjacent to the utility corridor, this may be an indication

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Table 1
MOBILE LABORATORY ANALYTICAL TEST RESULTS
GROUNDWATER AND SOIL GAS SAMPLES

Sample Location Number	Sample Collection Date	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	M,P-Xylene (µg/L)	O-Xylene (µg/L)	TPH (µg/L)
GW-01	10/10/90	221.00	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
GW-02	10/10/90	181.00	< 0.10	< 0.10	< 0.10	< 0.10	131.00
GW-03	10/11/90	13.50	1.80	1.50	3.30	2.30	43.60
GW-04-A(a)	10/11/90	391.00	< 0.10	68.00	23.00	22.00	406.00
GW-04-B	10/11/90	384.00	7.10	75.00	30.00	25.00	397.00
SG-05 (b,c)	—	—	—	—	—	—	—
GW-06	10/11/90	59.80	4.60	196.00	4.10	13.80	657.00
GW-07	10/11/90	17,560.00	13.10	126.00	124.00	52.60	17,000.00
GW-08	10/11/90	285.00	< 0.10	129.00	33.10	32.30	369.00
GW-09	10/11/90	371.00	13.10	74.40	34.20	32.40	791.00
GW-10	10/12/90	1,820.00	23.90	471.00	240.00	187.00	5,090.00
GW-11-A	10/12/90	18,100.00	3,910.00	2,520.00	2,380.00	1,130.00	56,500.00
GW-11-B	10/12/90	23,300.00	5,960.00	4,680.00	4,450.00	2,000.00	89,140.00
GW-11-C	10/12/90	18,470.00	5,590.00	4,510.00	4,372.00	2,050.00	88,240.00

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Table 1
(Continued)

Sample Location Number	Sample Collection Date	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	M,P - Xylene (µg/L)	O - Xylene (µg/L)	TPH (µg/L)
SG-12(c)	10/12/90	500.00	58.20	279.00	237.00	70.80	1,760.00
SG-13(c)	10/13/90	1.28	< 0.01	< 0.01	< 0.01	< 0.01	687.00
GW-14	10/12/90	8.60	< 0.10	< 0.10	< 0.10	< 0.10	74.70
GW-15	10/12/90	23.20	< 0.10	75.90	< 0.10	21.30	1,330.00
GW-16	10/13/90	12,600.00	214.00	1,680.00	1,180.00	738.00	21,400.00
GW-17-A	10/13/90	11,300.00	662.00	1,680.00	1,690.00	768.00	24,900.00
GW-17-B	10/13/90	10,930.00	574.00	1,370.00	1,410.00	632.00	19,400.00
GW-18	10/13/90	250.00	20.40	64.20	58.50	28.80	623.00
GW-19	10/13/90	52.40	< 0.10	13.00	12.60	8.00	148.00
GW-20-A	10/13/90	2,920.00	80.60	1,690.00	1,230.00	673.00	16,600.00
GW-20-B	10/13/90	3,120.00	85.60	1,720.00	1,230.00	667.00	14,500.00
GW-21	10/13/90	2,510.00	349.00	37.60	66.60	33.00	3,140.00
GW-22-A	10/14/90	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	12.10
GW-22-B	10/14/90	1.00	0.70	< 0.10	< 0.10	< 0.10	18.10
GW-23	10/14/90	335.00	< 0.10	419.00	67.30	24.60	635.00
GW-24	10/14/90	4,780.00	594.00	926.00	1,050.00	500.00	6,330.00
GW-25-A	10/15/90	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	26.80
GW-25-B	10/15/90	3.70	< 0.10	< 0.10	1.70	1.90	25.30

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Table 1
(Continued)

Sample Location Number	Sample Collection Date	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	M,P - Xylene (µg/L)	O - Xylene (µg/L)	TPH (µg/L)
GW-26	10/15/90	5,920.00	910.00	584.00	580.00	301.00	12,040.00
GW-27-A	10/15/90	10,300.00	627.00	1,220.00	1,250.00	597.00	16,300.00
GW-27-B	10/15/90	11,400.00	320.00	1,340.00	1,430.00	656.00	20,800.00
GW-28	10/15/90	349.00	9.70	< 0.10	6.20	16.20	328.00
GW-29	10/16/90	541.00	< 0.10	263.00	< 0.10	19.40	735.00

(a) The letters "A," "B," and "C" following the sample location number indicate duplicate analysis.
(b) Sample was too concentrated for instrument calibration setting.
(c) Groundwater sample not collected at this location.

Notes:
GW = groundwater sample; SG = soil gas sample.
Detection Limits for groundwater = 0.10 µg/L; Soil gas detection limits = 0.01 µg/L.
< = Analyte not detected at concentration posted.

All groundwater samples collected at 25 feet below ground surface.
All samples analyzed by Hydro Geo Chem Mobile Lab, using modified EPA Method 8015.

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TABLE 2
QUALITY CONTROL ANALYTICAL TEST RESULTS

Sample Location Number	Analytical Laboratory	Sample Collection Date	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	M,P - Xylene (µg/L)	O - Xylene (µg/L)	Total Xylenes (µg/L)	TPH (µg/L)	TFH(b) GAS (µg/L)
GW-04-A(a)	HYDRO GEO CHEM	10/11/90	391.00	< 0.10	68.00	23.00	22.00	45.00	406.00 (a)	
GW-04-B		10/11/90	384.00	7.10	75.00	30.00	25.00	55.00	397.00	
GW-04	CH2M HILL	10/11/90	280.00	9.80	80.00	N/A	N/A	70.00		1,300.00
GW-07	HYDRO GEO CHEM	10/11/90	17,560.00	13.10	126.00	124.00	52.60	176.60	17,000.00	
GW-07	CH2M HILL	10/11/90	8,400.00	100.00	770.00	N/A	N/A	540.00		19,000.00
GW-27-A	HYDRO GEO CHEM	10/15/90	10,300.00	627.00	1,220.00	1,250.00	597.00	1,847.00	16,300.00	
GW-27-B		10/15/90	11,400.00	320.00	1,340.00	1,430.00	656.00	2,086.00	20,800.00	
GW-27 **	CH2M HILL	10/15/90	18,000.00	280.00	1,070.00	N/A	N/A	490.00		40,000.00

(a)The letter "A" following the sample location number indicates field sample; "B" indicates a duplicate sample.
(b)CH2M HILL analyzed for TFH Gas and was recorded in mg/L units. This unit was converted to ug/L for comparison purposes (where 1.0 mg/L = .001 µg/L).

Notes:
** Due to the concentration of target compounds, GW-27 was diluted at 1:50 and then again at 1:100. Reporting limits have been adjusted accordingly.
< = analyte not detected at concentration posted.

All groundwater samples collected at 25 feet below ground surface.
CH2M HILL Lab samples analyzed using EPA Method 8015/8020. Hydro Geo Chem Mobile Lab samples analyzed using MODIFIED EPA Method 8015.

Detection Limits for Hydro Geo Chem groundwater samples = 0.10 µg/L.
N/A = Lab did NOT ANALYZE for this compound.

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that the source of BTEX contamination is located in that area. No free product was found (only slight sheens were observed in some of the samples) to conduct fingerprint analyses with the gas chromatographs to determine whether the source of BTEX is a gasoline leak from the pipeline. It is possible that if free product were present, it could be solubilizing the black, viscous substance (thought to be coal-tar-derived wastes) found at and near the GW-10, -11, and -12 sampling locations. This might change the character of both the coal tar and free gasoline if present. The results of the investigation may indicate the approximate location of the contamination source. However, the specific origin of the BTEX was not conclusively determined from the chemical concentrations or chromatograms. BTEX compounds are commonly used as indicator constituents to detect the presence of gasoline in soil and groundwater. Automotive gasolines contain more than 100 identifiable compounds and are variable in their contents. However, BTEX compounds are four major components of gasoline, as shown in Table 3. It should be noted that BTEX can be present in other chemical and petroleum products in addition to gasoline.

LIMITATIONS

This report has been prepared for the exclusive use of Wacker Siltronic Corporation for specific application to the Olympic Pipeline Soil Gas and Groundwater Sampling Survey in accordance with generally accepted engineering practice. No other warranty, express or implied, is made.

The analyses and recommendations contained in this report are based on the data obtained from groundwater and soil gas samples. The data indicate subsurface conditions only at specific locations and times, and only to the depths penetrated. They do not necessarily reflect strata variations that may exist among such locations.

CH2M HILL is not responsible for any claims, damages, or liability associated with interpretation of subsurface data or reuse of the subsurface data or engineering analyses without the express written authorization of CH2M HILL.

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Table 3
TYPICAL BTEX CONCENTRATIONS IN GASOLINE (a)

Component	Regular Gasoline (Six Samples) (μg/L)	Unleaded Gasoline (Three Samples) (μg/L)
Benzene	4,700,000 - 36,000,000	2,000,000 - 32,000,000
Toluene	34,000,000 - 100,000,000	44,000,000 - 120,000,000
Ethyl-Benzene	15,000,000 - 31,000,000	18,000,000 - 47,000,000
Xylene	54,000,000 - 110,000,000	74,000,000 - 160,000,000

(a) Source: Patton, R. H., and T. Stevens. March 1984. Petroleum Fuels Characterization, Summary of Current Data. Internal Report, Florida Department of Environmental Regulations.

Note: Patton and Stevens reported the values in percent by weight units. These units have been converted to μg/L for comparison purposes.

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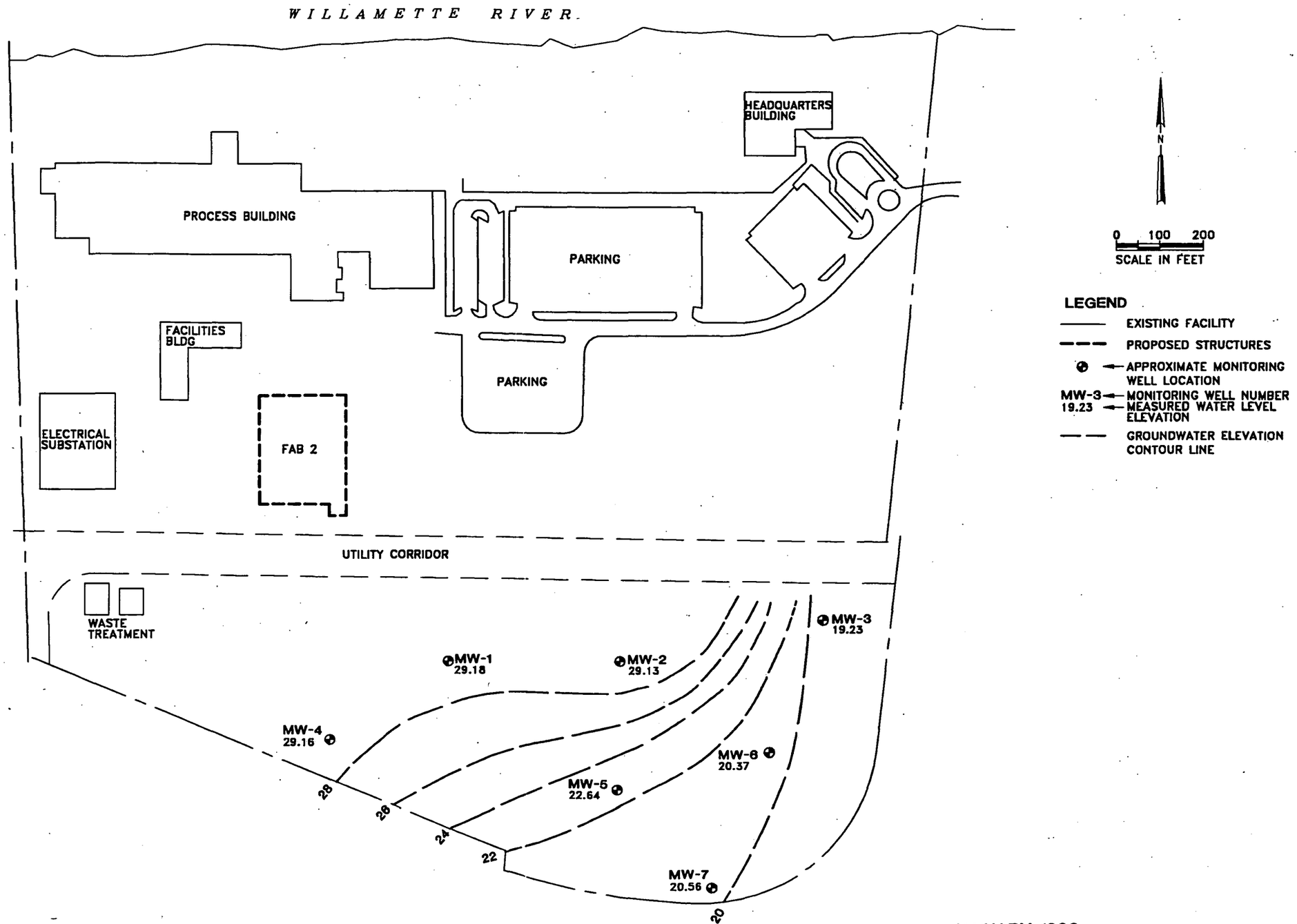
12-17-90

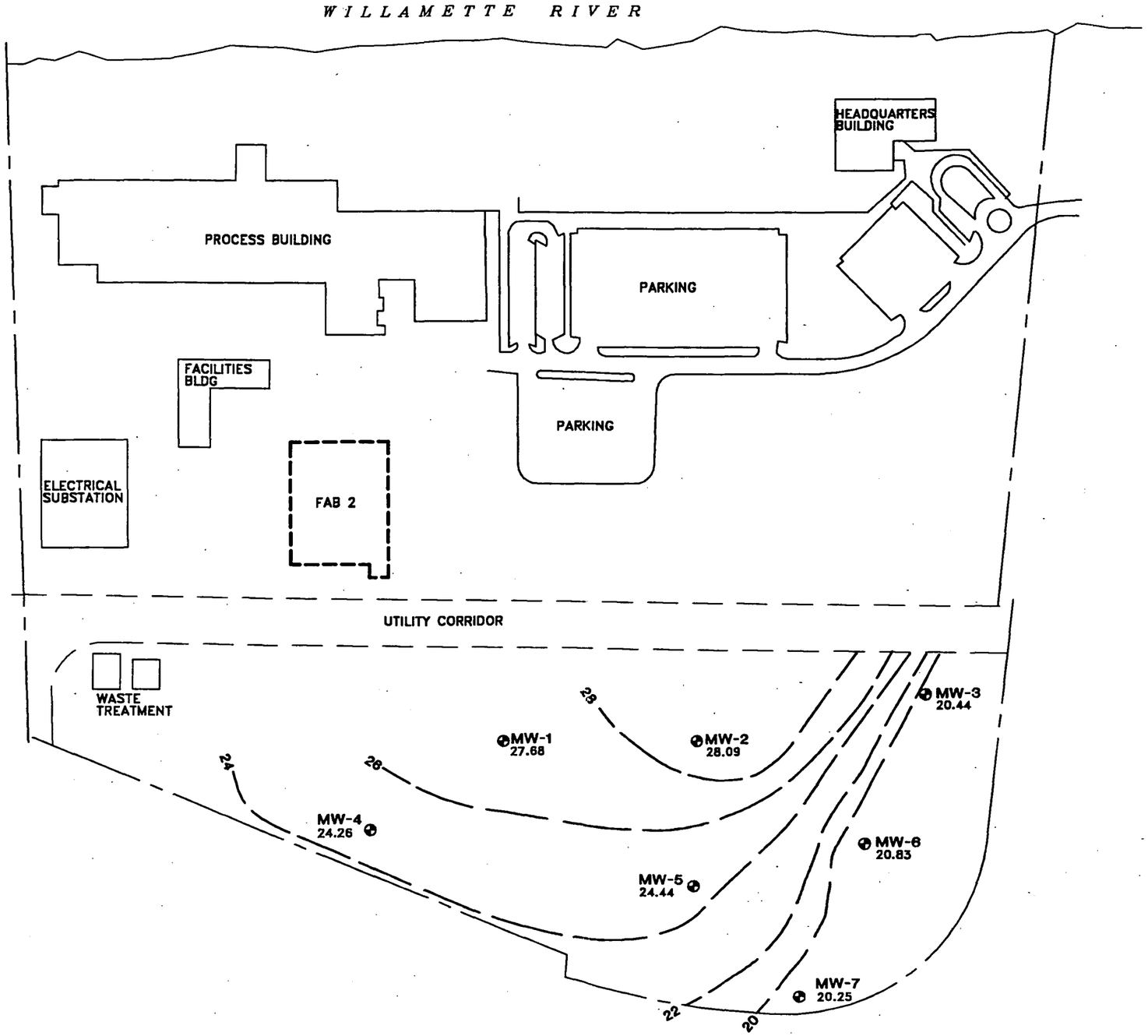


JANUARY 1988
GROUNDWATER ELEVATION CONTOURS ®
WACKER SILTRONIC CORPORATION
PORTLAND, OREGON

CH2MHILL

D:\30452\30452G5.DWG

12-17-90



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SCALE IN FEET

LEGEND

- EXISTING FACILITY
- PROPOSED STRUCTURES
- APPROXIMATE MONITORING WELL LOCATION
- MW-3 — MONITORING WELL NUMBER
- 20.44 — MEASURED WATER LEVEL ELEVATION
- GROUNDWATER ELEVATION CONTOUR LINE

MARCH 1988
GROUNDWATER ELEVATION CONTOURS
WACKER SILTRONIC CORPORATION
PORTLAND, OREGON

CH2MHILL

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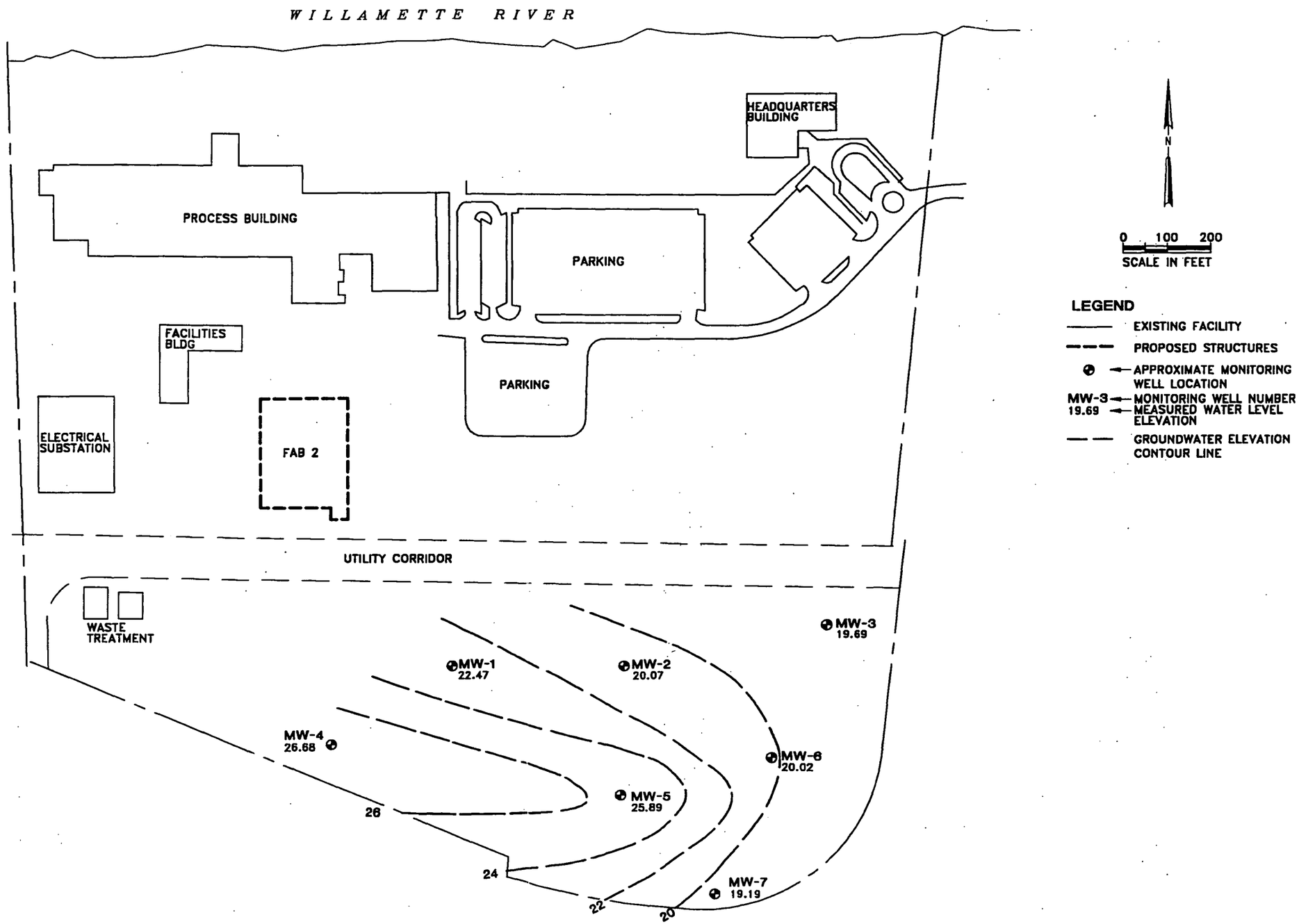
12-17-90



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SCALE IN FEET

LEGEND

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- PROPOSED STRUCTURES
- APPROXIMATE MONITORING WELL LOCATION
- MW-3 — MONITORING WELL NUMBER
- 19.69 — MEASURED WATER LEVEL ELEVATION
- GROUNDWATER ELEVATION CONTOUR LINE

JULY 1988
GROUNDWATER ELEVATION CONTOURS
WACKER SILTRONIC CORPORATION
PORTLAND, OREGON

CH2MHILL

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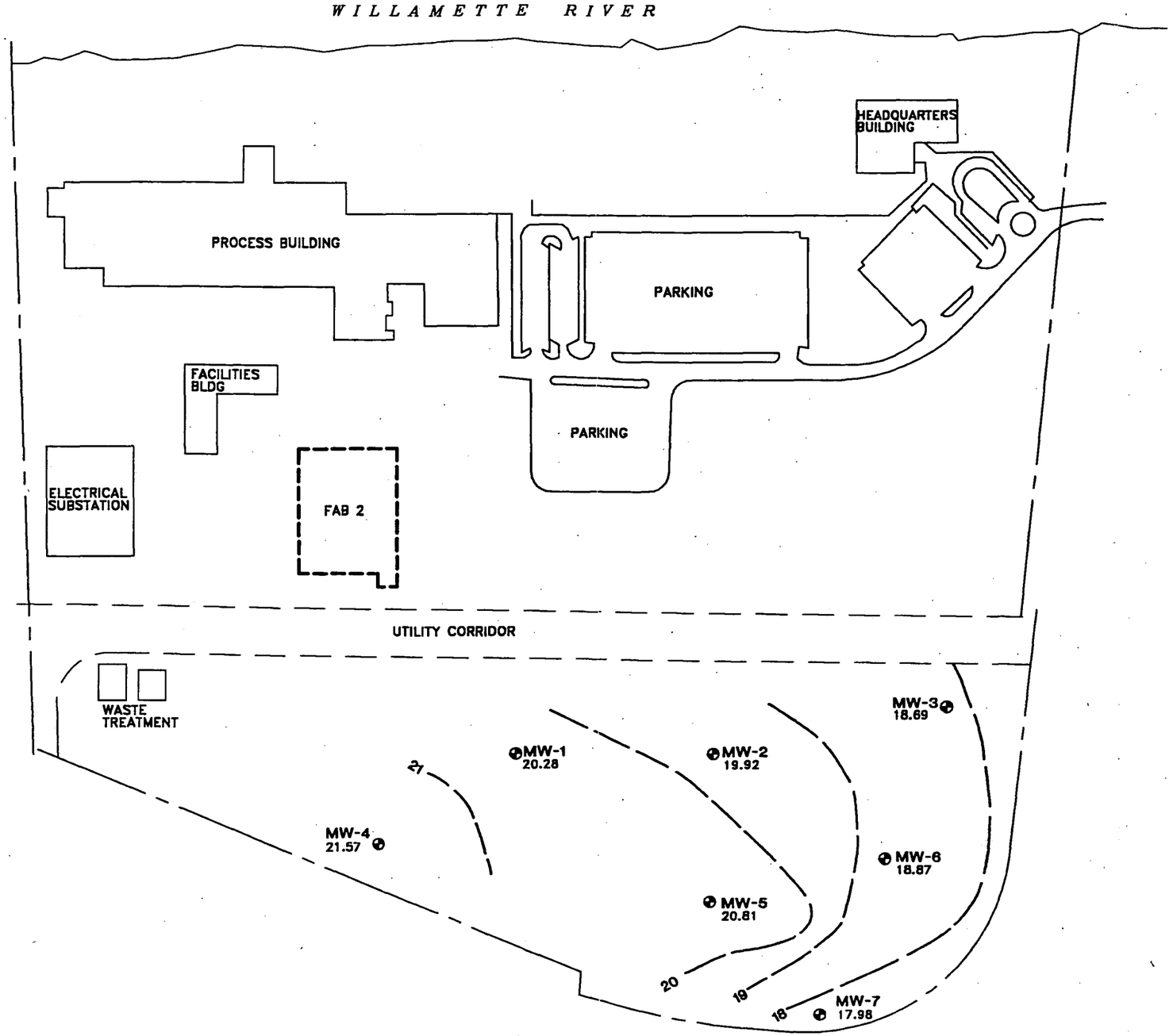
12-17-90



N

0 100 200
SCALE IN FEET

LEGEND

- EXISTING FACILITY
- PROPOSED STRUCTURES
- APPROXIMATE MONITORING WELL LOCATION
- MW-3 ← MONITORING WELL NUMBER
- 18.69 ← MEASURED WATER LEVEL ELEVATION
- GROUNDWATER ELEVATION CONTOUR LINE

OCTOBER 1986
GROUNDWATER ELEVATION CONTOURS
WACKER SILTRONIC CORPORATION
PORTLAND, OREGON

CH2M HILL

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APPENDIX B

SHALLOW GROUNDWATER AND SOIL GAS SURVEY OF THE WACKER FACILITY PORTLAND, OREGON

Submitted to

CH2M Hill
2020 SW 4th Avenue, 2nd Floor
Portland, Oregon 97201

Final Report

Submitted by

Hydro Geo Chem, Inc.
1430 North Sixth Avenue
Tucson, Arizona 85705

October 24, 1990

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SHALLOW GROUNDWATER AND SOIL GAS SURVEY OF THE WACKER FACILITY PORTLAND, OREGON

INTRODUCTION

This report presents the methods and results of a shallow groundwater and soil gas investigation for volatile organic compounds performed October 10-16, 1990 at the Wacker facility in Portland, Oregon. The investigation was conducted by Hydro Geo Chem, Inc. under contract to CH2M Hill. The investigation was designed to evaluate the near surface distribution of total petroleum hydrocarbons and selected aromatic hydrocarbons on the site.

BACKGROUND & THEORY

Soil gas surveys consist of the sampling and analysis of the soil gases that reside in the pore space of the unsaturated zone above the water table. Because many common organic compounds and industrial solvents exhibit significant vapor pressures and are relatively insoluble in water, their introduction into subsurface soils results in vapor phase permeation and transport. Should these chemicals reach the water table and travel with the groundwater, vapors will continue to emanate from the contaminated groundwater into overlying soil. Thus organic contamination of the subsurface or groundwater can be detected by measuring the concentration of volatile organics in the soil gas.

The concentration of a volatile organic compound (VOC) in soil gas is a complex function of the distribution of the organic compound and its interaction with the soil. This interaction depends on a number of soil parameters including

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soil particle size and mineralogy, the soil's natural and anthropogenic organic content, soil moisture, temperature, lithology, and heterogeneity.

Whatever the source of the VOC in soil gas, its concentration is representative of soils contamination at the point of measurement. Volatile organic contaminants are present in the gas phase in unsaturated pore spaces, in the water contained in the unsaturated soils, and sorbed on the soil particles. The total soils concentration is the sum of the VOC's contained in the three phases. The partitioning of the VOC between gas, liquid and solid phases is dependent on both the soil properties and the chemical properties of the organic compound. Thus, given the chemical properties of the VOC and measurements or reasonable estimates of relevant soil parameters, soil-gas data can be used to provide semi-quantitative estimates of soil contamination.

Since equilibrium between phases is generally rapid compared to the rate of gaseous diffusion, soil gas concentrations can be used to estimate the total soil concentration. The major uncertainties in estimating soil concentration directly from soil gas concentrations are the organic and moisture content of the soils. Chemical properties of particular organic compounds are well known, (i.e., vapor pressure, solubility), and the other relevant soil parameters (i.e., bulk density, porosity) have relatively little effect on soil concentration estimates. The following equation relates soil gas concentrations to total soil concentrations.

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$$\frac{C_g}{C_T} = \left[\frac{K_D \rho_b}{H_D} + \frac{\theta_w}{H_D} + (\theta_T - \theta_w)\right]^{-1}$$

Where C_g is the concentration in the gas [M/V air]

C_T is the concentration in the soil [M/V bulk volume soil]

K_D is the water-solid distribution coefficient [M/M solid/M/V water]

ρ_b is the bulk soil density [M/V solid]

H_D is the gas-water distribution coefficient [M/V air/M/V water]

θ_w is the water filled porosity

θ_T is the total porosity

The gas-water distribution coefficient (dimensionless Henry's law constant) is

$$H_D = C_g/C_w = H/RT \simeq \rho_g/S$$

where ρ_g is the saturated vapor density [M/V]

and S is the solubility [M/V].

H is the Henry's coefficient

R is the gas constant

T is the temperature in degrees Kelvin

The water-solid distribution coefficient is approximately

$$K_D = \frac{C_s}{C_w} \simeq \frac{K_{oc} \cdot \%OC}{100}$$

where C_s is the concentration in the solid (mg/gm)

C_w is the concentration in the water (mg/ml)

K_{OC} is the water-organic carbon distribution coefficient

%OC is the percent organic carbon in the soil

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Use of soil gas to infer concentrations of sources at distance (such as groundwater plumes) is necessarily much more qualitative. Soil gas data used in this manner is limited by the lack of information regarding the soil parameters interposed between the source and sampling point. It is therefore generally not possible to make quantitative estimates of groundwater concentrations from soil gas samples collected at distance from the saturated interface. Away from source areas (ie. underground storage tanks, surface spills etc.) where only the groundwater is providing a significant soil gas concentration, soil gas is often an excellent relative indicator of groundwater contamination. The effectiveness of soil gas surveys to delineate groundwater contamination, is, however, dependent on the depth to groundwater, contaminant concentration in the groundwater, and distribution of air permeabilities in the unsaturated zone.

SCOPE OF WORK

Groundwater samples were collected from 26 locations on the investigation site. In addition, three soil gas samples were also collected and analyzed on-site. Sampling locations were determined by a CH2M Hill on-site representative.

The volatile organic compounds that were analyzed at each of the sampling locations included the suite of aromatic compounds known as BTEX:

Benzene

Ethylbenzene

Toluene

Meta + Para Xylenes

Ortho Xylene

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and

Total hydrocarbons

These organic compounds were chosen for analysis because they are constituents of petroleum products.

METHODS AND INSTRUMENTATION

Sampling probes consisted of 1 3/8" OD, EW drill rod tipped by a loosely held hardened-steel disposable point. A probe was driven into the ground at each sampling location to a depth of 25 feet below land surface using a flatbed truck-mounted hydraulically-actuated drive point rig. The probe was then pulled up 6 inches to expose the sampling interval. Water samples were collected by dropping a stainless steel bailer down the pipe and filling a pre-weighed 40 ml. VOC vial liquid full with the captured sample. Soil gas samples were collected by attaching a regulated vacuum pump to the probe via a stainless steel adaptor. Three to five times the dead volume of the sampling train was purged to ensure that a representative soil gas sample would be collected. The samples were collected by withdrawing the soil gas from the probe using a Hydro Geo Chem designed, computerized mass-flow controller to regulate flow and measure volume sampled. The volatile organics were trapped and concentrated in a glass cartridge contained in a stainless steel housing. The concentrating cartridge was packed with three activated carbons, Carbotrap, Carbopak-B, and Carbosieve S-III, selected to quantitatively trap organics with widely different volatilities. After sampling, the cartridges were brought to the on-site mobile laboratory for analysis.

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Water samples were prepared for analysis by cooling the sample vial and transferring half the contents to another VOC vial. The sample volume was determined by weight. Using a purge and trap apparatus, helium was passed at 100 ml/min for 15 minutes through a needle inserted to the base of the VOC vial. The gas stream exiting from the VOC vial through another needle inserted above the water surface, purged the volatile components from the water and carried them to a carbon-packed glass trap.

Gas chromatographic techniques were used to identify and measure concentrations of the various compounds. The soil gas cartridges and cartridges used to trap the purge constituents from the water samples were desorbed at a temperature of 380 °C using a thermal desorption unit. Samples were injected by the desorber into a gas chromatograph equipped with a megabore capillary column and a photoionization detector (PID). A split from the thermal desorber was sent to a flame ionization detector (FID) for analysis of total hydrocarbons (including non-priority pollutant volatile organic compounds). Total hydrocarbons were calibrated to the sum of the calibrated aromatic hydrocarbons. Actual total hydrocarbon measurements are therefore dependent on the relative distribution of hydrocarbon compounds and their associated FID response. Total hydrocarbons for water are calibrated in the same manner, however measured concentrations are only representative of purgeable total hydrocarbons.

The make and model of the equipment used to perform these on-site analyses included:

Envirochem 850 Thermal Tube Desorber

Varian 3400 Gas Chromatograph

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Tracor 703 PID Detector

Varian Flame Ionization (FID) Detector

DB 624 30m Megabore column, J.W. Scientific

Spectra Physics 4400 Chrom Jet Integrator

QUALITY ASSURANCE/QUALITY CONTROL

Quality control and quality assurance were achieved through strict experimental protocol. Chain of custody procedures were observed. All parts of the collection system that come in contact with a sample were cleaned before each use. A systems blank and three calibration runs were performed at the beginning of each day and additional calibrations after every 10 samples.

Standards were prepared from stock mixtures of neat reagent grade compounds. The stock analyte mixture was prepared by weighing each compound addition to the mixture and weighing an aliquot volume of the final mixture to establish density (weight/volume). For preparation of daily soil gas standards, a measured volume of the standard mixture was injected into a nitrogen-filled 1-liter glass gas bottle through a septum side port. A measured volume of the resulting gas mixture was then injected into a 200-ml/min helium stream feeding a glass, carbon-packed concentrating cartridge. After two minutes the cartridge was transferred to the thermal desorber and analyzed exactly as the soil-gas samples.

For preparation of daily standards used for water analysis a measured volume of the standard mixture was injected into 10 ml of purge and trap grade methanol. An aliquot of the resulting methanol solution was then injected into

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20 ml of distilled water and purged and analyzed in the same manner as the actual water samples.

Prior to each day's sampling, atmospheric field blanks of the entire sampling apparatus were taken and analyzed to check background contamination in the sampling system and cartridges. In addition, serial duplicates were taken from 10% of the sample locations as a measure of reproducibility.

Detection limits were 0.01 micrograms or less per liter of soil gas and 0.10 micrograms per liter water for all compounds analyzed.

RESULTS

Table 1 presents the measured contaminant concentrations from each sampling location. Concentrations are reported in micrograms per liter (µg/l). Conversion of soil gas concentrations from µg/l (gas) to ppmV can be achieved by the following equation.

$$C_{ppmV} = C_{\mu g/l} \times RT/M_wP$$

where C_{ppmv} = soil gas concentration in ppmV

$C_{\mu g/l}$ = soil gas concentration in µg/l (gas)

R = 0.08205 L-Atm/deg-mole

T = °K

M_w = molecular wgt in grams

P = pressure in atmospheres

For most compounds C_{ppmV} is approximately 0.25 $C_{\mu g/l}$.

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TABLE 1
PRELIMINARY ANALYTICAL RESULTS
WACKER FACILITY, PORTLAND
CH2M-HILL
(UNITS OF CONCENTRATION, uG/L)

SAMPLE	COMMENT	BENZENE	TOLUENE	ETHYL BENZENE	M,P-XYLENE	O-XYLENE	TPH
EQUIPBLK	BAILER	<0.10	<0.10	<0.10	<0.10	<0.10	8.74
EQUIPBLK	BAILER	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
EQUIPBLK	BAILER	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
EQUIPBLK	BAILER	<0.10	<0.10	<0.10	<0.10	<0.10	7.30
EQUIPBLK	BAILER	<0.10	<0.10	<0.10	<0.10	<0.10	7.90
EQUIPBLK	BAILER	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
FB11OCT1	SOILGAS	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
FB12OCT1	SOILGAS	<0.01	<0.01	<0.01	<0.01	<0.01	0.60
FB13OCT1	SOILGAS	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
FB14OCT1	SOILGAS	<0.01	<0.01	<0.01	<0.01	<0.01	0.20
FB15OCT1	SOILGAS	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
GW01		221.00	<0.10	<0.10	<0.10	<0.10	<0.10
GW02		181.00	<0.10	<0.10	<0.10	<0.10	131.00
GW03		13.50	1.80	1.50	3.30	2.30	43.60
GW04-A	GASOLINE	391.00	<0.10	68.00	23.00	22.00	406.00
GW04-B		384.00	7.10	75.00	30.00	25.00	397.00
GW06	GAS/DIES	59.80	4.60	196.00	4.10	13.80	657.00
GW07		17560.00	13.10	126.00	124.00	52.60	17000.00
GW08	DIESEL	285.00	<0.10	129.00	33.10	32.30	369.00
GW09	GASOLINE	371.00	13.10	74.40	34.20	32.40	791.00
GW10	DIESEL	1820.00	23.90	471.00	240.00	187.00	5090.00
GW11-A	GAS/DIES	18100.00	3910.00	2520.00	2380.00	1130.00	56500.00
GW11-B		23300.00	5960.00	4680.00	4450.00	2000.00	89140.00
GW11-C		18470.00	5590.00	4510.00	4372.00	2050.00	88240.00
SG12	GASOLINE	500.00	58.20	279.00	237.00	70.80	1760.00
SG13	SOILGAS	1.28	<0.01	<0.01	<0.01	<0.01	687.00
SG14		8.60	<0.10	<0.10	<0.10	<0.10	74.70
GW15		23.20	<0.10	75.90	<0.10	21.30	1330.00
GW16	DIESEL	12600.00	214.00	1680.00	1180.00	738.00	21400.00
GW17-A	DIESEL	11300.00	662.00	1680.00	1690.00	768.00	24900.00
GW17-B		10930.00	574.00	1370.00	1410.00	632.00	19400.00
GW18	GASOLINE	250.00	20.40	64.20	58.50	28.80	623.00
GW19	GASOLINE	52.40	<0.10	13.00	12.60	8.00	148.00
GW20-A	DIESEL	2920.00	80.60	1690.00	1230.00	673.00	16600.00
GW20-B		3120.00	85.60	1720.00	1230.00	667.00	14500.00
GW21		2510.00	349.00	37.60	66.60	33.00	3140.00

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TABLE 1 (continued)
PRELIMINARY ANALYTICAL RESULTS
WACKER FACILITY, PORTLAND
CH2M-HILL
(UNITS OF CONCENTRATION, uG/L)

SAMPLE	COMMENT	BENZENE	TOLUENE	ETHYL BENZENE	M,P-XYLENE	O-XYLENE	TPH
GW22-A		<0.10	<0.10	<0.10	<0.10	<0.10	12.10
GW22-B		1.00	0.70	<0.10	<0.10	<0.10	18.10
GW23		335.00	<0.10	419.00	67.30	24.60	635.00
GW24	DIESEL	4780.00	594.00	926.00	1050.00	500.00	6330.00
GW25-A	DIESEL	<0.10	<0.10	<0.10	<0.10	<0.10	26.80
GW25-B		3.70	<0.10	<0.10	1.70	1.90	25.30
GW26	DIESEL	5920.00	910.00	584.00	580.00	301.00	12040.00
GW27-A	DIESEL	10300.00	627.00	1220.00	1250.00	597.00	16300.00
GW27-B		11400.00	320.00	1340.00	1430.00	656.00	20800.00
GW28		349.00	9.70	<0.10	6.20	16.20	328.00
GW29		541.00	<0.10	263.00	<0.10	19.40	735.00

FB = FIELD BLANK
A,B = DUPLICATE ANALYSIS

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APPENDIX C

HYDRO GEO CHEM, INC.

Sample # FB110CT01 Date/Time 8:45/10-11-90 Data Base File CH2M.1
Location Description Wacker Silicon
Sampler's Signature [signature] Soil ____ Water ____ Soil Gas ____
Weather Cloudy Air Temp.(°F) 48° Soil Temp.(°F) ____
Wind Direction & Speed Still Surface Conditions ____
Cartridge # A= B= Sample Size (ml) A= B=
Adapter # ____ Probe Depth ____ Probe Volume (ml) 900
Purge Rate Full Purge Time 3 Minutes Purge Vacuum 20 "Hg
Sample Flow Rate 200 ml/min Sample Vacuum ("Hg) A= 10" B= ____
Notes high vacuum readings
Lab Receipt: Signature [signature] Date/Time 0900 10/11/90

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	<.10		
Benzene	<.10		
Toluene	<.10		
Ethyl Benzene	<.10		
M,P-Xylenes	<.10		
O-Xylene	<.10		

HYDRO GEO CHEM, INC.

Sample # Equipment Blank Date/Time 0900 10/11/96 Data Base File CH2M.1

Location Description _____

Sampler's Signature Scott J. Wightman Soil ____ Water (Bailer) Soil Gas ____

Weather _____ Air Temp.(°F) _____ Soil Temp.(°F) _____

Wind Direction & Speed _____ Surface Conditions _____

Cartridge # A= B= Sample Size (ml) A= B=

Adapter # _____ Probe Depth _____ Probe Volume (ml) _____

Purge Rate _____ Purge Time _____ Minutes Purge Vacuum _____ "Hg

Sample Flow Rate _____ ml/min Sample Vacuum ("Hg) A= B=

Notes _____

Lab Receipt: Signature Scott J. Wightman Date/Time 0900 10/11/96

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	<.10		
Benzene	<.10		
Toluene	<.10		
Ethyl Benzene	<.10		
M,P-Xylenes	<.10		
O-Xylene	<.10		

HYDRO GEO CHEM, INC.

Sample #GW-01 Date/Time 10-10-90/1545 Data Base File CH2M.1

Location Description Wacker, S.E. Corner of fenced area

Sampler's Signature [signature] Soil ___ Water X Soil Gas ___

Weather Partly Cloudy Air Temp.(°F) 70° Soil Temp.(°F) ___

Wind Direction & Speed SW 11 Surface Conditions Gravel fill

Cartridge # A= B= Sample Size (ml) A= 40 B= 40

Adapter # ___ Probe Depth 25' Probe Volume (ml) ___

Purge Rate ___ Purge Time ___ Minutes Purge Vacuum ___ "Hg

Sample Flow Rate ___ ml/min Sample Vacuum ("Hg) A= B=

Notes ___

Lab Receipt: Signature Scott S. Wightman Date/Time 1550 10/10/90

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	<.10		
Benzene	<.10		
Toluene	221		
Ethyl Benzene	<.10		
M,P-Xylenes	<.10		
O-Xylene	<.10		

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HYDRO GEO CHEM, INC.

Sample # GW-02 Date/Time 10-10-90 / 16:45 Data Base File CH2M.1
Location Description along Southern fence approx 75' from eastern fence
Sampler's Signature [signature] Soil ____ Water X Soil Gas ____
Weather Partly Cloudy Air Temp.(°F) 68° Soil Temp.(°F) ____
Wind Direction & Speed Still Surface Conditions Gravel fill
Cartridge # A= B= Sample Size (ml) A= 40 B= 40
Adapter # ____ Probe Depth 25' Probe Volume (ml) ____
Purge Rate ____ Purge Time ____ Minutes Purge Vacuum ____ "Hg
Sample Flow Rate ____ ml/min Sample Vacuum ("Hg) A= B=
Notes ____
Lab Receipt: Signature [signature] Date/Time ____

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	131		
Benzene	181		
Toluene	<.10		
Ethyl Benzene	<.10		
M,P-Xylenes	<.10		
O-Xylene	<.10		

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HYDRO GEO CHEM, INC.

Sample # GW-03 Date/Time 10:30 / 10-11-90 Data Base File CH2M.1

Location Description along southern fence approx 15' from eastern fence

Sampler's Signature [signature] Soil ____ Water X Soil Gas ____

Weather Cloudy Air Temp.(°F) 50° Soil Temp.(°F) ____

Wind Direction & Speed Still Surface Conditions Gravel fill

Cartridge # A= ____ B= ____ Sample Size (ml) A= ____ B= ____

Adapter # ____ Probe Depth 25' Probe Volume (ml) 4500

Purge Rate ____ Purge Time ____ Minutes Purge Vacuum ____ "Hg

Sample Flow Rate ____ ml/min Sample Vacuum ("Hg) A= ____ B= ____

Notes ____

Lab Receipt: Signature [signature] Date/Time ____

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	43.6		
Benzene	13.5		
Toluene	1.8		
Ethyl Benzene	1.5		
M,P-Xylenes	3.3		
O-Xylene	2.3		

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HYDRO GEO CHEM, INC.

Sample # GW-04 Date/Time 10-11-90/11:15 Data Base File CHZM.1
Location Description along southern fence approx.
Sampler's Signature W D Thompson Soil ___ Water X Soil Gas ___
Weather cloudy Air Temp.(°F) 55° Soil Temp.(°F) ___
Wind Direction & Speed SE;11 Surface Conditions Gravel fill
Cartridge # A= B= Sample Size (ml) A= B=
Adapter # ___ Probe Depth 25' Probe Volume (ml) 4500
Purge Rate ___ Purge Time ___ Minutes Purge Vacuum ___ "Hg
Sample Flow Rate ___ ml/min Sample Vacuum ("Hg) A= B=
Notes slight petrol. odor
Lab Receipt: Signature Scott T. Wightman Date/Time 1125 10/11/90

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	406	~~384~~ 397	
Benzene	391	384	
Toluene	<.10	7.1	
Ethyl Benzene	68	75	
M,P-Xylenes	23	30	
O-Xylene	22	25	

SCOEPA00022274

RESAMPLE ?

HYDRO GEO CHEM, INC.

Sample # SG-05 Date/Time 10-11-90/13:35 Data Base File CH2M.1

Location Description along southern fence ≈225' from eastern corner

Sampler's Signature [signature] Soil ____ Water ____ Soil Gas X

Weather Clear Air Temp.(°F) 60°- Soil Temp.(°F) ____

Wind Direction & Speed Still Surface Conditions Gravel fill

Cartridge # A= 11 B= 20 Sample Size (ml) A= 200ml B= 200.

Adapter # ____ Probe Depth 25' Probe Volume (ml) 4500

Purge Rate Full Purge Time 10 Minutes Purge Vacuum 2 "Hg

Sample Flow Rate 200 ml/min Sample Vacuum ("Hg) A= 2 B= 2

Notes ____

Lab Receipt: Signature [signature] Date/Time 1400 10/11/90

Compound	Concentration (µg/L) A	B	Notes
Total Hydros			
Benzene			
Toluene			
Ethyl Benzene			RUN 1 WAS TOO CONCENTRATED, and
M,P-Xylenes			RUN 2 was bad cartridge
O-Xylene			

BOTH RUNS WERE NOT REPORTED

HYDRO GEO CHEM, INC.

Sample # GW-06 Date/Time 10-11-90/15:00 Data Base File CH2M.1
Location Description along southern fence ~ 150' from Western fence
Sampler's Signature [signature] Soil ___ Water X Soil Gas ___
Weather Clear Air Temp.(°F) 70° Soil Temp.(°F) ___
Wind Direction & Speed Still Surface Conditions Gravel fill
Cartridge # A= B= Sample Size (ml) A= 40 B= 40
Adapter # ___ Probe Depth 25' Probe Volume (ml) 4500
Purge Rate ___ Purge Time ___ Minutes Purge Vacuum ___ "Hg
Sample Flow Rate ___ ml/min Sample Vacuum ("Hg) A= B=
Notes Strong coal tar smell
Lab Receipt: Signature Scott Wightman Date/Time 1512 10/11/90

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	510		
Benzene	59.8		
Toluene	4.6		
Ethyl Benzene	196		
M,P-Xylenes	4.1		
O-Xylene	13.8		

HYDRO GEO CHEM, INC.

Sample # GW-07 Date/Time 10-11-90/1640 Data Base File CH2M.1
Location Description along southern fence ~75' from western fence
Sampler's Signature W. Astley Soil ___ Water X Soil Gas ___
Weather Cloudy Air Temp.(°F) 65° Soil Temp.(°F) ___
Wind Direction & Speed Still Surface Conditions Gravel fill
Cartridge # A= B= Sample Size (ml) A=40 B=
Adapter # ___ Probe Depth 25' BLS Probe Volume (ml) 4500
Purge Rate ___ Purge Time ___ Minutes Purge Vacuum ___ "Hg
Sample Flow Rate ___ ml/min Sample Vacuum ("Hg) A= B=
Notes very strong smell (of coal tar?)
Lab Receipt: Signature Scott S. Nightman Date/Time 1700 10/11/90

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	11000		
Benzene	11560		
Toluene	13.1		
Ethyl Benzene	126		
M,P-Xylenes	124		
O-Xylene	52.6		

HYDRO GEO CHEM, INC.

Sample # FB120CT01 Date/Time 10-12-90/8:30 Data Base File CH2M.1
Location Description Wacker Silicon Inc. Portland, Or.
Sampler's Signature W. O'Tillman Soil ____ Water ____ Soil Gas ____
Weather Cloudy Air Temp.(°F) ____ Soil Temp.(°F) ____
Wind Direction & Speed Still Surface Conditions ____
Cartridge # A=06 B= ____ Sample Size (ml) A= 40 B= ____
Adapter # ____ Probe Depth ____ Probe Volume (ml) 900
Purge Rate Full Purge Time 3 Minutes Purge Vacuum 20 "Hg
Sample Flow Rate 200 ml/min Sample Vacuum ("Hg) A= 12 B= ____
Notes High Vacuums during Purge and Sampling Processes
Lab Receipt: Signature Scott S. Wightman Date/Time 0845 10/12/90

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	0.60		
Benzene	< .10		
Toluene	< .10		
Ethyl Benzene	< .10		
M,P-Xylenes	< .10		
O-Xylene	< .10		

SCOEPA00022278

HYDRO GEO CHEM, INC.

Sample # EQUIPMENT BLANK Date/Time 10/12/90 0900 Data Base File CH2M.1

Location Description _____

Sampler's Signature Scott J. Leightman Soil ____ Water (Bailer) Soil Gas ____

Weather _____ Air Temp.(°F) _____ Soil Temp.(°F) _____

Wind Direction & Speed _____ Surface Conditions _____

Cartridge # A= B= Sample Size (ml) A= B=

Adapter # _____ Probe Depth _____ Probe Volume (ml) _____

Purge Rate _____ Purge Time _____ Minutes Purge Vacuum _____ "Hg

Sample Flow Rate _____ ml/min Sample Vacuum ("Hg) A= B=

Notes _____

Lab Receipt: Signature Scott J. Leightman Date/Time 10/12/90 0900

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	8.74	7.30	
Benzene	<.10	<.10	
Toluene	<.10	<.10	
Ethyl Benzene	<.10	<.10	
M,P-Xylenes	<.10	<.10	
O-Xylene	<.10	<.10	

SCOEPA00022279

HYDRO GEO CHEM, INC.

Sample # GW-08 Date/Time 10-11-90/17:43 Data Base File CH2M.1
Location Description along southern fence at western corner
Sampler's Signature [signature] Soil ___ Water X Soil Gas ___
Weather Cloudy Air Temp.(°F) 60° Soil Temp.(°F) ___
Wind Direction & Speed SE, 11 Surface Conditions gravel
Cartridge # A= B= Sample Size (ml) A= 40 B= ___
Adapter # ___ Probe Depth 25' Probe Volume (ml) 4500
Purge Rate ___ Purge Time ___ Minutes Purge Vacuum ___ "Hg
Sample Flow Rate ___ ml/min Sample Vacuum ("Hg) A= B= ___
Notes strong hydrocarbon odor
Lab Receipt: Signature Scott J. Wightman Date/Time 10/11/90 1745

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	369		
Benzene	285		
Toluene	<.10		
Ethyl Benzene	129		
M,P-Xylenes	33.1		
O-Xylene	32.3		

HYDRO GEO CHEM, INC.

Sample # GW-09 Date/Time 10-12-90/950 Data Base File CH2M.1
Location Description 50' North of Southern fence and ~150' east of western fen
Sampler's Signature WOSchp Soil ___ Water X Soil Gas ___
Weather Cloudy Air Temp.(°F) ___ Soil Temp.(°F) ___
Wind Direction & Speed SW, 11 Surface Conditions Gravel fill
Cartridge # A= B= Sample Size (ml) A= 40 B= ___
Adapter # ___ Probe Depth 25 Probe Volume (ml) 1500
Purge Rate ___ Purge Time ___ Minutes Purge Vacuum ___ "Hg
Sample Flow Rate ___ ml/min Sample Vacuum ("Hg) A= B= ___
Notes Slight hydrocarbon Smell.
Lab Receipt: Signature Scott J. Mightman Date/Time 0950 10/12/90

Compound	Concentration (ug/L) A	B	Notes
Total Hydros	~~804~~	~~371~~ 791	
Benzene	416	371	
Toluene	~~131~~ <.10	13.1	
Ethyl Benzene	~~4727~~ 131	14.4	
M,P-Xylenes	4.10	34.2	
O-Xylene	~~<.10~~ 4730	32.4	
	G		

HYDRO GEO CHEM, INC.

Sample # FB13OCt01 Date/Time 10-13-90/8:31 Data Base File CH2M.1

Location Description Wacker Silicon, Portland, Or.

Sampler's Signature [signature] Soil ____ Water ____ Soil Gas ____

Weather Cloudy Air Temp.(°F) ____ Soil Temp.(°F) ____

Wind Direction & Speed Still Surface Conditions ____

Cartridge # A= 11 B= ____ Sample Size (ml) A= 200 B= ____

Adapter # ____ Probe Depth ____ Probe Volume (ml) 900

Purge Rate Full Purge Time 3 Minutes Purge Vacuum 9 "Hg

Sample Flow Rate 200 ml/min Sample Vacuum ("Hg) A= 7" B= ____

Notes ____

Lab Receipt: Signature [signature] Date/Time 10/13/90 0845

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	<.10	~~<.00~~ <.01	
Benzene	<.10	<.01	
Toluene	<.10	<.01	
Ethyl Benzene	<.10	<.01	
M,P-Xylenes	<.10	<.01	
O-Xylene	<.10	<.01	

SCOEPA00022282

HYDRO GEO CHEM, INC.

Sample # EQUIPMENT BLANK Date/Time 10/13/90 0800 Data Base File CH2M.1

Location Description _____

Sampler's Signature Scott J. Wightman Soil ____ Water (Boiler) Soil Gas ____

Weather _____ Air Temp.(°F) _____ Soil Temp.(°F) _____

Wind Direction & Speed _____ Surface Conditions _____

Cartridge # A= B= Sample Size (ml) A= B=

Adapter # _____ Probe Depth _____ Probe Volume (ml) _____

Purge Rate _____ Purge Time _____ Minutes Purge Vacuum _____ "Hg

Sample Flow Rate _____ ml/min Sample Vacuum ("Hg) A= B=

Notes _____

Lab Receipt: Signature Scott J. Wightman Date/Time 10/13/90 0800

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	<.10		
Benzene	<.10		
Toluene	<.10		
Ethyl Benzene	<.10		
M,P-Xylenes	<.10		
O-Xylene	<.10		

HYDRO GEO CHEM, INC.

Sample # GW-16 Date/Time 10-13-90/10:20 Data Base File CH2M.1

Location Description 75' North of southern fence and 110' West of Western fence

Sampler's Signature W. O'Hagan Soil ____ Water X Soil Gas ____

Weather partly Cloudy Air Temp.(°F) 65° Soil Temp.(°F) ____

Wind Direction & Speed Still Surface Conditions Gravel fill

Cartridge # A= ____ B= ____ Sample Size (ml) A= 40 B= ____

Adapter # ____ Probe Depth 25' Probe Volume (ml) 4500

Purge Rate ____ Purge Time ____ Minutes Purge Vacuum ____ "Hg

Sample Flow Rate ____ ml/min Sample Vacuum ("Hg) A= ____ B= ____

Notes sample contains substantial amount of coal tar - smells stron

Lab Receipt: Signature Scott J. Laughtman Date/Time 10/13/90 1050

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	21400		
Benzene	12600		
Toluene	214		
Ethyl Benzene	1680		
M,P-Xylenes	1180		
O-Xylene	738		

SCOEPA00022284

HYDRO GEO CHEM, INC.

Sample # GW-17 Date/Time 10-13-90/11:15 Data Base File CH2M.1
Location Description 75' North of southern fence and 35' east of western fence
Sampler's Signature [signature] Soil ___ Water X Soil Gas ___
Weather Partly Cloudy Air Temp.(°F) 65° Soil Temp.(°F) ___
Wind Direction & Speed SW 11 Surface Conditions Gravel Fill
Cartridge # A= B= Sample Size (ml) A= 40 B= ___
Adapter # ___ Probe Depth 25' Probe Volume (ml) 4500
Purge Rate ___ Purge Time ___ Minutes Purge Vacuum ___ "Hg
Sample Flow Rate ___ ml/min Sample Vacuum ("Hg) A= B= ___
Notes Sample contains substantial amount of coal tar - smells strong.
Lab Receipt: Signature [signature] Date/Time 1132 10/13/90

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	24900	19350	
Benzene	11260	10925	
Toluene	662	514	
Ethyl Benzene	1680	1370	
M,P-Xylenes	1690	1410	
O-Xylene	768	632	

SCOEPA00022285

HYDRO GEO CHEM, INC.

Sample # GW-18 Date/Time 10-13-90/13:20 Data Base File CH2M.1

Location Description 25' east of western fence and 185' south of center

Sampler's Signature [signature] Soil ___ Water X Soil Gas ___

Weather partly cloudy Air Temp.(°F) 65° Soil Temp.(°F) ___

Wind Direction & Speed Still Surface Conditions ___

Cartridge # A= B= Sample Size (ml) A= 40 B= ___

Adapter # ___ Probe Depth 25' Probe Volume (ml) 4500

Purge Rate ___ Purge Time ___ Minutes Purge Vacuum ___ "Hg

Sample Flow Rate ___ ml/min Sample Vacuum ("Hg) A= B= ___

Notes strong fuel like odor.

Lab Receipt: Signature Scott S. Naughton Date/Time 10/13/90 1335

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	623		
Benzene	250		
Toluene	20.4		
Ethyl Benzene	64.2		
M,P-Xylenes	58.5		
O-Xylene	28.8		

SCOEPA00022286

HYDRO GEO CHEM, INC.

Sample # GW-19 Date/Time 10-13-90/1445 Data Base File CH2M.1

Location Description 100' East of Western fence and 185' South of Southern fence

Sampler's Signature W. [illegible] Soil ____ Water X Soil Gas ____

Weather Cloudy Air Temp.(°F) 55 Soil Temp.(°F) ____

Wind Direction & Speed Still Surface Conditions Sod

Cartridge # A= B= Sample Size (ml) A= 40 B=

Adapter # ____ Probe Depth 25 Probe Volume (ml) 4500

Purge Rate ____ Purge Time ____ Minutes Purge Vacuum ____ "Hg

Sample Flow Rate ____ ml/min Sample Vacuum ("Hg) A= B=

Notes No odor but water is very black in color

Lab Receipt: Signature Scott J Wightman Date/Time 1454 10/13/90

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	148		
Benzene	52.4		
Toluene	<.10		
Ethyl Benzene	13.8		
M,P-Xylenes	12.6		
O-Xylene	8.0		

HYDRO GEO CHEM, INC.

Sample # GW-15 Date/Time 10-12-90/18:07 Data Base File CH2M.1
Location Description 110' South of southern fence and 375' east of western
Sampler's Signature [signature] Soil ___ Water X Soil Gas ___
Weather Cloudy, damp Air Temp.(°F) 50° Soil Temp.(°F) ___
Wind Direction & Speed Still Surface Conditions Sod
Cartridge # A= B= Sample Size (ml) A= 40 B= ___
Adapter # ___ Probe Depth 25' Probe Volume (ml) 4500
Purge Rate ___ Purge Time ___ Minutes Purge Vacuum ___ "Hg
Sample Flow Rate ___ ml/min Sample Vacuum ("Hg) A= B= ___
Notes ___
Lab Receipt: Signature Scott J. Nightman Date/Time 10/12/90 1520

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	1330		
Benzene	23.2		
Toluene	<.10		
Ethyl Benzene	75.9		
M,P-Xylenes	<.10		
O-Xylene	21.3		

HYDRO GEO CHEM, INC.

Sample # SG-13 Date/Time 10-17-90/9:10 Data Base File CH2M.1
Location Description along southern fence 75' east of western fence.
Sampler's Signature [illegible] Soil ___ Water ___ Soil Gas X
Weather Partly Cloudy Air Temp.(°F) 60 Soil Temp.(°F) ___
Wind Direction & Speed Still Surface Conditions Grassed
Cartridge # A=100 B=UNKNOWN Sample Size (ml) A=200 B=~~UNKNOWN~~ 200
Adapter # ___ Probe Depth 25' Probe Volume (ml) 4500
Purge Rate Full Purge Time 3 Minutes Purge Vacuum 8 "Hg
Sample Flow Rate 200 ml/min Sample Vacuum ("Hg) A= 4 B= 4
Notes Slight petrol smell noticable from probe end
Lab Receipt: Signature Scott J Wightman Date/Time 10/13/90 0915

Compound	Concentration (ug/L) A	B	Notes
Total Hydros	687		
Benzene	1.28		
Toluene	<.01		
Ethyl Benzene	<.01		
M,P-Xylenes	<.01		
O-Xylene	<.01		

SCOEPA00022289

HYDRO GEO CHEM, INC.

Sample # GW-14 Date/Time 10-12-90/1720 Data Base File CH2M.1
Location Description 110' south of southern fence and 300' east of western fe
Sampler's Signature [signature] Soil ___ Water X Soil Gas ___
Weather Cloudy, rainy Air Temp.(°F) ___ Soil Temp.(°F) ___
Wind Direction & Speed Still Surface Conditions ___
Cartridge # A= B= Sample Size (ml) A= 40 B= ___
Adapter # ___ Probe Depth 25' Probe Volume (ml) 4500
Purge Rate ___ Purge Time ___ Minutes Purge Vacuum ___ "Hg
Sample Flow Rate ___ ml/min Sample Vacuum ("Hg) A= B= ___
Notes slight petrol. smell
Lab Receipt: Signature Scott J. Mightman Date/Time 10/12/90 1520

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	74.7		
Benzene	8.6		
Toluene	<.10		
Ethyl Benzene	<.10		
M,P-Xylenes	<.10		
O-Xylene	<.10		

HYDRO GEO CHEM, INC.

Sample # EQUIPMENT BLANK Date/Time 10/14/90 0900 Data Base File CH2M.1

Location Description _____

Sampler's Signature Scott J. Mightman Soil ____ Water (Bailer) Soil Gas ____

Weather _____ Air Temp.(°F) _____ Soil Temp.(°F) _____

Wind Direction & Speed _____ Surface Conditions _____

Cartridge # A= B= Sample Size (ml) A= B=

Adapter # _____ Probe Depth _____ Probe Volume (ml) _____

Purge Rate _____ Purge Time _____ Minutes Purge Vacuum _____ "Hg

Sample Flow Rate _____ ml/min Sample Vacuum ("Hg) A= B=

Notes _____

Lab Receipt: Signature Scott J. Mightman Date/Time 10/14/90 0900

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	<.10		
Benzene	<.10		
Toluene	<.10		
Ethyl Benzene	<.10		
M,P-Xylenes	<.10		
O-Xylene	<.10		

SCOEPA00022291

HYDRO GEO CHEM, INC.

Sample # GW-22 Date/Time 10-14-90/10:30 Data Base File CH2M.1

Location Description 65' east of GW-20

Sampler's Signature [signature] Soil ____ Water X Soil Gas ____

Weather Raining Air Temp.(°F) 60° Soil Temp.(°F) ____

Wind Direction & Speed Still Surface Conditions Sod

Cartridge # A= B= Sample Size (ml) A= 40 B=

Adapter # ____ Probe Depth 25' Probe Volume (ml) 4500

Purge Rate ____ Purge Time ____ Minutes Purge Vacuum ____ "Hg

Sample Flow Rate ____ ml/min Sample Vacuum ("Hg) A= B=

Notes ____

Lab Receipt: Signature Scott J. Wightman Date/Time 10/14/90 1040

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	12.1	18.1	
Benzene	<.10	1.0	
Toluene	<.10	0.7	
Ethyl Benzene	<.10	<.10	
M,P-Xylenes	<.10	<.10	
O-Xylene	<.10	<.10	

SCOEPA00022292

HYDRO GEO CHEM, INC.

Sample # GW-23 Date/Time 10-14-90/ 1135 Data Base File CH2M.1
Location Description 75' east of GW-15
Sampler's Signature [signature] Soil ___ Water X Soil Gas ___
Weather Rainy Air Temp.(°F) 55° Soil Temp.(°F) ___
Wind Direction & Speed Still Surface Conditions Sod
Cartridge # A= B= Sample Size (ml) A= 40 B= ___
Adapter # ___ Probe Depth 25' Probe Volume (ml) 4500
Purge Rate ___ Purge Time ___ Minutes Purge Vacuum ___ "Hg
Sample Flow Rate ___ ml/min Sample Vacuum ("Hg) A= B= ___
Notes ___
Lab Receipt: Signature Scott J. Wightman Date/Time 10/14/90 1130

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	635		
Benzene	335		
Toluene	~~419~~ <.10		
Ethyl Benzene	~~414~~ 419		
M,P-Xylenes	67.3		
O-Xylene	24.6		

SCOEPA00022293

HYDRO GEO CHEM, INC.

Sample # GW-24 Date/Time 10-14-90/12:40 Data Base File CH2M.1
Location Description 140' North of GW-6
Sampler's Signature W. Dillon Soil ___ Water X Soil Gas ___
Weather Rainy Air Temp.(°F) 56° Soil Temp.(°F) ___
Wind Direction & Speed SE 11 Surface Conditions Gravel fill
Cartridge # A= B= Sample Size (ml) A= 40 B= ___
Adapter # ___ Probe Depth 25' Probe Volume (ml) 4500
Purge Rate ___ Purge Time ___ Minutes Purge Vacuum ___ "Hg
Sample Flow Rate ___ ml/min Sample Vacuum ("Hg) A= B= ___
Notes ___
Lab Receipt: Signature Scott J. Wightman Date/Time 10/14/90 1300

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	6330		
Benzene	1780		
Toluene	594		
Ethyl Benzene	926		
M,P-Xylenes	1050		
O-Xylene	500		

SCOEPA00022294

HYDRO GEO CHEM, INC.

Sample # FB15oct01 Date/Time 10-15-90/11:47 Data Base File CH2M.1
Location Description Wacker Silicon, Portland, Or.
Sampler's Signature W.D.Th Soil ___ Water ___ Soil Gas ___
Weather Cloudy Air Temp.(°F) ___ Soil Temp.(°F) ___
Wind Direction & Speed Stl. Surface Conditions ___
Cartridge # A= 36 B= ___ Sample Size (ml) A= 200 B= ___
Adapter # ___ Probe Depth ___ Probe Volume (ml) 900
Purge Rate full Purge Time 3 Minutes Purge Vacuum ___ "Hg
Sample Flow Rate 200 ml/min Sample Vacuum ("Hg) A= 10 B= ___
Notes high Vacuums — both Purge and Sample
Lab Receipt: Signature Scott S. Wightman Date/Time 10/15/90 1150

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	<.10		
Benzene	<.10		
Toluene	<.10		
Ethyl Benzene	<.10		
M,P-Xylenes	<.10		
O-Xylene	<.10		

SCOEPA00022295

HYDRO GEO CHEM, INC.

Sample # SG-12 Date/Time 10-12-90/15:00 Data Base File CH2M.1
Location Description 110 feet from southern fence 150' from western fence
Sampler's Signature W O'Tilyn Soil ___ Water ___ Soil Gas X
Weather Cloudy Air Temp.(°F) 55° Soil Temp.(°F) ___
Wind Direction & Speed SE;17 Surface Conditions Gravel
Cartridge # A= 25 B=16 Sample Size (ml) A= 50 B= 50
Adapter # ___ Probe Depth 25' Probe Volume (ml) 4500ml
Purge Rate full Purge Time 10 Minutes Purge Vacuum 15 "Hg
Sample Flow Rate 200 ml/min Sample Vacuum ("Hg) A= 7 B=7
Notes Very strong coal tar odor coming from probe
Lab Receipt: Signature Scott J. Wightman Date/Time 10/12/90 1530

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	1760		
Benzene	500		
Toluene	58.2		
Ethyl Benzene	279		
M,P-Xylenes	237		
O-Xylene	70.8		

HYDRO GEO CHEM, INC.

Sample # GW-10 Date/Time 10-12-90/11:40 Data Base File CH2M.1
Location Description South of utility corridor ≈ 10' along western fence
Sampler's Signature [signature] Soil ___ Water X Soil Gas ___
Weather Cloudy Air Temp.(°F) 65 Soil Temp.(°F) ___
Wind Direction & Speed SW.11 Surface Conditions Sod
Cartridge # A= B= Sample Size (ml) A= 40ml B= ___
Adapter # ___ Probe Depth 25' Probe Volume (ml) 4500
Purge Rate ___ Purge Time ___ Minutes Purge Vacuum ___ "Hg
Sample Flow Rate ___ ml/min Sample Vacuum ("Hg) A= B= ___
Notes Very Strong smell of Coal tar.
Lab Receipt: Signature Charles Nightman Date/Time 10/12/90 1150

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	5090		
Benzene	1820		
Toluene	23.9		
Ethyl Benzene	471		
M,P-Xylenes	240		
O-Xylene	187		

SCOEPA00022297

HYDRO GEO CHEM, INC.

Sample # GW-11 Date/Time 10-12-90/13:25 Data Base File CH2M.1
Location Description 110 feet south of southern fence 75' east of western fence.
Sampler's Signature [signature] Soil ___ Water X Soil Gas ___
Weather Cloudy Air Temp.(°F) 55° Soil Temp.(°F) ___
Wind Direction & Speed Still Surface Conditions gravel
Cartridge # A= B= Sample Size (ml) A= 40 ml B= ___
Adapter # ___ Probe Depth 25' Probe Volume (ml) 4500
Purge Rate ___ Purge Time ___ Minutes Purge Vacuum ___ "Hg
Sample Flow Rate ___ ml/min Sample Vacuum ("Hg) A= B= ___
Notes Very Strong smell of coal tar - Very black and sticky.
Lab Receipt: Signature Scott J. Leightman Date/Time 1341 10/12/90

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	56500	89140	
Benzene	18100	23270	
Toluene	3910	5960	
Ethyl Benzene	2520	4680	
M,P-Xylenes	2380	4450	
O-Xylene	1130	2000	

SCOEPA00022298

HYDRO GEO CHEM, INC.

Sample # GW-20 Date/Time 10-13-90/15:55 Data Base File CH2M.1
Location Description 185' south of southern fence and 175' east of western fence
Sampler's Signature [signature] Soil ___ Water X Soil Gas ___
Weather Cloudy Air Temp.(°F) ___ Soil Temp.(°F) ___
Wind Direction & Speed from SW 5 mph Surface Conditions gravel & sand
Cartridge # A= B= Sample Size (ml) A= 40 B= ___
Adapter # ___ Probe Depth 25' Probe Volume (ml) ___
Purge Rate ___ Purge Time ___ Minutes Purge Vacuum ___ "Hg
Sample Flow Rate ___ ml/min Sample Vacuum ("Hg) A= B= ___
Notes strong coal tar smell
Lab Receipt: Signature Heidi J. Hufstetler Date/Time 10/13/90 1620

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	16600	14500	
Benzene	2920	3120	
Toluene	80.6	85.6	
Ethyl Benzene	1690	1720	
M,P-Xylenes	1230	1230	
O-Xylene	673	667	

HYDRO GEO CHEM, INC.

Sample # GW-21 Date/Time 10-13-90/1735 Data Base File CH2M.1

Location Description 75' Due North of GW-7

Sampler's Signature [signature] Soil ___ Water X Soil Gas ___

Weather Cloudy Air Temp.(°F) 55° Soil Temp.(°F) ___

Wind Direction & Speed Still Surface Conditions Gravel fill

Cartridge # A= B= Sample Size (ml) A= 40 B= 40

Adapter # ___ Probe Depth 25 Probe Volume (ml) 4500

Purge Rate ___ Purge Time ___ Minutes Purge Vacuum ___ "Hg

Sample Flow Rate ___ ml/min Sample Vacuum ("Hg) A= B=

Notes ___

Lab Receipt: Signature [signature] Date/Time 10/13/90 1745

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	3140		
Benzene	2510		
Toluene	349		
Ethyl Benzene	37.6		
M,P-Xylenes	66.6		
O-Xylene	33.0		

SCOEPA00022300

HYDRO GEO CHEM, INC.

Sample # FR140CE01 Date/Time 10-14-90/8:25 Data Base File CH2M.1

Location Description Wacker Silicon

Sampler's Signature W.J. [illegible] Soil ____ Water ____ Soil Gas ____

Weather Rainy Air Temp.(°F) 50 Soil Temp.(°F) ____

Wind Direction & Speed Still Surface Conditions ____

Cartridge # A= 25 B= ____ Sample Size (ml) A= 200 B= ____

Adapter # ____ Probe Depth ____ Probe Volume (ml) 900

Purge Rate Full Purge Time 3 Minutes Purge Vacuum 13 "Hg

Sample Flow Rate 200 ml/min Sample Vacuum ("Hg) A= 7 B= ____

Notes Purge Vacuum High

Lab Receipt: Signature Scott J. Wightman Date/Time 10/14/90 ~~[illegible]~~ 0830

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	~~2.00~~ 0.20		
Benzene	<.10		
Toluene	<.10		
Ethyl Benzene	<.10		
M,P-Xylenes	<.10		
O-Xylene	<.10		

HYDRO GEO CHEM, INC.

Sample # GW-25 Date/Time 10-15-90/9:35 Data Base File CH2M.1
Location Description 150' south of utility corridor and 175' east of western fe
Sampler's Signature [signature] Soil ___ Water V Soil Gas ___
Weather Partly Cloudy Air Temp.(°F) 55 Soil Temp.(°F) ___
Wind Direction & Speed SW 11 Surface Conditions Sod
Cartridge # A= B= Sample Size (ml) A= 40 B= ___
Adapter # ___ Probe Depth 25' Probe Volume (ml) 4500
Purge Rate ___ Purge Time ___ Minutes Purge Vacuum ___ "Hg
Sample Flow Rate ___ ml/min Sample Vacuum ("Hg) A= B= ___
Notes ___
Lab Receipt: Signature Scott J. Wightman Date/Time 0945 10/15/90

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	26.8	25.3	
Benzene	<.10	3.7	
Toluene	<.10	<.10	
Ethyl Benzene	<.10	<.10	
M,P-Xylenes	<.10	1.7	
O-Xylene	<.10	1.9	

SCOEPA00022302

HYDRO GEO CHEM, INC.

Sample # GW-26 Date/Time 10-15-90/10:45 Data Base File CH2M.1

Location Description West side of FAB II footprint 90' from SW corner (North c

Sampler's Signature W. [illegible] Soil ___ Water X Soil Gas ___

Weather Cloudy Air Temp.(°F) 60° Soil Temp.(°F) ___

Wind Direction & Speed Still Surface Conditions Gravel fill

Cartridge # A= ___ B= ___ Sample Size (ml) A= 40 B= ___

Adapter # ___ Probe Depth 25' Probe Volume (ml) 4500

Purge Rate ___ Purge Time ___ Minutes Purge Vacuum ___ "Hg

Sample Flow Rate ___ ml/min Sample Vacuum ("Hg) A= ___ B= ___

Notes ___

Lab Receipt: Signature [illegible] Date/Time 1053 10/15/90

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	12040		
Benzene	5920		
Toluene	910		
Ethyl Benzene	584		
M,P-Xylenes	580		
O-Xylene	301		

SCOEPA00022303

HYDRO GEO CHEM, INC.

Sample # GW-27 Date/Time 10-15-90/17:20 Data Base File CH2M.1

Location Description 150' North of southern fence - lined up with western corner

Sampler's Signature W. [illegible] Soil ____ Water X Soil Gas ____

Weather Cloudy Air Temp.(°F) 60° Soil Temp.(°F) ____

Wind Direction & Speed Still Surface Conditions Gravel fill

Cartridge # A= B= Sample Size (ml) A= 40 B=

Adapter # ____ Probe Depth 25' Probe Volume (ml) 4500

Purge Rate ____ Purge Time ____ Minutes Purge Vacuum ____ "Hg

Sample Flow Rate ____ ml/min Sample Vacuum ("Hg) A= B=

Notes ____

Lab Receipt: Signature [illegible] Date/Time 1725 10/15/90

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	16300	20800	
Benzene	10300	11400	
Toluene	627	320	
Ethyl Benzene	1220	1340	
M,P-Xylenes	1250	1430	
O-Xylene	597	656	

HYDRO GEO CHEM, INC.

Sample # GW-28 Date/Time 10-15-90/18:35 Data Base File CH2M.1

Location Description NW edge of FABII

Sampler's Signature W. Oth[illegible] Soil ____ Water X Soil Gas ____

Weather Cloudy Air Temp.(°F) 50° Soil Temp.(°F) ____

Wind Direction & Speed Still Surface Conditions Gravel fill

Cartridge # A= ____ B= ____ Sample Size (ml) A= 40 B= ____

Adapter # ____ Probe Depth 25' Probe Volume (ml) ____

Purge Rate ____ Purge Time ____ Minutes Purge Vacuum ____ "Hg

Sample Flow Rate ____ ml/min Sample Vacuum ("Hg) A= ____ B= ____

Notes ____

Lab Receipt: Signature Scott J. Wightman Date/Time 1853 10/15/90

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	328		
Benzene	349		
Toluene	9.7		
Ethyl Benzene	<.10		
M,P-Xylenes	6.2		
O-Xylene	16.2		

HYDRO GEO CHEM, INC.

Sample # GW-29 Date/Time 10-16-90/10:50 Data Base File CH2M.1

Location Description 120' east of GW-25

Sampler's Signature W D Thompson Soil ____ Water X Soil Gas ____

Weather Clear Air Temp.(°F) ____ Soil Temp.(°F) ____

Wind Direction & Speed From east 5 mph Surface Conditions Sod

Cartridge # A= ____ B= ____ Sample Size (ml) A= 40 B= ____

Adapter # ____ Probe Depth 25' Probe Volume (ml) 4500

Purge Rate ____ Purge Time ____ Minutes Purge Vacuum ____ "Hg

Sample Flow Rate ____ ml/min Sample Vacuum ("Hg) A= ____ B= ____

Notes ____

Lab Receipt: Signature [signature] Date/Time 1050 10/16/90

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	735		
Benzene	541		
Toluene	<.10		
Ethyl Benzene	263		
M,P-Xylenes	<.10		
O-Xylene	19.4		

SCOEPA00022306

APPENDIX D

SCOEPA00022307

Engineers
Planners
Economists
Scientists

CASE NARRATIVE FOR BTEX

LABORATORY: CH2M HILL **CLIENT :** Wacker Siltronics

CASE NO : N/A **CONTRACT NO.:** N/A

LAB ID : 27823 **SDG # :** N/A

I. RECEIPT

A. Date: October 13, 1990

B.

LAB ID	CLIENT ID	SAMPLE MATRIX	DATE SAMPLED	EXTRACTION DATE	ANALYSIS DATE
27823001	GW-7	Water	10/11/90	N/A	10/24/90
27823002	GW-4	Water	10/11/90	N/A	10/19/90

C. Documentation Exceptions : None encountered.

II. EXTRACTION

A. Holding Times: Medium level protocol was not performed, therefore, holding time is not applicable.

B. Extraction Exceptions : Not applicable.

III. ANALYSIS

A. Holding Times: Holding times were met.

B. Analytical Exceptions : Due to sample matrix, these samples were analyzed on a diluted basis. Reporting limits have been adjusted accordingly.

000001

jas20

SCOEPA00022308

IV. QUALITY CONTROL

A. Method Blank : A method blank is a laboratory generated sample used to determine the degree to which laboratory operations may cause false positive results for these samples. No target parameters were detected in the method blanks associated with these samples.

B. Surrogate Recoveries : Met acceptable QC limits.

C. Matrix Spike Results: Not applicable.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature. Diskette deliverables have not been provided for this data package.

Greg Jordan 10/25/90

Greg Jordan **Date**
GC Section Supervisor

Engineers
Planners
Economists
Scientists

METHOD: 8020
BTEX

Reference No: Method Blank

Sample Matrix: Water
Dilution Factor: 1

Date Analyzed: 10-19-90

Compound	Detection Limit	Method Blank Result	Units
Benzene	1.0	< 1.0	ug/l
Toluene	1.0	< 1.0	ug/l
Ethyl Benzene	1.0	< 1.0	ug/l
Total Xylenes	1.0	< 1.0	ug/l
Surrogate (SS)		107	% Rec.

SS - Surrogate Standard reported as percent recovery.
Fluorobenzene used as surrogate standard.

Comments:

Approved By: [signature]

000003

jas20

SCOEPA00022310

Engineers
Planners
Economists
Scientists

METHOD: 8020
BTEX

Reference No: Method Blank

Sample Matrix: Water
Dilution Factor: 1

Date Analyzed: 10-24-90

Compound	Detection Limit	Method Blank Result	Units
Benzene	1.0	< 1.0	ug/l
Toluene	1.0	< 1.0	ug/l
Ethyl Benzene	1.0	< 1.0	ug/l
Total Xylenes	1.0	< 1.0	ug/l
Surrogate (SS)		110	% Rec.

SS - Surrogate Standard reported as percent recovery.
Fluorobenzene used as surrogate standard.

Comments:

Approved By: Gary Jonlan

jas20

CH2M HILL Redding Environmental Laboratory, 5090 Caterpillar Road, Redding, California 96003 916.244.5227

SCOEPA00022311

Engineers
Planners
Economists
Scientists

METHOD: 8020
BTEX

Client: Wacker Siltronics
Client Sample ID: GW-7

Reference No: 27823-1

Date Sampled: 10-11-90
Date Received: 10-13-90
Date Extracted: N/A
Date Analyzed: 10-24-90

Sample Matrix: Water
Dilution Factor: 100

Compound	Detection Limit	Sample Result	Units
Benzene	100	8400	ug/l
Toluene	100	100	ug/l
Ethyl Benzene	100	770	ug/l
Total Xylenes	100	540	ug/l
Surrogate (SS)		108	% Rec.

SS - Surrogate Standard reported as percent recovery.
Fluorobenzene used as surrogate standard.

Comments:

Approved By: Greg Jordan

jas20

000005

SCOEPA00022312

Engineers
Planners
Economists
Scientists

METHOD: 8020
BTEX

Client: Wacker Siltronics
Client Sample ID: GW-4

Reference No: 27823-2

Date Sampled: 10-11-90
Date Received: 10-13-90
Date Extracted: N/A
Date Analyzed: 10-19-90

Sample Matrix: Water
Dilution Factor: 5

Compound	Detection Limit	Sample Result	Units
Benzene	5.0	280	ug/l
Toluene	5.0	9.8	ug/l
Ethyl Benzene	5.0	80	ug/l
Total Xylenes	5.0	70	ug/l
Surrogate (SS)		106	% Rec.

SS - Surrogate Standard reported as percent recovery.
Fluorobenzene used as surrogate standard.

Comments:

Approved By: Greg Jones

000006

jas20

SCOEPA00022313

Engineers
Planners
Economists
Scientists

CASE NARRATIVE FOR TFH GAS

LABORATORY: CH2M HILL **CLIENT :** Wacker Siltronics

CASE NO : N/A **CONTRACT NO.:** N/A

LAB ID : 27823 **SDG # :** N/A

I. RECEIPT

A. Date: October 13, 1990

B.

LAB ID	CLIENT ID	SAMPLE MATRIX	DATE SAMPLED	EXTRACTION DATE	ANALYSIS DATE
27823001	GW-7	Water	10/11/90	N/A	10/18/90
27823002	GW-4	Water	10/11/90	N/A	10/18/90

C. Documentation Exceptions : None encountered.

II. EXTRACTION

A. Holding Times: Medium level protocol was not performed, therefore, holding time is not applicable.

B. Extraction Exceptions : Not applicable.

III. ANALYSIS

A. Holding Times: Holding times were met.

B. Analytical Exceptions : Due to sample matrix, the samples were analyzed on a diluted basis. Reporting limits have been adjusted accordingly.

000007

jas20

SCOEPA00022314

IV. QUALITY CONTROL

A. Method Blank : A method blank is a laboratory generated sample used to determine the degree to which laboratory operations may cause false positive results for these samples. No target parameters were detected in the method blank associated with these samples.

B. Surrogate Recoveries : Due to matrix interference, percent recovery for sample 27823-1 (GW-7) was below laboratory control limits.

C. Matrix Spike Results: Not applicable.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature. Diskette deliverables have not been provided for this data package.

Greg Jordan 10/25/90

Greg Jordan **Date**
GC Section Supervisor

000006

jas20

WLK 10/25/90

SCOEPA00022315

Engineers
Planners
Economists
Scientists

METHOD: 8015
TFH Gas

Reference No: Method Blank

Sample Matrix: Water
Dilution Factor: 1

Date Analyzed: 10-18-90

Compound	Detection Limit	Method Blank Result	Units
TFH Gas	0.1	< 0.1	mg/l
Surrogate (SS)		98	% Rec.

SS - Surrogate Standard reported as percent recovery.
Fluorobenzene used as surrogate standard.

Comments:

Approved By: Greg Jordan

000009

jas20

SCOEPA00022316

Engineers
Planners
Economists
Scientists

METHOD: 8015
TFH Gas

Client: Wacker Siltronics
Client Sample ID: GW-7

Sample Matrix: Water
Dilution Factor: 5

Reference No: 27823-1

Date Sampled: 10-11-90
Date Received: 10-13-90
Date Extracted: N/A
Date Analyzed: 10-18-90

Compound	Detection Limit	Sample Result	Units
TFH Gas	0.5	19	mg/l
Surrogate (SS)		27 *	% Rec.

SS - Surrogate Standard reported as percent recovery.
Fluorobenzene used as surrogate standard.

Comments: * Surrogate outside control limits.

Approved By: Jay Jonlan

000010

jas20

SCOEPA00022317

Engineers
Planners
Economists
Scientists

METHOD: 8015
TFH Gas

Client: Wacker Siltronics
Client Sample ID: GW-4

Reference No: 27823-2

Date Sampled: 10-11-90
Date Received: 10-13-90
Date Extracted: N/A
Date Analyzed: 10-18-90

Sample Matrix: Water
Dilution Factor: 5

Compound	Detection Limit	Sample Result	Units
TFH Gas	0.5	1.3	mg/l
Surrogate (SS)		95	% Rec.

SS - Surrogate Standard reported as percent recovery.
Fluorobenzene used as surrogate standard.

Comments:

Approved By:

000011

jas20

SCOEPA00022318

CH2M HILL QUALITY ANALYTICS

CHAIN OF CUSTODY RECORD

000012

PROJECT NUMBER: PDX30452.B1	PROJECT NAME: Wacker Silftronics	CLIENT ADDRESS AND PHONE NUMBER	FOR LAB USE ONLY
CLIENT NAME: Wacker			LAB#: 27823
PROJECT MANAGER: Jill Jensen/TTA	COPY TO:		LAB#:
REQUESTED COMP. DATE: 10-25-90 ✓	SAMPLING REQUIREMENTS: SDWA ☐ NPDES ☐ RCRA ☐ OTHER ___		PROJECT NO.:
			ACK. / VERIFIED
			QUOTE# / BS
			NO. OF SAMP / PG / OF

STA NO.	DATE	TIME	COMP	GRAB	SOIL	SAMPLE DESCRIPTIONS (12 CHARACTERS)	# OF CONTAINERS	ANALYSES REQUESTED: BTEX/TPH, gasoline 8020/8015	ANALYSES REQUESTED: BTEX/TPH, gasoline 8020/8015	LAB ID	REMARKS
	10/11/90	16:40	X			GW-7	1		X	1	HCl spl'd ✓ 10/15/90
	10/11	11:15	X			GW-4	1		X	2	HCl spl'd ✓

VOAs not preserved per client. D. Lutz 10/15/90 B

SAMPLED BY AND TITLE: David W. Lutz Cust. Dy	DATE/TIME: 10-11-90 1706	RELINQUISHED BY: David W. Lutz	DATE/TIME: 10-12-90 1245	HAZWRAP/NEESA Y N
RECEIVED BY: ✓	DATE/TIME	RELINQUISHED BY:	DATE/TIME	QC LEVEL (1) 2 3
RECEIVED BY:	DATE/TIME	RELINQUISHED BY:	DATE/TIME	COC Y / ICE Y
				ANA REQ Y / TEMP 6.0
				CUST SEAL Y / Ph
				SAMPLE COND. good
RECEIVED BY LAB:	DATE/TIME: 10/13/90 1030	SAMPLE SHIPPED VIA: UPS (BUS) FED-EX HAND OTHER ___	AIR BILL#	

REMARKS

ENTERED INTO LIMS ___ COC REVIEWED ___

SCOEPA00022319

Engineers
Planners
Economists
Scientists

CASE NARRATIVE FOR BTEX & TFH GAS

LABORATORY: CH2M HILL **CLIENT** : Wacker Siltronics

CASE NO : N/A **CONTRACT NO.**: N/A

LAB ID : 27843 **SDG #** : N/A

I. RECEIPT

A. Date: October 17, 1990

B.

LAB ID	CLIENT ID	SAMPLE MATRIX	DATE SAMPLED	EXTRACTION DATE	ANALYSIS DATE
27843001	GW-27	Water	10/15/90	N/A	10/23/90
27843001_DL	GW-27_DL	Water	10/15/90	N/A	10/24/90

C. Documentation Exceptions : None encountered.

II. EXTRACTION

A. Holding Times: Holding times were met.

B. Extraction Exceptions : None encountered.

III. ANALYSIS

A. Holding Times: Holding times were met.

B. Analytical Exceptions : Due to the concentration of target compounds, sample 27843001 (GW-27) was diluted at 1:50 and sample 27843001_DL (GW-27_DL) was diluted at 1:100. Reporting limits have been adjusted accordingly.

000001

SCOEPA00022320

IV. QUALITY CONTROL

A. Method Blank : A method blank is a laboratory generated sample used to determine the degree to which laboratory operations may cause false positive results for these samples. No target parameters were detected in the method blanks associated with these samples.

B. Surrogate Recoveries : Met acceptable QC limits.

C. Matrix Spike Results: Not applicable.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature. Diskette deliverables have not been provided for this data package.

Greg Jordan 10/25/90

Greg Jordan **Date**
GC Section Supervisor

kdh.c

WLL 10/25/90 000002

SCOEPA00022321

Engineers
Planners
Economists
Scientists

METHOD: BTEX & TFH Gas

Reference No: Method Blank

Sample Matrix: Water
Dilution Factor: 1

Date Analyzed: 10-23-90

Compounds	Detection Limit	Method Blank Result	Units
Benzene	1.0	< 1.0	ug/l
Toluene	1.0	< 1.0	ug/l
Ethyl Benzene	1.0	< 1.0	ug/l
Total Xylenes	1.0	< 1.0	ug/l
TFH Gas	0.1	< 0.1	mg/l
Surrogate (SS)		99	% Rec.

SS - Surrogate Standard reported as percent recovery.
Fluorobenzene surrogate standard.

Comments:

Approved By: Greg Jordan

000003

SCOEPA00022322

Engineers
Planners
Economists
Scientists

METHOD: BTEX & TFH Gas

Reference No: Method Blank

Sample Matrix: Water
Dilution Factor: 1

Date Analyzed: 10-24-90

Compounds	Detection Limit	Method Blank Result	Units
Benzene	1.0	< 1.0	ug/l
Toluene	1.0	< 1.0	ug/l
Ethyl Benzene	1.0	< 1.0	ug/l
Total Xylenes	1.0	< 1.0	ug/l
TFH Gas	0.1	< 0.1	mg/l
Surrogate (SS)		98	% Rec.

SS - Surrogate Standard reported as percent recovery.
Fluorobenzene surrogate standard.

Comments:

Approved By: Gary Jordan

000004

SCOEPA00022323

Engineers
Planners
Economists
Scientists

METHOD: BTEX & TFH Gas

Client: Wacker Siltronics
Client Sample ID: GW-27

Sample Matrix: Water
Dilution Factor: 50

Reference No: 27843-1

Date Sampled: 10-15-90
Date Received: 10-17-90
Date Extracted: N/A
Date Analyzed: 10-23-90

Compounds	Detection Limit	Sample Result	Units
Benzene	50	23,000*	ug/L
Toluene	50	280	ug/L
Ethyl Benzene	50	1,070	ug/L
Total Xylenes	50	490	ug/L
TFH Gas	5.0	40	mg/L
Surrogate (SS)		111	% Rec.

SS - Surrogate Standard reported as percent recovery.
Fluorobenzene surrogate standard.

Comments: * Outside calibration range.

Dilution, due to the concentration of target compound(s).

Approved By: Greg Jones

000005

SCOEPA00022324

Engineers
Planners
Economists
Scientists

METHOD: BTEX & TFH Gas

Client: Wacker Siltronics
Client Sample ID: GW-27_DL

Sample Matrix: Water
Dilution Factor: 100

Reference No: 27843-1_DL

Date Sampled: 10-15-90
Date Received: 10-17-90
Date Extracted: N/A
Date Analyzed: 10-24-90

Compounds	Detection Limit	Sample Result	Units
Benzene	100	18,000	ug/L
Toluene	100	220	ug/L
Ethyl Benzene	100	760	ug/L
Total Xylenes	100	1000	ug/L
TFH Gas	10	38	mg/L
Surrogate (SS)		101	% Rec.

SS - Surrogate Standard reported as percent recovery.
Fluorobenzene surrogate standard.

Comments: Dilution, due to the concentration of target compound(s).

Approved By: Gary Jonker

000006

CH2M HILL QUALITY ANALYTICS

CHAIN OF CUSTODY RECORD

PROJECT NUMBER	PROJECT NAME
PDX30452.BQ	Wacker Siltronics

CLIENT NAME: Wacker Siltronics

PROJECT MANAGER: Jill Person/PDX

COPY TO:

REQUESTED COMP. DATE: 10-19-90 ASAP without paying premium

SAMPLING REQUIREMENTS: SDWA ☐ NPDES ☐ RCRA ☐ OTHER ____

CLIENT ADDRESS AND PHONE NUMBER

ANALYSES REQUESTED: BTEX/TPH Gasoline 8020/8015

STA NO.	DATE	TIME	WATER	GRAB	SOIL	SAMPLE DESCRIPTIONS (12 CHARACTERS)	# OF CONTAINERS	LAB ID
	10/15/90	17:35	X			~~MW~~ GW-27	2	

REMARKS: HCl spiked / HCl spiked

FOR LAB USE ONLY

LAB# 27843

LAB#

PROJECT NO.

ACK | VERIFIED

QUOTE# | BS

NO. OF SAMP | PG | OF

SAMPLED BY AND TITLE	DATE/TIME	RELINQUISHED BY	DATE/TIME
[illegible]	10-15-90/1745	[illegible]	10-16-90 1100
RECEIVED BY:	DATE/TIME	RELINQUISHED BY:	DATE/TIME
RECEIVED BY:	DATE/TIME	RELINQUISHED BY:	DATE/TIME
RECEIVED BY LAB: [illegible]	DATE/TIME 10/17/90 830	SAMPLE SHIPPED VIA UPS (BUS) FED-EX HAND OTHER ____	AIR BILL#

HAZWRAP/NEESA Y N

QC LEVEL 1 2 3

COC Y | ICE Y

ANA REQ Y | TEMP cool

CUST SEAL Y | Ph —

SAMPLE COND. good

REMARKS: D

ENTERED INTO LIMS ____ COC REVIEWED ____

000007

SCOEPA00022326

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180
Phone (503) 243-2020
TDD (503) 241-7519

December 15, 1995 SER52:TM

Ms. Laurie J. McCulloch
Manager, Underground Storage Tank Section
Department of Environmental Quality
Northwest Region
2020 SW Fourth Ave., Suite 400
Portland, Oregon 97201-4987

RE: Wacker Siltronic Corporation Petroleum Contaminated Soil Closure Report

Dear Ms. McCulloch:

Attached is the closure report required under condition 18 of the Solid Waste Letter of Authorization and Permit No.: PCSLA-NWR-95-004. This permit was issued for the onsite treatment of petroleum contaminated soils discovered during construction activities associated with facility expansion at Wacker Siltronic.

Your assistance during this process was greatly appreciated. Should you have any questions regarding this report or activities conducted during the treatment operation, please contact me, Tom McCue, at 241-7532.

Sincerely,

WACKER SILTRONIC CORPORATION

Thomas C. McCue
Environmental Manager

cc: John Pittman
Richard Rose-DEQ

SCOEPA00022327

PETROLEUM CONTAMINATED SOILS

CLOSURE REPORT

Prepared for

Wacker Siltronic Corporation

by

Deaver Environmental Group, Inc.

December 14, 1995

SCOEPA00022328

PETROLEUM CONTAMINATED SOILS
CLOSURE REPORT

The following data is provided to comply with condition 18 of the Petroleum Contaminated Soil Treatment Permit (#PCSLA-NWR-95-004) issued to Wacker Siltronic Corporation by DEQ on April 17, 1995 and amended on May 12, 1995.

Disposal Documents

1) St. John's Landfill - Property Owner Statement of Final Soil Disposition (includes reuse of all treated soils as clean cover material)

2) Permit #2306 with Sanifill Northwest - Hillsboro Landfill (includes contaminated soils from scraping the treatment area, and soils excavated from hot spots, hay bales, and plastic sheeting)

3) Oregon Hydrocarbon, Inc. - Soil Data and Certification Sheet (includes contaminated soils from treatment area identified during field screening)

4) Spencer Invoice for disposal of leachate removed from excavated areas prior to starting excavation work each morning. Leachate was processed through an oil/water separator. The oil was sent to Spencer for recycle and the water went to the Wacker wastewater treatment system and discharged under the Industrial Pretreatment Permit.

Description of Work Related to Closure

All treated soils processed through the MSRU (Mobile Soil Remediation Unit) met the permitted constituent levels and were sent to St. John's Landfill for use as clean cover material.

After treatment activities had ceased, the following closure activities occurred in the contaminated soil staging and treatment areas.

SCOEPA00022329

1) Prior to removing the MSRU, soils in the treatment and staging areas were scraped to a level of six inches and areas directly underneath the equipment were hand excavated. The soils were collected and treated in the MSRU and sent to St. John's Landfill for use as clean cover material.

2) The MSRU was removed from the site.

3) Areas with visible contamination (dark spots in the soil) where the treatment equipment had been located were scraped again, and the soils sent off-site to Oregon Hydrocarbon, Inc. for treatment by thermal desorption. The area where the treatment equipment had been located was sampled (Sample #'s 95-576 - 95-579) using both composite and grab sample methods. All samples exceeded the 100 mg/kg for TPH, however, none of the samples exceeded the 40 mg/kg standard for TPH-G.

4) The entire treatment area including the area where the treatment equipment had been located and the area where the contaminated soil had been staged prior to treatment was scraped to a depth of one foot.

5) Seventeen (17) soil samples were collected on a grid pattern from the treatment area and analyzed per methods TPH-G and TPH-418.1M. Three areas with levels of TPH exceeding 100 mg/kg were further excavated to a depth of three feet (Sample #'s 95-580 thru 95-596).

6) The soil scraped from the above areas was then sampled for Benzene (Sample #95-597). Based on the analytical results, the soil was sent to Hillsboro Landfill under Permit #2306.

7) The six locations where hydrocarbons had been detected in the previous sampling, and locations immediately around them, were then resampled (13 sample points) and analyzed per methods TPH-D and TPH-418.1M (Sample #'s 95-598 thru 95-610). Analytical results for all sample locations were below the maximum allowable contaminant level of 100 mg/kg for

waste oil, heating oil and heavy oil contaminated soil (by DEQ Method TPH-418.1) established by the Permit. No analysis was done for TPH-G based on results from 20 earlier samples indicating that gasoline levels were below 40 mg/kg (Sample #'s 95-576 thru 596).

All conditions of the Solid Waste Letter of Authorization have been met and the area used for staging and treatment of the contaminated soils has been covered with gravel and is currently being used for temporary parking to support construction activities on the site.

Attachments:

1) St. John's Landfill - Property Owner Statement of Final Soil Disposition
2) Sanifill Northwest - Hillsboro Landfill Permit #2306
3) Oregon Hydrocarbon, Inc. - Soil Data and Certification Sheet
4) Spencer Invoice
5) Wacker site map showing location of treatment area
6) Sample #'s 95-576 thru 95-579 and map
7) Sample #'s 95-580 thru 95-596 and map
8) Sample # 95-597
9) Sample #'s 95-598 thru 95-610 and map

ATTACHMENT 1

PROPERTY OWNER STATEMENT

FINAL SOIL DISPOSITION

FACILITY INFORMATION

(UST cleanup project where soils originated)

DEQ File Number assigned to site: ORD-096253737

Facility Name: Wacker Siltronic

Facility Address: 7200 N.W. Front Ave
Portland, Oregon 97210

FINAL DISPOSITION SITE INFORMATION

(Property where treated soils will be placed once treatment is complete)

Site Address: 9363 N. Columbia Blvd.
Portland OR 97203

Tax Lot No.(s): Sec 36, T.2N R.1W, WM County: Multnomah

Approximate size of property:

Acres: 250 or Sq. Ft.: _____ or Dimensions: _____

Property Owner Name: Metro

Mail Address: 600 NE Grand Ave
Portland, OR 97232

Phone Number: (503) 797-1652

THE PROPERTY OWNER WHERE THE TREATED SOILS WILL BE DEPOSITED MUST SIGN AND DATE THE FOLLOWING STATEMENT:

As the owner of the property listed above which will receive the treated soil from the UST cleanup project also listed above once treatment is complete, I agree to ensure that the soils will be placed on my property such that they are 1) above seasonal high groundwater levels, 2) not located near wetlands or surface water, 3) not located within a 100 year floodplain, and 4) will be placed out of human contact or possible exposure. I also understand that I may be jointly responsible and liable for any future problems arising from this soil disposition activity.

Signature: Terrell Davis, Program Sup. Date: 18 Apr 95

This signed statement must be included with the Soil Treatment Plan.

DEPARTMENT OF ENVIRONMENTAL QUALITY - April, 1993

SCOEPA00022333

ATTACHMENT 2

Permit No: 2306

Approval Expiration: 9/12/95

APPROVED

SANIFILL NORTHWEST

Northern Wasco County Landfill, Hillsboro Landfill, Riverbend Landfill

Generator's Special Waste Profile Sheet

IMPORTANT: This form must be completed by a Representative of the Waste Generator. The information on this form must be typed or legibly printed in ink and signed by an Authorized Agent of the Generator. Completed form bearing original signature must be provided PRIOR TO DISPOSAL.

1.0 Generator Information

1.1 Generator Name: Wacker Siltronic 1.5 Generator's EPAID No.: ORD 096253737

1.2 Site of Waste Generation: Wacker Siltronic
Facility Address: 7200 N.W. Front Avenue 1.6 Facility Phone:
City: Portland State: OR Zip: 97210 (503) 243-2020

1.3 Technical Contact: Sandra Archer/Chip Bloomer 1.7 Technical Contact Phone:
Title: Environmental Engineer (503) 243-2020

1.4 General Site Activity: Manufacture Silicon Wafers

2.0 Waste Description

2.1 General Waste Description: thermally Desorbed Soil

2.2 Process Generating Waste: Excavation

2.3 Is this Waste "Hazardous Waste" as defined by Federal, State or Local Regulations: ____ Yes X No

2.4 Has this waste ever been "handled" or "Disposed" of as hazardous: ____ Yes X No
____ Material ____ Waste ____ Disposed of via a "uniform hazardous waste manifest".
If yes, explain: _____

2.4 Waste Generation Rate: 250 Tons ____ Cubic Yards ____ Other: _____
Per: ____ Day X Week ____ Year ____ Other ____ One Time Disposal? ____ Yes ____ No.

2.6 Waste will be transported in: ____ Roll Off Boxes ____ Drums (Type/Size): _____
X Dump Trucks ____ Other: _____

3.0 Waste Properties at Room Temperature

3.1 Physical State:
X Solid ____ Semi Solid
____ Powder ____ Liquid
____ Combination: ____ Other: _____

3.2 Odor: X None ____ Mild ____ Strong

3.3 pH Range: 6.0 to 8.0

3.4 Color(s): Black

3.5 Percent Solid: 99 %

3.6 Flash Point F: X None ____ <140° F
____ 140° -199° F ____ >200° F

RETURN APPLICATION TO:
Hillsboro Landfill, Inc.
3205 SE Minter Bridge Rd.
Hillsboro, Oregon 97123
PH: 503-640-9427
FAX: 503-648-2490

SCOEPA00022335

SANIFILL NORTHWEST

Special Waste Permit Management Decision

APPROVED

Special Waste Permit No.: 23006

Permit Expiration Date: 9/12/95

Generators Name: Wacker Siltronic

Address of Waste Generation: 7200 NW Front Ave.

City: Portland State: OR

General Waste Description: clean up soil, petroleum contaminated

Landfill Action: Disposal of the above described special waste is:

Approved ✓ Disapproved ____ for disposal at Hillsboro Landfill

at the disposal rate of $ 57.86 per Ton $ _____ Per trip min/charge

Waste Acceptance Mgr. Signature: Ellen L. Rios Date: 6/12/95 EXR

Precautions, Conditions, or Limitations on Approval: _____

If disapproved, reason for denial of permit: _____

Credit/Billing Information

Accept _____ Reject _____ By: _____

Comments: _____

Landfill Account No. 41AC0001

SCOEPA00022336

ATTACHMENT 3

Portland, Oregon
Soil Recycling Facility

OREGON HYDROCARBON INC.
(a TPS Technologies Inc. company)
SOIL DATA AND CERTIFICATION SHEET

Date: 1-23-95

Generator and/or Client:
Waker Sultronics
700 N.W. Front
Portland, Ore. 97209

Consultant/Engineering Firm:
Spencer, Inc.
9145 Mollala Ave
Oregon City, Ore. 97045

Testing Laboratory (include contact person and phone #):
North Creek Analytical
Howard Holmes (503) 641-7599

Sampling procedures and location (attach add'l sheets and map)
SEE grid
Composite Samples from Boxes

Site History (list address, describe contamination type, contamination source, how contamination was stored, past activities at site - Attach additional sheet if necessary)
Pipe line Spills / Riverfill
non-Hazardous Soil

Estimated Qty (Tons):
30-200 TONS

State Classification:
non-Haz.

Please check appropriate box below and attach all required analytical reports, including test methodologies used. Unless otherwise noted, composite samples should be collected with the following frequency: One (1) sample for 250 tons or less; two (2) samples for 500 tons or less and one (1) additional sample for each 500 additional tons.

☐ I/We certify that the soil referenced herein is contaminated solely by virgin petroleum products from leaking underground storage tank(s).

Attach analysis for the following:
1. Total Petroleum Hydrocarbons ID test (Method TPH-HCID)
2. If Method TPH-HCID shows gasoline is present, perform a Total Petroleum Hydrocarbons test for gasoline (Method TPH-G or EPA Method 8020)
3. If Method TPH-HCID shows that diesel, heating oil, and/or Bunker C are present, perform Total Petroleum Hydrocarbons tests for fuel oils (EPA Method 418.1 Modified)
4. If Method TPH-HCID shows that both gasoline and diesel or heating oils are present, then both types of TPH test must be performed.

☒ I/We certify that some or all of the contaminants in the soil referenced herein is waste oil, or some other non-virgin petroleum product or virgin petroleum from something other than a leaking underground storage tank.

Attach analysis for the following:
1. Total Petroleum Hydrocarbons ID test (Method TPH-HCID)
2. If Method TPH-HCID shows gasoline is present, perform a Total Petroleum Hydrocarbons test for gasoline (Method TPH-G or EPA Method 8020)**
3. If Method TPH-HCID shows that diesel, heating oil, and/or Bunker C are present, perform Total Petroleum Hydrocarbons tests for fuel oils (EPA Method 418.1 Modified)
4. If Method TPH-HCID shows that both gasoline and diesel or heating oils are present, then both types of TPH test must be performed.
5. Halogenated Volatile Organic compounds (EPA Method 8240)
6. PCB's and Halogenated Pesticides (EPA Method 8080)
7. TCLP (EPA Method 1311) metals concentration for a) through h):
   a) arsenic c) cadmium e) lead g) selenium
   b) barium d) chromium f) mercury h) silver

** If elevated benzene levels are detected, an additional TCLP benzene test may be required in an above-ground spill or leak situation.

No soils referenced herein may be delivered until the foregoing certificate is received and approved by OHI, and OHI issues manifests and assigns a delivery date. If any soils delivered to OHI are found to be "hazardous waste" pursuant to federal or state regulations, Client shall be solely responsible for their removal. If Client fails to so remove such soils, OHI, acting as Client's agent, may arrange for such removal at Client's expense.

This is a complete and accurate description of the soil referenced herein; no deliberate or willful omissions have been made and all known or suspected hazards have been disclosed herein. I/We further hereby certify that the soil is not "hazardous" as defined by U.S. Department of Transportation (DOT), U.S. Environmental Protection Agency (EPA), State or local regulations.
All required analysis reports are attached.

Generator's Authorized Signatory: X Chip Bl Date: 1/25/95

Print Name: X Chip Blooks Title: X Engr.

Engineer/Environmental Firm Authorized Signatory: Christina Lemeers Date: 1-23-95

Print Name: Christina Lemeers Title: ENVIRO.

JAN 24 '95 03:48PM SPENCER ENVIRO P.2

SCOEPA00022338

OREGON HYDROCARBON INC.

Test No.: 09-01066 Time In 10:26 Time Out 10:40 Date 01-27-95

Owner Name: SPENCER/WAKER
7200 NW FRONT AVE
PORTLAND, OR

Gross: 59760 lb INB
Tare : 31980 lb
Net : 27780 lb

Load No.: 003
Transporter: SPENCER
Driver's Name: KIRK MORGAN
Reaction No.: 008138

Net Tons : 13.89

Generator and/or Consultant

PORTLAND, OR		AVG. PPM Levels
Designated Facility (Transporter's Name and Address): TPS/OREGON HYDROCARBON 9333 NORTH HARBORGATE STREET PORTLAND, OR 97203	Facility Phone #: (503) 735-9525 Person to Contact: GLENNA MULLAN Fax: (503) 240-1712	Facility Permit Number:
Transporter Name and Mailing Address:	Transporter's Phone #:	Transporter's US EPA ID No.:
	Person to Contact:	Transporter's DOT No.:
	Fax:	Customer Account Number with TPS:

Description of Soil	Moisture Content	Contaminated by:	Approx. Qty.	Description of Delivery	Gross Weight	Tare Weight	Net Weight
Sand ☐ Organic ☐ Clay ☐ Other ☐	0-10% ☐ 10-20% ☐ 20%-over ☐	Gas ☐ Diesel ☐ Other ☐			59760	31980	27780
Sand ☐ Organic ☐ Clay ☐ Other ☐	0-10% ☐ 10-20% ☐ 20%-over ☐	Gas ☐ Diesel ☐ Other ☐				13.89	

List any exception to items listed above:

Generator's and/or consultant's certification: I/We certify that the soil referenced herein is taken entirely from those soils described in the Soil Date Sheet completed and certified by me/us for the Generation Site shown above and nothing has been added or done to such soil that would alter it in any way.

Print or Type Name: Generator ☐ Consultant ☐ Signature and date: Month Day Year

Transporter

Transporter's certification: I/We acknowledge receipt of the soil described above and certify that such soil is being delivered in exactly the same condition as when received. I/We further certify that this soil is being directly transported from the Generation Site to the Designated Facility without off-loading, adding to, subtracting from or in any way delaying delivery to such site.

Print or Type Name: Kirk Morgan Signature and date: [signature] Month 1 Day 27 Year 95

Facility

Discrepancies: [signature]

Recycling Facility certifies the receipt of the soil covered by this manifest except as noted above:

Recy

Print or Type Name: Glenna Mullan Signature and date: Glenna Mullan 1-27-95

Please print or type TRANSPORTER'S COPY

SCOEPA00022339

R2 166 BACK to BAKER

Soil Recycling | Manifest

OREGON HYDROCARBON INC.

ifest No.: 09-01066 Time In 12:09 Time Out 12:24 Date 01-27-95

tomer Name: SPENCER/WAKER
7200 NW FRONT AVE
PORTLAND, OR

Gross: 56140 lb INB
Tare : 31880 lb
Net : 24260 lb
Net Tons : 12.13

Load No.: 004
Transporter: SPENCER
iver's Name: KIRK MORGAN
action No.: 008139

Generator and/or Consultant

Designated Facility: TPS/OREGON HYDROCARBON 9333 NORTH HARBORGATE STREET PORTLAND, OR 97203	Facility Phone #: 503 GLENNA MULLAN FAX: (503) 240-1712	
Transporter Name and Mailing Address:	Transporter's Phone #:	Transporter's US EPA ID No.:
	Person to Contact:	Transporter's DOT No.:
	FAX #:	Customer Account Number with TPS:

Description of Soil	Moisture Content	Contaminated by	Approx. Qty	Description of Delivery	Gross Weight	Tare Weight	Net Weight
Sand ☐ Organic ☐ Clay ☐ Other ☐	0-10% ☐ 10-20% ☐ 20%-over ☐	Gas ☐ Diesel ☐ Other ☐			56140	31880	24260
Sand ☐ Organic ☐ Clay ☐ Other ☐	0-10% ☐ 10-20% ☐ 20%-over ☐	Gas ☐ Diesel ☐ Other ☐				12.13	

List any exception to items listed above:

Generator's and/or consultant's certification: I/We certify that the soil referenced herein is taken entirely from those soils described in the Soil Data Sheet completed and certified by me/us for the Generation Site shown above and nothing has been added or done to such soil that would alter it in any way.

Print or Type Name: Generator ☐ Consultant ☐ | Signature and date: | Month | Day | Year

Transporter

Transporter's certification: I/We acknowledge receipt of the soil described above and certify that such soil is being delivered in exactly the same condition as when received. I/We further certify that this soil is being directly transported from the Generation Site to the Designated Facility without off-loading, adding to, subtracting from or in any way delaying delivery to such site.

Print or Type Name: Kirk Morgan | Signature and date: [signature] | Month | Day 27 | Year 95

Facility

Discrepancies:

Recycling Facility certifies the receipt of the soil covered by this manifest except as noted above:

Print or Type Name: Glenna Mullan | Signature and date: [signature] 1-27-95

Please print or type. | TRANSPORTER'S COPY

JAN 31 '95 02:07PM SPENCER ENVIRO P.3

SCOEPA00022340

R-2 134 TO BAKER

OREGON HYDROCARBON INC.

No.: 09-01066 Time In 14:49 Time Out 15:07 Date 01-27-95

Name: SPENCER/WAKER
7200 NW FRONT AVE
PORTLAND, OR

Gross: 57840 lb INB
Tare : 32620 lb
==========
Net : 25220 lb

ad No.: 005
porter: SPENCER
s Name: KIRK MORGAN
on No.: 008145

Net Tons : 12.61

ORTLAND, OR

PS/OREGON HYDROCARBON 333 NORTH HARBORGATE STREET ORTLAND, OR 97203	(503) 735-9525 GLENNA MULLAN (503) 240-1712	Facility Permit Numbers
...ter Name and Mailing Address:	Transporter's Phone #:	Transporter's US EPA ID No.:
	Person to Contact:	Transporter's DOT No.:
	FAX #:	Customer Account Number with TPS:

...ription of Soil	Moisture Content	Contaminated by:	Approx. Qty	Description of Delivery	Gross Weight	Tare Weight	Net Weight
☐ Organic ☐ ☐ Other ☐	0-10% ☐ 10-20% ☐ 20%-over ☐	Gas ☐ Diesel ☐ Other ☐			57840	32620	25220
Organic ☐ Other ☐	0-10% ☐ 10-20% ☐ 20%-over ☐	Gas ☐ Diesel ☐ Other ☐				12.61	

...exception to items listed above:

...or's and/or consultant's certification: I/We certify that the soil referenced herein is taken entirely from those soils described in the Soil ...heet completed and certified by me/us for the Generation Site shown above and nothing has been added or done to such soil that would ...in any way.

Type Name:	Generator ☐	Consultant ☐	Signature and date:	Month	Day	Year

...orter's certification: I/We acknowledge receipt of the soil described above and certify that such soil is being delivered in exactly the same ...n as when received. I/We further certify that this soil is being directly transported from the Generation Site to the Designated Facility ...off-loading, adding to, subtracting from or in any way delaying delivery to such site.

Type Name:	Signature and date:	Month	Day	Year
Kirk Morgan	[signature]	1	27	95

...cies:

...acility certifies the receipt of the soil covered by this manifest except as noted above:

Type Name:	Signature and date:
Glenna Mullan	Glenna Mullan 1-27-95

...or type: TRANSPORTER'S COPY

JAN 31 '95 02:08PM SPENCER ENVIRO.

SCOEPA00022341

TPS Technologies Soil Recycling
Non-Hazardous Soils

Manifest #

Facility #:	Given by TPS:	Load #
09	01066	001

OREGON HYDROCARBON INC.

fest No.: 09-01066 Time In 08:26 Time Out 08:37 Date 01-27-95

mer Name: SPENCER/WAKER
7200 NW FRONT AVE
PORTLAND, OR

Gross: 50580 lb INB
Tare : 32760 lb
Net : 17820 lb
Net Tons : 8.91

Load No.: 001
ansporter: SPENCER
er's Name: KIRK MORGAN
tion No.: 008135

Generator and/or Consultant

Designated Facility (Transporter)
TPS/OREGON HYDRO...
9333 NORTH HARBORGATE STREET
PORTLAND, OR 97203
(503) 240-171...

Transporter Name and Mailing Address | Tel (person) Phone # | Transporter's US EPA ID No.
Transporter's DOT No.
Customer Account Number with TPS:

Description of Soil	Moisture Content	Contaminated by	Approx. Qty	Description of Delivery	Gross Weight	Tare Weight	Net Weight
Sand ☐ Organic ☐ Clay ☐ Other ☐	0-10% ☐ 10-20% ☐ 20%-over ☐	Gas ☐ Diesel ☐ Other ☐			50580	32760	17820
Sand ☐ Organic ☐ Clay ☐ Other ☐	0-10% ☐ 10-20% ☐ 20%-over ☐	Gas ☐ Diesel ☐ Other ☐				8.91	

...at any exception to items listed above:

...erator's and/or consultant's certification: I/We certify that the soil referenced herein is taken entirely from those soils described in the Soil ... Sheet completed and certified by me/us for the Generation Site shown above and nothing has been added or done to such soil that would ...t in any way.

Type Name: Generator ☐ Consultant ☐ | Signature and date: | Month | Day | Year

Transporter

Tra...er's certification: I/We acknowledge receipt of the soil described above and certify that such soil is being delivered in exactly the same cond...s when received. I/We further certify that this soil is being directly transported from the Generation Site to the Designated Facility witho...-loading, adding to, subtracting from or in any way delaying delivery to such site.

Print or Type Name: X Kirk Morgan | Signature and date: X [signature] | Month 1 | Day 27 | Year 95

Discrepancies

Recycling Facility

Recycling Facility certifies the receipt of the soil covered by this manifest except as noted above:

Print or Type Name: Glenna Mullan | Signature and date: [signature] 1-27-95

Please print or type.

TRANSPORTER'S COPY

JAN 31 '95 02:09PM SPENCER ENVIRO

SCOEPA00022342

OREGON HYDROCARBON INC.

anifest No.: 09-01066 Time In 08:33 Time Out 08:51 Date 01-27-95

ustomer Name: SPENCER/WAKER
7200 NW FRONT AVE
PORTLAND, OR

Gross: 64020 lb INB
Tare : 33860 lb
==========
Net : 30160 lb

Load No.: 002
Transporter: SPENCER
Driver's Name: JOHN LARSON
ansaction No.: 008137

Net Tons : 15.08

3 ? 3 more Ship → 5 Loads
5 Boxes Total 62.62
62.62 Tons

PORTLAND, OR	FAX #	AVG. Loads 62
Destination: TPS/OREGON HYDROCARBON 9333 NORTH HARBORGATE STREET PORTLAND, OR 97203	Facility (503) 735-9525 Person to Contact GLENNA MULLAN FAX (503) 240-1718	Facility Permit Numbers
Transporter Name and Mailing Address	Transporter's Phone #	Transporter's US EPA ID No.
	Person to Contact	Transporter's DOT No.
	FAX #	Customer Account Number with TPS

Description of Soil	Moisture Content	Contaminated By	Approx. Qty	Description of Delivery	Gross Weight	Tare Weight	Net Weight
Sand ☐ Organic ☐ Clay ☐ Other ☐	0-10% ☐ 10-20% ☐ 20%-over ☐	Gas ☐ Diesel ☐ Other ☐			64020	33860	30160
Sand ☐ Organic ☐ Clay ☐ Other ☐	0-10% ☐ 10-20% ☐ 20%-over ☐	Gas ☐ Diesel ☐ Other ☐				15.08	

List any exception to items listed above:

Generator's and/or consultant's certification: I/We certify that the soil referenced herein is taken entirely from those soils described in the Soil Date Sheet completed and certified by me/us for the Generation Site shown above and nothing has been added or done to such soil that would alter it in any way.

Print or Type Name: Generator ☐ Consultant ☐ Signature and date: Month Day Year

Transporter's certification: I/We acknowledge receipt of the soil described above and certify that such soil is being delivered in exactly the same condition as when received. I/We further certify that this soil is being directly transported from the Generation Site to the Designated Facility without off-loading, adding to, subtracting from or in any way delaying delivery to such site.

Print or Type Name: X John Larson Signature and date: X John Larson Month 01 Day 27 Year 95

Discrepancies:

Recycling Facility certifies the receipt of the soil covered by this manifest except as noted above:

Print or Type Name: Glenna Mullan Signature and date: Glenna Mullan 1-27-95

Please print or type: TRANSPORTER'S COPY

P.6

JAN 31 '95 02:10PM SPENCER ENVIRO.

SCOEPA00022343

ATTACHMENT 4

(503) 655-0896

Spencer, Inc.

FAX: (503) 657-3395

PO BOX 5207
OREGON CITY, OREGON 97045-8207

INVOICE #
3140

* * I N V O I C E * *

Mar 22 95

BILL TO:
WACKER SULTRONIC
7200 NW FRONT
PORTLAND, OR

97209

LOCATION:
WACKER SULTRONIC
7200 NW FRONT
PORTLAND, OR

97209

CUST #		PO #	BILLING	TERMS 1.5% 10DAYS	DUE DATE	ORDER #
56145	KS	42106	Mar 24 95	NET 30 DAYS	Apr/23/95	3707

SAMPLE STEAM WASH BAY OIL/WATER SEPARATOR AND THEN PUMP IT OUT AS

0008-0SRV-0055-0SUR	SERVICE CALL CHARGE (INDU	1.00	125.00EA	125.00
0006-0NLQ-SE3 -0SUR	NON-HAZ LIQUID DISPOSAL (	661.00	0.50GA	330.50
0007-LAB -NET -0000	VOLATILES/PURGEABLES (624	1.00	200.00EA	200.00
0007-LAB -NET -0002	TCLP 8-LAB ANALYSIS (	1.00	200.00EA	200.00

RDERED BY: LYNN ERICKSON @243-2020 EXT 157

0.00
0.00
0.00

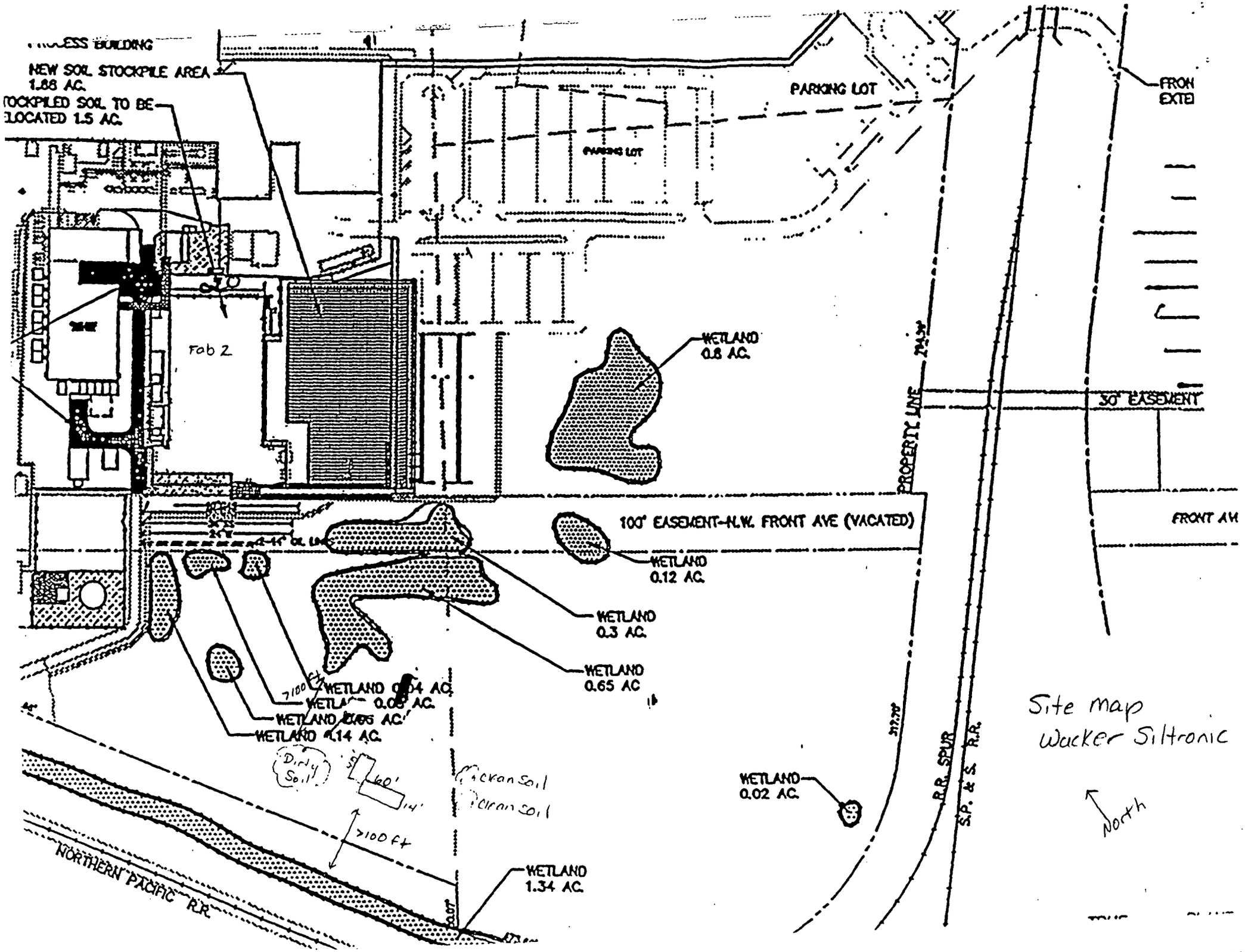
855.50

NANCIAL CHARGE of 1½% per month may be applied to any Past Due amount. Past
.. Accounts may be placed on C.O.D. without notification. If outside collection action is
cessary purchaser shall pay all costs of collection including reasonable attorney fees.

PAY THIS AMOUNT →

SCOEPA00022345

ATTACHMENT 5



SCOEPA00022347

ATTACHMENT 6

NORTH CREEK ANALYTICAL

18939 120th Avenue N.E., Suite 101 • Bothell, WA 98011-9508 (206) 481-9200 • FAX 485-2992
East 11115 Montgomery, Suite B • Spokane, WA 99206-4776 (509) 924-9200 • FAX 924-9290
9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

RECEIVED JUN 30 1995

TPH-G per Oregon DEQ (C6-C10)
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P506332
Matrix: soil
Sampled: 06/23/95
Received: 06/23/95

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-576-Composite	P506332-1	Gasoline/Related	6.9	2.0	06/26/95	06/26/95
95-577-grab	P506332-2	Gasoline/Related	7.2	2.0	06/26/95	06/26/95
95-578-grab	P506332-3	Gasoline/Related	ND	2.0	06/26/95	06/26/95
95-579-grab	P506332-4	Gasoline/Related	ND	2.0	06/26/95	06/26/95

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00022349

NORTH CREEK ANALYTICAL

18939 120th Avenue N.E., Suite 101 • Bothell, WA 98011-9508 (206) 481-9200 • FAX 485-2992
East 11115 Montgomery, Suite B • Spokane, WA 99206-4776 (509) 924-9200 • FAX 924-9290
9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

RECEIVED JUN 3 0 1995

TPH-D per Oregon DEQ (C10-C28)

Results In mg/kg (ppm)

Client:	Wacker Siltronic Corporation	**NCA Project #:**	P506332
Project:	FAB-2	**Matrix:**	soil
		Sampled:	06/23/95
		Received:	06/23/95

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-576-Composite	P506332-1	Diesel/Related	1,200	25	06/26/95	06/27/95
95-577-grab	P506332-2	Diesel/Related	350 *[1]	25	06/26/95	06/27/95
95-578-grab	P506332-3	Diesel/Related	100	25	06/26/95	06/27/95
95-579-grab	P506332-4	Diesel/Related	300	25	06/26/95	06/27/95

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00022350

NORTH CREEK ANALYTICAL

18939 120th Avenue N.E., Suite 101 • Bothell, WA 98011-9508 (206) 481-9200 • FAX 485-2992
East 11115 Montgomery, Suite B • Spokane, WA 99206-4776 (509) 924-9200 • FAX 924-9290
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RECEIVED JUN 3 0 1995

TPH-418.1M per Oregon DEQ
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P506332
Matrix: soil
Sampled: 06/23/95
Received: 06/23/95

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-576-Composite	P506332-1	TPH	290	100	06/26/95	06/27/95
95-577-grab	P506332-2	TPH	950	500	06/26/95	06/27/95
95-578-grab	P506332-3	TPH	180	100	06/26/95	06/27/95
95-579-grab	P506332-4	TPH	670	100	06/26/95	06/27/95

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00022351

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RECEIVED JUN 3 0 1995

TCLP VOC's per EPA 8240
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P506332
Matrix: soil
Sampled: 06/23/95
Received: 06/23/95

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-576-Composite	P506332-1	Benzene	ND	0.010	06/26/95	06/26/95
		Carbon Tetrachloride	ND	0.010		
		Chlorobenzene	ND	0.010		
		Chloroform	ND	0.010		
		1,4-Dichlorobenzene	ND	0.010		
		1,2-Dichloroethane	ND	0.010		
		1,1-Dichloroethene	ND	0.010		
		Methyl Ethyl Ketone	ND	0.13		
		Tetrachloroethene	ND	0.010		
		Trichloroethene	ND	0.010		
		Vinyl Chloride	ND	0.025		
95-577-grab	P506332-2	Benzene	ND	0.010	06/26/95	06/26/95
		Carbon Tetrachloride	ND	0.010		
		Chlorobenzene	ND	0.010		
		Chloroform	ND	0.010		
		1,4-Dichlorobenzene	ND	0.010		
		1,2-Dichloroethane	ND	0.010		
		1,1-Dichloroethene	ND	0.010		
		Methyl Ethyl Ketone	ND	0.13		
		Tetrachloroethene	ND	0.010		
		Trichloroethene	ND	0.010		
		Vinyl Chloride	ND	0.025		
95-578-grab	P506332-3	Benzene	ND	0.010	06/26/95	06/26/95
		Carbon Tetrachloride	ND	0.010		
		Chlorobenzene	ND	0.010		
		Chloroform	ND	0.010		
		1,4-Dichlorobenzene	ND	0.010		
		1,2-Dichloroethane	ND	0.010		
		1,1-Dichloroethene	ND	0.010		
		Methyl Ethyl Ketone	ND	0.13		
		Tetrachloroethene	ND	0.010		
		Trichloroethene	ND	0.010		
		Vinyl Chloride	ND	0.025		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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RECEIVED JUN 3 0 1995

TCLP VOC's per EPA 8240
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

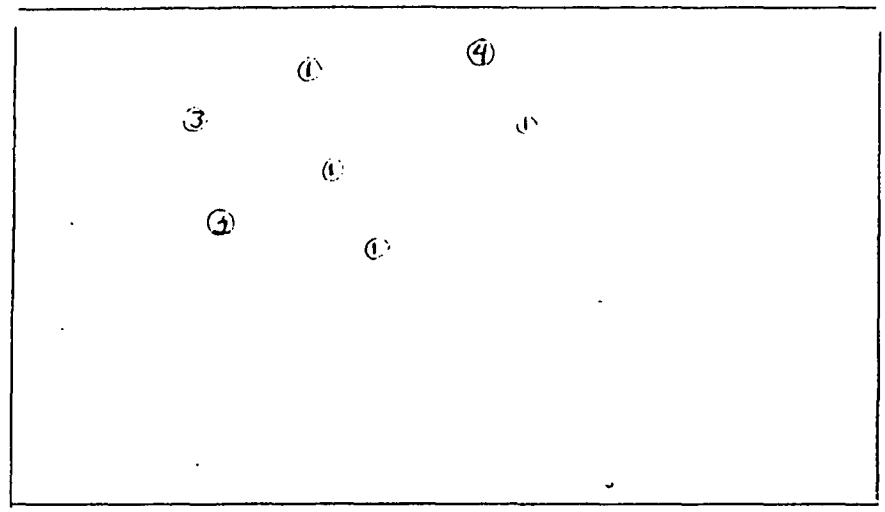
NCA Project #: P506332
Matrix: soil
Sampled: 06/23/95
Received: 06/23/95

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-579-grab	P506332-4	Benzene	ND	0.010	06/26/95	06/26/95
		Carbon Tetrachloride	ND	0.010		
		Chlorobenzene	ND	0.010		
		Chloroform	ND	0.010		
		1,4-Dichlorobenzene	ND	0.010		
		1,2-Dichloroethane	ND	0.010		
		1,1-Dichloroethene	ND	0.010		
		Methyl Ethyl Ketone	ND	0.13		
		Tetrachloroethene	ND	0.010		
		Trichloroethene	ND	0.010		
		Vinyl Chloride	ND	0.025		

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00022353

Soil Sample index ; after Pence moved off site
June 23, 1995 - sample 95-576, 577, 578, 579



① : Composite sample site of 400mls from each site #95-576

② : grab sample #95-577

③ : grab sample #95-578

④ : grab sample #95-579

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ATTACHMENT 7

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TPH-G per Oregon DEQ (C6-C10)
Results In mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P506392
Matrix: soil
Sampled: 06/29/95
Received: 06/30/95

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-580	P506392-1	Gasoline/Related	ND	2.0	06/30/95	06/30/95
95-581	P506392-2	Gasoline/Related	ND	2.0	07/03/95	07/03/95
95-582	P506392-3	Gasoline/Related	ND	2.0	06/30/95	06/30/95
95-583	P506392-4	Gasoline/Related	ND	2.0	06/30/95	06/30/95
95-584	P506392-5	Gasoline/Related	ND	2.0	06/30/95	06/30/95
95-585	P506392-6	Gasoline/Related	ND	2.0	06/30/95	06/30/95
95-586	P506392-7	Gasoline/Related	2.8	2.0	06/30/95	06/30/95
95-587	P506392-8	Gasoline/Related	6.9	2.0	06/30/95	06/30/95
95-588	P506392-9	Gasoline/Related	ND	2.0	06/30/95	06/30/95
95-589	P506392-10	Gasoline/Related	ND	2.0	06/30/95	06/30/95
95-590	P506392-11	Gasoline/Related	ND	2.0	06/30/95	06/30/95
95-591	P506392-12	Gasoline/Related	ND	2.0	06/30/95	06/30/95
95-592	P506392-13	Gasoline/Related	ND	2.0	06/30/95	06/30/95
95-593	P506392-14	Gasoline/Related	ND	2.0	06/30/95	06/30/95
95-594	P506392-15	Gasoline/Related	ND	2.0	06/30/95	06/30/95
95-595	P506392-16	Gasoline/Related	ND	2.0	06/30/95	06/30/95
95-596	P506392-17	Gasoline/Related	ND	2.0	06/30/95	06/30/95

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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TPH-418.1M per Oregon DEQ
Results In mg/kg (ppm)

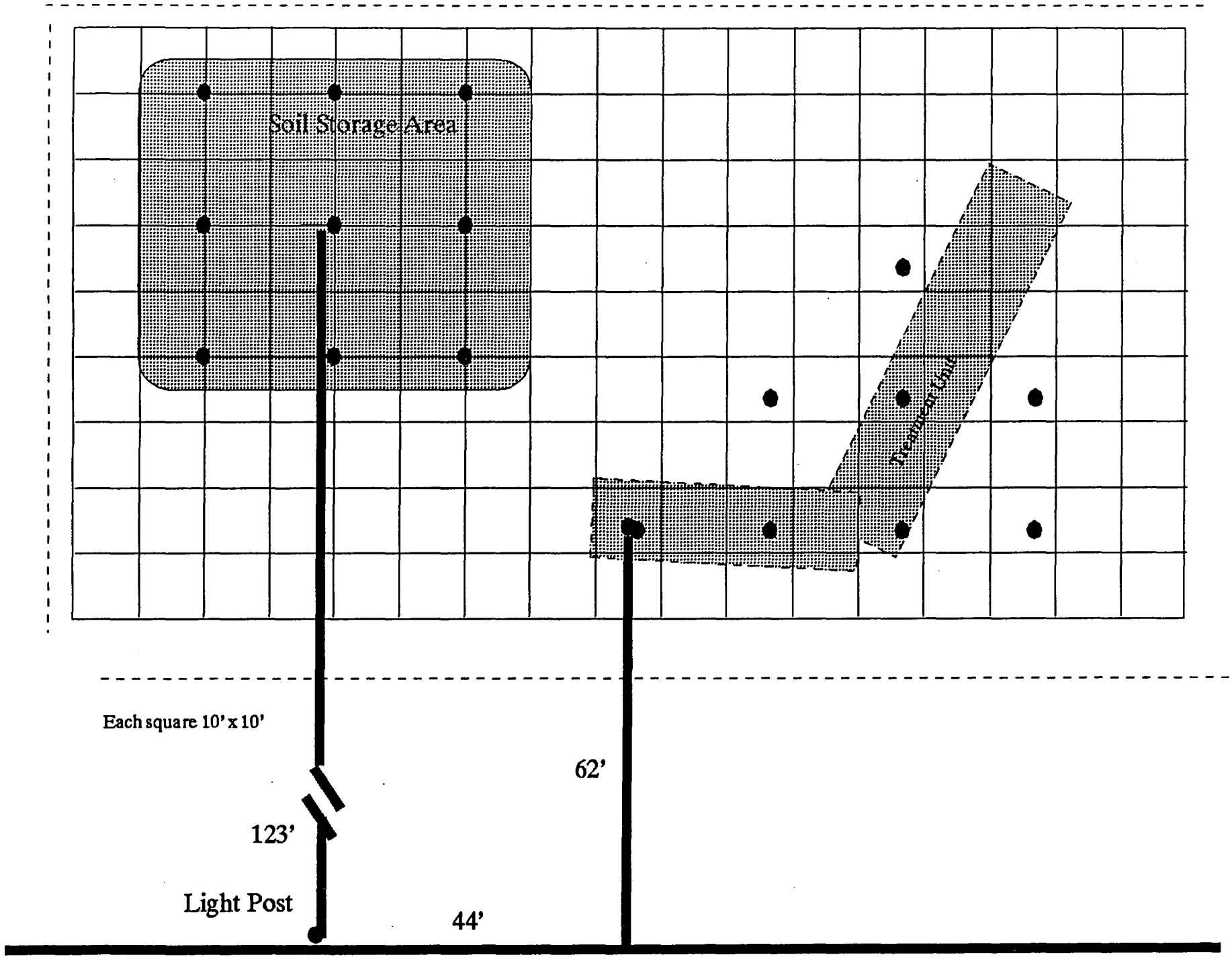
Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P506392
Matrix: soil
Sampled: 06/29/95
Received: 06/30/95

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-580	P506392-1	TPH	ND	20	06/30/95	07/05/95
95-581	P506392-2	TPH	360	20	06/30/95	07/05/95
95-582	P506392-3	TPH	43	20	06/30/95	07/05/95
95-583	P506392-4	TPH	ND	20	06/30/95	07/05/95
95-584	P506392-5	TPH	ND	20	06/30/95	07/05/95
95-585	P506392-6	TPH	ND	20	06/30/95	07/05/95
95-586	P506392-7	TPH	140	20	06/30/95	07/05/95
95-587	P506392-8	TPH	430	20	06/30/95	07/05/95
95-588	P506392-9	TPH	ND	20	06/30/95	07/05/95
95-589	P506392-10	TPH	ND	20	06/30/95	07/05/95
95-590	P506392-11	TPH	ND	20	06/30/95	07/05/95
95-591	P506392-12	TPH	22	20	06/30/95	07/05/95
95-592	P506392-13	TPH	ND	20	06/30/95	07/05/95
95-593	P506392-14	TPH	ND	20	06/30/95	07/05/95
95-594	P506392-15	TPH	29	20	06/30/95	07/05/95
95-595	P506392-16	TPH	ND	20	06/30/95	07/05/95
95-596	P506392-17	TPH	ND	20	06/30/95	07/05/95

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00022357


Soil Storage Area
Treatment Unit
Each square 10' x 10'
62'
123'
Light Post
44'

ATTACHMENT 8

NORTH CREEK ANALYTICAL

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BTEX per EPA 8020
Results In ug/kg (ppb)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P507082
Matrix: soil
Sampled: 07/10/95
Received: 07/10/95

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-597	P507082-1	Benzene	55	13	07/11/95	07/11/95

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00022360

ATTACHMENT 9

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TPH-D per Oregon DEQ (C10-C28)
Results in mg/kg (ppm)

Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P507126
Matrix: soil
Sampled: 07/12/95
Received: 07/12/95

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-598	P507126-1	Diesel/Related	38	25	07/13/95	07/14/95
95-599	P507126-2	Diesel/Related	ND	25	07/13/95	07/14/95
95-600	P507126-3	Diesel/Related	29	25	07/13/95	07/14/95
95-601	P507126-4	Diesel/Related	52	25	07/13/95	07/14/95
95-602	P507126-5	Diesel/Related	28	25	07/13/95	07/14/95
95-603	P507126-6	Diesel/Related	47	25	07/13/95	07/13/95
95-604	P507126-7	Diesel/Related	120	25	07/13/95	07/13/95
95-605	P507126-8	Diesel/Related	39	25	07/13/95	07/13/95
95-606	P507126-9	Diesel/Related	ND	25	07/13/95	07/14/95
95-607	P507126-10	Diesel/Related	ND	25	07/13/95	07/14/95
95-608	P507126-11	Diesel/Related	ND	25	07/13/95	07/14/95
95-609	P507126-12	Diesel/Related	ND	25	07/13/95	07/14/95
95-610	P507126-13	Diesel/Related	ND	25	07/13/95	07/13/95

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00022362

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TPH-418.1M per Oregon DEQ
Results in mg/kg (ppm)

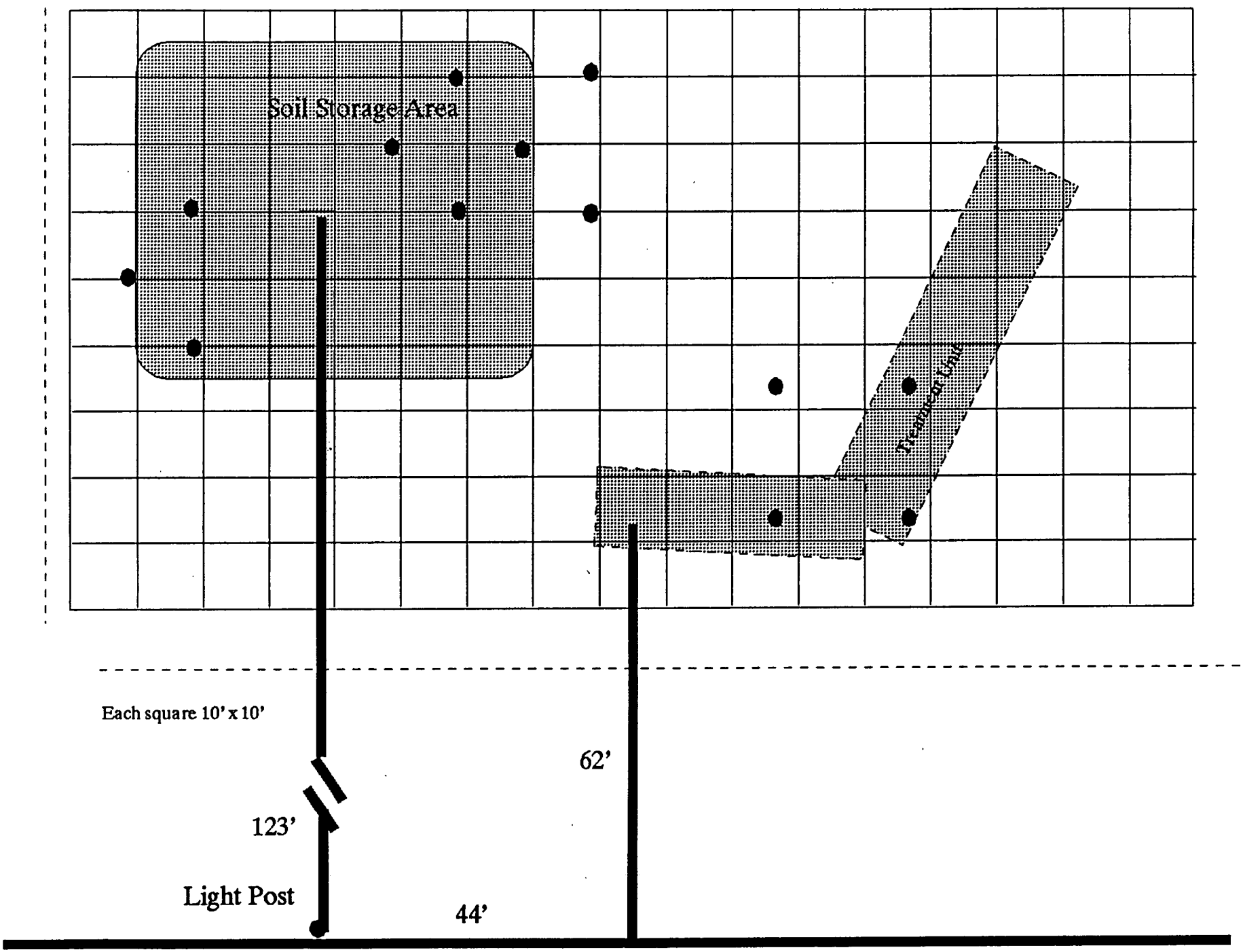
Client: Wacker Siltronic Corporation
Project: FAB-2

NCA Project #: P507126
Matrix: soil
Sampled: 07/12/95
Received: 07/12/95

Client ID	Lab ID	Analyte	Results	MRL	Date Prepared	Date Analyzed
95-598	P507126-1	TPH	47	20	07/13/95	07/13/95
95-599	P507126-2	TPH	ND	20	07/13/95	07/13/95
95-600	P507126-3	TPH	41	20	07/13/95	07/13/95
95-601	P507126-4	TPH	23	20	07/13/95	07/13/95
95-602	P507126-5	TPH	28	20	07/13/95	07/13/95
95-603	P507126-6	TPH	40	20	07/13/95	07/13/95
95-604	P507126-7	TPH	53	20	07/13/95	07/13/95
95-605	P507126-8	TPH	28	20	07/13/95	07/13/95
95-606	P507126-9	TPH	ND	20	07/13/95	07/13/95
95-607	P507126-10	TPH	ND	20	07/13/95	07/13/95
95-608	P507126-11	TPH	ND	20	07/13/95	07/13/95
95-609	P507126-12	TPH	ND	20	07/13/95	07/13/95
95-610	P507126-13	TPH	ND	20	07/13/95	07/13/95

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00022363


Soil Storage Area
Each square 10' x 10'
62'
123'
Light Post
44'

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180
Phone (503) 243-2020
TDD (503) 241-7519

December 15, 1995 SER51:TM

Ms. Laurie J. McCulloch
Manager, Underground Storage Tank Section
Department of Environmental Quality
Northwest Region
2020 SW Fourth Ave., Suite 400
Portland, Oregon 97201-4987

RE: Wacker Siltronic Corporation Petroleum Contaminated Soil Treatment Report

Dear Ms. McCulloch:

Attached is the closure report required under condition 17 of the Solid Waste Letter of Authorization and Permit No.: PCSLA-NWR-95-004. This permit was issued for the onsite treatment of petroleum contaminated soils discovered during construction activities associated with facility expansion at Wacker Siltronic.

Your assistance during this process was greatly appreciated. Should you have any questions regarding this report or activities conducted during the treatment operation, please contact me, Tom McCue, at 241-7532.

Sincerely,

WACKER SILTRONIC CORPORATION

Thomas C. McCue

Thomas C. McCue
Environmental Manager

cc: John Pittman
Richard Rose-DEQ

SCOEPA00022365

PETROLEUM CONTAMINATED SOILS

TREATMENT REPORT

Prepared for

Wacker Siltronic Corporation

by

Deaver Environmental Group, Inc.

December 14, 1995

SCOEPA00022366

PETROLEUM CONTAMINATED SOILS TREATMENT REPORT

The following data is provided to comply with condition 17 of the Petroleum Contaminated Soil Treatment Permit (#PCSLA-NWR-95-004) issued to Wacker Siltronic Corporation by DEQ on April 17, 1995 and amended on May 12, 1995.

The maximum allowable contaminant levels in the treated soil are identified in amended Permit condition 4 as follows:

- 40 mg/kg for gasoline - by DEQ Method TPH-G
- 100 mg/kg for waste oil, heating oil and heavy oil contaminated soils - by DEQ Method TPH 418.1

The Soil Management Plan submitted by Wacker and approved by DEQ describes the sampling procedures that were used to collect soil samples for analysis and characterization. Once excavation of soils began and initial sample results indicated regulated levels of benzene were present, Wacker modified the Soil Management Plan to include on-site treatment of the contaminated soils using a thermal desorption unit operated by PEMCO, Inc. under Air Contaminant Discharge Permit No. 37-0492. Wacker also obtained a Solid Waste Letter Authorization for Treatment of PCS (Petroleum Contaminated Soils), Permit No. PCSLA-NWR-95-004 from DEQ.

Prior to bringing the Mobile Soil Remediation Unit (MSRU) onto the Wacker site, the soils were containerized in roll-off boxes, and each roll-off box was individually sampled. Based on the results of the analysis, the soil was either sent off-site to Oregon Waste Systems - Columbia Ridge Landfill, or sent to Oregon Hydrocarbon, Inc. for further management. Due to the higher levels of Benzene found in the soils, the MSRU was brought onto the site to process the contaminated soils. The same sampling methodology was used throughout the process, first with roll-off boxes and later with piles of contaminated soils prior to treating. Treated soils meeting the permit standards were sent to St. John's Landfill for use as clean cover material.

SCOEPA00022367

Final Soil Sampling Data

Following treatment, the soil was staged in 100 ton batches which were then sampled by the methods described below.

Analytical data for each "batch" of soil is summarized in the attached matrix (see Attachment 4).

Description of the Sampling Methods Used

The following procedure was used to collect representative samples from each roll-off box and pile of contaminated soil.

One representative sample was collected from each roll-off box using a systematic-random, two-dimensional sampling grid. Each box was consecutively numbered and divided into six grids. One-third of the sample volume was collected from grid locations identified as 1, 2 , and 3. Samples were collected using disposable stainless steel spoons, using a new spoon at each grid location. After each representative sample was collected it was labeled, then the sample jar was placed in a Ziploc bag and secured. Samples were placed in a cooler and cooled to 4°C. Chain-of-custody procedures were used for delivering the samples to the analytical laboratory.

Diagram of Sampling Locations

Refer to the attached Soil Management Plan for diagram of sampling grid.

Summary of the Treatment History and Disposal Recommendation

Sampling performed on the soil prior to treatment was for the purpose of making management/disposal determinations. The initial levels of contaminants found in the excavated soils were as follows:

Benzene -- from ND to 8.2 mg/kg
Diesel Compounds - from 60 to 30,000 mg/kg

Initially, batches of soil with benzene results less than 0.5 mg/L were approved for disposal at Oregon Waste Systems - Columbia Ridge Landfill or Oregon Hydrocarbon, Inc. After the MSRU was brought on-site, all soil was treated on-site by a thermal desorption process and volatilized hydrocarbon compounds were oxidized in a combustion chamber.

Contaminated soils processed through the MSRU were again sampled for management/disposal determination. Soils that were above the permitted treatment levels were reprocessed through the unit, and soils below the permitted treatment levels were sent to St. John's Landfill for use as clean cover material.

In total, 5,490.76 tons of contaminated soil were treated in the MSRU. All final treated soil was in compliance with the maximum allowable contaminated levels specified in the Solid Waste Letter Authorization for Treatment of PCS, as modified on May 12, 1995.

Attachments:

1) Treated Soil Summary (Final Soil Sampling Data)
2) Summary of Treatment History and Disposal Recommendation (Contaminated Soil Analysis)
3) Solid Waste Letter Authorization for Treatment of Petroleum Contaminated Soils
4) PCSLA Amendment - 5/12/95
5) Wacker Siltronic Soil Management Plan
6) Air Contaminant Discharge Permit No. 37-0492
7) ACDP No. 37-0492 Amendment - 3/14/95

SCOEPA00022369

ATTACHMENT 1

Treated Soil Summary

Box/ Pile #	Sample Date	Analysis Performed	TPH-418.1 Results (mg/Kg)	TPH-G Results (mg/Kg)	Disposition
1	4/17/95	TPH-418.1 Mod.; TPH-G	71	ND	St. John's Landfill
2	4/17/95	TPH-418.1 Mod.; TPH-G	11	ND	St. John's Landfill
3	4/18/95	TPH-418.1 Mod.; TPH-G	58	ND	St. John's Landfill
4	4/18/95	TPH-418.1 Mod.; TPH-G	71	ND	St. John's Landfill
5	4/19/95	TPH-418.1 Mod.; TPH-G	59	ND	St. John's Landfill
6	4/20/95	TPH-418.1 Mod.; TPH-G	110	10	Reprocessed
7	4/20/95	TPH-418.1 Mod.; TPH-G	10	ND	St. John's Landfill
8	5/18/95	TPH-418.1 Mod.; TPH-G	11	ND	St. John's Landfill
9	5/18/95	TPH-418.1 Mod.; TPH-G	9	ND	St. John's Landfill
10	5/19/95	TPH-418.1 Mod.; TPH-G	9	ND	St. John's Landfill
11	5/19/95	TPH-418.1 Mod.; TPH-G	9	ND	St. John's Landfill
12	5/20/95	TPH-418.1 Mod.; TPH-G	27	ND	St. John's Landfill
13	5/21/95	TPH-418.1 Mod.; TPH-G	41	ND	St. John's Landfill
14	5/21/95	TPH-418.1 Mod.; TPH-G	24	ND	St. John's Landfill
15	5/22/95	TPH-418.1 Mod.; TPH-G	18	ND	St. John's Landfill
16	5/22/95	TPH-418.1 Mod.; TPH-G	59	ND	St. John's Landfill
17	5/23/95	TPH-418.1 Mod.; TPH-G	12	ND	St. John's Landfill
18	5/24/95	TPH-418.1 Mod.; TPH-G	8	ND	St. John's Landfill
19	5/24/95	TPH-418.1 Mod.; TPH-G	100	ND	Reprocessed
20	5/25/95	TPH-418.1 Mod.; TPH-G	17	ND	St. John's Landfill
21	5/25/95	TPH-418.1 Mod.; TPH-G	8	ND	St. John's Landfill
22	5/26/95	TPH-418.1 Mod.; TPH-G	14	ND	St. John's Landfill
23	5/26/95	TPH-418.1 Mod.; TPH-G	12	ND	St. John's Landfill
24	5/30/95	TPH-418.1 Mod.; TPH-G	3600	ND	Reprocessed
25	5/31/95	TPH-418.1 Mod.; TPH-G	26	ND	Reprocessed
26	5/31/95	TPH-418.1 Mod.; TPH-G	43	ND	St. John's Landfill
27	6/1/95	TPH-418.1 Mod.; TPH-G	35	ND	St. John's Landfill
28	6/1/95	TPH-418.1 Mod.; TPH-G	60	ND	St. John's Landfill

SCOEPA00022371

Treated Soil Summary

Box/ Pile #	Sample Date	Analysis Performed	TPH-418.1 Results (mg/Kg)	TPH-G Results (mg/Kg)	Disposition
29	6/1/95	TPH-418.1 Mod.; TPH-G	12	ND	Reprocessed
30	6/2/95	TPH-418.1 Mod.; TPH-G	24	ND	Reprocessed
31	6/2/95	TPH-418.1 Mod.; TPH-G	25	ND	St. John's Landfill
32	6/2/95	TPH-418.1 Mod.; TPH-G	31	ND	St. John's Landfill
33	6/5/95	TPH-418.1 Mod.; TPH-G	29	ND	St. John's Landfill
34	6/5/95	TPH-418.1 Mod.; TPH-G	29	ND	St. John's Landfill
35	6/5/95	TPH-418.1 Mod.; TPH-G	13	ND	St. John's Landfill
36	6/6/95	TPH-418.1 Mod.; TPH-G	17	ND	St. John's Landfill
37	6/6/95	TPH-418.1 Mod.; TPH-G	28	ND	St. John's Landfill
38	6/7/95	TPH-418.1 Mod.; TPH-G	21	ND	St. John's Landfill
39	6/7/95	TPH-418.1 Mod.; TPH-G	22	ND	St. John's Landfill
40	6/7/95	TPH-418.1 Mod.; TPH-G	43	ND	St. John's Landfill
41	6/9/95	TPH-418.1 Mod.; TPH-G	10	ND	St. John's Landfill
42	6/11/95	TPH-418.1 Mod.; TPH-G	37	19	St. John's Landfill
43	6/12/95	TPH-418.1 Mod.; TPH-G	58	ND	St. John's Landfill
44	6/13/95	TPH-418.1 Mod.; TPH-G	38	ND	St. John's Landfill
45	6/13/95	TPH-418.1 Mod.; TPH-G	33	ND	St. John's Landfill
46	6/14/95	TPH-418.1 Mod.; TPH-G	59	18	St. John's Landfill
47	6/14/95	TPH-418.1 Mod.; TPH-G	15	ND	St. John's Landfill
48	6/14/95	TPH-418.1 Mod.; TPH-G	31	ND	St. John's Landfill
49	6/15/95	TPH-418.1 Mod.; TPH-G	31	ND	St. John's Landfill
50	6/15/95	TPH-418.1 Mod.; TPH-G	40	ND	St. John's Landfill
51	6/16/95	TPH-418.1 Mod.; TPH-G	17	ND	St. John's Landfill
52	6/16/95	TPH-418.1 Mod.; TPH-G	28	12	St. John's Landfill
53	6/16/95	TPH-418.1 Mod.; TPH-G	13	ND	St. John's Landfill

SCOEPA00022372

ATTACHMENT 2

Contaminated Soil Analysis

Box#	Sample I.D. #	Box ID #	Fill Date	Sample Date	Ship Date	Analysis Performed	Analytical Results	Disposition
1	94-500	173	12/8/94	12/16/94	1/6/95	TCLP (8), TCLP 1311 & 8240, TCLP 8150, TCLP 8720, TCLP Pesticides, Flash Pt., pH EPA-9040, TPH-G, TPH-D, TPH-418.1 MOD.	Diesel cmpds 6,100 mg/Kg; Benzene 0.025 mg/l	Oregon Waste Systems
2	94-501	164	12/19/94	12/19/94	1/6/95	TCLP (8), TCLP 1311 & 8240, TCLP 8150, TCLP 8720, TCLP Pesticides, Flash Pt., pH EPA-9040, TPH-G, TPH-D, TPH-418.1 MOD.	Diesel cmpds 71 mg/Kg; Benzene ND	Oregon Waste Systems
3	94-502	176	12/19/94	12/20/94	1/18/95	TCLP (8), TCLP 8240, TCLP 8150, TCLP 8720, TPH-G, TPH-D, TPH-418.1 MOD.	Diesel cmpds 150 mg/Kg; Benzene ND	Oregon Waste Systems
4	94-503	165	12/21/94	12/22/94	1/9/95	TCLP 8240, TPH-D	Diesel cmpds 6,300 mg/Kg; Benzene 0.06 mg/L	Oregon Waste Systems
5	94-504	163	12/22/94	12/22/94		TCLP 8240, TCLP (8), TPH-D, PAHS 8310, PCB'S 8081	Diesel cmpds 27,000 mg/Kg; Benzene 0.9 mg/L	On-site Treatment
6	95-505	172	12/27/94	1/10/95		TCLP 8240, TPH-D	Diesel cmpds 57mg/Kg; Benzene ND	NA
6	95-519	Resample		1/17/95		TCLP 1311 & 8240, TPH-D	Diesel cmpds 25,000 mg/Kg; Benzene 0.95 mg/L	NA
6	95-527	Resample		1/25/95		TCLP 8240	Benzene 2.4 mg/Kg	NA

SCOEPA00022374

Contaminated Soil Analysis

Box#	Sample I.D. #	Box ID #	Fill Date	Sample Date	Ship Date	Analysis Performed	Analytical Results	Disposition
6	95-541	Resample		2/24/95		BTEX 8020	Benzene ND	On-site Treatment
7	95-506	910208	12/28/94	1/4/95	1/11/95	TCLP 8240, TPH-D	Diesel cmpds 3,300 mg/Kg; Benzene 0.2 mg/L	Oregon Waste Systems
8	95-507	161	1/4/95	1/4/95	1/27/95	TCLP 8240, TPH-D	Diesel cmpds 1,000 mg/Kg; Benzene 0.11 mg/L	Oregon Hydrocarbon
9	95-508	910206	1/4/95	1/4/95	1/10/95	TCLP 8240, TPH-D	Diesel cmpds 3,900 mg/Kg; Benzene 0.017 mg/L	Oregon Waste Systems
10	95-509	910214	1/4/95	1/4/95	1/10/95	TCLP 8240, TPH-D	Diesel cmpds 12,000 mg/Kg; Benzene 0.35 mg/L	Oregon Waste Systems
11	95-510	166	1/5/95	1/5/95	1/27/95	TCLP 8240, TPH-D	Diesel cmpds 25,000 mg/Kg; Benzene 0.4 mg/L	Oregon Hydrocarbon
12	95-515	420049	1/6/95	1/10/95	1/13/95	TCLP 8240, TPH-D	Diesel cmpds 30,000 mg/Kg; Benzene 0.2 mg/L	Oregon Waste Systems
13	95-511	910207	1/4/95	1/5/95	1/13/95	TCLP 8240, TPH-D	Diesel cmpds 8,900 mg/Kg; Benzene 0.18 mg/L	Oregon Waste Systems
14	95-512	174	1/5/95	1/6/95	1/27/95	TCLP 8240, TPH-D	Diesel cmpds 3,800 mg/Kg; Benzene ND	Oregon Hydrocarbon
15	95-513	910212	1/4/95	1/6/95	1/24/95	TCLP 8240, TPH-D	Diesel cmpds 2,400 mg/Kg; Benzene 0.018 mg/L	Oregon Waste Systems
16	95-520	910201	1/17/95	1/21/95		TCLP 8240, TPH-D	Diesel cmpds 1,500 mg/Kg; Benzene 0.019 mg/L	On-site Treatment

SCOEPA00022375

Contaminated Soil Analysis

Box#	Sample I.D. #	Box ID #	Fill Date	Sample Date	Ship Date	Analysis Performed	Analytical Results	Disposition
17	94-502	(Split Box #3)	12/19/94	12/20/94	1/18/95	TCLP (8), TCLP 8240, TCLP 8150, TCLP 8720, TCLP PEST., FLASH PT., pH-EPA-9040, TPH-G, TPH-D, TPH-418.1 MOD.	Diesel cmpds 150 mg/Kg; Benzene ND	Oregon Waste Systems
18	95-523	134	1/18/95	1/18/95	1/30/95	TCLP 8240, TPH-D	Diesel cmpds 1,200 mg/Kg; Benzene ND	Oregon Hydrocarbon
19	95-521	125	1/17/95	1/17/95	1/27/95	TCLP 8240, TPH-D	Diesel cmpds 3,900 mg/Kg ; Benzene ND	Oregon Hydrocarbon
20	95-516	910210	1/12/95	1/21/95		TCLP 8240, TPH-D	Diesel cmpds 1,200 mg/Kg; Benzene ND	On-site Treatment
21	95-522	91030	1/17/95	1/17/95		TCLP 8240, TPH-D	Diesel cmpds 790 mg/Kg; Benzene ND	On-site Treatment
22	95-528	165	1/23/95	1/25/95	1/30/95	TCLP 8240, TPH-D	Diesel cmpds 3,800 mg/Kg; Benzene 0.07 mg/Kg	Oregon Hydrocarbon
23	95-534	169	1/24/95	1/27/95		TCLP 8240, TCLP 8270, TCLP (8), TCLP Pesticides, TCLP Herbicides, TPH-D	Diesel cmpds 2,300 mg/Kg; Benzene 1.4 mg/Kg	On-site Treatment
24	95-529	910202	1/21/95	1/25/95		TCLP 8240, TCLP 8270, TCLP 8150, TCLP (8), TCLP Pesticides, TPH-D, TPH-G, FP 1010, pH EPA-9040	Diesel cmpds 19,000 mg/Kg; Benzene 1.1 mg/Kg	On-site Treatment

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Contaminated Soil Analysis

Box#	Sample I.D. #	Box ID #	Fill Date	Sample Date	Ship Date	Analysis Performed	Analytical Results	Disposition
25	95-530	126	1/21/95	1/25/95		TCLP 8240, TPH-D, BETX	Diesel cmpds 18,000 mg/Kg; Benzene 5.0 mg/Kg	On-site Treatment
26	95-531	159	1/23/95	1/25/95		TCLP 8240, TPH-D, BTEX	Diesel cmpds 3,000 mg/Kg; Benzene 2.7 mg/Kg	On-site Treatment
27	95-532	124	1/23/95	1/25/95	1/30/95	TCLP 8240, TPH-D, BTEX	Diesel cmpds 15,000 mg/Kg; Benzene 0.11 mg/Kg	Oregon Hydrocarbon
28	95-525	129	1/23/95	1/25/95	1/30/95	TCLP 8240, TPH-D	Diesel cmpds 3,000 mg/Kg; Benzene 0.02 mg/Kg	Oregon Hydrcarbon
29	95-536	119	2/7/95	2/8/95		TCLP 8240, TPH-D	Diesel cmpds 1,500 mg/Kg; Benzene ND	On-Site Treatment
30	95-535	420417	unknown	1/31/95		TCLP 8240, TPH-D	Diesel cmpds 83 mg/Kg; Benzene ND	On-Site Treatment
31	95-537	910200	2/8/95	2/8/95		TCLP 8240, TPH-D	Diesel cmpds 630 mg/Kg; Benzene ND	On-Site Treatment
32	95-538	910310	2/8/95	2/8/95		TCLP 8240, TPH-D	Diesel cmpds 60 mg/Kg, Benzene ND	On-Site Treatment
33	95-539	165	2/20/95	2/21/95		TCLP 8240, TPH-D	Diesel cmpds 2,500 mg/Kg; Benzene 2.0 mg/Kg	On-Site Treatment
34	95-546	129	2/27/95	2/27/95		TCLP 8240, TPH-D	Diesel cmpds 390 mg/Kg; Benzene ND	On-Site Treatment
35	95-548	145	2/28/95	3/1/95		TCLP 8240, TPH-D	Diesel cmpds 96 mg/Kg; Benzene ND	On-Site Treatment
36	95-549	910215	2/28/95	3/1/95		TCLP 8240, TPH-D	Diesel cmpds 600 mg/Kg; Benzene ND	On-Site Treatment
37	95-550	168	2/28/95	3/2/95		TCLP 8240, TPH-D	Diesel cmpds 270 mg/Kg; Benzene ND	On-Site Treatment
38	95-551	135	1/25/95	3/2/95		TCLP 8240, TPH-D	Diesel cmpds 10,000 mg/Kg; Benzene 3.0 mg/Kg	On-Site Treatment

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Contaminated Soil Analysis

Box#	Sample I.D. #	Box ID #	Fill Date	Sample Date	Ship Date	Analysis Performed	Analytical Results	Disposition
39	95-552	173	3/14/95	3/15/95		TCLP 8240, TPH-D	Diesel cmpds 280 mg/Kg; Benzene 1.6 mg/Kg	On-Site Treatment
40	95-553	161	3/14/95	3/15/95		TCLP 8240, TPH-D	Diesel cmpds 25,000 mg/Kg; Benzene 4.1 mg/Kg	On-Site Treatment
41	95-554	166	3/14/95	3/15/95		TCLP 8240, TPH-D	Diesel cmpds 22,000 mg/Kg; Benzene 8.2 mg/Kg	On-Site Treatment
42	95-555	162	3/20/95	3/23/95		TCLP 8240, TPH-D	Diesel cmpds 8,100 mg/Kg; Benzene 0.34 mg/Kg	On-Site Treatment
43	95-556	176	3/21/95	3/23/95		TCLP 8240, TPH-D	Diesel cmpds 5,800 mg/Kg; Benzene 5.4 mg/Kg	On-Site Treatment
44	95-557	417	3/21/95	3/23/95		TCLP 8240, TPH-D	Diesel cmpds 2,200 mg/Kg; Benzene 2.2 mg/Kg	On-Site Treatment
45	95-558	H3	3/21/95	3/24/95		TCLP 8240, TPH-D	Diesel cmpds 6,300 mg/Kg; Benzene 5.56 mg/Kg	On-Site Treatment
46	95-559	H7	3/23/95	3/24/95		TCLP 8240, TPH-D	Diesel cmpds 7,200 mg/Kg; Benzene 0.32 mg/L	On-Site Treatment
47	95-560	164	3/23/95	3/23/95		TCLP 8240, TPH-D	Diesel cmpds 12,000 mg/Kg; Benzene 4.8 mg/Kg	On-Site Treatment
48	95-561	174	3/23/95	3/23/95		TCLP 8240, TPH-D	Diesel cmpds 16,000 mg/Kg; Benzene 0.31 mg/L	On-Site Treatment
49	95-562	H4	3/23/95	3/23/95		TCLP 8240, TPH-D	Diesel cmpds 6,300 mg/Kg; Benzene 0.19 mg/L	On-Site Treatment
50	95-563	118	3/23/95	3/24/95		TCLP 8240, TPH-D	Diesel cmpds 11,000 mg/Kg; Benzene 5.9 mg/Kg	On-Site Treatment
51	95-564	120	3/23/95	3/24/95		TCLP 8240, TPH-D	Diesel cmpds 12,000 mg/Kg; Benzene 2.0 mg/Kg	On-Site Treatment

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Contaminated Soil Analysis

Box#	Sample I.D. #	Box ID #	Fill Date	Sample Date	Ship Date	Analysis Performed	Analytical Results	Disposition
52	95-565	130	3/24/95	3/27/95		TCLP 8240, TPH-D	Diesel cmpds 6,300 mg/Kg; Benzene 0.033 mg/Kg	On-Site Treatment
53	95-566	123	3/24/95	3/27/95		TCLP 8240, TPH-D	Diesel cmpds 12,000 mg/Kg; Benzene 0.88 mg/Kg	On-Site Treatment
Soil Piles								
	95-568			5/10/95		TPH-G, TPH-D, TPH 418.1	Gasoline 230 mg/Kg, Diesel 6,800 mg/Kg, TPH 1,300 mg/Kg	On-Site Treatment
	95-569			5/10/95		TPH-G, TPH-D, TPH 418.1	Gasoline 1,900 mg/Kg, Diesel 40,000 mg/Kg, TPH 4,600 mg/Kg, Benzene 0.82 mg/L	On-Site Treatment
	95-570			5/19/95		TPH-D, TPH 418.1	Diesel 46,000 mg/Kg, TPH 1,900 mg/Kg, Gasoline 1,400 mg/Kg, Benzene 5.0 mg/L	On-Site Treatment
	95-571			5/19/95		TPH-D, TPH 418.1	Diesel 45,000 mg/Kg, TPH 1,700 mg/Kg, Gasoline 900 mg/Kg, Benzene 3.1 mg/L	On-Site Treatment
	95-573			5/31/95		TPH-D, TPH 418.1	Diesel 6,800 mg/Kg, TPH 2,300 mg/Kg	On-Site Treatment
	95-574			5/31/95		TPH-D, TPH 418.2	Diesel 3,500 mg/Kg, TPH 1,000 mg/Kg	On-Site Treatment
	95-575			5/31/95		TPH-D, TPH 418.3	Diesel 24,000 mg/Kg, TPH 950 mg/Kg	On-Site Treatment

SCOEPA00022379

ATTACHMENT 3

Oregon

April 17, 1995

DEPARTMENT OF
ENVIRONMENTAL
QUALITY

NORTHWEST REGION

THOMAS C McCUE
WACKER SILTRONIC CORPORATION
PO BOX 83180
PORTLAND OR 97283-0180

RE: Solid Waste Letter Authorization
for Treatment of PCS
File No. NWR-SOIL-011
Permit No.: PCSLA-NWR-95-004
Permit Expiration Date: **July 17, 1995**

Dear Mr. McCue:

Your application and written Soil Management Plan to treat Petroleum Contaminated Soil (PCS) has been approved. Any required modifications to the treatment plan you submitted are included in the permit conditions listed below.

This permit specifically pertains to PCS generated from the treatment project identified as Wacker Siltronic Corp.; This letter permit authorizes you to conduct the soil treatment in accordance with the following conditions:

1. The treatment site is located at 7200 NW Front Avenue in Portland, Oregon.

2. Once treatment is complete, the treated soils will be transported to the St. Johns Landfill where it will be used as clean cover material.

3. Treatment will be accomplished by thermal treatment.

4. Treatment is to be conducted in accordance with the Soil Management Plan submitted by Thomas McCue, and as approved by the Department. The maximum contaminant level allowed after treatment is 40 mg/kg (by DEQ Method TPH-G) for gasoline, 100 mg/kg (by DEQ Method TPH-D) for diesel and mg/kg (by DEQ Method TPH 418.1) for waste oil, heating oil and heavy oil contaminated soils.

5. This permit does not authorize the violation of any state, federal, or local rules or regulations.

6. Adequate site security (e.g., fencing or equivalent) must be maintained to prevent unauthorized access to the treatment area at all times.

John A. Kitzhaber
Governor

2020 SW Fourth Avenue
Suite 400
Portland, OR 97201-4987
(503) 229-5263 Voice
TTY (503) 229-5471
DEQ-1

SCOEPA00022381

7. Department staff shall be allowed access at reasonable times to inspect both the treatment site and any or all final soil disposition sites for compliance purposes and to collect samples as necessary.

8. This permit only authorizes the one-time treatment of petroleum contaminated soils generated from the cleanup operation identified in this permit at the specific treatment site noted. Contaminated soils otherwise classified as hazardous waste are specifically excluded. The treatment site may not be reused for treatment of soil from any additional cleanup projects or receive soils from multiple cleanup projects without applying for a full Solid Waste Permit.

9. At any time active treatment is not in progress, the contaminated soil must be kept covered and the cover securely anchored (e.g., during rain or storm events).

10. The soil treatment and/or storage area(s) must have a suitable liner and be effectively bermed. Surface water run-off is prohibited.

11. Any leachate produced shall be collected, evaporated, or otherwise treated and controlled in a manner so as to prevent odors, public health hazards, and escapement to public waters.

12. The creation of public safety concerns, environmental hazards, or nuisance conditions (such as, but not limited to, odors or dust), is prohibited.

13. The treated soils must be reused on the property listed in condition 2. and in accordance with the statement signed by the property owner. Treated soils must be placed out of human contact (e.g., covered with clean soil, paved, etc.), placed above the seasonal high groundwater level, and may not be placed within approximately 100 feet of a surface water body, wetlands area, or 100 year flood plain area.

14. If treatment lasts longer than three months, interim quarterly reports must be submitted on a form provided by the Department or equivalent. Reports are due on the first day of January, April, July, and October.

15. No treated soils shall be reused on-site or moved off-site for final disposition without first coordinating with the Department.

16. Upon expiration of this permit, all PCS containing levels of contamination above the established treatment standard must be removed to an authorized disposal facility within thirty (30) days. Soil that has successfully met the treatment standard must be reused according to the Treatment Plan and the Department's policy for soil reuse within thirty (30) days, unless an alternate schedule has been approved by the Department.

17. A final treatment report is due on or before July 17, 1995, and must indicate whether or not the treatment has been successful in reducing contaminant concentrations to the levels required in this permit. This report must include final soil sampling data, a description of the sampling methods used, a diagram of sampling locations, a summary of the treatment history, and a recommendation for disposal at an approved facility or reuse of the treated soil. Following a review of this report, the Department will provide a written response outlining closure activities, including soil disposal or reuse.

18. A closure report must be submitted following movement of the treated soils. This report must include disposal documents (if any), and a description of all work related to closure. Closure activities include: field screening the treated soil for "hot spots," reuse of the treated soil, closure sampling (sampling from under the treatment area), disposal of hay bales, plastic sheeting, leachate, and any additional work deemed necessary by the Department. Additional work may include the excavation of native soil and additional sampling if the area under the treatment cell has become impacted.

19. **Additional time for treatment beyond the permit expiration date is not allowed unless the Department has approved the renewal of this permit.**

Greg Toran is available to answer your general questions or provide technical assistance on matters pertaining to soil treatment. Greg may be reached at 503-229-5496. Thank you in advance for your cooperation and efforts to comply with the conditions of this permit.

Sincerely,

Laurie J. McCulloch
UST Section Manager
Northwest Region

enclosures

cc: Wacker Siltronic Corporation
Sandee Archer
PO Box 83180, Portland, OR 97283-0180

PEMCO
Robin Hillier
PO Box 11569, Portland, OR 97211

ATTACHMENT 4

Oregon

May 12, 1995

DEPARTMENT OF
ENVIRONMENTAL
QUALITY

NORTHWEST REGION

THOMAS C McCUE
WACKER SILTRONIC CORPORATION
PO BOX 83180
PORTLAND OR 97283-0180

RE: Solid Waste Letter Authorization
for Treatment of PCS
File No. NWR-SOIL-011
Permit No.: PCSLA-NWR-95-004
Permit Expiration Date: **July 17, 1995**

Dear Mr. McCue:

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1. The treatment site is located at 7200 NW Front Avenue in Portland, Oregon.

2. Once treatment is complete, the treated soils will be transported to the St. Johns Landfill where it will be used as clean cover material.

3. Treatment will be accomplished by thermal treatment.

4. Treatment is to be conducted in accordance with the Soil Management Plan submitted by Thomas McCue, and as approved by the Department. The maximum contaminant level allowed after treatment is 40 mg/kg (by DEQ Method TPH-G) for gasoline, and 100 mg/kg (by DEQ Method TPH 418.1) for waste oil, heating oil and heavy oil contaminated soils.

5. This permit does not authorize the violation of any state, federal, or local rules or regulations.

6. Adequate site security (e.g., fencing or equivalent) must be maintained to prevent unauthorized access to the treatment area at all times.

John A. Kitzhaber
Governor

2020 SW Fourth Avenue
Suite 400
Portland, OR 97201-4987
(503) 229-5263 Voice
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DEQ-1

SCOEPA00022385

ATTACHMENT 5

Introduction

Purpose of Document

The purpose of this excavated soil management plan is to describe the procedures necessary to handle, characterize, and dispose of excavated soil during site work for the Fab 2 project at the Wacker Siltronic site in Portland, Oregon.

Background

Wacker Siltronic Corporation is located at the west end of Front Street in the northwest part of Portland, Oregon, and manufactures high-purity silicon wafers, the raw material for the electronics industry. Environmental studies of the site have shown that some of the existing soil onsite is contaminated with volatile organic compounds (VOCs) and semi-VOCs.

The Fab 2 structure is rectangular shaped, approximately 200 by 325 feet on a side, and will consist of a three-story building and associated support facilities. Contaminated soil may be encountered during construction of underground utilities.

In June 1990, Wacker sampled the site using a two-phase approach. The Phase 1 investigation consisted of sampling subsurface soils for chemical analysis during geotechnical drilling. The Phase 2 investigation consisted of sampling groundwater and soil gas using probes pushed below the top of the groundwater table.

Excavation Activities

Soil Management

Contaminated soils may be generated during subsurface excavation activities. Installation of underground utilities and excavation of two elevator shafts are potential activities that could generate contaminated soils. Wacker staff will oversee the excavation activities and will determine whether the soil has potential contamination.

If Wacker staff determine that a soil is potentially contaminated, then the soil management program will be implemented. The contractor will excavate soil under the guidance of Wacker staff using this waste management plan.

Potentially contaminated soil that is excavated as part of the building construction will be placed into roll-off boxes that will be used to stage the waste onsite as defined in 40 CFR 265.170 through 265.177, Subpart I. Roll-off boxes of the waste shall, at a minimum, meet the following requirements:

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- Be in good condition and be free of rust and structural defects and be leakproof and infiltration proof
- Be closed during storage except to add or remove waste
- Be inspected at least once per week while staged onsite for leaking or deterioration of containers
- Shall not contain free liquids
- Be placed in an area that will drain and remove precipitation, or be elevated or protected from contact with accumulated liquid
- Be cleaned of all waste and decontaminated prior to demobilization of the roll-off boxes

Containers used to store waste generated during the construction excavations shall be labeled with the words "Potential Hazardous Waste" and with the date that the waste was placed in the container. Hazardous waste shall be staged onsite for less than 90 days, in accordance with 40 CFR 262.34. Solid waste shall be staged for less than 30 days, in accordance with DEQ policy. If solid waste is required to be staged for more than 30 days, DEQ will be notified.

Training Requirements

Personnel associated with excavation, utility construction, handling, or exposure to potentially contaminated soil at the Wacker Fab 2 facility should follow hazardous waste operations and emergency response procedures as defined in 29 CFR 1910.120. The CH2M HILL Health and Safety Plan is provided in Appendix A.

Waste Characterization

Sampling Procedure

Each roll-off box will be individually sampled, and the samples will be analyzed for disposal purposes. The sampling and analysis will determine whether the waste is characterized as a solid waste or hazardous waste. To collect a representative sample for proper characterization, a systematic-random, two-dimensional sampling grid will be used. One representative sample will be collected from each roll-off box.

Each roll-off box will be numbered consecutively and divided into six grids (Figure 1). One-third of the sample volume will be collected from grid locations 1, 2, and 3. The locations of grids 1, 2, and 3 will be determined by matching the roll-off box number with the grid locations, as shown on Figure 1. For example, roll-off box number 4 will be sampled from

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grids located in the upper right corner (1), lower left corner (2), and the grid located in the middle on the right side (3) (Figure 1).

Soil samples will be collected using disposable stainless steel spoons. A new spoon shall be used at each grid location in each roll-off box. Each sample will be prepared as specified in the Analytical Methods section of this plan. Each sample will be labeled using the following notation:

WSC-BOX #
01/01/00
Sampled by:

where,

WSC = Wacker Siltronic Corporation
BOX # = Roll-off box number (1,2,3...)
01/01/00 = Date of Sample Collection
Sampled by = Person collecting sample

After each representative sample has been collected and labeled, the sample jar will be placed in a Ziploc bag and secured. Each sample will be placed in a metal or plastic cooler and cooled to 4°Celsius. Samples will be delivered to the analytical laboratory using chain-of-custody procedures.

Analytical Methods

Analysis of each sample will be conducted in a phased approach. The first phase of characterization will determine whether the soil is a hazardous waste. The second phase will determine whether the soil can potentially be accepted at the Hillsboro Landfill. A summary of analytical methods, sample containers, and holding times is shown in Table 1. One 16-ounce glass sample container will be sufficient to perform the analyses of Phase 1 and Phase 2.

Phase 1 will include toxicity characteristic leaching procedure (TCLP) extraction using EPA Method 1311 and analysis of benzene and 2,4-D using EPA Method 8020 and EPA Method 8150, respectively. The 2,4-D herbicide will be analyzed as part of the characterization process because of the historical presence of 2,4-D on adjacent sites. The material should also be analyzed to determine the flash point of the waste, using EPA Method 1010, and pH, using EPA Method 9040. If the waste meets any of the following criteria, it must be handled and disposed of as a RCRA hazardous waste in accordance with 40 CFR 268.

- TCLP benzene greater than 0.5 mg/kg
- TCLP 2,4-D greater than 10 mg/kg
- Flash point below 140°Fahrenheit
- pH less than or equal to 2 or greater than or equal to 12.5

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ROLL-OFF BOX NO.	GRID	
1	2	1
	5	6
	3	4
2	3	1
	4	5
	2	6
3	1	4
	2	6
	5	3
4	6	1
	5	3
	2	4
5	6	3
	1	5
	4	2

ROLL-OFF BOX NO.	GRID	
6	4	3
	1	2
	6	5
7	5	1
	4	6
	2	3
8	5	1
	6	4
	2	3
9	6	4
	3	2
	5	1
10	5	3
	6	1
	2	4

Figure 1
SCHEMATIC-RANDOM NUMBER SAMPLING SCHEMATIC
WACKER SILTRONIC CORPORATION
PORTLAND, OREGON

CH2MHILL

435FG01.DWG

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Table 1 Analytical Summary				
Analysis	**Analytical Method (EPA)**	**Sample Container**	**Preservative**	**Holding Time**
Phase 1				
TCLP benzene	1311/8020 or 1311/8240	16-ounce glass	None	14 days to extraction and 14 days to analysis
TCLP 2,4-D	1311/8150	16-ounce glass	None	14 days to extraction, 7 days to solvent extraction, and 40 days to analysis
Flash point	1010	16-ounce glass	None	14 days
pH	9040	16-ounce glass	None	Analyze immediately
Phase 2				
TPH-G	Oregon TPH-gasoline	16-ounce glass	None	14 days
TPH-D	418.1 modified	16-ounce glass	None	14 days

If the material meets none of these criteria, it should be handled and disposed as a solid waste. Phase 2 analysis will include testing required for acceptance at a solid waste landfill in Oregon. Phase 2 consists of TPH analysis. TPH-gasoline will be quantified using Oregon TPH-G; diesel and heavy oil will be quantified using EPA Method 418.1. Laboratory results from each characterization sample will indicate the disposal method for the material contained in the respective roll-off box.

Waste Disposal

Hazardous Waste

If analytical results indicate that the waste is hazardous, or exceeds the criteria for Hillsboro Landfill, the soil should be disposed of at a RCRA permitted landfill in accordance with 40 CFR 268. Wacker Siltronic has approved the Chemical Waste Management (CWM) hazardous waste landfill, located in Arlington, Oregon. A disposal application and a sample of the soil should be submitted to Chemical Waste Management as early as possible. Approval of the landfill application can take up to 3 weeks.

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Solid Waste

In order to dispose of the soil as solid waste, laboratory analysis must indicate, at a minimum, all of the following:

- EPA 418.1 <50,000 milligrams per kilogram (mg/kg)
- Oregon TPH-Gasoline <10,000 mg/kg
- TCLP benzene <0.5 mg/L
- TCLP 2,4-D <10 mg/L
- Flash point >140°F

Wacker has approved the Hillsboro Landfill, located in Hillsboro, Oregon, as an acceptable solid waste landfill. In addition to the analytical criteria listed above, a Hillsboro Landfill application must be completed and approved by landfill staff in order to dispose of material at the landfill.

At the time of disposal, Wacker may choose to investigate costs for disposal of petroleum-contaminated soil at a low temperature thermal desorption unit.

Disposal Costs

Estimated unit excavation, transportation, and disposal costs are outlined in a memorandum from Dave Dailer, CH2M HILL, to Jack Payne, IDC, dated August 12, 1994. As described in the memorandum, costs for excavation, transportation, and disposal of solid waste is estimated at $80 to $100 per ton; and excavation, transportation, and disposal of hazardous waste is estimated at $200 to $250 per ton.

New Regulations

In the September 19, 1994, Federal Register, EPA finalized Phase II of the Land Disposal Restrictions (LDRs) for new and existing waste, effective December 19, 1994. The LDRs established stringent standards prescribing how hazardous wastes must be treated before they can be disposed in or on the land.

Currently there are no treatment standards for benzene or 2,4-D characteristic hazardous waste. Therefore, benzene and 2,4-D characteristic hazardous waste can be landfilled without treatment. Beginning December 19, 1994, benzene and 2,4-D will be required to undergo treatment prior to disposal. In addition, if a waste is hazardous, underlying hazardous constituents will be required to meet the universal treatment standard listed in 40 CFR 268.48.

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References

Bensen, Jill. Letter to Michael J. Downs. June 14, 1990.

Bensen, Jill. Letter to John Pittman. March 27, 1991.

Bensen, Jill. Technical memorandum to Bill Matsukado. January 24, 1991.

CH2M HILL Site Safety Plan for Wacker Siltronic Corporation. June 4, 1990.

Downs, Mike. Letter to Christy Shoen. June 7, 1990.

Shoen, Christy. Letter to Michael J. Downs. May 22, 1990.

Shoen, Christy. Letter to Michael J. Downs. August 21, 1990.

Shoen, Christy. Letter to Bill Matsukado. August 3, 1990.

Shoen, Christy. Letter to Bill Matsukado. September 19, 1990.

Shoen, Christy. Memorandum to John Pittman. June 28, 1990.

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ATTACHMENT 6

File: left side All-Portable

Permit No.: 37-0492
Expiration Date: 08-01-99
Page 1 of 11 Pages

AIR CONTAMINANT DISCHARGE PERMIT

Department of Environmental Quality
Northwest Region
2020 S.W. Fourth Avenue, Suite 400
Portland, OR 97201-4987
Telephone: (503) 229-5263

Issued in accordance with the provisions of ORS 468A.040 and based on the land use compatibility findings included in the permit record.

ISSUED TO:

PEMCO, Inc.
P.O. Box 11569
Portland, OR 97211

PLANT SITE LOCATION:

Portable - Various Locations

INFORMATION RELIED UPON:

Application No.: 14466
Received: 05/12/94

THIS PERMIT PREVIOUSLY ISSUED TO:

NA

LAND USE COMPATIBILITY STATEMENT:

Not Required For Portable Source

ISSUED BY THE DEPARTMENT OF ENVIRONMENTAL QUALITY

Tom Bispham

SEP 13 1994

Tom Bispham, Northwest Region Administrator — Dated

Source(s) Permitted to Discharge Air Contaminants:

TYPE OF FACILITY (FROM TABLE 4, OAR 340-28-1750)	STANDARD INDUSTRY CODE
75b. Soil Remediation Plants, portable	SIC: 1799

PERMITTED ACTIVITIES

The permittee is herewith allowed to discharge exhaust gases containing air contaminants only in accordance with the permit application and the limitations contained in this permit. Until such time as this permit expires or is modified or revoked, the permittee is herewith allowed to discharge exhaust gases from those processes and activities directly related or associated thereto in accordance with the requirements, limitations, and conditions of this permit from the air contaminant source(s) listed above.

Compliance with the specific requirements, limitations and conditions contained herein does not relieve the permittee from complying with all other laws, rules and standards administered by the Department, nor does it allow significant levels of emissions of air contaminants not limited in this permit or contained in the permit application.

PERFORMANCE STANDARDS AND EMISSION LIMITS

1. The permittee shall at all times maintain and operate all air contaminant generating processes and all air contaminant control equipment at full efficiency and effectiveness, such that the emissions of air contaminants are kept at the lowest practicable levels.

2. The permittee shall operate the Mobile Soil Remediation Unit's (MSRU) Thermal Oxidizer at a minimum of 1500°F to achieve a volatile organic compound (VOC) destruction removal efficiency (DRE) of 98%, based upon manufacturer's claims. The DRE shall be verified as required by condition 18 of this ACDP. An alternate operating temperature for the Thermal Oxidizer may be approved by the Department based upon the source test results.

3. Particulate emissions from any single air contaminant source shall not exceed:

   a. 0.10 grains per standard cubic foot, corrected to 12% CO_2 or 50% excess air, for sources installed, constructed, or modified after June 1, 1970; and
   b. An opacity equal to or greater than twenty percent (20%) for a period aggregating more than three (3) minutes in any one (1) hour, excluding uncombined water vapor, when the source is located outside Clackamas, Columbia, Multnomah, and Washington counties; or
   c. An opacity equal to or greater than twenty percent (20%) for a period aggregating more than thirty (30) seconds in any one (1) hour, excluding uncombined water vapor, when the source is located inside Clackamas, Columbia, Multnomah, or Washington counties.

4. The permittee shall not use any distillate fuel oil containing more than:

   a. 0.3 percent sulfur by weight for ASTM Grade 1.
   b. 0.5 percent sulfur by weight for ASTM Grade 2.

5. Particulate matter which is larger than 250 microns and which may be deposited upon the real property of another person shall not be emitted.

6. The permittee shall not operate the MSRU more than 4000 hours per year in either the Medford-Ashland AQMA or the Klamath Falls Urban Growth Area without:

   a. demonstrating that operation in excess of 4000 hours will not result in the emission of particulate matter or PM10, at or above the Significant Emission Rate (SER) for those pollutants (SER = five tons/year in these nonattainment areas);

OR

b. satisfying the requirements of New Source Review for sources in nonattainment areas (OAR 340-28-1930).

7. The permittee shall not allow the emission of odorous matter or other fugitive emissions so as to create nuisance conditions off the permittee's property. Nuisance conditions will be verified by Department personnel. The creation of nuisance conditions may, in addition to any other action the Department may take, result in a permit modification to require a compliance schedule to control the nuisance conditions.

8. The permittee shall take reasonable precautions to minimize the emissions of fugitive dust. Such reasonable precautions shall include, but not be limited to the following:

a. Treating vehicular traffic areas of the plant site under the control of the permittee.
b. Storing collected material from air pollution control equipment in a covered container or other method equally effective in preventing the material from becoming airborne during storage and transfer.
c. Use of water sprays to eliminate fugitive emissions from storage and material transfer of petroleum contaminated soils and remediated soils.

PLANT SITE EMISSION LIMITS

9. Emissions of Particulate Matter on a plant site basis shall not exceed 4.9 tons per year or 2.7 pounds per hour within the Medford-Ashland AQMA or the Klamath Falls Urban Growth Area. Emissions of Particulate Matter on a plant site basis shall not exceed 5.1 tons per year or 2.7 pounds per hour in other parts of the state.

10. Emissions of PM_{10} (Particulate Matter less than ten microns in diameter) on a plant site basis shall not exceed 4.9 tons per year or 2.7 pounds per hour within the Medford-Ashland AQMA or the Klamath Falls Urban Growth Area. Emissions of PM10 on a plant site basis shall not exceed 5.1 tons per year or 2.7 pounds per hour in other parts of the state.

11. Emissions of Sulfur Dioxide on a plant site basis shall not exceed 34.2 tons per year or 16.3 pounds per hour.

12. Emissions of Nitrogen Oxides on a plant site basis shall not exceed 22.3 tons per year or 11.0 pounds per hour.

13. Emissions of Carbon Monoxide on a plant site basis shall not exceed 3.3 tons per year or 1.7 pounds per hour.

14. Emissions of Volatile Organic Compounds (VOC) on a plant site basis shall not exceed 17.0 tons per year or 20.1 pounds per hour.

The PSEL is based on an average of 20 tons of contaminated soil processed per hour with an average maximum petroleum hydrocarbon contamination level of

10,000 ppm and an annual operating period of 4160 hours. See additional limits in condition 6 applicable to the Medford-Ashland AQMA and the Klamath Falls Urban Growth Area. Any increases above these levels must receive the prior approval of the Department.

AIR POLLUTION EPISODES

15. The permittee may elect to file a Source Emission Reduction Plan (SERP) with the Department in accordance with OAR 340-27-015, specifying the procedures the permittee will follow in the event an Air Pollution Alert, Warning, or Emergency Episode is declared by the Department for an Air Quality Maintenance Area and/or nonattainment area in which the source is located. The Source Emission Reduction Plan shall be available on the source premises for inspection by any authorized personnel.

16. In the event an Air Pollution Alert, Warning, or Emergency Episode is declared by the Department for an Air Quality Maintenance Area and/or nonattainment area in which the source is located, the permittee shall take actions appropriate to the declared Air Pollution Episode as listed in the Source Emission Reduction Plan on file with the Department, or with Oregon Administrative Rules 340, Division 27 "Air Pollution Emergencies" if no Source Emission Reduction Plan has been voluntarily filed with the Department.

Air Pollution Episodes will be declared by the Department and information will be made available through the radio and television media.

OPERATIONAL AND MAINTENANCE PLAN

17. When the source is located within the Medford/Ashland AQMA the permittee shall at all times maintain appropriate Operational and Maintenance Plans, pursuant to OAR 340-30-044, and shall operate in conformance with those plans.

SOURCE TESTING REQUIREMENTS

18. By no later than February 15, 1995, unless an extension is approved by the Department, the permittee shall demonstrate that the MSRU is capable of operating at its maximum operating capacity in continuous compliance with Conditions 2., 3., and 9. through 14., by conducting a source test for Particulate, VOC, CO, and NO_x emissions. The source test shall be performed using petroleum hydrocarbon contaminated soil. The source test shall include the determination of the Destruction Removal Efficiency (DRE) of the MSRU at maximum operating rates.

All tests shall be conducted in accordance with approved testing procedures on file at the Department. A pretest plan shall be submitted for approval, to the Source Test Coordinator at the Department's Northwest Regional Office (ODEQ Northwest Region, 2020 S.W. 4th Avenue, Suite 400, Portland, OR 97201), at least 15 days prior to testing. All test data and results shall be submitted to the Source Test Coordinator for review within 30 days after testing unless an alternate submission date is approved by the Department.

Only regular operating staff may adjust the combustion system and emission control parameters during the source performance tests and within two (2) hours prior to the tests. Any operating adjustments made during the source performance tests, which are a result of consultation during the tests with source testing personnel, equipment vendors or consultants, may render the source performance test invalid.

During the source test the following parameters shall be monitored and recorded:

a. opacity readings on the exhaust stack following the procedures of EPA Method 9
b. process operating parameters during the source test, including but not limited to:
   i. feed rate of petroleum contaminated soil into the unit
   ii. the hydrocarbon and metals contamination concentration of the pretreated soil, expressed in ppm
   iii. fuel usage, expressed in gal/hr
c. Operating parameters of emission control equipment, including but not limited to:
   i. the combustion temperature within the thermal oxidizer
   ii. the pressure drop across the baghouse
d. The level of hydrocarbon and metals contamination in the processed soil following thermal treatment shall also be determined through EPA 8240 - TCLP and TPH/HCID analytical methods.

SPECIAL CONDITIONS

19. The permittee shall notify the Department in writing of the date the new MSRU is started up. The notification shall be submitted no later than seven (7) days after startup.

20. The permittee shall be exempt from conditions 21, 26, and 27 when treating soil from the State of Oregon which is being processed in accordance with Oregon Administrative Rule 340-122-205 through 340-122-260 (Cleanup Rules for Leaking Petroleum Underground Storage Tank Systems).

21. The permittee is authorized to accept soil that contains only the following non-hazardous materials:

    a. Petroleum as defined in 40 CFR 280.12 (published July 1, 1991) "regulated substance, paragraph (b)"; and

    b. Other hydrocarbons and compounds of carbon, hydrogen, and oxygen that have a boiling point less than 700 F.

22. The permittee is prohibited from processing liquids and sludges or other materials which are not soil as defined by OAR 340-122-310 (5). Under no circumstances shall the permittee accept or process materials which have been blended so as to meet the soil definition criteria.

23. The permittee shall require an endorsed document from the generator as sufficient evidence for a determination of the nature and the condition of the

soil and its origin to assure that blending, for the purposes of either dilution or influencing the hazardous/non-hazardous determination, has not occurred.

. The permittee is prohibited from processing soils which contain materials that define the soils as hazardous in their State of origin.

5. The permittee is prohibited from accepting or processing soils containing radioactive materials in concentrations in excess of those of Table 1 of OAR 345-50-025 "Exempt Concentrations".

6. The permittee is prohibited from accepting hazardous waste as defined in 40 CFR 261 (published July 1, 1991). A hazardous waste determination in accordance with OAR 340-102-011 shall be made by the permittee or the generator.

Soils shall be subject to testing using EPA Method 8240, and the TCLP extract procedure (Method 1311). The extract shall be analyzed using the EPA methods specified in 40 CFR 261 Appendix III (published July 1, 1991). These soils shall be further subject to EPA 8080 testing to determine the potential presence of chlorinated/halogenated organic compounds including PCB's.

The hazardous waste determination, including the prescribed test procedures, shall be performed by an independent laboratory.

7. In situations where spill related soils involve clean (not used in any process or mixed with any additional materials) diesel or motor oils and where the spill incident has become a reportable event in the State of Oregon, OAR 340-102-011(B) shall apply to the hazardous waste determination required under special condition 26.

The reportable spill incident documents shall be included in the shipping manifest and shall be reviewed and maintained by the permittee. Copies of manifests and spill documents shall be reported as outlined in the monitoring and reporting requirements of this permit.

28. The permittee is prohibited from processing soils which contain chlorinated or halogenated contaminants such as solvent contaminated soils or PCB contaminated soils. For the purpose of definition, soils with a total halogen content of 1 ppm or less shall be recognized as categorically insignificant and may be processed by the permittee.

29. The permittee shall maintain isolation of all soils treated in accordance with condition 26. Isolation shall be maintained throughout the treatment process until the final transfer of the remediated soils to an offsite location.

30. The permittee shall maintain records of all soil testing results in a form which is suitable for inspection by Department personnel. Analytical results and the non-hazardous determination as required by condition 26. shall be approved by the permittee's authorized representative and certified by his/her signature on an appropriate letter of approval. The approval letter or document shall certify that adequate testing and chain of custody procedures

have been maintained and shall also include the endorsement of the individual responsible for QA as required in condition 32.

31. Soils which are non-RCRA Subtitle I in origin require shipping documents which will indicate their source location, ownership of the location, the soil hauler, volume of material, transfer locations, transfer dates, and final disposition location. Chain of Custody procedures and transfer authorizations shall be followed at all times.

32. The permittee is required to maintain an adequate Quality Assurance program to efficiently document the processing and disposition of petroleum contaminated soils. This QA plan should be submitted in final form to the Department no later than 90 days following the issuance of this permit. The QA plan should include the following provisions at a minimum:

    a. A physical examination of each arriving load prior to acceptance. The examination shall be performed and documented by a certified soil matrix cleanup supervisor in accordance with OAR 340-162-025(b).

    b. A Nonhazardous Waste Certification for each lot of contaminated soil received for processing. The certification shall be endorsed by the generator and verify the soil to be treated is classified as nonhazardous.

    c. Provision for extracting and proper storage of a composite sample of both pre-processed soil and post-processed soils. This would include adequate sample identification and chain of custody procedures.

    d. Random testing of post-processed non-RCRA Subtitle I soils.

    e. Correlation of all load documentation, test data, shipping documents, and final process authorization for each project.

    f. Determination of the final disposition of processed soils.

33. The permittee may remediate soils which do not comply with conditions 21, 26, and 27 on a case by case basis after receiving written approval from the Department in the form of an authorization letter, approved by the Regional Administrator of the region where the soils are to be processed.

34. The permittee shall maintain a log of all nuisance complaints received by the permittee during the operation of the facility. Documentation shall include date of contact, time of observed nuisance condition, description of nuisance condition, location of receptor, and status of plant operation during the observed period.

    Each reported nuisance condition shall be investigated by a plant representative immediately following the receipt of the complaint. A plant representative shall provide a response to the complainant within 24 hours.

35. The permittee shall obtain approval from the Department at least ten (10) days prior to operating the MSRU at a new location.

36. The permittee shall minimize fugitive odorous emissions by complying with the following conditions:

    a. The MSRU and premises shall be kept clean and free of contaminated soils during hours the facility is not in operation. Exposed storage of untreated feed materials shall not be allowed.

    b. All solid wastes shall be stored in a covered manner until disposed of offsite.

MONITORING REQUIREMENTS

37. The permittee shall effectively inspect and monitor the operation and maintenance of the plant and its associated air contaminant control facilities and shall implement the procedures necessary to monitor and record the following parameters. A collective record of all required monitoring data for the facility shall be maintained at the corporate office for a period of at least two years and shall be made available for inspection by the authorized representatives of the Department upon request. Continuous monitoring, where required, shall be conducted in accordance with a Department approved plan which must be submitted within sixty (60) days of permit issuance.

    a. All operating and production parameters to be reported to the Department annually as required in Condition 38
    b. Combustion temperature of the MSRU Thermal Oxidizer, recorded utilizing a Continuous Monitoring System
    c. The quantity of soil treated on a daily basis.
    d. Excess emissions records as defined in OAR 340-20-350 through 340-20-375 (recorded on occurrence)
    e. A description of any maintenance to the air contaminant control system (recorded on occurrence)
    f. The quantity and types of fuel used on a monthly basis
    g. Number of hours of operation within the Medford-Ashland AQMA.
    h. Number of hours of operation within the Klamath Falls Urban Growth Area

REPORTING REQUIREMENTS

38. The permittee shall submit to the Department by January 15 of each year this permit is in effect three (3) copies of the following information for the preceding calendar year:

    a. Operating parameters:

        i. Total quantity of soil remediated for the calendar year
        ii. Total plant operating time (hours/year) at each location
        iii. Greatest daily VOC emission for each calendar month (calculated using the greatest daily quantity of soil remediated for each month, an assumed 10,000 ppm petroleum hydrocarbon contamination concentration, and the DRE determined by the source test, combined with the calculated emission for the generator using an emission factor of 0.13 lbs/hr)
        iv. Total VOC emissions for the calendar year (calculated using the total quantity of soil remediated for the calendar year, an

assumed 10,000 ppm petroleum hydrocarbon contamination concentration, and the DRE determined by the source test, combined with the calculated emission for the generator using an emission factor of 0.13 lbs/hr)

v. Amount of non-RCRA Subtitle I soil processed at each location and the corresponding soil characterization results from approved test methods as specified in the special conditions .

vi. Site(s) from which non-RCRA Subtitle I soil was obtained, including ownership, address, and Federal Employer Identification Number.

vii. The quantity and types of fuel used

viii. Number of hours operating within the Medford-Ashland AQMA.

ix. Number of hours operating within the Klamath Falls Urban Growth Area

b. A log of all planned and unplanned excess emissions in accordance with OAR 340-28-1440.

c. A summary of all nuisance complaints received during the year; by specifying the number of complaints on each date that complaints were received.

d. Explain any permanent changes made in the plant process or production which would effect air contaminant emissions, and indicate when changes were made.

e. List all major maintenance performed on air pollution equipment

f. The report shall be sent to the ODEQ Northwest Region, 2020 S.W. 4th Avenue, Suite 400, Portland, OR 97201, unless informed otherwise by the Department. The permit number must be prominently displayed on the report.

FEE SCHEDULE

39. The Annual Compliance Determination Fee for this permit is due on July 1 of each year this permit is in effect. An invoice indicating the amount, as determined by Department regulations, will be mailed prior to the above date. The fee shall be submitted to the Business Office of the Department in Portland (unless otherwise notified).

GENERAL CONDITIONS AND DISCLAIMERS

G1. The permittee shall allow Department of Environmental Quality representatives access to the plant site and pertinent records at all reasonable times for the purposes of making inspections, surveys, collecting samples, obtaining data, reviewing and copying air contaminant emission discharge records and otherwise conducting all necessary functions related to this permit in accordance with ORS 468.095.

G2. The permittee shall have available at the facility at all times a copy of the Air Contaminant Discharge Permit.

G3. The permittee is prohibited from conducting open burning.

G4. The permittee shall at all times conduct dust suppression measures to meet the requirements set forth in "Fugitive Emissions" and "Nuisance Conditions" in OAR 340-21-050 through 340-21-060. The requirements of OAR 340-30-440 shall be observed when operating in Clackamas, Columbia, Multnomah, and Washington counties. The requirements of OAR 340-30-043 shall be observed when operating in the Medford-Ashland AQMA.

G5. The permittee shall immediately (i.e. as soon as possible but in no case more than one hour after the beginning of the excess emission period) notify the Department by telephone or in person of any excess emissions which are of a nature that could endanger public health, in accordance with OAR 340-28-1430. Follow-up reporting shall be made in accordance with Department direction and OAR 340-28-1430(3) and 340-28-1440.

Notification shall be made to the appropriate regional or branch office. Current Departmental telephone numbers are:

Portland	229-5554	Medford	776-6010
Salem	378-8240	Coos Bay	269-2721
Bend	388-6146	Roseburg	440-3338
Pendleton	276-4063		

In the event of any excess emissions which are of a nature that could endanger public health and occur during nonbusiness hours, weekends, or holidays, the permittee shall immediately notify the Department by calling the Oregon Accident Response System (OARS). The current number is 1-800-452-0311.

G6. The permittee shall notify the Department in writing using a Departmental "Notice of Construction" form, or "Permit Application Form", and obtain approval in accordance with OAR 340-28-800 through 340-28-820 before:

a. Constructing or installing any new source of air contaminant emissions, including air pollution control equipment, or

b. Modifying or altering an existing source that may significantly affect the emission of air contaminants, or

c. Making any physical change which increases emissions, or

d. Changing the method of operation, the process, or the fuel use, or increasing the normal hours of operation to levels above those contained in the permit application and reflected in this permit and which result in increased emissions.

G7. Application for a modification of this permit must be submitted not less than 60 days prior to the source modification. A Filing Fee and an Application Processing Fee must be submitted with an application for the permit modification.

G8. The permittee shall notify the Department in writing using a Departmental "Permit Application Form" within 60 days after the following:

a. legal change of the registered name of the company with the Corporations Division of the State of Oregon, or

b. sale or exchange of the activity or facility.

Applicable Permit Fees must be submitted with an application for the name change.

G9. Application for renewal of this permit must be submitted not less than 60 days prior to the permit expiration date. A Filing Fee, an Application Processing Fee and an Annual Compliance Determination Fee must be submitted with the application for the permit renewal.

G10. The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state, or local laws or regulations.

G11. This permit is subject to revocation for cause as provided in OAR 340-14-045.

ALL INQUIRIES SHOULD BE DIRECTED TO:

Department of Environmental Quality
Northwest Region
2020 S.W. 4th Avenue, Suite 400
Portland, OR 97201
Telephone: (503) 229-5554

Doc. No. 370492.PMT

Department of Environmental Quality
Air Quality Division

AIR CONTAMINANT DISCHARGE PERMIT APPLICATION REVIEW REPORT

PEMCO, Inc.
P.O. Box 11569
Portland, OR 97211

PSEL CRED	SOURCE TEST	CMS	AMB MON	COMPL SCHED	SPEC COND	REPORT A	REPORT Q	REPORT M	EXCESS R	EXCESS N	NSPS	NSR	PSD	NESHAPS	SIZE A1	SIZE A2	PUBL NOTC
	X	X			X	X				X						X	X

GENERAL BACKGROUND INFORMATION

1. PEMCO operates a Mobile Soil Remediation Unit (MSRU) which may be located at various sites throughout the state. The MSRU was built in 1993. The MSRU remediates petroleum contaminated soils utilizing a thermal treatment process. The process includes volatilizing hydrocarbons from the contaminated soils in a rotary dryer, whereby the volatilized hydrocarbons become incorporated into the system flue gas. The flue gas containing the contaminants, both gaseous and particulate, first passes through a thermal oxidizer for hydrocarbon destruction. The gases exit the thermal oxidizer, passing through an air to air cooler prior to being ducted to a baghouse for capture of the particulate emissions. The treated soil passes through a discharge system which cools and rehydrates the soil prior to discharge. Particulate captured by the baghouse is transferred to the discharge system where it is mixed into the remediated soil. Following treatment, the remediated soils may be returned to their original site, used as landfill caps, or used as road subgrade material.

   Petroleum contaminated soils are controlled through the DEQ Underground Storage Tank (UST) program. Removal and upgrade of leaking underground storage tanks under the RCRA Subtitle I program produces a substantial amount of petroleum contaminated soil. This soil is predominantly contaminated with gasoline and diesel fuels and is not suitable for disposal at unlined landfills due to the potential groundwater contamination. This thermal treatment process is a recognized method for reducing the diesel and gasoline contamination to acceptable levels, thus producing fill material for specific applications.

   In addition to Underground Storage Tank (UST) removal operations, the Department recognizes that this process may be an acceptable form of remediation for soils which are contaminated by non-hazardous materials outside of the UST program. In those cases the permit requires sufficient testing to identify the soil as non-hazardous prior to treatment. This permit does not allow the permittee to process soils contaminated with hazardous waste or soils that are characterized as

hazardous waste. Examples of applications outside the UST program are soils from above ground tank spills, soils contaminated from non-hazardous spills, soils from plant closures which have been identified as non-hazardous, etc. The permittee must follow a defined protocol for processing these soils.

The source is portable may be located in both attainment and nonattainment areas for Carbon Monoxide, Particulate (PM10), and Ozone (VOCs and NOx are ozone precursors). The source is an insignificant source of these pollutants.

A Land Use Compatibility Statement is not required for portable sources.

No other permits have been issued or are required by the Department of Environmental Quality for this source.

The compliance status of this facility will be established by the Department after permitted operation begins.

Air contaminant sources at this facility consist of the following:

a. One rotary dryer (serial no. 79-201) with thermal oxidizer and baghouse (combined serial no. 79-326), manufactured by Tarmac, Incorporated.
b. One Caterpillar Generator model TM4606-03 3412 with no emission controls, using approximately 8.5 gallons of diesel fuel per ton of soil processed.
c. Fugitives from material handling, transfer, and processing operations controlled by water sprays.

The proposed Air Contaminant Discharge Permit (ACDP) is a new permit for a new source.

LANT SITE EMISSION LIMIT (PSEL) INFORMATION

IGINAL PLANT SITE EMISSION LIMIT

The Baseline Emission Rate for this source is zero since it was constructed after 1978.

LANT SITE EMISSION LIMIT

. The normal operating schedule for the MSRU is 16 hrs/day x 5 days/wk x 52 wks/yr = 4160 hrs/yr.

). The estimated maximum annual plant production is 83,200 tons of soil per year (20 TPH x 44160 hrs).

1. The maximum hourly plant production is 25 tons.

12. The normal hourly plant production is 20 tons.

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13. The Plant Site Emission Limit for normal operation is greater than the baseline emission rate and is shown below.

Source	Particulate tons/yr (lbs/hr)	PM_{10} tons/yr (lbs/hr)	SO_x tons/yr (lbs/hr)	NO_x tons/yr (lbs/hr)	CO tons/yr (lbs/hr)	VOC tons/yr (lbs/hr)
Thermal Oxidizer	4.5 (2.4)	4.5 (2.4)	33.1 (15.8)	6.5 (3.4)	3.1 (1.6)	16.7 (20.0)
Generator	0.6 (0.3)	0.6 (0.3)	1.1 (0.5)	15.8 (7.6)	0.2 (0.1)	0.3 (0.1)
Fugitives	Not quantified			—		
Totals	5.1 (2.7)	5.1 (2.7)	34.2 (16.3)	22.3 (11.0)	3.3 (1.7)	17.0 (20.1))

Note: Annual and hourly emissions for SO_x were adjusted upward by a factor of 30% to account for the possibility of additional sulfur contained in petroleum contaminated soil.

The normal or average hydrocarbon concentration of petroleum contaminated soils was estimated to be approximately 5,000 ppm. The annual PSEL was determined based upon an estimated maximum average petroleum hydrocarbon contamination level of 10,000 ppm. The hourly PSEL was based upon an operational throughput of 25 TPH and a maximum petroleum hydrocarbon contamination level of 20,000 ppm.

Previous ACDPs issued by the Department for thermal desorption soil remediation units have included a PSEL for lead emissions. These past permits included source testing conditions which required that the soil used during the source test be gasoline contaminated with the resulting stack gas emissions being tested for lead. The corresponding test results demonstrated an average lead emission of 0.004 lbs/hour. This emission average, demonstrated by source testing, correlates well with estimated lead emissions which the Department had determined previously by calculation. The significant emission rate for lead is 1200 lbs/year. At 4160 hours of operation this MSRU would emit 17 lbs lead/year if all lots of soil remediated at the facility were gasoline contaminated. It has been conservatively estimated that less than 50% of the soil remediated will be contaminated with leaded gasoline. Consequently the Department has determined that although lead is emitted by this MSRU it is not emitted at levels which create significant concern. A PSEL for lead emissions as well as lead testing requirements are not included in this permit.

NIFICANT EMISSION RATE

. The Plant Site Emission Limit increase over baseline is less than the Significant Emission Rate (SER) as defined in OAR 340-28-110(82) for all pollutants and is shown below. No further air quality analysis is required for these pollutants.

Pollutant	Baseline Emissions (tons/yr)	Current PSEL (tons/yr)	Increase (tons/yr)	SER (tons/yr)
Particulate	0	5.1	5.1	25
PM10	0	5.1	5.1	15
Sulfur Dioxide	0	34.2	34.2	40
Carbon Monoxide	0	3.3	3.3	100
Volatile Organic Compounds	0	17.0	17.0	40
NO_x	0	22.3	22.3	40

The following SERs for particulate matter and PM10 shall be applicable for the nonattainment portions of the Medford-Ashland Air quality Maintenance Area and the Klamath Falls Urban Growth Area:

Pollutant	Baseline Emissions (tons/yr)	Current PSEL (tons/yr)	Increase (tons/yr)	SER (tons/yr)
Particulate	0	4.9	4.9	5
PM10	0	4.9	4.9	5

PICALLY ACHIEVABLE CONTROL TECHNOLOGY

. Specific emission standards have not been adopted for mobile soil remediation units. An analysis for compliance with the Highest and Best Practicable Treatment and Control (OAR 340-28-600 through 340-28-640) was performed which included a Typically Achievable Control Technology (TACT) determination for thermal desorption MSRUs. The United States Environmental Protection Agency publication EPA-600/R-92-124, *AIR EMISSIONS FROM THE TREATMENT OF SOILS CONTAMINATED WITH PETROLEUM FUELS AND OTHER SUBSTANCES* was consulted for the TACT determination. Rotary dryer type thermal desorption treatment systems were stated to have a destruction/removal efficiency (DRE) of 95.0 - 99.9%. Based upon this information, TACT for this type of treatment system was determined to be ≥ 95% DRE. Condition 2. of the ACDP recognizes a 98% DRE for this MSRU and is based upon the MSRU manufacturer's claim. Therefore, at 98% DRE, the permittee's MSRU was determined to meet TACT.

AIR TOXICS

6. A review of toxic air pollutant emissions indicates that emissions of the compounds listed below would be less than the Department's respective

Significant Emission Rates. The following analysis is based upon a worst case scenario whereby it was assumed that all petroleum contaminated soil treated by the facility was contaminated with gasoline at 20,000 ppm. The analysis assumed that the BTEX compounds, as components of gasoline, were present at the maximum average percent as stated in Appendix I of the California Leaking Underground Storage Tank (LUST) manual *CHEMICAL COMPOSITION OF GASOLINE*.

Compound	Estimated Emission Rate	Significant Emission Rate
Benzene	1.16 tons/yr *	1.55 tons/yr
Ethyl Benzene	3.66 lbs/ 8 hr *	685 lbs/ 8 hr
Toluene	27.92 lbs/ 8 hr *	795 lbs/ 8 hr
O-xylenes	3.66 lbs/ 8 hr *	795 lbs/ 8 hr

* based on 40,000 lb contaminated soil/hr, two 8-hour shifts/day, 5 day/wk, 52 wk/yr

ADDITIONAL REQUIREMENTS

17. Source testing requirements contained in the permit include a provision for testing by February 15, 1995, unless an extension is granted by the Department.

Source testing for Sulfur Dioxide was not required because most of these emissions are attributed to the sulfur in the fuel oil used by the MSRU and can be calculated.

This ACDP does not specify a minimum petroleum hydrocarbon contamination concentration requirement for soil used in the source test required in condition 16. of the permit. Soil contamination levels often vary substantially within the same treatment project. The permittee has estimated that normal petroleum hydrocarbon contamination concentrations for pretreated soils will have an average of approximately 5,000 ppm. The Department would prefer to get test results from the thermal treatment of soil which has an average contamination concentration of between 5,000 and 10,000 ppm, however, the Department will consider different levels of contamination if they can be justified by the permittee.

18. Continuous monitoring requirements contained in the permit include monitoring the operating temperature of the thermal oxidizer.

19. Special conditions contained in the permit include provisions for prohibiting the treatment of hazardous wastes, and a prohibition against blending of soils in order to meet acceptance criteria of the permit.

20. The source is required to submit reports to the Department annually.

21. The source is not subject to immediate (within one hour) reporting of excess emissions, except when the emissions may endanger public health.

2. At the time of the ACDP application review this source was not subject to federal regulations for New Source Performance Standards (NSPS).

3. At the time of the ACDP application review this source was not subject to federal regulations for New Source Review.

4. At the time of the ACDP application review this source was not subject to federal regulations for Prevention of Significant Deterioration (PSD).

5. At the time of the ACDP application review this source was not subject to federal regulations for National Emissions Standards for Hazardous Air Pollutants (NESHAPS).

UBLIC NOTICE

6. The proposed permit was placed on public notice from August 6, 1994 to September 6 1994. No comments were received.

GG:EGW
eptember 9, 1994

PLANT SITE EMISSIONS DETAIL SHEET
Projected Emissions

Emission Point	Operating Parameters	Emission Factor Rate	Emission Factor Reference	Emissions lbs/hr	Emissions tons/yr
Thermal Oxidizer					
Particulate	20 TPH Ave./4160 hrs/yr 25 TPH Max.	2.17 lbs./hr	Mfr. Spec.	2.4	4.5
PM10	20 TPH Ave./4160 hrs/yr 25 TPH Max.	2.17 lbs./hr	Mfr. Spec.	2.4	4.5
SO_2*	172 gal diesel/hr	12.2 lb/hr	DEQ Factor (71 lbs/1000 gal)	15.8	33.1
NO_x	4,160 hrs/yr	3.11 lb/hr	Mfr. Spec.	3.4	6.5
CO	4,160 hrs/yr	1.50 lb/hr	Mfr. Spec.	1.6	3.1
VOC**	10,000 ppm max. average concentration in soil 20 TPH average	8 lbs/hr @ 98% DRE	EPA-600/R-92-124	20.0	16.7

Annual emission factors are based upon an average operating rate of 20 tons per hour, operating 16 hours per day, 5 days per week, and 52 weeks per year for a total of 4160 hours. The MSRU has a production capacity of 25 tons per hour.

* Annual and hourly emission rates for SO_2 were adjusted upward by a factor of 30% to account for additional sulfur contained in petroleum contaminated soil.

** Hourly emissions for VOCs were based on 25 tons of contaminated soil processed per hour with an

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PLANT SITE EMISSIONS DETAIL SHEET
Projected Emissions

Emission Point	Operating Parameters	Emission Factor Rate	Emission Factor Reference	Emissions lbs/hr	Emissions tons/yr
average maximum petroleum hydrocarbon contamination level of 20,000 ppm.					
...nerator					
Particulate	4,160 hrs/yr	0.27 lb/hr	Mfr. Spec.	0.3	0.6
PM10	4,160 hrs/yr	0.27 lb/hr	Mfr. Spec.	0.3	0.6
SO_2	4,160 hrs/yr	0.54 lb/hr	Mfr. Spec.	0.5	1.1
NO_x	4,160 hrs/yr	7.6 lb/hr	Mfr. Spec.	7.6	15.8
CO	4,160 hrs/yr	0.1 lb/hr	Mfr. Spec.	0.1	0.2
VOC	4,160 hrs/yr	0.13 lb/hr	Mfr. Spec.	0.1	0.3

SCOEPA00022413

ATTACHMENT 7

Oregon

DEPARTMENT OF ENVIRONMENTAL QUALITY

NORTHWEST REGION

March 14, 1995

MS ROBIN HILLIER
PEMCO
PO BOX 11569
PORTLAND OR 97211

Re: AQ-Portable Unit
PEMCO
ACDP 37-0426

Dear Ms. Hillier:

The Oregon Department of Environmental Quality (Department) has received your letter dated February 28, 1995, requesting permission to receive and process approximately 1400 tons of petroleum (diesel/gasoline) contaminated soils from the Wacker Siltronic Corporation, located at 7200 N.W. Front Avenue, Portland, Oregon. A portion of this contaminated soil was determined to be classified as a hazardous waste due to the presence of benzene. This classification was principally based upon the method by which the petroleum contamination entered the soil rather than its hazardous nature.

Upon reviewing this request, the Hazardous Waste Section at the Department's Northwest Region has determined that the proposed remediation of this soil by thermal desorption is a suitable means of treatment in this instance and is allowable under the Hazardous Waste rules. Pursuant to condition 35. of Air Contaminant Discharge Permit No. 37-0426 (ACDP), the Department approves your request for an exemption to conditions 23, 24, and 26 of the ACDP, thereby allowing PEMCO to receive and process this soil.

If you have any questions or require assistance in this matter, please contact Mr. Greg Grunow at 229-5571.

Sincerely,

Tom Bispham
Administrator
Northwest Region

cc: Air Quality Division
Hazardous Waste Section, Northwest Region

2020 SW Fourth Avenue
Suite 400
Portland, OR 97201-4987
(503) 229-5263 Voice/TDD
DEQ-1

SCOEPA00022415

PEMCO

437 N. Columbia Blvd.
P.O. Box 11569
Portland, Oregon 97211
Office (503) 283-2151
FAX (503) 283-6388

February 28, 1995

Ms. Wendy Waichler, Manager
Air Quality Division, Northwest Division
2020 SW Fourth Avenue, Suite 400
Portland, OR 97201

Re: Air Contaminant Discharge Permit No. 37-0426

Dear Ms. Waichler:

PEMCO requests the Department of Environmental Quality to grant an exception to conditions 23, 24, and 26 of the special conditions in PEMCO's ACDP No. 37-0426. The purpose of this request is to allow the use of PEMCO's Mobile Soil Remediation Unit-A to treat approximately 1400 tons of petroleum contaminated soil, some of which has been determined to be a hazardous waste due to the presence of benzene, a component of certain petroleum products.

This soil shall be treated onsite, at Wacker Siltronic Corp., 7200 N.W. Front Avenue in Portland. The duration of the thermal treatment is projected to be 7 - 10 days.

Thank you for your time and attention to this matter. Please contact me or Tom McCue of Wacker Siltronic Corp, 241-7532, if you have any questions.

Sincerely,
PEMCO

Robin Hillier, Coordinator
Soil Remediation Division

cc: Tom McCue, Wacker Siltronic Corp.

STATE OF OREGON
DEPARTMENT OF ENVIRONMENTAL QUALITY

Memorandum

To: Staff interested in Doane's Lake
LDPatterson, CRClinton, RPReiter,
PKRessler, CYoung

Date: August 5, 1985

From: JAGillaspie

Subject: Attached Summary from Wacker

HW 9.50

Attached is the preliminary report from Wacker Siltronics on the soil sampling conducted on its property. The company and its consultants are now conducting groundwater sampling, after concluding that it was difficult to know what was happening with just soil samples. They plan on meeting with us when the groundwater sampling is completed and they know the scope of the next step.

(Newfile if one hasn't already been prepared)

JAG/emc
cc: EPA - Cherry Evans-Carmichael
EPA - Pat Storm
Multnomah County - Dr. Charles Schade
Health Division - Michael Heumann

Hazardous & Solid Waste Division
Dept. of Environmental Quality
RECEIVED
AUG 5 1985

A PRELIMINARY REPORT
SOIL INVESTIGATION FOR PROPOSED POLYSILICON PLANT

WACKER SILTRONIC CORPORATION
PORTLAND, OREGON

Prepared By

CH2M HILL NORTHWEST, INC.
2020 S.W. Fourth Avenue
Portland, Oregon 97201

Dept. of Environmental Quality
RECEIVED
JUL 24 1985
NORTHWEST REGION

JUNE 1985
P19786.A1.00

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INTRODUCTION

Wacker Siltronic Corporation contracted CH2M HILL to conduct a soil investigation on Wacker's property located in the Northwest Industrial area of Portland, Oregon. The purpose of the investigation was to evaluate subsurface conditions within a section of the vacant portion of the site as part of the preliminary engineering for the design and construction of the proposed polysilicon plant.

The subsurface investigation was initiated based on the presence (both past and current) of industrial manufacturing and processing facilities within the Doane Lake area and recent environmental regulations--the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the Resource Conservation and Recovery Act of 1976 (RCRA). Wacker was concerned that past or current management practices of industrial wastes within the Doane Lake area may have resulted in the presence of these materials or subsequent residues on Wacker's property, which would prevent or hinder the construction of the proposed polysilicon plant and future expansions of the existing manufacturing facilities.

This preliminary report describes the soil boring, sampling, and analytical procedures and construction of the groundwater monitoring wells. It also presents the results of the laboratory analyses, which indicate the presence of chemical constituents commonly associated with petroleum products, coal tar, and pesticides. Interpretation of the results presented in this report is beyond the scope of our contract and will be included as part of future work (i.e., site environmental assessment).

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SITE DESCRIPTION

Wacker Siltronic Corporation is located in the northwest section of the City of Portland on the west bank of the Willamette River. The property, consisting of approximately 85 acres, is situated between the St. Johns Bridge and the Burlington Northern Railroad Bridge and is essentially rectangular in shape. Property boundaries are the Willamette River to the northeast; the Burlington Northern Railroad berm, which provides the approach to the railroad bridge, to the southwest; Burlington Northern track and adjacent N.W. St. Helens Road to the southwest; and the property line shared with Northwest Natural Gas and the Koppers Company to the northwest. Figure 1 shows the location of the Wacker property in relation to these landmarks and other industrial companies in the vicinity.

The project site is located in a vacant field about 400 feet south of Wacker's existing facilities, as shown in Figure 2. The site is bounded on the north by the existing Wacker plant, and is bordered on the south and east by Burlington Northern Railroad right-of-way. Underground utilities, consisting of oil, water, gasoline, natural gas, and sewer lines, as well as electric and telephone cables, are located in a 100-foot-wide easement on the north side of the site.

The site is relatively level with elevations ranging from about 40 feet National Geodetic Vertical Datum 1929 (NGVD) in the southern part to about 32 feet in the northern part. The local ground surface is deeply rutted with heavy machinery tracks and ditches. Wood debris, concrete, and other waste materials are present in small amounts across the field.

FIELD INVESTIGATION

The field investigation was performed from April 1 through 5, 8 and 9, 1985. The investigation involved collecting soil

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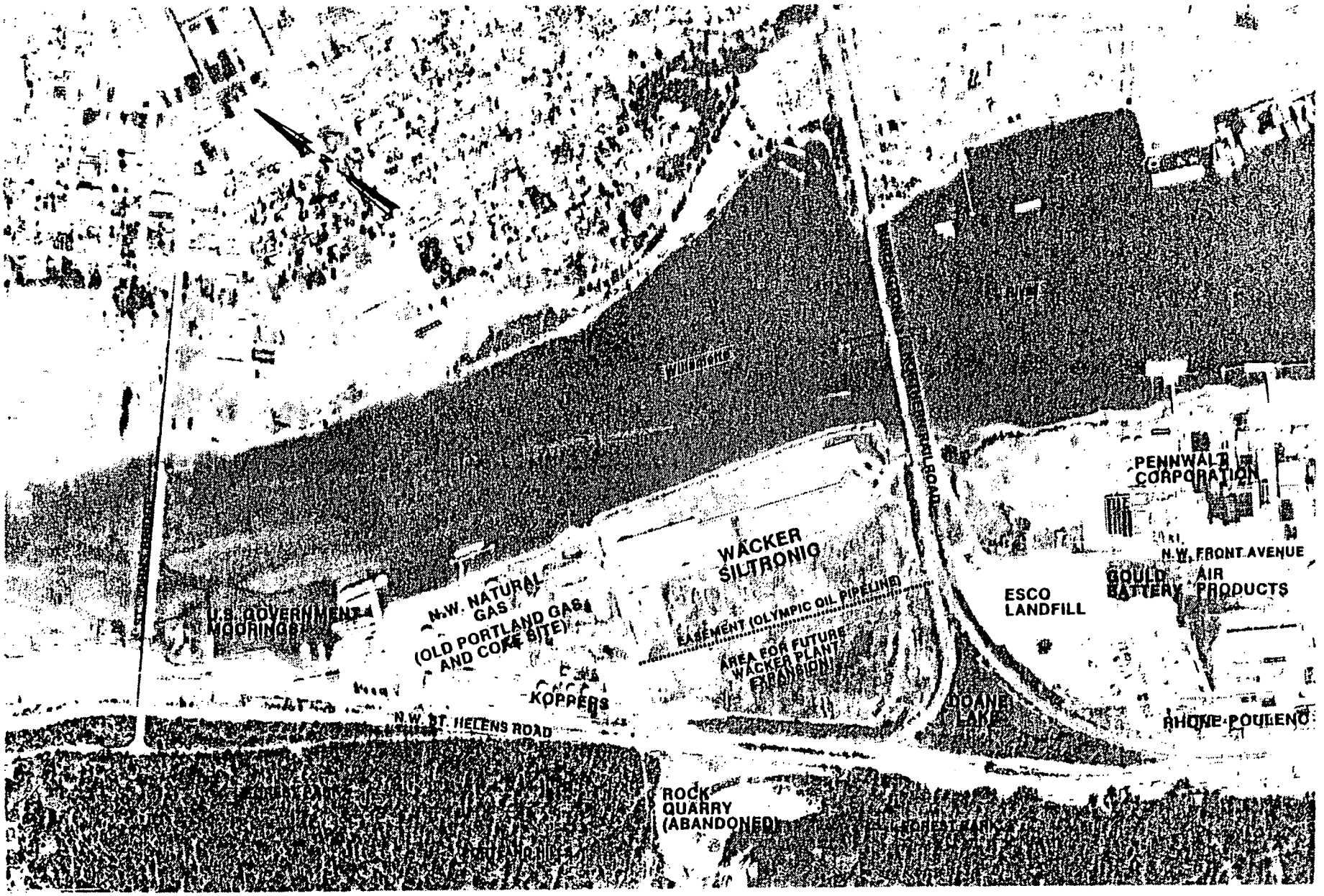

Figure 1 **WACKER SILTRONIC PLANT AND SURROUNDING VICINITY (1983)**

SCALE: 1" = 940 FEET (1 cm : 110 m)

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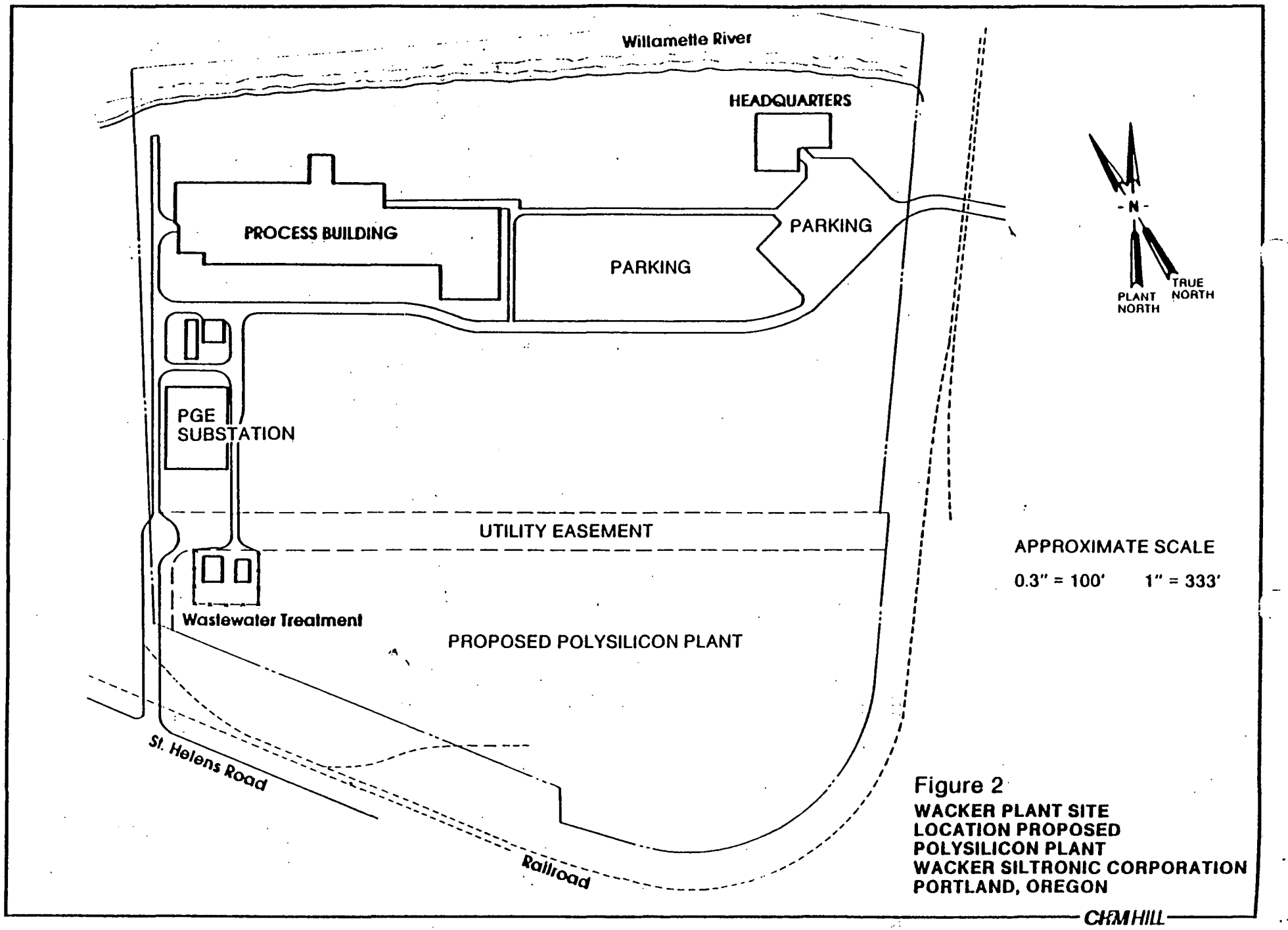

Figure 2
WACKER PLANT SITE
LOCATION PROPOSED
POLYSILICON PLANT
WACKER SILTRONIC CORPORATION
PORTLAND, OREGON

CH2M HILL

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samples from seven soil borings, all of which were completed as monitoring wells. The locations of the borings/monitoring wells (designated MW-1 through MW-7) are shown in Figure 3. The soil borings were drilled and monitoring wells constructed by Geotech Explorations, Inc., of Beaverton, Oregon, under the field observation of a CH2M HILL hydrogeologist.

SOIL BORING AND SAMPLING

The seven soil borings were drilled using a CME-55 rotary drill rig and 6¼-inch (OD) hollow-stem augers. Soil samples were recovered at 5-foot intervals. Samples were recovered using a 2-inch split-spoon sampler following the requirements of the standard Penetration Test (ASTM D 1586). The sampler was driven 18 inches ahead of the auger bit to collect an undisturbed soil sample. The depth of soil borings ranged from 31.5 to 41.5 feet, generally between 5 and 20 feet below fill material and into native soils. The CH2M HILL hydrogeologist inspected, classified, and logged each borehole and soil sample in the field in approximate accordance with the Visual-Manual Procedure (ASTM D 2488). The log included a physical description of the soil type and a visual and odor estimate for the presence of contaminants. Sample intervals, soil types, and descriptions of the soil types and soil borings are provided in the soil boring record drawings presented in the appendix.

A composite soil sample from each split-spoon was placed in a clean 8-ounce glass jar. Each jar was filled to the top before it was sealed. The label that had been affixed to the sample container was then filled out. Information on the label included the facility name, the sample identification number, the name of the person collecting the sample, date and time of collection, and the location of the sample. The sample was then placed in a portable cooler until the end of each day when it was transferred via chain-of-custody record

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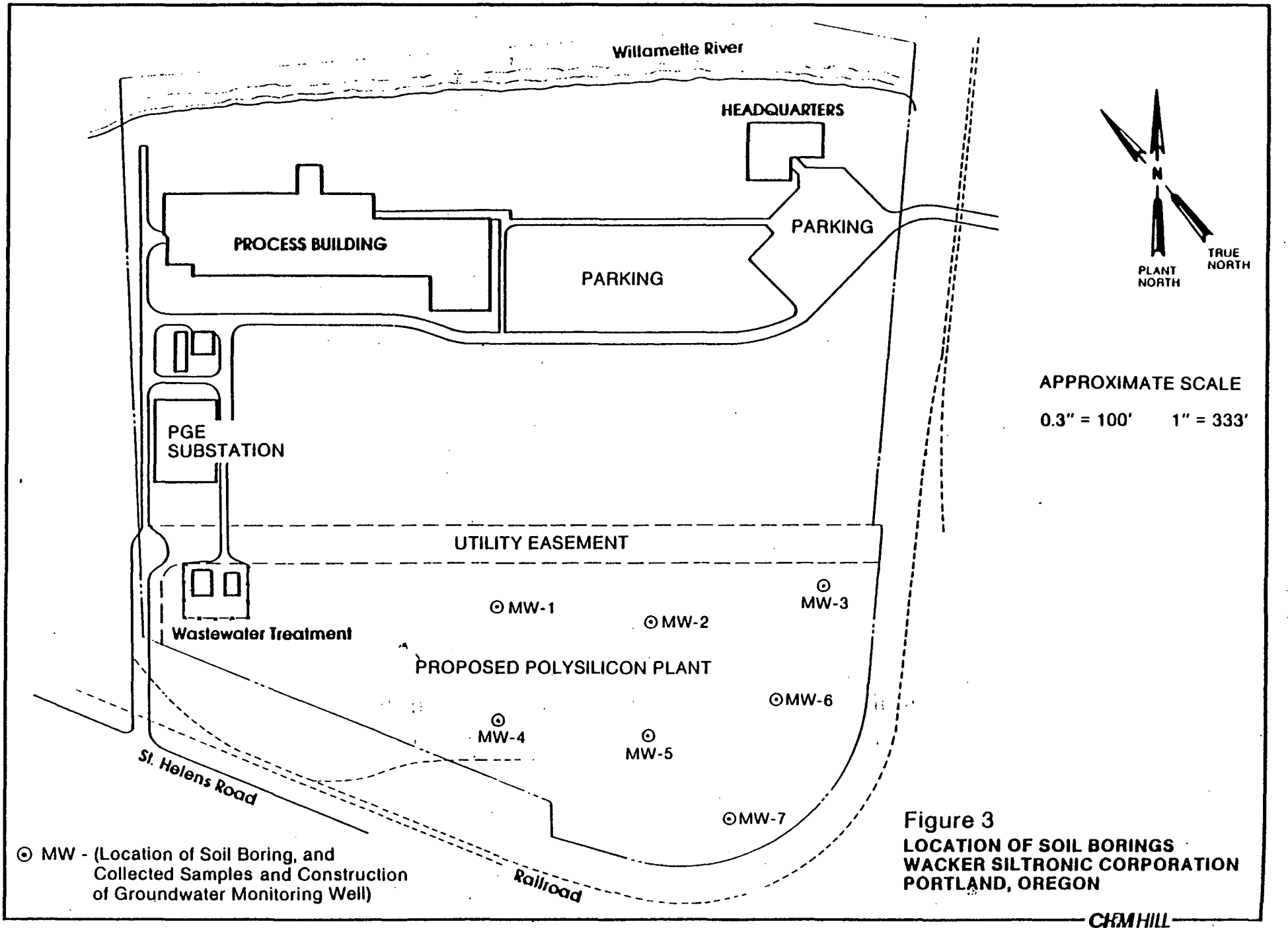

Figure 3
LOCATION OF SOIL BORINGS
WACKER SILTRONIC CORPORATION
PORTLAND, OREGON

CH2M HILL

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to a refrigerator located inside the laboratory area of Wacker's wastewater treatment building. Chain-of-custody records were kept for every sample collected. Sample custody was maintained until the samples were relinquished directly to Wacker or an outside laboratory. A sample of the chain-of-custody form used is illustrated in the appendix.

All drilling equipment was thoroughly steam-cleaned before drilling each boring. Oil and grease were not used at drill rod connection fittings to prevent contamination of the soil samples. The split-spoon soil sampler was decontaminated between each use. Decontamination steps included:

- Washing off grass, soil particles, mud smears, etc., in a bucket of tap water
- Washing in a 5 to 10 percent solution of trisodium phosphate (TSP) and tap water
- Two rinses in clean tap water
- One rinse each with distilled water and methanol

The same decontamination procedures were used for the stainless steel utensils used to transfer soil from the sampler to the jars. Utensils were stored in a new plastic bag until they were ready for use.

A number of quality control measures were performed in order to ensure that all data generated was of known precision, and accuracy and conformed to accepted procedures. Soil sample splits were collected at soil boring sites MW-2, -5, and -6. Several transfer blanks were also prepared to check for potential contamination of sample jars. Samples of water poured into the drill holes to hold back heaving sands were also collected.

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GROUNDWATER MONITORING WELL CONSTRUCTION

Seven groundwater monitoring wells were constructed by installing well screen casing assemblies into the completed drill holes.

Each assembly consisted of 2-inch diameter schedule 40 PVC. Well screens consisted of a 15-foot length of PVC with three rows of 0.010-inch machine-slotted openings. A 5-foot solid PVC sump was placed beneath each screen. Solid PVC casing was placed above the screen and extended to the ground surface. Casing lengths were connected by flush-threaded fittings; no solvents were used to connect PVC sections.

Each well screen interval was gravel-packed by pouring a coarse-grained sand into the annular space between the PVC and the hollow stem of the auger. As the auger was pulled up, the sand dropped out of the hollow stem into the well to envelop the well screen. After the sand pack was installed to 2 or 3 feet above the top of the well screen, the annular space between the PVC casing and the hollow stem was filled with 1 to 2 feet of pelletized bentonite followed by cement grout to the ground surface. A summary of the construction of each well is provided in the soil boring record drawings presented in the appendix.

Well heads were completed at approximately 2 feet above the ground surface with locking steel caps that were anchored 2 to 3 feet into the cement grout mixture. The monitoring wells were developed by the drilling contractor by blowing compressed air through an air line into the sump (tail pipe) located below the well screen. Development was considered complete when the return water became visibly less turbid. The PVC monitoring well assembly was thoroughly steam-cleaned before construction of each well. As a measure of additional quality assurance and control, samples of the sand filter

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pack material used for well construction were collected and saved.

LABORATORY ANALYSIS AND SOIL SAMPLE RESULTS

The field sample description generally provided the basis for selecting samples to be sent to the laboratory for chemical analysis. Samples in which contaminants were most apparent visually and by odor were selected for analysis. Also, at least one soil sample from each soil boring site was analyzed, as was at least one sample at every 5-foot depth (except at 30 feet) from the combination of all soil boring locations. Figure 4 shows the approximate vertical location of the collected soil samples for each monitoring well and identifies which samples were analyzed.

The selection of the chemical analyses to be performed on each soil sample was based on the past and current industrial chemical manufacturing and handling activities within the Doane Lake area (i.e., petroleum products, coal tar, creosote, pesticides, battery recycling, foundry process waste disposal). The following chemical analyses were performed on the selected soil samples by Coffey Laboratories, Inc. (located at 4914 N.E. 122nd Avenue, Portland, Oregon):

- Oil and grease
- Phenols
- Volatiles and polynuclear aromatic hydrocarbons
- E.P. toxicity for:
  --pesticides
  --herbicides
  --arsenic
  --barium
  --cadmium
  --chromium
  --lead
  --mercury
  --selenium
  --silver

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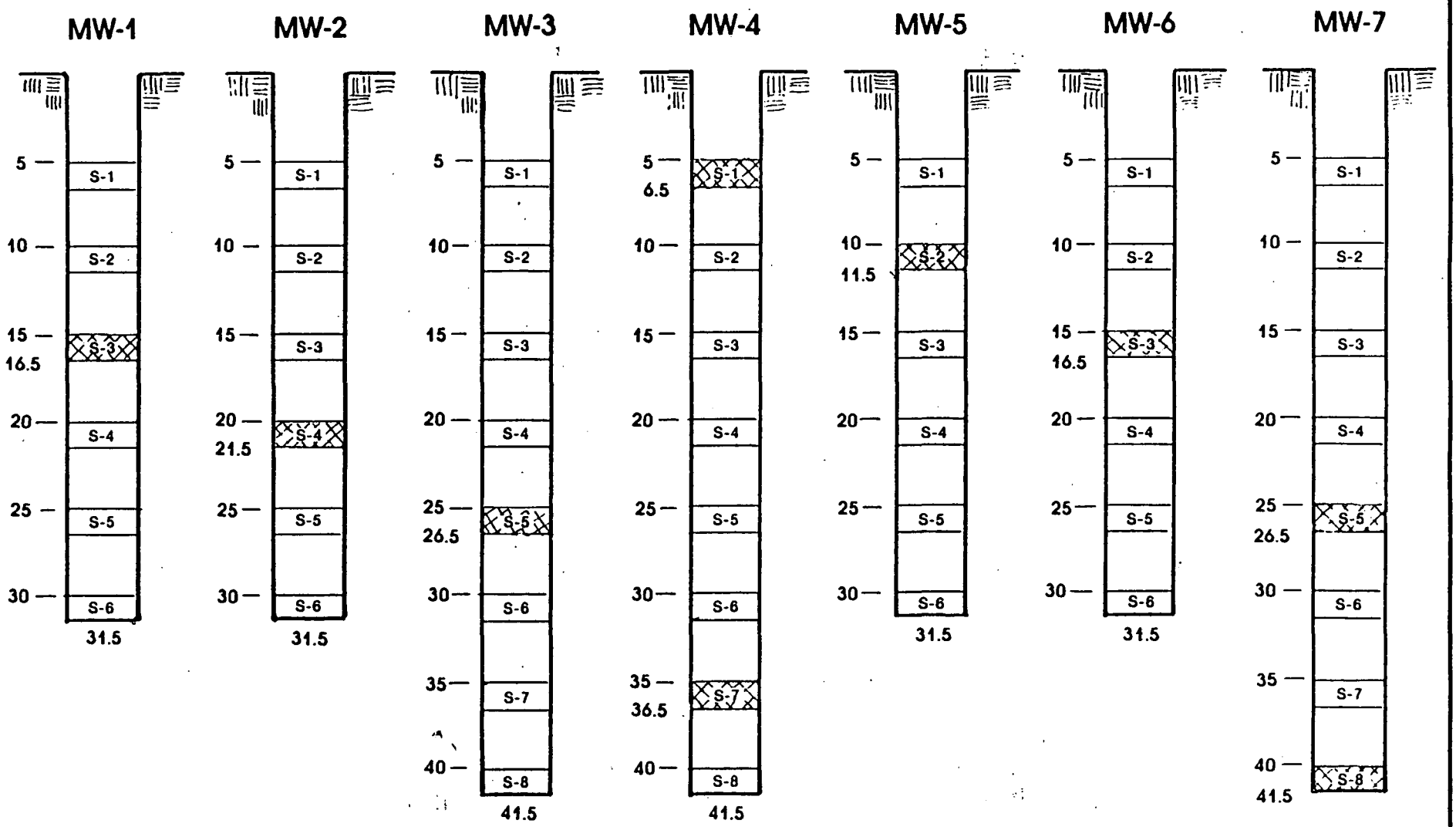

Figure 4
GENERAL VERTICAL LOCATION COLLECTED SOIL SAMPLES WACKER SILTRONIC CORPORATION PORTLAND, OREGON

CH2MHILL

The results of the laboratory analysis are presented in Table 1. A copy of the Coffey Laboratories, Inc., report is included in the appendix.

The field samples were analyzed for phenols, pesticides, herbicides, metals, volatiles, and aromatic hydrocarbons by EPA methods (SW-846, EPA-602, 4-79-020); the oils and grease were measured by standard methods (method 503 D).

Laboratory quality assurance procedures included method blanks, duplicates for precision measurements, and spikes for accuracy measurements. The frequency of blank, duplicate, and spike measurements was at a minimum of 10 percent per set to meet the standard requirements. The data were evaluated in view of the QC findings and found acceptable.

A review of the laboratory analysis indicates that each soil boring location contained a mixture of substances commonly associated with petroleum products, coal tar, and pesticides. The following list summarizes the principal substances found in each of the seven borings:

- MW-1 PAHs, petroleum products
- MW-2 PAHs, petroleum products
- MW-3 petroleum products
- MW-4 petroleum products
- MW-5 PAHs, petroleum products, 2,4-D
- MW-6 petroleum products, 2,4-D
- MW-7 petroleum products

Interpretation of results presented in Table 1 is beyond the scope of this report and will be included as part of future work (i.e., site environmental assessment).

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Table 1
WACKER SILTRONIC, POLYSILICON PLANT SOILS INVESTIGATION
SOURCE: COFFEY LABORATORIES, INC./APRIL 30, 1985
RESULTS OF SOILS ANALYSIS

Chemical Compounds	MW-1, S-3 (15-16.5 ft)	MW-2, S-4 (20-21.5 ft)	MW-3, S-5 (25-26.5 ft)	MW-4, S-1 (5-6.5 ft)	MW-4, S-7 (35-36.5 ft)	MW-5, S-2 (10-11.5 ft)	MW-6, S-3 (15-16.5 ft)	MW-7, S-5 (25-26.5 ft)	MW-7, S-8 (40-41.5 ft)	Detection Limits	Reference Criteria
Organic Analyses											
o Volatile Compounds											
1,1,1-Trichloroethane	0.01	BD	BD	BD	BD	BD	BD	BD	BD	0.01	pp, PDW (*)
1,2-Dichloroethane	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.01	pp, PDW (*)
1,1,2,2-Tetrachloroethylene	2.2	11	BD	BD	BD	0.14	BD	BD	BD	0.05	
Toluene	1.2	20	0.11	BD	BD	0.20	BD	BD	BD	0.1	pp
Chlorobenzene	0.04	BD	BD	BD	BD	BD	BD	BD	BD	0.04	pp
Ethylbenzene	17	5.4	BD	BD	BD	BD	BD	BD	0.05	0.04	pp
Xylene	146	116	BD	BD	BD	1.5	BD	2.8	1.2	1.0	
o Acid Extractables											
Phenol	0.35	3.1	0.20	0.30	0.17	0.07	0.05	0.06	0.08	NR	pp, SWQ
2-Chlorophenol	ND	7.8	0.08	0.26	ND	ND	0.13	ND	0.14	NR	pp, SWQ
2-Nitrophenol	ND	0.20	ND	ND	ND	ND	ND	ND	ND	NR	pp, SWQ
2,4-Dimethylphenol	ND	3.1	ND	ND	ND	0.22	0.17	ND	ND	NR	pp, SWQ
2,4-Dichlorophenol	ND	2.7	ND	ND	ND	0.24	ND	ND	ND	NR	pp, SWQ
2,4,6-Trichlorophenol	ND	ND	ND	ND	ND	0.22	ND	ND	ND	NR	pp, SWQ
2,4-Dinitrophenol	ND	ND	ND	ND	ND	0.81	ND	ND	ND	NR	pp, SWQ
Pentachlorophenol	ND	ND	ND	ND	0.31	6.9	5.1	ND	ND	NR	pp,SWQ,SHW
o Base Neutral Extractables											
Naphthalene	6.7	360	BD	BD	BD	230	BD	BD	BD	1	pp
Acenaphthalene	5.6	230	BD	BD	BD	24	BD	BD	BD	1	pp
Acenaphthene	8.0	560	BD	BD	BD	28	BD	BD	BD	1	pp
Fluorene	5.0	290	BD	BD	BD	20	BD	BD	BD	1	pp
Phenanthrine-Anthracene (***)	32	1,400	3	BD	BD	150	BD	1.6	BD	1	pp
Fluoranthene	16	530	BD	BD	BD	50	BD	1.1	BD	1	pp
Pyrene	18	550	BD	BD	BD	57	BD	1.2	BD	1	pp
Chrysene	12	92	BD	BD	BD	36	BD	1.7	BD	1	pp
Benzo (b) + Benzo (k) Fluoranthene (***)	8	120	BD	BD	BD	200	BD	BD	BD	1	pp
Benzo (a) pyrene	19	120	BD	BD	BD	100	BD	BD	BD	1	pp
Indeno (1,2,3-CD) Pyrene + Dibenzo (a,b) Anthracene (***)	BD	270	BD	BD	BD	7	BD	BD	BD	1	
Benzo (ghi) Perylene	BD	360	BD	BD	BD	25	BD	BD	BD	1	pp
o Pesticides (EP Toxicity)											
Gamma BHC (Lindane)	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.04	pp, SHW, PDW
Endrin	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.002	pp
Toxaphene	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	pp

PDR956.031.1

SCOEPA00022430

Table 1 (Continued)

Chemical Compounds	MW-1, S-3 (15-16.5 ft)	MW-2, S-4 (20-21.5 ft)	MW-3, S-5 (25-26.5 ft)	MW-4, S-1 (5-6.5 ft)	MW-4, S-7 (35-36.5 ft)	MW-5, S-2 (10-11.5 ft)	MW-6, S-3 (15-16.5 ft)	MW-7, S-5 (25-26.5 ft)	MW-7, S-8 (40-41.5 ft)	Detection Limits	Reference Criteria
Inorganic Analyses (EP Toxicity)											
Arsenic	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	pp,SHW,SWQ),PDW
barium	0.05	0.11	0.05	0.09	BD	0.05	0.11	0.08	0.15	0.05	SHW, SWQ
Cadmium	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	pp,SHW,SWQ),PDW
Chromium	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	pp,SHW,SWQ),PDW
Lead	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	pp,SHW,SWQ),PDW
Mercury	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	pp,SHW,PDW
Selenium	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	pp,SHW,PDW
Silver	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	pp,SHW,PDW
Miscellaneous Analysis											
o non-PP Phenols/Cresols											
3 & 4-Chlorophenol	0.44	17.5	0.06	ND	ND	1.7	0.32	ND	ND	NR	SHW, SWQ
2,4,5-Trichlorophenol	ND	1.9	ND	ND	ND	ND	ND	ND	ND	NR	SHW, SWQ
2,3,4,5-Tetrachlorophenol	4.9	256	ND	0.40	ND	0.23	4.7	0.06	0.25	NR	SHW, SWQ
2,3,4,6-Tetrachlorophenol	0.24	ND	ND	ND	ND	ND	ND	1.0	ND	NR	SHW, SWQ
2,3,5,6-Tetrachlorophenol	ND	4.0	ND	0.58	0.11	0.33	0.55	ND	0.46	NR	SHW, SWQ
o-Cresol	0.04	3.4	ND	0.02	ND	0.19	0.05	ND	ND	NR	
m- and p-Cresol (***)	0.006	ND	ND	0.08	ND	ND	ND	ND	ND	NR	
o Non-PP Pesticides (EP Toxicity)											
Methoxychlor	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.1	SHW, PDW
2,4-D	BD	BD	BD	BD	BD	10.0	160.0	BD	BD	10	SHW, PDW
2,4,5-TP (Silvex)	BD	BD	BD	BD	BD	BD	BD	BD	BD	1	SHW, PDW
o Misc. Constituents/Parameters											
Oil and Grease	0.340%	0.1498%	0.0587%	0.914%	0.0304%	0.190%	0.0539%	0.0650%	0.0586%		

Unless otherwise specified, all units are mg/kg (mg/L).
pp Priority Pollutant
PDW National Interim Primary Drinking Water Regulations
PDW(*) Proposed N.I.P.D.W.R.
SHW State of Oregon Hazardous Waste Administrative Rules
SWQ State of Oregon Water Quality Administrative Rules
BD Parameter detected, but below analytical quantification limits.
ND Analyzed, but not detected.
NR Not reported.
(***) Reported as sum of two compounds.

PDR956.031.2

SCOEPA00022431

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

VOLATILES (HEADSPACE ANALYSIS)

COMPOUND	#1	#2	#3	#4	#5
1,2-Dichloro-ethane	<0.01	<0.01	<0.01	<0.01	<0.01
1,1,1-Trichloro-ethane	0.01	<0.01	<0.01	<0.01	<0.01
Toluene	1.2	20	0.11	<0.1	<0.1
1,1,2,2 Tetra-chlorcethylene	2.2	11	<0.05	<0.05	<0.05
Chlorobenzene	0.04	<0.04	<0.04	<0.04	<0.04
Ethyl Benzene	17.0	5.4	<0.04	<0.04	<0.04
Xylene	146	116	<1.0	<1.0	<1.0

COMPOUND	#6	#7	#8	#9
1,2-Dichloro-ethane	<0.01	<0.01	<0.01	<0.01
1,1,1-Trichloro-ethane	<0.01	<0.01	<0.01	<0.01
Toluene	0.20	<0.1	<0.1	<0.1
1,1,2,2 Tetra-chloroethylene	0.14	<0.05	<0.05	<0.05
Chlorobenzene	<0.04	<0.04	<0.04	<0.04
Ethyl Benzene	<0.04	<0.04	<0.04	0.05
Xylene	1.5	<1.0	2.8	1.2

< denotes "less than"

Results reported in mg/kg

Some interference was encountered due to naphthalene and some of the more volatile phenols and PNA s.

THIS REPORT CONTINUES

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

Subject: E P Toxicity Test.

Method of Analysis: Federal Register/Vol.45, No.98/Monday, May 19, 1980/ Rules and Regulations; Appendix II, Page 33127

Field Data: Samples were collected and delivered by the Client

ANALYSIS	#1	#2	#3	#4	#5
Arsenic	<0.05	<0.05	<0.05	<0.05	<0.05
Barium	0.05	0.11	0.05	0.09	<0.05
Cadmium	<0.05	<0.05	<0.05	<0.05	<0.05
Chromium	<0.05	<0.05	<0.05	<0.05	<0.05
Lead	<0.05	<0.05	<0.05	<0.05	<0.05
Mercury	<0.05	<0.05	<0.05	<0.05	<0.05
Selenium	<0.05	<0.05	<0.05	<0.05	<0.05
Silver	<0.05	<0.05	<0.05	<0.05	<0.05

ANALYSIS	#6	#7	#8	#9	Limit
Arsenic	<0.05	<0.05	<0.05	<0.05	5.0
Barium	0.05	0.11	0.09	0.15	100.0
Cadmium	<0.05	<0.05	<0.05	<0.05	1.0
Chromium	<0.05	<0.05	<0.05	<0.05	5.0
Lead	<0.05	<0.05	<0.05	<0.05	5.0
Mercury	<0.05	<0.05	<0.05	<0.05	0.2
Selenium	<0.05	<0.05	<0.05	<0.05	1.0
Silver	<0.05	<0.05	<0.05	<0.05	5.0

< denotes "less than"

Results expressed in mg/liter

THIS REPORT CONTINUED

SCOEPA00022433

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

Wacker Siltronics
Log #A950410-I

April 30, 1995
Page Four

EP TOXICITY PESTICIDES

Results below apply to the water extract of soil samples. Water extracts performed as per EPA Specification of EP-Toxicity Method.

SAMPLE #	ENDRIN	LINDANE	METHOXYCHLOR	TOXAPHENE
#1	<0.002	<0.04	<0.1	<0.05
#2	<0.002	<0.04	<0.1	<0.05
#3	<0.002	<0.04	<0.1	<0.05
#4	<0.002	<0.04	<0.1	<0.05
#5	<0.002	<0.04	<0.1	<0.05
#6	<0.002	<0.04	<0.1	<0.05
#7	<0.002	<0.04	<0.1	<0.05
#8	<0.002	<0.04	<0.1	<0.05
#9	<0.002	<0.04	<0.1	<0.05
Allowed Limits	0.02	0.4	10	0.5

< denotes "less than"

Results expressed in mg/liter

EP TOXICITY HERBICIDES

SAMPLE #	2,4-D	2,4,5 TP (SILVEX)
#1	<10 (mg/liter)	<1 (mg/liter)
#2	<10	<1
#3	<10	<1
#4	<10	<1
#5	<10	<1
#6	10.0	<1
#7	150.0	<1
#8	<10	<1
#9	<10	<1

THIS REPORT CONTINUED

SCOEPA00022434

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

PHENOL RESULTS

ANALYSIS	SAMPLE #6 RESULTS
Phenol	0.07
O-Cresol	0.19
2,4 Dimethylphenol	0.22
2,4 Dichlorophenol	0.24
3 & 4 Chlorophenol	1.7
2,4,6 Trichlorophenol	0.22
2,3,5,6 Tetrachlorophenol	0.33
2,3,4,5 Tetrachlorophenol	0.23
2,4 Dinitrophenol	0.81
Pentachlorophenol	6.9

	SAMPLE #7 RESULTS
Phenol	0.05
O-Cresol	0.05
2-Chlorophenol	0.13
2,4 Dimethylphenol	0.17
3 & 4 Chlorophenol	0.32
2,3,5,6 Tetrachlorophenol	0.55
2,3,4,5 Tetrachlorophenol	4.7
Pentachlorophenol	5.1

	SAMPLE #8 RESULTS
Phenol	0.06
2,3,4,6 Tetrachlorophenol	1.0
2,3,4.5 Tetrachlorophenol	0.06

	SAMPLE #9 RESULTS
Phenol	0.08
2-Chlorophenol	0.14
2,3,5,6 Tetrachlorophenol	0.46
2,3,4,5 Tetrachlorophenol	0.25

Results reported in mg/kg

THIS REPORT CONTINUED

SCOEPA00022435

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

Wacker Siltronic
Log #A850410-I

April 30, 1985
Page Two

PHENOL RESULTS

ANALYSIS	SAMPLE #1 RESULTS
Phenol	0.35
O-Cresol	0.04
3 & 4 Chlorophenol	0.44
2,3,4,6 Tetrachlorophenol	0.24
2,3,4,5 Tetrachlorophenol	4.9
M & P Cresol	0.006

	SAMPLE #2 RESULTS
Phenol	3.1
O-Cresol	3.4
3 & 4 Chlorophenol	17.5
2-Chlorophenol	7.8
2-Nitrophenol	0.20
2,4 Dimethylphenol	3.1
2,4 Dichlorophenol	3.7
2,4,5 Trichlorophenol	1.9
2,3,5,6 Tetrachlorophenol	4.0
2,3,4,5 Tetrachlorophenol	256

	SAMPLE #3 RESULTS
Phenol	0.20
3 & 4 Chlorophenol	0.06
2-Chlorophenol	0.09

	SAMPLE #4 RESULTS
Phenol	0.30
2-Chlorophenol	0.26
O-Cresol	0.02
M & P Cresol	0.08
2,3,5,6 Tetrachlorophenol	0.59
2,3,4,5 Tetrachlorophenol	0.40

	SAMPLE #5 RESULTS
Phenol	0.17
2,3,5,6 Tetrachlorophenol	0.11
Pentachlorophenol	0.31

Results reported in ng/kg

THIS REPORT CONTINUED

SCOEPA00022436

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

April 30, 1995
Log #A950410-I

Wacker Siltronics
P.O. Box 03180
Portland, Oregon 97203

Analyses Requested: Oil and Grease, Phenols, Volatiles, and Polynuclear Aromatic Hydrocarbons

Sample Identifications:
#1 - MW1, S-3 (15.0' - 16.5')
#2 - MW2, S-4 (20.0' - 21.5')
#3 - MW3, S-5 (25.0' - 26.5')
#4 - MW4, S-1 (5.0' - 6.5')
#5 - MW4, S-7 (35.0' - 36.5')
#6 - MW5, S-2 (10.0' - 11.5')
#7 - MW6, S-3 (15.0' - 16.5')
#8 - MW7, S-5 (25.0' - 26.5')
#9 - MW7, S-9 (40.0' - 41.5')

SAMPLE #	OIL AND GREASE
#1	0.340 %
#2	0.1498 %
#3	0.0587 %
#4	0.0914 %
#5	0.0304 %
#6	0.190 %
#7	0.0539 %
#8	0.0650 %
#9	0.0586 %

THIS REPORT CONTINUES

SCOEPA00022437

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-7	SHEET 2 OF 2

SOIL BORING RECORD DRAWING

PROJECT **WACKER SILTRONIC CORPORATION** LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
		31.5	S-6	18	2-1-2 (3)	Lower 9" - SAND, poorly graded, fine, brown, wet, soft, (SP),.		Reamed out heaved area from 26 to 30' with wash water and tricone bit to clear auger
						Upper 9" - SAND, very fine, brown, wet, loose, (SM); All has definite hydrocarbon (?) odor, not visible in soil, however. Sample may be distrubed, heave material.		Backfill to 32'-4"
	35	35.0						
		36.5	S-7	18	3-5-5 (10)	SANDY SILT, low plasticity, 20-30% fine sand, medium brown, moist, soft, (ML); noticeable hydrocarbon (?) odor.		
	40	40.0				Upper 7" - SILT, low plasticity, brown, wet, firm, (ML).		
		41.5	S-8	14"	8-11-17 (28)	Lower 7" - SILTY SAND, fine sand, about 30% fine, brown, wet, compact, (SM); both silt and sand have noticeable hydrocarbon (?) odor, no visible traces.		
						END MW at 41.5 feet		

Sample choices

(Ranked from worst)

*S-5
S-6
S-7 - S-8 (about the same)

*amount of odor

CH2M HILL

PROJECT NUMBER	BORI UMBER	
P19436.A2	MW-7	SHEET 1 OF 2

SOIL BORING RECORD DRAWING

PROJECT **WACKER SILTRONIC CORPORATION** LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
								Grout to surface
	5	5.0				Lower 6" - SILT, low plasticity, moist, gray, soft (ML).		5 1/2' top of bentonite
		6.5	S-1	12"	1-3-1 (4)	Upper 6" - SAND, poorly graded, fine sand, brown, wet, loose, (SP), fill.		
								Cavings around PVC 7-15'
	10	10.0				SAND as in upper 6" of S-1, (SP), fill.		10' of top of screen
		11.5	S-2	14	5-9-11 (18)			Driller notes water at ±12'
								15' section 10 slot PVC wells
	15	15.0				SAND, same as upper 6" of S-1 (SP), fill.		During well construction, drill hole walls began squeezing in at 5' up to 7', sand was packed in auger and walls apparently squeezed in faster than sand could drop out; tried twice unsuccessfully to jet-out sand.
		16.5	S-3	18	2-1-5			
	20	20.0				Upper 6" - sand as in upper 6" of S-1, (SP), fill; mild hydrocarbon odor.		Fill Native
		21.5	S-4	18	5-5-6 (11)	Lower 12" - SILT, low plasticity, medium brown with gray mottling, moist, firm, (ML); native soil.		
	25	25.0				Upper 9" - SILT, low plasticity, medium brown with gray mottling, moist, firm, (ML).		25' bottom screen
		26.5	S-5	18	4-3-4 (7)	Lower 9" - SAND, poorly graded, fine sand, medium gray, wet, loose, (SP), strong hydrocarbon odor, visible blotches of oil (?) in both silt and sand.		5'-4" Sump
								Bottom of Sump = 30'
	30	30.0						Driller notes heave at 30' ±4' of heave

REV. 11-82 FORM D1556

SCOEPA00022439

CH2M HILL

PROJECT NUMBER	BORING NUMBER	SHEET 1 OF 2
P19436.A2	MW-6	

SOIL BORING RECORD DRAWING

PROJECT **WACKER SILTRONIC CORPORATION** LOCATION **PORTLAND, OREGON**

ELEVATION _____ DRILLING CONTRACTOR **GEOTECH EXPLORATIONS, BEAVERTON, OREGON**

DRILLING METHOD AND EQUIPMENT **CME-55, 6" HS AUGERS**

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION / DEPTH BELOW SURFACE (FT.)	SAMPLE: INTERVAL	SAMPLE: TYPE AND NUMBER	SAMPLE: RECOVERY	STANDARD PENETRATION TEST RESULTS: 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL
5	5.0				
	6.5	S-1	18	3-8-11 (19)	SAND, poorly graded, fine sand, less than 10% fine, brown, moist, compact (SP), fill.
10	10.0				
	11.5	S-2	18	10-10-11 (21)	Primarily sand, as in S-1, but with several 1-inch silt layers; lower 6" of sample has strong hydrocarbon odor to it.
15	15.0				
	16.5	S-3	18	1-1-2 (3)	SAND, as in S-1, except lower 6" have blackish discoloration and strong hydrocarbon odor; small oily splotches noticeable in soil.
20	20.0				
	21.5	S-4	18	3-3-5 (8)	Upper 6" - SAND as in S-1, have blackish discoloration and hydrocarbon odor, fill.
					Lower 12" - SILT, low plasticity, gray with brown mottling, firm (ML), hydrocarbon odor not noticeable.
25	25.0				
	26.5	S-5	18	9-26-26 (52)	SAND, as in S-1, but dark gray with mild hydrocarbon odor, material might be heaved sands and not representative of in-situ soil at 25'.
30	30.0				

SYMBOLIC LOG

COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION

- Grout to surface
- Bentonite to 6 1/2'
- Sand to 7 1/2'
- Top of screen at 9'
- Driller notes water at ±12', coincident with appearance of "oily" odor from cuttings while drilling from 10-15'
- A-rods came out of hold with unusual yellow discoloration from water at 20-25'
- Bottom of screen at 24'
- Driller notes 4' of heave after drilling to 25'; also, chain fell in hole, but was able to recover by retracting augers from hole; Augers moved during SPT from S-5, driller says no contact with sampler; why so high of an N value?
- Sump to 29 1/2'

RE. [illegible] FORM D1586

SCOEPA00022440

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-6	SHEET 2 OF 2

SOIL BORING RECORD DRAWING

PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
		31.5	S-6	18	S-7-12 (19)	All 18" of soil in barrel is SAND, poorly graded, fine sand, less than 10% fine, medium to dark gray, wet, compact, (SP), probably heave or disturbed soil, not representative of 30' depth; mild hydrocarbon odor. 2" of soil in shoe of sampler is SANDY SILT, non-plastic, 30-50% fine sand, medium gray, wet, firm, (ML); no noticeable hydrocarbon odor, sandy silt is probably representative of in-situ soil.		Driller notes 3' of heave from 30-29' prior to sampling S-6; had to drill/wash out heave
								Sample choices S-3

REV. 11-82 FORM D1686

SCOEPA00022441

CH2M HILL

PROJECT NUMBER	BORING NUMBER	SHEET
P19436.A2	MW-6	1 OF 2

SOIL BORING RECORD DRAWING

PROJECT **WACKER SILTRONIC CORPORATION** LOCATION **PORTLAND, OREGON**

ELEVATION _____ DRILLING CONTRACTOR **GEOTECH EXPLORATIONS, BEAVERTON, OREGON**

DRILLING METHOD AND EQUIPMENT **CME-55, 6" HS AUGERS**

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION / DEPTH BELOW SURFACE (FT.)	SAMPLE: INTERVAL	SAMPLE: TYPE AND NUMBER	SAMPLE: RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
5	5.0						Grout to surface
	6.5	S-1	18	3-8-11 (19)	SAND, poorly graded, fine sand, less than 10% fine, brown, moist, compact (SP), fill.		Bentonite to 6 1/2'
							Sand to 7 1/2'
10	10.0						Top of screen at 9'
	11.5	S-2	18	10-10-11 (21)	Primarily sand, as in S-1, but with several 1-inch silt layers; lower 6" of sample has strong hydrocarbon odor to it.		
							Driller notes water at ±12', coincident with appearance of "oily" odor from cuttings while drilling from 10-15'
15	15.0						
	16.5	S-3	18	1-1-2 (3)	SAND, as in S-1, except lower 6" have blackish discoloration and strong hydrocarbon odor; small oily splotches noticeable in soil.		
20	20.0						
	21.5	S-4	18	3-3-5 (8)	Upper 6" - SAND as in S-1, have blackish discoloration and hydrocarbon odor, fill.		A-rods came out of hold with unusual yellow discoloration from water at 20-25'
					Lower 12" - SILT, low plasticity, gray with brown mottling, firm (ML), hydrocarbon odor not noticeable.		
25	25.0						Bottom of screen at 24'
	26.5	S-5	18	9-26-26 (52)	SAND, as in S-1, but dark gray with mild hydrocarbon odor, material might be heaved sands and not representative of in-situ soil at 25'.		Driller notes 4' of heave after drilling to 25'; also, chain fell in hole, but was able to recover by retracting augers from hole; Augers moved during SPT from S-5, driller says no contact with sampler; why so high of an N value?
							Sump to 29 1/2'
30	30.0						

REV. 11-93 FORM D1556

SCOEPA00022442

CH2M HILL

PROJECT NUMBER	BORING NUMBER	SHEET 2 OF 2
P19436.A2	MW-5	

SOIL BORING RECORD DRAWING

PROJECT **WACKER SILTRONIC CORPORATION** LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION / DEPTH BELOW SURFACE (FT.)	SAMPLE: INTERVAL	SAMPLE: TYPE AND NUMBER	SAMPLE: RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
	31.5	S-6	18	4-5-5 (10)	**SILT, low plasticity, about 10% fine sand, gray with brown mottling, moist, stiff (ML), no noticeable hydrocarbon odor.**		
					END MW at 31.5 feet.		
							Worst samples **S-2 = worst** **S-3**

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-5	SHEET 1 OF 2

SOIL BORING RECORD DRAWING

PROJECT **WACKER SILTRONIC CORPORATION** LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
	5	5.0 – 6.5	S-1	18	4-4-8 (12)	SAND, poorly graded, fine sands, brown and gray, some 1/2" silt lenses, moist, loose; includes some oil sheen and odor.		Grout to surface; Top of bentonite scale = 2'; Top of sand at 4'; Screen top at 5'; Dark gray sandy material in cuttings from 5'-10', noticeable oily smell and sheen
	10	10.0 – 11.5	S-2	18	6-6-8 (14)	SAND, poorly graded, fine sand, dark gray, wet, loose to compact, (SP), fill, saturated with oil (split samples taken, Jar 1 and Jar 2).		Driller notes water 5'-10'
	15	15.0 – 16.5	S-3	18		SAND, same as S-2, except only has oily odor and occassional sheen in soil.		
	20	20.0 – 21.5	S-4	18	3-4-5 (9)	SAND, same as S-2, excet has mild odor of oil; silt in top.		Screen bottom at 20'; Silt in tip of sampler, for S-4 fill ±21 Native
	25	25.0 – 26.5	S-5	9	3-5-10 (15)	SILT, low plasticity, 10-15% fine sand, medium gray with brown, yellow and reddish mottling, slightly moist, very stiff (ML), no noticeable hydrocarbon odor.		Sump bottom at 25'; Tailpiece bottom at 25'-4"
	30	30.0						NOTE: Driller lost steel weight for tape in hole at 30 feet, not recovered.

REV. 11-82 FORM D1556

SCOEPA00022444

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-4	SHEET 2 OF 2

SOIL BORING RECORD DRAWING

PROJECT **WACKER SILTRONIC CORPORATION** LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
		31.5	S-6	18	4-5-4 (9)	SILT, low plasticity, gray with brown mottling, moist, firm (ML), includes some decomposed plant fragments.		
	35	35.0						
		36.5	S-7	8	2-3-8 (11)	SANDY SILT, non-plastic, 30-50% fine sand, brown, moist, firm (ML).		Gravel to 41 1/2'
	40	40.0						
		41.5	S-8	8		END MW at 41.5'		
								Worst samples None - all have clean appearance

REV. 11-82 FORM D1686

SCOEPA00022445

CH2M HILL

PROJECT NUMBER	BORING NUMBER	SHEET 1 OF 2
P19436.A2	MW-4	

SOIL BORING RECORD DRAWING

PROJECT **WACKER SILTRONIC CORPORATION** LOCATION **PORTLAND, OREGON**

ELEVATION _____ DRILLING CONTRACTOR **GEOTECH EXPLORATIONS, BEAVERTON, OREGON**

DRILLING METHOD AND EQUIPMENT **CME-55, 6" HS AUGERS**

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION / DEPTH BELOW SURFACE (FT.)	SAMPLE: INTERVAL	SAMPLE: TYPE AND NUMBER	SAMPLE: RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
5	5.0				Upper 9" - SAND, poorly graded, fine sand, brown, moist to wet, loose (SP).		Hole is within 20' of abandoned natural gas line Grout 5' to surface Bentonite from 5'-6'
	6.5	S-1	18	5-1-2 (3)	Lower 9" - SILT, non-plastic, 10-20% fine sand, dark gray, moist, soft (ML), fill.		Screen top at 6 1/2'
10	10.0				Upper 6" - SAND, same as S-1, maybe slough.		Some gravel - like material at 8' Driller notes water at ±8';
	11.5	S-2	18	11-13-11 (24)	Lower 12" - SILT, same as above.		15' screen 10 slot 2" schedule 40 PVC
15	15.0				SAND, poorly graded, fine sand, saturated, loose, (SP), maybe slough, possible mild odor of hydrocarbon.		Piece wood jammed into end of shoe
	16.5	S-3	6"	3-3-4 (7)			
20	20.0				SILT, low plasticity, brownish gray, moist, firm, (ML), native soil; included pieces of wire, probably dragged into sample.		Fill ±20' Native Screen bottom at 21 1/2'
	21.5	S-4	18	1-4-4 (8)			
25	25.0				SILT, same as above.		5'-4" Sump
	26.5	S-5	12	4-4-4 (8)			Tailpiece bottom at 27' Bentonite from 27-28'
30	30.0						Gravel to 41 1/2'

REV. 11-82 FORM C1996

SCOEPA00022446

CH2M HILL

PROJECT NUMBER	BORING NUMBER	SHEET	OF
P19436.A2	MW-2	2	2

SOIL BORING RECORD DRAWING

PROJECT **WACKER SILTRONIC CORPORATION** LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE: INTERVAL	SAMPLE: TYPE AND NUMBER	SAMPLE: RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
	30							
		31.5	S-6	18	3-3-4 (7)	**SILT, low plasticity, grayish brown, moist, firm (ML), no noticeable hydrocarbon odor, native soil.**		
						END MW at 31.5 feet		
								Worst sample
								S-3, S-4 - about the same

SCOEPA00022447

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-2	SHEET 1 OF 2

SOIL BORING RECORD DRAWING

PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION / DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
5	5.0						Grout to surface
	6.5	S-1	18	1-2-3 (5)	SAND, poorly graded, fine sand, brown, moist, loose (SP), fill.		Top of bentonite at 3'
							Top of gravel at 4 1/2'
10	10.0						Screen top at 7 1/2'
	11.5	S-2	0	1-4-5	NO RECOVERY; sample tube came up oily, strong hydrocarbon odor, sandy material on outside of sampler.		Driller notes water at ±8';
15	15.0						15' screen 2" schedule 40 10 slot PVC
	16.5	S-3	18	1-1-2 (3)	SAND, poorly graded, fine sand, chalk gray, wet, loose (SP), some lenses of silt; strong hydrocarbon odor, oily material observed on sample fill.		
20	20.0						Driller notes considerabe degree of oiliness to cutting from 15'-25', more than in MW-1
	21.5	S-4	18	5-6-6 (12)	SANDY SILT, non-plastic, ~30% fill sand, medium to dark gray, wet, firm, (ML), strong hydrocarbon oder, noticeable oil in sample fill?		Screen bottom at 22'
25	25.0						5' sump
	26.5	S-5	18	3-5-5 (10)	Upper 14" - SAND, as in S-3, includes strong hydrocarbon odor and visible oil in sample, material may be slough from drilling and washing out heaved zone, may not be representative of 25'-26.5' interval.		Driller notes 2' heave at 25', had to wash out hole
					Lower 4" - SILT, low plasticity, medium grayish brown, firm, moist (ML), no apparent hydrocarbon, native.		Sump bottom at 27' 4"

RE. [illegible] FORM [illegible]

SCOEPA00022448

CH2M HILL

PROJECT NUMBER	BORING NUMBER	SHEET
P19436.A2	MW-1	2 OF 2

SOIL BORING RECORD DRAWING

PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE: INTERVAL	SAMPLE: TYPE AND NUMBER	SAMPLE: RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
	30	30.0				**SILT, low plasticity, medium brownish gray, moist to wet, includes some sandy silt in upper 6", firm (ML), no noticeable hydrocarbon odor, native soil.**		
		31.5	S-5	18	4-4-5 (9)	**END MW at 31.5 feet.**		**Bottom gravel at 31.5'**
								Worst samples
								S-2, Jar 2 of 2 and S-3 are equally bad, more sample in S-3 for testing.

REV. 11-82 FORM D1586

SCOEPA00022449

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-1	SHEET 1 OF 2

SOIL BORING RECORD DRAWING

PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION / DEPTH BELOW SURFACE (FT.)	SAMPLE: INTERVAL	SAMPLE: TYPE AND NUMBER	SAMPLE: RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
5	5.0				SILT, low plasticity, medium gray with brown mottling, moist, soft (ML), fill.		Grout to surface Top of bentonite at 2 1/2" Top of gravel at 5'
	6.5	S-1	18	1-1-1 (2)			Screen top at 7'
10	10.0				Upper 16" - SILT, same as S-1, some hydrocarbon odor (Jar 1 of 2), fill.		Driller notes water at ±9';
	11.5	S-2	0	4-4-5 (9)	Lower 6" - SAND, poorly graded, fine sand, dark gray, wet compact (SP), heavily saturated with oil, strong odor (Jar 2 of 2), fill.		Prominent oily sheen and odor to cuttings between 10' and 15'
15	15.0				SAND, poorly graded, fine sand, dark gray, wet, compact (SP), heavily saturated with oil, fill.		
	16.5	S-3	18	3-4-5 (9)			
20	20.0				SAND, same as S-3, heavily saturated with oil, fill.		
	21.5	S-4	18	4-3-4 (7)			Screen bottom at 22'
							Driller notes 3 feet of heave at 25', had to wash out hole to clean out heave
25	25.0				Upper 14" - SAND as in S-3 (SP), mild hydrocarbon odor, probably is slough from washing out heave and not representative.		Fill Native ±21'
	26.5	S-5	18	3-3-4	Lower 4" - SILT, low plasticity, medium brownish gray, moist, firm (ML), no noticeable hydrocarbon odor, probably native soil.		Sump bottom at 27'

CH2M HILL

PROJECT NUMBER	BORING NUMBER	SHEET
P19436.A2	MW-3	2 OF 2

SOIL BORING RECORD DRAWING

PROJECT **WACKER SILTRONIC CORPORATION** LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION / DEPTH BELOW SURFACE (FT.)	SAMPLE: INTERVAL	SAMPLE: TYPE AND NUMBER	SAMPLE: RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
	31.5	S-6	18	4-5-5 (10)	**SAND, poorly graded, fine sand, some interbedded silt in lower 2-4", medium gray, wet, medium dense, strong hydrocarbon odor, fill.**		**Sump bottom at 32'- 4"**
							Bottom of fill at ±34 1/2'
35	35.0				**Upper 14" - mixture of sand and silt, probably washed cavings.**		**Augered to 35' and driller notes 3' of heave; opted to remove check ball from sampler and jet it to sample position in hopes of getting recovery; sample may be disturbed; pumped fresh water into hole (sample of water taken).**
	36.5	S-7	18	8-6-6 (12)	**Lower 4" - SILT, low plasticity, medium to dark gray, moist, firm (ML), slight hydrocarbon odor in upper 12", not noticeable in lower 6", sand and silt were mixed together in jar, silt is probably native soil.**		
40	40.0				**Upper 12" - sand as in S-6, but is washed, probably is heaved material, discarded.**		
	41.5	S-8	6"	3-3-3 (9)	**Lower 6" - SILT, low plasticity, medium to dark gray, moist, firm (ML), probably native soil, no noticeable hydrocarbon odor.**		**Worst samples**
							Sample choices, any of S-3, S-4, S-5, S-6.

FEB. 1983 FORM D1696

SCOEPA00022451

CH2M HILL

PROJECT NUMBER	BORING NUMBER	SHEET 1 OF 2
P19436.A2	MW-3	

SOIL BORING RECORD DRAWING

PROJECT **WACKER SILTRONIC CORPORATION** LOCATION **PORTLAND, OREGON**

ELEVATION _____ DRILLING CONTRACTOR **GEOTECH EXPLORATIONS, BEAVERTON, OREGON**

DRILLING METHOD AND EQUIPMENT **CME-55, 6" HS AUGERS**

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION / DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
5	5.0						Silty topsoil, then sandy cuttings to 5'
	6.5	S-1	18	7-6-2 (8)	SAND, poorly graded, fine sand, ~15% fine, but some interlayers of silt, medium dense, dry, light brown, (SP), fill.		Grout to surface
							Cuttins change to dark gray silt at ±7'
							7" top of bentonite soil
							Top of sand pace 8 1/2'
10	10.0						
	11.5	S-2	18	2-2-7 (9)	Interbedded silt and sand, sand same as above (SP), except gray, SILT, low plasticity, 10-15% sand, odor, light gray, moist, firm (ML), fill.		
							Screen top 12'
15	15.0						
	16.5	S-3	18	1-4-10 (14)	SAND, poorly graded, same as S-1, except strong hydrocarbon odor. (SP), fill.		Driller notes H_20 at ±15'
							First notice hydrocarbon odor in cutting at 15'
20	20.0						
	21.5	S-4	18	4-4-7 (11)	Interbedded silt and sand, same as S-2, except includes partially decomposed wood fragments and mild to strong hydrocarbon odor, wet, gray, fill.		15' schedule 40 2" 10 slot PVC screen
25	25.0						
	26.5	S-5	18	5-6-6 (12)	SAND, poorly graded, fine sand, less than 10% fine, wet, medium to dark gray, compact (SP), strong hydrocarbon odor, fill.		Screen bottom 27'
							5'-4" Sump
30	30.0						

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

Wacker Siltronics
Log #A850410-I

April 30, 1985
Page Seven

POLYNUCLEAR AROMATIC HYDROCARBONS

COMPOUND	#1	#2	#3	#4	#5
Naphthalene	6.7	360	< 1	< 1	< 1
Acenaphthalene	5.6	230	< 1	< 1	< 1
Acenaphthene	9.0	560	< 1	< 1	< 1
Fluorene	5.0	290	< 1	< 1	< 1
Phenanthrine-Anthracene	32	1400	3	< 1	< 1
Fluoranthrene	16	530	< 1	< 1	< 1
Pyrene	18	550	< 1	< 1	< 1
Chrysene	12	93	< 1	< 1	< 1
Benzo(b) + Benzo(k) Fluoranthrene	8.0	120	< 1	< 1	< 1
Benzo(a)Pyrene	19	120	< 1	< 1	< 1
Indeno(1,2,3-CD) Pyrene+Dibenzo (a,b)Anthracene	< 1	270	< 1	< 1	< 1
Benzo(ghi)-Perylene	< 1	360	< 1	< 1	< 1

COMPOUND	#6	#7	#8	#9
Naphthalene	230	< 1	< 1	< 1
Acenaphthalene	24	< 1	< 1	< 1
Acenaphthene	28	< 1	< 1	< 1
Fluorene	20	< 1	< 1	< 1
Phenanthrine-Anthracene	150	< 1	1.6	< 1
Fluoranthrene	50	< 1	1.1	< 1
Pyrene	57	< 1	1.2	< 1
Chrysene	36	< 1	1.7	< 1
Benzo(b)+Benzo(k) Fluoranthrene	200	< 1	< 1	< 1
Benzo(a)Pyrene	100	< 1	< 1	< 1
Indeno(1,2,3-CD) Pyrene+Dibenzo (a,b)Anthracene	7	< 1	< 1	< 1
Benzo(ghi)-Perylene	25	< 1	< 1	< 1

< denotes "less than"
Results reported in mg/kg

Sincerely,

Susan M. Coffey

Susan M. Coffey
President

SMC/dh

SCOEPA00022453

U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 SIXTH AVENUE
SEATTLE, WASHINGTON 98101
May 25, 1988

REPLY TO ATTN OF: HW-113

Hazardous & Solid Waste Division
Dept. of Environmental Quality
RECEIVED
MAY 27 1988

Remedial Action Section

Wacker Siltronic Corporation
7200 N.W. Front Avenue
Portland, Oregon 97229

Gentlemen:

The U.S. Environmental Protection Agency (EPA), through its contractor, Ecology and Environment, Inc. (E&E), has completed the Preliminary Assessment of the Wacker Siltronic facility. A copy of the report is enclosed.

Based on this assessment and other pertinent information, EPA finds that no further action under the Superfund pre-remedial program is appropriate. However, the facility will continue to be assessed as part of the Doane Lake investigation currently ongoing by EPA and the Oregon Department of Environmental Quality.

If you have questions regarding report content or planned actions, I may be reached at (206) 442-2722.

Sincerely,

Deborah Flood

Deborah Flood
Environmental Protection Specialist
Superfund Response & Investigations Section

Enclosure

cc: Al Goodman, EPA-000
Mary Wahl, DEQ (2 copies)
Art Bloom, Multnomah County Health Department

SCOEPA00022454

CH2MHILL *CHAIN OF CUSTODY RECORD*

PROJECT NUMBER	PROJECT NAME
LABORATORY	

STA. NO.	DATE	TIME	COMP	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS										REMARKS

SAMPLED BY AND TITLE *(SIGNATURE)*	DATE/TIME	RELINQUISHED BY: *(SIGNATURE)*	DATE/TIME	RECEIVED BY: *(SIGNATURE)*
RELINQUISHED BY: *(SIGNATURE)*	DATE/TIME	RECEIVED BY: *(SIGNATURE)*	RELINQUISHED BY: *(SIGNATURE)*	DATE/TIME	RECEIVED BY LAB: *(SIGNATURE)*

REMARKS _____

SAMPLE SHIPPED VIA
☐ UPS ☐ BUS
☐ FEDERAL EXPRESS

AIR BUS BILL NUMBER

COPY TO COORDINATOR FIELD FILES YELLOW - CLIENT

SCOEPA00022455

HORIZON ENGINEERING LLC

13585 N.E. Whitaker Way • Portland, OR 97230
Phone (503)255-5050 • Fax (503)255-0505
horizone@teleport.com

November 25, 1997

Mr. Tom McCue
Wacker Siltronics Corporation
P.O. Box 83180
Portland, Oregon 97283-0180

Dear Mr. McCue,

A Cylinder Gas Audit (CGA) of the NO_x Continuous Monitoring System (CEMS) on the NO_x scrubbing system was done on November 25, 1997. The results are attached. The system was tested to satisfy the Oregon Department of Environmental Quality (ODEQ) Discharge Permit requirement for performance audits for CEMS.

Summary of Results

Both analyzers in the system met the acceptable accuracy criteria of less than 15% of the audit value or ± 5 ppm, whichever is higher. The accuracy of the NO CEM was calculated to be within 2%; and the accuracy of the NO_x CEM was calculated to be within 4%. Both analyzers met the relative accuracy requirement on either percentage or the ± ppm criteria.

Sampling and Analytical Procedures

The work was done according to guidelines of the ODEQ Continuous Monitoring Manual that references EPA CFR 40, Pt. 60, Appendix B, Performance Specification 2 for NO_x, and Appendix F. For the CGA, each monitor (NO and

NO_x) was challenged three times with three independent audit standards: one standard of compressed zero air, and two NIST or EPA Protocol 1 traceable cylinders of NO gas at concentrations equal to 55% and 77% of the instrument span. The audit gas was introduced at the connection between the probe and the sample line with the CEMS in the normal operating configuration.

Accuracy was calculated from the average of the three measured values using calculations in Appendix F.

Discussion

The data should be valid in all respects; documentation for quality assurance checks is in the Appendix.

If you have any questions, please contact us.

Sincerely,

David Broderick
HORIZON ENGINEERING

attachments: CGA Report
Field Data
Wacker CEM Data
Calibration Gas Certificates

SCOEPA00022457

CGA Report

Client	Wacker Siltronics	Period Ending Date	12/31/97
Plant name	Wacker Siltronics		
Source Unit No.	NOx scrubbing system outlet	Date of Audit	11/25/97
Audited by	David Broderick, Horizon Engineering		

CEMS Information:

Manufacturer	Horiba	Type:	NDIR w/Cross Flow Modulation
Model No.	ENDA-1330		Trimer Corp.
Serial No.	0439	Location:	NOx Control Room
Applicable Regulations:			

Cylinder Gas Audit (CGA) for:

Pollutant NOx Units ppm

Span Value 100

		Zero	Audit Point 1	Audit Point 2	
Cylinder ID No.			XC006129B	CC53877	
Date of Certification			5/3/96	1/18/96	
Type of Certification			NIST-SRM	EPA-1	
Certified Audit Value			55.3	76.9	
% of Span Value			55%	77%	
CEMS Response Time	34 seconds				
Sampled for 2x response time, +					
CEMS Response Value	NO Analyzer / Model # CFA-311A Mfg# 568833012				**Time**
Run 1		-0.40	56.60	77.50	1054-1100
Run 2		-0.20	56.40	77.70	1107-1115
Run 3		-0.50	56.00	77.90	1129-1137
Average			56.33	77.70	
Accuracy, % difference			1.9%	1.0%	
Accuracy, difference, ppm			1.0	0.8	

Criteria for excessive inaccuracy: the greater of these two values:

15% of audit value	ppm	8	**12**
or,	ppm	**+/- 5**	+/- 5

CEMS Response Value	NOx Analyzer / Model # CFA-311A Mfg# 568833011				**Time**
Run 1		0.40	56.80	79.90	1054-1100
Run 2		1.90	58.80	80.90	1107-1115
Run 3		0.50	56.80	77.90	1129-1137
Average			57.47	79.57	
Accuracy, % difference			3.9%	3.5%	
Accuracy, difference, ppm			2.2	2.7	

Criteria for excessive inaccuracy: the greater of these two values:

15% of audit value	ppm	8	**12**
or,	ppm	**+/- 5**	+/- 5

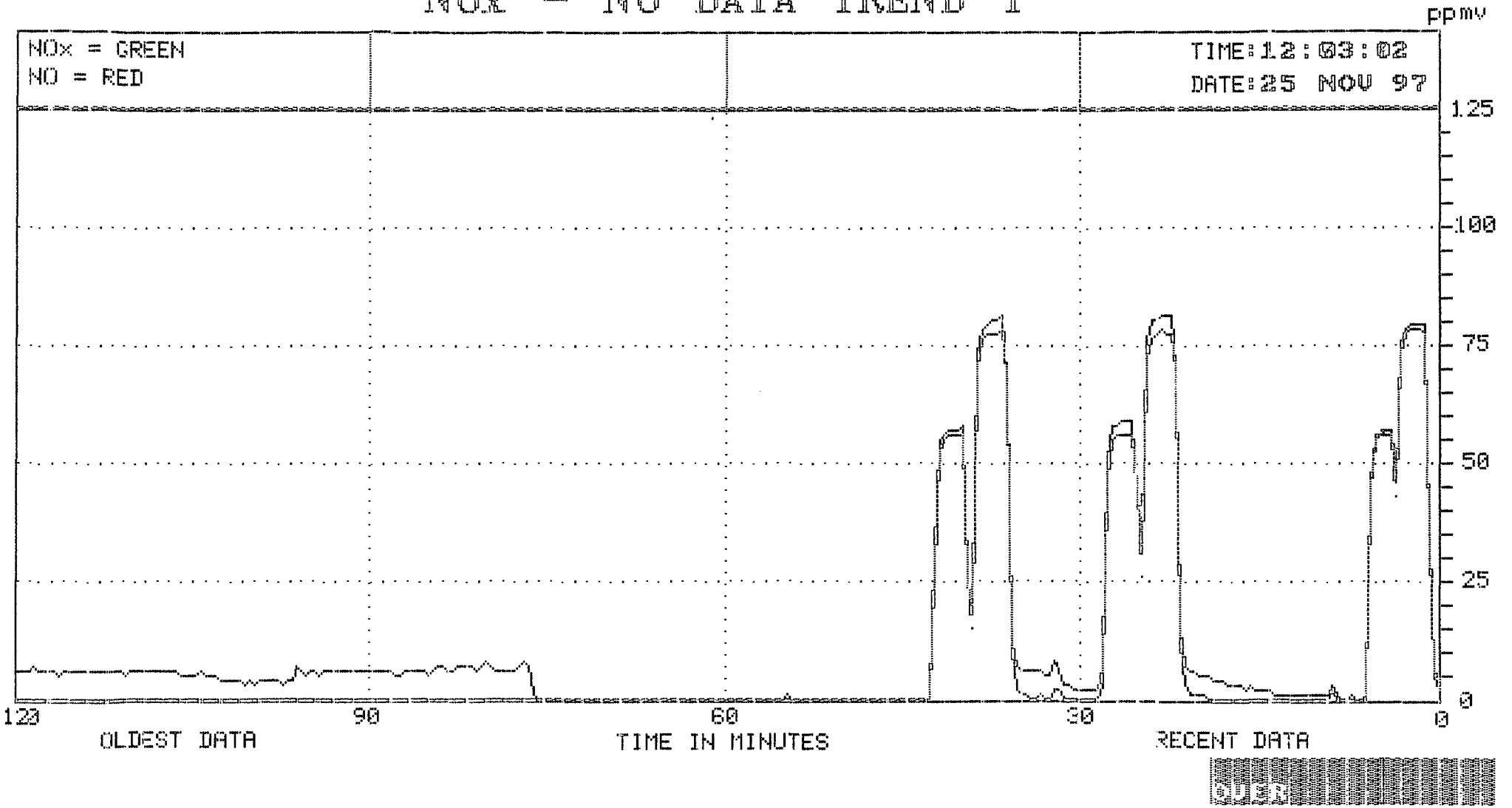
Comments

Heated Line Temp - 197 degrees F

Confirm Logbook Entry _____

SCOEPA00022458

NOx - NO DATA TREND 1



Log File Report - Last 60 Records
FORM NAME: MINLOG FILENAME: C:\LOGS\1MIN.D13 TYPE: DAILY
Page 1 Tue Nov 25 12:06:04 1997

RECO	DATE	TIME	LABEL	DATA	LABEL	DATA	LABEL	DATA	LABEL	DATA
665	11/25/97	11:04:42	NOx =	0	NO =	0	SCFM=	15601	TEMP=	70
666	11/25/97	11:05:43	NOx =	0	NO =	0	SCFM=	15601	TEMP=	70
667	11/25/97	11:06:42	NOx =	0	NO =	0	SCFM=	15549	TEMP=	70
668	11/25/97	11:07:42	NOx =	0	NO =	0	SCFM=	15601	TEMP=	70
669	11/25/97	11:08:41	NOx =	0	NO =	0	SCFM=	15654	TEMP=	70
670	11/25/97	11:09:41	NOx =	0	NO =	0	SCFM=	15654	TEMP=	70
671	11/25/97	11:10:41	NOx =	0	NO =	0	SCFM=	15601	TEMP=	70
672	11/25/97	11:11:40	NOx =	0	NO =	0	SCFM=	15601	TEMP=	70
673	11/25/97	11:12:41	NOx =	0	NO =	0	SCFM=	15601	TEMP=	70
674	11/25/97	11:13:42	NOx =	0	NO =	0	SCFM=	15601	TEMP=	70
675	11/25/97	11:14:41	NOx =	0	NO =	0	SCFM=	15654	TEMP=	70
676	11/25/97	11:15:41	NOx =	0	NO =	0	SCFM=	15601	TEMP=	70
677	11/25/97	11:16:40	NOx =	0	NO =	0	SCFM=	15654	TEMP=	71
678	11/25/97	11:17:40	NOx =	0	NO =	0	SCFM=	15601	TEMP=	71
679	11/25/97	11:18:41	NOx =	0	NO =	0	SCFM=	15654	TEMP=	71
680	11/25/97	11:19:40	NOx =	0	NO =	0	SCFM=	15601	TEMP=	71
681	11/25/97	11:20:40	NOx =	54	NO =	52	SCFM=	15601	TEMP=	71
682	11/25/97	11:21:39	NOx =	57	NO =	56	SCFM=	15601	TEMP=	71
683	11/25/97	11:22:40	NOx =	58	NO =	56	SCFM=	15601	TEMP=	71
684	11/25/97	11:23:41	NOx =	50	NO =	44	SCFM=	15601	TEMP=	71
685	11/25/97	11:24:39	NOx =	79	NO =	77	SCFM=	15601	TEMP=	71
686	11/25/97	11:25:40	NOx =	80	NO =	77	SCFM=	15601	TEMP=	72
687	11/25/97	11:26:39	NOx =	17	NO =	16	SCFM=	15601	TEMP=	72
688	11/25/97	11:27:39	NOx =	6	NO =	1	SCFM=	15601	TEMP=	72
689	11/25/97	11:28:40	NOx =	6	NO =	0	SCFM=	15549	TEMP=	72
690	11/25/97	11:29:39	NOx =	5	NO =	0	SCFM=	15601	TEMP=	72
691	11/25/97	11:30:39	NOx =	8	NO =	4	SCFM=	15601	TEMP=	72
692	11/25/97	11:31:38	NOx =	3	NO =	0	SCFM=	15601	TEMP=	72
693	11/25/97	11:32:38	NOx =	2	NO =	0	SCFM=	15601	TEMP=	72
694	11/25/97	11:33:39	NOx =	2	NO =	0	SCFM=	15601	TEMP=	72
695	11/25/97	11:34:38	NOx =	40	NO =	35	SCFM=	15601	TEMP=	72
696	11/25/97	11:35:39	NOx =	59	NO =	56	SCFM=	15549	TEMP=	72
697	11/25/97	11:36:37	NOx =	59	NO =	56	SCFM=	15496	TEMP=	72
698	11/25/97	11:37:38	NOx =	41	NO =	34	SCFM=	15601	TEMP=	72
699	11/25/97	11:38:38	NOx =	80	NO =	77	SCFM=	15496	TEMP=	72
700	11/25/97	11:39:37	NOx =	81	NO =	77	SCFM=	15496	TEMP=	72
701	11/25/97	11:40:38	NOx =	27	NO =	26	SCFM=	15601	TEMP=	72
702	11/25/97	11:41:38	NOx =	6	NO =	1	SCFM=	15549	TEMP=	72
703	11/25/97	11:42:38	NOx =	5	NO =	1	SCFM=	15601	TEMP=	72
704	11/25/97	11:43:37	NOx =	4	NO =	0	SCFM=	15601	TEMP=	72
705	11/25/97	11:44:39	NOx =	3	NO =	0	SCFM=	15549	TEMP=	72
706	11/25/97	11:45:37	NOx =	3	NO =	0	SCFM=	15496	TEMP=	72
707	11/25/97	11:46:37	NOx =	2	NO =	0	SCFM=	15496	TEMP=	72
708	11/25/97	11:47:36	NOx =	2	NO =	0	SCFM=	15549	TEMP=	72
709	11/25/97	11:48:37	NOx =	1	NO =	0	SCFM=	15549	TEMP=	72
710	11/25/97	11:49:36	NOx =	1	NO =	0	SCFM=	15601	TEMP=	72
711	11/25/97	11:50:36	NOx =	1	NO =	0	SCFM=	15601	TEMP=	73
712	11/25/97	11:51:36	NOx =	1	NO =	0	SCFM=	15496	TEMP=	73
713	11/25/97	11:52:36	NOx =	1	NO =	0	SCFM=	15549	TEMP=	73

RECO	DATE	TIME	LABEL	DATA	LABEL	DATA	LABEL	DATA	LABEL	DATA
714	11/25/97	11:53:37	NOx =	2	NO =	2	SCFM=	15549	TEMP=	73
715	11/25/97	11:54:36	NOx =	0	NO =	0	SCFM=	15496	TEMP=	73
716	11/25/97	11:55:37	NOx =	0	NO =	0	SCFM=	15496	TEMP=	73
717	11/25/97	11:56:36	NOx =	25	NO =	20	SCFM=	15496	TEMP=	73
718	11/25/97	11:57:37	NOx =	56	NO =	56	SCFM=	15496	TEMP=	73
719	11/25/97	11:58:36	NOx =	57	NO =	56	SCFM=	15496	TEMP=	73
720	11/25/97	11:59:35	NOx =	75	NO =	73	SCFM=	15549	TEMP=	73
721	11/25/97	12:00:36	NOx =	79	NO =	78	SCFM=	15549	TEMP=	73
722	11/25/97	12:01:34	NOx =	79	NO =	77	SCFM=	15496	TEMP=	73
723	11/25/97	12:02:35	NOx =	5	NO =	3	SCFM=	15496	TEMP=	73
724	11/25/97	12:04:36	NOx =	4	NO =	0	SCFM=	15496	TEMP=	73

SPECIALTY GA[illegible]EPARTMENT
23320 S. ALAM[illegible]A STREET
LONG BEACH, CA 90810

Certificate of Analysis - EPA Protocol Gas Standard

PERFORMED ACCORDING TO EPA TRACEABILITY PROTOCOL FOR ASSAY AND CERTIFICATION OF GASEOUS CALIBRATION STANDARDS (PROCEDURE #G1)

Customer:
AIR PRODUCT & CHEMICALS, INC.
940 S.E. 7TH AVE. Notes:
PORTLAND OR 97214-

PO: 584728 Rel:

Order No: 591-088867-01
Batch No: 863-20983
Cylinder No: CC53877
Cylinder Pressure*: 2000 psig
Certification Date: 01/18/96
Expiration Date: 01/18/98

*** Certified Concentration ***		********* Reference Standards *********			************ Analytical Instrumentation ************			
Component	Certified Concentration	Cylinder #	Standard Number	Concentration	Instrument Make/Model	Serial Number	Last Calibration	Measurement Principal
NITRIC OXIDE	76.9 ±.47 PPM	SG909675ALB	GMIS	101.2000 PPM	BECKMAN/951A	0100722	12/13/95	CHEMILUMINESCENCE

Balance Gas: NITROGEN

Contaminent

Nitrogen Dioxide .400 PPM

---

* Standard should not be used below 150 psig

Analyst: Heber Enriquez
HEBER ENRIQUEZ

Approved By: Anne M Ehlers
ANNE M EHLERS

#E3

#N2

BOC GASES

1715 N.E. 78th Street
Vancouver, WA 98665
Telephone: 360 695 1207
503-283-2567
FAX 360-696-3975

774634

ANALYTICAL REPORT

To: Byrnes

Date Reported: 05-03-96
Test Number: 5479
Fill Date: 05-01-96
Expire Date: 05-01-98
Product Vol: 140 cf

Material Submitted. 55 ppm NO in Nitrogen

Specification Number: BOC Specifications

Method of Analysis: Chemiluminescence

Analyzed: Cylinder No. XC0061298 Size 152, CGA 660 2000 psi

Component	Specification	Concentration
Nitric Oxide	55 ppm	55.3 ppm
Nitrogen	Balance	Balance

Analytical Accuracy = +/- 1% relative

Traceable to NIST SRM 2629A

By _____
Authorized Signature

Check for OFF SPEC result.

WHITE - Customer Copy

SCOEPA00022463

HORIZON ENGINEERING LLC

13585 N.E. Whitaker Way • Portland, OR 97230
Phone (503)255-5050 • Fax (503)255-0505
horizone@teleport.com

September 22, 1997

Mr. Eric Spiering
Wacker Siltronics Corporation
P.O. Box 83180
Portland, Oregon 97283-0180

Dear Eric:

A Cylinder Gas Audit (CGA) of the NO_x Continuous Monitoring System (CEMS) on the NO_x scrubbing system was done on September 18, 1997. The results are attached. The system was tested to satisfy the Oregon Department of Environmental Quality (ODEQ) Discharge Permit requirement for performance audits for CEMS.

Summary of Results

Both analyzers in the system met the acceptable accuracy criteria of less than 15% of the audit value or ± 5 ppm, whichever is higher. The accuracy of the NO CEM was calculated to be within 7.5% and 0.0% for audit points 1 and 2; respectively. The accuracy of the NO_x CEM was calculated to be 7.0% and 0.4% respectively. Both analyzers met the relative accuracy requirement on either percentage or the ± ppm criteria.
Test data was recorded in the Data Assessment Report in the Appendix.

Sampling and Analytical Procedures

The work was done according to guidelines of the ODEQ Continuous Monitoring Manual that references EPA CFR 40, Pt. 60, Appendix B, Performance Specification 2 for NO_x, and Appendix F. At the time of the testing, the 55 ppm

SCOEPA00022464

NO bottle was unavailable, so a 76.9 ppm EPA Protocol bottle was substituted for this test only.

For the CGA, each monitor (NO and NO_x) was challenged three times with three independent audit standards: one zero standard of N_2, and two NIST traceable cylinders of NO gas at concentrations equal to 27% and 77% of the instrument span. The audit gas was introduced at the connection between the probe and the sample line with the CEMS in the normal operating configuration.

Accuracy was calculated from the average of the three measured values using calculations in Appendix F.

Discussion

The data should be valid in all respects; documentation for quality assurance checks is in the Appendix.

Also, new test procedures have been implemented to avoid drying out the analyzers with calibration gas and causing the readings to be incorrect. I am very glad that the Horriba Representative was there at the time to explain the operation of the instrument and the negative interference that CO_2 and water vapor cause.

If you have any questions, please contact us.

Sincerely,

Kurt D. Torgerson

Kurt D. Torgerson
HORIZON ENGINEERING

SCOEPA00022465

attachments: Data Assessment Report
Field Data / Calculation sheet
Calibration Gas Certificates

SCOEPA00022466

Data Assessment Report

Client	Wacker Siltronic Corp	Period Ending Date	Sept 22, 1997
Plant name	Portland Campus		
Source Unit No.	NOx Scrubbing System Outlet	Date of Audit	09-18-97
Audited by	Kurt Torgerson, Horizon Engineering		

CEMS Information:

Manufacturer	Horiba	Type:	NDIR w/Cross Flow Modulation
Model No.	ENDA-1330		Trimer Corp.
Serial No.	0439	Location:	NOx Control Room
Applicable Regulations:			

Cylinder Gas Audit (CGA) for:

Pollutant NOx Units ppm

Span Value 100

		Zero	Audit Point 1	Audit Point 2	
Cylinder ID No.		CC53833	CA03076	XC006129B	
Date of Certification			4/10/97	5/3/96	
Type of Certification			NIST-SRM	EPA-PROTO 1	
Certified Audit Value		0	25.65	76.9	
% of Span Value		0%	26%	77%	
CEMS Response Time	58 seconds				
Sampled for 2x response time, +					
CEMS Response Value	NO Analyzer / Model # CFA-311A Mfg# 568833012				**Time**
Run 1		3.10	27.40	76.70	1112
Run 2		3.40	27.70	76.90	1126
Run 3		3.00	27.60	77.10	1142
Average			27.57	76.90	
Accuracy, % difference			7.5%	0.0%	
Accuracy, difference, ppm			1.9	0.0	

Criteria for excessive inaccuracy: the greater of these two values:

15% of audit value	ppm	4	**12**
or,	ppm	**+/- 5**	+/- 5

CEMS Response Value	NOx Analyzer / Model # CFA-311A Mfg# 568833011				**Time**
Run 1		2.50	27.00	76.00	1113
Run 2		2.80	27.30	77.00	1126
Run 3		3.90	28.00	76.80	1142
Average			27.43	76.60	
Accuracy, % difference			7.0%	-0.4%	
Accuracy, difference, ppm			1.8	-0.3	

Criteria for excessive inaccuracy: the greater of these two values:

15% of audit value	ppm	4	**12**
or,	ppm	**+/- 5**	+/- 5

Comments

Heated Line Temp - 196 degrees F

Confirm Logbook Entry x

SCOEPA00022467

Relative Accuracy Field Data

Client WACKER - SILTRONIC
Date 9-18-97
Observer OLOM PLAVSAIT

Response Time 60 SECS Leak Check? ____

Source NOx SCRUBBER CEM
Location PORTLAND, OR.
Horizon Personnel KDF - Kurt D. Fergus

Time :	Cyl. # /			1113	1120	1126	1142											
Gas/ Range	Bottle Value	Instrument Response		Run 1	Run 2	Run 3	Run 4	Run 5	Run 6	Run 7	Run 8	Run 9	Run 10	Run 11	Run 12			Final Bias
NO	76.90		Start	76.7	76.9		77.1											
	25.65		Bias	27.4	27.7	/	27.6											
0- 100 ppm	0.00			3.1	3.4	3.3	3.0											
			End															
			Bias															
Instrument Response			High															
			Mid															
			0															
NOx	76.90		Start	76.0	77.0		76.8											
	25.65		Bias	27.0	27.3	/	28.0											
0- 100 ppm	0.00			2.5	2.8	8.0	3.4											
			End															
			Bias															
Instrument Response			High															
			Mid															
			0															
			Start															
			Bias															
0-																		
			End															
			Bias															
			Start															
			End															
	Cal.	Time																
Instrument Response			High															
			Mid															
			0															

Notes:

HORRIBA INSTRUMENTS NDIR w/ MOLY CONVERTER. - NOTE RR #3 DUE TO DEHYDRATION OF CELL W/ MOISTURE
NEED DEWPOINT OF SAMPLE/REF @ 5.0°C

#N7

SCOTT-MARRIN, INC.
6531 BOX SPRINGS BLVD. • RIVERSIDE, CA 92507
TELEPHONE (909) 653-6780 • FAX (909) 653-2430

REPORT OF ANALYSIS
NIST TRACEABLE GAS MIXTURES

HENGØ1
TO:
DAVID ROSSMAN
HORIZON ENG'G/INFRARED NW
13585 NE WHITAKER WAY
PORTLAND, OR 97230-

DATE: Ø4/1Ø/97

CUSTOMER ORDER NUMBER: 1828

CYLINDER NUMBER	COMPONENT	CONCENTRATION(v/v)	NIST TRACEABLE REFERENCE STANDARD
CAØ3Ø76	Nitric oxide	25.65 ± Ø.26 ppm	SRM 2629a
	Nitrogen,O2-Free	Balance	
	NOx	25.65 ppm	

ppm = umole/mole % = mole-%

The above analysis is traceable to the National Institute of Standards and Technology by intercomparison with the reference standard listed above.
Where indicated, volumetric and gravimetric reference standards are traceable thru use of our analytical balance, NIST Weight Report No. MMAP 232.Ø9/2Ø2491.

Analyst: B.E. Gross

Approved: J.T. Marrin

The only liability of this company for gas which fails to comply with this analysis shall be replacement or reanalysis thereof by the company without extra cost.

[illegible]
SPECIALTY GA[illegible]EPARTMENT
23320 S. ALAM[illegible]A STREET
LONG BEACH, CA 90810

Certificate of Analysis - EPA Protocol Gas Standard

PERFORMED ACCORDING TO EPA TRACEABILITY PROTOCOL FOR ASSAY AND CERTIFICATION OF GASEOUS CALIBRATION STANDARDS (PROCEDURE #G1)

Customer:
AIR PRODUCT & CHEMICALS, INC.
940 S.E. 7TH AVE. Notes:
PORTLAND OR 97214-

PO: 584728 Rel:

Order No: 591-088867-01
Batch No: 863-20983
Cylinder No: CC53877
Cylinder Pressure*: 2000 psig
Certification Date: 01/18/96
Expiration Date: 01/18/98

*** Certified Concentration ***		********* Reference Standards *********			************ Analytical Instrumentation ************			
Component	Certified Concentration	Cylinder #	Standard Number	Concentration	Instrument Make/Model	Serial Number	Last Calibration	Measurement Principal
NITRIC OXIDE	76.9 ±.47 PPM	SG909675ALB	GMIS	101.2000 PPM	BECKMAN/951A	0100722	12/13/95	CHEMILUMINESCENCE

Balance Gas: NITROGEN

Contaminent
Nitrogen Dioxide .400 PPM

---

* Standard should not be used below 150 psig

Analyst: HEBER ENRIQUEZ

Approved By: ANNE M EHLERS

#E3

HORIZON ENGINEERING LLC

13585 N.E. Whitaker Way • Portland, OR 97230
Phone (503)255-5050 • Fax (503)255-0505
horizone@teleport.com

FAX COVER LETTER

TELEFAX NO. 503.241.7599 DATE May , 1997

RECIPIENT'S NAME Eric Spearing

COMPANY Wacker Siltronic

SENDER'S NAME Kurt Torgerson

NUMBER OF PAGES (INCLUDING COVER SHEET) two

REFERENCE #7

****

Enclosed is a spreadsheet documenting the results of the cylinder gas audit. Unfortunately, the system did not pass on NO or NOx. On the favorable side, your instrument appears to be reading higher than it should. There is a possibility that there is a leak in the sample side of the system. This could explain why the NOx is reading higher than the NO, and why both are higher than the cal gas values.

If you have any questions, please contact us.

Thank You,

Kurt D. Torgerson

Data Assessment Report

Client	Deaver Environmental Group	Period Ending Date	
Plant name	Wacker Siltronics		
Source Unit No.	NOx scrubbing system outlet	Date of Audit	August 22, 1997
Audited by	Kurt Torgerson		

CEMS Information:

Manufacturer	Horiba	Type:	NDIR w/Cross Flow Modulation
Model No.	ENDA-1330		Trimer Corp.
Serial No.	0439	Location:	NOx Control Room
Applicable Regulations:			

Cylinder Gas Audit (CGA) for:

Pollutant NOx Units ppm

Span Value 100

		Zero	Audit Point 1	Audit Point 2	
Cylinder ID No.			XC006159B	XC006129B	
Date of Certification			5/3/96	5/3/96	
Type of Certification			NIST-SRM	NIST-SRM	
Certified Audit Value			25.21	55.3	
% of Span Value			25%	55%	
CEMS Response Time	58 seconds				
Sampled for 2x response time, +					
CEMS Response Value	NO Analyzer / Model # CFA-311A Mfg# 568833012				**Time**
Run 1		0.80	19.70	41.00	1607/1610/1613
Run 2		1.70	20.10	41.20	1619/1622/1624
Run 3		0.60	19.80	41.00	1626/1628/1630
Average			19.87	41.07	
Accuracy, % difference			-21.2%	-25.7%	
Accuracy, difference, ppm			-5.3	-14.2	

Criteria for excessive inaccuracy: the greater of these two values:

15% of audit value	ppm	4	8
or,	ppm	+/- 5	+/- 5

CEMS Response Value	NOx Analyzer / Model # CFA-311A Mfg# 568833011				**Time**
Run 1		11.70	39.50	64.10	1607/1610/1613
Run 2		6.90	33.10	61.20	1619/1622/1624
Run 3		8.30	36.00	62.40	1626/1628/1630
Average			36.20	62.57	
Accuracy, % difference			43.6%	13.1%	
Accuracy, difference, ppm			11.0	7.3	

Criteria for excessive inaccuracy: the greater of these two values:

15% of audit value	ppm	4	8
or,	ppm	+/- 5	+/- 5

Comments

Heated Line Temp - 196 degrees F

Confirm Logbook Entry x

HORIZON ENGINEERING LLC

13585 N.E. Whitaker Way • Portland, OR 97230
Phone (503)255-5050 • Fax (503)255-0505
horizone@teleport.com

SOURCE EVALUATION REPORT

WACKER SILTRONICS CORPORATION

NO_x Scrubber System Outlet
Total Nitrogen Oxides
CEMS Relative Accuracy Test

May 28, 1997

Prepared for

Deaver Environmental Group, Inc.
7900 S.W. Barnard Drive
Beaverton, OR 97007

by
David R. Broderick
&
David R. Rossman, P.E.

Expires 12/31/98

SCOEPA00022473

Introduction

Relative accuracy (RA) tests were made to confirm the accuracy of the continuous emission monitoring system (CEMS) for nitrogen oxides (NO_x), volume flow rate, and emission rate from the NO_x scrubber at Wacker Siltronics plant in Portland, Oregon.

The system was tested on May 28, 1997, to satisfy the Oregon Department of Environmental Quality (ODEQ) Discharge Permit requirement for relative accuracy testing.

The field work was done by Horizon Engineering personnel David Broderick and Brian Fallon. Frank Deaver, of Deaver Environmental Group, Inc., arranged for the tests. Tom McCue was the site contact person at Wacker Siltronics and Eric Spiering coordinated plant operation and data acquisition.

Summary of Results

The results show that the NO_x monitoring system meets the performance standards in terms of the RA (maximum allowed difference) of less than 20%. Table 1 summarizes the results of the RA testing. Although the results of all runs in a set must be reported, the standards allow the use of the best nine runs in determining RA between the CEMS and the Reference Method (RM). The results were acceptable when all tests (11 tests were run) were used in the calculation or when the best nine tests were used.

Table 1
Relative Accuracy Test Results

NO_x Scrubber Outlet
Test Date: May 28, 1997

	Relative Accuracy All 11 Runs	Relative Accuracy Best 9 Runs
NO_x Concentration (ppmv)		
Actual difference	0.4	0.2
RA based on mean value (%)	5.7	4.9

	Relative Accuracy All 11 Runs	Relative Accuracy Best 9 Runs
Volume Flow Rate (dscf/min)		
Actual difference	1,010.4	941.6
RA based on mean value (%)	9.1	8.7

	Relative Accuracy All 11 Runs	Relative Accuracy Best 9 Runs
NO_x Emission Rate (lbm/hr)		
Actual difference	.07	.05
RA based on mean value (%)	9.2	7.9
RA allowable, based on mean value (%)	20	20

Average NO_x Emission Rate, lb/hr	1.3
Allowable NO_x Emission Rate, lb/hr*	5.4

* Permit limit cited is based on 130 lb/day for "wafer manufacturing process"

Description of the Source and its Operation

Air from the processes is pulled through three packed bed chemical scrubbers by a fan located upstream from the sampling port and downstream from the last scrubber. The liquid chemicals and gaseous NO_x/air mixture flow in different directions and have a high residence time in the scrubbers due to the packed beds. This residence time is sufficient to reduce the NO_x emissions well below Permit standards.

Sampling and Analytical Procedures

General The work was done according to guidelines of Performance Specification 2 (CFR 40, Pt. 60, Appendix B) for NO_x. EPA Reference Method 7E was used to determine NO_x with EPA Methods 1 and 2 and ODEQ Method 4 for determining the system flow rate. The RA testing consisted of eleven 23-minute sampling runs (21 minutes plus twice the response time of the system). The analyzer used was a TECO model 10A/R (chemiluminescent) run on the 0-250 ppm scale.

A probe was prepared for the testing by drilling holes at three points (16.7%, 50%, 83.3% of stack diameter) as specified in the method. Gas sample was drawn into an ice-water bath condenser (to remove moisture) by a Teflon lined sample pump and was pulled through a 75 ft. Teflon umbilical to the instrument van on the ground.

The NO_x analyzer was first calibrated with certified calibration gas. Then the entire sampling system was verified by introducing calibration gas near the sampling probe inlet. This bias check was conducted before and after every test run. The results of all calibrations are included in the Appendix.

Data The analyzer output was read every ten seconds during the tests by a Rustrak Ranger II data logger. Printouts of the plots from the data logger are in the Appendix.

After the completion of testing, data sets from the plant CEMS were generated and passed along to us by the Wacker technicians.

Calculations The data sets were compared using the formulas in Performance Specification 2. Results worksheets, in the Appendix, include calculations using all test data sets and are repeated using only the nine data sets that had the best agreement. The plant one-minute averages from Run 1 were printed out on the 500 ppm scale instead of the 100 ppm scale. As a result the average was 1/5 the actual value. For comparison we simply multiplied their data by 5.

Discussion

As noted, the results of the tests show that the NO_x CEMS is operating within the allowable specifications. All Reference Method instrument calibrations and all testing parameters were within specifications. Measured emissions for the 11 tests averaged 1.3 lb/hr. The Permit limit for the source is about 5.4 lb/hr (based on the daily allowable rate).

APPENDIX

Gases

- RA Results
- Wacker Siltronics Data
- Data Logger Plots
- Drift Corrections
- Calibration Documentation

Flow Rates

- Calculations
- Field Data

Calibration Gas Certificates

GASES

NOx RATA Results

Client	Wacker Siltronic								05/28/97	Date
Source	NOx Scrubber								wacker97	File
NOx PPMV	**ALL DATA**				**NOx PPMV**	**BEST 9 of 12**				
Run	CEM	Horizon RM	di	di2	Run	CEM	Horizon RM	di	di2	
1	14.1	14.35	0.22	0.05	1	14.1	14.35	0.22	0.05	
2	14.8	15.34	0.56	0.31	2	14.8	15.34	0.56	0.31	
3	21.2	21.99	0.77	0.60	3	21.2	21.99	0.77	0.60	
4	12.7	11.87	-0.78	0.61	4	12.7	11.87	-0.78	0.61	
5	22.7	22.20	-0.54	0.29	5	22.7	22.20	-0.54	0.29	
6	15.3	14.32	-1.03	1.06						
7	18.4	18.03	-0.36	0.13	7	18.4	18.03	-0.36	0.13	
8	9.6	8.97	-0.60	0.35	8	9.6	8.97	-0.60	0.35	
9	8.2	7.67	-0.55	0.30	9	8.2	7.67	-0.55	0.30	
10	8.0	7.10	-0.86	0.73	10	8.0	7.10	-0.86	0.73	
11	11.2	10.22	-0.95	0.91						
Mean	14.2	13.82	-4.11	5.34	Mean	14.41	14.17	-2.13	3.38	
avg (di)	=	-0.37	<		avg (di)	=	-0.24	<		
sum (di)	=	-4.114			sum (di)	=	-2.132			
n-1	=	10			n-1	=	8			
n	=	11	Passing		n	=	9	Passing		
t0.975	=	2.228	Criteria		t0.975	=	2.306	Criteria		
sum (di ^2)	=	5.34			sum (di ^2)	=	3.38			
(sum di)^2	=	16.92			(sum di)^2	=	4.55			
Sd^2	=	0.38			Sd^2	=	0.36			
Sd	=	0.62			Sd	=	0.60			
CC	=	0.41			CC	=	0.46			
RA	=	5.7	< 20	%	RA	=	4.9	< 20	%	
FLOW dscf/min		Horizon	di	di2	**FLOW dscf/min**		Horizon	di	di2	
Run	CEM	RM			Run	CEM	RM			
1	12,027	12,625	598	357,515	1	12,027	12,625	598	357,515	
2	11,993	13,083	1,090	1,187,909	2	11,993	13,083	1,090	1,187,909	
3	11,997	12,682	685	468,851	3	11,997	12,682	685	468,851	
4	11,975	13,159	1,184	1,402,359	4	11,975	13,159	1,184	1,402,359	
5	11,997	13,253	1,256	1,577,546						
6	11,997	13,202	1,205	1,451,789	6	11,997	13,202	1,205	1,451,789	
7	11,981	13,189	1,208	1,458,206	7	11,981	13,189	1,208	1,458,206	
8	12,059	12,870	811	657,230	8	12,059	12,870	811	657,230	
9	12,080	13,463	1,384	1,914,279						
10	12,073	12,878	805	648,588	10	12,073	12,878	805	648,588	
11	12,070	12,960	889	791,058	11	12,070	12,960	889	791,058	
Mean	12,023	13,033	11,114	11,915,331	Mean	12,019	12,961	8,475	8,423,506	
avg (di)	=	1,010.4	<		avg (di)	=	941.6	<		
sum (di)	=	11,114.3			sum (di)	=	8,474.7			
n-1	=	10			n-1	=	8			
n	=	11	Passing		n	=	9	Passing		
t0.975	=	2.228	Criteria		t0.975	=	2.306	Criteria		
sum (di ^2)	=	11,915,331			sum (di ^2)	=	8,423,506			
(sum di)^2	=	123,527,263			(sum di)^2	=	71,820,598			
Sd^2	=	68,558			Sd^2	=	55,430			
Sd	=	262			Sd	=	235			
CC	=	175.89			CC	=	180.97			
RA	=	9.1	< 20	%	RA	=	8.66	< 20	%	
NOx lbm/hr	**ALL DATA**				**NOx lbm/hr**	**BEST 9 of 12**				
Run	CEM	Horizon RM	di	di2	Run	CEM	Horizon RM	di	di2	
1	1.22	1.30	0.080	0.006	1	1.22	1.30	0.080	0.006	
2	1.27	1.44	0.168	0.028						
3	1.82	2.00	0.174	0.030						
4	1.09	1.12	0.034	0.001	4	1.09	1.12	0.034	0.001	
5	1.95	2.11	0.153	0.024	5	1.95	2.11	0.153	0.024	
6	1.32	1.35	0.035	0.001	6	1.32	1.35	0.035	0.001	
7	1.58	1.70	0.125	0.016	7	1.58	1.70	0.125	0.016	
8	0.83	0.83	0.001	0.000	8	0.83	0.83	0.001	0.000	
9	0.71	0.74	0.029	0.001	9	0.71	0.74	0.029	0.001	
10	0.69	0.66	-0.033	0.001	10	0.69	0.66	-0.033	0.001	
11	0.97	0.95	-0.017	0.000	11	0.97	0.95	-0.017	0.000	
Mean	1.22	1.29	0.748	0.109	Mean	1.15	1.19	0.406	0.050	
avg (di)	=	0.07	<		avg (di)	=	0.05	<		
sum (di)	=	0.75			sum (di)	=	0.41			
n-1	=	10			n-1	=	8			
n	=	11	Passing		n	=	9	Passing		
t0.975	=	2.228	Criteria		t0.975	=	2.306	Criteria		
sum (di ^2)	=	0.11			sum (di ^2)	=	0.05			
(sum di)^2	=	0.56			(sum di)^2	=	0.17			
Sd^2	=	0.01			Sd^2	=	0.00			
Sd	=	0.08			Sd	=	0.06			
CC	=	0.05			CC	=	0.05			
RA	=	9.2	< 20	%	RA	=	7.87	< 20	%	

SCOEPA00022480

Wacker Siltronic Data

NOx Run 1	Q(sd) Run 1	NOx Run 2	Q(sd) Run 2	NOx Run 3	Q(sd) Run 3	NOx Run 4	Q(sd) Run 4	NOx Run 5	Q(sd) Run 5	NOx Run 6	Q(sd) Run 6
10.0	12,029	15.0	11,977	14.0	11,977	15.0	11,977	16.0	11,977	13.0	12,029
10.0	12,082	23.0	12,082	9.0	11,977	13.0	11,977	22.0	11,977	16.0	11,977
10.0	12,082	21.0	12,029	9.0	11,977	18.0	11,924	25.0	12,029	18.0	12,082
10.0	12,029	19.0	12,029	15.0	11,977	16.0	11,977	36.0	12,082	13.0	11,977
15.0	12,082	18.0	12,029	12.0	12,029	16.0	11,924	17.0	12,029	8.0	11,977
20.0	12,082	17.0	11,977	16.0	11,977	15.0	11,977	14.0	11,977	15.0	11,924
15.0	11,977	13.0	11,977	9.0	11,977	15.0	11,977	16.0	12,082	12.0	12,029
10.0	11,977	11.0	11,977	7.0	11,977	16.0	11,977	27.0	12,082	12.0	12,029
10.0	12,029	8.0	11,977	8.0	11,977	14.0	11,977	34.0	11,924	11.0	11,977
10.0	11,977	9.0	11,977	20.0	11,977	15.0	11,977	37.0	12,029	11.0	12,082
10.0	12,029	20.0	11,977	19.0	11,977	14.0	11,977	40.0	11,977	13.0	11,977
10.0	12,082	14.0	12,029	18.0	11,977	14.0	11,977	18.0	11,977	13.0	12,082
10.0	12,082	20.0	11,977	31.0	12,029	8.0	11,977	11.0	11,977	12.0	11,977
20.0	12,082	18.0	11,977	28.0	12,082	7.0	12,029	11.0	11,977	11.0	11,977
15.0	11,977	15.0	11,977	28.0	12,029	8.0	11,977	11.0	11,977	27.0	11,977
30.0	12,029	13.0	11,924	30.0	11,977	9.0	11,977	12.0	11,977	24.0	11,977
30.0	12,082	15.0	11,977	29.0	12,082	9.0	11,977	14.0	11,977	23.0	11,977
30.0	11,977	13.0	11,977	29.0	12,029	8.0	11,977	26.0	11,977	19.0	11,977
20.0	11,977	11.0	12,082	28.0	11,977	19.0	11,977	25.0	11,977	16.0	12,029
10.0	11,977	17.0	11,977	31.0	12,029	13.0	11,977	26.0	12,029	18.0	11,977
10.0	12,029	11.0	12,029	34.0	11,977	12.0	11,977	28.0	11,977	18.0	11,977
5.0	11,977	10.0	11,977	34.0	11,977	8.0	11,977	30.0	11,977	17.0	11,977
5.0	11,977	9.0	11,924	30.0	11,977	9.0	11,977	27.0	11,977	13.0	11,977
14.1	12,027.1	14.8	11,992.8	21.2	11,997.4	12.7	11,974.7	22.7	11,997.4	15.3	11,997.4

NOx Run 7	Q(sd) Run 7	NOx Run 8	Q(sd) Run 8	NOx Run 9	Q(sd) Run 9	NOx Run 10	Q(sd) Run 10	NOx Run 11	Q(sd) Run 11
10.0	11,924.0	12.0	12,082.0	3.0	12,082.0	6.0	12,082.0	12.0	12,029.0
9.0	11,977.0	11.0	12,029.0	3.0	12,029.0	6.0	12,082.0	12.0	12,082.0
7.0	11,977.0	10.0	12,029.0	3.0	12,082.0	8.0	12,082.0	12.0	12,082.0
10.0	11,977.0	10.0	12,082.0	3.0	12,082.0	5.0	12,082.0	11.0	12,082.0
26.0	11,977.0	10.0	12,029.0	4.0	12,082.0	10.0	12,082.0	13.0	12,082.0
21.0	11,977.0	12.0	12,082.0	5.0	12,082.0	9.0	12,082.0	14.0	12,082.0
22.0	11,977.0	12.0	12,082.0	5.0	12,082.0	8.0	12,082.0	14.0	12,029.0
24.0	11,977.0	11.0	12,082.0	12.0	12,082.0	6.0	12,082.0	12.0	12,082.0
20.0	11,977.0	10.0	12,082.0	7.0	12,082.0	4.0	12,082.0	11.0	12,082.0
21.0	11,977.0	10.0	12,082.0	4.0	12,082.0	5.0	12,082.0	11.0	12,134.0
21.0	12,029.0	14.0	12,082.0	4.0	12,082.0	6.0	12,082.0	11.0	12,082.0
23.0	11,977.0	11.0	12,029.0	3.0	12,082.0	7.0	12,082.0	11.0	12,082.0
25.0	11,977.0	11.0	12,082.0	5.0	12,082.0	6.0	12,029.0	10.0	12,082.0
26.0	12,029.0	10.0	11,977.0	6.0	12,082.0	13.0	12,082.0	8.0	12,082.0
24.0	12,029.0	7.0	12,082.0	8.0	12,082.0	10.0	12,082.0	9.0	12,029.0
25.0	12,029.0	8.0	12,029.0	21.0	12,082.0	9.0	12,082.0	9.0	12,082.0
27.0	11,977.0	8.0	12,029.0	29.0	12,082.0	6.0	12,029.0	9.0	12,082.0
24.0	11,924.0	8.0	12,082.0	20.0	12,082.0	6.0	12,029.0	10.0	12,082.0
20.0	11,977.0	8.0	12,029.0	7.0	12,082.0	8.0	12,082.0	11.0	12,082.0
12.0	11,977.0	9.0	12,082.0	5.0	12,082.0	8.0	12,082.0	11.0	12,082.0
12.0	11,977.0	10.0	12,029.0	5.0	12,082.0	8.0	12,082.0	12.0	12,029.0
11.0	11,977.0	4.0	12,082.0	8.0	12,082.0	13.0	12,029.0	12.0	12,029.0
3.0	11,977.0	4.0	12,082.0	19.0	12,082.0	16.0	12,082.0	12.0	12,029.0
18.4	11,981.4	9.6	12,059.0	8.2	12,079.7	8.0	12,072.8	11.2	12,070.4

SCOEPA00022481

cem output 500 scale
Data logger 100 scale.

Run 1

Log File Report - Last 30 Records
FORM NAME: MINLOG FILENAME: C:\LOGS\1MIN.D9 TYPE: DAILY
Page 1 Wed May 28 09:37:54 1997

RECO	DATE	TIME	LABEL	DATA	LABEL	DATA	LABEL	DATA	LABEL	DATA
548	05/28/97	09:08:02	NOx =	3	NO =	0	SCFM=	12029	TEMP=	73
549	05/28/97	09:09:01	NOx =	4	NO =	0	SCFM=	11977	TEMP=	73
550	05/28/97	09:10:00	NOx =	2	NO =	0	SCFM=	12029	TEMP=	73
551	05/28/97	09:11:01	NOx =	2	NO =	0	SCFM=	12029	TEMP=	73
552	05/28/97	09:12:00	NOx =	2	NO =	0	SCFM=	12082	TEMP=	73
553	05/28/97	09:13:01	NOx =	2	NO =	0	SCFM=	12029	TEMP=	73
554	05/28/97	09:14:01	NOx =	2	NO =	0	SCFM=	12082	TEMP=	73
555	05/28/97	09:15:00	NOx =	2	NO =	0	SCFM=	12082	TEMP=	73
556	05/28/97	09:16:00	NOx =	2	NO =	0	SCFM=	12029	TEMP=	73
557	05/28/97	09:17:00	NOx =	3	NO =	0	SCFM=	12082	TEMP=	73
558	05/28/97	09:18:00	NOx =	4	NO =	0	SCFM=	12082	TEMP=	73
559	05/28/97	09:19:01	NOx =	3	NO =	0	SCFM=	11977	TEMP=	73
560	05/28/97	09:20:00	NOx =	2	NO =	0	SCFM=	11977	TEMP=	73
561	05/28/97	09:21:00	NOx =	2	NO =	0	SCFM=	12029	TEMP=	73
562	05/28/97	09:21:59	NOx =	2	NO =	0	SCFM=	11977	TEMP=	73
563	05/28/97	09:22:59	NOx =	2	NO =	0	SCFM=	12029	TEMP=	73
564	05/28/97	09:24:00	NOx =	2	NO =	0	SCFM=	12082	TEMP=	73
565	05/28/97	09:24:59	NOx =	2	NO =	0	SCFM=	12082	TEMP=	73
566	05/28/97	09:25:59	NOx =	4	NO =	0	SCFM=	12082	TEMP=	73
567	05/28/97	09:26:59	NOx =	3	NO =	0	SCFM=	11977	TEMP=	73
568	05/28/97	09:27:58	NOx =	6	NO =	0	SCFM=	12029	TEMP=	73
569	05/28/97	09:28:59	NOx =	6	NO =	0	SCFM=	12082	TEMP=	73
570	05/28/97	09:29:58	NOx =	6	NO =	1	SCFM=	11977	TEMP=	73
571	05/28/97	09:30:59	NOx =	4	NO =	0	SCFM=	11977	TEMP=	73
572	05/28/97	09:31:59	NOx =	2	NO =	0	SCFM=	11977	TEMP=	73
573	05/28/97	09:32:58	NOx =	2	NO =	0	SCFM=	12029	TEMP=	73
574	05/28/97	09:33:59	NOx =	1	NO =	0	SCFM=	11977	TEMP=	73
575	05/28/97	09:34:58	NOx =	1	NO =	0	SCFM=	11977	TEMP=	73
576	05/28/97	09:35:58	NOx =	1	NO =	0	SCFM=	12029	TEMP=	73
577	05/28/97	09:36:58	NOx =	1	NO =	0	SCFM=	12082	TEMP=	73

Log File Report - Last 100 Records
FORM NAME: MINLOG FILENAME: C:\LOGS\1MIN.D9 TYPE: DAILY
Page 1 Wed May 28 12:23:06 1997

RECO	DATE	TIME	LABEL	DATA	LABEL	DATA	LABEL	DATA	LABEL	DATA
604	05/28/97	10:03:55	NOx =	2	NO =	0	SCFM=	11977	TEMP=	73
605	05/28/97	10:04:54	NOx =	2	NO =	0	SCFM=	11977	TEMP=	73
606	05/28/97	10:05:54	NOx =	5	NO =	0	SCFM=	12029	TEMP=	73
607	05/28/97	10:06:54	NOx =	3	NO =	0	SCFM=	12029	TEMP=	73
608	05/28/97	10:07:54	NOx =	4	NO =	0	SCFM=	12082	TEMP=	73
609	05/28/97	10:08:54	NOx =	4	NO =	0	SCFM=	11977	TEMP=	73
610	05/28/97	10:09:54	NOx =	4	NO =	0	SCFM=	11977	TEMP=	73
611	05/28/97	10:10:53	NOx =	6	NO =	1	SCFM=	11977	TEMP=	73
612	05/28/97	10:11:53	NOx =	2	NO =	0	SCFM=	11977	TEMP=	73
613	05/28/97	10:12:53	NOx =	1	NO =	0	SCFM=	11977	TEMP=	73
614	05/28/97	10:13:54	NOx =	1	NO =	0	SCFM=	12029	TEMP=	73
615	05/28/97	10:14:54	NOx =	4	NO =	0	SCFM=	11977	TEMP=	73
616	05/28/97	10:15:52	NOx =	4	NO =	0	SCFM=	11977	TEMP=	73
617	05/28/97	10:16:53	NOx =	4	NO =	0	SCFM=	11977	TEMP=	73
618	05/28/97	10:17:55	NOx =	5	NO =	0	SCFM=	11977	TEMP=	73
619	05/28/97	10:18:53	NOx =	4	NO =	0	SCFM=	11977	TEMP=	73
620	05/28/97	10:19:53	NOx =	5	NO =	0	SCFM=	11977	TEMP=	73
621	05/28/97	10:20:52	NOx =	2	NO =	0	SCFM=	11977	TEMP=	73
622	05/28/97	10:50:52	NOx =	3	NO =	1	SCFM=	11977	TEMP=	73
623	05/28/97	11:02:54	NOx =	3	NO =	1	SCFM=	12029	TEMP=	73
624	05/28/97	11:03:51	NOx =	3	NO =	1	SCFM=	11977	TEMP=	73
625	05/28/97	11:04:51	NOx =	0	NO =	0	SCFM=	11977	TEMP=	73
626	05/28/97	11:05:53	NOx =	2	NO =	1	SCFM=	11977	TEMP=	73
627	05/28/97	11:06:52	NOx =	1	NO =	0	SCFM=	12082	TEMP=	73
628	05/28/97	11:07:51	NOx =	1	NO =	0	SCFM=	12029	TEMP=	73
629	05/28/97	11:08:52	NOx =	8	NO =	0	SCFM=	11977	TEMP=	73
630	05/28/97	11:09:51	NOx =	9	NO =	0	SCFM=	11977	TEMP=	73
631	05/28/97	11:10:51	NOx =	15	NO =	0	SCFM=	11977	TEMP=	73
632	05/28/97	11:11:51	NOx =	23	NO =	1	SCFM=	12082	TEMP=	73
633	05/28/97	11:12:51	NOx =	21	NO =	1	SCFM=	12029	TEMP=	73
634	05/28/97	11:13:51	NOx =	19	NO =	1	SCFM=	12029	TEMP=	73
635	05/28/97	11:14:51	NOx =	18	NO =	1	SCFM=	12029	TEMP=	73
636	05/28/97	11:15:50	NOx =	17	NO =	1	SCFM=	11977	TEMP=	73
637	05/28/97	11:16:51	NOx =	13	NO =	1	SCFM=	11977	TEMP=	74
638	05/28/97	11:17:51	NOx =	11	NO =	0	SCFM=	11977	TEMP=	74
639	05/28/97	11:18:50	NOx =	8	NO =	0	SCFM=	11977	TEMP=	74
640	05/28/97	11:19:51	NOx =	9	NO =	0	SCFM=	11977	TEMP=	74
641	05/28/97	11:20:51	NOx =	20	NO =	1	SCFM=	11977	TEMP=	74
642	05/28/97	11:21:50	NOx =	14	NO =	0	SCFM=	12029	TEMP=	74
643	05/28/97	11:22:51	NOx =	20	NO =	1	SCFM=	11977	TEMP=	74
644	05/28/97	11:23:51	NOx =	18	NO =	1	SCFM=	11977	TEMP=	74
645	05/28/97	11:24:49	NOx =	15	NO =	1	SCFM=	11977	TEMP=	74
646	05/28/97	11:25:51	NOx =	13	NO =	0	SCFM=	11924	TEMP=	74
647	05/28/97	11:26:49	NOx =	15	NO =	0	SCFM=	11977	TEMP=	74
648	05/28/97	11:27:50	NOx =	13	NO =	0	SCFM=	11977	TEMP=	74
649	05/28/97	11:28:49	NOx =	11	NO =	0	SCFM=	12082	TEMP=	74
650	05/28/97	11:29:50	NOx =	17	NO =	1	SCFM=	11977	TEMP=	74
651	05/28/97	11:30:48	NOx =	11	NO =	1	SCFM=	12029	TEMP=	74
652	05/28/97	11:31:49	NOx =	10	NO =	0	SCFM=	11977	TEMP=	74

RECO	DATE	TIME	LABEL	DATA	LABEL	DATA	LABEL	DATA	LABEL	DATA
653	05/28/97	11:32:49	NOx =	9	NO =	0	SCFM=	11924	TEMP=	74
654	05/28/97	11:33:48	NOx =	14	NO =	1	SCFM=	11977	TEMP=	74
655	05/28/97	11:34:48	NOx =	9	NO =	0	SCFM=	11977	TEMP=	74
656	05/28/97	11:35:48	NOx =	9	NO =	0	SCFM=	11977	TEMP=	74
657	05/28/97	11:36:48	NOx =	15	NO =	1	SCFM=	11977	TEMP=	74
658	05/28/97	11:37:49	NOx =	12	NO =	1	SCFM=	12029	TEMP=	74
659	05/28/97	11:38:47	NOx =	16	NO =	1	SCFM=	11977	TEMP=	74
660	05/28/97	11:39:48	NOx =	9	NO =	1	SCFM=	11977	TEMP=	74
661	05/28/97	11:40:47	NOx =	7	NO =	0	SCFM=	11977	TEMP=	74
662	05/28/97	11:41:47	NOx =	8	NO =	0	SCFM=	11977	TEMP=	74
663	05/28/97	11:42:46	NOx =	20	NO =	1	SCFM=	11977	TEMP=	74
664	05/28/97	11:43:47	NOx =	19	NO =	0	SCFM=	11977	TEMP=	74
M 665	05/28/97	11:44:47	NOx =	18	NO =	1	SCFM=	11977	TEMP=	74
666	05/28/97	11:45:47	NOx =	31	NO =	1	SCFM=	12029	TEMP=	74
667	05/28/97	11:46:46	NOx =	28	NO =	1	SCFM=	12082	TEMP=	74
668	05/28/97	11:47:47	NOx =	28	NO =	1	SCFM=	12029	TEMP=	74
669	05/28/97	11:48:47	NOx =	30	NO =	1	SCFM=	11977	TEMP=	74
670	05/28/97	11:49:46	NOx =	29	NO =	2	SCFM=	12082	TEMP=	74
671	05/28/97	11:50:46	NOx =	29	NO =	2	SCFM=	12029	TEMP=	74
672	05/28/97	11:51:46	NOx =	28	NO =	1	SCFM=	11977	TEMP=	74
673	05/28/97	11:52:46	NOx =	31	NO =	1	SCFM=	12029	TEMP=	74
674	05/28/97	11:53:46	NOx =	34	NO =	2	SCFM=	11977	TEMP=	74
675	05/28/97	11:54:45	NOx =	34	NO =	2	SCFM=	11977	TEMP=	74
676	05/28/97	11:55:45	NOx =	30	NO =	2	SCFM=	11977	TEMP=	74
677	05/28/97	11:56:46	NOx =	29	NO =	1	SCFM=	12029	TEMP=	74
678	05/28/97	11:57:46	NOx =	32	NO =	2	SCFM=	11977	TEMP=	74
679	05/28/97	11:58:45	NOx =	35	NO =	2	SCFM=	11924	TEMP=	74
680	05/28/97	11:59:45	NOx =	36	NO =	2	SCFM=	11977	TEMP=	74
681	05/28/97	12:00:45	NOx =	33	NO =	2	SCFM=	12029	TEMP=	74
682	05/28/97	12:01:45	NOx =	32	NO =	1	SCFM=	11977	TEMP=	74
683	05/28/97	12:02:46	NOx =	29	NO =	1	SCFM=	11977	TEMP=	74
684	05/28/97	12:03:44	NOx =	15	NO =	1	SCFM=	11977	TEMP=	74
685	05/28/97	12:04:46	NOx =	13	NO =	1	SCFM=	11977	TEMP=	74
686	05/28/97	12:05:44	NOx =	18	NO =	3	SCFM=	11924	TEMP=	74
687	05/28/97	12:06:44	NOx =	16	NO =	0	SCFM=	11977	TEMP=	74
688	05/28/97	12:07:45	NOx =	16	NO =	0	SCFM=	11924	TEMP=	74
689	05/28/97	12:08:43	NOx =	15	NO =	0	SCFM=	11977	TEMP=	74
690	05/28/97	12:09:44	NOx =	15	NO =	0	SCFM=	11977	TEMP=	74
691	05/28/97	12:10:43	NOx =	16	NO =	0	SCFM=	11977	TEMP=	74
692	05/28/97	12:11:44	NOx =	14	NO =	0	SCFM=	11977	TEMP=	74
693	05/28/97	12:12:44	NOx =	15	NO =	0	SCFM=	11977	TEMP=	74
694	05/28/97	12:13:44	NOx =	14	NO =	0	SCFM=	11977	TEMP=	74
695	05/28/97	12:14:42	NOx =	14	NO =	0	SCFM=	11977	TEMP=	74
696	05/28/97	12:15:42	NOx =	8	NO =	0	SCFM=	11977	TEMP=	74
697	05/28/97	12:16:43	NOx =	7	NO =	0	SCFM=	12029	TEMP=	74
698	05/28/97	12:17:43	NOx =	8	NO =	0	SCFM=	11977	TEMP=	74
699	05/28/97	12:18:43	NOx =	9	NO =	0	SCFM=	11977	TEMP=	74
700	05/28/97	12:19:42	NOx =	9	NO =	0	SCFM=	11977	TEMP=	74
701	05/28/97	12:20:43	NOx =	8	NO =	0	SCFM=	11977	TEMP=	74
702	05/28/97	12:21:42	NOx =	19	NO =	0	SCFM=	11977	TEMP=	74
703	05/28/97	12:22:43	NOx =	13	NO =	0	SCFM=	11977	TEMP=	74

Log File Report - Time/Date for 05/28/97 12:00:00 to 05/28/97 14:00:00
FORM NAME: MINLOG FILENAME: C:\LOGS\1MIN.D9 TYPE: DAILY
Page 1 Wed May 28 14:21:06 1997

RECO	DATE	TIME	LABEL	DATA	LABEL	DATA	LABEL	DATA	LABEL	DATA
681	05/28/97	12:00:45	NOx =	33	NO =	2	SCFM=	12029	TEMP=	74
682	05/28/97	12:01:45	NOx =	32	NO =	1	SCFM=	11977	TEMP=	74
683	05/28/97	12:02:46	NOx =	29	NO =	1	SCFM=	11977	TEMP=	74
684	05/28/97	12:03:44	NOx =	15	NO =	1	SCFM=	11977	TEMP=	74
685	05/28/97	12:04:46	NOx =	13	NO =	1	SCFM=	11977	TEMP=	74
686	05/28/97	12:05:44	NOx =	18	NO =	3	SCFM=	11924	TEMP=	74
687	05/28/97	12:06:44	NOx =	16	NO =	0	SCFM=	11977	TEMP=	74
688	05/28/97	12:07:45	NOx =	16	NO =	0	SCFM=	11924	TEMP=	74
689	05/28/97	12:08:43	NOx =	15	NO =	0	SCFM=	11977	TEMP=	74
690	05/28/97	12:09:44	NOx =	15	NO =	0	SCFM=	11977	TEMP=	74
691	05/28/97	12:10:43	NOx =	16	NO =	0	SCFM=	11977	TEMP=	74
692	05/28/97	12:11:44	NOx =	14	NO =	0	SCFM=	11977	TEMP=	74
693	05/28/97	12:12:44	NOx =	15	NO =	0	SCFM=	11977	TEMP=	74
694	05/28/97	12:13:44	NOx =	14	NO =	0	SCFM=	11977	TEMP=	74
695	05/28/97	12:14:42	NOx =	14	NO =	0	SCFM=	11977	TEMP=	74
696	05/28/97	12:15:42	NOx =	8	NO =	0	SCFM=	11977	TEMP=	74
697	05/28/97	12:16:43	NOx =	7	NO =	0	SCFM=	12029	TEMP=	74
698	05/28/97	12:17:43	NOx =	8	NO =	0	SCFM=	11977	TEMP=	74
699	05/28/97	12:18:43	NOx =	9	NO =	0	SCFM=	11977	TEMP=	74
700	05/28/97	12:19:42	NOx =	9	NO =	0	SCFM=	11977	TEMP=	74
701	05/28/97	12:20:43	NOx =	8	NO =	0	SCFM=	11977	TEMP=	74
702	05/28/97	12:21:42	NOx =	19	NO =	0	SCFM=	11977	TEMP=	74
703	05/28/97	12:22:43	NOx =	13	NO =	0	SCFM=	11977	TEMP=	74
704	05/28/97	12:23:43	NOx =	12	NO =	0	SCFM=	11977	TEMP=	74
705	05/28/97	12:24:43	NOx =	8	NO =	0	SCFM=	11977	TEMP=	74
706	05/28/97	12:25:42	NOx =	9	NO =	0	SCFM=	11977	TEMP=	74
707	05/28/97	12:26:42	NOx =	11	NO =	0	SCFM=	11977	TEMP=	74
708	05/28/97	12:27:41	NOx =	11	NO =	0	SCFM=	11977	TEMP=	74
709	05/28/97	12:28:41	NOx =	11	NO =	0	SCFM=	11977	TEMP=	74
710	05/28/97	12:29:42	NOx =	8	NO =	0	SCFM=	12029	TEMP=	74
711	05/28/97	12:30:42	NOx =	25	NO =	0	SCFM=	11977	TEMP=	74
712	05/28/97	12:31:41	NOx =	22	NO =	0	SCFM=	12029	TEMP=	74
713	05/28/97	12:32:41	NOx =	16	NO =	0	SCFM=	11977	TEMP=	74
714	05/28/97	12:33:41	NOx =	22	NO =	1	SCFM=	11977	TEMP=	74
715	05/28/97	12:34:41	NOx =	25	NO =	1	SCFM=	12029	TEMP=	74
716	05/28/97	12:35:40	NOx =	36	NO =	1	SCFM=	12082	TEMP=	74
717	05/28/97	12:36:42	NOx =	17	NO =	0	SCFM=	12029	TEMP=	74
718	05/28/97	12:37:41	NOx =	14	NO =	0	SCFM=	11977	TEMP=	74
719	05/28/97	12:38:39	NOx =	16	NO =	0	SCFM=	12082	TEMP=	74
720	05/28/97	12:39:40	NOx =	27	NO =	1	SCFM=	12082	TEMP=	74
721	05/28/97	12:40:40	NOx =	34	NO =	1	SCFM=	11924	TEMP=	74
722	05/28/97	12:41:40	NOx =	37	NO =	0	SCFM=	12029	TEMP=	74
723	05/28/97	12:42:40	NOx =	40	NO =	2	SCFM=	11977	TEMP=	74
724	05/28/97	12:43:40	NOx =	18	NO =	1	SCFM=	11977	TEMP=	74
725	05/28/97	12:44:39	NOx =	11	NO =	0	SCFM=	11977	TEMP=	74
726	05/28/97	12:45:39	NOx =	11	NO =	0	SCFM=	11977	TEMP=	74
727	05/28/97	12:46:40	NOx =	11	NO =	0	SCFM=	11977	TEMP=	74
728	05/28/97	12:47:40	NOx =	12	NO =	1	SCFM=	11977	TEMP=	75
729	05/28/97	12:48:38	NOx =	14	NO =	0	SCFM=	11977	TEMP=	75

RECO	DATE	TIME	LABEL	DATA	LABEL	DATA	LABEL	DATA	LABEL	DATA
730	05/28/97	12:49:39	NOx =	26	NO =	1	SCFM=	11977	TEMP=	75
731	05/28/97	12:50:39	NOx =	25	NO =	1	SCFM=	11977	TEMP=	75
732	05/28/97	12:51:39	NOx =	26	NO =	0	SCFM=	12029	TEMP=	75
733	05/28/97	12:52:39	NOx =	28	NO =	1	SCFM=	11977	TEMP=	75
734	05/28/97	12:53:38	NOx =	30	NO =	1	SCFM=	11977	TEMP=	75
735	05/28/97	12:54:38	NOx =	27	NO =	1	SCFM=	11977	TEMP=	75
736	05/28/97	12:55:39	NOx =	20	NO =	0	SCFM=	11977	TEMP=	74
737	05/28/97	12:56:39	NOx =	19	NO =	0	SCFM=	11977	TEMP=	74
738	05/28/97	12:57:37	NOx =	18	NO =	0	SCFM=	11977	TEMP=	74
739	05/28/97	12:58:37	NOx =	18	NO =	0	SCFM=	11977	TEMP=	74
740	05/28/97	12:59:39	NOx =	12	NO =	0	SCFM=	11924	TEMP=	74
741	05/28/97	13:00:37	NOx =	13	NO =	0	SCFM=	12029	TEMP=	74
742	05/28/97	13:01:39	NOx =	16	NO =	0	SCFM=	11977	TEMP=	74
743	05/28/97	13:02:37	NOx =	18	NO =	0	SCFM=	12082	TEMP=	74
744	05/28/97	13:03:37	NOx =	13	NO =	0	SCFM=	11977	TEMP=	74
745	05/28/97	13:04:38	NOx =	8	NO =	0	SCFM=	11977	TEMP=	74
746	05/28/97	13:05:37	NOx =	15	NO =	1	SCFM=	11924	TEMP=	74
747	05/28/97	13:06:37	NOx =	12	NO =	0	SCFM=	12029	TEMP=	74
748	05/28/97	13:07:37	NOx =	12	NO =	1	SCFM=	12029	TEMP=	74
749	05/28/97	13:08:36	NOx =	11	NO =	0	SCFM=	11977	TEMP=	74
750	05/28/97	13:09:36	NOx =	11	NO =	0	SCFM=	12082	TEMP=	74
751	05/28/97	13:10:36	NOx =	13	NO =	1	SCFM=	11977	TEMP=	74
752	05/28/97	13:11:36	NOx =	13	NO =	0	SCFM=	12082	TEMP=	74
753	05/28/97	13:12:36	NOx =	12	NO =	0	SCFM=	11977	TEMP=	74
754	05/28/97	13:13:37	NOx =	11	NO =	0	SCFM=	11977	TEMP=	75
755	05/28/97	13:14:36	NOx =	27	NO =	1	SCFM=	11977	TEMP=	75
756	05/28/97	13:15:36	NOx =	24	NO =	1	SCFM=	11977	TEMP=	75
757	05/28/97	13:16:35	NOx =	23	NO =	1	SCFM=	11977	TEMP=	75
758	05/28/97	13:17:36	NOx =	19	NO =	0	SCFM=	11977	TEMP=	75
759	05/28/97	13:18:35	NOx =	16	NO =	1	SCFM=	12029	TEMP=	75
760	05/28/97	13:19:35	NOx =	18	NO =	0	SCFM=	11977	TEMP=	75
761	05/28/97	13:20:35	NOx =	18	NO =	1	SCFM=	11977	TEMP=	75
762	05/28/97	13:21:35	NOx =	17	NO =	0	SCFM=	11977	TEMP=	75
763	05/28/97	13:22:35	NOx =	13	NO =	0	SCFM=	11977	TEMP=	75
764	05/28/97	13:23:35	NOx =	22	NO =	1	SCFM=	11977	TEMP=	75
765	05/28/97	13:24:33	NOx =	17	NO =	1	SCFM=	11977	TEMP=	75
766	05/28/97	13:25:35	NOx =	15	NO =	1	SCFM=	11977	TEMP=	75
767	05/28/97	13:26:35	NOx =	11	NO =	0	SCFM=	11977	TEMP=	75
768	05/28/97	13:27:33	NOx =	9	NO =	0	SCFM=	12029	TEMP=	75
769	05/28/97	13:28:34	NOx =	10	NO =	0	SCFM=	11924	TEMP=	75
770	05/28/97	13:29:34	NOx =	9	NO =	0	SCFM=	11977	TEMP=	75
771	05/28/97	13:30:33	NOx =	7	NO =	0	SCFM=	11977	TEMP=	75
772	05/28/97	13:31:33	NOx =	10	NO =	0	SCFM=	11977	TEMP=	75
773	05/28/97	13:32:33	NOx =	26	NO =	2	SCFM=	11977	TEMP=	75
774	05/28/97	13:33:34	NOx =	21	NO =	1	SCFM=	11977	TEMP=	75
775	05/28/97	13:34:32	NOx =	22	NO =	0	SCFM=	11977	TEMP=	75
776	05/28/97	13:35:33	NOx =	24	NO =	1	SCFM=	11977	TEMP=	75
777	05/28/97	13:36:33	NOx =	20	NO =	1	SCFM=	11977	TEMP=	75
778	05/28/97	13:37:33	NOx =	21	NO =	1	SCFM=	11977	TEMP=	75
779	05/28/97	13:38:34	NOx =	21	NO =	1	SCFM=	12029	TEMP=	75
780	05/28/97	13:39:32	NOx =	23	NO =	1	SCFM=	11977	TEMP=	75

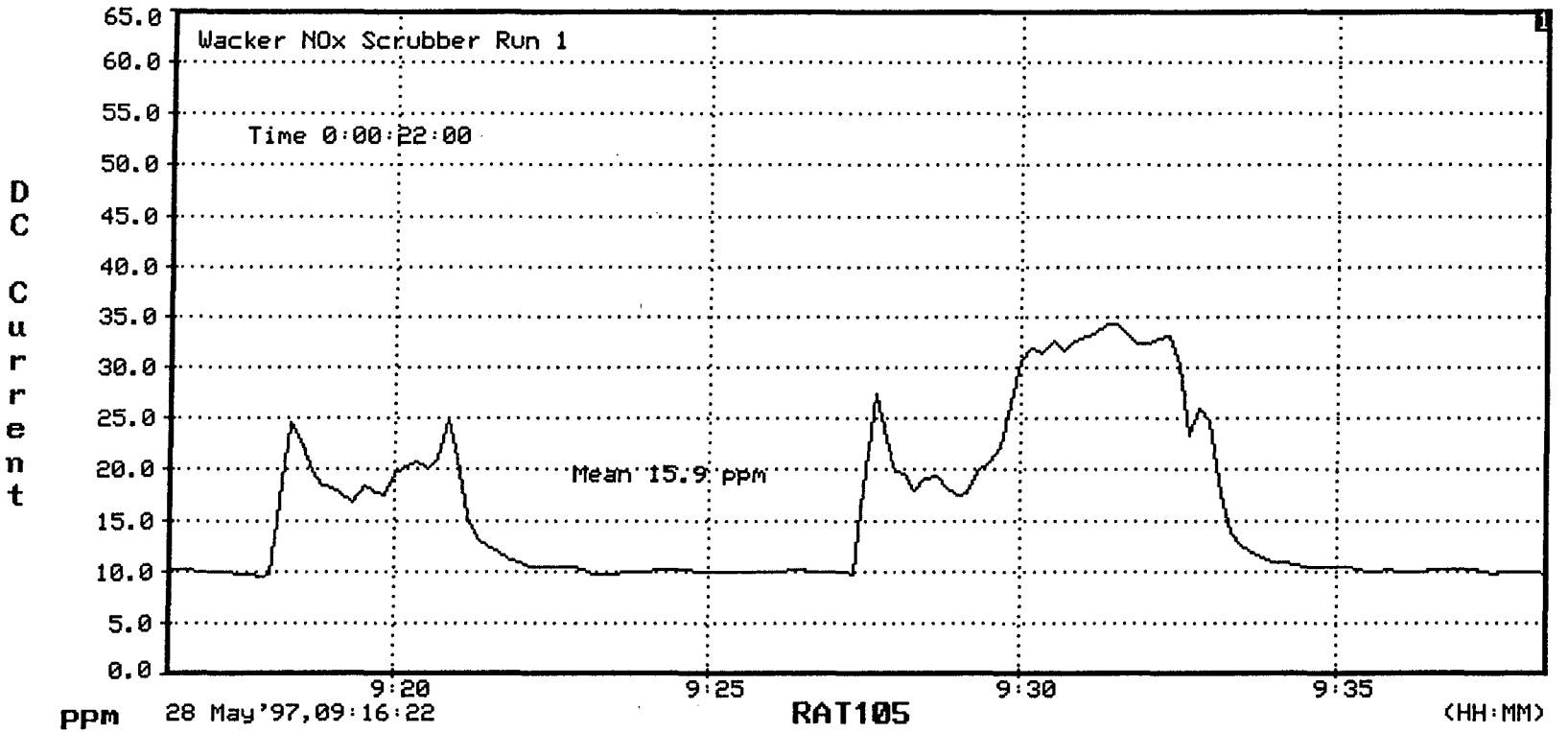
SCOEPA00022486

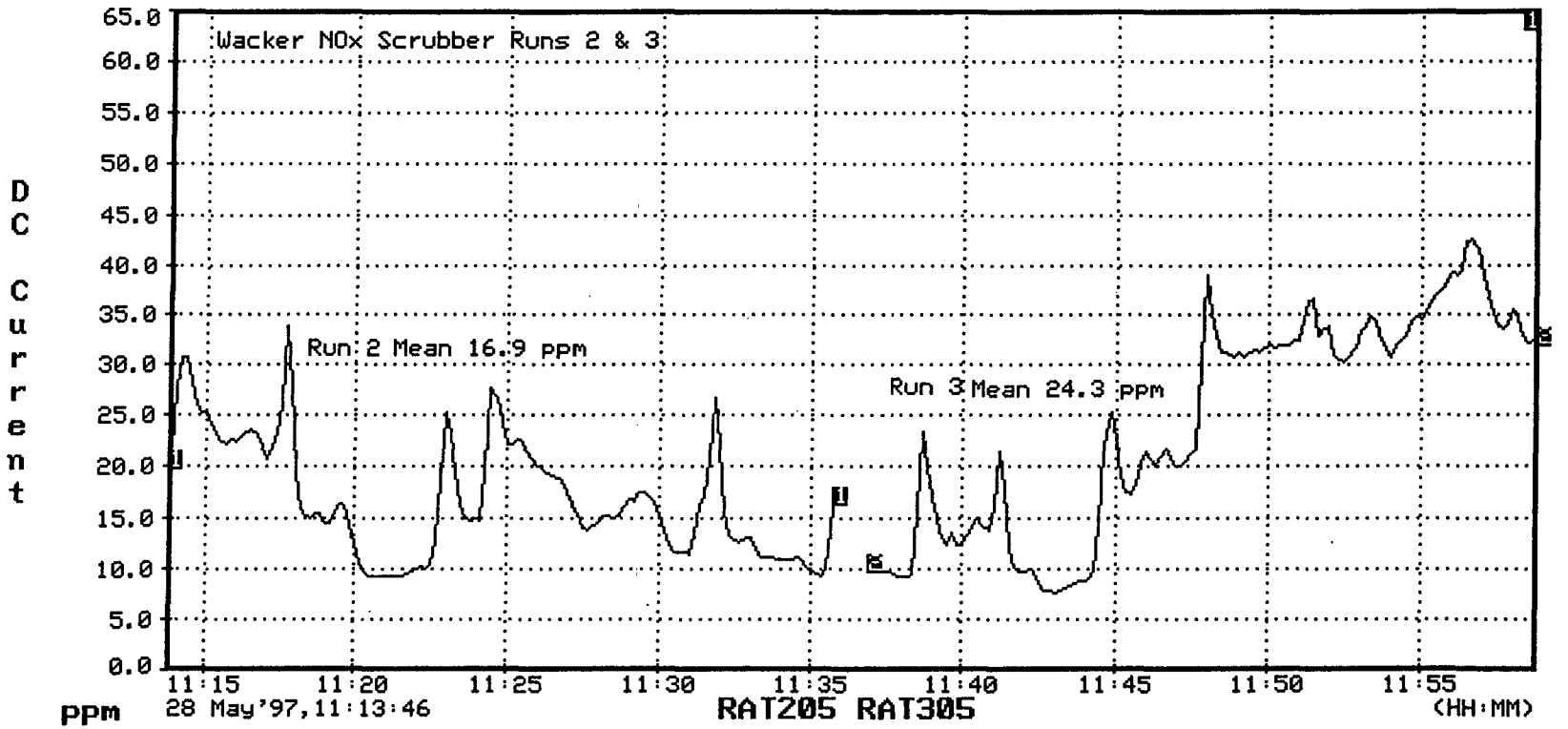
RECO	DATE	TIME	LABEL	DATA	LABEL	DATA	LABEL	DATA	LABEL	DATA
781	05/28/97	13:40:32	NOx =	25	NO =	0	SCFM=	11977	TEMP=	75
782	05/28/97	13:41:32	NOx =	26	NO =	1	SCFM=	12029	TEMP=	75
783	05/28/97	13:42:32	NOx =	24	NO =	1	SCFM=	12029	TEMP=	74
784	05/28/97	13:43:32	NOx =	25	NO =	0	SCFM=	12029	TEMP=	74
785	05/28/97	13:44:32	NOx =	27	NO =	0	SCFM=	11977	TEMP=	74
786	05/28/97	13:45:32	NOx =	24	NO =	1	SCFM=	11924	TEMP=	74
787	05/28/97	13:46:32	NOx =	20	NO =	0	SCFM=	11977	TEMP=	74
788	05/28/97	13:47:31	NOx =	12	NO =	1	SCFM=	11977	TEMP=	74
789	05/28/97	13:48:31	NOx =	12	NO =	1	SCFM=	11977	TEMP=	74
790	05/28/97	13:49:31	NOx =	11	NO =	1	SCFM=	11977	TEMP=	74
791	05/28/97	13:50:32	NOx =	3	NO =	0	SCFM=	11977	TEMP=	74
792	05/28/97	13:51:32	NOx =	5	NO =	0	SCFM=	12029	TEMP=	74
793	05/28/97	13:52:31	NOx =	18	NO =	0	SCFM=	12029	TEMP=	74
794	05/28/97	13:53:31	NOx =	22	NO =	0	SCFM=	11924	TEMP=	74
795	05/28/97	13:54:31	NOx =	30	NO =	0	SCFM=	11977	TEMP=	74
796	05/28/97	13:55:31	NOx =	12	NO =	0	SCFM=	12082	TEMP=	74
797	05/28/97	13:56:31	NOx =	11	NO =	0	SCFM=	12029	TEMP=	74
798	05/28/97	13:57:30	NOx =	10	NO =	0	SCFM=	12029	TEMP=	74
799	05/28/97	13:58:30	NOx =	10	NO =	0	SCFM=	12082	TEMP=	74
800	05/28/97	13:59:30	NOx =	10	NO =	0	SCFM=	12029	TEMP=	74

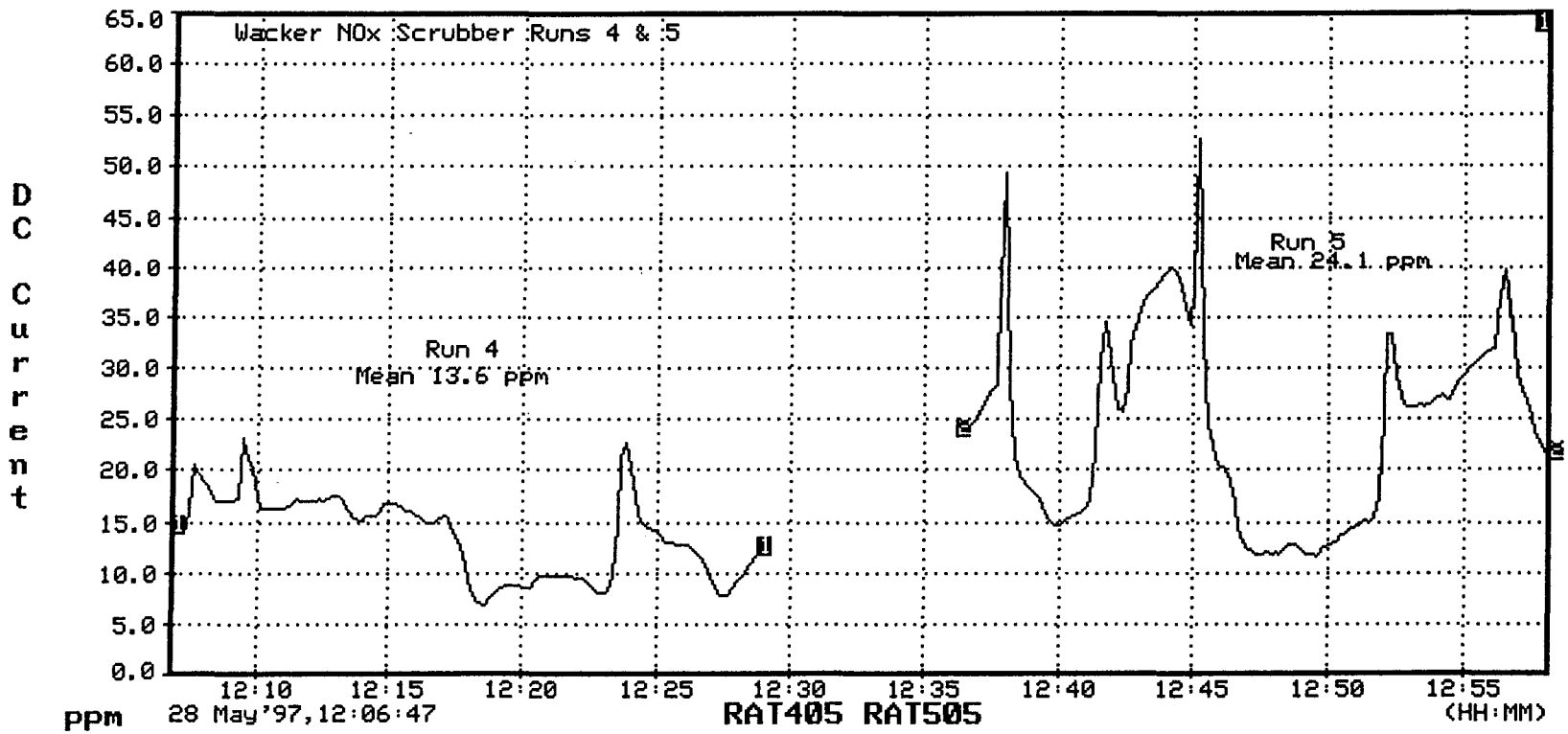
Log File Report - Time/Date for 05/28/97 14:00:00 to 05/28/97 17:50:00
FORM NAME: MINLOG FILENAME: C:\LOGS\1MIN.D9 TYPE: DAILY
Page 1 Wed May 28 15:54:37 1997

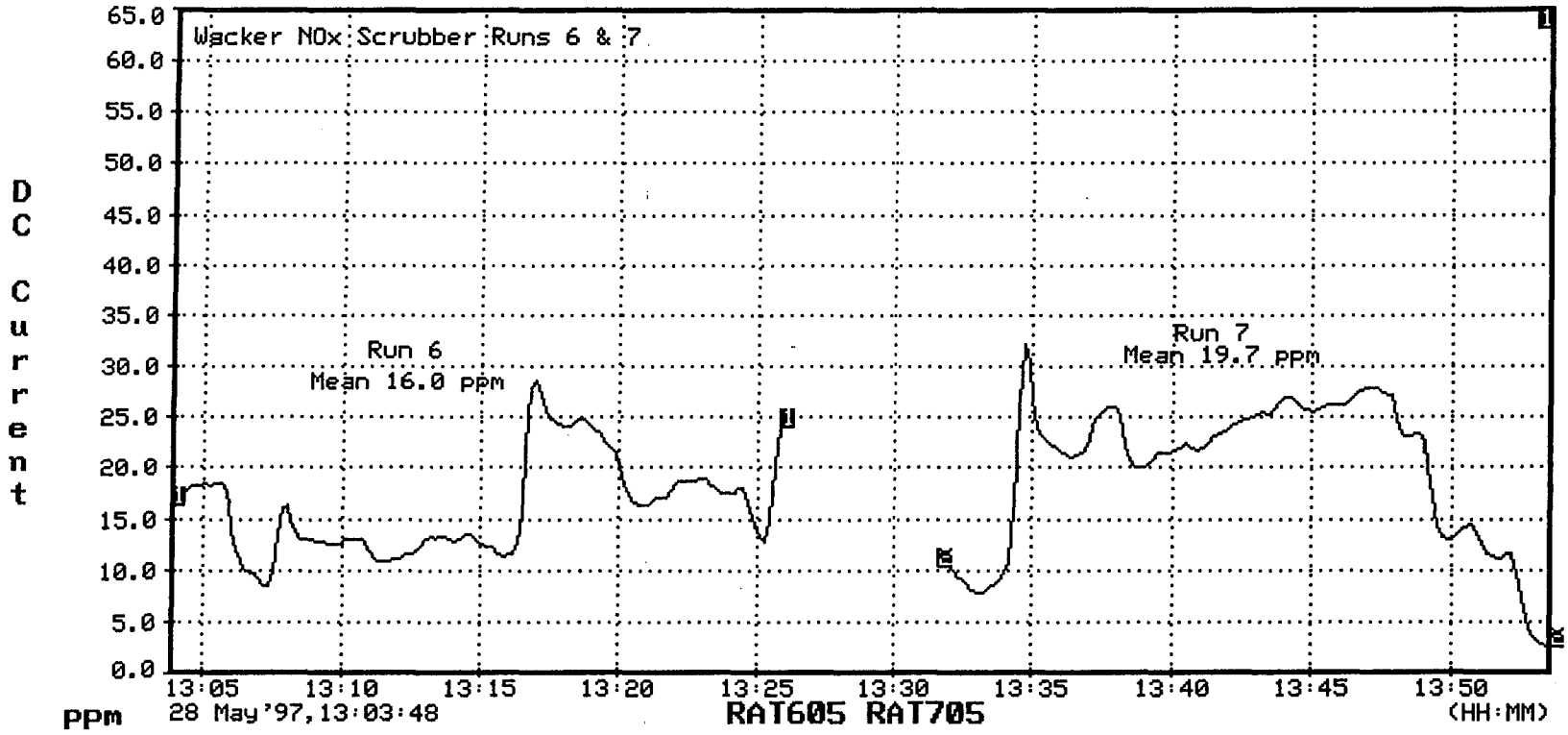
RECO	DATE	TIME	LABEL	DATA	LABEL	DATA	LABEL	DATA	LABEL	DATA
801	05/28/97	14:00:30	NOx =	12	NO =	0	SCFM=	12082	TEMP=	74
802	05/28/97	14:01:30	NOx =	12	NO =	0	SCFM=	12082	TEMP=	74
803	05/28/97	14:02:30	NOx =	11	NO =	0	SCFM=	12082	TEMP=	74
804	05/28/97	14:03:30	NOx =	10	NO =	0	SCFM=	12082	TEMP=	74
805	05/28/97	14:04:30	NOx =	10	NO =	0	SCFM=	12082	TEMP=	74
806	05/28/97	14:05:30	NOx =	14	NO =	0	SCFM=	12082	TEMP=	74
807	05/28/97	14:06:29	NOx =	11	NO =	0	SCFM=	12029	TEMP=	74
808	05/28/97	14:07:29	NOx =	11	NO =	0	SCFM=	12082	TEMP=	74
809	05/28/97	14:08:29	NOx =	10	NO =	0	SCFM=	11977	TEMP=	74
810	05/28/97	14:09:29	NOx =	7	NO =	0	SCFM=	12082	TEMP=	74
811	05/28/97	14:10:29	NOx =	8	NO =	0	SCFM=	12029	TEMP=	74
812	05/28/97	14:11:28	NOx =	8	NO =	0	SCFM=	12029	TEMP=	74
813	05/28/97	14:12:28	NOx =	8	NO =	0	SCFM=	12082	TEMP=	74
814	05/28/97	14:13:28	NOx =	8	NO =	0	SCFM=	12029	TEMP=	74
815	05/28/97	14:14:28	NOx =	9	NO =	0	SCFM=	12082	TEMP=	74
816	05/28/97	14:15:28	NOx =	10	NO =	0	SCFM=	12029	TEMP=	74
817	05/28/97	14:16:28	NOx =	4	NO =	0	SCFM=	12082	TEMP=	74
818	05/28/97	14:17:28	NOx =	4	NO =	0	SCFM=	12082	TEMP=	74
819	05/28/97	14:18:28	NOx =	4	NO =	0	SCFM=	12082	TEMP=	74
820	05/28/97	14:19:28	NOx =	4	NO =	0	SCFM=	12029	TEMP=	73
821	05/28/97	14:20:27	NOx =	3	NO =	0	SCFM=	12082	TEMP=	73
822	05/28/97	14:21:27	NOx =	3	NO =	0	SCFM=	12082	TEMP=	73
823	05/28/97	14:22:26	NOx =	3	NO =	0	SCFM=	12082	TEMP=	73
824	05/28/97	14:23:28	NOx =	3	NO =	0	SCFM=	12029	TEMP=	73
825	05//28/97	14:24:26	NOx =	3	NO =	0	SCFM=	12082	TEMP=	73
826	05/28/97	14:25:26	NOx =	3	NO =	0	SCFM=	12082	TEMP=	73
827	05/28/97	14:26:27	NOx =	4	NO =	0	SCFM=	12082	TEMP=	73
828	05/28/97	14:27:27	NOx =	5	NO =	0	SCFM=	12082	TEMP=	73
829	05/28/97	14:28:26	NOx =	5	NO =	0	SCFM=	12082	TEMP=	73
830	05/28/97	14:29:26	NOx =	12	NO =	0	SCFM=	12082	TEMP=	73
831	05/28/97	14:30:26	NOx =	7	NO =	0	SCFM=	12082	TEMP=	73
832	05/28/97	14:31:26	NOx =	4	NO =	0	SCFM=	12082	TEMP=	73
833	05/28/97	14:32:27	NOx =	4	NO =	0	SCFM=	12082	TEMP=	73
834	05/28/97	14:33:25	NOx =	3	NO =	0	SCFM=	12082	TEMP=	73
835	05/28/97	14:34:26	NOx =	5	NO =	0	SCFM=	12082	TEMP=	73
836	05/28/97	14:35:25	NOx =	6	NO =	0	SCFM=	12082	TEMP=	73
837	05/28/97	14:36:25	NOx =	8	NO =	0	SCFM=	12082	TEMP=	73
838	05/28/97	14:37:24	NOx =	21	NO =	0	SCFM=	12082	TEMP=	73
839	05/28/97	14:38:25	NOx =	29	NO =	0	SCFM=	12082	TEMP=	73
840	05/28/97	14:39:25	NOx =	20	NO =	0	SCFM=	12082	TEMP=	73
841	05/28/97	14:40:25	NOx =	7	NO =	0	SCFM=	12082	TEMP=	73
842	05/28/97	14:41:24	NOx =	5	NO =	0	SCFM=	12082	TEMP=	73
843	05/28/97	14:42:24	NOx =	5	NO =	0	SCFM=	12082	TEMP=	73
844	05/28/97	14:43:24	NOx =	8	NO =	0	SCFM=	12082	TEMP=	73
845	05/28/97	14:44:25	NOx =	19	NO =	0	SCFM=	12082	TEMP=	73
846	05/28/97	14:45:24	NOx =	20	NO =	0	SCFM=	12082	TEMP=	73
847	05/28/97	14:46:24	NOx =	18	NO =	0	SCFM=	12082	TEMP=	73
848	05/28/97	14:47:24	NOx =	9	NO =	0	SCFM=	12082	TEMP=	73
849	05/28/97	14:48:24	NOx =	7	NO =	0	SCFM=	12082	TEMP=	73

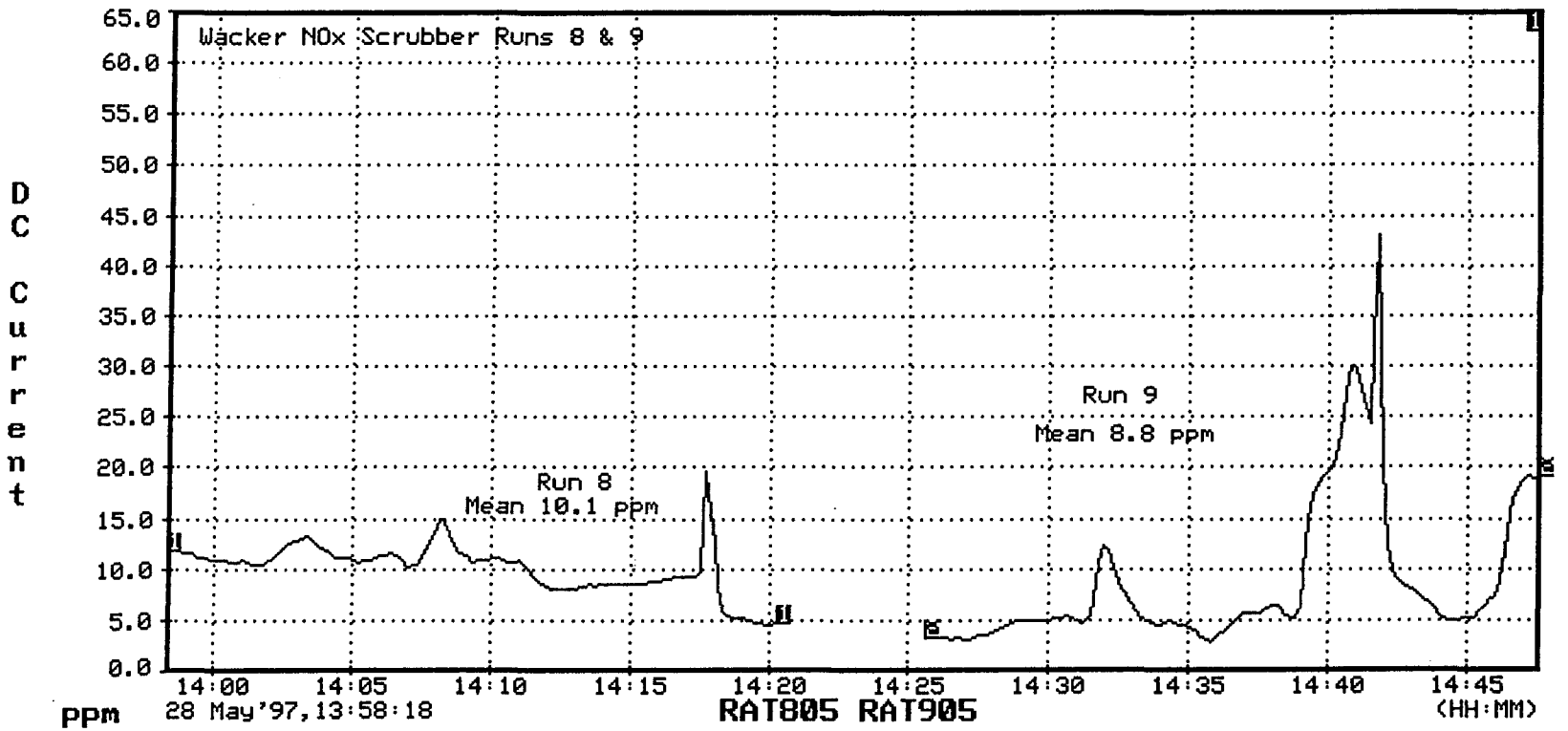
RECO	DATE	TIME	LABEL	DATA	LABEL	DATA	LABEL	DATA	LABEL	DATA
850	05/28/97	14:49:24	NOx =	6	NO =	0	SCFM=	12082	TEMP=	73
851	05/28/97	14:50:23	NOx =	4	NO =	0	SCFM=	12082	TEMP=	73
852	05/28/97	14:51:23	NOx =	6	NO =	0	SCFM=	12082	TEMP=	73
853	05/28/97	14:52:23	NOx =	6	NO =	0	SCFM=	12082	TEMP=	73
854	05/28/97	14:53:24	NOx =	8	NO =	0	SCFM=	12082	TEMP=	73
855	05/28/97	14:54:22	NOx =	5	NO =	0	SCFM=	12082	TEMP=	73
856	05/28/97	14:55:23	NOx =	10	NO =	0	SCFM=	12082	TEMP=	73
857	05/28/97	14:56:23	NOx =	9	NO =	0	SCFM=	12082	TEMP=	74
858	05/28/97	14:57:23	NOx =	8	NO =	0	SCCFM=	12082	TEMP=	74
859	05/28/97	14:58:23	NOx =	6	NO =	0	SCFM=	12082	TEMP=	74
860	05/28/97	14:59:23	NOx =	4	NO =	0	SCFM=	12082	TEMP=	74
861	05/28/97	15:00:22	NOx =	5	NO =	0	SCFM=	12082	TEMP=	74
862	05/28/97	15:01:23	NOx =	6	NO =	0	SCFM=	12082	TEMP=	74
863	05/28/97	15:02:22	NOx =	7	NO =	0	SCFM=	12082	TEMP=	74
864	05/28/97	15:03:21	NOx =	6	NO =	0	SCFM=	12029	TEMP=	74
865	05/28/97	15:04:23	NOx =	13	NO =	0	SCFM=	12082	TEMP=	74
866	05/28/97	15:05:22	NOx =	10	NO =	0	SCFM=	12082	TEMP=	74
867	05/28/97	15:06:22	NOx =	9	NO =	0	SCFM=	12082	TEMP=	74
868	05/28/97	15:07:22	NOx =	6	NO =	0	SCFM=	12029	TEMP=	74
869	05/28/97	15:08:20	NOx =	6	NO =	0	SCFM=	12029	TEMP=	74
870	05/28/97	15:09:21	NOx =	8	NO =	0	SCFM=	12082	TEMP=	74
871	05/28/97	15:10:21	NOx =	8	NO =	0	SCFM=	12082	TEMP=	74
872	05/28/97	15:11:21	NOx =	8	NO =	0	SCFM=	12082	TEMP=	74
873	05/28/97	15:12:21	NOx =	13	NO =	0	SCFM=	12029	TEMP=	74
874	05/28/97	15:13:21	NOx =	16	NO =	0	SCFM=	12082	TEMP=	74
875	05/28/97	15:14:20	NOx =	11	NO =	0	SCFM=	12082	TEMP=	74
876	05/28/97	15:15:22	NOx =	11	NO =	0	SCFM=	12082	TEMP=	74
877	05/28/97	15:16:20	NOx =	12	NO =	0	SCFM=	12029	TEMP=	74
878	05/28/97	15:17:19	NOx =	12	NO =	0	SCFM=	12082	TEMP=	74
879	05/28/97	15:18:21	NOx =	12	NO =	0	SCFM=	12082	TEMP=	74
880	05/28/97	15:19:20	NOx =	11	NO =	0	SCFM=	12082	TEMP=	74
881	05/28/97	15:20:20	NOx =	13	NO =	0	SCFM=	12082	TEMP=	74
882	05/28/97	15:21:20	NOx =	14	NO =	0	SCFM=	12082	TEMP=	74
883	05/28/97	15:22:20	NOx =	14	NO =	0	SCFM=	12029	TEMP=	74
884	05/28/97	15:23:19	NOx =	12	NO =	0	SCFM=	12082	TEMP=	74
885	05/28/97	15:24:19	NOx =	11	NO =	0	SCFM=	12082	TEMP=	74
886	05/28/97	15:25:19	NOx =	11	NO =	0	SCFM=	12134	TEMP=	74
887	05/28/97	15:26:18	NOx =	11	NO =	0	SCFM=	12082	TEMP=	74
888	05/28/97	15:27:20	NOx =	11	NO =	0	SCFM=	12082	TEMP=	74
889	05/28/97	15:28:18	NOx =	10	NO =	0	SCFM=	12082	TEMP=	74
890	05/28/97	15:29:19	NOx =	8	NO =	0	SCFM=	12082	TEMP=	74
891	05/28/97	15:30:18	NOx =	9	NO =	0	SCFM=	12029	TEMP=	74
892	05/28/97	15:31:18	NOx =	9	NO =	0	SCFM=	12082	TEMP=	74
893	05/28/97	15:32:18	NOx =	9	NO =	0	SCFM=	12082	TEMP=	74
894	05/28/97	15:33:19	NOx =	10	NO =	0	SCFM=	12082	TEMP=	74
895	05/28/97	15:34:17	NOx =	11	NO =	0	SCFM=	12082	TEMP=	74
896	05/28/97	15:35:19	NOx =	11	NO =	0	SCFM=	12082	TEMP=	74
897	05/28/97	15:36:17	NOx =	12	NO =	0	SCFM=	12029	TEMP=	74
898	05/28/97	15:37:19	NOx =	12	NO =	0	SCFM=	12029	TEMP=	74
899	05/28/97	15:38:18	NOx =	12	NO =	0	SCFM=	12029	TEMP=	74
900	05/28/97	15:39:18	NOx =	12	NO =	0	SCFM=	12082	TEMP=	74

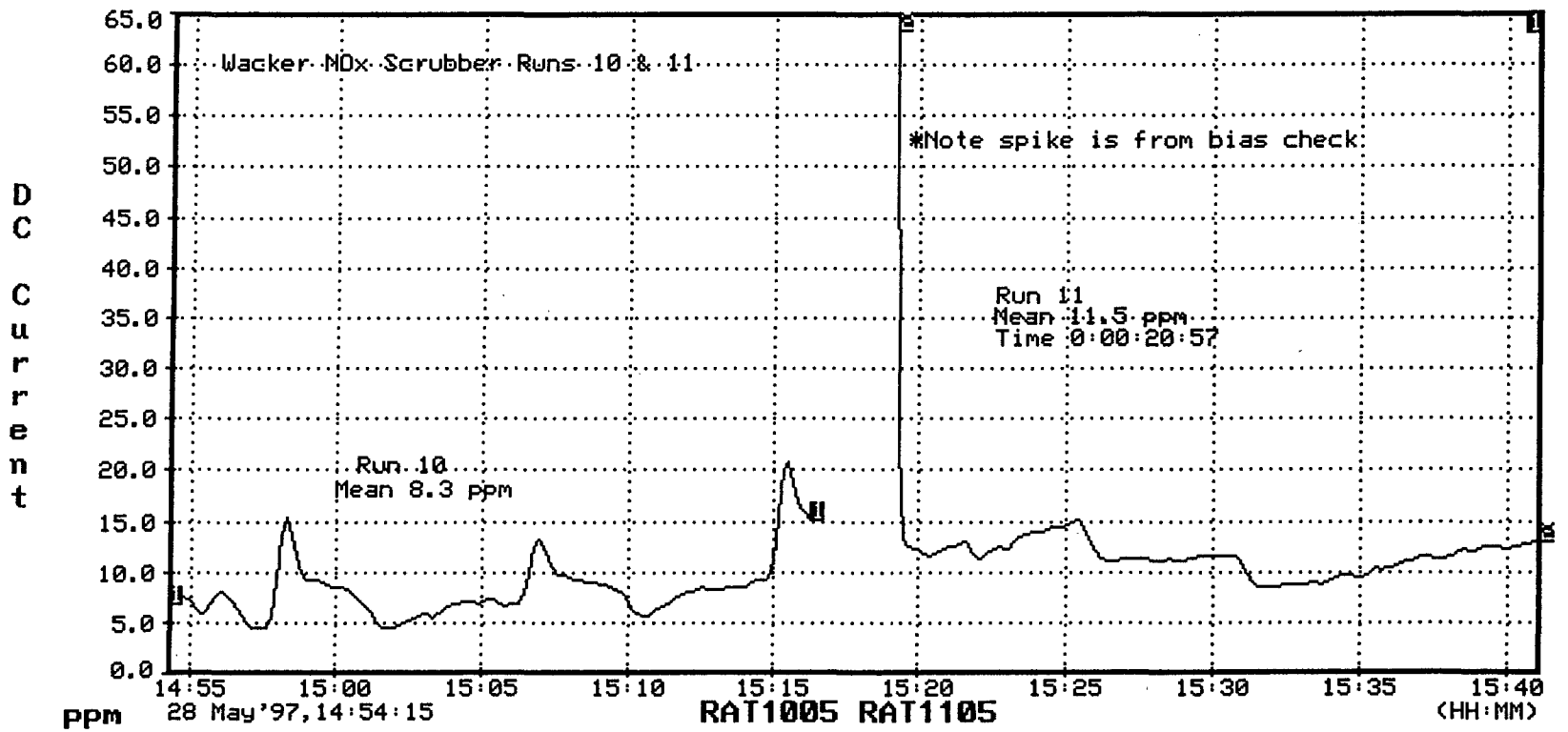

Wacker NOx Scrubber Run 1
Time 0:00:22:00
Mean 15.9 ppm
65.0
60.0
55.0
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
DC Current
ppm
9:20
9:25
9:30
9:35
28 May'97,09:16:22
RAT105
(HH:MM)

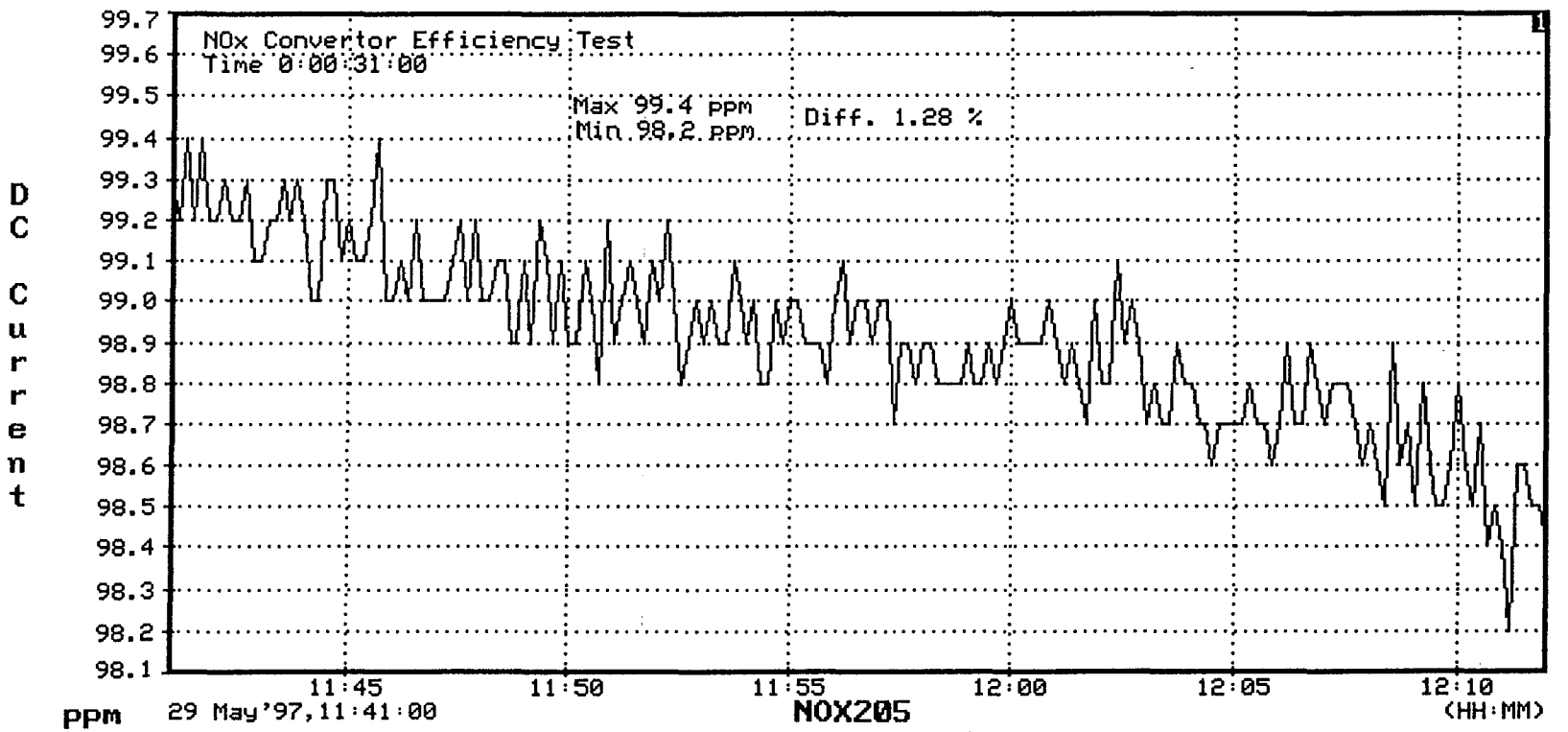

Wacker NOx Scrubber Runs 2 & 3
Run 2 Mean 16.9 ppm
Run 3 Mean 24.3 ppm
DC Current
65.0
60.0
55.0
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
11:15
11:20
11:25
11:30
11:35
11:40
11:45
11:50
11:55
ppm
28 May'97,11:13:46
RAT205 RAT305
(HH:MM)


Wacker NOx Scrubber Runs 4 & 5
65.0
60.0
55.0
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
DC Current
Run 4
Mean 13.6 ppm
Run 5
Mean 24.1 ppm
12:10
12:15
12:20
12:25
12:30
12:35
12:40
12:45
12:50
12:55
(HH:MM)
ppm
28 May'97,12:06:47
RAT405 RAT505


Wacker NOx Scrubber Runs 6 & 7
65.0
60.0
55.0
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
DC Current
Run 6
Mean 16.0 ppm
Run 7
Mean 19.7 ppm
13:05
13:10
13:15
13:20
13:25
13:30
13:35
13:40
13:45
13:50
(HH:MM)
ppm
28 May'97,13:03:48
RAT605 RAT705


Wacker NOx Scrubber Runs 8 & 9
65.0
60.0
55.0
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
DC Current
Run 8
Mean 10.1 ppm
Run 9
Mean 8.8 ppm
14:00
14:05
14:10
14:15
14:20
14:25
14:30
14:35
14:40
14:45
(HH:MM)
ppm
28 May'97,13:58:18
RAT805 RAT905


Wacker NOx Scrubber Runs 10 & 11
*Note spike is from bias check
Run 11
Mean 11.5 ppm
Time 0:00:20:57
Run 10
Mean 8.3 ppm
DC Current
65.0
60.0
55.0
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
14:55
15:00
15:05
15:10
15:15
15:20
15:25
15:30
15:35
15:40
ppm
28 May'97,14:54:15
RAT1005 RAT1105
(HH:MM)


NOx Convertor Efficiency Test
Time 0:00:31:00
Max 99.4 ppm
Min 98.2 ppm
Diff. 1.28 %
1
99.7
99.6
99.5
99.4
99.3
99.2
99.1
99.0
98.9
98.8
98.7
98.6
98.5
98.4
98.3
98.2
98.1
DC Current
11:45
11:50
11:55
12:00
12:05
12:10
(HH:MM)
ppm
29 May'97,11:41:00
NOX205

NOx Drift Correction

Wacker Siltronic 05/28/97
NOx Scrubber

Test Length time **22** min

Number of Completed Runs			Run 1	Run 2	Run 3	Run 4	Run 5	Run 6	Run 7	Run 8	Run 9	Run 10	Run 11
System Calibration Time - Initial		Tci	9:05	11:04	11:04	12:01	12:33	12:59	13:27	13:56	14:22	14:50	15:18
Test Time-Starting		Tts	9:15	11:14	11:37	12:07	12:36	13:04	13:32	13:58	14:26	14:54	15:20
Test Time-Ending		Tte	09:37	11:36	11:59	12:29	12:58	13:26	13:54	14:20	14:48	15:16	15:41
System Calibration Time - Final		Tcf	9:40	12:01	12:01	12:33	12:59	13:27	13:56	14:22	14:50	15:18	15:45
Test Mid-point Time		Tx	09:26	11:25	11:48	12:18	12:47	13:15	13:43	14:09	14:37	15:05	15:30
Nitrogen Oxides	NOx	Span	**250**	**250**	**250**	**250**	**250**	**250**	**250**	**250**	**250**	**250**	**250**
Indicated average-Dry	ppmv	Cid	15.9	16.9	24.3	13.6	24.1	16.0	19.7	10.1	8.8	8.3	11.5
Cylinder Value - High Range calibration gas	ppmv	Cma	72.0	72.0	72.0	72.0	72.0	72.0	72.0	72.0	72.0	72.0	72.0
Cylinder Value - Low Range (Zero) calibration gas	ppmv	Coa	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
System Calibration Response - High Range gas - Initia	ppmv	Cmi	74.7	75.2	75.2	76.2	75.5	76.0	75.8	75.9	75.7	75.9	76.1
System Calibration Response - Low Range gas - Initial	ppmv	Coi	0.6	0.5	0.5	1.9	0.8	1.3	1.0	0.9	0.6	1.0	0.8
System Calibration Response - Low Range gas - Final	ppmv	Cof	1.4	1.9	1.9	0.8	1.3	1.0	0.9	0.6	1.0	0.8	0.8
System Calibration Response - High Range gas - Final	ppmv	Cmf	75.9	76.2	76.2	75.5	76.0	75.8	75.9	75.7	75.9	76.1	76.3
Actual average - Dry (Corrected for Drift)	ppmv	Cgas	14.35	15.34	21.99	11.87	22.20	14.32	18.03	8.97	7.67	7.10	10.22

Relative Accuracy Field Data

Client Wacker Siltronic
Date 5/28/97
Observer

Source NO_x Scrubber
Location outlet
Horizon Personnel DRBBTF

#	Time :		900		905	recal 1104		1201	1233	~~1258~~ 1259	1327	1356	1422	1450	1518	1545			
	Gas/ Range	Bottle Value	Instrument Response		Run 1	Run 2	Run 3	Run 4	Run 5	Run 6	Run 7	Run 8	Run 9	Run 10	Run 11	Run ~~12~~			Final Bias
34	NO_x	220	220	Start															
11		72.0	75.5	Bias	74.7	75.2	—	76.2	75.5	76.0	75.8	75.9	75.7	75.9	76.1	76.3			
N_2	0-270	0.0	0.0		0.6	0.5	—	1.9	0.8	1.3	1.0	0.9	0.6	1.0	0.8	0.8			
				End	75.1		76.7												
				Bias	1.4		1.9												
					9:40		1201	S4	S5	S6	S7	S8	S9	S10	S11	~~S~~			
	____			Start				E3	E4	E5	E6	E7	E8	E9	E10	E11			
				Bias															
	0-																		
				End															
				Bias															
				Start	915	1114	1137	1207	1236	13:04	1332	1358	1426	1454	1519				
				End	937	1136	1159	1229	1258	13:26	1354	1420	1448	1516	1541				
	AVG	NO_x	PPM		15.~~9~~	16.9	24.3	13.6	24.~~1~~	16.0	19.~~7~~	10.1	8.8	8.3	17.5				
		Instrument Response		High															
				Mid															
				Low															

Notes:

Their clock is 3min behind Rustrack Time

Leak Check X
Response Time 20

FLOW RATES

Flow Rate Determination

Client	Wacker Siltronic	Sampling	1	2	3	4	5	6	7	8	9	10	11
Source	NOx Scrubber	Point											
Location	Portland, OR	1	0.2010	0.2512	0.2083	0.2210	0.1854	0.1889	0.2024	0.2132	0.2512	0.18	0.18
Date	May 28, 97	2	0.1707	0.2657	0.2241	0.2719	0.2686	0.2508	0.2605	0.2689	0.2915	0.24	0.28
Testers	drb/btf	3	0.2257	0.2937	0.2553	0.2712	0.2911	0.2975	0.3326	0.2441	0.3542	0.36	0.30
File	wacker97	4	0.2347	0.2536	0.2402	0.2351	0.2807	0.2655	0.2746	0.2691	0.3180	0.24	0.27
Equipment	Short Ridge;5s-2	5	0.2052	0.2442	0.2799	0.2426	0.2772	0.2653	0.2184	0.2218	0.2947	0.26	0.30
Total Runs	11	6	0.2008	0.2199	0.2247	0.2561	0.2502	0.2365	0.2314	0.2419	0.2699	0.24	0.26
Pts per Run	12	7	0.2126	0.1851	0.1565	0.1964	0.1947	0.1833	0.1922	0.1741	0.1549	0.16	0.14
		8	0.2562	0.1866	0.1824	0.1964	0.1812	0.1872	0.1689	0.1809	0.1604	0.18	0.16
		9	0.2215	0.2285	0.2174	0.2454	0.2350	0.2570	0.2097	0.2622	0.2087	0.22	0.22
		10	0.2169	0.2319	0.2208	0.2489	0.2534	0.2300	0.2827	0.2428	0.2657	0.24	0.24
		11	0.2291	0.2107	0.2111	0.2156	0.2222	0.2368	0.2570	0.1924	0.2017	0.22	0.22
		12	0.1985	0.2063	0.1913	0.2052	0.2064	0.2229	0.1957	0.1890	0.2120	0.18	0.19
		13											
		14											
		15											
		16											
		SQRT(dP)	0.4625	0.4800	0.4653	0.4828	0.4855	0.4836	0.4831	0.4731	0.4949	0.4734	0.4764

Symbol	Definitions, Units	Method/Notes	1	2	3	4	5	6	7	8	9	10	11
	Traverse Time		09:50	11:40	11:47	12:20	12:30	13:20	13:30	14:25	14:35	15:35	15:40
Ds	Duct diameter	in	39.4	39.4	39.4	39.4	39.4	39.4	39.4	39.4	39.4	39.4	39.4
As	Cross Section	in²	1,217.7	1,217.7	1,217.7	1,217.7	1,217.7	1,217.7	1,217.7	1,217.7	1,217.7	1,217.7	1,217.7
Cp	Pitot Coef.		0.8248	0.8248	0.8248	0.8248	0.8248	0.8248	0.8248	0.8248	0.8248	0.8248	0.8248
Ts	Duct temperature	°F	73.4	74.6	74.6	74.6	73.8	73.8	73.8	75.8	75.8	75.8	75.8
Ts	Duct temperature	°R	533.1	534.3	534.3	534.3	533.5	533.5	533.5	535.5	535.5	535.5	535.5
Tdb	Dry bulb temperature	°F	73.4	74.6	74.6	74.6	73.8	73.8	73.8	75.8	75.8	75.8	75.8
Twb	Wet bulb temperature	°F	68.6	69.4	69.4	69.4	68.2	68.2	68.2	70.4	70.4	70.4	70.4
Pbar	Barometric Pressure	in Hg	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00
Pg	Static Pressure	in H2O	-0.07	-0.11	-0.11	-0.10	-0.10	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15
Ps	Duct Pressure	in Hg	30.00	29.99	29.99	29.99	29.99	29.99	29.99	29.99	29.99	29.99	29.99
dp^½			0.4625	0.4800	0.4653	0.4828	0.4855	0.4836	0.4831	0.4731	0.4949	0.4734	0.4764
Bws	Moisture, % Stack	(Psychometry)	2.27	2.32	2.32	2.32	2.21	2.21	2.21	2.39	2.39	2.39	2.39
mfg	Mole fraction dry gas		97.7%	97.7%	97.7%	97.7%	97.8%	97.8%	97.8%	97.6%	97.6%	97.6%	97.6%
Md	Molecular weight Dry		28.95	28.95	28.95	28.95	28.95	28.95	28.95	28.95	28.95	28.95	28.95
Ms	Molecular weight Wet		28.71	28.70	28.70	28.70	28.71	28.71	28.71	28.69	28.69	28.69	28.69
vs	Velocity stack	fpm	1,539	1,600	1,551	1,609	1,616	1,610	1,609	1,579	1,652	1,580	1,590
Qa	Flowrate actual	acf/min	13,018	13,529	13,114	13,607	13,669	13,618	13,604	13,350	13,965	13,358	13,443
Qsd	Flowrate @std	dscf/min	12,625	13,083	12,682	13,159	13,253	13,202	13,189	12,870	13,463	12,878	12,960

HORIZON ENGINEERING LLC
13585 N.E. Whitaker Way
Portland, OR 97230
Phone (503)255-5050
Fax (503)255-0505

VOLUME FLOWRATE MEASUREMENT

Plant Wacker

Sampling Location NOx scrubber

Test Conditions Normal

Date 5-29-97 Time

Duct Dimensions

Duct Area in²

Gauge I.D. Micro in H20 By JTF

Post Test Leak Check

Cyclonic Flow ? Yes__ No X Avg Null Angle ____

P_o = Barometric Pressure 30.0 in Hg

C_p = Pitot Coefficient .85332 0.82976

Pitot I.D. ~~603~~ S-2

Run #	R1	not used								
Time	9 50	10:00								
Pt/										
1	.2010	.1843								
2	.1707	.1779								
3	.2257	.2196								
4	.2347	.2782								
5	.2052	.2111								
6	.2008	.11060								
7	.2426	.2371								
8	.2862	.2731								
9	.2245	.2778								
10	.2169	.2580								
11	.2291	.2361								
12	.1885	.1878								
Avg √ΔP										

Symbol	Definition, Units	Method/Equation	Run 1	Run 2	Run 3	Average
T_{db}	Dry bulb temp., °F		73.4			
T_{wb}	Wet bulb temp., °F		68.6			
P_{stat}	Static press., in H_2O		-.0673			
T_s	Duct temp., °R	T_{db} + 460				
P_s	Duct press., in H_g	P_o ± Pstat/13.6				
S		Avg √ΔP x √ T_s				
mv	% H_2O in gas stream	Psychrometry				
md	Mole fraction dry gas	1.00 - mv/100				
Md	Molecular weight of dry gas	Gas analysis				
Ms	Molecular wt of act. gas	Ms = mdMd + 18 (1-md)				
Vs	Velocity, fpm	Vs = 5125s (1/PsMs)$^{1/2}$ (Cp)				
qa	Actual flowrate, acfm	qa = VsAs/144				
qs	Flowrate @ std cond, scfm	qs = 0.123 VsAs md Ps / Ts				

Horizon Engineering
13585 NE Whitaker Way
Portland, OR 97230
503/255-5050 FAX 503/255-0505

VOLUME FLOWRATE MEASUREMENT

Plant Wacker
Sampling Location NOx Scrubber
Test Conditions
Date 5/28 Time
Duct Dimensions
Duct Area in²
Gauge I.D. S-2 in H20 By BTE
Post Test Leak Check

P_o = Barometric Pressure 30.0 in Hg
C_p = Pitot Coefficient .7.7.. 0.82476
Pitot I.D. ~~S-T~~ S-2

Run #										
Time	1140	1147	1220	1230	1320	1330				
Pt/	2	3	4	5	6) 89	7				
NW 1	2512	2083	2210	1854	1887	2024				
2	2657	2241	2719	2686	2508	2605				
3	2937	2553	2712	2911	2975	3326				
4	2536	2402	2351	2807	2655	2746				
5	.1442	2799	2426	2772	2653	2184				
6	2199	2247	2561	2507	2365	2314				
NE 7	.1851	1565	1964	1947	1833	1922				
8	.1866	1824	1964	1812	1872	1689				
9	.2285	2174	2454	2356	2570	2097				
10	2319	2208	2489	2534	2300	2827				
11	2107	2111	2156	2222	2368	2570				
12	2063	1913	2052	2064	2229	1957				
Avg $\sqrt{\Delta P}$										

Symbol	Definition, Units	Method/Equation	Run 1	Run 2	Run 3	Average
T_{db}	Dry bulb temp., °F		74.6		73.8	
T_{wb}	Wet bulb temp., °F		69.4		68.2	
P_{stat}	Static press., in H_2O		-.1111	-.1001	-.1526	
T_s	Duct temp., °R	T_{db} + 460				
P_s	Duct press., in H_g	$P_o \pm$ Pstat/13.6				
S		Avg $\sqrt{\Delta P}$ x $\sqrt{T_s}$				
mv	% H_2O in gas stream	Psychrometry				
md	Mole fraction dry gas	1.00 - mv/100				
Md	Molecular weight of dry gas	Gas analysis				
Ms	Molecular wt of act. gas	Ms = mdMd + 18 (1-md)				
Vs	Velocity, fpm	Vs = 5125s $(1/PsMs)^{1/2}$ (Cp)				
qa	Actual flowrate, acfm	qa = VsAs/144				
qs	Flowrate @ std cond, scfm	qs = 0.123 VsAs md Ps / Ts				

Horizon Engineering
13585 NE Whitaker Way
Portland, OR 97230
503/255-5050 FAX 503/255-0505

VOLUME FLOWRATE MEASUREMENT

Plant _____

Sampling Location _____

Test Conditions _____

Date _____ Time _____

Duct Dimensions _____

Duct Area _____ in^2

Gauge I.D. _____ in H20 By _____

Post Test Leak Check _____

P_o = Barometric Pressure 30.0 in Hg

C_p = Pitot Coefficient 0.82476

Pitot I.D. 55-2

Run #	8	9	10	11						
Time	1425	1435	1535	1540						
Pt/		143								
1	2132	2512	.18	.18						
2	2689	2915	.24	.28						
3	2411	3542	.36	.30						
4	2691	3160	.24	.27						
5	2218	2947	.26	.30						
6	2414	2699	.24	.26						
1	1741	1549	.16	.14						
2	1809	1804	.18	.16						
3	2622	2087	.27	.22						
4	2428	2657	.24	.24						
5	1924	2017	.22	.22						
6	1890	2120	.16	.19						
Avg $\sqrt{\Delta P}$										

Symbol	Definition, Units	Method/Equation	Run 1	Run 2	Run 3	Average
T_{db}	Dry bulb temp., °F			↗	70.4	
T_{wb}	Wet bulb temp., °F			↘	75.8	
P_{stat}	Static press., in H_2O		.1147		-.15	
T_s	Duct temp., °R	T_{db} + 460				
P_s	Duct press., in H_g	$P_o \pm$ Pstat/13.6				
S		Avg $\sqrt{\Delta P}$ x $\sqrt{T_s}$				
mv	% H_2O in gas stream	Psychrometry				
md	Mole fraction dry gas	1.00 - mv/100				
Md	Molecular weight of dry gas	Gas analysis				
Ms	Molecular wt of act. gas	Ms = mdMd + 18 (1-md)				
Vs	Velocity, fpm	Vs = 5125s $(1/PsMs)^{1/2}$ (Cp)				
qa	Actual flowrate, acfm	qa = VsAs/144				
qs	Flowrate @ std cond, scfm	qs = 0.123 VsAs md Ps / Ts				

SCOEPA00022503

CALIBRATION GAS CERTIFICATES

#34

AIR LIQUIDE

1426 Fairmont Pkwy
LaPorte, TX 77571
Phone (713) 474-8400 **Fax** (713) 474-8419
USA (800) 248-1427

CERTIFICATION OF CYLINDER #

CC53888

Customer : Horizon Eng.
Date Made : 1/20/97
Mix # : LAPX19321
P.O. Number : 1774
AGZ Doc. # : 1595380-1A
Item Number :
Valve Type : CGA 660
Blend Type : GAS CERTIFIED
Cyl. Size : 30AL 144 SCF

Mole	Components	Equipment Used: Scale	Instr.	Standard
Balance	NITROGEN	1628		
957 PPM	CARBON MONOXIDE	2486	3024	196
23.20 %	CARBON DIOXIDE	1628	3024	GMIS41
220 PPM	NITRIC OXIDE	2486	3024	1208
88.8 PPM	METHANE	1628	786B	1142

Valid Until: 20 January, 1999

Requested Notes	Accuracy of Standard			
	Certified* and Certified Plus		Weight Tracable	
		Non-React.	React.		
	1 % - 50 %	± 1% (*±2%)	± 2%	20 ppm - 50 %	± 1%
	100 ppm - <1 %	± 2%	± 3%	2 ppm - <20 ppm	± 2%
	10 ppm - <100 ppm	± 3%	± 5%		
	1 ppm - <10 ppm	± 10%	± 10%		
	Improper storage or use may affect the accuracy of this standard.				

ISO 9002 CERTIFIED SINCE APRIL 1994

This mixture was certified by analysis using one or more calibration standards prepared with scales certified against weights traceable to N.I.S.T. #822/254143-94.

Prepared by _____

#11

AIR LIQUIDE™

1426 Fairmont Pkwy
LaPorte, TX 77571
Phone (281) 474-8400 **Fax** (281) 474-8419
USA (800) 248-1427

CERTIFICATION OF CYLINDER #

CC99500

Customer : Bob Stewart
Date Made : 2/7/97
Mix # : LAPX20208
P.O. Number : 1774
AGZ Doc. # : 1598355-1ARR
Item Number :
Valve Type : CGA 660
Blend Type : GAS CERTIFIED
Cyl. Size : 30AL 144 SCF

Mole	Components	Equipment Used Scale	Instr.	Standard
Balance	NITROGEN	1628		
311 PPM	CARBON MONOXIDE	1628	3024	196
7.25 %	CARBON DIOXIDE	1628		
72.0 PPM	NITRIC OXIDE	1628	3024	GMIS21
25.1 PPM	METHANE	1628	786B	1142

Valid Until: 7 February, 1999

Requested Notes

Accuracy of Standard

Certified* and Certified Plus	Non-React.	React.	Weight Tracable	
1 % - 50 %	± 1% (*±2%)	± 2%	20 ppm - 50 %	± 1%
100 ppm - <1 %	± 2%	± 3%	2 ppm - <20 ppm	± 2%
10 ppm - <100 ppm	± 3%	± 5%		
1 ppm - <10 ppm	± 10%	± 10%		

Improper storage or use may affect the accuracy of this standard.

ISO 9002 CERTIFIED SINCE APRIL 1994

This mixture was certified by a combination of weight and analysis (depending on component) using scales certified against weights traceable to N.I.S.T. #822/254143-94, or calibration standards prepared in that manner.

Prepared by _____

HORIZON ENGINEERING LLC

13585 N.E. Whitaker Way • Portland, OR 97230
Phone (503)255-5050 • Fax (503)255-0505
horizone@teleport.com

February 25, 1997

Mr. Tom McCue
Wacker Siltronics Corporation
P.O. Box 83180
Portland, Oregon 97283-0180

Dear Mr. McCue:

A Cylinder Gas Audit (CGA) of the NO_x Continuous Monitoring System (CEMS) on the NO_x scrubbing system was done on February 25, 1997. The results are attached. The system was tested to satisfy the Oregon Department of Environmental Quality (ODEQ) Discharge Permit requirement for performance audits for CEMS.

Summary of Results

Both analyzers in the system met the acceptable accuracy criteria of less than 15% of the audit value or ± 5 ppm, whichever is higher. The accuracy of the NO CEM was calculated to be 2.0% and -2.5% for audit points 1 and 2; respectively. The accuracy of the NO_x CEM was calculated to be 1.5% and -2.7% respectively. Test data was recorded in the Data Assessment Report in the Appendix.

Sampling and Analytical Procedures

The work was done according to guidelines of the ODEQ Continuous Monitoring Manual that references EPA CFR 40, Pt. 60, Appendix B, Performance Specification 2 for NO_x, and Appendix F.

SCOEPA00022507

For the CGA, each monitor (NO and NO_x) was challenged three times with three independent audit standards: one zero standard of N_2, and two NIST traceable cylinders of NO gas at concentrations equal to 26% and 55% of the instrument span. The audit gas was introduced at the connection between the probe and the sample line with the CEMS in the normal operating configuration.

Accuracy was calculated from the average of the three measured values using calculations in Appendix F.

Discussion

The data should be valid in all respects; documentation for quality assurance checks is in the Appendix.

If you have any questions, please contact us.

Sincerely,

HORIZON ENGINEERING

Joe D Fiedl

Joe D. Fiedler

cc: Frank Deaver, Deaver Environmental Group
Eric Spiering, Wacker Siltronic

attachments: Data Assessment Report
CEMS Data
Calibration Gas Certificates

Data Assessment Report

Client	Deaver Environmental Group	Period Ending Date	
Plant name	Wacker Siltronics		
Source Unit No.	NOx scrubbing system outlet	Date of Audit	02/25/97
Audited by	Joe Fiedler, Horizon Engineering		

CEMS Information:

Manufacturer	Horiba	Type:	NDIR w/Cross Flow Modulation
Model No.	ENDA-1330		Trimer Corp.
Serial No.	0439	Location:	NOx Control Room
Applicable Regulations:			

Cylinder Gas Audit (CGA) for:

Pollutant NOx Units ppm

Span Value 100

		Zero	Audit Point 1	Audit Point 2	
Cylinder ID No.			XC006159B	XC006129B	
Date of Certification			5/3/96	5/3/96	
Type of Certification			NIST-SRM	NIST-SRM	
Certified Audit Value			26.4	55.3	
% of Span Value			26%	55%	

CEMS Response Time	58 seconds
Sampled for 2x response time, +	

		Zero	Audit Point 1	Audit Point 2	Time
CEMS Response Value	NO Analyzer / Model # CFA-311A Mfg# 568833012				
Run 1		-0.60	27.50	54.70	1250-1300
Run 2		0.70	27.00	54.40	1300-1305
Run 3		0.50	26.30	56.20	1305-1310
Average			26.93	53.90	
Accuracy, % difference			2.0%	-2.5%	
Accuracy, difference, pp			0.5	-1.4	

Criteria for excessive inaccuracy: the greater of these two values:

15% of audit value	ppm	4	**8**
or,	ppm	**+/- 5**	+/- 5

		Zero	Audit Point 1	Audit Point 2	Time
CEMS Response Value	NOx Analyzer / Model # CFA-311A Mfg# 568833011				
Run 1		0.70	27.90	54.30	1250-1300
Run 2		1.00	26.40	54.00	1300-1305
Run 3		0.90	26.10	53.10	1305-1310
Average			26.80	53.80	
Accuracy, % difference			1.5%	-2.7%	
Accuracy, difference, pp			0.4	-1.5	

Criteria for excessive inaccuracy: the greater of these two values:

15% of audit value	ppm	4	**8**
or,	ppm	**+/- 5**	+/- 5

Comments

Heated Line Temp - 196 degrees F

Confirm Logbook Entry no*

*inadvertently not done

SCOEPA00022509

#N3

BOC GASES

4715 N.E. 78th Street
Vancouver WA 98665
Telephone 360-695 1257
603 283 2561
FAX 360-696-3975

774631

ANALYTICAL REPORT

To: Byrnes

Date Reported: 05-03-96
Test Number: 5480
Fill Date: 05-01-96
Expire Date: 05-01-98
Product Vol: 140 cf

Material Submitted: 27 ppm NO in Nitrogen

Specification Number: BOC Specifications

Method of Analysis: Chemiluminescence

Analyzed: Cylinder No. XC0061598 Size 152. CGA 660 2000 psi

Component	Specification	Concentration
Nitric Oxide	27 ppm	26.4 ppm
Nitrogen	Balance	Balance

Analytical Accuracy = +/- 1% relative

Traceable to NIST SRM 2629A

By [signature]
Authorized Signature

WHITE Customer Copy

SCOEPA00022510

#N2

BOC GASES

3215 N.E. 78th Street
Vancouver, WA 98665
Telephone: 360 695 1267
503-283-2561
FAX 360-698-3975

774634

ANALYTICAL REPORT

To: Byrnes

Date Reported: 05-03-96
Test Number: 5479
Fill Date: 05-01-96
Expire Date: 05-01-98
Product Vol: 140 cf

Material Submitted. 55 ppm NO in Nitrogen

Specification Number: BOC Specifications

Method of Analysis: Chemiluminescence

Analyzed: Cylinder No. XC0061298 Size 152, CGA 660 2000 psi

Component	Specification	Concentration
Nitric Oxide	55 ppm	55.3 ppm
Nitrogen	Balance	Balance

Analytical Accuracy = +/- 1% relative

Traceable to NIST SRM 2629A

By [signature]
Authorized Signature

Check for OFF SPEC result.

WHITE - Customer Copy

NOx Scrubber Emissions for 1997							
	Jan	819.23					
	Feb	391.27					
	Mar	888.82					
	Apr	995.82					
	May	227.23					
	Jun	902.56					
	Jul	1043.64					
	Aug	820.65					
	Sep	816.38					
	Oct	789.69					
	Nov	427.26					
	Dec	302.57					
Pounds NOx:		8425.12					
Data logger Up time							
Total days:		369	(1/2/97 to 1/6/98)				
Days not operating:		24					
% operating time:		93%					
Estimating total emissions:							
		9011.215	lbs	or	4.5	tons	
Highlighted numbers are invalid data due to lack of appropriate data per CEM Manual, 1992							

SCOEPA00022512

SCFM

1	12/16/97	0:31:35	4	0	16349	61
2	12/16/97	1:31:28	3	0	16350	61
3	12/16/97	2:31:27	6	0	16344	62
4	12/16/97	3:31:19	5	0	16339	62
5	12/16/97	4:31:12	2	0	16324	63
6	12/16/97	5:31:06	3	0	16306	63
7	12/16/97	6:30:57	3	0	16348	63
8	12/16/97	7:30:50	3	0	16351	63
1	12/16/97	8:30:45	3	0	16357	63
2	12/16/97	9:30:38	4	0	16344	64
3	12/16/97	10:30:31	6	1	16344	64
4	12/16/97	11:30:24	6	1	16332	65
5	12/16/97	12:30:15	6	1	16341	65
6	12/16/97	13:30:10	5	0	16333	65
7	12/16/97	14:30:02	6	0	16360	65
8	12/16/97	15:29:55	7	1	16348	65
9	12/16/97	16:29:48	8	2	16381	64
10	12/16/97	17:29:39	6	1	16432	63
11	12/16/97	18:29:33	3	0	16457	62
12	12/16/97	19:29:24	2	0	16471	62
13	12/16/97	20:29:17	2	0	16537	62
14	12/16/97	21:29:10	2	0	16547	61
15	12/16/97	22:29:02	4	0	16549	60
16	12/16/97	23:28:54	6	0	16551	60
1	12/17/97	0:28:47	5	0	16548	60
2	12/17/97	1:28:39	6	0	16551	60
3	12/17/97	2:28:32	5	0	16550	61
4	12/17/97	3:28:24	5	1	16548	61
5	12/17/97	4:28:16	3	1	16548	61
6	12/17/97	5:28:10	0	0	16548	61
7	12/17/97	6:27:59	0	0	16548	61
1	12/17/97	19:11:04	0	0	-762	46
2	12/17/97	20:10:56	0	0	4864	46
3	12/17/97	21:10:47	1	0	-2633	46
4	12/17/97	22:10:41	1	0	11922	56
5	12/17/97	23:10:38	0	0	16686	60
1	12/18/97	0:10:30	0	0	23761	69
1	12/18/97	1:11:04	0	0	23799	62
2	12/18/97	2:10:56	0	0	24357	59
3	12/18/97	3:10:54	3	0	24501	58
4	12/18/97	4:10:46	3	0	24501	58
5	12/18/97	5:10:39	3	0	24501	57
6	12/18/97	6:10:32	6	0	24440	58
7	12/18/97	7:10:25	2	0	24353	58
8	12/18/97	8:10:18	2	0	24349	58
9	12/18/97	9:10:10	2	0	24249	58
10	12/18/97	10:10:02	5	0	24249	58
11	12/18/97	11:09:56	2	0	24206	58
12	12/18/97	12:09:49	4	0	24189	58
1	12/18/97	13:09:42	5	0	24138	58
2	12/18/97	14:09:35	6	0	26427	58
3	12/18/97	15:09:28	6	0	25469	59
1	12/18/97	16:09:21	5	0	13418	59
2	12/18/97	17:09:13	5	0	13459	59
3	12/18/97	18:09:06	4	0	13553	58
4	12/18/97	19:08:58	4	0	13553	58
5	12/18/97	20:08:51	3	0	13482	58
6	12/18/97	21:08:44	3	0	13486	58
7	12/18/97	22:08:35	5	0	13451	58
8	12/18/97	23:08:30	4	0	13433	58

SCFM in: September '97 ≈ 10-11,000 SCFM
October ≈ 13,500 - 15,000
November ≈ 15,500 - 16,000

1	12/16/97	0:31:35	0.48	0	32.767	99	1	0
2	12/16/97	1:31:28	0.38	0	32.767	66	0	0
3	12/16/97	2:31:27	0.75	0	32.767	55	0	0
4	12/16/97	3:31:19	0.55	0	32.767	121	0	0
5	12/16/97	4:31:12	0.2	0	32.767	88	0	0
6	12/16/97	5:31:06	0.32	0	32.767	77	0	0
7	12/16/97	6:30:57	0.48	0	32.767	33	0	0
8	12/16/97	7:30:50	0.43	0	32.767	88	0	0
1	12/16/97	8:30:44	0.39	0	0.015	66	0	0
2	12/16/97	9:30:38	0.44	0	0.06	88	0	0
3	12/16/97	10:30:31	0.69	0	0.129	99	0	0
4	12/16/97	11:30:24	0.73	0	0.201	99	0	0
5	12/16/97	12:30:15	0.73	0	0.275	77	0	0
6	12/16/97	13:30:09	0.63	0	0.337	77	0	0
7	12/16/97	14:30:01	0.71	0	0.409	77	0	0
8	12/16/97	15:29:55	0.88	0	0.497	110	0	0
9	12/16/97	16:29:48	0.9	0	0.586	77	0	0
10	12/16/97	17:29:39	0.75	0	0.661	66	0	0
11	12/16/97	18:29:33	0.3	0	0.691	66	0	0
12	12/16/97	19:29:24	0.19	0	0.71	66	0	0
13	12/16/97	20:29:17	0.22	0	0.732	88	0	0
14	12/16/97	21:29:10	0.3	0	0.761	66	0	0
15	12/16/97	22:29:02	0.42	0	0.803	55	0	0
16	12/16/97	23:28:54	0.71	0	0.875	88	0	0
1	12/17/97	0:28:48	0.65	0	0.94	44	1	0
2	12/17/97	1:28:39	0.7	0	1.01	66	0	0
3	12/17/97	2:28:32	0.65	0	1.075	77	0	0
4	12/17/97	3:28:24	0.58	0	1.133	88	0	0
5	12/17/97	4:28:15	0.4	0	1.173	99	0	0
6	12/17/97	5:28:10	0.01	0	1.174	55	0	0
7	12/17/97	6:28:01	0	0	1.174	363	0	0
1	12/17/97	19:11:03	0	0	32.767	33	0	0
2	12/17/97	20:10:55	0	0	32.767	0	0	0
3	12/17/97	21:10:47	0.01	0	32.767	0	0	0
4	12/17/97	22:10:41	0.06	0	32.767	22	0	0
5	12/17/97	23:10:38	0.02	0	32.767	561	0	0
1	12/18/97	0:10:30	0.02	0	32.767	0	1	0
1	12/18/97	1:11:04	0	0	32.767	11	0	0
2	12/18/97	2:10:56	0.04	0	32.767	0	0	0
3	12/18/97	3:10:54	0.58	0	32.767	11	0	0
4	12/18/97	4:10:46	0.58	0	32.767	0	0	0
5	12/18/97	5:10:39	0.6	0	32.767	11	0	0
6	12/18/97	6:10:33	1.01	0	32.767	0	0	0
7	12/18/97	7:10:25	0.42	0	32.767	11	0	0
8	12/18/97	8:10:18	0.27	0	32.767	0	0	0
9	12/18/97	9:10:10	0.27	0	32.767	0	0	0
10	12/18/97	10:10:03	0.88	0	32.767	11	0	0
11	12/18/97	11:09:57	0.38	0	32.767	0	0	0
12	12/18/97	12:09:49	0.71	0	0.07	11	0	0
1	12/18/97	13:09:42	0.91	0	0.162	0	0	0
2	12/18/97	14:09:34	1.25	0	0.287	99	0	0
3	12/18/97	15:09:28	1.04	0	0.391	88	0	0
1	12/18/97	16:09:21	0.5	0	0.441	33	0	0
2	12/18/97	17:09:13	0.52	0	0.493	0	0	0
3	12/18/97	18:09:06	0.4	0	0.533	0	0	0
4	12/18/97	19:08:58	0.4	0.01	0.579	11	0	0
5	12/18/97	20:08:51	0.29	0	0.607	0	0	0
6	12/18/97	21:08:44	0.34	0	0.641	0	0	0
7	12/18/97	22:08:36	0.54	0	0.695	11	0	0
8	12/18/97	23:08:30	0.36	0	0.731	0	0	0

SCOEPA00022514

1	1/5/98	0:55:49	2	0	13151	58
2	1/5/98	1:55:42	3	0	13121	57
3	1/5/98	2:55:34	3	0	13121	57
4	1/5/98	3:55:27	3	0	13078	58
5	1/5/98	4:55:20	4	0	13017	58
6	1/5/98	5:55:14	2	0	13067	57
7	1/5/98	6:55:08	3	0	13096	57
8	1/5/98	7:55:00	3	0	13157	57
9	1/5/98	8:54:53	1	0	13082	57
1	1/5/98	9:54:47	3	0	13125	57
2	1/5/98	10:54:40	1	0	12955	57
3	1/5/98	11:54:35	2	0	12954	57
4	1/5/98	12:54:27	5	0	13098	59
5	1/5/98	13:54:21	8	1	13105	59
6	1/5/98	14:54:13	8	1	13105	59
7	1/5/98	15:54:06	8	1	13033	60
8	1/5/98	16:53:59	2	0	13046	60
9	1/5/98	17:53:51	2	0	13046	60
10	1/5/98	18:53:46	3	0	13033	60
11	1/5/98	19:53:39	1	0	13152	59
12	1/5/98	20:53:32	1	0	13152	59
13	1/5/98	21:53:26	2	0	13053	59
14	1/5/98	22:53:19	3	0	13060	60
15	1/5/98	23:53:12	2	0	13108	60

End of file

SCOEPA00022515

1	1/6/98	0:53:06	0.08	0	14.255	11	1	0
2	1/6/98	1:52:59	0.08	0	14.263	11	0	0
3	1/6/98	2:52:52	0.15	0	14.278	11	0	0
4	1/6/98	3:52:44	0.31	0	14.309	11	0	0
5	1/6/98	4:52:37	0.27	0	14.336	0	0	0
6	1/6/98	5:52:31	0.42	0	14.378	11	0	0
7	1/6/98	6:52:25	0.37	0	14.415	11	0	0
8	1/6/98	7:52:18	0.32	0	14.447	11	0	0
9	1/6/98	8:52:14	0.3	0	14.477	11	0	0
10	1/6/98	9:52:08	0.65	0	14.542	0	0	0
11	1/6/98	10:52:00	0.6	0	14.603	11	0	0
			302.57				33	0

SCOEPA00022516

Acid Etch Pre-Clean Output (Steag -- Operation 3150)

Day	6" Feb. 98 Kcm2	6" Feb. 98 Slices	8" Feb. 98 Kcm2	8" Feb. 98 Slices	Total Outs Feb. 98 Kcm2	Total Outs Feb. 98 Slices
1			532.2	1695	532.2	1695
2	88.8	503	687.8	2190	776.6	2693
3	490.6	2776	74.4	237	565	3013
4	135.7	768	719.1	2290	854.8	3058
5	456.8	2585			456.8	2585
6	296.1	1675	268.5	855	564.6	2530
7	149.7	847	549.2	1749	698.9	2596
8	453.5	2567			453.5	2567
9	268.4	1519	304.9	971	573.3	2490
10	343.3	1943	280.1	892	623.4	2835
11	139	787			139	787
12	139.4	789			139.4	789
13	195.3	1105			195.3	1105
14	318.1	1800	429.4	1367	747.5	3167
15	408.6	2312			408.6	2312
16	318.6	1803	320.3	1020	638.9	2823
17	194.9	1103	592.8	1888	787.7	2991
18	435.6	2688	412.9	1315	848.5	4003
19	219.2	1240	707.7	2254	926.9	3494
20	333.1	1885	198.7	633	531.8	2518
21			551.6	1757	551.6	1757
22	623.2	3526	57.1	182	680.3	3708
23	474.3	2684	288.6	919	762.9	3603
24	241.4	1366	796.8	2538	1038.2	3904
25	235.9	1334	492.4	1568	728.3	2902
26	179.5	1016	707.9	2254	887.4	3270
27			362.7	1155	362.7	1155
28						
29	86.9	492			86.9	492
30	523.8	2964			523.8	2964
31	561	3175	170.5	543	731.5	3718
Mo.Total	**7139**	**40621**	**9335.1**	**29729**	**16474.1**	**70350**
Avg/Day	**793.2**	**4513**	**1037.2**	**3303**	**1830.5**	**7817**

C. Ferrer -- 2/10/98

Acid Etch Pre-clean WIP Levels (Steag -- Operation 3150)

	Day	6" Feb. 98 Slices	6" Feb. 98 Kcm2	8" Feb. 98 Slices	8" Feb. 98 Kcm2	Total WIP Feb. 98 Slices	Total WIP Feb. 98 Kcm2
Jan-98	1	1610	284.5	2122	666.6	3732	951.2
	2	2782	491.6	422	132.6	3204	624.2
	3	800	141.4	1405	441.4	2205	582.8
	4	1390	245.6		0.0	1390	245.6
	5	878	155.2	661	207.7	1539	362.8
	6	504	89.1	1037	325.8	1541	414.8
	7	1537	271.6	237	74.5	1774	346.1
	8	1298	229.4	1662	522.1	2960	751.5
	9	3149	556.5	1275	400.6	4424	957.0
	10	4870	860.6	1155	362.9	6025	1223.5
	11	5447	962.6	1397	438.9	6844	1401.4
	12	6232	1101.3	1397	438.9	7629	1540.2
	13	5838	1031.7	1992	625.8	7830	1657.5
	14	4928	870.9	616	193.5	5544	1064.4
	15	3402	601.2	1821	572.1	5223	1173.3
	16	3799	671.3	2359	741.1	6158	1412.4
	17	4388	775.4	1858	583.7	6246	1359.1
	18	4168	736.5	2410	757.1	6578	1493.7
	19	3158	558.1	1862	585.0	5020	1143.0
	20	3042	537.6	2306	724.5	5348	1262.0
	21	5659	1000.0	1243	390.5	6902	1390.5
	22	5421	958.0	1243	390.5	6664	1348.5
	23	5315	939.2	1657	520.6	6972	1459.8
	24	4174	737.6	1667	523.7	5841	1261.3
	25	4243	749.8	1972	619.5	6215	1369.3
	26	5158	911.5	1325	416.3	6483	1327.8
	27	5874	1038.0	532	167.1	6406	1205.2
	28	5874	1038.0	532	167.1	6406	1205.2
	29	7124	1258.9	2262	710.6	9386	1969.5
	30	6814	1204.1	3655	1148.3	10469	2352.4
	31	6198	1095.3	4259	1338.0	10457	2433.3
	Mo.Total	**104938**	**18544.1**	**38165**	**11989.9**	**143103**	**30534.0**
	Avg/Day	**11659.8**	**2060**	**4240.6**	**1332**	**15900.3**	**3393**

Check calculation

Acid Etch Pre-Clean Output (Steag -- Operation 3150)

	6"		8"		Total Outs	
	Feb. 98		Feb. 98		Feb. 98	
Day	Kcm2	Slices	Kcm2	Slices	Kcm2	Slices
1	330.3	1869	227.1	723	557.4	2592
2	383.1	2169	667	2124	1050.1	4293
3	709.4	4014			709.4	4014
4	311.3	1762	657.2	2093	968.5	3855
5	741.6	4197	171.8	547	913.4	4744
6	427.2	2418	592.8	1888	1020	4306
7	222.6	1259	937.9	2987	1160.5	4246
8	273.7	1549	1020.5	3250	1294.2	4799
9	142.9	808	174	554	316.9	1362
10	119.3	676	452.8	1442	572.1	2118
11	214.5	1214	304.1	969	518.6	2183
12	378.7	2143	281	895	659.7	3038
13	337	1907	102.1	325	439.1	2232
14	336.4	1903	185.3	590	521.7	2493
15	432.5	2447	295.8	942	728.3	3389
16	290.8	1645	419.6	1336	710.4	2981
17	322	1822	813.4	2590	1135.4	4412
18	382.6	2165	635.6	2024	1018.2	4189
19	360.4	2040	49.3	157	409.7	2197
20	663.9	3758	281.6	897	945.5	4655
21	93.3	528	590	1879	683.3	2407
22	248.1	1404	334.7	1066	582.8	2470
23	273.1	1545	406.6	1295	679.7	2840
24	131.4	744	237.4	756	368.8	1500
25			751.5	2393	751.5	2393
26						
27						
28						
Mo.Total	**8126.1**	**45986**	**10589.1**	**33722**	**18715.2**	**79708**
Avg/Day	**338.6**	**1916**	**423.6**	**1349**	**748.6**	**3188**

C. Ferrer -- 2/26/98

Acid Etch Pre-clean WIP Levels (Steag -- Operation 3150)

		6"		8"		Total WIP	
		Feb. 98		Feb. 98		Feb. 98	
	Day	Slices	Kcm2	Slices	Kcm2	Slices	Kcm2
Feb-98	1	6873	1214.6	4151	1304.1	11024	2518.6
	2	6906	1220.4	3660	1149.8	10566	2370.2
	3	3057	540.2	5397	1695.5	8454	2235.7
	4	2736	483.5	4761	1495.7	7497	1979.2
	5	1833	323.9	5414	1700.9	7247	2024.8
	6	831	146.9	4918	1545.0	5749	1691.9
	7	550	97.2	2611	820.3	3161	917.5
	8	372	65.7	0	0.0	372	65.7
	9	396	70.0	106	33.3	502	103.3
	10						
	11						
	12	WIP Not Updated					
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	Mo.Total	**23554**	**4162.3**	**31018**	**9744.6**	**54572**	**13906.9**
	Avg/Day	**2617.1**	**462**	**3446.4**	**1083**	**6063.6**	**1545**

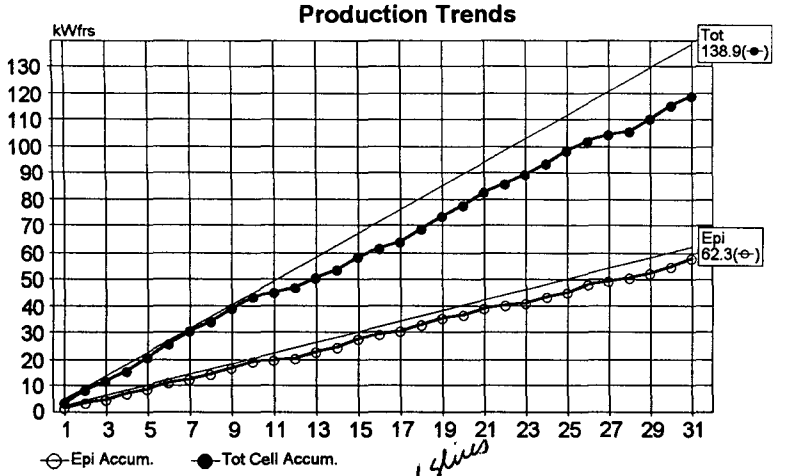
Run Date: 02/01/98
Run Time 11:48:07 AM

Fab 2 Navigator 1 -- Acid Etch

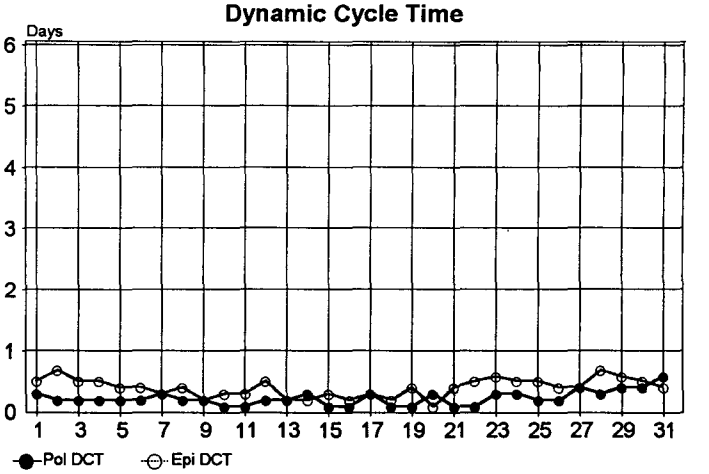
Cell 4

January 1998

Production Trends



Dynamic Cycle Time



slices

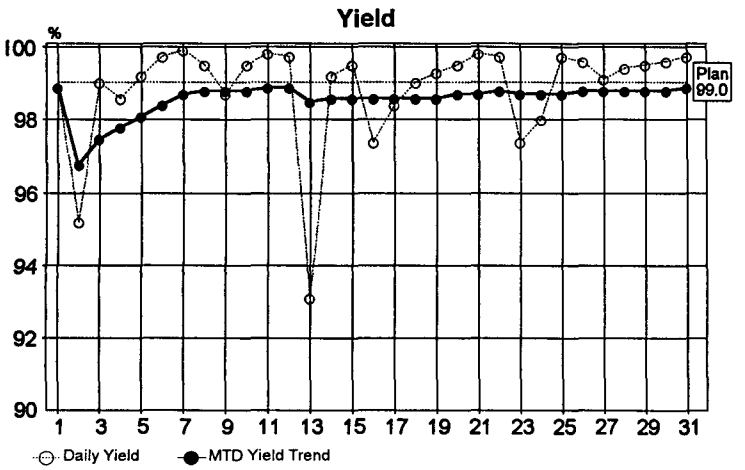
CW	Date	Daily Production - wafers					MTD Production - wafers					Yield - %		Inventory		DCT - days	
		Polish		Epitaxy		Total	Polish		Epitaxy		Total	Daily	MTD	Pol	Epi	Pol	Epi
		4210in	4210ou	4210in	4210ou	mvou	4210in	4210ou	4210in	4210ou	mvou			wfrs	wfrs		
1																	
	01-01	2222	2188	1360	1354	3542	2222	2188	1360	1354	3542	98.9	98.9	840	539	0.3	0.5
	01-02	2755	2647	1866	1754	4401	4977	4835	3226	3108	7943	95.2	96.8	810	762	0.2	0.7
	01-03	2185	2164	1552	1537	3701	7162	6999	4778	4645	11644	99.0	97.5	196	643	0.2	0.5
2	01-04	1831	1806	2171	2138	3944	8993	8805	6949	6783	15588	98.6	97.8	611	743	0.2	0.5
	01-05	3363	3335	1932	1920	5255	12356	12140	8881	8703	20843	99.2	98.1	577	617	0.2	0.4
	01-06	2543	2540	2255	2246	4786	14899	14680	11136	10949	25629	99.7	98.4	630	358	0.2	0.4
	01-07	3070	3070	1782	1776	4846	17969	17750	12918	12725	30475	99.9	98.7	642	497	0.3	0.3
	01-08	2333	2318	1453	1450	3768	20302	20068	14371	14175	34243	99.5	98.8	198	977	0.2	0.4
	01-09	1946	1922	2823	2786	4708	22248	21990	17194	16961	38951	98.7	98.8	185	196	0.2	0.2
	01-10	2229	2213	1943	1940	4153	24477	24203	19137	18901	43104	99.5	98.8	405	423	0.1	0.3
3	01-11	1818	1816	595	593	2409	26295	26019	19732	19494	45513	99.8	98.9	0	308	0.1	0.3
	01-12	810	807	993	990	1797	27105	26826	20725	20484	47310	99.7	98.9	258	1164	0.2	0.5
	01-13	1255	1255	2344	2097	3352	28360	28081	23069	22581	50662	93.1	98.5	180	195	0.2	0.2
	01-14	1630	1624	1756	1736	3360	29990	29705	24825	24317	54022	99.2	98.6	367	196	0.3	0.2
	01-15	1528	1526	3128	3109	4635	31518	31231	27953	27426	58657	99.5	98.6	0	198	0.1	0.3
	01-16	1033	1013	1913	1856	2869	32551	32244	29866	29282	61526	97.4	98.6	200	640	0.1	0.2
	01-17	1477	1465	1316	1282	2747	34028	33709	31182	30564	64273	98.4	98.6	415	603	0.3	0.3
4	01-18	2485	2461	2309	2286	4747	36513	36170	33491	32850	69020	99.0	98.6	340	586	0.1	0.2
	01-19	2086	2061	2470	2461	4522	38599	38231	35961	35311	73542	99.3	98.6	200	439	0.1	0.4
	01-20	2586	2578	1718	1703	4281	41185	40809	37679	37014	77823	99.5	98.7	762	412	0.3	0.1
	01-21	2725	2717	2150	2147	4864	43910	43526	39829	39161	82687	99.8	98.7	194	1462	0.1	0.4
	01-22	2341	2331	916	915	3246	46251	45857	40745	40076	85933	99.7	98.8	540	1455	0.1	0.5
	01-23	2400	2375	1216	1147	3522	48651	48232	41961	41223	89455	97.4	98.7	1182	1427	0.3	0.6
	01-24	2555	2496	2032	2000	4496	51206	50728	43993	43223	93951	98.0	98.7	1131	1293	0.3	0.5
5	01-25	2836	2828	2102	2094	4922	54042	53556	46095	45317	98873	99.7	98.7	664	1157	0.2	0.5
	01-26	661	660	2695	2681	3341	54703	54216	48790	47998	102214	99.6	98.8	891	1105	0.2	0.4
	01-27	539	536	1690	1674	2210	55242	54752	50480	49672	104424	99.1	98.8	905	1054	0.4	0.4
	01-28	547	545	1105	1097	1642	55789	55297	51585	50769	106066	99.4	98.8	943	943	0.3	0.7
	01-29	2672	2653	2007	2004	4657	58461	57950	53592	52773	110723	99.5	98.8	811	741	0.4	0.6
	01-30	2500	2489	2397	2387	4876	60961	60439	55989	55160	115599	99.6	98.8	170	456	0.4	0.5
	01-31	1183	1179	2782	2774	3953	62144	61618	58771	57934	119552	99.7	98.9	715	541	0.6	0.4
Req'd run rate										155	690						
Goal										62.3	138.9		99.0				

Fab 2 produces 200 mm wafers exclusively.

Need: slices ⇒ cm^2

wafer slices × 314 = cm^2

Yield



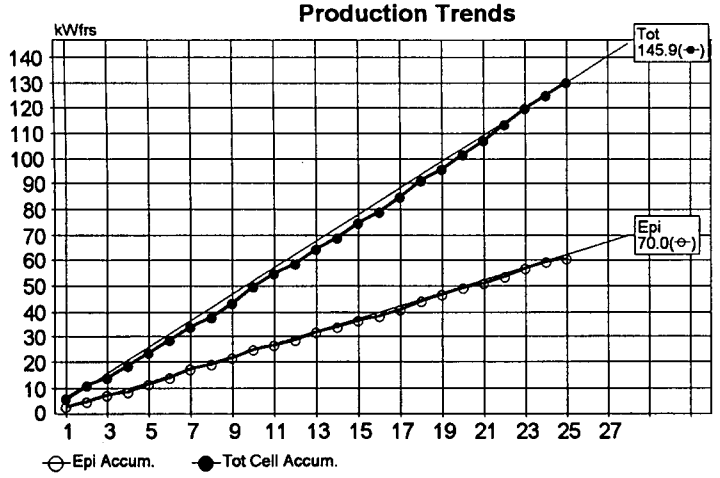
Run Date: 02/26/98
Run Time 02:11:49 AM

Fab 2 Navigator 1 -- Acid Etch

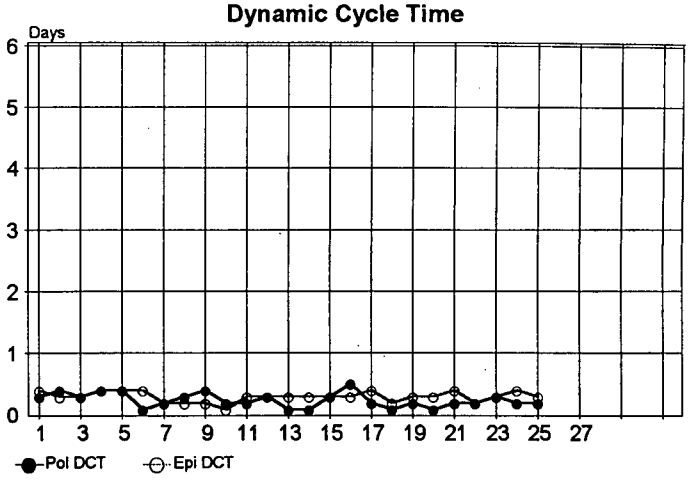
Cell 4

February 1998

Production Trends

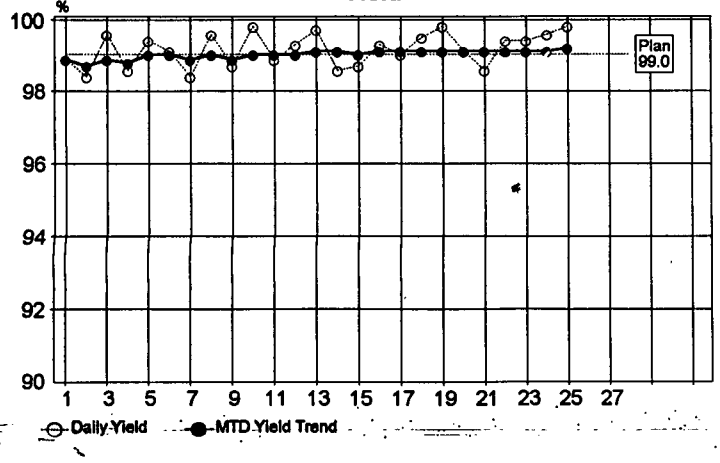


Dynamic Cycle Time



CW	Date	Daily Production - wafers					MTD Production - wafers					Yield - %		Inventory		DCT - days	
		Polish		Epitaxy		Total	Polish		Epitaxy		Total	Daily	MTD	Pol	Epi	Pol	Epi
		4210in	4210ou	4210in	4210ou	mvou	4210in	4210ou	4210in	4210ou	mvou			wfrs	wfrs		
6	02-01	3235	3203	2769	2734	5937	3235	3203	2769	2734	5937	98.9	98.9	415	410	0.3	0.4
	02-02	2702	2694	2384	2313	5007	5937	5897	5153	5047	10944	98.4	98.7	563	174	0.4	0.3
	02-03	1382	1377	2178	2170	3547	7319	7274	7331	7217	14491	99.6	98.9	157	382	0.3	0.3
	02-04	2370	2367	1721	1666	4033	9689	9641	9052	8883	18524	98.6	98.8	683	962	0.4	0.4
	02-05	2647	2627	2745	2731	5358	12336	12268	11797	11614	23882	99.4	99.0	925	1093	0.4	0.4
	02-06	2750	2720	2486	2469	5189	15086	14988	14283	14083	29071	99.1	99.0	215	1330	0.1	0.4
	02-07	1822	1820	3259	3178	4998	16908	16808	17542	17261	34069	98.4	98.9	0	417	0.2	0.2
7	02-08	1631	1626	2496	2484	4110	18539	18434	20038	19745	38179	99.6	99.0	927	707	0.3	0.2
	02-09	3095	3047	2535	2511	5558	21634	21481	22573	22256	43737	98.7	98.9	1196	774	0.4	0.2
	02-10	3396	3387	2837	2832	6219	25030	24868	25410	25088	49956	99.8	99.0	739	365	0.2	0.1
	02-11	2810	2773	2119	2101	4874	27840	27641	27529	27189	54830	98.9	99.0	150	348	0.2	0.3
	02-12	2438	2436	1953	1926	4362	30278	30077	29482	29115	59192	99.3	99.0	781	390	0.3	0.3
	02-13	2567	2562	2818	2809	5371	32845	32639	32300	31924	64563	99.7	99.1	320	227	0.1	0.3
	02-14	2749	2680	2221	2220	4900	35594	35319	34521	34144	69463	98.6	99.1	391	1016	0.1	0.3
8	02-15	2901	2834	2468	2463	5297	38495	38153	36989	36607	74760	98.7	99.0	723	809	0.3	0.3
	02-16	2274	2262	2298	2280	4542	40769	40415	39287	38887	79302	99.3	99.1	1590	818	0.5	0.3
	02-17	3694	3640	2338	2333	5973	44463	44055	41625	41220	85275	99.0	99.1	358	1318	0.2	0.4
	02-18	2750	2739	3245	3226	5965	47213	46794	44870	44446	91240	99.5	99.1	196	836	0.1	0.2
	02-19	2633	2630	2375	2366	4996	49846	49424	47245	46812	96236	99.8	99.1	360	989	0.2	0.3
	02-20	2995	2976	2581	2552	5528	52841	52400	49826	49364	101764	99.1	99.1	319	1246	0.1	0.3
	02-21	3391	3356	2162	2118	5474	56232	55756	51988	51482	107238	98.6	99.1	572	827	0.2	0.4
9	02-22	4078	4039	2686	2682	6721	60310	59795	54674	54164	113959	99.4	99.1	442	224	0.2	0.2
	02-23	3128	3117	3051	3022	6139	63438	62912	57725	57186	120098	99.4	99.1	399	871	0.3	0.3
	02-24	3029	3020	2262	2249	5269	66467	65932	59987	59435	125367	99.6	99.1	604	840	0.2	0.4
	02-25	3227	3218	1643	1640	4858	69694	69150	61630	61075	130225	99.8	99.2	1102	559	0.2	0.3
	02-26																
	02-27																
	02-28																
Req'd run rate										2975	5216						
Goal										70.0	145.9		99.0				

Yield



SCOEPA00022520

NO_x Scrubber Emission Calculations

Strip Chart Recorder Analysis
2/5 - 2/25/98

Findings: 2, 35 ppm NO_x peaks
mostly, 20 ppm ceiling w/ typical 0-10 ppm

From Nox_97.xls
Temp. Range (°F) 49-74 (11/6-12/16)
Flow Range (SCFM) 10,854-16551 (11/6-12/16)
9°C - 23°C

From Nox_97.xls + NOx data 98.xls
Temp. Range (°F) 47-68 (12/18 - 1/26)
Flow Range (SCFM) 11,799-14,634 (12/18-1/26)
8°C - 20°C

$$ppm = \frac{\text{volume of pollutant gas}}{\text{total volume of gas mixture}} (10)^6 = 35\ ppm$$

$$C_{mass} = \left(\frac{P}{RT}\right) C_{ppm}^{35}\ MW_{(NO_x)} = \begin{matrix} 70\ \mu g/m^3 @ 281\ K \\ 66\ \mu g/m^3 @ 296\ K \end{matrix}$$

$P = 1.0$ atm, $T = ?\ K$, $R = 0.08206$ l-atm/gmole-K
$P/RT = 0.04337$ gmole/liter @ 281 K or 8°C
$P/RT = 0.04117$ gmole/liter @ 296 K or 23°C
$P/RT = 0.04159$ gmole/liter @ 293 K or 20°C
$P/RT = 0.04321$ gmole/liter @ 282 K or 20°C

$MW_{avg\,(air)} = 28.96$ $MW_{(NO_x)} = 46.01$

NO_x generally refers only to NO and NO_2 (although there are seven oxides of nitrogen), so $MW_{NO_x} = MW_{NO_2}$
Per Tom, "our NO_x" is $NO + NO_2$. Per historical conc. data, NO_x is dwarfed by NO_2 conc.

NO_x Scrubber Emission Calculations

Strip Chart Recorder, 2/5 - 2/25/98

2, 35 ppm NO_x peaks
Mostly, 20 ppm ceiling w/typical 0-10 ppm readings

Temperature Range (Nov '97 - Jan '98), °F
(12/16/97 - 1/26/98)

Flow Range ~~(Nov '97 - Jan '98)~~ (12/16/97 - 1/26/98), SCFM

98

review of
~~[redacted]~~ Nox_97.xls + NOX data 98.xls Yields:
Dec 16 - Jan 26

Temp 47-68 °F
SCFM 11799-14634

NO_x - 97.xls
(~~Nov~~ 11/6 - 12/16)
~~4955-7672~~ 74
12963-16557
10654

Acid Etch Output (Operation 3200)

C. Ferrer -- 2/10/98

	6"		8"		Total Outs		
	Feb. 98		Feb. 98		Feb. 98		
Day	Kcm2	Slices	Kcm2	Slices	Kcm2	Slices	
1			531.6	1693	531.6	1693	Jan-98
2	88.8	503	687.5	2189	776.3	2692	
3	407.9	2308	74.4	237	482.3	2545	
4	175.3	992	696.5	2218	871.8	3210	
5	401.2	2271	22.6	72	423.8	2343	
6	340.5	1927	267.9	853	608.4	2780	
7	158.8	899	548.6	1747	707.4	2646	
8	473.4	2679			473.4	2679	
9	267.8	1516	304.6	970	572.4	2486	
10	315	1783	280.1	892	595.1	2675	
11	134.1	759			134.1	759	
12	188	1064			188	1064	
13	194.7	1102			194.7	1102	
14	348.5	1972	429	1366	777.5	3338	
15	406	2298			406	2298	
16	186.4	1055	319.1	1016	505.5	2071	
17	277.2	1569	512.2	1631	789.4	3200	
18	390.1	2207	482.2	1536	872.3	3743	
19	290.2	1642	714.3	2275	1004.5	3917	
20	333	1884	211.6	674	544.6	2558	
21			592.5	1887	592.5	1887	
22	566.3	3204	57.1	182	623.4	3386	
23	528.8	2993	230.2	733	759	3726	
24	240.6	1362	734.6	2340	975.2	3702	
25	188.7	1067	590.4	1880	779.1	2947	
26	264.4	1496	702	2235	966.4	3731	
27			362.4	1154	362.4	1154	
28	Fab 1		Shutdown				
29	86.8	491			86.8	491	
30	489.7	2771	51.8	165	541.5	2936	
31	510	2886	170.5	543	680.5	3429	
Mo.Total	**7165.7**	**40552**	**9351.4**	**29780**	**16517.1**	**70332**	
Avg/Day	**796.2**	**4506**	**1039.0**	**3309**	**1835.2**	**7815**	

Acid Etch WIP Levels (Decker -- Operation 3200)

	6"		8"		Total WIP	
	Feb. 98		Feb. 98		Feb. 98	
Day	Slices	Kcm2	Slices	Kcm2	Slices	Kcm2
1			87	27.3	87	27.3
2			178	55.9	178	55.9
3	227	40.1	87	27.3	314	67.4
4	227	40.1	159	50.0	386	90.1
5	537	94.9	87	27.3	624	122.2
6	276	48.8	87	27.3	363	76.1
7	221	39.1	87	27.3	308	66.4
8	99	17.5	87	27.3	186	44.8
9	99	17.5	87	27.3	186	44.8
10	250	44.2	87	27.3	337	71.5
11	278	49.1	87	27.3	365	76.5
12			87	27.3	87	27.3
13			87	27.3	87	27.3
14			255	80.1	255	80.1
15	149	26.3	87	27.3	236	53.7
16	748	132.2	87	27.3	835	159.5
17	256	45.2	512	160.8	768	206.1
18	479	84.6	291	91.4	770	176.1
19			261	82.0	261	82.0
20			248	77.9	248	77.9
21			87	27.3	87	27.3
22	316	55.8	87	27.3	403	83.2
23			272	85.5	272	85.5
24	230	40.6	277	87.0	507	127.7
25	223	39.4	87	27.3	310	66.7
26			87	27.3	87	27.3
27			277	87.0	277	87.0
28			277	87.0	277	87.0
29			277	87.0	277	87.0
30	184	32.5	87	27.3	271	59.8
31	440	77.8	87	27.3	527	105.1
Mo.Total	**4615**	**815.5**	**4486**	**1409.3**	**9101**	**2224.9**
Avg/Day	**512.8**	**91**	**498.4**	**157**	**1011.2**	**247**

Acid Etch Output (Operation 3200)

C. Ferrer -- 2/26/98

	6" Feb. 98		8" Feb. 98		Total Outs Feb. 98		
Day	Kcm2	Slices	Kcm2	Slices	Kcm2	Slices	
1	406.8	2302	226.8	722	633.6	3024	Feb-98
2	285.8	1618	665.7	2120	951.5	3738	
3	758.4	4291	0	0	758.4	4291	
4	357.8	2024	602.9	1920	960.7	3944	
5	741.1	4194	0	0	741.1	4194	
6	281.1	1591	701.2	2233	982.3	3824	
7	367.4	2079	949.3	3023	1316.7	5102	
8	273.6	1548	1003	3194	1276.6	4742	
9	142.9	808	222.4	708	365.3	1516	
10	88.5	501	502.4	1600	590.9	2101	
11	244.7	1385	303.5	967	548.2	2352	
12	291.4	1649	280.7	894	572.1	2543	
13	328.9	1861	102.1	325	431	2186	
14	293.2	1659	185.3	590	478.5	2249	
15	556.4	3148	294.3	937	850.7	4085	
16	339.9	1923	338.8	1079	678.7	3002	
17	238.9	1352	827.8	2636	1066.7	3988	
18	327.6	1854	658.3	2096	985.9	3950	
19	538.4	3047	49.3	157	587.7	3204	
20	513.5	2906	97	309	610.5	3215	
21	197.3	1117	714	2274	911.3	3391	
22	384	2173	402.8	1283	786.8	3456	
23	170.6	966	405.6	1292	576.2	2258	
24	302	1710	237.4	756	539.4	2466	
25			751.2	2392	751.2	2392	
26							
27							
28							
Mo.Total	8430.2	47706	10521.8	33507	18952	81213	
Avg/Day	351.3	1988	420.9	1340	758.1	3249	

Acid Etch WIP Levels (Decker -- Operation 3200)

	6" Feb. 98		8" Feb. 98		Total WIP Feb. 98	
Day	Slices	Kcm2	Slices	Kcm2	Slices	Kcm2
1			87	27.3	87	27.3
2	549	97.0	87	27.3	636	124.3
3	493	87.1	87	27.3	580	114.5
4			260	81.7	260	81.7
5	0	0.0	720	226.2	720	226.2
6	827	146.1	371	116.6	1198	262.7
7	0	0.0	485	152.4	485	152.4
8	0	0.0	854	268.3	854	268.3
9	0	0.0	158	49.6	158	49.6
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
Mo.Total	1869	330.3	3109	976.7	4978	1307.0
Avg/Day	207.7	37	345.4	109	553.1	145

HORIZON ENGINEERING LLC

13585 N.E. Whitaker Way • Portland, OR 97230
Phone (503)255-5050 • Fax (503)255-0505
horizone@teleport.com

December 16, 1996

Mr. Tom McCue
Wacker Siltronics Corporation
P.O. Box 83180
Portland, Oregon 97283-0180

Dear Mr. McCue:

A Cylinder Gas Audit (CGA) of the NO_x Continuous Monitoring System (CEMS) on the NO_x scrubbing system was done on December 5, 1996. The results are attached. The system was tested to satisfy the Oregon Department of Environmental Quality (ODEQ) Discharge Permit requirement for performance audits for CEMS.

Summary of Results

Both analyzers in the system met the acceptable accuracy criteria of less than 15% of the audit value or ± 5 ppm, whichever is higher. The accuracy of the NO CEM was calculated to be 4% and 0.2% for audit points 1 and 2; respectively. The accuracy of the NO_x CEM was calculated to be 4% and 0.7% respectively. Test data was recorded in the Data Assessment Report in the Appendix.

Sampling and Analytical Procedures

The work was done according to guidelines of the ODEQ Continuous Monitoring Manual that references EPA CFR 40, Pt. 60, Appendix B, Performance Specification 2 for NO_x, and Appendix F.

For the CGA, each monitor (NO and NO_x) was challenged three times with three independent audit standards: one zero standard of N_2, and two NIST traceable cylinders of NO gas at concentrations equal to 26% and 55% of the instrument span. The audit gas was introduced at the connection between the probe and the sample line with the CEMS in the normal operating configuration.

Accuracy was calculated from the average of the three measured values using calculations in Appendix F.

Discussion

The data should be valid in all respects; documentation for quality assurance checks is in the Appendix.

If you have any questions, please contact us.

Sincerely,

HORIZON ENGINEERING

Kurt D. Torgerson

cc: Frank Deaver, Deaver Environmental Group
Eric Spiering, Wacker Siltronic

attachments: Data Assessment Report
Field Data
CEMS Data
Calibration Gas Certificates

SCOEPA00022526

Data Assessment Report

Client	Deaver Environmental Group	Period Ending Date	
Plant name	Wacker Siltronics		
Source Unit No.	NOx scrubbing system outlet	Date of Audit	12/15/96
Audited by	Kurt Torgerson, Horizon Engineering		

CEMS Information:

Manufacturer	Horiba	Type:	NDIR w/Cross Flow Modulation
Model No.	ENDA-1330		Trimer Corp.
Serial No.	0439	Location:	NOx Control Room
Applicable Regulations:			

Cylinder Gas Audit (CGA) for:

Pollutant NOx Units ppm

Span Value 100

		Zero	Audit Point 1	Audit Point 2	
Cylinder ID No.			XC006159B	XC006129B	
Date of Certification			5/3/96	5/3/96	
Type of Certification			NIST-SRM	NIST-SRM	
Certified Audit Value			26.4	55.3	
% of Span Value			26%	55%	

CEMS Response Time	58 seconds
Sampled for 2x response time, +	

CEMS Response Value	NO Analyzer / Model # CFA-311A Mfg# 568833012

		Zero	Audit Point 1	Audit Point 2	Time
Run 1		2.00	27.20	54.70	1522-1527
Run 2		2.90	27.60	55.30	1532-1535
Run 3		2.60	27.80	56.20	1541-1546
Average			27.53	55.40	
Accuracy, % difference			4.3%	0.2%	
Accuracy, difference, ppm			1.1	0.1	

Criteria for excessive inaccuracy: the greater of these two values:

15% of audit value	ppm	4	8
or,	ppm	**+/- 5**	+/- 5

CEMS Response Value	NOx Analyzer / Model # CFA-311A Mfg# 568833011

		Zero	Audit Point 1	Audit Point 2	Time
Run 1		1.60	27.10	55.20	1522-1527
Run 2		2.40	27.40	55.60	1532-1535
Run 3		2.30	28.00	56.30	1541-1546
Average			27.50	55.70	
Accuracy, % difference			4.2%	0.7%	
Accuracy, difference, ppm			1.1	0.4	

Criteria for excessive inaccuracy: the greater of these two values:

15% of audit value	ppm	4	8
or,	ppm	**+/- 5**	+/- 5

Comments

Heated Line Temp - 196 degrees F

Confirm Logbook Entry x

SCOEPA00022527

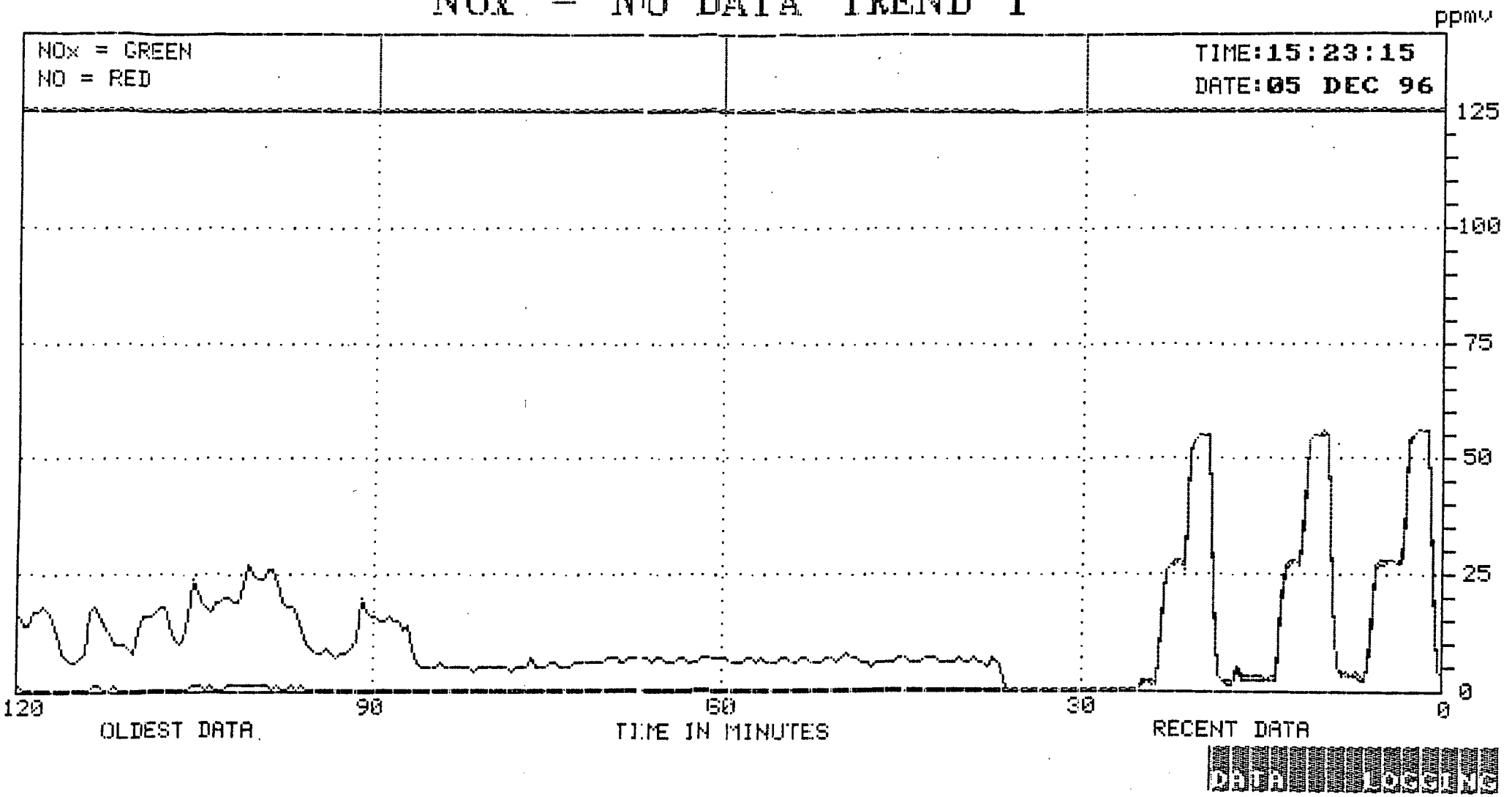
Wacker Siltronics
CGA Field Data

RUN #	ØN₂	26.4		55.3	TIME
1	2.0	27.2	← NO →	54.7	1522 Ø 1525
	1.6	27.1	← NOx →	55.2	1527 ~~NOx~~
	2.4	27.4	NOx	55.6	1532
2.	2.9	27.6	NO	55.3	1535
3.	~~2.8~~ 2.6	27.8	NO	56.2	1541
	~~3.4~~ 2.3	28.0	NOx	56.3	1546

12/5/96

SEND REPORT TO: ERIC SPEARING

NOx - NO DATA TREND 1



#N2

BOC GASES

4715 N.E. 78th Street
Vancouver, WA 98665
Telephone: 360 695 1267
503-283-2561
FAX 360-696-3975

774634

ANALYTICAL REPORT

To: Byrnes

Date Reported: 05-03-96
Test Number: 5479
Fill Date: 05-01-96
Expire Date: 05-01-98
Product Vol: 140 cf

Material Submitted. 55 ppm NO in Nitrogen

Specification Number: BOC Specifications

Method of Analysis: Chemiluminescence

Analyzed: Cylinder No. XC006129B Size 152, CGA 660 2000 psi

Component	Specification	Concentration
Nitric Oxide	55 ppm	55.3 ppm
Nitrogen	Balance	Balance

Analytical Accuracy = +/- 1% relative

Traceable to NIST SRM 2629A

By [signature]
Authorized Signature

Check for OFF SPEC result.

WHITE - Customer Copy

#N3

BOC GASES

4715 N.E. 78th Street
Vancouver WA 98665
Telephone 360-695 1257
503 283 2561
FAX 360-696-3975

774631

ANALYTICAL REPORT

To: Byrnes

Date Reported: 05-03-96
Test Number: 5480
Fill Date: 05-01-96
Expire Date: 05-01-98
Product Vol: 140 cf

Material Submitted: 27 ppm NO in Nitrogen

Specification Number: BOC Specifications

Method of Analysis: Chemiluminescence

Analyzed: Cylinder No. XC0061598 Size 152. CGA 660 2000 psi

Component	Specification	Concentration
Nitric Oxide	27 ppm	26.4 ppm
Nitrogen	Balance	Balance

Analytical Accuracy = +/- 1% relative

Traceable to NIST SRM 2629A

By [signature]
Authorized Signature

WHITE Customer Copy

HORIZON ENGINEERING LLC

13585 N.E. Whitaker Way • Portland, OR 97230
Phone (503)255-5050 • Fax (503)255-0505
horizone@teleport.com

August 8, 1996

Mr. Tom McCue
Wacker Siltronics Corp.
P.O. Box 83180
Portland, Or 97283-0180

Dear Tom:

This letter is being sent to assist you in adjusting your NOx analyzer to bring it closer to the required performance specification. From our CGA of 7 August, it is apparent that the zero control needs to be adjusted on the NOx instrument.

The Horriba manual states that theoretically the zero does not need to be adjusted, but does provide instructions for how to do so. Essentially it is a matter of running a zero gas through the instrument and adjusting some small potentiometers inside the front panel.

One unusual thing that I noticed while performing the CGA was that when the instrument was sampling ambient air it went to nearly 0.0 ppm. However, when the high purity nitrogen gas was run through the instrument the zeroes went to 2.5 and 6.0 ppm on the NO and the NOx analyzers. I have not seen this type of response before in an instrument of this type. Nitrogen is the normal zero calibration gas we use in our instruments, so you may want to investigate why your zero is reading high.

On our next visit, we can bring along both purified air and nitrogen for the zero gas and check the responses.

Please feel free to call us about questions you may have about the NOx analyzer system.

Best Regards,

Kurt D. Torgerson

SCOEPA00022532

HORIZON ENGINEERING LLC

13585 N.E. Whitaker Way • Portland, OR 97230
Phone (503)255-5050 • Fax (503)255-0505
horizone@teleport.com

August 8,1996

Mr. Tom McCue
Wacker Siltronics Corporation
P.O. Box 83180
Portland, Oregon 97283-0180

Dear Mr. McCue:

A Cylinder Gas Audit (CGA) of the NO_x Continuous Monitoring System (CEMS) on the NO_x scrubbing system was done on August 7, 1996. The results are attached. The system was tested to satisfy the Oregon Department of Environmental Quality (ODEQ) Discharge Permit requirement for performance audits for CEMS.

Summary of Results

Both analyzers in the system met the acceptable accuracy criteria of less than 15% of the audit value or ± 5 ppm, whichever is higher. The accuracy of the NO CEM was calculated to be 4% and 0.6% for audit points 1 and 2; respectively. The accuracy of the NO_x CEM was calculated to be 18.3% and 4.5% respectively. However, the NO_x analyzer did meet the ± 5 ppm criteria. Test data was recorded in the Data Assessment Report in the Appendix.

Sampling and Analytical Procedures

The work was done according to guidelines of the ODEQ Continuous Monitoring Manual that references EPA CFR 40, Pt. 60, Appendix B, Performance Specification 2 for NO_x, and Appendix F.

SCOEPA00022533

For the CGA, each monitor (NO and NO_x) was challenged three times with three independent audit standards: one zero standard of N_2, and two NIST traceable cylinders of NO gas at concentrations equal to 26% and 55% of the instrument span. The audit gas was introduced at the connection between the probe and the sample line with the CEMS in the normal operating configuration.

Accuracy was calculated from the average of the three measured values using calculations in Appendix F.

Discussion

The data should be valid in all respects; documentation for quality assurance checks is in the Appendix.

If you have any questions, please contact us.

Sincerely,

HORIZON ENGINEERING

Kurt D. Torgerson

cc: Frank Deaver, Deaver Environmental Group
Eric Spiering, Wacker Siltronic

attachments: Data Assessment Report
Field Data / Calculation sheet
Calibration Gas Certificates

Data Assessment Report

Client	Deaver Environmental Group	Period Ending Date	
Plant name	Wacker Siltronics		
Source Unit No.	NOx scrubbing system outlet	Date of Audit	08/07/96
Audited by	Kurt Torgerson and Joe Fiedler,	Horizon Engineering	

CEMS Information:

Manufacturer	Horiba	Type:	NDIR w/Cross Flow Modulation
Model No.	ENDA-1330		Trimer Corp.
Serial No.	0439	Location:	NOx Control Room
Applicable Regulations:			

Cylinder Gas Audit (CGA) for:

Pollutant NOx Units ppm

Span Value 100

		Zero	Audit Point 1	Audit Point 2	
Cylinder ID No.			XC006159B	XC006129B	
Date of Certification			5/3/96	5/3/96	
Type of Certification			NIST-SRM	NIST-SRM	
Certified Audit Value			26.4	55.3	
% of Span Value			26%	55%	
CEMS Response Time	58 seconds				
Sampled for 2x response time, +					
CEMS Response Value	NO Analyzer / Model # CFA-311A Mfg# 568833012				**Time**
Run 1		2.30	27.40	54.20	1458/1501/1504
Run 2		2.30	27.50	55.10	1508/1511/1513
Run 3		2.50	27.50	55.60	1517/1520/1523
Average			27.47	54.97	
Accuracy, % difference			4.0%	-0.6%	
Accuracy, difference, ppm			1.1	-0.3	
Criteria for excessive inaccuracy: the greater of these two values:					
15% of audit value	ppm		4	**8**	
or,	ppm		**+/- 5**	+/- 5	

CEMS Response Value	NOx Analyzer / Model # CFA-311A Mfg# 568833011				**Time**
Run 1		2.50	32.90	57.30	1458/1501/1504
Run 2		6.00	30.90	58.30	1508/1511/1513
Run 3		5.00	29.90	57.70	1517/1520/1523
Average			31.23	57.77	
Accuracy, % difference			18.3%	4.5%	
Accuracy, difference, ppm			4.8	2.5	
Criteria for excessive inaccuracy: the greater of these two values:					
15% of audit value	ppm		4	**8**	
or,	ppm		**+/- 5**	+/- 5	

Comments

Heated Line Temp - 196 degrees F

Confirm Logbook Entry x

SCOEPA00022535

BOC GASES

4715 N.E. 78th Street
Vancouver WA 98665
Telephone 360-695 1257
503 283 2561
FAX 360-696-3975

774634

ANALYTICAL REPORT

To: Byrnes

Date Reported: 05-03-96
Test Number: 5480
Fill Date: 05-01-96
Expire Date: 05-01-98
Product Vol: 140 cf

Material Submitted: 27 ppm NO in Nitrogen

Specification Number: BOC Specifications

Method of Analysis: Chemiluminescence

Analyzed: Cylinder No. XC0061598 Size 152. CGA 660 2000 psi

Component	Specification	Concentration
Nitric Oxide	27 ppm	26.4 ppm
Nitrogen	Balance	Balance

Analytical Accuracy = +/- 1% relative

Traceable to NIST SRM 2629A

By [signature]
Authorized Signature

WHITE Customer Copy

BOC GASES

4715 N.E. 78th Street
Vancouver, WA 98665
Telephone: 360 695 1207
503-283-2567
FAX 360-698-3975

774634

ANALYTICAL REPORT

To: Byrnes

Date Reported: 05-03-96
Test Number: 5479
Fill Date: 05-01-96
Expire Date: 05-01-98
Product Vol: 140 cf

Material Submitted: 55 ppm NO in Nitrogen

Specification Number: BOC Specifications

Method of Analysis: Chemiluminescence

Analyzed: Cylinder No. XC0061298 Size 152, CGA 660 2000 psi

Component	Specification	Concentration
Nitric Oxide	55 ppm	55.3 ppm
Nitrogen	Balance	Balance

Analytical Accuracy = +/- 1% relative

Traceable to NIST SRM 2629A

By _____
Authorized Signature

Check for OFF SPEC result.

WHITE - Customer Copy

SCOEPA00022537

Horizon Engineering

13585 N.E. Whitaker Way
Portland, Oregon 97230
503/255-5050 FAX# 503/255-0505

June 26, 1996

Mr. Tom McCue
Wacker Siltronics Corporation
PO Box 83180
Portland, OR 97283

Dear Mr. McCue:

We are enclosing the results of your Cylinder Gas Audit (CGA) which was performed May 28, 1996. After your review please mail two copies to Mr. David Sellers at the Oregon DEQ.

It has been a pleasure working with you and if you have any questions, please feel free to call.

Thank you.

HORIZON ENGINEERING

Enc.

6/28/96

DISCUSSED REQUIREMENTS TO SUBMIT CGA RESULTS WITH DAVID SELLERS. NO REQUIREMENT TO SUBMIT IN PERMIT OR CONTINUOUS MONITORING MANUAL. DAVID SELLERS STATED WE DID NOT NEED TO SUBMIT CGA AUDIT REPORTS BUT TO KEEP THEM ON-SITE FOR REVIEW BY THE INSPECTOR.

SCOEPA00022538

Horizon Engineering
13585 N.E. Whitaker Way
Portland, Oregon 97230
503/255-5050 FAX# 503/255-0505

June 26, 1996

Mr. Tom McCue
Wacker Siltronics Corporation
P.O. Box 83180
Portland, Oregon 97283-0180

Dear Mr. McCue:

A Cylinder Gas Audit (CGA) of the NO_x Continuous Monitoring System (CEMS) on the NO_x scrubbing system was done on May 28, 1996. The results are attached. The system was tested to satisfy the Oregon Department of Environmental Quality (ODEQ) Discharge Permit requirement for performance audits for CEMS.

Summary of Results

Both analyzers in the system met the acceptable accuracy criteria of less than 15% of the audit value. The accuracy of the NO CEM was calculated to be 5% and 1% for audit points 1 and 2; respectively. The accuracy of the NO_x CEM was calculated to be 3% for both audit points. Test data was recorded in the Data Assessment Report in the Appendix.

Sampling and Analytical Procedures

The work was done according to guidelines of the ODEQ Continuous Monitoring Manual that references EPA CFR 40, Pt. 60, Appendix B, Performance Specification 2 for NO_x, and Appendix F.

SCOEPA00022539

For the CGA, each monitor (NO and NO_x) was challenged three times with three independent audit standards: one zero standard of N_2, and two NIST traceable cylinders of NO gas at concentrations equal to 26% and 55% of the instrument span, or at one and at one-half times the permitted emission standard of 58 ppm The audit gas was introduced at the connection between the probe and the sample line with the CEMS in the normal operating configuration.

Accuracy was calculated from the average of the three measured values using calculations in Appendix F.

Discussion

The data should be valid in all respects; documentation for quality assurance checks is in the Appendix.

If you have any questions, please contact us.

Sincerely,

HORIZON ENGINEERING

David Rossman

David Rossman, P.E.

cc: Frank Deaver, Deaver Environmental Group

attachments: Data Assessment Report
Field Data
Calibration Gas Certificates
Test Plan

SCOEPA00022540

Data Assessment Report

Client	Deaver Environmental Group	Period Ending Date	
Plant name	Wacker Siltronics		
Source Unit No.	NOx scrubbing system outlet	Date of Audit	May 28, 1996
Audited by	Kurt Torgerson and William Kroll, Horizon Engineering		

CEMS Information:

Manufacturer	Horiba	Type:	NDIR w/Cross Flow Modulation
Model No.	ENDA-1330		Trimer Corp.
Serial No.	0439	Location:	NOx Control Room
Applicable Regulations:			

Cylinder Gas Audit (CGA) for:

Pollutant NOx Units ppm

Span Value 100

		Zero	Audit Point 1	Audit Point 2	
Cylinder ID No.			XC006159B	XC006129B	
Date of Certification			5/3/96	5/3/96	
Type of Certification			NIST-SRM	NIST-SRM	
Certified Audit Value			26.4	55.3	
% of Span Value			26%	55%	
CEMS Response Time	58 seconds				
Sampled for 2x response time, +					
CEMS Response Value	NO Analyzer / Model # CFA-311A Mfg# 568833012				**Time**
Run 1		2.60	27.80	55.60	1458/1501/1504
Run 2		2.90	27.80	55.60	1508/1511/1513
Run 3		2.70	27.70	55.70	1517/1520/1523
Average			27.77	55.63	
Accuracy, % difference			5.2%	0.6%	
Accuracy, difference, ppm			1.4	0.3	

Criteria for excessive inaccuracy: the greater of these two values:

15% of audit value	ppm	4	**8**
or,	ppm	**+/- 5**	+/- 5

CEMS Response Value	NOx Analyzer / Model # CFA-311A Mfg# 568833011				**Time**
Run 1		2.00	28.90	58.20	1458/1501/1504
Run 2		3.80	29.80	58.30	1508/1511/1513
Run 3		3.60	30.40	58.80	1517/1520/1523
Average			29.70	58.43	
Accuracy, % difference			12.5%	5.7%	
Accuracy, difference, ppm			3.3	3.1	

Criteria for excessive inaccuracy: the greater of these two values:

15% of audit value	ppm	4	**8**
or,	ppm	**+/- 5**	+/- 5

Comments

Heated Line Temp - 196 degrees F

Confirm Logbook Entry x

SCOEPA00022541

WACKER CGA AUDITS.

DATE: 28 MAY, 1996

TIME: 1458/1504/1508/1511
1501 1513 1517
1520
1523

1) 3 RUNS OF A ZERO ____
MID ____ 0.5X STANDARD
HIGH ____ 1.0X STANDARD

RUN #	ZERO	MID (26.4 ppm NO)	HIGH (55.3)	
1 NO	2.6	27.8	55.6	response Time:
NOx	2.0	28.9	58.2	58 sec.
2 NO	2.9	27.8	55.6	
NOx	3.8	29.8	58.3	
3 NO	2.7	27.7	55.7	
NOx	3.6	30.4	58.8	

HEATED LINE TEMP — 196°F

SAMPLED FOR 2X RESPONSE TIME + 1 ____ UNTIL STABLE

CONFIRM LOGBOOK ENTRY.

BOC GASES

4715 N E 78th Street
Vancouver WA 98665
Telephone 360-695 1351
503 285 2561
FAX 360-696-2975

774634

ANALYTICAL REPORT

To: Byrnes

Date Reported: 05-03-96
Test Number: 5480
Fill Date: 05-01-96
Expire Date: 05-01-98
Product Vol: 140 cf

Material Submitted: 27 ppm NO in Nitrogen

Specification Number: BOC Specifications

Method of Analysis: Chemiluminescence

Analyzed: Cylinder No. XC0061598 Size 152, CGA 660 2000 psi

Component	Specification	Concentration
Nitric Oxide	27 ppm	26.4 ppm
Nitrogen	Balance	Balance

Analytical Accuracy = +/- 1% relative

traceable to NIST SRM 2629A

By _____
Authorized Signature

WHITE Customer Copy

06/17/98 4:25PM Jetfax #001 P.002 360 696 3975 BY: BOC VANCOUVER

BOC GASES

4715 N.E. 78th Street
Vancouver, WA 98665
Telephone: 360 695 1267
503-283-2561
FAX 360-696-3975

774634

ANALYTICAL REPORT

To: Byrnes

Date Reported: 05-03-96
Test Number: 5479
Fill Date: 05-01-96
Expire Date: 05-01-98
Product Vol: 140 cf

Material Submitted. 55 ppm NO in Nitrogen

Specification Number: BOC Specifications

Method of Analysis: Chemiluminescence

Analyzed: Cylinder No. XC006129B Size 152, CGA 660 2000 psi

Component	Specification	Concentration
Nitric Oxide	55 ppm	55.3 ppm
Nitrogen	Balance	Balance

Analytical Accuracy = +/- 1% relative

Traceable to NIST SRM 2629A

By [signature]
Authorized Signature

Check for OFF SPEC result.

WHITE - Customer Copy

Horizon Engineering

13585 N.E. Whitaker Way
Portland, Oregon 97230
503/255-5050 FAX# 503/255-0505

April 19, 1996

David Sellers
Oregon Department of Environmental Quality
2020 S.W. 4th, Suite 400
Portland, OR 97201

Re: CGA, Wacker Siltronics Corporation
7200 N.W. Front
P.O. Box 83180
Portland, OR 97283-0180

This correspondence is notice that Horizon Engineering is to do a Cylinder Gas Audit (CGA) for the NO_x scrubbing system outlet at the above-referenced facility, scheduled for May 28, 1996. The purpose of this testing is to meet requirements for a continuous emission monitoring system. Per DEQ requirements we will challenge the NO_x CEMS three times with certified gases at 1 and 0.5 times the emission limit.

1. **Horizon Engrg. Contacts:**		David Rossman or Kurt Torgerson (503) 255-5050
	Fax	(503) 255-0505
2. **Source Site Personnel:**		Tom McCue (503) 243-2020
	Fax	(503) 241-7599
3. **Regulatory Contacts:**		David Sellers (503) 229-6991
	Fax	(503) 229-6957

The Department will be notified of any changes in plans prior to the audit. It is recognized that significant changes not acknowledged, which could affect accuracy and reliability of the results, could result in report rejection. Documentation of the procedures and results will be presented in the report for review.

Results will be submitted to you within 30 days of the completion of the field work, unless another deadline has been stipulated.

Two (2) copies of the completed report should be sent to you, by Mr. McCue, at the address above.

Any questions or comments relating to this audit should be directed to me.

Sincerely,

HORIZON ENGINEERING

David R. Rossman, P.E.

cc: Tom McCue, Wacker Siltronics
Frank Deaver, Deaver Environmental Group, Inc.

SCOEPA00022546

Share this w/ Olson and file with final report when it arrives

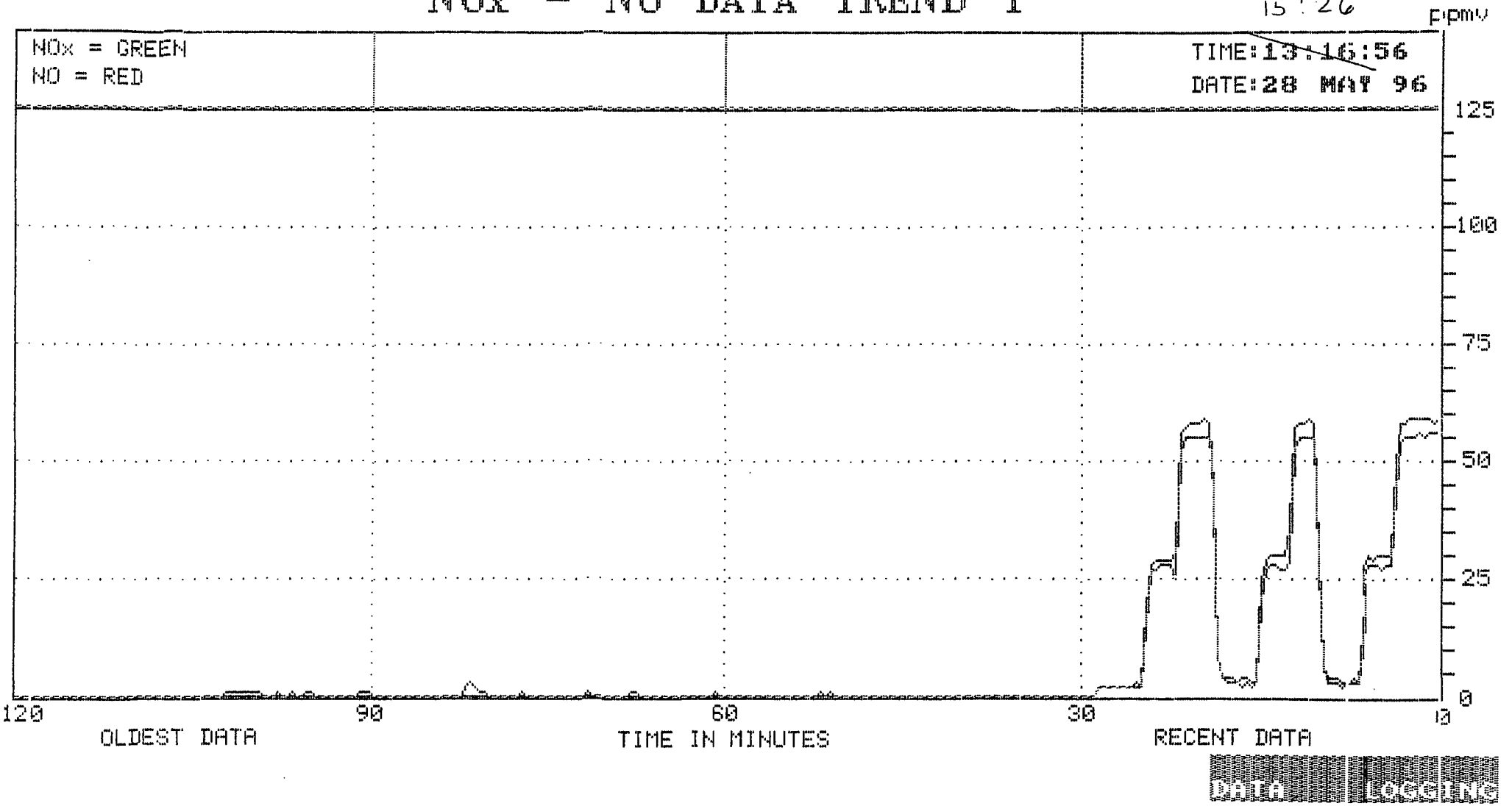
Cyl. Gas Audit - NOx Scrubber

May 28, 1996

Horizon ENG

NOx - NO DATA TREND 1

15:26



Log File Report - Last 120 Records
FORM NAME: MINLOG FILENAME: C:\LOGS\1MIN.D16 TYPE: DAILY
Page 1 Tue May 28 13:26:49 1996

15:37

RECO	DATE	TIME	LABEL	DATA	LABEL	DATA	LABEL	DATA	LABEL	DATA
667	05/28/96	11:24:37	NOx =	0	NO =	0	SCFM=	12502	TEMP=	72
668	05/28/96	11:25:36	NOx =	0	NO =	0	SCFM=	12397	TEMP=	72
669	05/28/96	11:26:38	NOx =	0	NO =	0	SCFM=	12502	TEMP=	72
670	05/28/96	11:27:37	NOx =	0	NO =	0	SCFM=	12502	TEMP=	72
671	05/28/96	11:28:36	NOx =	0	NO =	0	SCFM=	12502	TEMP=	72
672	05/28/96	11:29:36	NOx =	0	NO =	0	SCFM=	12450	TEMP=	72
673	05/28/96	11:30:36	NOx =	0	NO =	0	SCFM=	12502	TEMP=	72
674	05/28/96	11:31:37	NOx =	0	NO =	0	SCFM=	12502	TEMP=	72
675	05/28/96	11:32:36	NOx =	0	NO =	0	SCFM=	12502	TEMP=	72
676	05/28/96	11:33:36	NOx =	0	NO =	0	SCFM=	12607	TEMP=	71
677	05/28/96	11:34:37	NOx =	2	NO =	0	SCFM=	12607	TEMP=	71
678	05/28/96	11:35:35	NOx =	1	NO =	0	SCFM=	12607	TEMP=	71
679	05/28/96	11:36:36	NOx =	1	NO =	0	SCFM=	12607	TEMP=	71
680	05/28/96	11:37:35	NOx =	0	NO =	0	SCFM=	12607	TEMP=	71
681	05/28/96	11:38:36	NOx =	1	NO =	0	SCFM=	12607	TEMP=	71
682	05/28/96	11:39:35	NOx =	0	NO =	0	SCFM=	12607	TEMP=	71
683	05/28/96	11:40:35	NOx =	0	NO =	0	SCFM=	12607	TEMP=	70
684	05/28/96	11:41:34	NOx =	0	NO =	0	SCFM=	12607	TEMP=	70
685	05/28/96	11:42:34	NOx =	0	NO =	0	SCFM=	12607	TEMP=	70
686	05/28/96	11:43:35	NOx =	0	NO =	0	SCFM=	12660	TEMP=	70
687	05/28/96	11:44:35	NOx =	0	NO =	0	SCFM=	12660	TEMP=	70
688	05/28/96	11:45:35	NOx =	1	NO =	0	SCFM=	12607	TEMP=	70
689	05/28/96	11:46:35	NOx =	1	NO =	0	SCFM=	12607	TEMP=	70
690	05/28/96	11:47:35	NOx =	0	NO =	0	SCFM=	12660	TEMP=	70
691	05/28/96	11:48:35	NOx =	0	NO =	0	SCFM=	12660	TEMP=	70
692	05/28/96	11:49:34	NOx =	0	NO =	0	SCFM=	12660	TEMP=	69
693	05/28/96	11:50:34	NOx =	0	NO =	0	SCFM=	12660	TEMP=	69
694	05/28/96	11:51:33	NOx =	0	NO =	0	SCFM=	12660	TEMP=	69
695	05/28/96	11:52:34	NOx =	0	NO =	0	SCFM=	12660	TEMP=	69
696	05/28/96	11:53:34	NOx =	0	NO =	0	SCFM=	12660	TEMP=	69
697	05/28/96	11:54:34	NOx =	2	NO =	0	SCFM=	12607	TEMP=	68
698	05/28/96	11:55:33	NOx =	1	NO =	0	SCFM=	12660	TEMP=	68
699	05/28/96	11:56:33	NOx =	0	NO =	0	SCFM=	12607	TEMP=	68
700	05/28/96	11:57:34	NOx =	0	NO =	0	SCFM=	12660	TEMP=	68
701	05/28/96	11:58:33	NOx =	0	NO =	0	SCFM=	12660	TEMP=	68
702	05/28/96	11:59:33	NOx =	0	NO =	0	SCFM=	12660	TEMP=	68
703	05/28/96	12:00:33	NOx =	0	NO =	0	SCFM=	12660	TEMP=	68
704	05/28/96	12:01:33	NOx =	0	NO =	0	SCFM=	12607	TEMP=	68
705	05/28/96	12:02:32	NOx =	0	NO =	0	SCFM=	12660	TEMP=	68
706	05/28/96	12:03:32	NOx =	0	NO =	0	SCFM=	12712	TEMP=	68
707	05/28/96	12:04:33	NOx =	0	NO =	0	SCFM=	12712	TEMP=	68
708	05/28/96	12:05:32	NOx =	0	NO =	0	SCFM=	12765	TEMP=	68
709	05/28/96	12:06:33	NOx =	0	NO =	0	SCFM=	12712	TEMP=	68
710	05/28/96	12:07:32	NOx =	0	NO =	0	SCFM=	12765	TEMP=	68
711	05/28/96	12:08:33	NOx =	1	NO =	0	SCFM=	12660	TEMP=	68
712	05/28/96	12:09:31	NOx =	0	NO =	0	SCFM=	12712	TEMP=	68
713	05/28/96	12:10:31	NOx =	0	NO =	0	SCFM=	12765	TEMP=	68
714	05/28/96	12:11:31	NOx =	0	NO =	0	SCFM=	12712	TEMP=	68
715	05/28/96	12:12:31	NOx =	0	NO =	0	SCFM=	12765	TEMP=	68

RECO	DATE	TIME	LABEL	DATA	LABEL	DATA	LABEL	DATA	LABEL	DATA
716	05/28/96	12:13:32	NOx =	0	NO =	0	SCFM=	12660	TEMP=	68
717	05/28/96	12:14:30	NOx =	0	NO =	0	SCFM=	12660	TEMP=	68
718	05/28/96	12:15:31	NOx =	0	NO =	0	SCFM=	12660	TEMP=	68
719	05/28/96	12:16:32	NOx =	0	NO =	0	SCFM=	12607	TEMP=	68
720	05/28/96	12:17:30	NOx =	0	NO =	0	SCFM=	12660	TEMP=	69
721	05/28/96	12:18:30	NOx =	0	NO =	0	SCFM=	12660	TEMP=	69
722	05/28/96	12:19:31	NOx =	0	NO =	0	SCFM=	12660	TEMP=	69
723	05/28/96	12:20:30	NOx =	0	NO =	0	SCFM=	12660	TEMP=	69
724	05/28/96	12:21:31	NOx =	0	NO =	0	SCFM=	12607	TEMP=	69
725	05/28/96	12:22:31	NOx =	0	NO =	0	SCFM=	12660	TEMP=	69
726	05/28/96	12:23:29	NOx =	0	NO =	0	SCFM=	12660	TEMP=	69
727	05/28/96	12:24:30	NOx =	1	NO =	0	SCFM=	12607	TEMP=	70
728	05/28/96	12:25:30	NOx =	1	NO =	0	SCFM=	12660	TEMP=	70
729	05/28/96	12:26:29	NOx =	0	NO =	0	SCFM=	12607	TEMP=	70
730	05/28/96	12:27:30	NOx =	0	NO =	0	SCFM=	12607	TEMP=	70
731	05/28/96	12:28:29	NOx =	0	NO =	0	SCFM=	12660	TEMP=	71
732	05/28/96	12:29:29	NOx =	0	NO =	0	SCFM=	12607	TEMP=	71
733	05/28/96	12:30:29	NOx =	0	NO =	0	SCFM=	12607	TEMP=	71
734	05/28/96	12:31:28	NOx =	1	NO =	0	SCFM=	12607	TEMP=	71
735	05/28/96	12:32:29	NOx =	0	NO =	0	SCFM=	12607	TEMP=	71
736	05/28/96	12:33:29	NOx =	0	NO =	0	SCFM=	12607	TEMP=	71
737	05/28/96	12:34:29	NOx =	0	NO =	0	SCFM=	12660	TEMP=	70
738	05/28/96	12:35:29	NOx =	0	NO =	0	SCFM=	12607	TEMP=	70
739	05/28/96	12:36:29	NOx =	0	NO =	0	SCFM=	12607	TEMP=	70
740	05/28/96	12:37:28	NOx =	0	NO =	0	SCFM=	12607	TEMP=	70
741	05/28/96	12:38:28	NOx =	0	NO =	0	SCFM=	12607	TEMP=	70
742	05/28/96	12:39:27	NOx =	0	NO =	0	SCFM=	12607	TEMP=	70
743	05/28/96	12:40:28	NOx =	0	NO =	0	SCFM=	12607	TEMP=	70
744	05/28/96	12:41:28	NOx =	0	NO =	0	SCFM=	12607	TEMP=	70
745	05/28/96	12:42:27	NOx =	0	NO =	0	SCFM=	12607	TEMP=	70
746	05/28/96	12:43:27	NOx =	0	NO =	0	SCFM=	12607	TEMP=	70
747	05/28/96	12:44:27	NOx =	0	NO =	0	SCFM=	12607	TEMP=	70
748	05/28/96	12:45:27	NOx =	0	NO =	0	SCFM=	12607	TEMP=	70
749	05/28/96	12:46:28	NOx =	0	NO =	0	SCFM=	12607	TEMP=	70
750	05/28/96	12:47:28	NOx =	0	NO =	0	SCFM=	12607	TEMP=	70
751	05/28/96	12:48:26	NOx =	2	NO =	3	SCFM=	12607	TEMP=	70
752	05/28/96	12:49:28	NOx =	2	NO =	2	SCFM=	12607	TEMP=	70
753	05/28/96	12:50:26	NOx =	2	NO =	2	SCFM=	12607	TEMP=	70
754	05/28/96	12:51:28	NOx =	1	NO =	2	SCFM=	12607	TEMP=	70
755	05/28/96	12:52:26	NOx =	28	NO =	27	SCFM=	12607	TEMP=	70
756	05/28/96	12:53:27	NOx =	29	NO =	28	SCFM=	12607	TEMP=	70
757	05/28/96	12:54:27	NOx =	51	NO =	46	SCFM=	12607	TEMP=	70
758	05/28/96	12:55:26	NOx =	58	NO =	55	SCFM=	12607	TEMP=	70
759	05/28/96	12:56:26	NOx =	58	NO =	55	SCFM=	12607	TEMP=	70
760	05/28/96	12:57:26	NOx =	39	NO =	43	SCFM=	12607	TEMP=	70
761	05/28/96	12:58:26	NOx =	4	NO =	3	SCFM=	12607	TEMP=	71
762	05/28/96	12:59:25	NOx =	3	NO =	3	SCFM=	12607	TEMP=	71
763	05/28/96	13:00:26	NOx =	3	NO =	3	SCFM=	12607	TEMP=	71
764	05/28/96	13:01:25	NOx =	25	NO =	20	SCFM=	12607	TEMP=	71
765	05/28/96	13:02:25	NOx =	30	NO =	27	SCFM=	12607	TEMP=	71
766	05/28/96	13:03:25	NOx =	30	NO =	27	SCFM=	12607	TEMP=	71

RECO	DATE	TIME	LABEL	DATA	LABEL	DATA	LABEL	DATA	LABEL	DATA
767	05/28/96	13:04:24	NOx =	58	NO =	54	SCFM=	12607	TEMP=	71
768	05/28/96	13:05:26	NOx =	59	NO =	55	SCFM=	12607	TEMP=	71
769	05/28/96	13:06:24	NOx =	12	NO =	14	SCFM=	12607	TEMP=	72
770	05/28/96	13:07:25	NOx =	4	NO =	3	SCFM=	12607	TEMP=	72
771	05/28/96	13:08:25	NOx =	3	NO =	2	SCFM=	12607	TEMP=	72
772	05/28/96	13:09:24	NOx =	3	NO =	3	SCFM=	12607	TEMP=	72
773	05/28/96	13:10:24	NOx =	29	NO =	27	SCFM=	12607	TEMP=	72
774	05/28/96	13:11:24	NOx =	30	NO =	28	SCFM=	12607	TEMP=	72
775	05/28/96	13:12:23	NOx =	30	NO =	28	SCFM=	12607	TEMP=	72
776	05/28/96	13:13:25	NOx =	57	NO =	54	SCFM=	12607	TEMP=	72
777	05/28/96	13:14:24	NOx =	58	NO =	55	SCFM=	12607	TEMP=	72
778	05/28/96	13:15:24	NOx =	59	NO =	55	SCFM=	12607	TEMP=	72
779	05/28/96	13:16:24	NOx =	58	NO =	56	SCFM=	12607	TEMP=	72
780	05/28/96	13:18:24	NOx =	6	NO =	7	SCFM=	12607	TEMP=	73
781	05/28/96	13:19:24	NOx =	2	NO =	1	SCFM=	12607	TEMP=	73
782	05/28/96	13:20:23	NOx =	1	NO =	0	SCFM=	12502	TEMP=	73
783	05/28/96	13:21:22	NOx =	0	NO =	0	SCFM=	12502	TEMP=	73
784	05/28/96	13:23:23	NOx =	1	NO =	0	SCFM=	12555	TEMP=	72
785	05/28/96	13:24:21	NOx =	1	NO =	0	SCFM=	12607	TEMP=	72
786	05/28/96	13:26:23	NOx =	1	NO =	0	SCFM=	12607	TEMP=	72

WACKER
Wacker Siltronic Corporation

P.O. BOX 83180
PORTLAND, OREGON 97283-1080
(503) 243-2020

PURCHASE ORDER

DATE	NUMBER
05/15/96	24552

CHANGE NOTICE	BLANKET RELEASE	PAGE
		1

VENDOR:

DEAVER ENVIRONMENTAL
GROUP, INC.
7900 S.W. BARNARD DRIVE
BEAVERTON, OR 97007

SHIP TO: Wacker Siltronic Corp., 7200 N.W. Front Ave., Portland, Oregon 97210-3676
SHIP VIA: VENDOR
F.O.B.: DESTINATION
FREIGHT TERMS: PREPAID
PAYMENT TERMS: NET 30 DAYS

LINE	QUANTITY	UNIT	DELIVER BY	DESCRIPTION	UNIT PRICE	EXTENSION
001	1	JB	02/25/97	PERFORM CYLINDER GAS AUDITS PER SCHEDULE ON QUOTE DATED 05/01/96 THROUGH 02/25/97 PROVIDE NOX CALIBATION GASES SUBMIT WRITTEN REPORT OF TEST RESULTS WITHIN 30 DAYS PERFORMING TEST PLEASE CONTACT TOM MCCUE AT 503-243-2020 X 7532 FOR JOB SCHEDULE AND INSTRUCTIONS CONFIRMATION ONLY T. DO TO FRANK 05/14/96	4895.0000	4895.00

LINE	REQUESTOR	DELIVER TO	ACCOUNT NO.
01	MCCUE, TOM	(1)THOMAS MCCUE	5951

INSTRUCTIONS ON FACE AND REVERSE SIDE ARE MADE PART OF THIS ORDER TO WHICH SELLER AGREES BY ACCEPTANCE OF SAME.

THIEN DO
PURCHASING AGENT

ADDITIONAL COST

ORDER TOTAL 4895.00

REQUESTOR

SCOEPA00022552

Horizon Engineering
13585 N.E. Whitaker Way
Portland, Oregon 97230
503/255-5050 FAX# 503/255-0505

TELECOPIER COVER LETTER

TELEFAX NO. 241-7599 DATE 3/20/96

RECIPIENT'S NAME TOM McCUE

COMPANY WACKER SILTRONIC

SENDER'S NAME MICHAEL WALLACE

NUMBER OF PAGES (INCLUDING COVER SHEET) 2

REFERENCE ABORTED RATA DATA NOX 2/20/96

****

Mechanical Engineering ☐ Air Pollution Emission Testing Specialists ☐ Infrared Inspections

Wacker Siltronic Aborted RATA data

RUN 1 Time	NOx ppmv	RUN 2 Time	NOx ppmv	RUN 3 Time	NOx ppmv
11:43:43	1	12:23:59	8	13:09:10	28
11:44:40	1	12:24:55	11	13:10:10	15
11:45:40	1	12:25:55	7	13:11:10	11
11:46:40	1	12:26:55	6	13:12:10	10
11:47:40	0	12:27:55	6	13:13:10	10
11:48:40	0	12:28:55	6	13:14:10	9
11:49:40	3	12:29:55	8	13:15:10	9
11:50:40	9	12:30:55	10	13:16:10	9
11:51:40	12	12:31:55	9	13:17:10	9
11:52:40	13	12:32:55	7	13:18:10	9
11:53:40	14	12:33:55	7	13:19:10	9
11:54:40	14	12:34:55	12	13:20:10	9
11:55:40	15	12:35:55	7	13:21:10	9
11:56:40	15	12:36:55	7	13:22:10	9
11:57:40	15	12:37:55	8	13:23:10	7
11:58:40	15	12:38:55	16	13:24:10	7
11:59:40	15	12:39:55	20	13:25:10	7
12:00:40	15	12:40:55	21	13:26:10	7
12:01:40	15	12:41:55	20	13:27:10	7
12:02:40	15	12:42:55	26	13:28:10	7
12:03:40	15	12:43:55	25	13:29:10	11
12:04:40	15	12:44:55	22	13:30:10	9
12:05:40	16	12:45:55	25	13:31:10	9
12:06:40	16	12:46:55	31	13:32:10	6

RUN 4 Time	NOx ppmv	RUN 5 Time	NOx ppmv
15:46:28	16	16:41:33	29
15:47:25	18	16:42:30	28
15:48:25	26	16:43:30	29
15:49:25	26	16:44:30	34
15:50:25	22	16:45:30	30
15:51:25	22	16:46:30	27
15:52:25	22	16:47:30	27
15:53:25	23	16:48:30	38
15:54:25	23	16:49:30	33
15:55:25	26	16:50:30	22
15:56:25	32	16:51:30	15
15:57:25	37	16:52:30	17
15:58:25	20	16:53:30	25
15:59:25	10	16:54:30	26
16:00:25	10	16:55:30	26
16:01:25	7	16:56:30	26
16:02:25	6	16:57:30	27
16:03:25	13	16:58:30	27
16:04:25	9	16:59:30	29
16:05:25	15	17:00:30	31
16:06:25	14	17:01:30	28
16:07:25	25	17:02:30	27
16:08:25	20	17:03:30	28
16:09:25	16	17:04:30	29

[58] From: Dave Locke 3/4/96 1:48PM (2123 bytes: 33 ln)
cc: Tom McCue, Jerry Linden, Tom Voigt, Justin Darr, Tom Rothschild,
John Pittman, Jerry Schaeffer, Dave Locke
Subject: NOx - Errant Call for Stage 2 Activation
---------- Message Contents ----------

REFERENCE: Over-dosing of sodium chlorite by NOx system; began happening Friday; system normalized by Sunday morning.

While this is NOT an incident report of all things that happened, this is what I've surmised from the data so far:

The same day (March 1) that maintenance responded to my MWR to free-up stuck chlorite feed pumps, the analyzer data shows an unusual trend.

The unusual trend data is as follows: The nitric oxide component (usually 1 to 3 ppm, 99 percent of time) shows increasing level over a several hour period. Following 9:00am (indicated time) the nitric oxide level routinely exceeded 2 ppm, and by 1:00pm (indicated time) routinely exceeded 6 ppm.

When maintenance was through working on the stuck pumps, the high nitric oxide indication from the analyzer prompted a lot of chlorite (oxidizer) chemical to go into the system.

The connection of the two incidents escapes me. Two problems I see:

- Why were the chlorite (and sulfuric acid reactant) feeds enabled to feed beyond the high (positive) ORP alarm point?
- Why did the "NO" analyzer output seem to drift upward; even given that gallons of chlorite were introduced, which would presumably destroy any significant levels of nitric oxide. (It's almost as though the "NO" analyzer experienced a drift from its zero limit of range; or that a phantom source of NO (nitric oxide) was being introduced into the analyzer. Here's a thought - could some cal gas solenoid be leaking small amounts of "NO" into the sample stream?

I'll be looking further into this. In the mean time I've asked Olom to ensure that the analyzer PM is up to date. 3/4/96

Horizon Engineering

13585 N.E. Whitaker Way
Portland, Oregon 97230
503/255-5050 FAX# 503/255-0505

SOURCE EVALUATION REPORT

WACKER SILTRONICS CORPORATION

NO_x Scrubber System Outlet
Total Nitrogen Oxides
CEMS Relative Accuracy Test

February 28, 1996

Prepared for

Deaver Environmental Group, Inc.
7900 S.W. Barnard Drive
Beaverton, OR 97007

by
Joe D. Fiedler
&
David R. Rossman, P.E.

Expires 12/31/96

SCOEPA00022556

Introduction

Relative accuracy (RA) tests were made to confirm the accuracy of the continuous emission monitoring system (CEMS) for nitrogen oxides (NO_x), volume flow rate, and emission rate from the NO_x scrubber at Wacker Siltronics plant in Portland, Oregon.

The system was tested on February 28, 1996, to satisfy the Oregon Department of Environmental Quality (ODEQ) Discharge Permit requirement for relative accuracy testing.

The field work was done by Horizon Engineering personnel Kurt Torgerson and Brian Fallon. Frank Deaver, of Deaver Environmental Group, Inc., arranged for the tests. Tom McCue was the site contact person at Wacker Siltronics and he coordinated plant operation and data acquisition for the CEMS. Jack Herbert and David Sellers represented the ODEQ on the test day.

This testing was scheduled to be completed on two previous dates but was postponed. Field personnel went to the site on February 8, but there was concern that the Willamette River would flood the plant that day so the test was delayed. On February 20, the relative accuracy tests were started but there was a problem with the Wacker CEMS and it was decided to delay again until the system was repaired.

Summary of Results

The results show that the NO_x monitoring system meets the performance standards in terms of the RA (maximum allowed difference) of less than 20%. Table 1 summarizes the results of the RA testing. Although the results of all runs in a set must be reported, the standards allow the use of the best nine runs in determining RA between the CEMS and the Reference Method (RM). The results were acceptable when all tests were used in the calculation or when the best nine tests were used.

SCOEPA00022557

Table 1
Relative Accuracy Test Results

NO_x Scrubber Outlet
Test Date: February 28, 1996

	Relative Accuracy All 12 Runs	Relative Accuracy Best 9 Runs
NO_x Concentration (ppmv)		
Actual difference	1.2	1.2
RA based on mean value (%)	17.6	16.5

	Relative Accuracy All 12 Runs	Relative Accuracy Best 9 Runs
Volume Flow Rate (dscf/min)		
Actual difference	457	323
RA based on mean value (%)	5.2	4.5

	Relative Accuracy All 12 Runs	Relative Accuracy Best 9 Runs
NO_x Emission Rate (lbm/hr)		
Actual difference	.09	.08
RA based on mean value (%)	15.4	12.2
RA allowable, based on mean value (%)	20	20

Average NO_x Emission Rate, lb/hr	0.83
Allowable NO_x Emission Rate, lb/hr*	5.4

* Permit limit cited is based on 130 lb/day for "wafer manufacturing process"

Description of the Source and its Operation

NO_x contaminated air is pulled through three packed bed chemical scrubbers by a fan located upstream from the sampling port and downstream from the last scrubber. The liquid chemicals and gaseous NO_x/air mixture flow in different directions and have a high residence time in the scrubbers due to the packed beds. This residence time is sufficient to reduce the NO_x emissions well below Permit standards.

Sampling and Analytical Procedures

General The work was done according to guidelines of Performance Specification 2 (CFR 40, Pt. 60, Appendix B) for NO_x. EPA Reference Method 7E was used to determine NO_x with EPA Methods 1 and 2 and ODEQ Method 4 for determining the system flow rate. The RA testing consisted of twelve 25-minute sampling runs (21 minutes plus twice the response time of the system).

The table below describes the gas analyzer used for the method.

Reference Method Analyzer

Gas	Brand	Model	Range	Measurement Method
NO_x	TECO	10A/R	0-250	Chemiluminescent

A probe was prepared for the testing by drilling holes at three points (16.7%, 50%, 83.3% of stack diameter) as specified in the method. Gas sample was drawn into an ice-water bath condenser (to remove moisture) by a Teflon lined sample pump and was pulled through a 75 ft. Teflon umbilical to the instrument van on the ground.

The NO_x analyzer was first calibrated with certified calibration gas. Then the entire sampling system was verified by introducing calibration gas near the sampling probe inlet. This bias check was conducted before and after every test run. The results of all calibrations are included in the Appendix.

Data The analyzer output was read every five seconds during the tests by a Rustrak Ranger II data logger. Printouts of the plots from the data logger are in the Appendix.

After the completion of all the testing, data sets from the plant CEMS were generated and passed along to us by the Wacker technicians.

Calculations The data sets were compared using the formulas in Performance Specification 2. Results worksheets, in the Appendix, include calculations using all test data sets and are repeated using only the nine data sets that had the best agreement.

Discussion

As noted, the results of the tests show that the NO_x CEMS is operating within the allowable specifications. All Reference Method instrument calibrations and all testing parameters were within specifications. Measured emissions for the 12 tests averaged 0.83 lb/hr. The Permit limit for the source is about 5.4 lb/hr (based on the daily allowable rate).

APPENDIX

Gases

- RA Results
- Wacker Siltronics Data
- Data Logger Plots
- Drift Corrections
- Calibration Documentation

Flow Rates

- Calculations
- Field Data

Calibration Gas Certificates

Administrative

- Test Plan
- DEQ Approval
- DEQ Air Quality Permit

SCOEPA00022561

RATA RESULTS

Client	Wacker Siltronic								02/28/96	Date
Source	NOx Scrubber								wacker	File
NOx	**ALL DATA**				**NOx**	**BEST 9 of 12**				
PPMV		Horizon	di	di2	**PPMV**		Horizon	di	di2	
Run	CEM	RM			Run	CEM	RM			
1	**11.20**	10.48	-0.72	0.52	1	11.2	10.48	-0.72	0.52	
2	**14.10**	12.63	-1.47	2.16	2	14.1	12.63	-1.47	2.16	
3	**4.30**	3.85	-0.45	0.20	3	4.3	3.85	-0.45	0.20	
4	**4.70**	3.98	-0.72	0.52	4	4.7	3.98	-0.72	0.52	
5	**6.40**	5.33	-1.07	1.14						
6	**7.70**	6.45	-1.25	1.56	6	7.7	6.45	-1.25	1.56	
7	**8.70**	7.55	-1.15	1.32	7	8.7	7.55	-1.15	1.32	
8	**6.00**	5.10	-0.90	0.81	8	6.0	5.10	-0.90	0.81	
9	**4.40**	3.03	-1.37	1.88						
10	**9.50**	7.99	-1.51	2.28						
11	**19.80**	17.92	-1.88	3.53	11	19.8	17.92	-1.88	3.53	
12	**19.30**	17.37	-1.93	3.72	12	19.3	17.37	-1.93	3.72	
Mean	9.68	8.47	-14.42	19.66	Mean	10.64	9.48	-10.47	14.35	
avg (di)	=	**-1.20**	<		avg (di)	=	**-1.16**	<		
sum (di)	=	-14.42			sum (di)	=	-10.47			
n-1	=	11			n-1	=	8			
n	=	12	Passing		n	=	9	Passing		
t0.975	=	2.201	Criteria		t0.975	=	2.306	Criteria		
sum (di ^2)	=	19.66			sum (di ^2)	=	14.35			
(sum di)^2	=	207.94			(sum di)^2	=	109.62			
Sd^2	=	0.21			Sd^2	=	0.27			
Sd	=	0.46			Sd	=	0.52			
CC	=	0.29			CC	=	0.40			
RA	=	**17.6**	< **20**	%	RA	=	**16.5**	< **20**	%	
FLOW		Horizon	di	di2	**FLOW**		Horizon	di	di2	
dscf/min					dscf/min					
Run	CEM	RM			Run	CEM	RM			
1	**13,450**	**13,773**	323	104,006	1	13,450	13,773	323	104,006	
2	**13,395**	**14,050**	655	428,763	2	13,395	14,050	655	428,763	
3	**13,385**	**13,633**	248	61,504	3	13,385	13,633	248	61,504	
4	**13,323**	**13,198**	(125)	15,625	4	13,323	13,198	(125)	15,625	
5	**13,275**	**14,155**	880	773,872						
6	**13,288**	**14,008**	720	517,968	6	13,288	14,008	720	517,968	
7	**13,290**	**14,186**	896	802,278						
8	**13,299**	**13,843**	544	295,610	8	13,299	13,843	544	295,610	
9	**13,323**	**14,022**	699	488,321	9	13,323	14,022	699	488,321	
10	**13,387**	**14,187**	800	640,480						
11	**13,391**	**12,982**	(410)	167,690	11	13,391	12,982	(410)	167,690	
12	**13,384**	**13,637**	253	63,958	12	13,384	13,637	253	63,958	
Mean	13,349	13,806	5,482	4,360,077	Mean	13,360	13,683	2,906	2,143,446	
avg (di)	=	**456.8**	<		avg (di)	=	**322.9**	<		
sum (di)	=	5481.6			sum (di)	=	2905.9			
n-1	=	11			n-1	=	8			
n	=	12	Passing		n	=	9	Passing		
t0.975	=	2.201	Criteria		t0.975	=	2.306	Criteria		
sum (di ^2)	=	4,360,077			sum (di ^2)	=	2,143,446			
(sum di)^2	=	30,047,939			(sum di)^2	=	8,444,255			
Sd^2	=	168,735			Sd^2	=	150,649			
Sd	=	411			Sd	=	388			
CC	=	260.99			CC	=	298.35			
RA	=	**5.2**	< **20**	%	RA	=	**4.54**	< **20**	%	

SCOEPA00022562

RATA RESULTS

NOx lbm/hr	ALL DATA				NOx lbm/hr	BEST 9 of 12			
Run	CEM	Horizon RM	di	di2	Run	CEM	Horizon RM	di	di2
1	1.08	1.03	-0.045	0.002	1	1.08	1.03	-0.045	0.002
2	1.35	1.27	-0.082	0.007	2	1.35	1.27	-0.082	0.007
3	0.41	0.38	-0.036	0.001	3	0.41	0.38	-0.036	0.001
4	0.45	0.38	-0.072	0.005					
5	0.61	0.54	-0.068	0.005	5	0.61	0.54	-0.068	0.005
6	0.73	0.65	-0.086	0.007	6	0.73	0.65	-0.086	0.007
7	0.83	0.77	-0.061	0.004	7	0.83	0.77	-0.061	0.004
8	0.57	0.51	-0.066	0.004	8	0.57	0.51	-0.066	0.004
9	0.42	0.30	-0.116	0.013					
10	0.91	0.81	-0.099	0.010	10	0.91	0.81	-0.099	0.010
11	1.90	1.67	-0.233	0.054					
12	1.85	1.70	-0.154	0.024	12	1.85	1.70	-0.154	0.024
Mean	0.93	0.83	-1.117	0.136	Mean	0.93	0.85	-0.697	0.064

avg (di)	=	**-0.09**	<		avg (di)	=	**-0.08**	<	
sum (di)	=	-1.12			sum (di)	=	-0.70		
n-1	=	11			n-1	=	8		
n	=	12		Passing	n	=	9		Passing
t0.975	=	2.201		Criteria	t0.975	=	2.306		Criteria
sum (di ^2)	=	0.14			sum (di ^2)	=	0.06		
(sum di)^2	=	1.25			(sum di)^2	=	0.49		
Sd^2	=	0.00			Sd^2	=	0.00		
Sd	=	0.05			Sd	=	0.03		
CC	=	0.03			CC	=	0.03		
RA	=	**15.4**	<	**20** %	RA	=	**12.23**	<	**20** %

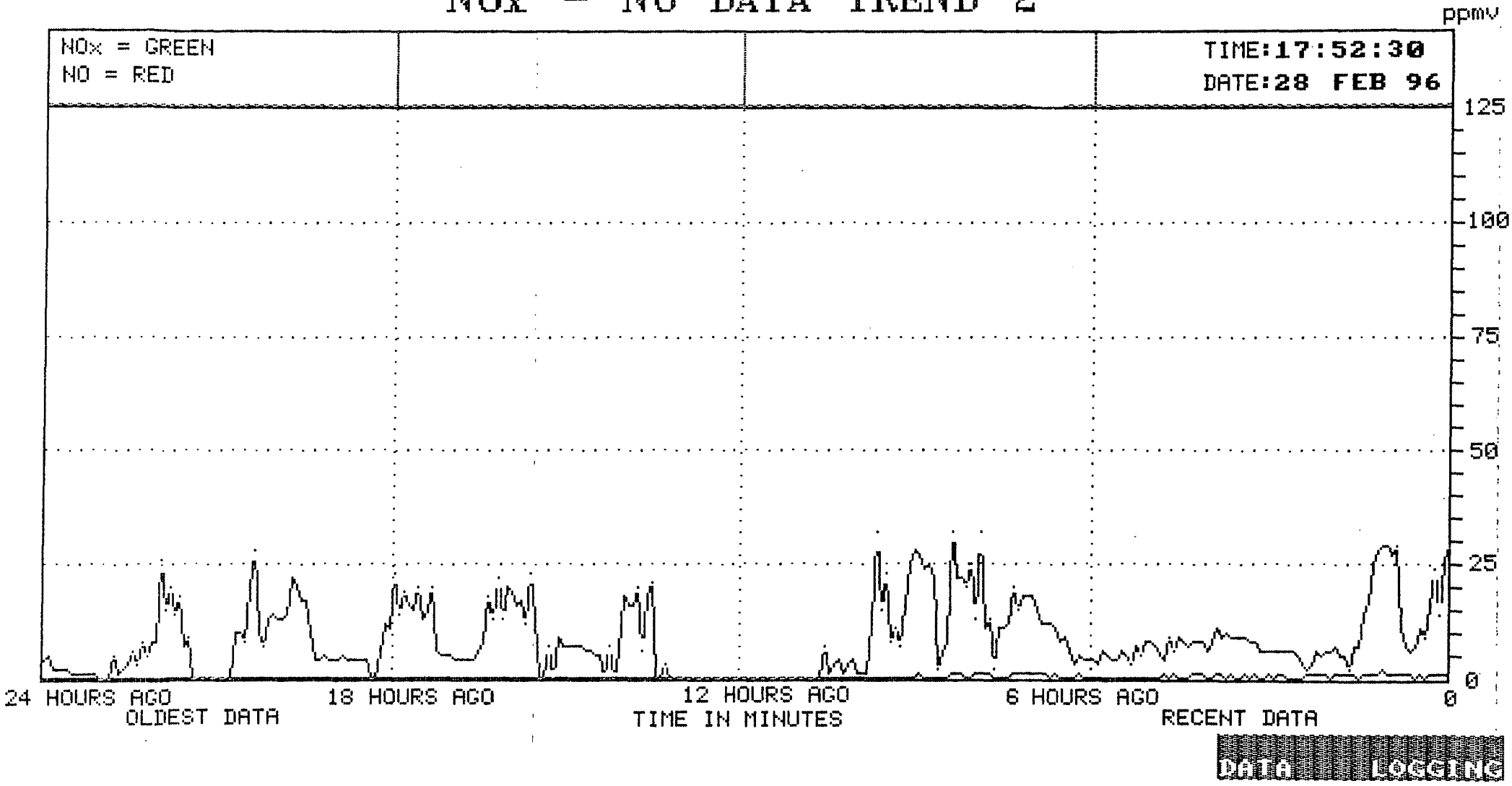
Wacker Siltronic Data

NOx Run 1	Q(sd) Run 1	NOx Run 2	Q(sd) Run 2	NOx Run 3	Q(sd) Run 3	NOx Run 4	Q(sd) Run 4	NOx Run 5	Q(sd) Run 5	NOx Run 6	Q(sd) Run 6
13.0	13,448.0	18.0	13,395.0	9.0	13,500.0	5.0	13,395.0	6.0	13,290.0	8.0	13,238.0
18.0	13,448.0	18.0	13,448.0	9.0	13,448.0	6.0	13,290.0	5.0	13,238.0	8.0	13,290.0
20.0	13,448.0	18.0	13,343.0	6.0	13,343.0	5.0	13,395.0	5.0	13,238.0	8.0	13,395.0
19.0	13,448.0	17.0	13,448.0	3.0	13,395.0	5.0	13,343.0	5.0	13,290.0	8.0	13,290.0
28.0	13,448.0	17.0	13,448.0	3.0	13,448.0	4.0	13,290.0	5.0	13,238.0	8.0	13,290.0
16.0	13,448.0	17.0	13,343.0	3.0	13,343.0	3.0	13,290.0	5.0	13,290.0	8.0	13,343.0
9.0	13,448.0	17.0	13,448.0	3.0	13,343.0	3.0	13,343.0	6.0	13,290.0	8.0	13,238.0
6.0	13,448.0	16.0	13,395.0	3.0	13,343.0	3.0	13,343.0	5.0	13,238.0	8.0	13,290.0
11.0	13,448.0	16.0	13,448.0	4.0	13,448.0	4.0	13,238.0	4.0	13,238.0	8.0	13,290.0
10.0	13,448.0	13.0	13,448.0	4.0	13,343.0	4.0	13,343.0	4.0	13,290.0	8.0	13,290.0
10.0	13,500.0	13.0	13,448.0	3.0	13,290.0	5.0	13,343.0	8.0	13,290.0	8.0	13,343.0
7.0	13,448.0	12.0	13,343.0	3.0	13,343.0	3.0	13,343.0	8.0	13,290.0	8.0	13,290.0
15.0	13,448.0	13.0	13,343.0	4.0	13,343.0	4.0	13,343.0	8.0	13,238.0	8.0	13,290.0
13.0	13,448.0	12.0	13,343.0	5.0	13,343.0	7.0	13,448.0	9.0	13,290.0	9.0	13,238.0
12.0	13,500.0	12.0	13,343.0	4.0	13,343.0	6.0	13,290.0	9.0	13,290.0	7.0	13,290.0
9.0	13,448.0	12.0	13,343.0	3.0	13,343.0	6.0	13,343.0	8.0	13,238.0	6.0	13,290.0
10.0	13,448.0	12.0	13,343.0	3.0	13,343.0	6.0	13,343.0	7.0	13,238.0	5.0	13,238.0
4.0	13,448.0	12.0	13,343.0	4.0	13,343.0	6.0	13,343.0	6.0	13,290.0	5.0	13,290.0
2.0	13,500.0	12.0	13,448.0	4.0	13,448.0	6.0	13,290.0	6.0	13,238.0	5.0	13,290.0
2.0	13,448.0	12.0	13,448.0	4.0	13,395.0	4.0	13,343.0	6.0	13,290.0	5.0	13,290.0
5.0	13,395.0	12.0	13,395.0	6.0	13,395.0	4.0	13,238.0	6.0	13,290.0	7.0	13,290.0
9.0	13,448.0	13.0	13,395.0	4.0	13,448.0	4.0	13,290.0	6.0	13,290.0	9.0	13,290.0
9.0	13,395.0	12.0	13,448.0	4.0	13,448.0	5.0	13,238.0	8.0	13,395.0	11.0	13,290.0
12.0	13,448.0	12.0	13,343.0	4.0	13,448.0	5.0	13,290.0	9.0	13,290.0	12.0	13,238.0
11.2	13,450.1	14.1	13,395.4	4.3	13,384.5	4.7	13,323.1	6.4	13,274.9	7.7	13,288.0

NOx Run 7	Q(sd) Run 7	NOx Run 8	Q(sd) Run 8	NOx Run 9	Q(sd) Run 9	NOx Run 10	Q(sd) Run 10	NOx Run 11	Q(sd) Run 11	NOx Run 12	Q(sd) Run 12
10.0	13,238.0	6.0	13,290.0	2.0	13,343.0	3.0	13,290.0	29.0	13,395.0	8.0	13,290.0
9.0	13,290.0	6.0	13,290.0	3.0	13,395.0	2.0	13,395.0	25.0	13,395.0	7.0	13,343.0
9.0	13,290.0	6.0	13,290.0	2.0	13,395.0	2.0	13,343.0	25.0	13,343.0	12.0	13,448.0
8.0	13,132.0	6.0	13,290.0	1.0	13,290.0	2.0	13,343.0	25.0	13,395.0	12.0	13,395.0
8.0	13,290.0	6.0	13,290.0	1.0	13,290.0	10.0	13,395.0	26.0	13,395.0	16.0	13,395.0
9.0	13,290.0	6.0	13,343.0	2.0	13,238.0	9.0	13,395.0	27.0	13,448.0	16.0	13,343.0
9.0	13,290.0	6.0	13,290.0	3.0	13,290.0	11.0	13,290.0	28.0	13,395.0	15.0	13,395.0
9.0	13,290.0	6.0	13,395.0	2.0	13,343.0	6.0	13,395.0	28.0	13,395.0	15.0	13,395.0
9.0	13,290.0	6.0	13,290.0	3.0	13,290.0	3.0	13,395.0	28.0	13,395.0	19.0	13,448.0
9.0	13,290.0	6.0	13,290.0	3.0	13,343.0	3.0	13,343.0	28.0	13,343.0	23.0	13,395.0
9.0	13,238.0	6.0	13,290.0	10.0	13,395.0	5.0	13,395.0	29.0	13,343.0	28.0	13,343.0
9.0	13,343.0	6.0	13,290.0	5.0	13,395.0	9.0	13,290.0	29.0	13,395.0	29.0	13,395.0
8.0	13,290.0	6.0	13,290.0	6.0	13,290.0	7.0	13,395.0	29.0	13,395.0	18.0	13,448.0
9.0	13,290.0	6.0	13,238.0	6.0	13,290.0	12.0	13,395.0	43.0	13,395.0	13.0	13,290.0
8.0	13,290.0	6.0	13,290.0	6.0	13,395.0	10.0	13,395.0	18.0	13,395.0	14.0	13,343.0
9.0	13,290.0	6.0	13,290.0	6.0	13,395.0	12.0	13,395.0	8.0	13,448.0	18.0	13,395.0
9.0	13,343.0	6.0	13,395.0	5.0	13,290.0	14.0	13,395.0	6.0	13,395.0	20.0	13,448.0
9.0	13,290.0	6.0	13,290.0	5.0	13,290.0	14.0	13,343.0	6.0	13,395.0	25.0	13,448.0
9.0	13,290.0	6.0	13,290.0	5.0	13,343.0	16.0	13,448.0	6.0	13,395.0	26.0	13,395.0
8.0	13,343.0	6.0	13,343.0	6.0	13,290.0	16.0	13,448.0	7.0	13,395.0	26.0	13,395.0
8.0	13,290.0	6.0	13,290.0	6.0	13,290.0	15.0	13,448.0	7.0	13,395.0	28.0	13,343.0
9.0	13,290.0	6.0	13,238.0	6.0	13,290.0	17.0	13,448.0	7.0	13,343.0	28.0	13,395.0
8.0	13,395.0	6.0	13,290.0	6.0	13,290.0	16.0	13,448.0	6.0	13,348.0	29.0	13,343.0
8.0	13,290.0	6.0	13,290.0	6.0	13,290.0	15.0	13,448.0	6.0	13,448.0		
8.7	13,290.1	6.0	13,298.8	4.4	13,322.9	9.5	13,386.5	19.8	13,391.0	19.3	13,383.8

SCOEPA00022564

NOx - NO DATA TREND 2



Log File Report - Time/Date for 02/28/96 09:30:00 to 02/28/96 18:03:00
FORM NAME: MINLOG FILENAME: C:\LOGS\1MIN.D15 TYPE: DAILY
Page 1 Wed Feb 28 18:03:38 1996

RECO	DATE	TIME	LABEL	DATA	LABEL	DATA	LABEL	DATA	LABEL	DATA
571	02/28/96	09:30:52	NOx =	22	NO =	0	SCFM=	13343	TEMP=	56
572	02/28/96	09:31:51	NOx =	24	NO =	0	SCFM=	13395	TEMP=	56
573	02/28/96	09:32:51	NOx =	36	NO =	1	SCFM=	13448	TEMP=	56
574	02/28/96	09:33:52	NOx =	26	NO =	1	SCFM=	13448	TEMP=	56
575	02/28/96	09:34:52	NOx =	16	NO =	1	SCFM=	13448	TEMP=	56
576	02/28/96	09:35:50	NOx =	15	NO =	1	SCFM=	13448	TEMP=	56
577	02/28/96	09:36:52	NOx =	17	NO =	0	SCFM=	13448	TEMP=	56
578	02/28/96	09:37:52	NOx =	20	NO =	1	SCFM=	13343	TEMP=	56
579	02/28/96	09:38:52	NOx =	19	NO =	0	SCFM=	13448	TEMP=	56
580	02/28/96	09:39:51	NOx =	21	NO =	1	SCFM=	13448	TEMP=	56
581	02/28/96	09:40:51	NOx =	30	NO =	2	SCFM=	13448	TEMP=	56
582	02/28/96	09:41:51	NOx =	16	NO =	0	SCFM=	13448	TEMP=	56
583	02/28/96	09:42:51	NOx =	19	NO =	0	SCFM=	13448	TEMP=	56
584	02/28/96	09:43:49	NOx =	25	NO =	0	SCFM=	13448	TEMP=	56
585	02/28/96	09:44:50	NOx =	23	NO =	0	SCFM=	13448	TEMP=	56
586	02/28/96	09:45:50	NOx =	23	NO =	0	SCFM=	13448	TEMP=	56
587	02/28/96	09:46:51	NOx =	36	NO =	1	SCFM=	13448	TEMP=	56
588	02/28/96	09:47:49	NOx =	24	NO =	1	SCFM=	13448	TEMP=	56
589	02/28/96	09:48:50	NOx =	13	NO =	1	SCFM=	13448	TEMP=	56
590	02/28/96	09:49:50	NOx =	13	NO =	0	SCFM=	13448	TEMP=	56
591	02/28/96	09:50:50	NOx =	18	NO =	1	SCFM=	13448	TEMP=	56
592	02/28/96	09:51:50	NOx =	20	NO =	1	SCFM=	13448	TEMP=	56
593	02/28/96	09:52:50	NOx =	19	NO =	1	SCFM=	13448	TEMP=	56
594	02/28/96	09:53:50	NOx =	28	NO =	2	SCFM=	13448	TEMP=	56
595	02/28/96	09:54:48	NOx =	16	NO =	0	SCFM=	13448	TEMP=	56
596	02/28/96	09:55:49	NOx =	9	NO =	0	SCFM=	13448	TEMP=	56
597	02/28/96	09:56:48	NOx =	6	NO =	0	SCFM=	13448	TEMP=	56
598	02/28/96	09:57:48	NOx =	11	NO =	0	SCFM=	13448	TEMP=	56
599	02/28/96	09:58:50	NOx =	10	NO =	0	SCFM=	13448	TEMP=	56
600	02/28/96	09:59:48	NOx =	10	NO =	0	SCFM=	13500	TEMP=	56
601	02/28/96	10:00:49	NOx =	7	NO =	0	SCFM=	13448	TEMP=	56
602	02/28/96	10:01:48	NOx =	15	NO =	0	SCFM=	13448	TEMP=	56
603	02/28/96	10:02:47	NOx =	13	NO =	1	SCFM=	13448	TEMP=	56
604	02/28/96	10:03:48	NOx =	12	NO =	1	SCFM=	13500	TEMP=	56
605	02/28/96	10:04:48	NOx =	9	NO =	0	SCFM=	13448	TEMP=	56
606	02/28/96	10:05:46	NOx =	10	NO =	0	SCFM=	13448	TEMP=	57
607	02/28/96	10:06:48	NOx =	4	NO =	0	SCFM=	13448	TEMP=	57
608	02/28/96	10:07:48	NOx =	2	NO =	0	SCFM=	13500	TEMP=	57
609	02/28/96	10:08:48	NOx =	2	NO =	0	SCFM=	13448	TEMP=	57
610	02/28/96	10:09:48	NOx =	5	NO =	0	SCFM=	13395	TEMP=	57
611	02/28/96	10:10:47	NOx =	9	NO =	0	SCFM=	13448	TEMP=	57
612	02/28/96	10:11:47	NOx =	9	NO =	0	SCFM=	13395	TEMP=	57
613	02/28/96	10:12:46	NOx =	12	NO =	0	SCFM=	13448	TEMP=	57
614	02/28/96	10:13:46	NOx =	12	NO =	0	SCFM=	13395	TEMP=	57
615	02/28/96	10:14:46	NOx =	10	NO =	0	SCFM=	13343	TEMP=	57
616	02/28/96	10:15:46	NOx =	24	NO =	2	SCFM=	13343	TEMP=	57
617	02/28/96	10:16:46	NOx =	14	NO =	1	SCFM=	13448	TEMP=	57
618	02/28/96	10:17:45	NOx =	11	NO =	0	SCFM=	13448	TEMP=	57
619	02/28/96	10:18:46	NOx =	11	NO =	0	SCFM=	13395	TEMP=	57

RECO	DATE	TIME	LABEL	DATA	LABEL	DATA	LABEL	DATA	LABEL	DATA
620	02/28/96	10:19:45	NOx =	18	NO =	1	SCFM=	13448	TEMP=	57
621	02/28/96	10:20:46	NOx =	15	NO =	1	SCFM=	13395	TEMP=	57
622	02/28/96	10:21:48	NOx =	11	NO =	0	SCFM=	13343	TEMP=	57
623	02/28/96	10:22:47	NOx =	18	NO =	0	SCFM=	13395	TEMP=	57
624	02/28/96	10:23:46	NOx =	18	NO =	1	SCFM=	13343	TEMP=	57
625	02/28/96	10:24:44	NOx =	13	NO =	0	SCFM=	13343	TEMP=	58
626	02/28/96	10:25:46	NOx =	14	NO =	0	SCFM=	13343	TEMP=	58
627	02/28/96	10:26:44	NOx =	27	NO =	2	SCFM=	13448	TEMP=	58
628	02/28/96	10:27:45	NOx =	12	NO =	1	SCFM=	13343	TEMP=	58
629	02/28/96	10:28:44	NOx =	5	NO =	0	SCFM=	13343	TEMP=	58
630	02/28/96	10:29:46	NOx =	9	NO =	0	SCFM=	13343	TEMP=	58
631	02/28/96	10:30:45	NOx =	16	NO =	1	SCFM=	13343	TEMP=	58
632	02/28/96	10:31:44	NOx =	15	NO =	1	SCFM=	13448	TEMP=	58
633	02/28/96	10:32:44	NOx =	15	NO =	1	SCFM=	13395	TEMP=	58
634	02/28/96	10:33:44	NOx =	14	NO =	0	SCFM=	13448	TEMP=	58
635	02/28/96	10:34:44	NOx =	14	NO =	1	SCFM=	13448	TEMP=	58
636	02/28/96	10:35:44	NOx =	18	NO =	2	SCFM=	13395	TEMP=	58
637	02/28/96	10:36:43	NOx =	18	NO =	1	SCFM=	13343	TEMP=	58
638	02/28/96	10:37:44	NOx =	19	NO =	1	SCFM=	13395	TEMP=	58
639	02/28/96	10:38:44	NOx =	19	NO =	1	SCFM=	13448	TEMP=	58
640	02/28/96	10:39:44	NOx =	18	NO =	1	SCFM=	13343	TEMP=	58
641	02/28/96	10:40:44	NOx =	19	NO =	1	SCFM=	13395	TEMP=	58
642	02/28/96	10:41:43	NOx =	18	NO =	1	SCFM=	13343	TEMP=	58
643	02/28/96	10:42:43	NOx =	18	NO =	1	SCFM=	13395	TEMP=	58
644	02/28/96	10:43:42	NOx =	18	NO =	0	SCFM=	13448	TEMP=	58
645	02/28/96	10:44:43	NOx =	18	NO =	1	SCFM=	13343	TEMP=	58
646	02/28/96	10:45:42	NOx =	17	NO =	1	SCFM=	13448	TEMP=	58
647	02/28/96	10:46:42	NOx =	17	NO =	1	SCFM=	13448	TEMP=	58
648	02/28/96	10:47:42	NOx =	17	NO =	1	SCFM=	13343	TEMP=	58
649	02/28/96	10:48:42	NOx =	17	NO =	1	SCFM=	13448	TEMP=	58
650	02/28/96	10:49:41	NOx =	16	NO =	1	SCFM=	13395	TEMP=	58
651	02/28/96	10:50:42	NOx =	16	NO =	1	SCFM=	13448	TEMP=	58
652	02/28/96	10:51:42	NOx =	13	NO =	1	SCFM=	13448	TEMP=	58
653	02/28/96	10:52:42	NOx =	13	NO =	1	SCFM=	13448	TEMP=	58
654	02/28/96	10:53:41	NOx =	12	NO =	1	SCFM=	13343	TEMP=	58
655	02/28/96	10:54:42	NOx =	13	NO =	1	SCFM=	13343	TEMP=	58
656	02/28/96	10:55:41	NOx =	12	NO =	1	SCFM=	13343	TEMP=	59
657	02/28/96	10:56:42	NOx =	12	NO =	1	SCFM=	13343	TEMP=	59
658	02/28/96	10:57:42	NOx =	12	NO =	0	SCFM=	13343	TEMP=	59
659	02/28/96	10:58:42	NOx =	12	NO =	0	SCFM=	13343	TEMP=	58
660	02/28/96	10:59:40	NOx =	12	NO =	0	SCFM=	13343	TEMP=	58
661	02/28/96	11:00:40	NOx =	12	NO =	1	SCFM=	13448	TEMP=	58
662	02/28/96	11:01:40	NOx =	12	NO =	0	SCFM=	13448	TEMP=	58
663	02/28/96	11:02:41	NOx =	12	NO =	1	SCFM=	13395	TTEMP=	58
664	02/28/96	11:03:41	NOx =	12	NO =	1	SCFM=	13395	TEMP=	58
665	02/28/96	11:04:40	NOx =	13	NO =	1	SCFM=	13448	TEMP=	58
666	02/28/96	11:05:40	NOx =	12	NO =	0	SCFM=	13343	TEMP=	58
667	02/28/96	11:06:40	NOx =	12	NO =	1	SCFM=	13395	TEMP=	58
668	02/28/96	11:07:40	NOx =	12	NO =	1	SCFM=	13448	TEMP=	58
669	02/28/96	11:08:40	NOx =	12	NO =	0	SCFM=	13343	TEMP=	58
670	02/28/96	11:09:40	NOx =	11	NO =	0	SCFM=	13500	TEMP=	58

RECO	DATE	TIME	LABEL	DATA	LABEL	DATA	LABEL	DATA	LABEL	DATA
671	02/28/96	11:10:39	NOx =	11	NO =	1	SCFM=	13343	TEMP=	58
672	02/28/96	11:11:39	NOx =	11	NO =	0	SCFM=	13395	TEMP=	58
673	02/28/96	11:12:39	NOx =	10	NO =	0	SCFM=	13448	TEMP=	58
674	02/28/96	11:13:40	NOx =	8	NO =	0	SCFM=	13448	TEMP=	58
675	02/28/96	11:14:38	NOx =	8	NO =	0	SCFM=	13448	TEMP=	58
676	02/28/96	11:15:39	NOx =	8	NO =	0	SCFM=	13395	TEMP=	58
677	02/28/96	11:16:39	NOx =	9	NO =	0	SCFM=	13500	TEMP=	58
678	02/28/96	11:17:39	NOx =	9	NO =	1	SCFM=	13448	TEMP=	58
679	02/28/96	11:18:38	NOx =	10	NO =	0	SCFM=	13448	TEMP=	58
680	02/28/96	11:19:38	NOx =	8	NO =	0	SCFM=	13448	TEMP=	58
681	02/28/96	11:20:37	NOx =	7	NO =	0	SCFM=	13343	TEMP=	58
682	02/28/96	11:21:39	NOx =	8	NO =	0	SCFM=	13395	TEMP=	58
683	02/28/96	11:22:38	NOx =	9	NO =	0	SCFM=	13500	TEMP=	58
684	02/28/96	11:23:38	NOx =	9	NO =	0	SCFM=	13448	TEMP=	58
685	02/28/96	11:24:38	NOx =	6	NO =	0	SCFM=	13343	TEMP=	58
686	02/28/96	11:25:37	NOx =	3	NO =	0	SCFM=	13395	TEMP=	58
687	02/28/96	11:26:37	NOx =	3	NO =	0	SCFM=	13448	TEMP=	58
688	02/28/96	11:27:37	NOx =	3	NO =	0	SCFM=	13343	TEMP=	58
689	02/28/96	11:28:38	NOx =	3	NO =	0	SCFM=	13343	TEMP=	58
690	02/28/96	11:29:37	NOx =	3	NO =	0	SCFM=	13343	TEMP=	58
691	02/28/96	11:30:37	NOx =	4	NO =	0	SCFM=	13448	TEMP=	58
692	02/28/96	11:31:36	NOx =	4	NO =	0	SCFM=	13343	TEMP=	58
693	02/28/96	11:32:37	NOx =	3	NO =	0	SCFM=	13290	TEMP=	58
694	02/28/96	11:33:36	NOx =	3	NO =	0	SCFM=	13343	TEMP=	58
695	02/28/96	11:34:37	NOx =	4	NO =	0	SCFM=	13343	TEMP=	58
696	02/28/96	11:35:37	NOx =	5	NO =	1	SCFM=	13343	TEMP=	58
697	02/28/96	11:36:37	NOx =	4	NO =	0	SCFM=	13343	TEMP=	58
698	02/28/96	11:37:36	NOx =	3	NO =	0	SCFM=	13343	TEMP=	58
699	02/28/96	11:38:36	NOx =	3	NO =	0	SCFM=	13343	TEMP=	58
700	02/28/96	11:39:36	NOx =	4	NO =	0	SCFM=	13343	TEMP=	58
701	02/28/96	11:40:37	NOx =	4	NO =	0	SCFM=	13448	TEMP=	58
702	02/28/96	11:41:35	NOx =	4	NO =	0	SCFM=	13395	TEMP=	58
703	02/28/96	11:42:35	NOx =	6	NO =	0	SCFM=	13395	TEMP=	58
704	02/28/96	11:43:35	NOx =	4	NO =	0	SCFM=	13448	TEMP=	58
705	02/28/96	11:44:36	NOx =	4	NO =	0	SCFM=	13448	TEMP=	59
706	02/28/96	11:45:35	NOx =	4	NO =	0	SCFM=	13448	TEMP=	59
707	02/28/96	11:46:34	NOx =	5	NO =	0	SCFM=	13343	TEMP=	59
708	02/28/96	11:47:36	NOx =	4	NO =	0	SCFM=	13290	TEMP=	59
709	02/28/96	11:48:34	NOx =	5	NO =	0	SCFM=	13343	TEMP=	59
710	02/28/96	11:49:35	NOx =	3	NO =	0	SCFM=	13395	TEMP=	59
711	02/28/96	11:50:34	NOx =	3	NO =	0	SCFM=	13448	TEMP=	59
712	02/28/96	11:51:35	NOx =	3	NO =	0	SCFM=	13343	TEMP=	59
713	02/28/96	11:52:34	NOx =	4	NO =	0	SCFM=	13343	TEMP=	60
714	02/28/96	11:53:35	NOx =	3	NO =	0	SCFM=	13343	TEMP=	60
715	02/28/96	11:54:33	NOx =	4	NO =	0	SCFM=	13343	TEMP=	60
716	02/28/96	11:55:34	NOx =	6	NO =	0	SCFM=	13343	TEMP=	60
717	02/28/96	11:56:33	NOx =	4	NO =	0	SCFM=	13395	TEMP=	60
718	02/28/96	11:57:33	NOx =	4	NO =	0	SCFM=	13290	TEMP=	61
719	02/28/96	11:58:33	NOx =	5	NO =	0	SCFM=	13343	TEMP=	61
720	02/28/96	11:59:33	NOx =	5	NO =	0	SCFM=	13290	TEMP=	61
721	02/28/96	12:00:33	NOx =	5	NO =	0	SCFM=	13395	TEMP=	61

RECO	DATE	TIME	LABEL	DATA	LABEL	DATA	LABEL	DATA	LABEL	DATA
722	02/28/96	12:01:33	NOx =	6	NO =	0	SCFM=	13290	TEMP=	61
723	02/28/96	12:02:33	NOx =	5	NO =	0	SCFM=	13395	TEMP=	61
724	02/28/96	12:03:33	NOx =	5	NO =	0	SCFM=	13343	TEMP=	61
725	02/28/96	12:04:32	NOx =	4	NO =	0	SCFM=	13290	TEMP=	61
726	02/28/96	12:05:33	NOx =	3	NO =	0	SCFM=	13290	TEMP=	61
727	02/28/96	12:06:32	NOx =	3	NO =	0	SCFM=	13343	TEMP=	61
728	02/28/96	12:07:32	NOx =	3	NO =	0	SCFM=	13343	TEMP=	61
729	02/28/96	12:08:33	NOx =	4	NO =	0	SCFM=	13238	TEMP=	61
730	02/28/96	12:09:31	NOx =	4	NO =	0	SCFM=	13343	TEMP=	61
731	02/28/96	12:10:33	NOx =	5	NO =	0	SCFM=	13343	TEMP=	61
732	02/28/96	12:11:31	NOx =	3	NO =	0	SCFM=	13343	TEMP=	61
733	02/28/96	12:12:32	NOx =	4	NO =	0	SCFM=	13343	TEMP=	61
734	02/28/96	12:13:32	NOx =	7	NO =	0	SCFM=	13448	TEMP=	61
735	02/28/96	12:14:32	NOx =	6	NO =	0	SCFM=	13290	TEMP=	61
736	02/28/96	12:15:31	NOx =	6	NO =	0	SCFM=	13343	TEMP=	61
737	02/28/96	12:16:31	NOx =	6	NO =	0	SCFM=	13343	TEMP=	61
738	02/28/96	12:17:32	NOx =	6	NO =	0	SCFM=	13343	TEMP=	61
739	02/28/96	12:18:32	NOx =	6	NO =	1	SCFM=	13290	TEMP=	61
740	02/28/96	12:19:31	NOx =	4	NO =	1	SCFM=	13343	TEMP=	61
741	02/28/96	12:20:31	NOx =	4	NO =	1	SCFM=	13238	TEMP=	62
742	02/28/96	12:21:31	NOx =	4	NO =	1	SCFM=	13290	TEMP=	62
743	02/28/96	12:22:30	NOx =	5	NO =	0	SCFM=	13238	TEMP=	62
744	02/28/96	12:23:30	NOx =	5	NO =	0	SCFM=	13290	TEMP=	62
745	02/28/96	12:24:30	NOx =	4	NO =	0	SCFM=	13343	TEMP=	62
746	02/28/96	12:25:31	NOx =	7	NO =	0	SCFM=	13238	TEMP=	62
747	02/28/96	12:26:31	NOx =	3	NO =	0	SCFM=	13395	TEMP=	62
748	02/28/96	12:27:30	NOx =	3	NO =	0	SCFM=	13290	TEMP=	61
749	02/28/96	12:28:30	NOx =	5	NO =	0	SCFM=	13343	TEMP=	61
750	02/28/96	12:29:30	NOx =	6	NO =	0	SCFM=	13343	TEMP=	61
751	02/28/96	12:30:30	NOx =	6	NO =	1	SCFM=	13343	TEMP=	61
752	02/28/96	12:31:29	NOx =	6	NO =	0	SCFM=	13343	TEMP=	61
753	02/28/96	12:32:30	NOx =	7	NO =	1	SCFM=	13290	TEMP=	61
754	02/28/96	12:33:30	NOx =	7	NO =	0	SCFM=	13290	TEMP=	62
755	02/28/96	12:34:29	NOx =	6	NO =	0	SCFM=	13290	TEMP=	62
756	02/28/96	12:35:31	NOx =	5	NO =	0	SCFM=	13343	TEMP=	62
757	02/28/96	12:36:29	NOx =	5	NO =	0	SCFM=	13290	TEMP=	62
758	02/28/96	12:37:29	NOx =	5	NO =	0	SCFM=	13343	TEMP=	62
759	02/28/96	12:38:27	NOx =	6	NO =	0	SCFM=	13238	TEMP=	62
760	02/28/96	12:39:29	NOx =	5	NO =	0	SCFM=	13290	TEMP=	62
761	02/28/96	12:40:28	NOx =	6	NO =	1	SCFM=	13395	TEMP=	62
762	02/28/96	12:41:30	NOx =	8	NO =	0	SCFM=	13290	TEMP=	63
763	02/28/96	12:42:28	NOx =	8	NO =	0	SCFM=	13290	TEMP=	63
764	02/28/96	12:43:27	NOx =	8	NO =	0	SCFM=	13343	TEMP=	63
765	02/28/96	12:44:29	NOx =	7	NO =	0	SCFM=	13238	TEMP=	63
766	02/28/96	12:45:28	NOx =	7	NO =	0	SCFM=	13290	TEMP=	63
767	02/28/96	12:46:27	NOx =	7	NO =	0	SCFM=	13290	TEMP=	63
768	02/28/96	12:47:29	NOx =	8	NO =	0	SCFM=	13343	TEMP=	63
769	02/28/96	12:48:27	NOx =	7	NO =	0	SCFM=	13238	TEMP=	63
770	02/28/96	12:49:29	NOx =	7	NO =	0	SCFM=	13343	TEMP=	63
771	02/28/96	12:50:28	NOx =	7	NO =	0	SCFM=	13343	TEMP=	63
772	02/28/96	12:51:28	NOx =	7	NO =	1	SCFM=	13238	TEMP=	63

RECO	DATE	TIME	LABEL	DATA	LABEL	DATA	LABEL	DATA	LABEL	DATA
773	02/28/96	12:52:28	NOx =	6	NO =	0	SCFM=	13290	TEMP=	63
774	02/28/96	12:53:28	NOx =	5	NO =	1	SCFM=	13238	TEMP=	63
775	02/28/96	12:54:26	NOx =	5	NO =	0	SCFM=	13238	TEMP=	63
776	02/28/96	12:55:29	NOx =	5	NO =	0	SCFM=	13290	TEMP=	63
777	02/28/96	12:56:27	NOx =	5	NO =	0	SCFM=	13238	TEMP=	63
778	02/28/96	12:57:29	NOx =	5	NO =	0	SCFM=	13290	TEMP=	63
779	02/28/96	12:58:28	NOx =	6	NO =	0	SCFM=	13290	TEMP=	63
780	02/28/96	12:59:26	NOx =	5	NO =	0	SCFM=	13238	TEMP=	63
781	02/28/96	13:00:28	NOx =	4	NO =	0	SCFM=	13238	TEMP=	63
782	02/28/96	13:01:27	NOx =	4	NO =	0	SCFM=	13290	TEMP=	63
783	02/28/96	13:02:27	NOx =	8	NO =	1	SCFM=	13290	TEMP=	63
784	02/28/96	13:03:27	NOx =	8	NO =	0	SCFM=	13290	TEMP=	63
785	02/28/96	13:04:26	NOx =	8	NO =	1	SCFM=	13238	TEMP=	63
786	02/28/96	13:05:28	NOx =	9	NO =	0	SCFM=	13290	TEMP=	63
787	02/28/96	13:06:27	NOx =	9	NO =	0	SCFM=	13290	TEMP=	63
788	02/28/96	13:07:25	NOx =	8	NO =	0	SCFM=	13238	TEMP=	63
789	02/28/96	13:08:27	NOx =	7	NO =	0	SCFM=	13238	TEMP=	63
790	02/28/96	13:09:26	NOx =	6	NO =	0	SCFM=	13290	TEMP=	63
791	02/28/96	13:10:25	NOx =	6	NO =	1	SCFM=	13238	TEMP=	63
792	02/28/96	13:11:27	NOx =	6	NO =	0	SCFM=	13290	TEMP=	63
793	02/28/96	13:12:25	NOx =	6	NO =	0	SCFM=	13290	TEMP=	63
794	02/28/96	13:13:28	NOx =	6	NO =	0	SCFM=	13290	TEMP=	63
795	02/28/96	13:14:26	NOx =	8	NO =	0	SCFM=	13395	TEMP=	63
796	02/28/96	13:15:26	NOx =	9	NO =	1	SCFM=	13290	TEMP=	63
797	02/28/96	13:16:27	NOx =	9	NO =	0	SCFM=	13290	TEMP=	63
798	02/28/96	13:17:25	NOx =	11	NO =	0	SCFM=	13290	TEMP=	63
799	02/28/96	13:18:26	NOx =	9	NO =	0	SCFM=	13238	TEMP=	63
800	02/28/96	13:19:26	NOx =	8	NO =	0	SCFM=	13343	TEMP=	63
801	02/28/96	13:20:25	NOx =	8	NO =	1	SCFM=	13343	TEMP=	63
802	02/28/96	13:21:27	NOx =	8	NO =	0	SCFM=	13290	TEMP=	63
803	02/28/96	13:22:26	NOx =	8	NO =	0	SCFM=	13343	TEMP=	63
804	02/28/96	13:23:24	NOx =	8	NO =	0	SCFM=	13238	TEMP=	63
805	02/28/96	13:24:26	NOx =	7	NO =	0	SCFM=	13343	TEMP=	63
806	02/28/96	13:25:25	NOx =	8	NO =	0	SCFM=	13238	TEMP=	63
807	02/28/96	13:26:24	NOx =	8	NO =	1	SCFM=	13290	TEMP=	63
808	02/28/96	13:27:26	NOx =	8	NO =	1	SCFM=	13290	TEMP=	63
809	02/28/96	13:28:25	NOx =	8	NO =	1	SCFM=	13238	TEMP=	63
810	02/28/96	13:29:27	NOx =	8	NO =	1	SCFM=	13290	TEMP=	63
811	02/28/96	13:30:25	NOx =	8	NO =	0	SCFM=	13395	TEMP=	63
812	02/28/96	13:31:24	NOx =	8	NO =	1	SCFM=	13290	TEMP=	63
813	02/28/96	13:32:26	NOx =	8	NO =	0	SCFM=	13290	TEMP=	63
814	02/28/96	13:33:25	NOx =	8	NO =	0	SCFM=	13343	TEMP=	63
815	02/28/96	13:34:24	NOx =	8	NO =	0	SCFM=	13238	TEMP=	63
816	02/28/96	13:35:25	NOx =	8	NO =	0	SCFM=	13290	TEMP=	63
817	02/28/96	13:36:24	NOx =	8	NO =	0	SCFM=	13290	TEMP=	63
818	02/28/96	13:37:26	NOx =	8	NO =	1	SCFM=	13290	TEMP=	63
819	02/28/96	13:38:25	NOx =	8	NO =	0	SCFM=	13343	TEMP=	63
820	02/28/96	13:39:23	NOx =	8	NO =	0	SCFM=	13290	TEMP=	63
821	02/28/96	13:40:26	NOx =	8	NO =	0	SCFM=	13290	TEMP=	63
822	02/28/96	13:41:24	NOx =	9	NO =	1	SCFM=	13238	TEMP=	63
823	02/28/96	13:42:23	NOx =	7	NO =	0	SCFM=	13290	TEMP=	63

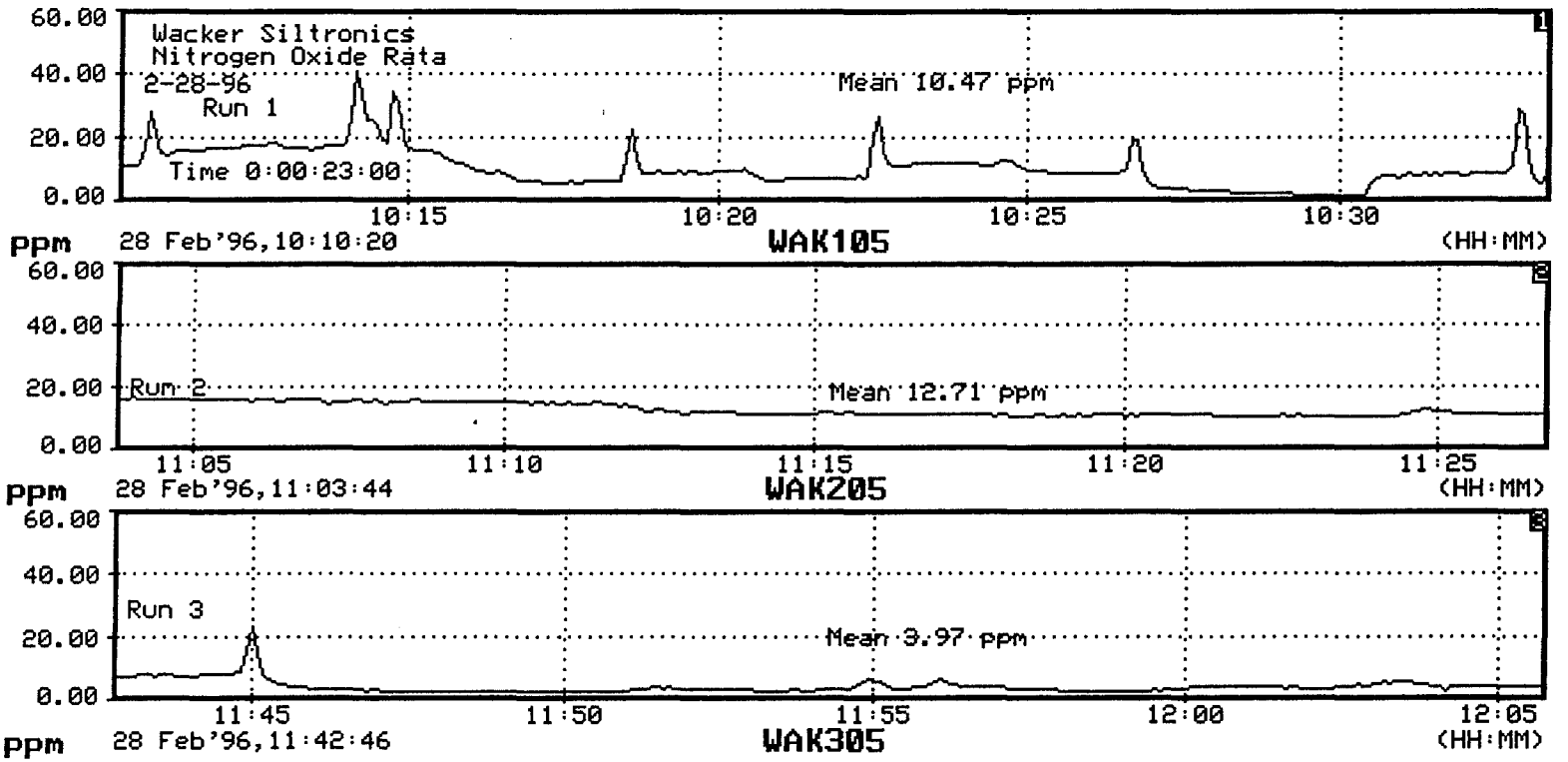
RECO	DATE	TIME	LABEL	DATA	LABEL	DATA	LABEL	DATA	LABEL	DATA
824	02/28/96	13:43:25	NOx =	6	NO =	1	SCFM=	13290	TEMP=	63
825	02/28/96	13:44:24	NOx =	5	NO =	0	SCFM=	13238	TEMP=	63
826	02/28/96	13:45:26	NOx =	5	NO =	0	SCFM=	13290	TEMP=	64
827	02/28/96	13:46:25	NOx =	5	NO =	0	SCFM=	13290	TEMP=	64
828	02/28/96	13:47:23	NOx =	5	NO =	0	SCFM=	13290	TEMP=	64
829	02/28/96	13:48:25	NOx =	7	NO =	1	SCFM=	13290	TEMP=	63
830	02/28/96	13:49:24	NOx =	9	NO =	0	SCFM=	13290	TEMP=	63
831	02/28/96	13:50:24	NOx =	11	NO =	0	SCFM=	13290	TEMP=	64
832	02/28/96	13:51:24	NOx =	12	NO =	0	SCFM=	13238	TEMP=	64
833	02/28/96	13:52:23	NOx =	13	NO =	1	SCFM=	13238	TEMP=	64
834	02/28/96	13:53:23	NOx =	11	NO =	1	SCFM=	13238	TEMP=	64
835	02/28/96	13:54:24	NOx =	11	NO =	0	SCFM=	13238	TEMP=	64
836	02/28/96	13:55:23	NOx =	11	NO =	0	SCFM=	13290	TEMP=	64
837	02/28/96	13:56:25	NOx =	11	NO =	0	SCFM=	13290	TEMP=	64
838	02/28/96	13:57:23	NOx =	10	NO =	1	SCFM=	13238	TEMP=	64
839	02/28/96	13:58:22	NOx =	9	NO =	1	SCFM=	13238	TEMP=	64
840	02/28/96	13:59:24	NOx =	10	NO =	0	SCFM=	13290	TEMP=	64
841	02/28/96	14:00:22	NOx =	10	NO =	0	SCFM=	13343	TEMP=	64
842	02/28/96	14:01:21	NOx =	10	NO =	1	SCFM=	13290	TEMP=	64
843	02/28/96	14:02:23	NOx =	10	NO =	0	SCFM=	13290	TEMP=	64
844	02/28/96	14:03:21	NOx =	10	NO =	0	SCFM=	13290	TEMP=	64
845	02/28/96	14:04:24	NOx =	10	NO =	1	SCFM=	13238	TEMP=	64
846	02/28/96	14:05:22	NOx =	9	NO =	1	SCFM=	13290	TEMP=	64
847	02/28/96	14:06:22	NOx =	9	NO =	1	SCFM=	13290	TEMP=	64
848	02/28/96	14:07:23	NOx =	8	NO =	1	SCFM=	13132	TEMP=	64
849	02/28/96	14:08:22	NOx =	8	NO =	1	SCFM=	13290	TEMP=	64
850	02/28/96	14:09:22	NOx =	9	NO =	0	SCFM=	13290	TEMP=	64
851	02/28/96	14:10:23	NOx =	9	NO =	0	SCFM=	13290	TEMP=	64
852	02/28/96	14:11:21	NOx =	9	NO =	1	SCFM=	13290	TEMP=	64
853	02/28/96	14:12:23	NOx =	9	NO =	0	SCFM=	13290	TEMP=	64
854	02/28/96	14:13:22	NOx =	9	NO =	1	SCFM=	13290	TEMP=	64
855	02/28/96	14:14:21	NOx =	9	NO =	0	SCFM=	13238	TEMP=	64
856	02/28/96	14:15:22	NOx =	9	NO =	1	SCFM=	13343	TEMP=	64
857	02/28/96	14:16:21	NOx =	8	NO =	0	SCFM=	13290	TEMP=	64
858	02/28/96	14:17:22	NOx =	9	NO =	0	SCFM=	13290	TEMP=	64
859	02/28/96	14:18:22	NOx =	8	NO =	0	SCFM=	13290	TEMP=	63
860	02/28/96	14:19:21	NOx =	9	NO =	0	SCFM=	13290	TEMP=	63
861	02/28/96	14:20:23	NOx =	9	NO =	0	SCFM=	13343	TEMP=	63
862	02/28/96	14:21:21	NOx =	9	NO =	1	SCFM=	13290	TEMP=	63
863	02/28/96	14:22:20	NOx =	9	NO =	0	SCFM=	13290	TEMP=	63
864	02/28/96	14:23:22	NOx =	8	NO =	1	SCFM=	13343	TEMP=	63
865	02/28/96	14:24:21	NOx =	8	NO =	0	SCFM=	13290	TEMP=	63
866	02/28/96	14:25:20	NOx =	9	NO =	0	SCFM=	13290	TEMP=	62
867	02/28/96	14:26:21	NOx =	8	NO =	1	SCFM=	13395	TEMP=	62
868	02/28/96	14:27:20	NOx =	8	NO =	0	SCFM=	13290	TEMP=	62
869	02/28/96	14:28:22	NOx =	9	NO =	1	SCFM=	13290	TEMP=	62
870	02/28/96	14:29:21	NOx =	9	NO =	0	SCFM=	13290	TEMP=	61
871	02/28/96	14:30:19	NOx =	9	NO =	1	SCFM=	13238	TEMP=	61
872	02/28/96	14:31:22	NOx =	8	NO =	0	SCFM=	13343	TEMP=	61
873	02/28/96	14:32:20	NOx =	8	NO =	0	SCFM=	13395	TEMP=	61
874	02/28/96	14:33:19	NOx =	8	NO =	0	SCFM=	13343	TEMP=	61

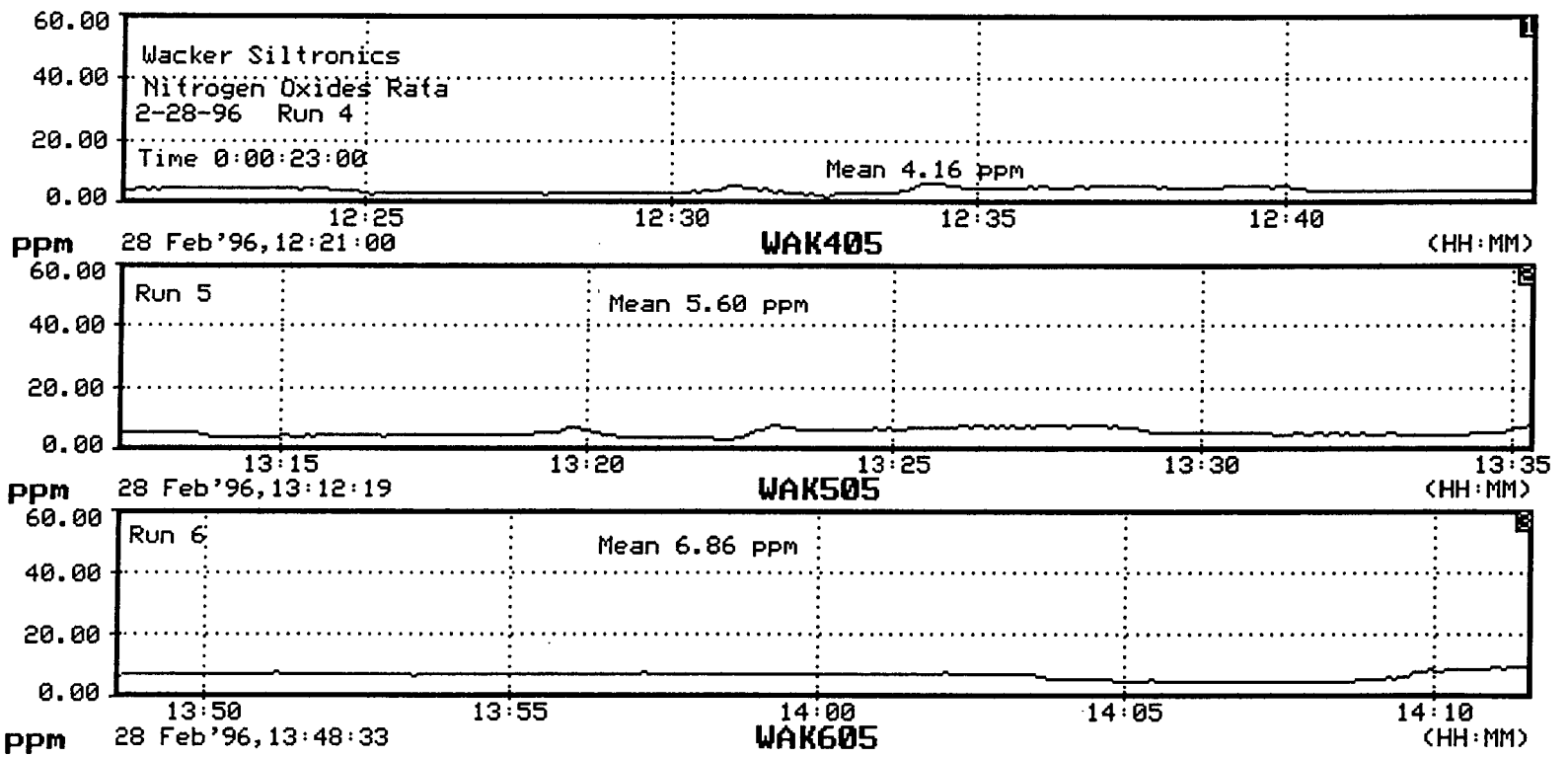
RECO	DATE	TIME	LABEL	DATA	LABEL	DATA	LABEL	DATA	LABEL	DATA
875	02/28/96	14:34:21	NOx =	8	NO =	1	SCFM=	13395	TEMP=	61
876	02/28/96	14:35:20	NOx =	8	NO =	0	SCFM=	13238	TEMP=	62
877	02/28/96	14:36:22	NOx =	7	NO =	0	SCFM=	13290	TEMP=	62
878	02/28/96	14:37:20	NOx =	6	NO =	0	SCFM=	13290	TEMP=	62
879	02/28/96	14:38:19	NOx =	6	NO =	0	SCFM=	13290	TEMP=	62
880	02/28/96	14:39:21	NOx =	6	NO =	0	SCFM=	13290	TEMP=	62
881	02/28/96	14:40:20	NOx =	6	NO =	0	SCFM=	13343	TEMP=	63
882	02/28/96	14:41:18	NOx =	6	NO =	1	SCFM=	13238	TEMP=	63
883	02/28/96	14:42:20	NOx =	6	NO =	0	SCFM=	13290	TEMP=	63
884	02/28/96	14:43:19	NOx =	6	NO =	0	SCFM=	13290	TEMP=	63
885	02/28/96	14:44:18	NOx =	6	NO =	0	SCFM=	13290	TEMP=	63
886	02/28/96	14:45:20	NOx =	6	NO =	0	SCFM=	13290	TEMP=	63
887	02/28/96	14:46:19	NOx =	6	NO =	1	SCFM=	13290	TEMP=	63
888	02/28/96	14:47:21	NOx =	6	NO =	0	SCFM=	13290	TEMP=	63
889	02/28/96	14:48:19	NOx =	6	NO =	0	SCFM=	13343	TEMP=	63
890	02/28/96	14:49:19	NOx =	6	NO =	1	SCFM=	13290	TEMP=	63
891	02/28/96	14:50:19	NOx =	6	NO =	0	SCFM=	13395	TEMP=	63
892	02/28/96	14:51:19	NOx =	6	NO =	0	SCFM=	13290	TEMP=	63
893	02/28/96	14:52:18	NOx =	6	NO =	1	SCFM=	13290	TEMP=	63
894	02/28/96	14:53:19	NOx =	6	NO =	1	SCFM=	13290	TEMP=	63
895	02/28/96	14:54:19	NOx =	6	NO =	0	SCFM=	13290	TEMP=	63
896	02/28/96	14:55:20	NOx =	6	NO =	0	SCFM=	13290	TEMP=	63
897	02/28/96	14:56:20	NOx =	6	NO =	0	SCFM=	13238	TEMP=	63
898	02/28/96	14:57:18	NOx =	6	NO =	0	SCFM=	13290	TEMP=	63
899	02/28/96	14:58:19	NOx =	6	NO =	0	SCFM=	13290	TEMP=	63
900	02/28/96	14:59:19	NOx =	6	NO =	0	SCFM=	13395	TEMP=	63
901	02/28/96	15:00:17	NOx =	6	NO =	0	SCFM=	13290	TEMP=	63
902	02/28/96	15:01:19	NOx =	6	NO =	0	SCFM=	13290	TEMP=	63
903	02/28/96	15:02:18	NOx =	6	NO =	0	SCFM=	13343	TEMP=	63
904	02/28/96	15:03:19	NOx =	6	NO =	0	SCFM=	13290	TEMP=	63
905	02/28/96	15:04:18	NOx =	6	NO =	0	SCFM=	13238	TEMP=	63
906	02/28/96	15:05:17	NOx =	6	NO =	0	SCFM=	13290	TEMP=	63
907	02/28/96	15:06:18	NOx =	6	NO =	0	SCFM=	13290	TEMP=	63
908	02/28/96	15:07:17	NOx =	6	NO =	1	SCFM=	13290	TEMP=	63
909	02/28/96	15:08:17	NOx =	6	NO =	1	SCFM=	13290	TEMP=	63
910	02/28/96	15:09:18	NOx =	6	NO =	0	SCFM=	13238	TEMP=	63
911	02/28/96	15:10:16	NOx =	6	NO =	0	SCFM=	13395	TEMP=	63
912	02/28/96	15:11:18	NOx =	6	NO =	1	SCFM=	13290	TEMP=	63
913	02/28/96	15:12:18	NOx =	6	NO =	1	SCFM=	13290	TEMP=	63
914	02/28/96	15:13:17	NOx =	6	NO =	1	SCFM=	13290	TEMP=	62
915	02/28/96	15:14:18	NOx =	4	NO =	0	SCFM=	13290	TEMP=	62
916	02/28/96	15:15:18	NOx =	4	NO =	1	SCFM=	13290	TEMP=	62
917	02/28/96	15:16:17	NOx =	4	NO =	0	SCFM=	13290	TEMP=	62
918	02/28/96	15:17:18	NOx =	4	NO =	1	SCFM=	13343	TEMP=	62
919	02/28/96	15:18:17	NOx =	3	NO =	1	SCFM=	13290	TEMP=	62
920	02/28/96	15:19:17	NOx =	3	NO =	1	SCFM=	13290	TEMP=	63
921	02/28/96	15:20:17	NOx =	2	NO =	0	SCFM=	13343	TEMP=	63
922	02/28/96	15:21:16	NOx =	2	NO =	1	SCFM=	13343	TEMP=	63
923	02/28/96	15:22:18	NOx =	3	NO =	0	SCFM=	13395	TEMP=	63
924	02/28/96	15:23:17	NOx =	2	NO =	0	SCFM=	13395	TEMP=	63
925	02/28/96	15:24:15	NOx =	1	NO =	1	SCFM=	13290	TEMP=	63

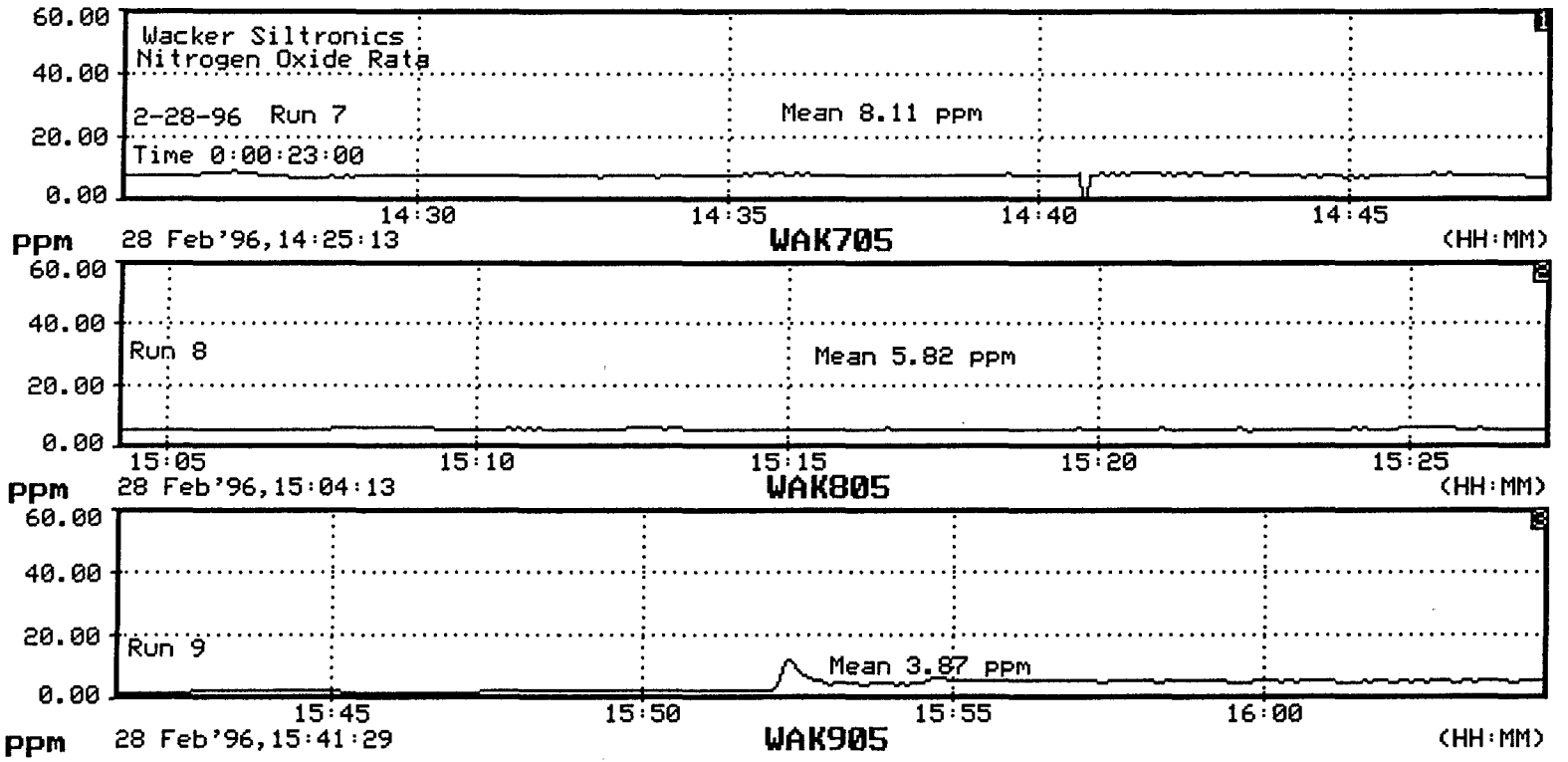
RECO	DATE	TIME	LABEL	DATA	LABEL	DATA	LABEL	DATA	LABEL	DATA
926	02/28/96	15:25:17	NOx =	1	NO =	1	SCFM=	13290	TEMP=	63
927	02/28/96	15:26:16	NOx =	2	NO =	0	SCFM=	13238	TEMP=	63
928	02/28/96	15:27:18	NOx =	3	NO =	0	SCFM=	13290	TEMP=	63
929	02/28/96	15:28:17	NOx =	2	NO =	0	SCFM=	13343	TEMP=	63
930	02/28/96	15:29:15	NOx =	3	NO =	1	SCFM=	13290	TEMP=	63
931	02/28/96	15:30:17	NOx =	3	NO =	1	SCFM=	13343	TEMP=	63
932	02/28/96	15:31:16	NOx =	10	NO =	1	SCFM=	13395	TEMP=	63
933	02/28/96	15:32:16	NOx =	5	NO =	0	SCFM=	13395	TEMP=	63
934	02/28/96	15:33:16	NOx =	6	NO =	1	SCFM=	13290	TEMP=	63
935	02/28/96	15:34:17	NOx =	6	NO =	1	SCFM=	13290	TEMP=	63
936	02/28/96	15:35:17	NOx =	6	NO =	0	SCFM=	13395	TEMP=	63
937	02/28/96	15:36:17	NOx =	6	NO =	1	SCFM=	13395	TEMP=	63
938	02/28/96	15:37:16	NOx =	5	NO =	0	SCFM=	13290	TEMP=	63
939	02/28/96	15:38:16	NOx =	5	NO =	0	SCFM=	13290	TEMP=	63
940	02/28/96	15:39:16	NOx =	5	NO =	1	SCFM=	13343	TEMP=	63
941	02/28/96	15:40:15	NOx =	6	NO =	1	SCFM=	13290	TEMP=	63
942	02/28/96	15:41:17	NOx =	6	NO =	1	SCFM=	13290	TEMP=	63
943	02/28/96	15:42:15	NOx =	6	NO =	0	SCFM=	13290	TEMP=	63
944	02/28/96	15:43:14	NOx =	6	NO =	1	SCFM=	13290	TEMP=	63
945	02/28/96	15:44:16	NOx =	6	NO =	1	SCFM=	13290	TEMP=	63
946	02/28/96	15:45:14	NOx =	5	NO =	1	SCFM=	13290	TEMP=	63
947	02/28/96	15:46:15	NOx =	5	NO =	1	SCFM=	13290	TEMP=	62
948	02/28/96	15:47:15	NOx =	5	NO =	0	SCFM=	13343	TEMP=	62
949	02/28/96	15:48:14	NOx =	5	NO =	1	SCFM=	13395	TEMP=	62
950	02/28/96	15:49:16	NOx =	6	NO =	1	SCFM=	13395	TEMP=	62
951	02/28/96	15:50:14	NOx =	5	NO =	0	SCFM=	13343	TEMP=	62
952	02/28/96	15:51:13	NOx =	6	NO =	0	SCFM=	13290	TEMP=	62
953	02/28/96	15:52:15	NOx =	6	NO =	1	SCFM=	13290	TEMP=	62
954	02/28/96	15:53:14	NOx =	12	NO =	0	SCFM=	13290	TEMP=	62
955	02/28/96	15:54:15	NOx =	7	NO =	1	SCFM=	13395	TEMP=	62
956	02/28/96	15:55:14	NOx =	6	NO =	0	SCFM=	13395	TEMP=	62
957	02/28/96	15:56:14	NOx =	6	NO =	0	SCFM=	13395	TEMP=	62
958	02/28/96	15:57:14	NOx =	5	NO =	1	SCFM=	13290	TEMP=	62
959	02/28/96	15:58:14	NOx =	6	NO =	1	SCFM=	13290	TEMP=	62
960	02/28/96	15:59:14	NOx =	4	NO =	1	SCFM=	13343	TEMP=	62
961	02/28/96	16:00:14	NOx =	4	NO =	1	SCFM=	13343	TEMP=	62
962	02/28/96	16:01:13	NOx =	4	NO =	1	SCFM=	13395	TEMP=	62
963	02/28/96	16:02:15	NOx =	5	NO =	1	SCFM=	13395	TEMP=	62
964	02/28/96	16:03:14	NOx =	5	NO =	0	SCFM=	13290	TEMP=	62
965	02/28/96	16:04:13	NOx =	10	NO =	1	SCFM=	13343	TEMP=	62
966	02/28/96	16:05:15	NOx =	4	NO =	1	SCFM=	13290	TEMP=	62
967	02/28/96	16:06:13	NOx =	3	NO =	1	SCFM=	13290	TEMP=	62
968	02/28/96	16:07:12	NOx =	2	NO =	1	SCFM=	13395	TEMP=	62
969	02/28/96	16:08:14	NOx =	2	NO =	1	SCFM=	13343	TEMP=	62
970	02/28/96	16:09:13	NOx =	2	NO =	0	SCFM=	13343	TEMP=	62
971	02/28/96	16:10:14	NOx =	10	NO =	1	SCFM=	13395	TEMP=	62
972	02/28/96	16:11:14	NOx =	9	NO =	0	SCFM=	13395	TEMP=	62
973	02/28/96	16:12:12	NOx =	11	NO =	0	SCFM=	13290	TEMP=	62
974	02/28/96	16:13:13	NOx =	6	NO =	1	SCFM=	13395	TEMP=	62
975	02/28/96	16:14:13	NOx =	3	NO =	1	SCFM=	13395	TEMP=	62
976	02/28/96	16:15:12	NOx =	3	NO =	1	SCFM=	13343	TEMP=	62

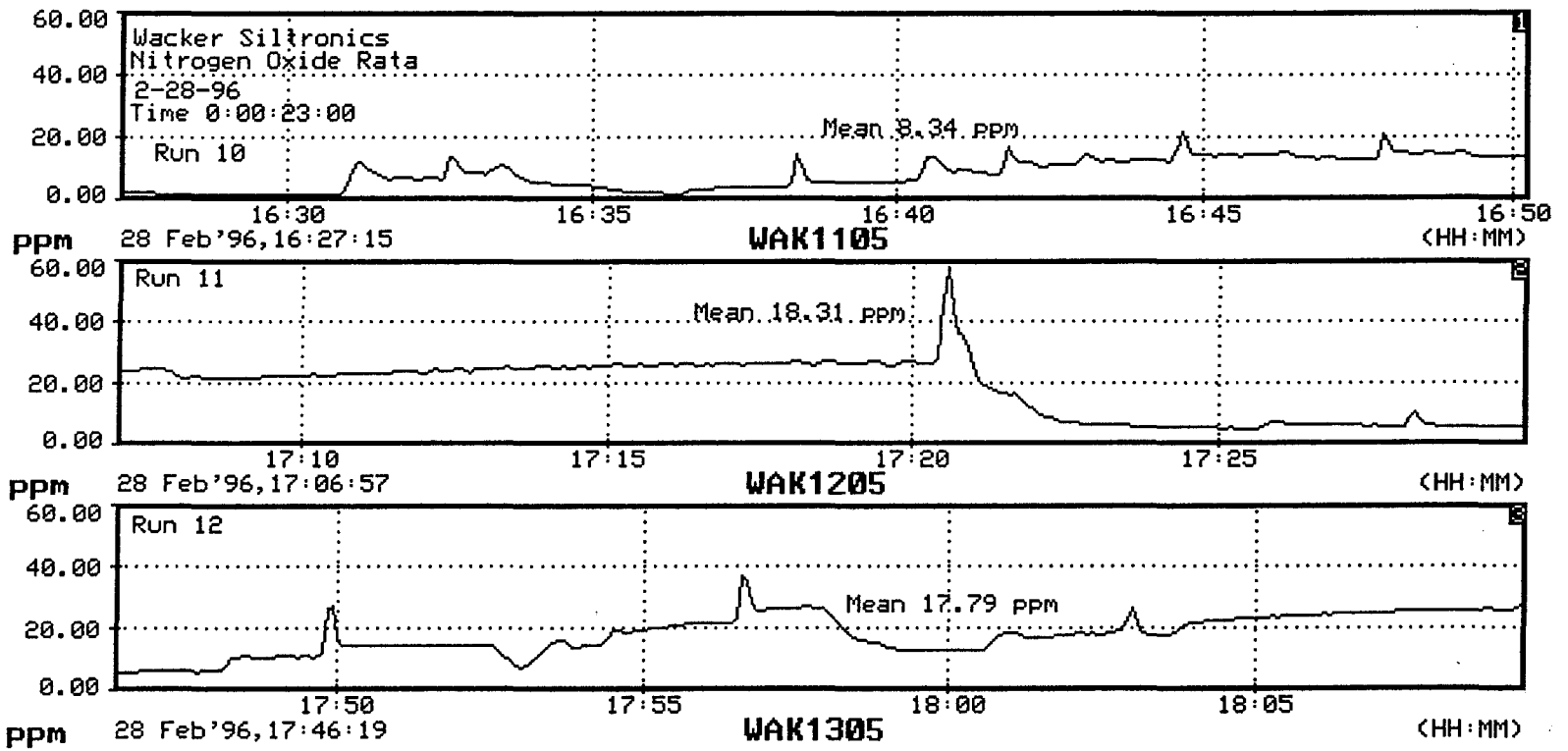
RECO	DATE	TIME	LABEL	DATA	LABEL	DATA	LABEL	DATA	LABEL	DATA
977	02/28/96	16:16:13	NOx =	5	NO =	1	SCFM=	13395	TEMP=	62
978	02/28/96	16:17:13	NOx =	9	NO =	1	SCFM=	13290	TEMP=	61
979	02/28/96	16:18:13	NOx =	7	NO =	1	SCFM=	13395	TEMP=	61
980	02/28/96	16:19:12	NOx =	12	NO =	1	SCFM=	13395	TEMP=	61
981	02/28/96	16:20:13	NOx =	10	NO =	1	SCFM=	13395	TEMP=	61
982	02/28/96	16:21:13	NOx =	12	NO =	1	SCFM=	13395	TEMP=	61
983	02/28/96	16:22:12	NOx =	14	NO =	1	SCFM=	13395	TEMP=	61
984	02/28/96	16:23:11	NOx =	14	NO =	0	SCFM=	13343	TEMP=	61
985	02/28/96	16:24:13	NOx =	16	NO =	1	SCFM=	13448	TEMP=	61
986	02/28/96	16:25:12	NOx =	16	NO =	1	SCFM=	13448	TEMP=	60
987	02/28/96	16:26:13	NOx =	15	NO =	1	SCFM=	13448	TEMP=	60
988	02/28/96	16:27:12	NOx =	17	NO =	1	SCFM=	13448	TEMP=	60
989	02/28/96	16:28:11	NOx =	16	NO =	1	SCFM=	13448	TEMP=	60
990	02/28/96	16:29:13	NOx =	15	NO =	1	SCFM=	13448	TEMP=	60
991	02/28/96	16:30:12	NOx =	26	NO =	1	SCFM=	13448	TEMP=	60
992	02/28/96	16:31:11	NOx =	23	NO =	1	SCFM=	13343	TEMP=	60
993	02/28/96	16:32:13	NOx =	29	NO =	1	SCFM=	13395	TEMP=	60
994	02/28/96	16:33:11	NOx =	29	NO =	1	SCFM=	13448	TEMP=	60
995	02/28/96	16:34:12	NOx =	30	NO =	1	SCFM=	13395	TEMP=	60
996	02/28/96	16:35:11	NOx =	28	NO =	1	SCFM=	13448	TEMP=	60
997	02/28/96	16:36:11	NOx =	27	NO =	1	SCFM=	13343	TEMP=	60
998	02/28/96	16:37:12	NOx =	28	NO =	1	SCFM=	13395	TEMP=	60
999	02/28/96	16:38:10	NOx =	28	NO =	2	SCFM=	13395	TEMP=	59
1000	02/28/96	16:39:11	NOx =	29	NO =	1	SCFM=	13395	TEMP=	59
1001	02/28/96	16:40:12	NOx =	29	NO =	1	SCFM=	13395	TEMP=	59
1002	02/28/96	16:41:10	NOx =	29	NO =	1	SCFM=	13395	TEMP=	59
1003	02/28/96	16:42:12	NOx =	29	NO =	2	SCFM=	13343	TEMP=	59
1004	02/28/96	16:43:11	NOx =	30	NO =	1	SCFM=	13395	TEMP=	59
1005	02/28/96	16:44:10	NOx =	30	NO =	1	SCFM=	13395	TEMP=	59
1006	02/28/96	16:45:12	NOx =	29	NO =	2	SCFM=	13343	TEMP=	59
1007	02/28/96	16:46:11	NOx =	29	NO =	1	SCFM=	13395	TEMP=	59
1008	02/28/96	16:47:10	NOx =	25	NO =	1	SCFM=	13395	TEMP=	59
1009	02/28/96	16:48:11	NOx =	25	NO =	1	SCFM=	13343	TEMP=	59
1010	02/28/96	16:49:10	NOx =	25	NO =	2	SCFM=	13395	TEMP=	59
1011	02/28/96	16:50:09	NOx =	26	NO =	1	SCFM=	13395	TEMP=	59
1012	02/28/96	16:51:10	NOx =	27	NO =	1	SCFM=	13448	TEMP=	59
1013	02/28/96	16:52:09	NOx =	28	NO =	2	SCFM=	13395	TEMP=	59
1014	02/28/96	16:53:11	NOx =	28	NO =	2	SCFM=	13395	TEMP=	59
1015	02/28/96	16:54:09	NOx =	28	NO =	1	SCFM=	13395	TEMP=	59
1016	02/28/96	16:55:10	NOx =	28	NO =	2	SCFM=	13343	TEMP=	59
1017	02/28/96	16:56:10	NOx =	29	NO =	1	SCFM=	13343	TEMP=	59
1018	02/28/96	16:57:10	NOx =	29	NO =	1	SCFM=	13395	TEMP=	59
1019	02/28/96	16:58:09	NOx =	29	NO =	1	SCFM=	13395	TEMP=	59
1020	02/28/96	16:59:10	NOx =	43	NO =	2	SCFM=	13395	TEMP=	59
1021	02/28/96	17:00:10	NOx =	18	NO =	1	SCFM=	13395	TEMP=	59
1022	02/28/96	17:01:10	NOx =	8	NO =	1	SCFM=	13448	TEMP=	59
1023	02/28/96	17:02:09	NOx =	6	NO =	1	SCFM=	13395	TEMP=	59
1024	02/28/96	17:03:09	NOx =	6	NO =	1	SCFM=	13395	TEMP=	59
1025	02/28/96	17:04:10	NOx =	6	NO =	1	SCFM=	13395	TEMP=	59
1026	02/28/96	17:05:09	NOx =	7	NO =	1	SCFM=	13395	TEMP=	59
1027	02/28/96	17:06:09	NOx =	7	NO =	1	SCFM=	13395	TEMP=	59

RECO	DATE	TIME	LABEL	DATA	LABEL	DATA	LABEL	DATA	LABEL	DATA
1028	02/28/96	17:07:09	NOx =	7	NO =	1	SCFM=	13343	TEMP=	59
1029	02/28/96	17:08:08	NOx =	6	NO =	1	SCFM=	13448	TEMP=	59
1030	02/28/96	17:09:10	NOx =	6	NO =	1	SCFM=	13448	TEMP=	59
1031	02/28/96	17:10:09	NOx =	6	NO =	1	SCFM=	13448	TEMP=	59
1032	02/28/96	17:11:08	NOx =	7	NO =	1	SCFM=	13343	TEMP=	59
1033	02/28/96	17:12:10	NOx =	9	NO =	1	SCFM=	13395	TEMP=	59
1034	02/28/96	17:13:09	NOx =	10	NO =	1	SCFM=	13448	TEMP=	59
1035	02/28/96	17:14:07	NOx =	12	NO =	1	SCFM=	13448	TEMP=	59
1036	02/28/96	17:15:09	NOx =	7	NO =	0	SCFM=	13290	TEMP=	59
1037	02/28/96	17:16:08	NOx =	7	NO =	1	SCFM=	13395	TEMP=	59
1038	02/28/96	17:17:09	NOx =	12	NO =	1	SCFM=	13343	TEMP=	59
1039	02/28/96	17:18:09	NOx =	7	NO =	0	SCFM=	13448	TEMP=	59
1040	02/28/96	17:19:08	NOx =	7	NO =	1	SCFM=	13343	TEMP=	59
1041	02/28/96	17:20:08	NOx =	11	NO =	1	SCFM=	13395	TEMP=	59
1042	02/28/96	17:21:08	NOx =	12	NO =	1	SCFM=	13395	TEMP=	59
1043	02/28/96	17:22:08	NOx =	16	NO =	0	SCFM=	13395	TEMP=	59
1044	02/28/96	17:23:08	NOx =	15	NO =	0	SCFM=	13448	TEMP=	59
1045	02/28/96	17:24:08	NOx =	14	NO =	0	SCFM=	13395	TEMP=	59
1046	02/28/96	17:25:09	NOx =	8	NO =	0	SCFM=	13290	TEMP=	59
1047	02/28/96	17:26:07	NOx =	7	NO =	0	SCFM=	13343	TEMP=	59
1048	02/28/96	17:27:08	NOx =	12	NO =	0	SCFM=	13448	TEMP=	59
1049	02/28/96	17:28:08	NOx =	12	NO =	0	SCFM=	13395	TEMP=	58
1050	02/28/96	17:29:07	NOx =	16	NO =	1	SCFM=	13395	TEMP=	58
1051	02/28/96	17:30:06	NOx =	16	NO =	0	SCFM=	13343	TEMP=	58
1052	02/28/96	17:31:08	NOx =	15	NO =	1	SCFM=	13395	TEMP=	58
1053	02/28/96	17:32:07	NOx =	15	NO =	1	SCFM=	13395	TEMP=	58
1054	02/28/96	17:33:05	NOx =	19	NO =	1	SCFM=	13448	TEMP=	58
1055	02/28/96	17:34:08	NOx =	23	NO =	1	SCFM=	13395	TEMP=	58
1056	02/28/96	17:35:06	NOx =	28	NO =	1	SCFM=	13343	TEMP=	58
1057	02/28/96	17:36:08	NOx =	29	NO =	2	SCFM=	13395	TEMP=	58
1058	02/28/96	17:37:07	NOx =	18	NO =	2	SCFM=	13448	TEMP=	58
1059	02/28/96	17:38:06	NOx =	13	NO =	1	SCFM=	13290	TEMP=	58
1060	02/28/96	17:39:08	NOx =	14	NO =	1	SCFM=	13343	TEMP=	58
1061	02/28/96	17:40:07	NOx =	18	NO =	1	SCFM=	13395	TEMP=	58
1062	02/28/96	17:41:06	NOx =	20	NO =	1	SCFM=	13448	TEMP=	58
1063	02/28/96	17:43:09	NOx =	25	NO =	1	SCFM=	13448	TEMP=	58
1064	02/28/96	17:44:05	NOx =	26	NO =	2	SCFM=	13395	TEMP=	58
1065	02/28/96	17:45:05	NOx =	26	NO =	1	SCFM=	13395	TEMP=	58
1066	02/28/96	17:46:05	NOx =	28	NO =	2	SCFM=	13343	TEMP=	58
1067	02/28/96	17:47:06	NOx =	28	NO =	1	SCFM=	13395	TEMP=	58
1068	02/28/96	17:48:05	NOx =	29	NO =	1	SCFM=	13343	TEMP=	58
1069	02/28/96	17:49:07	NOx =	29	NO =	1	SCFM=	13343	TEMP=	58
1070	02/28/96	17:50:06	NOx =	29	NO =	1	SCFM=	13448	TEMP=	58
1071	02/28/96	17:51:05	NOx =	29	NO =	1	SCFM=	13448	TEMP=	58
1072	02/28/96	17:52:05	NOx =	25	NO =	1	SCFM=	13343	TEMP=	58
1073	02/28/96	17:54:05	NOx =	22	NO =	1	SCFM=	13395	TEMP=	58
1074	02/28/96	17:55:04	NOx =	21	NO =	1	SCFM=	13395	TEMP=	58
1075	02/28/96	18:01:05	NOx =	24	NO =	1	SCFM=	13343	TEMP=	58
1076	02/28/96	18:02:04	NOx =	19	NO =	1	SCFM=	13343	TEMP=	58

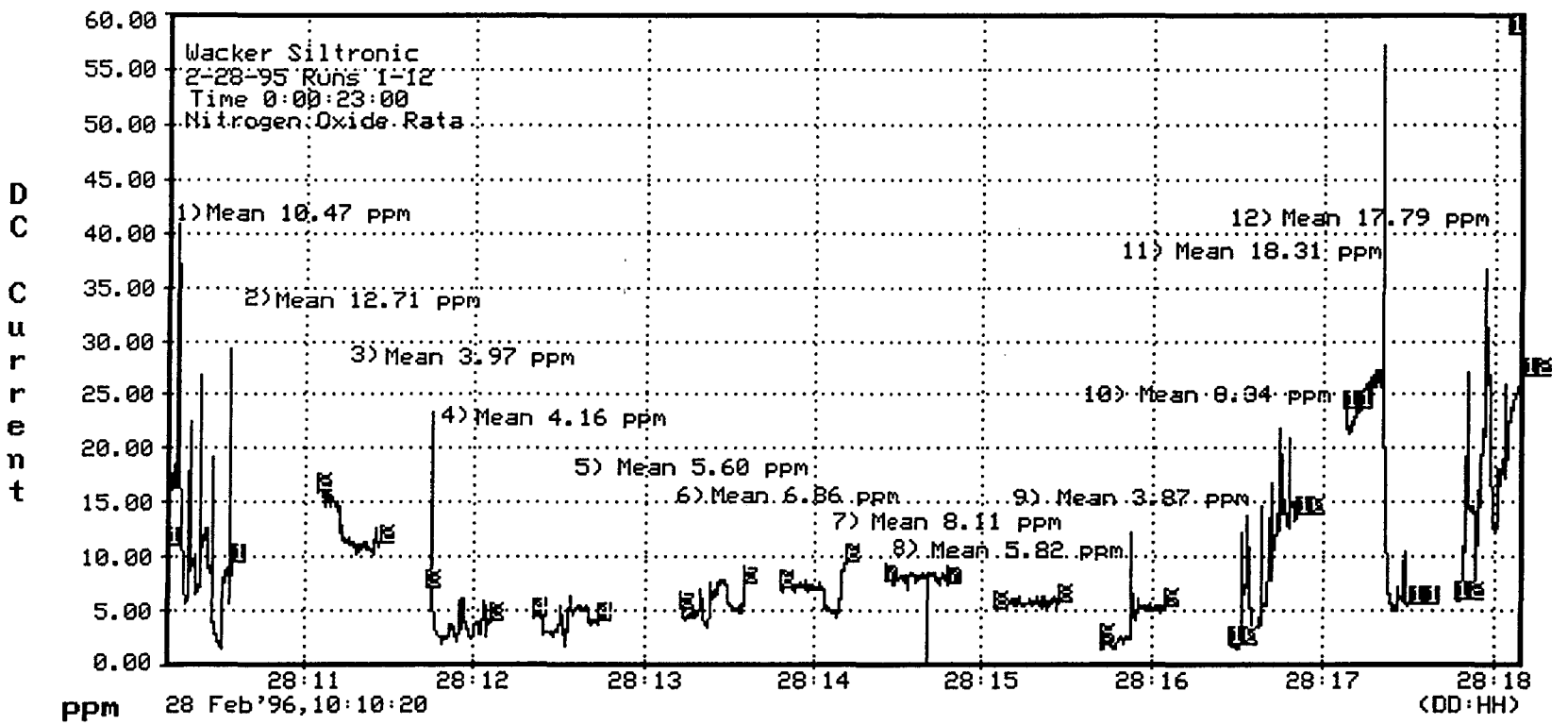

60.00
40.00
20.00
0.00
Wacker Siltronics
Nitrogen Oxide Rata
2-28-96
Run 1
Mean 10.47 ppm
Time 0:00:23:00
10:15
10:20
10:25
10:30
ppm
28 Feb'96,10:10:20
WAK105
(HH:MM)
60.00
40.00
20.00
0.00
Run 2
Mean 12.71 ppm
11:05
11:10
11:15
11:20
11:25
ppm
28 Feb'96,11:03:44
WAK205
(HH:MM)
60.00
40.00
20.00
0.00
Run 3
Mean 3.97 ppm
11:45
11:50
11:55
12:00
12:05
ppm
28 Feb'96,11:42:46
WAK305
(HH:MM)


60.00
40.00
20.00
0.00
Wacker Siltronics
Nitrogen Oxides Rata
2-28-96 Run 4
Time 0:00:23:00
Mean 4.16 ppm
12:25
12:30
12:35
12:40
ppm
28 Feb'96,12:21:00
WAK405
(HH:MM)
60.00
40.00
20.00
0.00
Run 5
Mean 5.60 ppm
13:15
13:20
13:25
13:30
13:35
ppm
28 Feb'96,13:12:19
WAK505
(HH:MM)
60.00
40.00
20.00
0.00
Run 6
Mean 6.86 ppm
13:50
13:55
14:00
14:05
14:10
ppm
28 Feb'96,13:48:33
WAK605
(HH:MM)


60.00
40.00
20.00
0.00
Wacker Siltronics
Nitrogen Oxide Rate
2-28-96 Run 7
Mean 8.11 ppm
Time 0:00:23:00
14:30
14:35
14:40
14:45
ppm
28 Feb'96,14:25:13
WAK705
(HH:MM)
60.00
40.00
20.00
0.00
Run 8
Mean 5.82 ppm
15:05
15:10
15:15
15:20
15:25
ppm
28 Feb'96,15:04:13
WAK805
(HH:MM)
60.00
40.00
20.00
0.00
Run 9
Mean 3.87 ppm
15:45
15:50
15:55
16:00
ppm
28 Feb'96,15:41:29
WAK905
(HH:MM)



SCOEPA00022579


Wacker Siltronic
2-28-95 Runs 1-12
Time 0:00:23:00
Nitrogen Oxide Rata
1) Mean 10.47 ppm
2) Mean 12.71 ppm
3) Mean 3.97 ppm
4) Mean 4.16 ppm
5) Mean 5.60 ppm
6) Mean 6.86 ppm
7) Mean 8.11 ppm
8) Mean 5.82 ppm
9) Mean 3.87 ppm
10) Mean 8.84 ppm
11) Mean 18.31 ppm
12) Mean 17.79 ppm
DC Current
ppm
60.00
55.00
50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
28:11
28:12
28:13
28:14
28:15
28:16
28:17
28:18
28 Feb'96,10:10:20
(DD:HH)

NOx Drift Correction

Wacker Siltronic
NOx Scrubber

Test Length time **23** min

Number of Completed Runs			Run 1	Run 2	Run 3	Run 4	Run 5	Run 6	Run 7	Run 8	Run 9	Run 10	Run 11	Run 12
System Calibration Time - Initial		Tci	**10:07**	10:35	11:30	12:08	12:45	13:37	14:15	14:49	15:28	16:15	16:52	17:35
Test Time-Starting		Tts	**10:10**	**11:03**	**11:43**	**12:21**	**13:13**	**13:49**	**14:25**	**15:04**	**15:42**	**16:27**	**17:07**	**17:46**
Test Time-Ending		Tte	10:33	11:26	12:06	12:44	13:36	14:12	14:48	15:27	16:05	16:50	17:30	18:09
System Calibration Time - Final		Tcf	10:35	11:30	12:08	12:45	13:37	14:15	14:49	15:28	16:15	16:52	17:35	**18:15**
Test Mid-point Time		Tx	10:21	11:14	11:54	12:32	13:24	14:00	14:36	15:15	15:53	16:38	17:18	17:57
Nitrogen Oxides	NOx	Span	**250**	**250**	**250**	**250**	**250**	**250**	**250**	**250**	**250**	**250**	**250**	**250**
Indicated average-Dry	ppmv	Cid	**10.47**	**12.71**	**3.97**	**4.16**	**5.60**	**6.86**	**8.11**	**5.82**	**3.87**	**8.34**	**18.31**	**17.79**
Cylinder Value - High Range calibration gas	ppmv	Cma	**73.00**	73.00	73.00	73.00	73.00	73.00	73.00	73.00	73.00	73.00	73.00	73.00
Cylinder Value - Low Range (Zero) calibration gas	ppmv	Coa	**0.00**	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
System Calibration Response - High Range gas - Initia	ppmv	Cmi	**73.65**	73.20	73.15	73.25	73.71	73.48	73.34	73.54	73.62	73.31	72.86	72.89
System Calibration Response - Low Range gas - Initial	ppmv	Coi	**-0.19**	0.02	0.08	0.14	0.17	0.28	0.50	0.62	0.78	0.19	0.51	0.59
System Calibration Response - Low Range gas - Final	ppmv	Cof	**0.02**	**0.08**	**0.14**	**0.17**	**0.28**	**0.50**	**0.62**	**0.78**	**0.92**	**0.51**	**0.59**	**0.67**
System Calibration Response - High Range gas - Final	ppmv	Cmf	**73.20**	**73.15**	**73.25**	**73.71**	**73.48**	**73.34**	**73.54**	**73.62**	**73.48**	**72.86**	**72.89**	**72.59**
Actual average - Dry (Corrected for Drift)	ppmv	Cgas	10.48	12.63	3.85	3.98	5.33	6.45	7.55	5.10	3.03	7.99	17.92	17.37

WACKER = 1801 = HORIZON 1809
* or 1748 = HORIZON 1809

Relative Accuracy Field Data

Client WACKER-SILTRONIC
Date 2-28-96
Observer Jack Herbelts

Source NOx Scrubber
Location Wacker
Horizon Personnel KDT/BTF

Time :		10:00		10:07	1035	11.30	1208	1245	1337	14/5	1449	1528	1615	1657	1735	1815		
Gas/ Range	Bottle Value	Instrument Response		Run 1	Run 2	Run 3	Run 4	Run 5	Run 6	Run 7	Run 8	Run 9	Run 10	Run 11	Run 12			Final Bias
(32) (11) NOx	2238	2238	Start					22245										
	73.0	73.6	Bias	73.65	73.2	73.15	73.25	73.71	73.48	7334	73.54	73.62	73.31	7286	72.89			
0-250	00	.03		-.19	-.02	+.08	.14	+.17	.28	.50	.62	.78	.19	.51	.59			
			End				22245											
			Bias	73.2	73.15	73.25	73.71	73.48	73.34	73.54	7362	7348	7286	72.89	72.59			
				02	.08	.14	.17	.28	.50	.62	.78	.92	.51	.59	.67			
			Start															
			Bias															
0-																		
			End															
			Bias															
			Start	1010	1103	1143	1221	1313	1349	1425	1504	1542	1629	1707	1746			
			End	1033	1127	1206	1244	1336	1412	1448	1522	1605	1650	1730	1809			
												1610						
	Instrument Response		High									223.61						
			Mid									73.45						
			Low									+.06						

Notes:

Run 10 = Run 11 on Data loggers.

Leak Check _____
Response Time 28 sec.

Flowrate Determination

Client	Wacker Siltronic	Sampling	1	2	3	4	5	6	7	8	9	10	11	12
Source	NOx Scrubber	Point												
Location	Portland, OR	1	0.2534	0.2434	0.2514	0.24	0.2778	0.2605	0.3031	0.1990	0.2417	0.2950	0.20	0.21
Date	Feb 28, 96	2	0.3135	0.2853	0.2773	0.25	0.2813	0.3009	0.2946	0.2688	0.2095	0.2352	0.26	0.27
Testers	kdt/btf	3	0.2940	0.2757	0.2876	0.26	0.3080	0.3041	0.3000	0.2971	0.3036	0.2988	0.27	0.30
File	wacker	4	0.2053	0.1968	0.2013	0.18	0.1793	0.1866	0.1890	0.3075	0.3065	0.3437	0.18	0.20
Equipment	Short Ridge;Mag 01F;ss5-s	5	0.2499	0.2420	0.2649	0.23	0.2516	0.2671	0.2742	0.1984	0.1669	0.2115	0.23	0.25
Total Runs	12	6	0.2885	0.2566	0.2761	0.26	0.2847	0.2434	0.2567	0.2330	0.2716	0.2562	0.24	0.26
Pts per Run	16	7	0.2642	0.2513	0.2546	0.21	0.3127	0.2500	0.2645	0.2759	0.2972	0.2909	0.22	0.26
		8	0.2188	0.1938	0.2426	0.20	0.2048	0.2513	0.2594	0.2581	0.2514	0.2314	0.20	0.20
		9	0.1746	0.2264	0.1790	0.21	0.2210	0.2004	0.2603	0.2618	0.2549	0.1916	0.18	0.20
		10	0.2028	0.1984	0.1825	0.18	0.2056	0.1842	0.1779	0.1879	0.2595	0.2301	0.18	0.18
		11	0.1749	0.2279	0.2045	0.20	0.2065	0.2105	0.2148	0.2044	0.2040	0.2038	0.20	0.24
		12	0.2514	0.2789	0.2105	0.26	0.2792	0.2824	0.2481	0.1742	0.2780	0.2595	0.21	0.25
		13	0.2406	0.3037	0.2458	0.22	0.2935	0.2837	0.2848	0.2826	0.2504	0.2625	0.21	0.24
		14	0.2897	0.2834	0.2528	0.21	0.2503	0.2788	0.2947	0.2616	0.2280	0.2579	0.22	0.24
		15	0.1948	0.2825	0.2180	0.25	0.2821	0.2818	0.2495	0.2897	0.2348	0.2758	0.22	0.23
		16	0.2404	0.2434	0.2514	0.20	0.2778	0.2500	0.2501	0.2387	0.2522	0.2551	0.20	0.19
		SQRT(dP)	0.4891	0.4982	0.4861	0.4708 Mag 0-1f	0.5056	0.5008	0.5062	0.4944	0.4993	0.5048	0.4615 Mag 0-1f	0.4810 Mag 0-1f

Symbol	Definitions, Units	Method/Notes	1	2	3	4	5	6	7	8	9	10	11	12
	Time		10:55	11:35	12:10	12:50	13:40	14:11	14:50	15:30	16:10	16:57	17:35	18:15
Ds	Duct diameter	in	39.4	39.4	39.4	39.4	39.4	39.4	39.4	39.4	39.4	39.4	39.4	39.4
As	Cross Section	in²	1,217.7	1,217.7	1,217.7	1,217.7	1,217.7	1,217.7	1,217.7	1,217.7	1,217.7	1,217.7	1,217.7	1,217.7
Cp	Pitot Coef.		0.8331	0.8331	0.8331	0.8331	0.8331	0.8331	0.8331	0.8331	0.8331	0.8331	0.8331	0.8331
Ts	Duct temperature	°F	59.6	58.6	62.0	62.8	64.2	65.0	63.9	64.0	62.0	61.4	61.0	57.0
Ts	Duct temperature	°R	519.3	518.3	521.7	522.5	523.9	524.7	523.6	523.7	521.7	521.1	520.7	516.7
Tdb	Dry bulb temperature	°F	59.6	58.6	62.0	62.8	64.2	65.0	63.9	64.0	62.0	61.4	61.0	57.0
Twb	Wet bulb temperature	°F	54.8	53.8	57.8	57.6	58.0	58.4	57.1	58.0	56.0	55.6	55.0	49.0
Pbar	Barometric Pressure	in Hg	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00
Pg	Static Pressure	in H2O	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15
Ps	Duct Pressure	in Hg	29.99	29.99	29.99	29.99	29.99	29.99	29.99	29.99	29.99	29.99	29.99	29.99
dp^½			0.4891	0.4982	0.4861	0.4708	0.5056	0.5008	0.5062	0.4944	0.4993	0.5048	0.4615	0.4810
Bws	Moisture, % Stack	(Psychometry)	1.28	1.21	1.50	1.45	1.45	1.46	1.36	1.45	1.32	1.30	1.25	0.76
mfg	Mole fraction dry gas		0.987	0.988	0.985	0.985	0.986	0.985	0.986	0.985	0.987	0.987	0.988	0.992
Md	Molecular weight Dry		28.97	28.97	28.97	28.97	28.97	28.97	28.97	28.97	28.97	28.97	28.97	28.97
Ms	Molecular weight Wet		28.83	28.83	28.80	28.81	28.81	28.81	28.82	28.81	28.82	28.82	28.83	28.88
vs	Velocity stack	fpm	1,619.9	1,648.2	1,614.5	1,564.7	1,682.4	1,667.7	1,683.7	1,644.8	1,657.4	1,674.7	1,530.5	1,587.6
Qa	Flowrate actual	acf/min	13,697.8	13,937.5	13,652.4	13,230.9	14,226.6	14,102.3	14,237.8	13,908.8	14,015.5	14,161.3	12,942.0	13,424.9
Qsd	Flowrate @std	dscf/min	13,772.6	14,050.2	13,632.5	13,198.1	14,154.6	14,007.7	14,185.8	13,842.6	14,021.7	14,186.8	12,981.5	13,636.7

Horizon Engineering 503/255-5050 FAX 255-0505

Horizon Engineering
13585 N.E. Whitaker Way
Portland, Oregon 97230
503/255-5050 FAX# 503/255-0505

VOLUME FLOWRATE MEASUREMENT

Plant WACKER - SILTRONIC
Sampling Location NOx SCRUBBER OUTLET
Test Conditions DATA - NORMAL
Date 2-28-96 Time
Duct Dimensions 39.375 ⌀
Duct Area 1217.674 in^2
Gauge I.D. SHORT in H20 By KDT
Post Test Leak Check ✓ ✓ ✓ ✓ ✓ ✓ ✓

P_o = Barometric Pressure 30.00 in Hg
C_p = Pitot Coefficient .8330S
Pitot I.D. #5-S

Run #	1	2	3	4	5	6	7	8	9	
Time	1055	1135	1210	1250	1340	1510	1550	1530	1610	
Pt/ 1	.2534	.2434	.2514	.24	.2778	.2605	.3031	.1990	.2417	
SW 2	.3135	.2853	.2773	.25	.2813	.3009	.2946	.2688	.2095	
3	.2946	.2757	.2876	.26	.3080	.3041	.300	.2971	.3036	
4	.2053	.1968	.2013	.18	.1793	.1866	.1890	.3075	.3065	
5	.2499	.2420	.2649	23	.2516	.2671	.2742	.1984	.1669	
6	.2885	.2566	.2761	26	.2847	.2434	.2567	.2330	.2716	
7	.2642	.2513	.2546	21	.3127	.2500	.2645	.2759	.2972	
8	.2188	.1938	.2426	20	.2048	.2513	.2594	.2581	.2514	
NW 1	.1746	.2269	.1790	21	.2210	.2004	.2603	.2618	.2549	
2	.2028	.1984	.1825	18	.2056	.1842	.1779	.1879	.2595	
3	.1749	.2279	.2045	20	.2065	.2105	.2148	.2044	.2040	
4	.2514	.2789	.2105	26	.2792	.2824	.2481	.1742	.2760	
5	.2406	.3037	.2458	22	.2935	.2837	.2848	.2826	.2504	
6	.2897	.2834	.2528	21	.2503	.2788	.2997	.2616	.2280	
7	.1948	.2825	.2180	25	.2821	.2818	.2995	.2897	.2348	
8	.2404	.2434	.2514	20	.2770	.2500	.2501	.2387	.2522	
Avg	~~.2411~~	~~.2493~~	~~.2375~~	~~.2225~~	~~.2593~~	~~.2522~~	~~.2576~~	~~.2462~~	~~.2506~~	
					Twb 58°	58.4°	57.1	58	56	
					Tdb 64.2	65°	63.9	64	62	

Avg √ΔP 0.489

TEMP = 58.8 — 58.6 ON TRAVERSE

Symbol	Definition, Units	Method/Equation	Run 1	Run 2	Run 3	Average
T_{db}	Dry bulb temp., °F		59.6	58.6	62	62.8
T_{wb}	Wet bulb temp., °F		54.8	53.8	57.8	57.6
P_{stat}	Static press., in H_2O		-.15	-.15	-.15	-.15
T_s	Duct temp., °R	T_{db} + 460				
P_s	Duct press., in Hg	P_o ± Pstat/13.6				
S		Avg √ΔP x √T_s				
mv	% H_2O in gas stream	Psychrometry	1.278			
md	Mole fraction dry gas	1.00 - mv/100				
Md	Molecular weight of dry gas	Gas analysis	29.86			
Ms	Molecular wt of act. gas	Ms = mdMd + 18 (1-md)				
Vs	Velocity, fpm	Vs = 5125s (1/PsMs)$^{1/2}$ (Cp)	1595.8			
qa	Actual flowrate, acfm	qa = VsAs/144	13,494			
qs	Flowrate @ std cond, scfm	qs = 0.123 VsAs md Ps / Ts	13,573			

Horizon Engineering

13585 N.E. Whitaker Way
Portland, Oregon 97230
503/255-5050 FAX# 503/255-0505

VOLUME FLOWRATE MEASUREMENT

Plant WACKER
Sampling Location NOx SCRUBBER
Test Conditions
Date 2-28-96 Time VARIOUS
Duct Dimensions 39.375 S
Duct Area 1217.674 in²
Gauge I.D. SHORT / 15 in H20 By KDT
Post Test Leak Check ✓

P_o = Barometric Pressure 30.00 in Hg
C_p = Pitot Coefficient .833
Pitot I.D. #5-S

Run #	10	11	12							
Time	1657	1735	1815							
Pt/SW1	.2950	20	21							
2	.2352	26	27							
3	.2988	27	30							
4	.3437	18	20							
5	.2115	23	25							
6	.2562	24	26							
7	.2909	22	.26							
8	.2314	20	.20							
NW1	.1916	18	20							
2	.2301	19	18							
3	.2038	20	24							
4	.2595	21	25							
5	.2625	21	24							
6	.2579	22	24							
7	.2758	22	23							
8	.2551	20	19							
	~~.2562~~	~~.2438~~	~~.2325~~							
Avg √ΔP										

Symbol	Definition, Units	Method/Equation	Run 10	Run 11	Run 12	Average
T_{db}	Dry bulb temp., °F		61.4	61.0	57	
T_{wb}	Wet bulb temp., °F		55.6	55.	49	
P_{stat}	Static press., in H_2O		-.148	-.15	-.15	
T_s	Duct temp., °R	T_{db} + 460				
P_s	Duct press., in Hg	P_o ± Pstat/13.6				
S		Avg √ΔP x √ T_s				
mv	% H_2O in gas stream	Psychrometry				
md	Mole fraction dry gas	1.00 - mv/100				
Md	Molecular weight of dry gas	Gas analysis				
Ms	Molecular wt of act. gas	Ms = mdMd + 18 (1-md)				
Vs	Velocity, fpm	Vs = 5125s $(1/PsMs)^{1/2}$ (Cp)				
qa	Actual flowrate, acfm	qa = VsAs/144				
qs	Flowrate @ std cond, scfm	qs = 0.123 VsAs md Ps / Ts				

SCOTT-MARRIN, INC.
6531 BOX SPRINGS BLVD. • RIVERSIDE, CA 92507
TELEPHONE (909) 653-6780 • FAX (909) 653-2430

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REPORT OF ANALYSIS
NIST TRACEABLE GAS MIXTURES

HENGØ1

TO:

DATE: Ø7/27/95

DAVID ROSSMAN
HORIZON ENGINEERING
13585 NE WHITAKER WAY
PORTLAND, OR 97230-

CUSTOMER ORDER NUMBER: ØØØ1299

CYLINDER NUMBER	COMPONENT	CONCENTRATION(v/v)	NIST TRACEABLE REFERENCE STANDARD
CC99500	Carbon monoxide	331 ± 3 ppm	SRM 1680b
	Nitric oxide	73.Ø ± Ø.7 ppm	SRM 1684b
	Carbon dioxide	6.ØØ ± Ø.Ø6 %	SRM 1674B
	Propane	12.66 ± Ø.13 ppm	SRM 1667b
	Sulfur dioxide	59.7 ± 1.2 ppm	SRM 1694a
	Nitrogen,O2-Free	Balance	

ppm = umole/mole % = mole-%

The above analyses are traceable to the National Institute of Standards and Technology by intercomparison with the reference standards listed above.
Where indicated, volumetric and gravimetric reference standards are traceable thru use of our analytical balance. NIST Report No. MMAP 232.09/202491.

Analyst: Mark Monson
M.J. Monson

Approved:
J.T. Marrin

The only liability of this company for gas which fails to comply with this analysis shall be replacement or reanalysis thereof by the company without extra cost.

STANDARD CALIBRATION GASES IN ALUMINUM CYLINDERS

SCOTT-MARRIN, INC.
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REPORT OF ANALYSIS
NIST TRACEABLE GAS MIXTURES

HENGØ1

TO:

DAVID ROSSMAN
HORIZON ENGINEERING
13585 N.E. WHITAKER WAY
PORTLAND, OR 97230-

DATE: Ø5/Ø8/95

CUSTOMER ORDER NUMBER: ØØØ1257

CYLINDER NUMBER	COMPONENT	CONCENTRATION(v/v)	NIST TRACEABLE REFERENCE STANDARD
CC97886	Carbon monoxide	956 ± 1Ø ppm	SRM 1681b
	Nitric oxide	223.8 ± 2.2 ppm	SRM 1685b
	Carbon dioxide	22.43 ± Ø.22 %	SRM 1675b
	Methane	99.2 ± 1.Ø ppm	L2293
	Sulfur dioxide	184.9 ± 1.8 ppm	SRM 1661a
	Nitrogen,O2-Free	Balance	

ppm = umole/mole % = mole-%

The above analyses are traceable to the National Institute of Standards and Technology by intercomparison with the reference standards listed above.
Where indicated, volumetric and gravimetric reference standards are traceable thru use of our analytical balance. NIST Report No. MMAP 232.09/202491.

Analyst: M.J. Monson

Approved: J.T. Marrin

The only liability of this company for gas which fails to comply with this analysis shall be replacement or reanalysis thereof by the company without extra cost.

STANDARD CALIBRATION GASES IN ALUMINUM CYLINDERS

Horizon Engineering

13585 N.E. Whitaker Way
Portland, Oregon 97230
503/255-5050 FAX# 503/255-0505

FAXED 1/26/96

January 26, 1996

David Sellers
Oregon Department of Environmental Quality
2020 S.W. 4th, Suite 400
Portland, OR 97201

Re: Source Testing, Wacker Siltronics Corporation
7200 N.W. Front
P.O. Box 83160
Portland, OR 97283-0160

This correspondence is notice that Horizon Engineering is to do source testing for the above-referenced facility, scheduled for February 8, 1996. This will serve as the source test plan unless changes are requested prior to the start of testing.

1. **Source to be Tested:** NO_x Scrubber system outlet

2. **Purpose of the Testing:** Discharge Permit requirement (26-3002) for RA testing of the CEMs on the exhaust.

3. **Source Description:** The NO_x scrubber is a three stage tower, outside the building, that exhausts through a non-metallic duct. Existing sampling ports meet EPA Method 1 criteria. The exhaust temperature is near ambient

4. **Pollutants to be Tested:** NO_x

5. **Test Methods to be Used:**

Flowrate:	EPA Methods 1 and 2
Moisture:	ODEQ Method 4 (wet and dry bulb thermometry)
NO_x:	EPA Method 7E (chemiluminescent analyzer)
Relative Accuracy:	EPA Performance Specification 2

6. **Number of Sampling Replicates:** Twelve (12) Relative Accuracy (RA) test runs of about 25 minutes, of which 9 or more will be used. In no case will sampling replicates be separated by a time duration of twenty-four (24) or more hours, unless prior authorization is granted by the DEQ.

SCOEPA00022588

7. **Source Testing Company:** Horizon Engineering
   (503) 255-5050
   Fax (503) 255-0505
   Contact Personnel: David Rossman
   or Kurt Torgerson

8. **Source Site Personnel:** Tom McCue
   (503) 243-2020 x7532
   Fax (503) 241-7599

9. **Regulatory Contacts:** David Sellers
   (503) 229-6991
   Fax (503) 229-6957

10. **Applicable Process/Production Information:** Process operating data and production information that characterizes the source operation is considered to be: Source CEMs data for the sampling period.

11. **Control Device Operating Parameters:** Scrubber pressure drop, liquid flow rate, and pH (if monitored).

12. **Opacity readings to be taken by:** N/A

13. **Certified plume evaluator:** Yes ( ) No ( ) N/A (x)

14. **Other process considerations,** including intermittent production, special feed or product, etc.: None known

15. **Administrative:** Unless notified prior to the start of testing, this test plan is considered to be approved for compliance testing of this source. A letter acknowledging receipt of this plan and agreement on the content (or changes as necessary) would be appreciated.

The Department will be notified of any changes in source test plans prior to testing. It is recognized that significant changes not acknowledged, which could affect accuracy and reliability of the results, could result in test report rejection.

Method-specific quality assurance/quality control (QA/QC) procedures will be performed to ensure that the data is valid for determining source compliance. Documentation of the procedures and results will be presented in the source test report for review.

Source test reports will be submitted to you within 45 days of the completion of the field work, unless another deadline has been stipulated.

Two (2) copies of the completed source test report should be sent to you, by Mr. McCue, at the address above.

SCOEPA00022589

Any questions or comments relating to this test plan should be directed to me

Sincerely,

HORIZON ENGINEERING

David R. Rossman, P.E.

cc: Tom McCue, Wacker Siltronics
Frank Deaver, Deaver Environmental Group, Inc.

Oregon

DEPARTMENT OF
ENVIRONMENTAL
QUALITY

NORTHWEST REGION

February 1, 1996

ATTN TOM MCCUE
WACKER SILTRONIC CORPORATION
PO BOX 83180
PORTLAND OR 97283

ATTN DAVID R ROSSMAN PE
HORIZON ENGINEERING
13585 NE WHITAKER WAY
PORTLAND OR 97230

Re: AQ Multnomah County
ACDP No 26-3002
Wacker Siltronic Corporation
Plan for the relative accuracy test audit of the NO_x and flow-rate continuous monitoring system

Dear Messrs McCue and Rossman:

The Department of Environmental Quality has reviewed the test plan submitted for a relative accuracy test audit of the continuous monitoring system (CMS) on February 8, 1996. This plan is approved by the Department with the following conditions:

1. Copies of the chart of NO_x concentrations and of the electronic records of NO_x concentrations and anemometer readings, showing the values during the test runs, shall be included in the test report. Calculation of emission rates (lb/hr) by Wacker Siltronic in the way used for determining compliance shall be followed and documented for each test run. From the average concentration, flow rate, and emission rate for each test run, Horizon shall calculate the relative accuracy of each variable. Biases in concentration and flow rate indicate how to improve accuracy. The relative accuracy of the emission rate is compared with the criterion in EPA Performance Specification 2 (PS2).

2. The locations of sampling points shall comply with PS2, section 3.2. The test plan should contain diagrams showing the sampling location in relation other components of the production, control, and exhaust system and showing the locations of traverse points. A preliminary sampling traverse shall be made of two perpendicular stack diameters to determine the diameter with greater variation in concentrations, and that diameter shall be used for the samples measured.

John A. Kitzhaber
Governor

2020 SW Fourth Avenue
Suite 400
Portland, OR 97201-4987
(503) 229-5263 Voice
TTY (503) 229-5471
DEQ-1

SCOEPA00022591

If you have questions regarding the test, operating conditions, or reporting, or if the test schedule or plan changes, please call me at (503) 229-5579.

Sincerely,

Jack Herbert
Source Testing Coordinator

JHH

cc: Dave Sellers:NWR

Terri Sylvester:AQ:DEQ

PLANT SITE EMISSION LIMITS

5. Plant site emissions shall not exceed the following:

a. Wafer Manufacturing Process Annual and Short Term Limits:

NO_x tons/yr (lbs/day)	VOC tons/yr (lbs/mon)	SO2 tons/yr (lbs/hr)	PM tons/yr (lbs/hr)	CO tons/yr (lbs/hr)
24 (130)	53 (10000)	— —	1 (1.2)	— —

b. Fuel Burning Equipment (Boilers and Emergency Generators) Annual Limits:

NO_x tons/yr	VOC tons/yr	SO2 tons/yr	PM tons/yr	CO tons/yr
49	1	61	7	24

1. Boiler Short Term Limits:

NO_x (lbs/hr)	VOC (lbs/hr)	SO2 (lbs/hr)	PM (lbs/hr)	CO (lbs/hr)
(14)	(0.3)	(14)	(2.9)	(5.5)

2. Emergency Generator Short Term Limits:

NO_x (lbs/hr)	VOC (lbs/hr)	SO2 (lbs/hr)	PM (lbs/hr)	CO (lbs/hr)
(63)	(1.9)	(6.2)	(1.4)	(13.7)

Compliance with the wafer manufacturing nitrogen oxide limitations shall be determined on a daily basis as measured by continuous emission monitoring required in conditions 11 and 12. Wafer manufacturing volatile organic compound emission limits shall be determined based on monitoring required in conditions 12 and 13. Compliance with the wafer manufacturing particulate emission limits shall be based on compliance with condition 1.

Compliance with fuel burning emission limits shall be based on fuel use, and AP42 emission factors or source specific stack test data. The short term pound per hour emission limit is based on operating at maximum capacity using the highest emitting fuel.

AIR POLLUTION EPISODES

7. The permittee may elect to file a Source Emission Reduction Plan (SERP) with the Department in accordance with OAR 340-27-015, specifying the procedures the permittee will follow in the event an Air Pollution Alert, Warning, or Emergency Episode is declared in the Portland area by the Department. The

Source Emission Reduction Plan shall be available on the source premises for inspection by any authorized personnel.

In the event an Air Pollution Alert, Warning, or Emergency Episode is declared in the Portland area by the Department, the permittee shall take actions appropriate to the declared Air Pollution Episode as listed in the Source Emission Reduction Plan on file with the Department, or with Oregon Administrative Rules 340, Division 27 "Air Pollution Emergencies" if no Source Emission Reduction Plan has been filed with the Department.

Air Pollution Episodes will be declared by the Department and information will be made available through the radio and television media.

URCE PERFORMANCE STANDARDS

The permittee shall comply with the New Source Performance Standards in Subpart Dc, 40 CFR Part 60 for the three new industrial boilers, with heat input capacity of 21 million BTUs per hour, installed after the issue date of this permit. This includes notification of the date of construction, anticipated startup, and actual startup of the natural gas fired boilers as provided by 40 CFR 60.48c and 40 CFR 60.7. Notification shall be submitted to the Department and to the U.S. Environmental Protection Agency, unless otherwise notified by the Department.

ATING AND MAINTENANCE REQUIREMENTS

Each emergency generator shall not operate more than 200 hours in a year.

ITORING REQUIREMENTS

TINUOUS EMISSION MONITORING

The permittee shall install, calibrate, maintain, and operate a continuous monitoring system for measuring nitrogen oxide emission from the three stage nitrogen oxide scrubber to demonstrate compliance with condition 6. The continuous emission monitoring system used shall at a minimum conform with the Department's Continuous Monitoring Manual, January 1992. The permittee shall complete installation and performance tests of the equipment and begin monitoring and recordkeeping within 90 days of the date of permit issuance. The results of the initial Relative Accuracy Test Audit shall be submitted within 90 days of permit issuance.

NITORING PARAMETERS

The permittee shall effectively inspect and monitor the operation and maintenance of the plant and associated air contaminant control facilities and shall implement the procedures necessary to monitor and record the following parameters. A record of all such data shall be maintained for a period of two years at the plant site for inspection by the authorized representatives of the Department.

ster	Minimum Monitoring Frequency
A description of any physical repair to the air contaminant control systems.	On Occurrence
Excess emission records defined in OAR 340-28-1400 through OAR 340-28-1440.	On Occurrence
NO_x continuous emission monitor records as defined in 5.1 of the Continuous Monitoring Manual, January 1992	On Occurrence
Three stage NO_x scrubber NO_x emission in ppmv, pounds per hour, and pounds per day.	Continuous
Three stage NO_x scrubber exhaust gas flow rate and temperature.	Continuous
The amount of distillate oil burned.	Annually
The distillate oil sulfur content on a weight basis.	Each Shipment
The amount of natural gas burned in the boilers.	Annual for all natural gas burned. Daily for natural gas burned in the NSPS boilers
The number of hours of emergency diesel generator operation.	On Occurrence
The amount and type of VOC cleaning solvent used by weight.	Monthly
The amount of VOC waste collected and VOC sent to the waste water treatment plant	Monthly
Determine VOC emissions for each month based on mass balance of VOC used and VOC waste collected (j. - k).	Monthly

ORTING REQUIREMENTS

The permittee shall submit to the Department by February 15 of each year this permit is in effect two (2) copies of the following information for the preceding calendar year:

a. Quantity of natural gas and diesel oil burned on an annual basis, and resulting criteria pollutant annual emissions.

b. Annual wafer manufacturing NOx emission.

c. The amount of total VOCs emitted on an annual basis.

d. The amount of VOC cleaning solvent emitted each month.

1. The temperature of the pH electrode must be known and constant because pH varies with electrode temperature.

2. The pH electrode shall be calibrated before each use, using pH 7 and pH 10 buffers, according to a written procedure.

F. Gas flow rates, in and out of the system, must be checked and documented three times each week. Liquid flow rates must be checked once per month. There must be a written procedure for checking flows, and a procedure for correcting those flows found to be out of limits.

G. Flow measurement devices for liquids and gases must be calibrated at least annually, and the calibration documented. Flow measurement accuracy must be within ± 3%.

H. Water vapor content (i.e. absolute humidity) of the gas exiting the CEMS and the particulate scrubbing efficiency of the CEMS shall be verified and documented annually. The particulate scrubbing efficiency shall be determined by measuring the amount of particulate matter collected on a one-hour glass-fiber filter sample of the CEMS exiting gas stream.

I. The percent sodium in the stack particulate shall be measured annually using an isokinetic impinger sample train and flame atomic absorption analysis. The sampling and analytical method shall be described in a written procedure and results documented.

4.3 Continuous Emissions Monitoring Systems (CEMS)

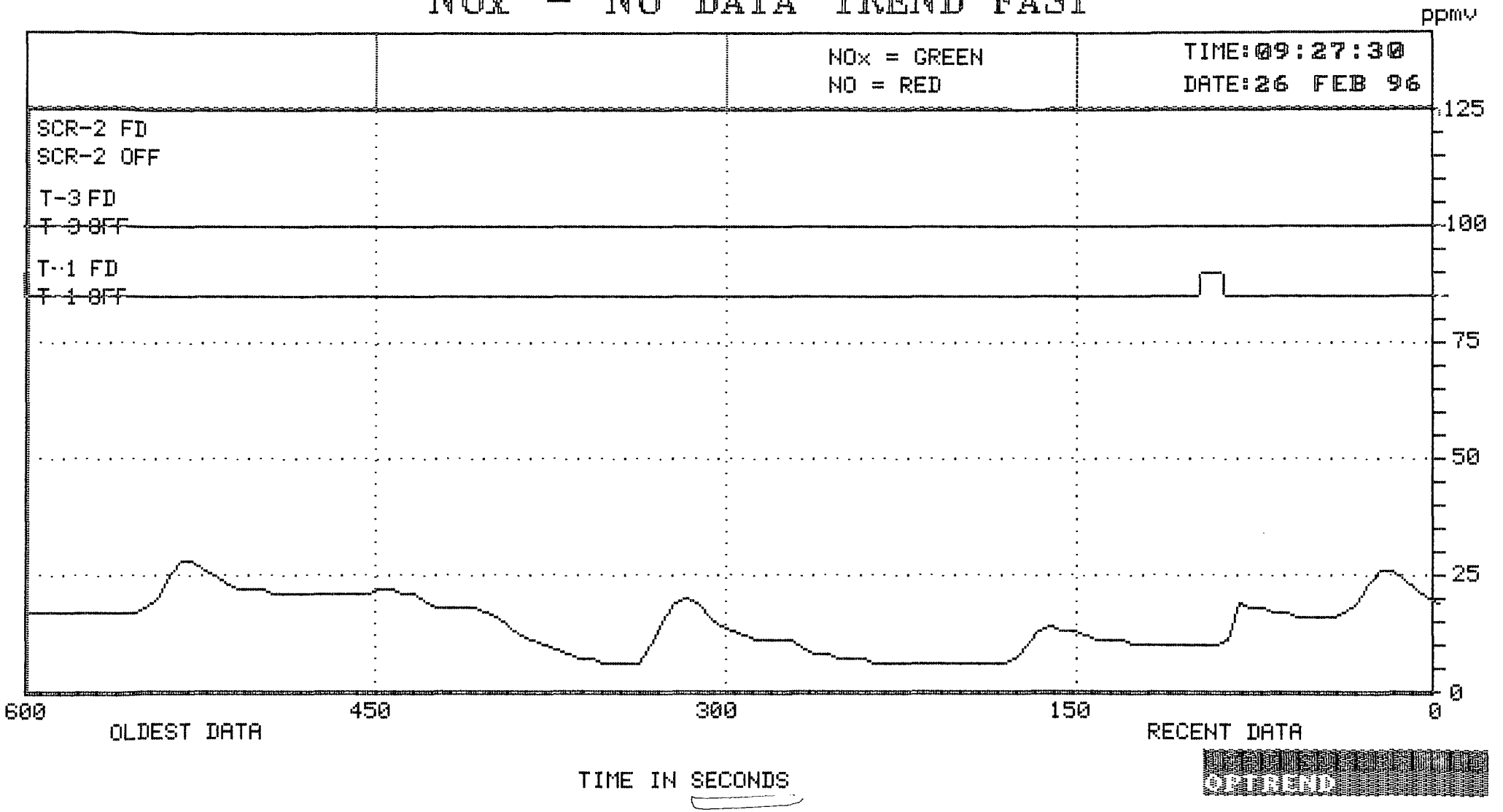
4.3.1 NSPS sources and CEMS installed after 6/1/91

A. The CEMS shall continuously monitor and record the concentration of gaseous pollutant emissions on a wet or dry basis discharged into the atmosphere consisting of subsystems for sample extraction, conditioning, detection, analysis, and data recording/processing.

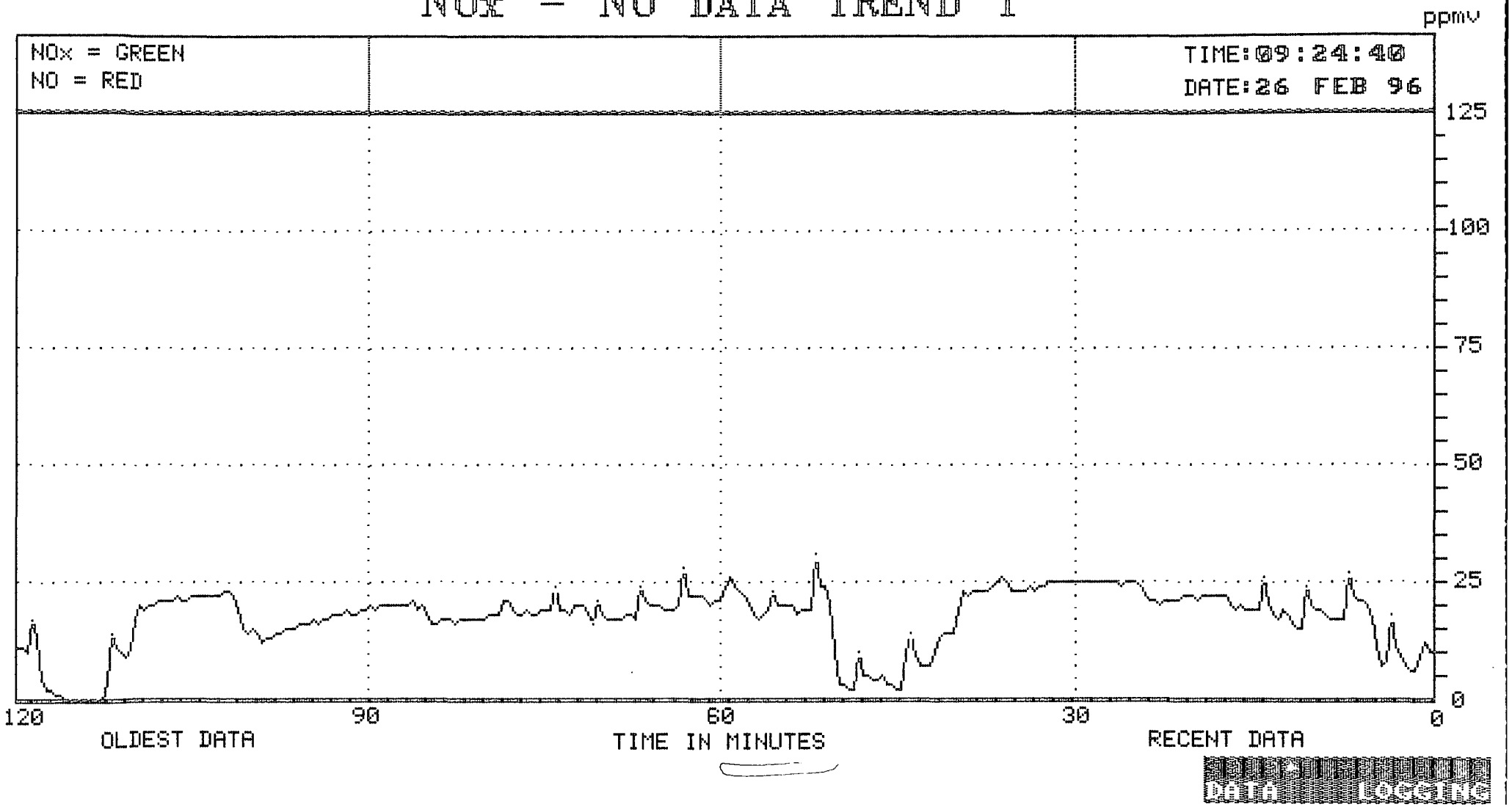
B. All CEMS must meet the performance specifications of 40 CFR 60, Appendix B. (Included for reference in Appendix D of this manual). The specific performance specifications are listed below:

1. SO_2 and NO_x CEMS - Performance Specification 2

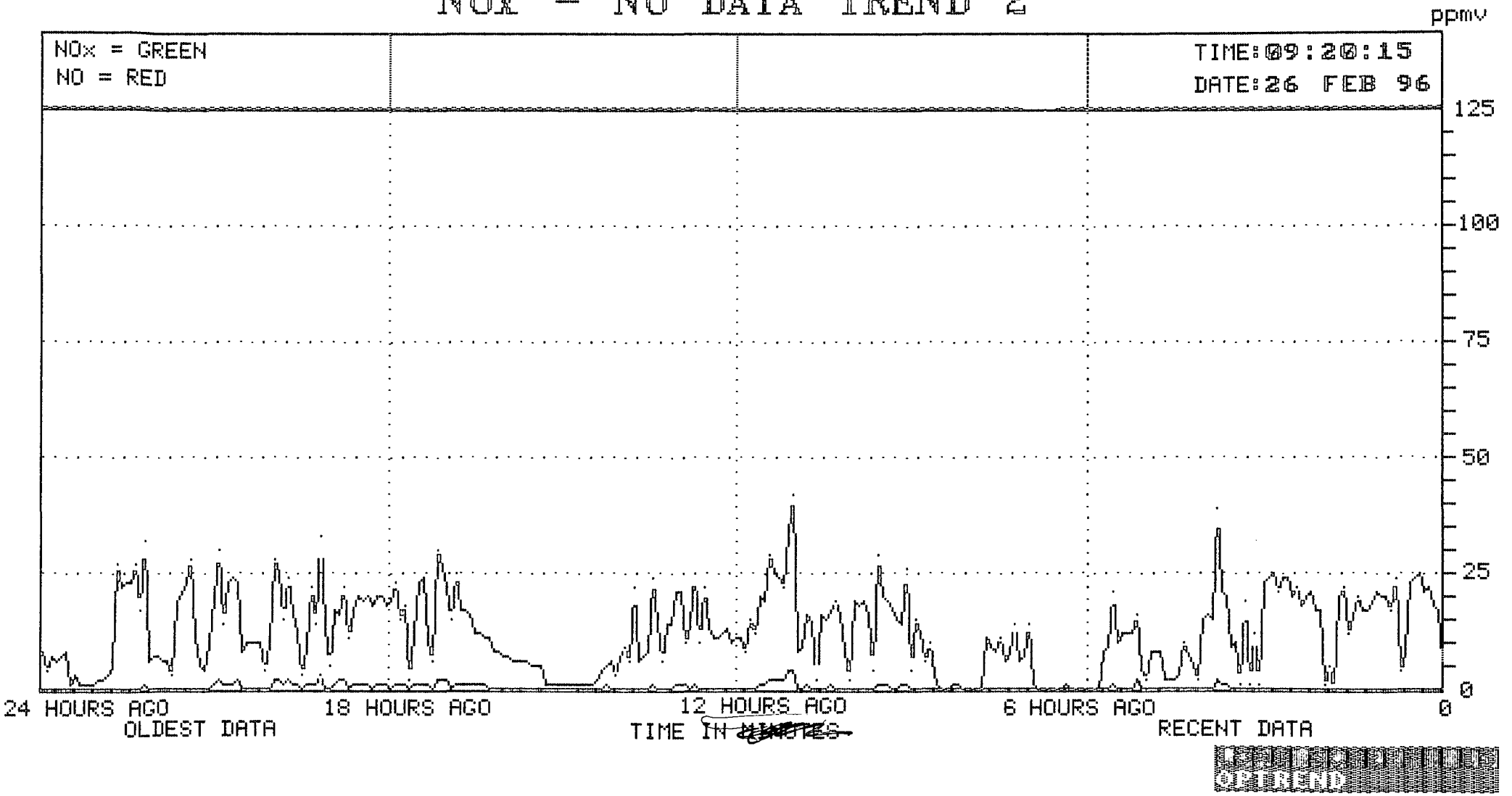
NOx - NO DATA TREND FAST



NOx - NO DATA TREND 1



NOx - NO DATA TREND 2



Wacker Siltronic Corporation

TO: Tom McCue

FROM: Dave Locke

SUBJECT: NOx SCRUBBER DATA ERROR

DATE: February 13, 1996

Yesterday I noted an unusual trend of NOx and NO on the operator screen. The apparent problem was signified by the trends zeroing-out too high on the trend graph.

I concluded that it may have been the result of a calibration error. In checking the valving and regulators in the gas cabinet, I noticed that the regulator for one of the calibration gases was set for too low of a delivery pressure required by the analyzer.

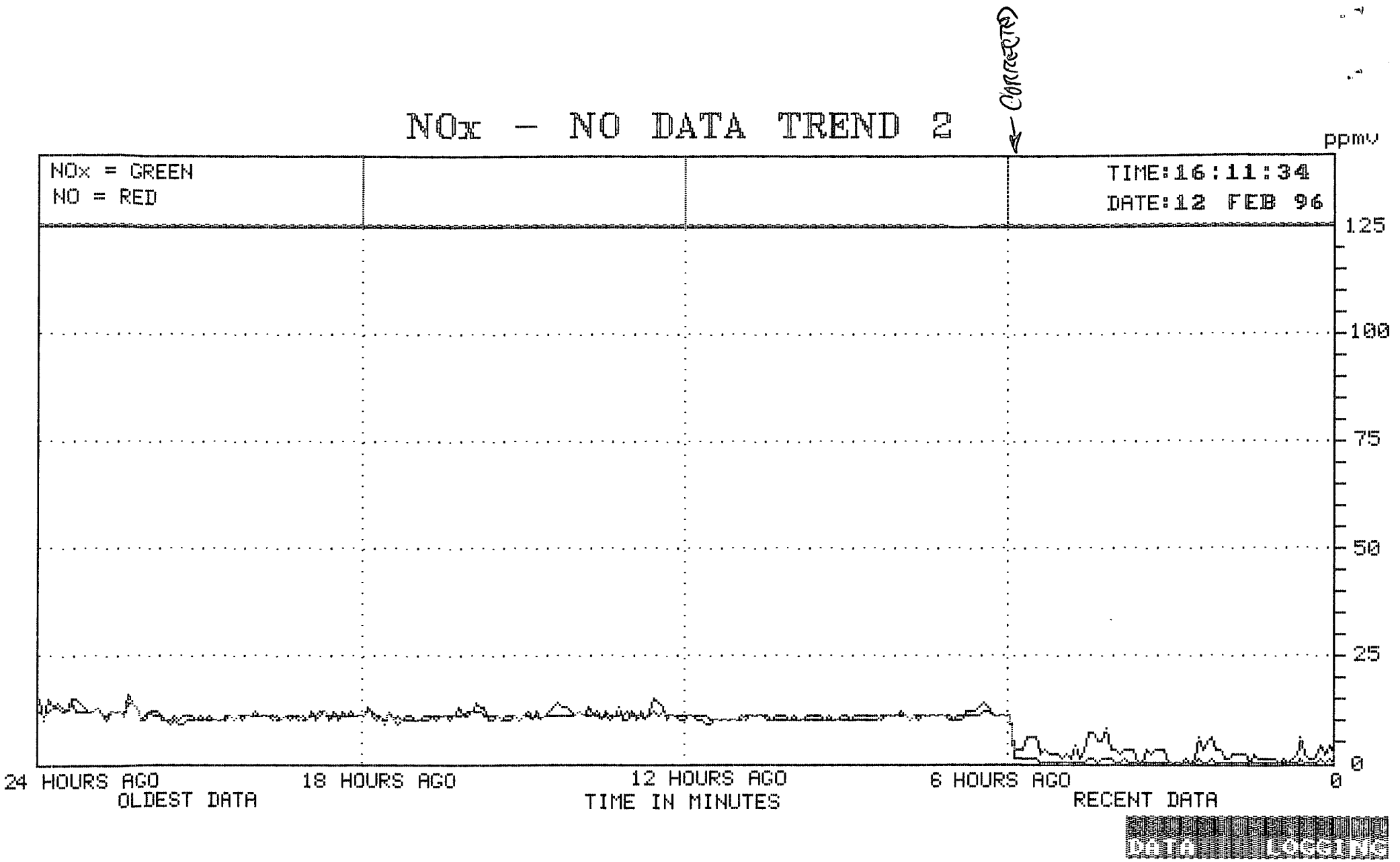
After a response from maintenance, the Horiba Analyzer was correctly recalibrated.

I estimate that the error is as follows: The readings displayed and recorded by the CEM were as much as 11 ppm higher than actual.

Attached is "minute" data from 2/11/96 that shows the error in the trend beginning approximately 12:30pm. This trend error lasted until about 10:15am 2/12/96, as shown by the trend plot, also attached.

In checking the NOx CEM this morning, everything was operating correctly and as normal.

If there is any other information I can provide, please let me know.


NOx – NO DATA TREND 2
Corrected
ppmv
NOx = GREEN
NO = RED
TIME:16:11:34
DATE:12 FEB 96
125
100
75
50
25
0
24 HOURS AGO
OLDEST DATA
18 HOURS AGO
12 HOURS AGO
TIME IN MINUTES
6 HOURS AGO
RECENT DATA
0
Data Locals

Log File Report - Time/Date for 02/11/96 12:15:00 to 02/11/96 13:30:00
FORM NAME: MINLOG FILENAME: C:\LOGS\1MIN.D27 TYPE: DAILY
Page 1 Tue Feb 13 09:05:29 1996

RECO	DATE	TIME	LABEL	DATA	LABEL	DATA	LABEL	DATA	LABEL	DATA
737	02/11/96	12:15:58	NOx =	5	NO =	2	SCFM=	13290	TEMP=	72
738	02/11/96	12:16:59	NOx =	4	NO =	2	SCFM=	13238	TEMP=	72
739	02/11/96	12:17:58	NOx =	4	NO =	2	SCFM=	13343	TEMP=	72
740	02/11/96	12:18:58	NOx =	3	NO =	2	SCFM=	13290	TEMP=	72
741	02/11/96	12:19:59	NOx =	4	NO =	2	SCFM=	13290	TEMP=	72
742	02/11/96	12:20:58	NOx =	3	NO =	2	SCFM=	13290	TEMP=	72
743	02/11/96	12:21:58	NOx =	3	NO =	3	SCFM=	13395	TEMP=	72
744	02/11/96	12:22:58	NOx =	3	NO =	2	SCFM=	13290	TEMP=	72
745	02/11/96	12:23:58	NOx =	3	NO =	2	SCFM=	13343	TEMP=	72
746	02/11/96	12:24:59	NOx =	3	NO =	2	SCFM=	13290	TEMP=	72
747	02/11/96	12:25:57	NOx =	3	NO =	2	SCFM=	13395	TEMP=	72
748	02/11/96	12:26:57	NOx =	4	NO =	2	SCFM=	13343	TEMP=	72
749	02/11/96	12:27:58	NOx =	4	NO =	2	SCFM=	13290	TEMP=	72
750	02/11/96	12:28:57	NOx =	5	NO =	2	SCFM=	13448	TEMP=	72
751	02/11/96	12:29:57	NOx =	5	NO =	3	SCFM=	13290	TEMP=	72
752	02/11/96	12:30:57	NOx =	4	NO =	3	SCFM=	13395	TEMP=	72
753	02/11/96	12:31:57	NOx =	3	NO =	3	SCFM=	13290	TEMP=	72
754	02/11/96	12:32:57	NOx =	4	NO =	3	SCFM=	13238	TEMP=	72
755	02/11/96	12:33:56	NOx =	4	NO =	2	SCFM=	13290	TEMP=	72
756	02/11/96	12:34:57	NOx =	4	NO =	3	SCFM=	13343	TEMP=	72
757	02/11/96	12:35:56	NOx =	3	NO =	2	SCFM=	13395	TEMP=	72
758	02/11/96	12:36:56	NOx =	3	NO =	3	SCFM=	13395	TEMP=	72
759	02/11/96	12:37:57	NOx =	4	NO =	2	SCFM=	13395	TEMP=	72
760	02/11/96	12:38:55	NOx =	3	NO =	2	SCFM=	13395	TEMP=	72
761	02/11/96	12:39:56	NOx =	4	NO =	2	SCFM=	13395	TEMP=	72
762	02/11/96	12:40:55	NOx =	5	NO =	3	SCFM=	13290	TEMP=	72
763	02/11/96	12:41:56	NOx =	5	NO =	3	SCFM=	13343	TEMP=	72
764	02/11/96	12:42:55	NOx =	6	NO =	3	SCFM=	13395	TEMP=	72
765	02/11/96	12:43:56	NOx =	6	NO =	3	SCFM=	13395	TEMP=	72
766	02/11/96	12:44:56	NOx =	5	NO =	3	SCFM=	13238	TEMP=	72
767	02/11/96	12:45:55	NOx =	5	NO =	3	SCFM=	13395	TEMP=	72
768	02/11/96	12:46:55	NOx =	6	NO =	3	SCFM=	13395	TEMP=	72
769	02/11/96	12:47:56	NOx =	7	NO =	3	SCFM=	13395	TEMP=	72
770	02/11/96	12:48:55	NOx =	9	NO =	3	SCFM=	13395	TEMP=	72
771	02/11/96	12:49:55	NOx =	10	NO =	3	SCFM=	13395	TEMP=	72
772	02/11/96	12:50:54	NOx =	12	NO =	4	SCFM=	13395	TEMP=	72
773	02/11/96	12:51:55	NOx =	11	NO =	4	SCFM=	13343	TEMP=	72
774	02/11/96	12:52:55	NOx =	11	NO =	5	SCFM=	13448	TEMP=	72
775	02/11/96	12:53:54	NOx =	12	NO =	5	SCFM=	13395	TEMP=	72
776	02/11/96	12:54:55	NOx =	11	NO =	6	SCFM=	13448	TEMP=	72
777	02/11/96	12:55:54	NOx =	12	NO =	6	SCFM=	13290	TEMP=	72
778	02/11/96	12:56:54	NOx =	11	NO =	7	SCFM=	13395	TEMP=	72
779	02/11/96	12:57:54	NOx =	12	NO =	8	SCFM=	13395	TEMP=	72
780	02/11/96	12:58:53	NOx =	12	NO =	8	SCFM=	13395	TEMP=	72
781	02/11/96	12:59:54	NOx =	12	NO =	9	SCFM=	13395	TEMP=	72
782	02/11/96	13:00:53	NOx =	12	NO =	10	SCFM=	13395	TEMP=	72
783	02/11/96	13:01:53	NOx =	12	NO =	10	SCFM=	13290	TEMP=	72
784	02/11/96	13:02:54	NOx =	12	NO =	11	SCFM=	13395	TEMP=	72
785	02/11/96	13:03:52	NOx =	11	NO =	11	SCFM=	13395	TEMP=	72

RECO	DATE	TIME	LABEL	DATA	LABEL	DATA	LABEL	DATA	LABEL	DATA
786	02/11/96	13:04:53	NOx =	11	NO =	11	SCFM=	13395	TEMP=	72
787	02/11/96	13:05:53	NOx =	11	NO =	11	SCFM=	13343	TEMP=	72
788	02/11/96	13:06:52	NOx =	11	NO =	10	SCFM=	13343	TEMP=	72
789	02/11/96	13:07:53	NOx =	11	NO =	10	SCFM=	13343	TEMP=	72
790	02/11/96	13:08:52	NOx =	11	NO =	11	SCFM=	13290	TEMP=	72
791	02/11/96	13:09:52	NOx =	11	NO =	10	SCFM=	13395	TEMP=	72
792	02/11/96	13:10:53	NOx =	10	NO =	10	SCFM=	13290	TEMP=	72
793	02/11/96	13:11:52	NOx =	10	NO =	11	SCFM=	13395	TEMP=	72
794	02/11/96	13:12:53	NOx =	10	NO =	10	SCFM=	13395	TEMP=	72
795	02/11/96	13:13:51	NOx =	10	NO =	11	SCFM=	13395	TEMP=	72
796	02/11/96	13:14:52	NOx =	10	NO =	11	SCFM=	13290	TEMP=	73
797	02/11/96	13:15:52	NOx =	11	NO =	11	SCFM=	13290	TEMP=	73
798	02/11/96	13:16:51	NOx =	13	NO =	13	SCFM=	13290	TEMP=	73
799	02/11/96	13:17:52	NOx =	14	NO =	13	SCFM=	13395	TEMP=	73
800	02/11/96	13:18:51	NOx =	15	NO =	13	SCFM=	13290	TEMP=	73
801	02/11/96	13:19:51	NOx =	16	NO =	13	SCFM=	13290	TEMP=	73
802	02/11/96	13:20:52	NOx =	14	NO =	13	SCFM=	13290	TEMP=	73
803	02/11/96	13:21:51	NOx =	14	NO =	13	SCFM=	13290	TEMP=	73
804	02/11/96	13:22:51	NOx =	16	NO =	13	SCFM=	13395	TEMP=	73
805	02/11/96	13:23:50	NOx =	15	NO =	13	SCFM=	13395	TEMP=	73
806	02/11/96	13:24:50	NOx =	14	NO =	13	SCFM=	13290	TEMP=	73
807	02/11/96	13:25:51	NOx =	14	NO =	13	SCFM=	13290	TEMP=	73
808	02/11/96	13:26:50	NOx =	16	NO =	13	SCFM=	13290	TEMP=	73
809	02/11/96	13:27:50	NOx =	16	NO =	13	SCFM=	13343	TEMP=	73
810	02/11/96	13:28:51	NOx =	17	NO =	13	SCFM=	13290	TEMP=	73
811	02/11/96	13:29:50	NOx =	18	NO =	13	SCFM=	13290	TEMP=	73

Log File Report - Time/Date for 02/11/96 13:30:00 to 02/11/96 14:00:00
FORM NAME: MINLOG FILENAME: C:\LOGS\IMIN.D27 TYPE: DAILY
Page 1 Tue Feb 13 09:08:28 1996

RECO	DATE	TIME	LABEL	DATA	LABEL	DATA	LABEL	DATA	LABEL	DATA
812	02/11/96	13:30:50	NOx =	17	NO =	13	SCFM=	13290	TEMP=	73
813	02/11/96	13:31:49	NOx =	15	NO =	14	SCFM=	13290	TEMP=	72
814	02/11/96	13:32:50	NOx =	13	NO =	13	SCFM=	13290	TEMP=	72
815	02/11/96	13:33:50	NOx =	13	NO =	13	SCFM=	13343	TEMP=	73
816	02/11/96	13:34:49	NOx =	14	NO =	13	SCFM=	13290	TEMP=	73
817	02/11/96	13:35:50	NOx =	14	NO =	13	SCFM=	13395	TEMP=	73
818	02/11/96	13:36:49	NOx =	14	NO =	13	SCFM=	13290	TEMP=	73
819	02/11/96	13:37:49	NOx =	14	NO =	12	SCFM=	13290	TEMP=	73
820	02/11/96	13:38:49	NOx =	15	NO =	13	SCFM=	13448	TEMP=	73
821	02/11/96	13:39:48	NOx =	15	NO =	13	SCFM=	13395	TEMP=	73
822	02/11/96	13:40:49	NOx =	16	NO =	13	SCFM=	13343	TEMP=	73
823	02/11/96	13:41:48	NOx =	15	NO =	13	SCFM=	13290	TEMP=	73
824	02/11/96	13:42:49	NOx =	14	NO =	13	SCFM=	13290	TEMP=	73
825	02/11/96	13:43:49	NOx =	16	NO =	13	SCFM=	13343	TEMP=	73
826	02/11/96	13:44:48	NOx =	15	NO =	13	SCFM=	13290	TEMP=	73
827	02/11/96	13:45:48	NOx =	17	NO =	14	SCFM=	13290	TEMP=	73
828	02/11/96	13:46:47	NOx =	11	NO =	11	SCFM=	13290	TEMP=	73
829	02/11/96	13:47:48	NOx =	12	NO =	11	SCFM=	13290	TEMP=	73
830	02/11/96	13:48:48	NOx =	12	NO =	11	SCFM=	13395	TEMP=	73
831	02/11/96	13:49:47	NOx =	11	NO =	11	SCFM=	13290	TEMP=	73
832	02/11/96	13:50:47	NOx =	11	NO =	11	SCFM=	13343	TEMP=	73
833	02/11/96	13:51:49	NOx =	11	NO =	11	SCFM=	13343	TEMP=	73
834	02/11/96	13:52:47	NOx =	11	NO =	11	SCFM=	13290	TEMP=	73
835	02/11/96	13:53:48	NOx =	13	NO =	11	SCFM=	13395	TEMP=	73
836	02/11/96	13:54:46	NOx =	10	NO =	11	SCFM=	13290	TEMP=	73
837	02/11/96	13:55:48	NOx =	10	NO =	11	SCFM=	13290	TEMP=	73
838	02/11/96	13:56:47	NOx =	10	NO =	10	SCFM=	13290	TEMP=	73
839	02/11/96	13:57:47	NOx =	11	NO =	11	SCFM=	13290	TEMP=	73
840	02/11/96	13:58:47	NOx =	10	NO =	11	SCFM=	13238	TEMP=	73
841	02/11/96	13:59:46	NOx =	11	NO =	11	SCFM=	13343	TEMP=	73

2/12/96

NOx CEM

Tom -

THE ERROR (WHICH I THINK IS THE CASE) INDICATES APPROXIMATELY 10 ppm HIGHER THAN ACTUAL. I'm NOT SURE OVER WHAT TIME HISTORY.

I'LL SEE WHERE MAINTENANCE IS ON CORRECTING THIS.

Dave R. 1st Mon.

1:30 LARRY MONK ADVISES CAL. PROBLEM HAS BEEN ADDRESSED, FUNCTIONING NORMALLY.

Dave

SCOEPA00022605

TOM -
MARGARET FOUND MANUAL.
IN MEAN TIME I RAN
THIS EXCERPT FROM
SEC "6".
- DAVE L.

SCOEPA00022606

FCI® Fluid Components, Inc. San Marcos, Ca.

JUN 22 1993 F.C.I. TECH. 14

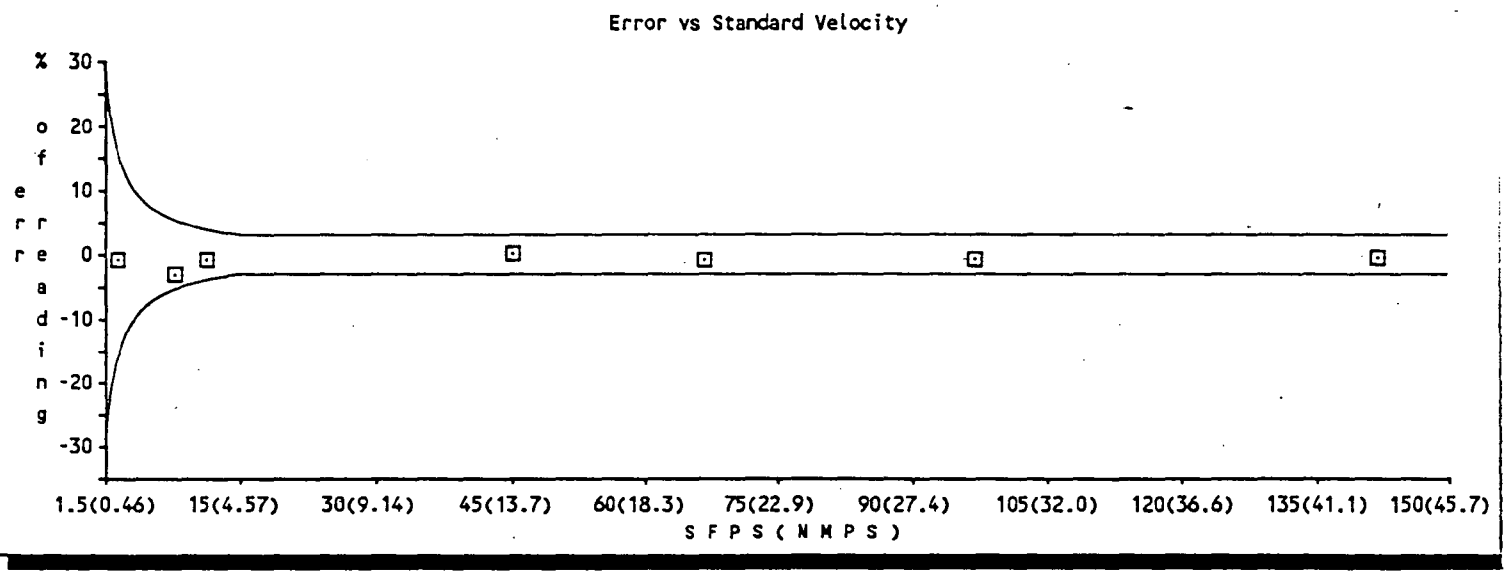
CERTIFICATE OF CALIBRATION

Model..... AF88
Serial Number..... 118357
Calibration Date.... 06/22/93

Fluid Components Incorporated certifies that this instrument has been calibrated for the following operating conditions using standards and instruments traceable to the National Institute of Standards and Technology (formerly the National Bureau of Standards) and internationally accepted measuring practices :

media	AIR
temperature range	40 - 100 °F
pressure range	10 - 25 psia
flow range	1.5 - 150 SFPS

Within the above specified range this instrument has been proven to exceed accuracy specifications. Actual flow verification points are plotted below :



The reference standards that support this system are calibrated on a schedule that maintains their traceability . The calibration instrument's control numbers are listed below :

Flow Meter #1	FM 4810	Counter #1	NA	Pressure #3	NA
Flow Meter #2	FM 3921	Counter #2	NA	Pressure #4	NA
Flow Meter #3	NA	Pressure #1	PG 119	Voltage Meter	EL 226
Flow Meter #4	NA	Pressure #2	PG 118	Temperature	RP 1

JUN 22 19[illegible] F.C.I. TECH. 14

FCI Technician

NOTEBOOK
STN 90101000
TRI NOX/NO_2 SYSTEM

INSTRUMENT CHARACTERISTICS

F.C.I. TECH. 110

Model	AF88
Serial Number	118357
Calibration Date	06/22/93
media	AIR
temperature range	40 - 100 °F
pressure range	10 - 25 psia
flow range	1.5 - 150 SFPS
line inside diameter	4.026 in
orientation	vertical
mounting	side
flow direction	up

Instrument signal output is linear with flow rate and is calculated using the following equation;

A = 9.375
B = -37.5

Flow Rate = A x Signal Output + B

Look-Up Table generated using above equation:

mA	SFPS	mA	SFPS	mA	SFPS
4.0000	0.000	9.4000	50.625	14.8000	101.250
4.2000	1.875	9.6000	52.500	15.0000	103.125
4.4000	3.750	9.8000	54.375	15.2000	105.000
4.6000	5.625	10.0000	56.250	15.4000	106.875
4.8000	7.500	10.2000	58.125	15.6000	108.750
5.0000	9.375	10.4000	60.000	15.8000	110.625
5.2000	11.250	10.6000	61.875	16.0000	112.500
5.4000	13.125	10.8000	63.750	16.2000	114.375
5.6000	15.000	11.0000	65.625	16.4000	116.250
5.8000	16.875	11.2000	67.500	16.6000	118.125
6.0000	18.750	11.4000	69.375	16.8000	120.000
6.2000	20.625	11.6000	71.250	17.0000	121.875
6.4000	22.500	11.8000	73.125	17.2000	123.750
6.6000	24.375	12.0000	75.000	17.4000	125.625
6.8000	26.250	12.2000	76.875	17.6000	127.500
7.0000	28.125	12.4000	78.750	17.8000	129.375
7.2000	30.000	12.6000	80.625	18.0000	131.250
7.4000	31.875	12.8000	82.500	18.2000	133.125
7.6000	33.750	13.0000	84.375	18.4000	135.000
7.8000	35.625	13.2000	86.250	18.6000	136.875
8.0000	37.500	13.4000	88.125	18.8000	138.750
8.2000	39.375	13.6000	90.000	19.0000	140.625
8.4000	41.250	13.8000	91.875	19.2000	142.500
8.6000	43.125	14.0000	93.750	19.4000	144.375
8.8000	45.000	14.2000	95.625	19.6000	146.250
9.0000	46.875	14.4000	97.500	19.8000	148.125
9.2000	48.750	14.6000	99.375	20.0000	150.000

Parameters

eprom version "U"	zero 0
Scale = 1	sensor 0
c1 = 10.30457	tslp .2375998
c2 = 7.304664	tcslp0 0
c3 = -32.56628	tcslp .1713999
c4 = 71.92227	tcslp2 0
c5 = -.875399	higain 9
caltemp 79	
balance 231	
outz 430	
outf 2146	
heater_i 3080	
toff -373	
factor 1	
eu 70(F)	
tot 0	
totflow 0	
mins 11.935674	
outmode 0	
maxflow 150	
minflow 1.5	
Max A/D 6502	
Density 28.9699	
K Factor 1	

ΔR Table:

ΔR, Ohms								
Signal Output, mA								
Signal Output, VDC								
Indicated SFPS								

FCI AF SERIES DELTA "R" DATA SHEET

1755 LA COSTA MEADOWS DR. SAN MARCOS, CA 92069 (619) 744-6950

SHOP ORDER	39533	DECADE BOX	EQUIP. #	CAL. DUE
CUSTOMER:	TRI-MER	(ACT)	EL-379	8-11-93
DATE :	6-22-93	(REF)	EL-238	7-26-93
SERIAL #:	118357	DVM	EL-29	7-16-93
TAG #:	—	250 OHM RESISTOR	EL-209	1-7-94

NOMINAL SENSOR RESISTANCE	4 KΩ
INDICATED TEMPERATURE (AT NOMINAL SENSOR RESISTANCE)	70.3°F

TEST TECH	F.C.I. TECH 14

Δ R	A/D	VDC ACROSS A 250 Ω RESISTOR	mA OUTPUT	INDICATED DISPLAY: SFPS
926.43	3913	1.000	4.00	0.00
step 926.41	3912	1.037	4.14	1.50
621.23	2625	1.250	5.00	9.54
449.00	1899	1.500	6.00	18.9
304.00	1286	2.000	8.00	37.6
194.55	828	3.000	12.00	75.0
147.40	629	4.000	16.00	112.
119.80	464	4.999	19.99	150.

Eprom Version/Date=	42 5-13-93	tot =	
scale =		tflow =	
c1 =		mins =	
c2 =		outmode=	
c3 =		maxflow=	
c4 =		minflow =	
c5 =		Max A/D=	
caltemp =		Density =	
balance =		K-Factor =	
outz =		zero=	
outf =		sensor =	
heater i=		tslp =	
toff =		tcslp0 =	
factor =		tcslp =	
eu =		tcslp2 =	
		higain=	

Boiler data
End of Month Readings (in 10^5 CF)

	2006												2007											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Boiler 5	15,235	15,285	15,342	15,378	15,416	15,449	15,481	15,508	15,537	15,579	15,627	15,663	15708	15715	15737	15766	15793	15810	15833	15862	15887	15919	15955	16000
Boiler 6	13,917	13,917	13,917	13,917	13,917	13,929	13,958	13,977	13,977	13,977	13,977	13,990	14032	14072	14097	14120	14138	14138	14138	14138	14138	14138	14138	14138
Boiler 7	15,530	15,574	15,598	15,611	15,629	15,646	15,662	15,683	15,712	15,746	15,787	15,839	15881	15912	15935	15958	15975	15992	16012	16032	16054	16078	16107	16135
total	44,682	44,776	44,857	44,906	44,962	45,024	45,101	45,168	45,226	45,302	45,391	45,492	45,621	45,699	45,769	45,844	45,906	45,940	45,983	46,032	46,079	46,135	46,200	46,273
monthly use	83	94	81	49	56	62	77	67	58	76	89	101	129	78	70	75	62	34	43	49	47	56	65	73

M#	Product Name (Instructions in comment)	12 month ave lbs VOC	Evaporation %	lbs/UOM	12 month total units	UOM	Jan-07	Feb-06	Mar-06	Apr-06	May-06	Jun-06	Jul-06	Aug-06	Sep-06	Oct-06	Nov-06	Dec-06
5406902	PAINT Krylon white enamel glossy	8.8	0.85	0.9393	11	CAN	0	0	1	2	0	4	4	0	0	0	0	0
5406903	PAINT gray primer 2X982 16 OZ.	7.2	0.85	0.9393	9	CAN	0	0	1	3	0	4	0	1	0	0	0	0
5406904	PAINT SUPERCOAT 316L SS AEROSOL CAN	1.6	0.85	0.9393	2	CAN	0	0	0	1	0	0	0	0	0	0	1	0
5406907	PAINT Equipment Orange	0.0	0.85	0.9393	-	PC	0	0	0	0	0	0	0	0	0	0	0	0
5406908	PAINT Ford red	3.2	0.85	0.9393	4	PC	0	0	0	0	0	0	3	1	0	0	0	0
5406909	PAINT high heat black	0.0	0.85	0.9393	-	PC	0	0	0	0	0	0	0	0	0	0	0	0
5406910	PAINT Chrysler blue	4.8	0.85	0.9393	6	PC	0	2	0	2	0	0	0	0	0	0	2	0
5406912	PAINT glossy black spray can #84000	5.6	0.85	0.9393	7	CAN	0	1	0	0	3	0	2	0	1	0	0	0
5407102	SEALANT silicon clear 3 oz tube	0.0	0.025	0.1875	6	PC	0	0	5	0	0	1	0	0	0	0	0	0
5407103	SEALANT silicone white 10.3 OZ tube	0.0	0.025	0.64375	1	PC	1	0	0	0	0	0	0	0	0	0	0	0
5407104	SEALANT rubber silicone RTV GE#W102	0.0	0.04	0.64375	1	PC	1	0	0	0	0	0	0	0	0	0	0	0
5407105	PASTE SILICON P12 WARMELEITPASTE	0.1	0.1	0.3308	4	PC	0	0	0	3	1	0	0	0	0	0	0	0
5407106	SILICONE RTV high temp red mak-a-gasket	1.5	1	0.4983	3	CAN	0	0	0	0	0	0	0	0	0	0	3	0
5407107	SILICONE RTV HIGH TEMP BLUE MAK-A-GASKET	0.1	0.08	0.5421	3	CAN	0	0	0	0	0	0	0	0	0	0	3	0
5407108	SILICONE RTV HIGH TEMP CLEAR	0.9	0.08	0.5421	21	CAN	6	0	4	0	0	0	0	0	1	0	10	0
5407328	CLEANER instant contact #CRC-03070	0.8	0.96	0.85557	1	CAN	0	0	0	0	0	0	0	0	0	0	0	1
5407330	CLEANER DUST CHASER SPRAY	73.9	1	0.62622	118	CAN	19	0	3	12	26	6	4	14	1	8	19	6
5407331	DEGREASER gel engine	1.1	0.7	0.78188	2	CAN	0	0	0	0	0	0	0	0	0	2	0	0
5407332	CLEANER electric motor KAR #65390-2	0.8	0.243	1.56375	2	CAN	0	0	0	0	0	0	0	0	0	2	0	0
5407334	STRIPPER/REMOVER PAINT, CARBON & GASKETS	1.3	0.68	0.93825	2	CAN	0	0	0	2	0	0	0	0	0	0	0	0
5407376	ISOPROPYL ALCOHOL (IPA) 99%	20,634.0	1	362	57	DR	3	5	3	3	6	5	6	5	6	5	5	5
5407431	LUBRICANT CRC 3-36 16oz can	3.4	0.07	0.85141	57	PC	0	0	1	13	6	0	12	13	12	0	0	0
5407432	LUBRICANT Parker-O-Lube #884-4	0.3	1	0.25	1	PC	1	0	0	0	0	0	0	0	0	0	0	0
5407433	LUBRICANT CRC 3-36 (1 gallon)	1.0	0.07	6.81128	2	GAL	0	0	0	0	0	0	0	1	0	0	1	0
5407434	GREASE ALVANIA EP 2 LITHIUM BASE	26.0	0.8	0.88	37	PC	4	2	0	16	2	0	9	0	0	4	0	0
5407435	LUBE teflon #79417	0.0	0.82	0.78188	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407436	LUBRICANT teflon dry #79418	0.0	0.125	0.6255	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407437	LUBRICANT MOLY HIGH TEMP	0.0			-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407438	LUBE OPEN CHAIN & SPROCKET #65389	26.6	1	8.86125	3	CAN	0	0	0	0	0	3	0	0	0	0	0	0
5407470	CLEANER zero residue instant tech spray	0.0	0.0541	1.04667	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407947	LUBRICANT SILICON	0.0	0.9	0.99038	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407948	GREASE MULTI PURPOSE WHITE	0.6	0.24	1.17281	2	PC	0	0	2	0	0	0	0	0	0	0	0	0
5407950	PAINT OSHA orange spray can	0.6	0.7	0.882	1	CAN	0	0	0	1	0	0	0	0	0	0	0	0
5407953	VINNAPAS C305 (solution) 1 liter	0.5	0.63	0.82358	1	BTL	0	0	0	0	1	0	0	0	0	0	0	0
5407955	EPOXY VALTRON AD1230 4-1 GAL/CS PART A	0.0	0.4	40.032	-	CS	0	0	0	0	0	0	0	0	0	0	0	0
5407966	ADHESIVE 10ML blue thred	0.0	0	0.02205	2	PC	0	0	1	0	0	0	0	0	1	0	0	0
5407967	ADHESIVE all purpose & trim #77160	1.2	0.88	1.36828	1	CAN	0	0	0	0	0	0	0	0	1	0	0	0
5410534	OIL AEROKROIL LOOSENS FROZEN METAL PARTS	12.8	0.6	0.625	34	PC	1	0	14	0	0	3	0	2	0	12	0	2
5410872	PAINT spray yellow	1.2	0.65	0.9393	2	CAN	0	0	0	0	0	0	0	0	0	0	2	0
5413542	WAX SKYLIQUID CLEAR HF4011 2 LITER	10,430.9	0.6	3.97458	4,374	BTL	480	0	660	348	456	342	444	324	354	354	420	192
5414028	LUBRICANT CRC 3-36 (5 gallon)	0.0			-	PC	0	0	0	0	0	0	0	0	0	0	0	0
5516514	BOTTLE IPA high purity (4x1-gal cs)	727.2	1	6.55107	111	PC	27	0	0	4	0	0	0	0	0	0	0	80
5522458	WAX Thin Skyliquid KN-25449 2ltr/btl	155.3	0.75	3.83357	54	BTL	0	0	18	6	0	0	0	6	12	0	6	6
5527433	TISAB II WITH CDTA	32.1	0.1	8.9238	36	GAL	2	2	4	2	3	3	3	3	3	3	6	2
5551837	ISOPROPYL ALCOHOL (IPA) Class 1 drum	350.0	1	350	1	drum	1	0	0	0	0	0	0	0	0	0	0	0
	Parts washer solvent	2371.9				LBS	0	0	791	0	0	0	791	0	791	0	0	0
	VOC's shipped offsite or to sanitary sewer	9223.5				LBS	158	612	1042	1056	846	62	1017	422	1486	221	277	2024
10419	Natural Gas (total); (VOC EF = 2.8 lb/MMCF)	425.6			1,520,100	CCF	190700	160,130	161,890	132,970	115,810	92,690	86,730	92,940	87,700	112,530	129,650	156,360
	Natural Gas (21 MMBtu/hr boliers)				939,000	CCF	129,000	94,000	81,000	49,000	56,000	62,000	77,000	67,000	58,000	76,000	89,000	101,000
	Naturall Gas (other boilers and thermal oxidizer)				599,100	CCF	61,700	66,130	80,890	83,970	59,810	30,690	9,730	25,940	29,700	35,530	48,650	66,360
	NITRIC ACID				1,278,942	LB	116,770	95,948	100,984	95,099	117,348	104,383	117,530	109,381	113,569	108,936	109,826	89,169

If products do not show up on the above list, they are flagged in SAP for deletion.

12 MONTH ROLLING AVERAGES

VOC Emissions	total lbs	26,089
	total tons	13.0
NOx Emissions		
From 21 MMBtu/hr boilers	lbs	7,606
(EF = 81.0 lb/MMCF)	tons	3.8
From other boilers and thermal oxidizer	lbs	8,387
(EF = 140.0 lb/MMCF)	tons	4.2
From manufacturing operations (based on nitric acid used)	lbs	18,289
(EF = 0.0143 lb NOx / lb 100% HNO3)	tons	9.1
	total lbs	34,282
	total tons	17.1
CO Emissions		
From 21 MMBtu/hr boilers	lbs	5,728
(EF = 61.0 lb/MMCF)	tons	2.9
From other boilers and thermal oxidizer	lbs	2,097
(EF = 35.0 lb/MMCF)	tons	1.0
	total lbs	7,825
	total tons	3.9
PM Emissions		
From natural gas combustion	lbs	2,083
(EF = 13.7 lb/MMCF)	tons	1.0
PM 10 Emissions		
From natural gas combustion	lbs	2,083
(EF = 13.7 lb/MMCF)	tons	1.0

total IPA pounds 21,711.2

M#	Product Name (Instructions in comment)	12 month ave lbs VOC	Evaporation %	lbs/UOM	12 month total units	UOM	Jan-07	Feb-07	Mar-06	Apr-06	May-06	Jun-06	Jul-06	Aug-06	Sep-06	Oct-06	Nov-06	Dec-06
5406902	PAINT Krylon white enamel glossy	8.8	0.85	0.9393	11	CAN	0	0	1	2	0	4	4	0	0	0	0	0
5406903	PAINT gray primer 2X982 16 OZ.	7.2	0.85	0.9393	9	CAN	0	0	1	3	0	4	0	1	0	0	0	0
5406904	PAINT SUPERCOAT 316L SS AEROSOL CAN	1.6	0.85	0.9393	2	CAN	0	0	0	1	0	0	0	0	0	0	1	0
5406907	PAINT Equipment Orange	0.0	0.85	0.9393	-	PC	0	0	0	0	0	0	0	0	0	0	0	0
5406908	PAINT Ford red	3.2	0.85	0.9393	4	PC	0	0	0	0	0	0	3	1	0	0	0	0
5406909	PAINT high heat black	0.0	0.85	0.9393	-	PC	0	0	0	0	0	0	0	0	0	0	0	0
5406910	PAINT Chrysler blue	4.8	0.85	0.9393	6	PC	0	2	0	2	0	0	0	0	0	0	2	0
5406912	PAINT glossy black spray can #84000	4.8	0.85	0.9393	6	CAN	0	0	0	0	3	0	2	0	1	0	0	0
5407102	SEALANT silicon clear 3 oz tube	0.0	0.025	0.1875	6	PC	0	0	5	0	0	1	0	0	0	0	0	0
5407103	SEALANT silicone white 10.3 OZ tube	0.0	0.025	0.64375	1	PC	1	0	0	0	0	0	0	0	0	0	0	0
5407104	SEALANT rubber silicone RTV GE#W102	0.0	0.04	0.64375	1	PC	1	0	0	0	0	0	0	0	0	0	0	0
5407105	PASTE SILICON P12 WARMELEITPASTE	0.1	0.1	0.3308	4	PC	0	0	0	3	1	0	0	0	0	0	0	0
5407106	SILICONE RTV high temp red mak-a-gasket	1.5	1	0.4983	3	CAN	0	0	0	0	0	0	0	0	0	0	3	0
5407107	SILICONE RTV HIGH TEMP BLUE MAK-A-GASKET	0.1	0.08	0.5421	3	CAN	0	0	0	0	0	0	0	0	0	0	3	0
5407108	SILICONE RTV HIGH TEMP CLEAR	0.9	0.08	0.5421	21	CAN	6	0	4	0	0	0	0	0	1	0	10	0
5407328	CLEANER instant contact #CRC-03070	0.8	0.96	0.85557	1	CAN	0	0	0	0	0	0	0	0	0	0	0	1
5407330	CLEANER DUST CHASER SPRAY	75.8	1	0.62622	121	CAN	19	3	3	12	26	6	4	14	1	8	19	6
5407331	DEGREASER gel engine	1.1	0.7	0.78188	2	CAN	0	0	0	0	0	0	0	0	0	2	0	0
5407332	CLEANER electric motor KAR #65390-2	0.8	0.243	1.56375	2	CAN	0	0	0	0	0	0	0	0	0	2	0	0
5407334	STRIPPER/REMOVER PAINT, CARBON & GASKETS	1.3	0.68	0.93825	2	CAN	0	0	0	2	0	0	0	0	0	0	0	0
5407376	ISOPROPYL ALCOHOL (IPA) 99%	20,634.0	1	362	57	DR	3	5	3	3	6	5	6	5	6	5	5	5
5407431	LUBRICANT CRC 3-36 16oz can	4.1	0.07	0.85141	69	PC	0	12	1	13	6	0	12	13	12	0	0	0
5407432	LUBRICANT Parker-O-Lube #884-4	0.3	1	0.25	1	PC	1	0	0	0	0	0	0	0	0	0	0	0
5407433	LUBRICANT CRC 3-36 (1 gallon)	1.0	0.07	6.81128	2	GAL	0	0	0	0	0	0	0	1	0	0	1	0
5407434	GREASE ALVANIA EP 2 LITHIUM BASE	24.6	0.8	0.88	35	PC	4	0	0	16	2	0	9	0	0	4	0	0
5407435	LUBE teflon #79417	0.0	0.82	0.78188	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407436	LUBRICANT teflon dry #79418	0.0	0.125	0.6255	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407437	LUBRICANT MOLY HIGH TEMP	0.0			-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407438	LUBE OPEN CHAIN & SPROCKET #65389	26.6	1	8.86125	3	CAN	0	0	0	0	0	3	0	0	0	0	0	0
5407470	CLEANER zero residue instant tech spray	0.0	0.0541	1.04667	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407947	LUBRICANT SILICON	0.0	0.9	0.99038	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407948	GREASE MULTI PURPOSE WHITE	0.6	0.24	1.17281	2	PC	0	0	2	0	0	0	0	0	0	0	0	0
5407950	PAINT OSHA orange spray can	0.6	0.7	0.882	1	CAN	0	0	0	1	0	0	0	0	0	0	0	0
5407953	VINNAPAS C305 (solution) 1 liter	1.0	0.63	0.82358	2	BTL	0	1	0	0	1	0	0	0	0	0	0	0
5407955	EPOXY VALTRON AD1230 4-1 GAL/CS PART A	0.0	0.4	40.032	-	CS	0	0	0	0	0	0	0	0	0	0	0	0
5407966	ADHESIVE 10ML blue thred	0.0	0	0.02205	2	PC	0	0	1	0	0	0	0	0	1	0	0	0
5407967	ADHESIVE all purpose & trim #77160	1.2	0.88	1.36828	1	CAN	0	0	0	0	0	0	0	0	1	0	0	0
5410534	OIL AEROKROIL LOOSENS FROZEN METAL PARTS	12.8	0.6	0.625	34	PC	1	0	14	0	0	3	0	2	0	12	0	2
5410872	PAINT spray yellow	1.2	0.65	0.9393	2	CAN	0	0	0	0	0	0	0	0	0	0	2	0
5413542	WAX SKYLIQUID CLEAR HF4011 2 LITER	11,403.9	0.6	3.97458	4,782	BTL	480	408	660	348	456	342	444	324	354	354	420	192
5414028	LUBRICANT CRC 3-36 (5 gallon)	0.0			-	PC	0	0	0	0	0	0	0	0	0	0	0	0
5516514	BOTTLE IPA high purity (4x1-gal cs)	727.2	1	6.55107	111	PC	27	0	0	4	0	0	0	0	0	0	0	80
5522458	WAX Thin Skyliquid KN-25449 2ltr/btl	155.3	0.75	3.83357	54	BTL	0	0	18	6	0	0	0	6	12	0	6	6
5527433	TISAB II WITH CDTA	33.0	0.1	8.9238	37	GAL	2	3	4	2	3	3	3	3	3	3	6	2
5551837	ISOPROPYL ALCOHOL (IPA) Class 1 drum	700.0	1	350	2	drum	1	1	0	0	0	0	0	0	0	0	0	0
	Parts washer solvent	2371.9				LBS	0	0	791	0	0	0	791	0	791	0	0	0
	VOC's shipped offsite or to sanitary sewer	8614.7				LBS	158	3	1042	1056	846	62	1017	422	1486	221	277	2024
10419	Natural Gas (total); (VOC EF = 2.8 lb/MMCF)	420.4			1,501,460	CCF	190700	141490	161,890	132,970	115,810	92,690	86,730	92,940	87,700	112,530	129,650	156,360
	Natural Gas (21 MMBtu/hr boliers)				923,000	CCF	129,000	78,000	81,000	49,000	56,000	62,000	77,000	67,000	58,000	76,000	89,000	101,000
	Naturall Gas (other boilers and thermal oxidizer)				578,460	CCF	61,700	63,490	80,890	83,970	59,810	30,690	9,730	25,940	29,700	36,530	40,650	55,360
	NITRIC ACID				1,276,289	LB	116,770	93,294	100,984	95,099	117,348	104,383	117,530	109,381	113,569	108,936	109,826	89,169

If products do not show up on the above list, they are flagged in SAP for deletion.

12 MONTH ROLLING AVERAGES

VOC Emissions	total lbs	28,018
	total tons	14.0
NOx Emissions		
From 21 MMBtu/hr boilers	lbs	7,476
(EF = 81.0 lb/MMCF)	tons	3.7
From other boilers and thermal oxidizer	lbs	8,098
(EF = 140.0 lb/MMCF)	tons	4.0
From manufacturing operations (based on nitric acid used)	lbs	18,251
(EF = 0.0143 lb NOx / lb 100% HNO3)	tons	9.1
	total lbs	33,826
	total tons	16.9
CO Emissions		
From 21 MMBtu/hr boilers	lbs	5,630
(EF = 61.0 lb/MMCF)	tons	2.8
From other boilers and thermal oxidizer	lbs	2,025
(EF = 35.0 lb/MMCF)	tons	1.0
	total lbs	7,655
	total tons	3.8
PM Emissions		
From natural gas combustion	lbs	2,057
(EF = 13.7 lb/MMCF)	tons	1.0
PM 10 Emissions		
From natural gas combustion	lbs	2,057
(EF = 13.7 lb/MMCF)	tons	1.0

total IPA pounds 22,061.2

M#	Product Name (Instructions in comment)	12 month ave lbs VOC	Evaporation %	lbs/UOM	12 month total units	UOM	Jan-07	Feb-07	Mar-07	Apr-06	May-06	Jun-06	Jul-06	Aug-06	Sep-06	Oct-06	Nov-06	Dec-06
5406902	PAINT Krylon white enamel glossy	8.0	0.85	0.9393	10	CAN	0	0	0	2	0	4	4	0	0	0	0	0
5406903	PAINT gray primer 2X982 16 OZ.	12.8	0.85	0.9393	16	CAN	0	0	8	3	0	4	0	1	0	0	0	0
5406904	PAINT SUPERCOAT 316L SS AEROSOL CAN	1.6	0.85	0.9393	2	CAN	0	0	0	1	0	0	0	0	0	0	1	0
5406907	PAINT Equipment Orange	0.0	0.85	0.9393	-	PC	0	0	0	0	0	0	0	0	0	0	0	0
5406908	PAINT Ford red	3.2	0.85	0.9393	4	PC	0	0	0	0	0	0	3	1	0	0	0	0
5406909	PAINT high heat black	0.0	0.85	0.9393	-	PC	0	0	0	0	0	0	0	0	0	0	0	0
5406910	PAINT Chrysler blue	4.8	0.85	0.9393	6	PC	0	2	0	2	0	0	0	0	0	0	2	0
5406912	PAINT glossy black spray can #84000	4.8	0.85	0.9393	6	CAN	0	0	0	0	3	0	2	0	1	0	0	0
5407102	SEALANT silicon clear 3 oz tube	0.0	0.025	0.1875	1	PC	0	0	0	0	0	1	0	0	0	0	0	0
5407103	SEALANT silicone white 10.3 OZ tube	0.0	0.025	0.64375	3	PC	1	0	2	0	0	0	0	0	0	0	0	0
5407104	SEALANT rubber silicone RTV GE#W102	0.0	0.04	0.64375	1	PC	1	0	0	0	0	0	0	0	0	0	0	0
5407105	PASTE SILICON P12 WARMELEITPASTE	0.1	0.1	0.3308	4	PC	0	0	0	3	1	0	0	0	0	0	0	0
5407106	SILICONE RTV high temp red mak-a-gasket	1.5	1	0.4983	3	CAN	0	0	0	0	0	0	0	0	0	0	3	0
5407107	SILICONE RTV HIGH TEMP BLUE MAK-A-GASKET	0.2	0.08	0.5421	4	CAN	0	0	1	0	0	0	0	0	0	0	3	0
5407108	SILICONE RTV HIGH TEMP CLEAR	0.7	0.08	0.5421	17	CAN	6	0	0	0	0	0	0	0	1	0	10	0
5407328	CLEANER instant contact #CRC-03070	0.8	0.96	0.85557	1	CAN	0	0	0	0	0	0	0	0	0	0	0	1
5407330	CLEANER DUST CHASER SPRAY	73.9	1	0.62622	118	CAN	19	3	0	12	26	6	4	14	1	8	19	6
5407331	DEGREASER gel engine	1.1	0.7	0.78188	2	CAN	0	0	0	0	0	0	0	0	0	2	0	0
5407332	CLEANER electric motor KAR #65390-2	0.8	0.243	1.56375	2	CAN	0	0	0	0	0	0	0	0	0	2	0	0
5407334	STRIPPER/REMOVER PAINT, CARBON & GASKETS	1.3	0.68	0.93825	2	CAN	0	0	0	2	0	0	0	0	0	0	0	0
5407376	ISOPROPYL ALCOHOL (IPA) 99%	21,358.0	1	362	59	DR	3	5	5	3	6	5	6	5	6	5	5	5
5407431	LUBRICANT CRC 3-36 16oz can	4.1	0.07	0.85141	68	PC	0	12	0	13	6	0	12	13	12	0	0	0
5407432	LUBRICANT Parker-O-Lube #884-4	0.8	1	0.25	3	PC	1	0	2	0	0	0	0	0	0	0	0	0
5407433	LUBRICANT CRC 3-36 (1 gallon)	1.0	0.07	6.81128	2	GAL	0	0	0	0	0	0	0	1	0	0	1	0
5407434	GREASE ALVANIA EP 2 LITHIUM BASE	28.9	0.8	0.88	41	PC	4	0	6	16	2	0	9	0	0	4	0	0
5407435	LUBE teflon #79417	0.0	0.82	0.78188	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407436	LUBRICANT teflon dry #79418	0.0	0.125	0.6255	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407437	LUBRICANT MOLY HIGH TEMP	0.0			-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407438	LUBE OPEN CHAIN & SPROCKET #65389	26.6	1	8.86125	3	CAN	0	0	0	0	0	3	0	0	0	0	0	0
5407470	CLEANER zero residue instant tech spray	0.0	0.0541	1.04667	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407947	LUBRICANT SILICON	0.0	0.9	0.99038	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407948	GREASE MULTI PURPOSE WHITE	0.0	0.24	1.17281	-	PC	0	0	0	0	0	0	0	0	0	0	0	0
5407950	PAINT OSHA orange spray can	0.6	0.7	0.882	1	CAN	0	0	0	1	0	0	0	0	0	0	0	0
5407953	VINNAPAS C305 (solution) 1 liter	1.0	0.63	0.82358	2	BTL	0	1	0	0	1	0	0	0	0	0	0	0
5407955	EPOXY VALTRON AD1230 4-1 GAL/CS PART A	16.0	0.4	40.032	1	CS	0	0	1	0	0	0	0	0	0	0	0	0
5407966	ADHESIVE 10ML blue thred	0.0	0	0.02205	1	PC	0	0	0	0	0	0	0	0	1	0	0	0
5407967	ADHESIVE all purpose & trim #77160	1.2	0.88	1.36828	1	CAN	0	0	0	0	0	0	0	0	1	0	0	0
5410534	OIL AEROKROIL LOOSENS FROZEN METAL PARTS	7.9	0.6	0.625	21	PC	1	0	1	0	0	3	0	2	0	12	0	2
5410872	PAINT spray yellow	1.2	0.65	0.9393	2	CAN	0	0	0	0	0	0	0	0	0	0	2	0
5413542	WAX SKYLIQUID CLEAR HF4011 2 LITER	10,874.4	0.6	3.97458	4,560	BTL	480	408	438	348	456	342	444	324	354	354	420	192
5414028	LUBRICANT CRC 3-36 (5 gallon)	0.0			-	PC	0	0	0	0	0	0	0	0	0	0	0	0
5516514	BOTTLE IPA high purity (4x1-gal cs)	727.2	1	6.55107	111	PC	27	0	0	4	0	0	0	0	0	0	0	80
5522458	WAX Thin Skyliquid KN-25449 2ltr/btl	138.0	0.75	3.83357	48	BTL	0	0	12	6	0	0	0	6	12	0	6	6
5527433	TISAB II WITH CDTA	32.1	0.1	8.9238	36	GAL	2	3	3	2	3	3	3	3	3	3	6	2
5551837	ISOPROPYL ALCOHOL (IPA) Class 1 drum	700.0	1	350	2	drum	1	1	0	0	0	0	0	0	0	0	0	0
	Parts washer solvent	1581.3				LBS	0	0	0	0	0	0	791	0	791	0	0	0
	VOC's shipped offsite or to sanitary sewer	9157.8				LBS	158	3	1586	1056	846	62	1017	422	1486	221	277	2024
10419	Natural Gas (total); (VOC EF = 2.8 lb/MMCF)	408.9			1,460,230	CCF	190700	141490	120660	132,970	115,810	92,690	86,730	92,940	87,700	112,530	129,650	156,360
	Natural Gas (21 MMBtu/hr boliers)				912,000	CCF	129,000	78,000	70,000	49,000	56,000	62,000	77,000	67,000	58,000	76,000	89,000	101,000
	Naturall Gas (other boilers and thermal oxidizer)				548,230	CCF	61,700	63,490	50,660	83,970	59,810	30,690	9,730	25,940	29,700	36,530	40,650	55,360
	NITRIC ACID				1,279,888	LB	116,770	93,294	104,582	95,099	117,348	104,383	117,530	109,381	113,569	108,936	109,826	89,169

If products do not show up on the above list, they are flagged in SAP for deletion.

12 MONTH ROLLING AVERAGES

VOC Emissions	total lbs	26,867
	total tons	13.4
NOx Emissions		
From 21 MMBtu/hr boilers	lbs	7,387
(EF = 81.0 lb/MMCF)	tons	3.7
From other boilers and thermal oxidizer	lbs	7,675
(EF = 140.0 lb/MMCF)	tons	3.8
From manufacturing operations (based on nitric acid used)	lbs	18,302
(EF = 0.0143 lb NOx / lb 100% HNO3)	tons	9.2
	total lbs	33,365
	total tons	16.7
CO Emissions		
From 21 MMBtu/hr boilers	lbs	5,563
(EF = 61.0 lb/MMCF)	tons	2.8
From other boilers and thermal oxidizer	lbs	1,919
(EF = 35.0 lb/MMCF)	tons	1.0
	total lbs	7,482
	total tons	3.7
PM Emissions		
From natural gas combustion	lbs	2,001
(EF = 13.7 lb/MMCF)	tons	1.0
PM 10 Emissions		
From natural gas combustion	lbs	2,001
(EF = 13.7 lb/MMCF)	tons	1.0

total IPA pounds 22,785.2

M#	Product Name (Instructions in comment)	12 month ave lbs VOC	Evaporation %	lbs/UOM	12 month total units	UOM	Jan-07	Feb-07	Mar-07	Apr-07	May-06	Jun-06	Jul-06	Aug-06	Sep-06	Oct-06	Nov-06	Dec-06
5406902	PAINT Krylon white enamel glossy	6.4	0.85	0.9393	8	CAN	0	0	0	0	0	4	4	0	0	0	0	0
5406903	PAINT gray primer 2X982 16 OZ.	10.4	0.85	0.9393	13	CAN	0	0	8	0	0	4	0	1	0	0	0	0
5406904	PAINT SUPERCOAT 316L SS AEROSOL CAN	0.8	0.85	0.9393	1	CAN	0	0	0	0	0	0	0	0	0	0	1	0
5406907	PAINT Equipment Orange	0.0	0.85	0.9393	-	PC	0	0	0	0	0	0	0	0	0	0	0	0
5406908	PAINT Ford red	3.2	0.85	0.9393	4	PC	0	0	0	0	0	0	3	1	0	0	0	0
5406909	PAINT high heat black	0.0	0.85	0.9393	-	PC	0	0	0	0	0	0	0	0	0	0	0	0
5406910	PAINT Chrysler blue	3.2	0.85	0.9393	4	PC	0	2	0	0	0	0	0	0	0	0	2	0
5406912	PAINT glossy black spray can #84000	7.2	0.85	0.9393	9	CAN	0	0	0	3	3	0	2	0	1	0	0	0
5407102	SEALANT silicon clear 3 oz tube	0.0	0.025	0.1875	1	PC	0	0	0	0	0	1	0	0	0	0	0	0
5407103	SEALANT silicone white 10.3 OZ tube	0.0	0.025	0.64375	3	PC	1	0	2	0	0	0	0	0	0	0	0	0
5407104	SEALANT rubber silicone RTV GE#W102	0.0	0.04	0.64375	1	PC	1	0	0	0	0	0	0	0	0	0	0	0
5407105	PASTE SILICON P12 WARMELEITPASTE	0.0	0.1	0.3308	1	PC	0	0	0	0	1	0	0	0	0	0	0	0
5407106	SILICONE RTV high temp red mak-a-gasket	1.5	1	0.4983	3	CAN	0	0	0	0	0	0	0	0	0	0	3	0
5407107	SILICONE RTV HIGH TEMP BLUE MAK-A-GASKET	0.2	0.08	0.5421	5	CAN	0	0	1	1	0	0	0	0	0	0	3	0
5407108	SILICONE RTV HIGH TEMP CLEAR	0.7	0.08	0.5421	17	CAN	6	0	0	0	0	0	0	0	1	0	10	0
5407328	CLEANER instant contact #CRC-03070	0.8	0.96	0.85557	1	CAN	0	0	0	0	0	0	0	0	0	0	0	1
5407330	CLEANER DUST CHASER SPRAY	76.4	1	0.62622	122	CAN	19	3	0	16	26	6	4	14	1	8	19	6
5407331	DEGREASER gel engine	1.1	0.7	0.78188	2	CAN	0	0	0	0	0	0	0	0	0	2	0	0
5407332	CLEANER electric motor KAR #65390-2	0.8	0.243	1.56375	2	CAN	0	0	0	0	0	0	0	0	0	2	0	0
5407334	STRIPPER/REMOVER PAINT, CARBON & GASKETS	0.0	0.68	0.93825	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407376	ISOPROPYL ALCOHOL (IPA) 99%	21,358.0	1	362	59	DR	3	5	5	3	6	5	6	5	6	5	5	5
5407431	LUBRICANT CRC 3-36 16oz can	3.3	0.07	0.85141	55	PC	0	12	0	0	6	0	12	13	12	0	0	0
5407432	LUBRICANT Parker-O-Lube #884-4	0.8	1	0.25	3	PC	1	0	2	0	0	0	0	0	0	0	0	0
5407433	LUBRICANT CRC 3-36 (1 gallon)	1.0	0.07	6.81128	2	GAL	0	0	0	0	0	0	0	1	0	0	1	0
5407434	GREASE ALVANIA EP 2 LITHIUM BASE	24.6	0.8	0.88	35	PC	4	0	6	10	2	0	9	0	0	4	0	0
5407435	LUBE teflon #79417	0.0	0.82	0.78188	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407436	LUBRICANT teflon dry #79418	0.0	0.125	0.6255	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407437	LUBRICANT MOLY HIGH TEMP	0.0			-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407438	LUBE OPEN CHAIN & SPROCKET #65389	26.6	1	8.86125	3	CAN	0	0	0	0	0	3	0	0	0	0	0	0
5407470	CLEANER zero residue instant tech spray	0.0	0.0541	1.04667	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407947	LUBRICANT SILICON	0.0	0.9	0.99038	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407948	GREASE MULTI PURPOSE WHITE	0.3	0.24	1.17281	1	PC	0	0	0	1	0	0	0	0	0	0	0	0
5407950	PAINT OSHA orange spray can	0.0	0.7	0.882	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407953	VINNAPAS C305 (solution) 1 liter	1.0	0.63	0.82358	2	BTL	0	1	0	0	1	0	0	0	0	0	0	0
5407955	EPOXY VALTRON AD1230 4-1 GAL/CS PART A	16.0	0.4	40.032	1	CS	0	0	1	0	0	0	0	0	0	0	0	0
5407966	ADHESIVE 10ML blue thred	0.0	0	0.02205	1	PC	0	0	0	0	0	0	0	0	1	0	0	0
5407967	ADHESIVE all purpose & trim #77160	1.2	0.88	1.36828	1	CAN	0	0	0	0	0	0	0	0	1	0	0	0
5410534	OIL AEROKROIL LOOSENS FROZEN METAL PARTS	8.3	0.6	0.625	22	PC	1	0	1	1	0	3	0	2	0	12	0	2
5410872	PAINT spray yellow	1.2	0.65	0.9393	2	CAN	0	0	0	0	0	0	0	0	0	0	2	0
5413542	WAX SKYLIQUID CLEAR HF4011 2 LITER	10,960.3	0.6	3.97458	4,596	BTL	480	408	438	384	456	342	444	324	354	354	420	192
5414028	LUBRICANT CRC 3-36 (5 gallon)	0.0			-	PC	0	0	0	0	0	0	0	0	0	0	0	0
5516514	BOTTLE IPA high purity (4x1-gal cs)	701.0	1	6.55107	107	PC	27	0	0	0	0	0	0	0	0	0	0	80
5522458	WAX Thin Skyliquid KN-25449 2ltr/btl	120.8	0.75	3.83357	42	BTL	0	0	12	0	0	0	0	6	12	0	6	6
5527433	TISAB II WITH CDTA	32.1	0.1	8.9238	36	GAL	2	3	3	2	3	3	3	3	3	3	6	2
5551837	ISOPROPYL ALCOHOL (IPA) Class 1 drum	1050.0	1	350	3	drum	1	1	0	1	0	0	0	0	0	0	0	0
	Parts washer solvent	2306.0				LBS	0	0	0	725	0	0	791	0	791	0	0	0
	VOC's shipped offsite or to sanitary sewer	9016.1				LBS	158	3	1586	914	846	62	1017	422	1486	221	277	2024
10419	Natural Gas (total); (VOC EF = 2.8 lb/MMCF)	403.3			1,440,410	CCF	190700	141490	120660	113150	115,810	92,690	86,730	92,940	87,700	112,530	129,650	156,360
	Natural Gas (21 MMBtu/hr boilers)				938,000	CCF	129,000	78,000	70,000	75,000	56,000	62,000	77,000	67,000	58,000	76,000	89,000	101,000
	Naturall Gas (other boilers and thermal oxidizer)				502,410	CCF	61,700	63,490	50,660	38,150	59,810	30,690	9,730	25,940	29,700	36,530	40,650	55,360
	NITRIC ACID				1,295,424	LB	116,770	93,294	104,582	110,635	117,348	104,383	117,530	109,381	113,569	108,936	109,826	89,169

If products do not show up on the above list, they are flagged in SAP for deletion.

12 MONTH ROLLING AVERAGES

VOC Emissions	total lbs	28,112
	total tons	14.1
NOx Emissions		
From 21 MMBtu/hr boilers	lbs	7,598
(EF = 81.0 lb/MMCF)	tons	3.8
From other boilers and thermal oxidizer	lbs	7,034
(EF = 140.0 lb/MMCF)	tons	3.5
From manufacturing operations (based on nitric acid used)	lbs	18,525
(EF = 0.0143 lb NOx / lb 100% HNO3)	tons	9.3
	total lbs	33,156
	total tons	16.6
CO Emissions		
From 21 MMBtu/hr boilers	lbs	5,722
(EF = 61.0 lb/MMCF)	tons	2.9
From other boilers and thermal oxidizer	lbs	1,758
(EF = 35.0 lb/MMCF)	tons	0.9
	total lbs	7,480
	total tons	3.7
PM Emissions		
From natural gas combustion	lbs	1,973
(EF = 13.7 lb/MMCF)	tons	1.0
PM 10 Emissions		
From natural gas combustion	lbs	1,973
(EF = 13.7 lb/MMCF)	tons	1.0

total IPA pounds 23,109.0

M#	Product Name (Instructions in comment)	12 month ave lbs VOC	Evaporation %	lbs/UOM	12 month total units	UOM	Jan-07	Feb-07	Mar-07	Apr-07	May-07	Jun-06	Jul-06	Aug-06	Sep-06	Oct-06	Nov-06	Dec-06
5406902	PAINT Krylon white enamel glossy	6.4	0.85	0.9393	8	CAN	0	0	0	0	0	4	4	0	0	0	0	0
5406903	PAINT gray primer 2X982 16 OZ.	12.0	0.85	0.9393	15	CAN	0	0	8	0	2	4	0	1	0	0	0	0
5406904	PAINT SUPERCOAT 316L SS AEROSOL CAN	2.4	0.85	0.9393	3	CAN	0	0	0	0	2	0	0	0	0	0	1	0
5406907	PAINT Equipment Orange	0.0	0.85	0.9393	-	PC	0	0	0	0	0	0	0	0	0	0	0	0
5406908	PAINT Ford red	3.2	0.85	0.9393	4	PC	0	0	0	0	0	0	3	1	0	0	0	0
5406909	PAINT high heat black	0.0	0.85	0.9393	-	PC	0	0	0	0	0	0	0	0	0	0	0	0
5406910	PAINT Chrysler blue	4.8	0.85	0.9393	6	PC	0	2	0	0	2	0	0	0	0	0	2	0
5406912	PAINT glossy black spray can #84000	8.8	0.85	0.9393	11	CAN	0	0	0	3	5	0	2	0	1	0	0	0
5407102	SEALANT silicon clear 3 oz tube	0.0	0.025	0.1875	1	PC	0	0	0	0	0	1	0	0	0	0	0	0
5407103	SEALANT silicone white 10.3 OZ tube	0.0	0.025	0.64375	3	PC	1	0	2	0	0	0	0	0	0	0	0	0
5407104	SEALANT rubber silicone RTV GE#W102	0.0	0.04	0.64375	1	PC	1	0	0	0	0	0	0	0	0	0	0	0
5407105	PASTE SILICON P12 WARMELEITPASTE	0.1	0.1	0.3308	2	PC	0	0	0	0	2	0	0	0	0	0	0	0
5407106	SILICONE RTV high temp red mak-a-gasket	1.5	1	0.4983	3	CAN	0	0	0	0	0	0	0	0	0	0	3	0
5407107	SILICONE RTV HIGH TEMP BLUE MAK-A-GASKET	0.2	0.08	0.5421	5	CAN	0	0	1	1	0	0	0	0	0	0	3	0
5407108	SILICONE RTV HIGH TEMP CLEAR	0.7	0.08	0.5421	17	CAN	6	0	0	0	0	0	0	0	1	0	10	0
5407328	CLEANER instant contact #CRC-03070	4.1	0.96	0.85557	5	CAN	0	0	0	0	4	0	0	0	0	0	0	1
5407330	CLEANER DUST CHASER SPRAY	62.0	1	0.62622	99	CAN	19	3	0	16	3	6	4	14	1	8	19	6
5407331	DEGREASER gel engine	1.6	0.7	0.78188	3	CAN	0	0	0	0	1	0	0	0	0	2	0	0
5407332	CLEANER electric motor KAR #65390-2	0.8	0.243	1.56375	2	CAN	0	0	0	0	0	0	0	0	0	2	0	0
5407334	STRIPPER/REMOVER PAINT, CARBON & GASKETS	0.0	0.68	0.93825	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407376	ISOPROPYL ALCOHOL (IPA) 99%	20,634.0	1	362	57	DR	3	5	5	3	4	5	6	5	6	5	5	5
5407431	LUBRICANT CRC 3-36 16oz can	3.5	0.07	0.85141	58	PC	0	12	0	0	9	0	12	13	12	0	0	0
5407432	LUBRICANT Parker-O-Lube #884-4	0.8	1	0.25	3	PC	1	0	2	0	0	0	0	0	0	0	0	0
5407433	LUBRICANT CRC 3-36 (1 gallon)	1.4	0.07	6.81128	3	GAL	0	0	0	0	1	0	0	1	0	0	1	0
5407434	GREASE ALVANIA EP 2 LITHIUM BASE	23.2	0.8	0.88	33	PC	4	0	6	10	0	0	9	0	0	4	0	0
5407435	LUBE teflon #79417	0.0	0.82	0.78188	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407436	LUBRICANT teflon dry #79418	0.0	0.125	0.6255	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407437	LUBRICANT MOLY HIGH TEMP	0.0			-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407438	LUBE OPEN CHAIN & SPROCKET #65389	26.6	1	8.86125	3	CAN	0	0	0	0	0	3	0	0	0	0	0	0
5407470	CLEANER zero residue instant tech spray	0.0	0.0541	1.04667	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407947	LUBRICANT SILICON	0.0	0.9	0.99038	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407948	GREASE MULTI PURPOSE WHITE	0.3	0.24	1.17281	1	PC	0	0	0	1	0	0	0	0	0	0	0	0
5407950	PAINT OSHA orange spray can	0.0	0.7	0.882	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407953	VINNAPAS C305 (solution) 1 liter	0.5	0.63	0.82358	1	BTL	0	1	0	0	0	0	0	0	0	0	0	0
5407955	EPOXY VALTRON AD1230 4-1 GAL/CS PART A	16.0	0.4	40.032	1	CS	0	0	1	0	0	0	0	0	0	0	0	0
5407966	ADHESIVE 10ML blue thred	0.0	0	0.02205	1	PC	0	0	0	0	0	0	0	0	1	0	0	0
5407967	ADHESIVE all purpose & trim #77160	1.2	0.88	1.36828	1	CAN	0	0	0	0	0	0	0	0	1	0	0	0
5410534	OIL AEROKROIL LOOSENS FROZEN METAL PARTS	8.3	0.6	0.625	22	PC	1	0	1	1	0	3	0	2	0	12	0	2
5410872	PAINT spray yellow	1.2	0.65	0.9393	2	CAN	0	0	0	0	0	0	0	0	0	0	2	0
5413542	WAX SKYLIQUID CLEAR HF4011 2 LITER	10,702.7	0.6	3.97458	4,488	BTL	480	408	438	384	348	342	444	324	354	354	420	192
5414028	LUBRICANT CRC 3-36 (5 gallon)	0.0			-	PC	0	0	0	0	0	0	0	0	0	0	0	0
5516514	BOTTLE IPA high purity (4x1-gal cs)	701.0	1	6.55107	107	PC	27	0	0	0	0	0	0	0	0	0	0	80
5522458	WAX Thin Skyliquid KN-25449 2ltr/btl	120.8	0.75	3.83357	42	BTL	0	0	12	0	0	0	0	6	12	0	6	6
5527433	TISAB II WITH CDTA	32.1	0.1	8.9238	36	GAL	2	3	3	2	3	3	3	3	3	3	6	2
5551837	ISOPROPYL ALCOHOL (IPA) Class 1 drum	1750.0	1	350	5	drum	1	1	0	1	2	0	0	0	0	0	0	0
	Parts washer solvent	2306.0				LBS	0	0	0	725	0	0	791	0	791	0	0	0
	VOC's shipped offsite or to sanitary sewer	8379.9				LBS	158	3	1586	914	209	62	1017	422	1486	221	277	2024
10419	Natural Gas (total); (VOC EF = 2.8 lb/MMCF)	397.1			1,418,380	CCF	190700	141490	120660	113150	93780	92,690	86,730	92,940	87,700	112,530	129,650	156,360
	Natural Gas (21 MMBtu/hr boliers)				944,000	CCF	129,000	78,000	70,000	75,000	62,000	62,000	77,000	67,000	58,000	76,000	89,000	101,000
	Naturall Gas (other boilers and thermal oxidizer)				474,380	CCF	61,700	63,490	50,660	38,150	31,780	30,690	9,730	25,940	29,700	36,530	40,650	55,360
	NITRIC ACID				1,286,909	LB	116,770	93,294	104,582	110,635	108,834	104,383	117,530	109,381	113,569	108,936	109,826	89,169

If products do not show up on the above list, they are flagged in SAP for deletion.

12 MONTH ROLLING AVERAGES

VOC Emissions	total lbs	28,455
	total tons	14.2
NOx Emissions		
From 21 MMBtu/hr boilers	lbs	7,646
(EF = 81.0 lb/MMCF)	tons	3.8
From other boilers and thermal oxidizer	lbs	6,641
(EF = 140.0 lb/MMCF)	tons	3.3
From manufacturing operations (based on nitric acid used)	lbs	18,403
(EF = 0.0143 lb NOx / lb 100% HNO3)	tons	9.2
	total lbs	32,691
	total tons	16.3
CO Emissions		
From 21 MMBtu/hr boilers	lbs	5,758
(EF = 61.0 lb/MMCF)	tons	2.9
From other boilers and thermal oxidizer	lbs	1,660
(EF = 35.0 lb/MMCF)	tons	0.8
	total lbs	7,419
	total tons	3.7
PM Emissions		
From natural gas combustion	lbs	1,943
(EF = 13.7 lb/MMCF)	tons	1.0
PM 10 Emissions		
From natural gas combustion	lbs	1,943
(EF = 13.7 lb/MMCF)	tons	1.0

total IPA pounds 23,085.0

M#	Product Name (Instructions in comment)	12 month ave lbs VOC	Evaporation %	lbs/UOM	12 month total units	UOM	Jan-07	Feb-07	Mar-07	Apr-07	May-07	Jun-07	Jul-06	Aug-06	Sep-06	Oct-06	Nov-06	Dec-06
5406902	PAINT Krylon white enamel glossy	3.2	0.85	0.9393	4	CAN	0	0	0	0	0	0	4	0	0	0	0	0
5406903	PAINT gray primer 2X982 16 OZ.	8.8	0.85	0.9393	11	CAN	0	0	8	0	2	0	0	1	0	0	0	0
5406904	PAINT SUPERCOAT 316L SS AEROSOL CAN	2.4	0.85	0.9393	3	CAN	0	0	0	0	2	0	0	0	0	0	1	0
5406907	PAINT Equipment Orange	0.0	0.85	0.9393	-	PC	0	0	0	0	0	0	0	0	0	0	0	0
5406908	PAINT Ford red	3.2	0.85	0.9393	4	PC	0	0	0	0	0	0	3	1	0	0	0	0
5406909	PAINT high heat black	0.0	0.85	0.9393	-	PC	0	0	0	0	0	0	0	0	0	0	0	0
5406910	PAINT Chrysler blue	4.8	0.85	0.9393	6	PC	0	2	0	0	2	0	0	0	0	0	2	0
5406912	PAINT glossy black spray can #84000	8.8	0.85	0.9393	11	CAN	0	0	0	3	5	0	2	0	1	0	0	0
5407102	SEALANT silicon clear 3 oz tube	0.0	0.025	0.1875	-	PC	0	0	0	0	0	0	0	0	0	0	0	0
5407103	SEALANT silicone white 10.3 OZ tube	0.1	0.025	0.64375	5	PC	1	0	2	0	0	2	0	0	0	0	0	0
5407104	SEALANT rubber silicone RTV GE#W102	0.0	0.04	0.64375	1	PC	1	0	0	0	0	0	0	0	0	0	0	0
5407105	PASTE SILICON P12 WARMELEITPASTE	0.1	0.1	0.3308	2	PC	0	0	0	0	2	0	0	0	0	0	0	0
5407106	SILICONE RTV high temp red mak-a-gasket	1.5	1	0.4983	3	CAN	0	0	0	0	0	0	0	0	0	0	3	0
5407107	SILICONE RTV HIGH TEMP BLUE MAK-A-GASKET	0.2	0.08	0.5421	5	CAN	0	0	1	1	0	0	0	0	0	0	3	0
5407108	SILICONE RTV HIGH TEMP CLEAR	0.7	0.08	0.5421	17	CAN	6	0	0	0	0	0	0	0	1	0	10	0
5407328	CLEANER instant contact #CRC-03070	4.1	0.96	0.85557	5	CAN	0	0	0	0	4	0	0	0	0	0	0	1
5407330	CLEANER DUST CHASER SPRAY	59.5	1	0.62622	95	CAN	19	3	0	16	3	2	4	14	1	8	19	6
5407331	DEGREASER gel engine	1.6	0.7	0.78188	3	CAN	0	0	0	0	1	0	0	0	0	2	0	0
5407332	CLEANER electric motor KAR #65390-2	0.8	0.243	1.56375	2	CAN	0	0	0	0	0	0	0	0	0	2	0	0
5407334	STRIPPER/REMOVER PAINT, CARBON & GASKETS	0.0	0.68	0.93825	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407376	ISOPROPYL ALCOHOL (IPA) 99%	19,548.0	1	362	54	DR	3	5	5	3	4	2	6	5	6	5	5	5
5407431	LUBRICANT CRC 3-36 16oz can	4.2	0.07	0.85141	70	PC	0	12	0	0	9	12	12	13	12	0	0	0
5407432	LUBRICANT Parker-O-Lube #884-4	1.0	1	0.25	4	PC	1	0	2	0	0	1	0	0	0	0	0	0
5407433	LUBRICANT CRC 3-36 (1 gallon)	1.4	0.07	6.81128	3	GAL	0	0	0	0	1	0	0	1	0	0	1	0
5407434	GREASE ALVANIA EP 2 LITHIUM BASE	23.2	0.8	0.88	33	PC	4	0	6	10	0	0	9	0	0	4	0	0
5407435	LUBE teflon #79417	0.0	0.82	0.78188	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407436	LUBRICANT teflon dry #79418	0.0	0.125	0.6255	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407437	LUBRICANT MOLY HIGH TEMP	0.0			-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407438	LUBE OPEN CHAIN & SPROCKET #65389	0.0	1	8.86125	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407470	CLEANER zero residue instant tech spray	0.0	0.0541	1.04667	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407947	LUBRICANT SILICON	0.0	0.9	0.99038	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407948	GREASE MULTI PURPOSE WHITE	0.3	0.24	1.17281	1	PC	0	0	0	1	0	0	0	0	0	0	0	0
5407950	PAINT OSHA orange spray can	0.0	0.7	0.882	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407953	VINNAPAS C305 (solution) 1 liter	0.5	0.63	0.82358	1	BTL	0	1	0	0	0	0	0	0	0	0	0	0
5407955	EPOXY VALTRON AD1230 4-1 GAL/CS PART A	16.0	0.4	40.032	1	CS	0	0	1	0	0	0	0	0	0	0	0	0
5407966	ADHESIVE 10ML blue thred	0.0	0	0.02205	1	PC	0	0	0	0	0	0	0	0	1	0	0	0
5407967	ADHESIVE all purpose & trim #77160	1.2	0.88	1.36828	1	CAN	0	0	0	0	0	0	0	0	1	0	0	0
5410534	OIL AEROKROIL LOOSENS FROZEN METAL PARTS	10.9	0.6	0.625	29	PC	1	0	1	1	0	10	0	2	0	12	0	2
5410872	PAINT spray yellow	1.2	0.65	0.9393	2	CAN	0	0	0	0	0	0	0	0	0	0	2	0
5413542	WAX SKYLIQUID CLEAR HF4011 2 LITER	10,688.4	0.6	3.97458	4,482	BTL	480	408	438	384	348	336	444	324	354	354	420	192
5414028	LUBRICANT CRC 3-36 (5 gallon)	0.0			-	PC	0	0	0	0	0	0	0	0	0	0	0	0
5516514	BOTTLE IPA high purity (4x1-gal cs)	701.0	1	6.55107	107	PC	27	0	0	0	0	0	0	0	0	0	0	80
5522458	WAX Thin Skyliquid KN-25449 2ltr/btl	155.3	0.75	3.83357	54	BTL	0	0	12	0	0	12	0	6	12	0	6	6
5527433	TISAB II WITH CDTA	32.1	0.1	8.9238	36	GAL	2	3	3	2	3	3	3	3	3	3	6	2
5551837	ISOPROPYL ALCOHOL (IPA) Class 1 drum	2450.0	1	350	7	drum	1	1	0	1	2	2	0	0	0	0	0	0
	Parts washer solvent	2602.5				LBS	0	0	0	725	0	296	791	0	791	0	0	0
	VOC's shipped offsite or to sanitary sewer	9155.9				LBS	158	3	1586	914	209	838	1017	422	1486	221	277	2024
10419	Natural Gas (total); (VOC EF = 2.8 lb/MMCF)	393.1			1,403,850	CCF	190700	141490	120660	113150	93780	78160	86,730	92,940	87,700	112,530	129,650	156,360
	Natural Gas (21 MMBtu/hr boliers)				916,000	CCF	129,000	78,000	70,000	75,000	62,000	34,000	77,000	67,000	58,000	76,000	89,000	101,000
	Naturall Gas (other boilers and thermal oxidizer)				487,850	CCF	61,700	63,490	50,660	38,150	31,780	44,160	9,730	25,940	29,700	36,530	40,650	55,360
	NITRIC ACID				1,287,581	LB	116,770	93,294	104,582	110,635	108,834	105,055	117,530	109,381	113,569	108,936	109,826	89,169

If products do not show up on the above list, they are flagged in SAP for deletion.

12 MONTH ROLLING AVERAGES

VOC Emissions	total lbs	27,574
	total tons	13.8
NOx Emissions		
From 21 MMBtu/hr boilers	lbs	7,420
(EF = 81.0 lb/MMCF)	tons	3.7
From other boilers and thermal oxidizer	lbs	6,830
(EF = 140.0 lb/MMCF)	tons	3.4
From manufacturing operations (based on nitric acid used)	lbs	18,412
(EF = 0.0143 lb NOx / lb 100% HNO3)	tons	9.2
	total lbs	32,662
	total tons	16.3
CO Emissions		
From 21 MMBtu/hr boilers	lbs	5,588
(EF = 61.0 lb/MMCF)	tons	2.8
From other boilers and thermal oxidizer	lbs	1,707
(EF = 35.0 lb/MMCF)	tons	0.9
	total lbs	7,295
	total tons	3.6
PM Emissions		
From natural gas combustion	lbs	1,923
(EF = 13.7 lb/MMCF)	tons	1.0
PM 10 Emissions		
From natural gas combustion	lbs	1,923
(EF = 13.7 lb/MMCF)	tons	1.0

total IPA pounds 22,699.0

M#	Product Name (Instructions in comment)	12 month ave lbs VOC	Evaporation %	lbs/UOM	12 month total units	UOM	Jan-07	Feb-07	Mar-07	Apr-07	May-07	Jun-07	Jul-07	Aug-06	Sep-06	Oct-06	Nov-06	Dec-06
5406902	PAINT Krylon white enamel glossy	0.0	0.85	0.9393	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5406903	PAINT gray primer 2X982 16 OZ.	8.8	0.85	0.9393	11	CAN	0	0	8	0	2	0	0	1	0	0	0	0
5406904	PAINT SUPERCOAT 316L SS AEROSOL CAN	2.4	0.85	0.9393	3	CAN	0	0	0	0	2	0	0	0	0	0	1	0
5406907	PAINT Equipment Orange	0.0	0.85	0.9393	-	PC	0	0	0	0	0	0	0	0	0	0	0	0
5406908	PAINT Ford red	0.8	0.85	0.9393	1	PC	0	0	0	0	0	0	0	1	0	0	0	0
5406909	PAINT high heat black	0.0	0.85	0.9393	-	PC	0	0	0	0	0	0	0	0	0	0	0	0
5406910	PAINT Chrysler blue	4.8	0.85	0.9393	6	PC	0	2	0	0	2	0	0	0	0	0	2	0
5406912	PAINT glossy black spray can #84000	7.2	0.85	0.9393	9	CAN	0	0	0	3	5	0	0	0	1	0	0	0
5407102	SEALANT silicon clear 3 oz tube	0.0	0.025	0.1875	2	PC	0	0	0	0	0	0	2	0	0	0	0	0
5407103	SEALANT silicone white 10.3 OZ tube	0.1	0.025	0.64375	5	PC	1	0	2	0	0	2	0	0	0	0	0	0
5407104	SEALANT rubber silicone RTV GE#W102	0.0	0.04	0.64375	1	PC	1	0	0	0	0	0	0	0	0	0	0	0
5407105	PASTE SILICON P12 WARMELEITPASTE	0.1	0.1	0.3308	2	PC	0	0	0	0	2	0	0	0	0	0	0	0
5407106	SILICONE RTV high temp red mak-a-gasket	1.5	1	0.4983	3	CAN	0	0	0	0	0	0	0	0	0	0	3	0
5407107	SILICONE RTV HIGH TEMP BLUE MAK-A-GASKET	0.2	0.08	0.5421	5	CAN	0	0	1	1	0	0	0	0	0	0	3	0
5407108	SILICONE RTV HIGH TEMP CLEAR	0.7	0.08	0.5421	17	CAN	6	0	0	0	0	0	0	0	1	0	10	0
5407328	CLEANER instant contact #CRC-03070	4.1	0.96	0.85557	5	CAN	0	0	0	0	4	0	0	0	0	0	0	1
5407330	CLEANER DUST CHASER SPRAY	65.1	1	0.62622	104	CAN	19	3	0	16	3	2	13	14	1	8	19	6
5407331	DEGREASER gel engine	1.6	0.7	0.78188	3	CAN	0	0	0	0	1	0	0	0	0	2	0	0
5407332	CLEANER electric motor KAR #65390-2	0.8	0.243	1.56375	2	CAN	0	0	0	0	0	0	0	0	0	2	0	0
5407334	STRIPPER/REMOVER PAINT, CARBON & GASKETS	0.0	0.68	0.93825	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407376	ISOPROPYL ALCOHOL (IPA) 99%	18,462.0	1	362	51	DR	3	5	5	3	4	2	3	5	6	5	5	5
5407431	LUBRICANT CRC 3-36 16oz can	3.6	0.07	0.85141	60	PC	0	12	0	0	9	12	2	13	12	0	0	0
5407432	LUBRICANT Parker-O-Lube #884-4	1.0	1	0.25	4	PC	1	0	2	0	0	1	0	0	0	0	0	0
5407433	LUBRICANT CRC 3-36 (1 gallon)	1.4	0.07	6.81128	3	GAL	0	0	0	0	1	0	0	1	0	0	1	0
5407434	GREASE ALVANIA EP 2 LITHIUM BASE	16.9	0.8	0.88	24	PC	4	0	6	10	0	0	0	0	0	4	0	0
5407435	LUBE teflon #79417	0.0	0.82	0.78188	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407436	LUBRICANT teflon dry #79418	0.0	0.125	0.6255	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407437	LUBRICANT MOLY HIGH TEMP	0.0			-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407438	LUBE OPEN CHAIN & SPROCKET #65389	0.0	1	8.86125	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407470	CLEANER zero residue instant tech spray	0.0	0.0541	1.04667	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407947	LUBRICANT SILICON	0.0	0.9	0.99038	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407948	GREASE MULTI PURPOSE WHITE	0.3	0.24	1.17281	1	PC	0	0	0	1	0	0	0	0	0	0	0	0
5407950	PAINT OSHA orange spray can	0.0	0.7	0.882	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407953	VINNAPAS C305 (solution) 1 liter	0.5	0.63	0.82358	1	BTL	0	1	0	0	0	0	0	0	0	0	0	0
5407955	EPOXY VALTRON AD1230 4-1 GAL/CS PART A	16.0	0.4	40.032	1	CS	0	0	1	0	0	0	0	0	0	0	0	0
5407966	ADHESIVE 10ML blue thred	0.0	0	0.02205	1	PC	0	0	0	0	0	0	0	0	1	0	0	0
5407967	ADHESIVE all purpose & trim #77160	1.2	0.88	1.36828	1	CAN	0	0	0	0	0	0	0	0	1	0	0	0
5410534	OIL AEROKROIL LOOSENS FROZEN METAL PARTS	10.9	0.6	0.625	29	PC	1	0	1	1	0	10	0	2	0	12	0	2
5410872	PAINT spray yellow	1.2	0.65	0.9393	2	CAN	0	0	0	0	0	0	0	0	0	0	2	0
5413542	WAX SKYLIQUID CLEAR HF4011 2 LITER	10,531.0	0.6	3.97458	4,416	BTL	480	408	438	384	348	336	378	324	354	354	420	192
5414028	LUBRICANT CRC 3-36 (5 gallon)	0.0			-	PC	0	0	0	0	0	0	0	0	0	0	0	0
5516514	BOTTLE IPA high purity (4x1-gal cs)	701.0	1	6.55107	107	PC	27	0	0	0	0	0	0	0	0	0	0	80
5522458	WAX Thin Skyliquid KN-25449 2ltr/btl	172.5	0.75	3.83357	60	BTL	0	0	12	0	0	12	6	6	12	0	6	6
5527433	TISAB II WITH CDTA	32.1	0.1	8.9238	36	GAL	2	3	3	2	3	3	3	3	3	3	6	2
5551837	ISOPROPYL ALCOHOL (IPA) Class 1 drum	2800.0	1	350	8	drum	1	1	0	1	2	2	1	0	0	0	0	0
	Parts washer solvent	1811.9				LBS	0	0	0	725	0	296	0	0	791	0	0	0
	VOC's shipped offsite or to sanitary sewer	8881.3				LBS	158	3	1586	914	209	838	742	422	1486	221	277	2024
10419	Natural Gas (total); (VOC EF = 2.8 lb/MMCF)	389.2			1,390,037	CCF	190700	141490	120660	113150	93780	78160	72917	92,940	87,700	112,530	129,650	156,360
	Natural Gas (21 MMBtu/hr boliers)				882,000	CCF	129,000	78,000	70,000	75,000	62,000	34,000	43,000	67,000	58,000	76,000	89,000	101,000
	Naturall Gas (other boilers and thermal oxidizer)				508,037	CCF	61,700	63,490	50,660	38,150	31,780	44,160	29,917	25,940	29,700	36,530	40,650	55,360
	NITRIC ACID				1,268,355	LB	116,770	93,294	104,582	110,635	108,834	105,055	98,304	109,381	113,569	108,936	109,826	89,169

If products do not show up on the above list, they are flagged in SAP for deletion.

12 MONTH ROLLING AVERAGES

VOC Emissions	total lbs	26,170
	total tons	13.1
NOx Emissions		
From 21 MMBtu/hr boilers	lbs	7,144
(EF = 81.0 lb/MMCF)	tons	3.6
From other boilers and thermal oxidizer	lbs	7,113
(EF = 140.0 lb/MMCF)	tons	3.6
From manufacturing operations (based on nitric acid used)	lbs	18,137
(EF = 0.0143 lb NOx / lb 100% HNO3)	tons	9.1
	total lbs	32,394
	total tons	16.2
CO Emissions		
From 21 MMBtu/hr boilers	lbs	5,380
(EF = 61.0 lb/MMCF)	tons	2.7
From other boilers and thermal oxidizer	lbs	1,778
(EF = 35.0 lb/MMCF)	tons	0.9
	total lbs	7,158
	total tons	3.6
PM Emissions		
From natural gas combustion	lbs	1,904
(EF = 13.7 lb/MMCF)	tons	1.0
PM 10 Emissions		
From natural gas combustion	lbs	1,904
(EF = 13.7 lb/MMCF)	tons	1.0

total IPA pounds 21,963.0

M#	Product Name (Instructions in comment)	12 month ave lbs VOC	Evaporation %	lbs/UOM	12 month total units	UOM	Jan-07	Feb-07	Mar-07	Apr-07	May-07	Jun-07	Jul-07	Aug-07	Sep-06	Oct-06	Nov-06	Dec-06
5406902	PAINT Krylon white enamel glossy	0.0	0.85	0.9393	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5406903	PAINT gray primer 2X982 16 OZ.	9.6	0.85	0.9393	12	CAN	0	0	8	0	2	0	0	2	0	0	0	0
5406904	PAINT SUPERCOAT 316L SS AEROSOL CAN	2.4	0.85	0.9393	3	CAN	0	0	0	0	2	0	0	0	0	0	1	0
5406907	PAINT Equipment Orange	0.0	0.85	0.9393	-	PC	0	0	0	0	0	0	0	0	0	0	0	0
5406908	PAINT Ford red	0.8	0.85	0.9393	1	PC	0	0	0	0	0	0	0	1	0	0	0	0
5406909	PAINT high heat black	0.0	0.85	0.9393	-	PC	0	0	0	0	0	0	0	0	0	0	0	0
5406910	PAINT Chrysler blue	8.0	0.85	0.9393	10	PC	0	2	0	0	2	0	0	4	0	0	2	0
5406912	PAINT glossy black spray can #84000	7.2	0.85	0.9393	9	CAN	0	0	0	3	5	0	0	0	1	0	0	0
5407102	SEALANT silicon clear 3 oz tube	0.0	0.025	0.1875	2	PC	0	0	0	0	0	0	2	0	0	0	0	0
5407103	SEALANT silicone white 10.3 OZ tube	0.1	0.025	0.64375	5	PC	1	0	2	0	0	2	0	0	0	0	0	0
5407104	SEALANT rubber silicone RTV GE#W102	0.0	0.04	0.64375	1	PC	1	0	0	0	0	0	0	0	0	0	0	0
5407105	PASTE SILICON P12 WARMELEITPASTE	0.1	0.1	0.3308	2	PC	0	0	0	0	2	0	0	0	0	0	0	0
5407106	SILICONE RTV high temp red mak-a-gasket	1.5	1	0.4983	3	CAN	0	0	0	0	0	0	0	0	0	0	3	0
5407107	SILICONE RTV HIGH TEMP BLUE MAK-A-GASKET	0.2	0.08	0.5421	5	CAN	0	0	1	1	0	0	0	0	0	0	3	0
5407108	SILICONE RTV HIGH TEMP CLEAR	0.7	0.08	0.5421	17	CAN	6	0	0	0	0	0	0	0	1	0	10	0
5407328	CLEANER instant contact #CRC-03070	4.1	0.96	0.85557	5	CAN	0	0	0	0	4	0	0	0	0	0	0	1
5407330	CLEANER DUST CHASER SPRAY	56.4	1	0.62622	90	CAN	19	3	0	16	3	2	13	0	1	8	19	6
5407331	DEGREASER gel engine	1.6	0.7	0.78188	3	CAN	0	0	0	0	1	0	0	0	0	2	0	0
5407332	CLEANER electric motor KAR #65390-2	1.5	0.243	1.56375	4	CAN	0	0	0	0	0	0	0	2	0	2	0	0
5407334	STRIPPER/REMOVER PAINT, CARBON & GASKETS	0.0	0.68	0.93825	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407376	ISOPROPYL ALCOHOL (IPA) 99%	17,738.0	1	362	49	DR	3	5	5	3	4	2	3	3	6	5	5	5
5407431	LUBRICANT CRC 3-36 16oz can	2.8	0.07	0.85141	47	PC	0	12	0	0	9	12	2	0	12	0	0	0
5407432	LUBRICANT Parker-O-Lube #884-4	1.0	1	0.25	4	PC	1	0	2	0	0	1	0	0	0	0	0	0
5407433	LUBRICANT CRC 3-36 (1 gallon)	1.0	0.07	6.81128	2	GAL	0	0	0	0	1	0	0	0	0	0	1	0
5407434	GREASE ALVANIA EP 2 LITHIUM BASE	19.0	0.8	0.88	27	PC	4	0	6	10	0	0	0	3	0	4	0	0
5407435	LUBE teflon #79417	0.0	0.82	0.78188	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407436	LUBRICANT teflon dry #79418	0.0	0.125	0.6255	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407437	LUBRICANT MOLY HIGH TEMP	0.0			-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407438	LUBE OPEN CHAIN & SPROCKET #65389	0.0	1	8.86125	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407470	CLEANER zero residue instant tech spray	0.0	0.0541	1.04667	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407947	LUBRICANT SILICON	0.0	0.9	0.99038	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407948	GREASE MULTI PURPOSE WHITE	0.3	0.24	1.17281	1	PC	0	0	0	1	0	0	0	0	0	0	0	0
5407950	PAINT OSHA orange spray can	0.0	0.7	0.882	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407953	VINNAPAS C305 (solution) 1 liter	0.5	0.63	0.82358	1	BTL	0	1	0	0	0	0	0	0	0	0	0	0
5407955	EPOXY VALTRON AD1230 4-1 GAL/CS PART A	16.0	0.4	40.032	1	CS	0	0	1	0	0	0	0	0	0	0	0	0
5407966	ADHESIVE 10ML blue thred	0.0	0	0.02205	1	PC	0	0	0	0	0	0	0	0	1	0	0	0
5407967	ADHESIVE all purpose & trim #77160	1.2	0.88	1.36828	1	CAN	0	0	0	0	0	0	0	0	1	0	0	0
5410534	OIL AEROKROIL LOOSENS FROZEN METAL PARTS	10.1	0.6	0.625	27	PC	1	0	1	1	0	10	0	0	0	12	0	2
5410872	PAINT spray yellow	1.2	0.65	0.9393	2	CAN	0	0	0	0	0	0	0	0	0	0	2	0
5413542	WAX SKYLIQUID CLEAR HF4011 2 LITER	10,588.3	0.6	3.97458	4,440	BTL	480	408	438	384	348	336	378	348	354	354	420	192
5414028	LUBRICANT CRC 3-36 (5 gallon)	0.0			-	PC	0	0	0	0	0	0	0	0	0	0	0	0
5516514	BOTTLE IPA high purity (4x1-gal cs)	701.0	1	6.55107	107	PC	27	0	0	0	0	0	0	0	0	0	0	80
5522458	WAX Thin Skyliquid KN-25449 2ltr/btl	207.0	0.75	3.83357	72	BTL	0	0	12	0	0	12	6	18	12	0	6	6
5527433	TISAB II WITH CDTA	31.2	0.1	8.9238	35	GAL	2	3	3	2	3	3	3	2	3	3	6	2
5551837	ISOPROPYL ALCOHOL (IPA) Class 1 drum	3500.0	1	350	10	drum	1	1	0	1	2	2	1	2	0	0	0	0
	Parts washer solvent	1811.9				LBS	0	0	0	725	0	296	0	0	791	0	0	0
	VOC's shipped offsite or to sanitary sewer	9218.1				LBS	158	3	1586	914	209	838	742	759	1486	221	277	2024
10419	Natural Gas (total); (VOC EF = 2.8 lb/MMCF)	384.0			1,371,569	CCF	190700	141490	120660	113150	93780	78160	72917	74472	87,700	112,530	129,650	156,360
	Natural Gas (21 MMBtu/hr boilers)				864,000	CCF	129,000	78,000	70,000	75,000	62,000	34,000	43,000	49,000	58,000	76,000	89,000	101,000
	Naturall Gas (other boilers and thermal oxidizer)				507,569	CCF	61,700	63,490	50,660	38,150	31,780	44,160	29,917	25,472	29,700	36,530	40,650	55,360
	NITRIC ACID				1,268,388	LB	116,770	93,294	104,582	110,635	108,834	105,055	98,304	109,415	113,569	108,936	109,826	89,169

If products do not show up on the above list, they are flagged in SAP for deletion.

12 MONTH ROLLING AVERAGES

VOC Emissions	total lbs	25,891
	total tons	12.9
NOx Emissions		
From 21 MMBtu/hr boilers	lbs	6,998
(EF = 81.0 lb/MMCF)	tons	3.5
From other boilers and thermal oxidizer	lbs	7,106
(EF = 140.0 lb/MMCF)	tons	3.6
From manufacturing operations (based on nitric acid used)	lbs	18,138
(EF = 0.0143 lb NOx / lb 100% HNO3)	tons	9.1
	total lbs	32,242
	total tons	16.1
CO Emissions		
From 21 MMBtu/hr boilers	lbs	5,270
(EF = 61.0 lb/MMCF)	tons	2.6
From other boilers and thermal oxidizer	lbs	1,776
(EF = 35.0 lb/MMCF)	tons	0.9
	total lbs	7,047
	total tons	3.5
PM Emissions		
From natural gas combustion	lbs	1,879
(EF = 13.7 lb/MMCF)	tons	0.9
PM 10 Emissions		
From natural gas combustion	lbs	1,879
(EF = 13.7 lb/MMCF)	tons	0.9

total IPA pounds 21,939.0

M#	Product Name (Instructions in comment)	12 month ave lbs VOC	Evaporation %	lbs/UOM	12 month total units	UOM	Jan-07	Feb-07	Mar-07	Apr-07	May-07	Jun-07	Jul-07	Aug-07	Sep-07	Oct-06	Nov-06	Dec-06
5406902	PAINT Krylon white enamel glossy	0.0	0.85	0.9393	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5406903	PAINT gray primer 2X982 16 OZ.	9.6	0.85	0.9393	12	CAN	0	0	8	0	2	0	0	2	0	0	0	0
5406904	PAINT SUPERCOAT 316L SS AEROSOL CAN	2.4	0.85	0.9393	3	CAN	0	0	0	0	2	0	0	0	0	0	1	0
5406907	PAINT Equipment Orange	0.0	0.85	0.9393	-	PC	0	0	0	0	0	0	0	0	0	0	0	0
5406908	PAINT Ford red	0.8	0.85	0.9393	1	PC	0	0	0	0	0	0	0	1	0	0	0	0
5406909	PAINT high heat black	0.0	0.85	0.9393	-	PC	0	0	0	0	0	0	0	0	0	0	0	0
5406910	PAINT Chrysler blue	8.8	0.85	0.9393	11	PC	0	2	0	0	2	0	0	4	1	0	2	0
5406912	PAINT glossy black spray can #84000	8.0	0.85	0.9393	10	CAN	0	0	0	3	5	0	0	0	2	0	0	0
5407102	SEALANT silicon clear 3 oz tube	0.0	0.025	0.1875	2	PC	0	0	0	0	0	0	2	0	0	0	0	0
5407103	SEALANT silicone white 10.3 OZ tube	0.1	0.025	0.64375	7	PC	1	0	2	0	0	2	0	0	2	0	0	0
5407104	SEALANT rubber silicone RTV GE#W102	0.0	0.04	0.64375	1	PC	1	0	0	0	0	0	0	0	0	0	0	0
5407105	PASTE SILICON P12 WARMELEITPASTE	0.1	0.1	0.3308	2	PC	0	0	0	0	2	0	0	0	0	0	0	0
5407106	SILICONE RTV high temp red mak-a-gasket	1.5	1	0.4983	3	CAN	0	0	0	0	0	0	0	0	0	0	3	0
5407107	SILICONE RTV HIGH TEMP BLUE MAK-A-GASKET	0.2	0.08	0.5421	5	CAN	0	0	1	1	0	0	0	0	0	0	3	0
5407108	SILICONE RTV HIGH TEMP CLEAR	0.7	0.08	0.5421	16	CAN	6	0	0	0	0	0	0	0	0	0	10	0
5407328	CLEANER instant contact #CRC-03070	4.1	0.96	0.85557	5	CAN	0	0	0	0	4	0	0	0	0	0	0	1
5407330	CLEANER DUST CHASER SPRAY	57.0	1	0.62622	91	CAN	19	3	0	16	3	2	13	0	2	8	19	6
5407331	DEGREASER gel engine	1.6	0.7	0.78188	3	CAN	0	0	0	0	1	0	0	0	0	2	0	0
5407332	CLEANER electric motor KAR #65390-2	1.5	0.243	1.56375	4	CAN	0	0	0	0	0	0	0	2	0	2	0	0
5407334	STRIPPER/REMOVER PAINT, CARBON & GASKETS	0.0	0.68	0.93825	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407376	ISOPROPYL ALCOHOL (IPA) 99%	16,290.0	1	362	45	DR	3	5	5	3	4	2	3	3	2	5	5	5
5407431	LUBRICANT CRC 3-36 16oz can	2.1	0.07	0.85141	35	PC	0	12	0	0	9	12	2	0	0	0	0	0
5407432	LUBRICANT Parker-O-Lube #884-4	1.0	1	0.25	4	PC	1	0	2	0	0	1	0	0	0	0	0	0
5407433	LUBRICANT CRC 3-36 (1 gallon)	1.0	0.07	6.81128	2	GAL	0	0	0	0	1	0	0	0	0	0	1	0
5407434	GREASE ALVANIA EP 2 LITHIUM BASE	20.4	0.8	0.88	29	PC	4	0	6	10	0	0	0	3	2	4	0	0
5407435	LUBE teflon #79417	0.0	0.82	0.78188	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407436	LUBRICANT teflon dry #79418	0.0	0.125	0.6255	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407437	LUBRICANT MOLY HIGH TEMP	0.0			-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407438	LUBE OPEN CHAIN & SPROCKET #65389	8.9	1	8.86125	1	CAN	0	0	0	0	0	0	0	0	1	0	0	0
5407470	CLEANER zero residue instant tech spray	0.0	0.0541	1.04667	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407947	LUBRICANT SILICON	0.0	0.9	0.99038	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407948	GREASE MULTI PURPOSE WHITE	0.3	0.24	1.17281	1	PC	0	0	0	1	0	0	0	0	0	0	0	0
5407950	PAINT OSHA orange spray can	0.0	0.7	0.882	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407953	VINNAPAS C305 (solution) 1 liter	0.5	0.63	0.82358	1	BTL	0	1	0	0	0	0	0	0	0	0	0	0
5407955	EPOXY VALTRON AD1230 4-1 GAL/CS PART A	32.0	0.4	40.032	2	CS	0	0	1	0	0	0	0	0	1	0	0	0
5407966	ADHESIVE 10ML blue thred	0.0	0	0.02205	-	PC	0	0	0	0	0	0	0	0	0	0	0	0
5407967	ADHESIVE all purpose & trim #77160	0.0	0.88	1.36828	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5410534	OIL AEROKROIL LOOSENS FROZEN METAL PARTS	10.5	0.6	0.625	28	PC	1	0	1	1	0	10	0	0	1	12	0	2
5410872	PAINT spray yellow	1.2	0.65	0.9393	2	CAN	0	0	0	0	0	0	0	0	0	0	2	0
5413542	WAX SKYLIQUID CLEAR HF4011 2 LITER	10,659.8	0.6	3.97458	4,470	BTL	480	408	438	384	348	336	378	348	384	354	420	192
5414028	LUBRICANT CRC 3-36 (5 gallon)	0.0			-	PC	0	0	0	0	0	0	0	0	0	0	0	0
5516514	BOTTLE IPA high purity (4x1-gal cs)	701.0	1	6.55107	107	PC	27	0	0	0	0	0	0	0	0	0	0	80
5522458	WAX Thin Skyliquid KN-25449 2ltr/btl	276.0	0.75	3.83357	96	BTL	0	0	12	0	0	12	6	18	36	0	6	6
5527433	TISAB II WITH CDTA	31.2	0.1	8.9238	35	GAL	2	3	3	2	3	3	3	2	3	3	6	2
5551837	ISOPROPYL ALCOHOL (IPA) Class 1 drum	3850.0	1	350	11	drum	1	1	0	1	2	2	1	2	1	0	0	0
	Parts washer solvent	1515.4				LBS	0	0	0	725	0	296	0	0	494	0	0	0
	VOC's shipped offsite or to sanitary sewer	9030.9				LBS	158	3	1586	914	209	838	742	759	1299	221	277	2024
10419	Natural Gas (total); (VOC EF = 2.8 lb/MMCF)	380.2			1,357,749	CCF	190700	141490	120660	113150	93780	78160	72917	74472	73880	112,530	129,650	156,360
	Natural Gas (21 MMBtu/hr boilers)				853,000	CCF	129,000	78,000	70,000	75,000	62,000	34,000	43,000	49,000	47,000	76,000	89,000	101,000
	Naturall Gas (other boilers and thermal oxidizer)				504,749	CCF	61,700	63,490	50,660	38,150	31,780	44,160	29,917	25,472	26,880	36,530	40,650	55,360
	NITRIC ACID				1,241,635	LB	116,770	93,294	104,582	110,635	108,834	105,055	98,304	109,415	86,816	108,936	109,826	89,169

If products do not show up on the above list, they are flagged in SAP for deletion.

12 MONTH ROLLING AVERAGES

VOC Emissions	total lbs	24,847
	total tons	12.4
NOx Emissions		
From 21 MMBtu/hr boilers	lbs	6,909
(EF = 81.0 lb/MMCF)	tons	3.5
From other boilers and thermal oxidizer	lbs	7,066
(EF = 140.0 lb/MMCF)	tons	3.5
From manufacturing operations (based on nitric acid used)	lbs	17,755
(EF = 0.0143 lb NOx / lb 100% HNO3)	tons	8.9
	total lbs	31,731
	total tons	15.9
CO Emissions		
From 21 MMBtu/hr boilers	lbs	5,203
(EF = 61.0 lb/MMCF)	tons	2.6
From other boilers and thermal oxidizer	lbs	1,767
(EF = 35.0 lb/MMCF)	tons	0.9
	total lbs	6,970
	total tons	3.5
PM Emissions		
From natural gas combustion	lbs	1,860
(EF = 13.7 lb/MMCF)	tons	0.9
PM 10 Emissions		
From natural gas combustion	lbs	1,860
(EF = 13.7 lb/MMCF)	tons	0.9

total IPA pounds 20,841.0

SCOEPA00022619

M#	Product Name (Instructions in comment)	12 month ave lbs VOC	Evaporation %	lbs/UOM	12 month total units	UOM	Jan-07	Feb-07	Mar-07	Apr-07	May-07	Jun-07	Jul-07	Aug-07	Sep-07	Oct-07	Nov-06	Dec-06
5406902	PAINT Krylon white enamel glossy	2.4	0.85	0.9393	3	CAN	0	0	0	0	0	0	0	0	0	3	0	0
5406903	PAINT gray primer 2X982 16 OZ.	12.0	0.85	0.9393	15	CAN	0	0	8	0	2	0	0	2	0	3	0	0
5406904	PAINT SUPERCOAT 316L SS AEROSOL CAN	2.4	0.85	0.9393	3	CAN	0	0	0	0	2	0	0	0	0	0	1	0
5406907	PAINT Equipment Orange	0.0	0.85	0.9393	-	PC	0	0	0	0	0	0	0	0	0	0	0	0
5406908	PAINT Ford red	0.8	0.85	0.9393	1	PC	0	0	0	0	0	0	0	1	0	0	0	0
5406909	PAINT high heat black	0.0	0.85	0.9393	-	PC	0	0	0	0	0	0	0	0	0	0	0	0
5406910	PAINT Chrysler blue	8.8	0.85	0.9393	11	PC	0	2	0	0	2	0	0	4	1	0	2	0
5406912	PAINT glossy black spray can #84000	10.4	0.85	0.9393	13	CAN	0	0	0	3	5	0	0	0	2	3	0	0
5407102	SEALANT silicon clear 3 oz tube	0.0	0.025	0.1875	2	PC	0	0	0	0	0	0	2	0	0	0	0	0
5407103	SEALANT silicone white 10.3 OZ tube	0.1	0.025	0.64375	7	PC	1	0	2	0	0	2	0	0	2	0	0	0
5407104	SEALANT rubber silicone RTV GE#W102	0.0	0.04	0.64375	1	PC	1	0	0	0	0	0	0	0	0	0	0	0
5407105	PASTE SILICON P12 WARMELEITPASTE	0.1	0.1	0.3308	2	PC	0	0	0	0	2	0	0	0	0	0	0	0
5407106	SILICONE RTV high temp red mak-a-gasket	1.5	1	0.4983	3	CAN	0	0	0	0	0	0	0	0	0	0	3	0
5407107	SILICONE RTV HIGH TEMP BLUE MAK-A-GASKET	0.2	0.08	0.5421	5	CAN	0	0	1	1	0	0	0	0	0	0	3	0
5407108	SILICONE RTV HIGH TEMP CLEAR	0.7	0.08	0.5421	16	CAN	6	0	0	0	0	0	0	0	0	0	10	0
5407328	CLEANER instant contact #CRC-03070	4.1	0.96	0.85557	5	CAN	0	0	0	0	4	0	0	0	0	0	0	1
5407330	CLEANER DUST CHASER SPRAY	52.0	1	0.62622	83	CAN	19	3	0	16	3	2	13	0	2	0	19	6
5407331	DEGREASER gel engine	0.5	0.7	0.78188	1	CAN	0	0	0	0	1	0	0	0	0	0	0	0
5407332	CLEANER electric motor KAR #65390-2	0.8	0.243	1.56375	2	CAN	0	0	0	0	0	0	0	2	0	0	0	0
5407334	STRIPPER/REMOVER PAINT, CARBON & GASKETS	0.0	0.68	0.93825	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407376	ISOPROPYL ALCOHOL (IPA) 99%	15,566.0	1	362	43	DR	3	5	5	3	4	2	3	3	2	3	5	5
5407431	LUBRICANT CRC 3-36 16oz can	3.0	0.07	0.85141	51	PC	0	12	0	0	9	12	2	0	0	16	0	0
5407432	LUBRICANT Parker-O-Lube #884-4	1.0	1	0.25	4	PC	1	0	2	0	0	1	0	0	0	0	0	0
5407433	LUBRICANT CRC 3-36 (1 gallon)	1.0	0.07	6.81128	2	GAL	0	0	0	0	1	0	0	0	0	0	1	0
5407434	GREASE ALVANIA EP 2 LITHIUM BASE	17.6	0.8	0.88	25	PC	4	0	6	10	0	0	0	3	2	0	0	0
5407435	LUBE teflon #79417	0.0	0.82	0.78188	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407436	LUBRICANT teflon dry #79418	0.0	0.125	0.6255	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407437	LUBRICANT MOLY HIGH TEMP	0.0			-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407438	LUBE OPEN CHAIN & SPROCKET #65389	8.9	1	8.86125	1	CAN	0	0	0	0	0	0	0	0	1	0	0	0
5407470	CLEANER zero residue instant tech spray	0.0	0.0541	1.04667	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407947	LUBRICANT SILICON	0.0	0.9	0.99038	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407948	GREASE MULTI PURPOSE WHITE	0.3	0.24	1.17281	1	PC	0	0	0	1	0	0	0	0	0	0	0	0
5407950	PAINT OSHA orange spray can	0.0	0.7	0.882	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407953	VINNAPAS C305 (solution) 1 liter	0.5	0.63	0.82358	1	BTL	0	1	0	0	0	0	0	0	0	0	0	0
5407955	EPOXY VALTRON AD1230 4-1 GAL/CS PART A	32.0	0.4	40.032	2	CS	0	0	1	0	0	0	0	0	1	0	0	0
5407966	ADHESIVE 10ML blue thred	0.0	0	0.02205	-	PC	0	0	0	0	0	0	0	0	0	0	0	0
5407967	ADHESIVE all purpose & trim #77160	0.0	0.88	1.36828	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5410534	OIL AEROKROIL LOOSENS FROZEN METAL PARTS	6.0	0.6	0.625	16	PC	1	0	1	1	0	10	0	0	1	0	0	2
5410872	PAINT spray yellow	1.2	0.65	0.9393	2	CAN	0	0	0	0	0	0	0	0	0	0	2	0
5413542	WAX SKYLIQUID CLEAR HF4011 2 LITER	10,616.9	0.6	3.97458	4,452	BTL	480	408	438	384	348	336	378	348	384	336	420	192
5414028	LUBRICANT CRC 3-36 (5 gallon)	0.0			-	PC	0	0	0	0	0	0	0	0	0	0	0	0
5516514	BOTTLE IPA high purity (4x1-gal cs)	701.0	1	6.55107	107	PC	27	0	0	0	0	0	0	0	0	0	0	80
5522458	WAX Thin Skyliquid KN-25449 2ltr/btl	327.8	0.75	3.83357	114	BTL	0	0	12	0	0	12	6	18	36	18	6	6
5527433	TISAB II WITH CDTA	33.0	0.1	8.9238	37	GAL	2	3	3	2	3	3	3	2	3	5	6	2
5551837	ISOPROPYL ALCOHOL (IPA) Class 1 drum	4200.0	1	350	12	drum	1	1	0	1	2	2	1	2	1	1	0	0
	TexWipes (PreSat wipes)	3.2	1	0.06857	47											47		
	Parts washer solvent	1515.4				LBS	0	0	0	725	0	296	0	0	494	0	0	0
	VOC's shipped offsite or to sanitary sewer	8947.9				LBS	158	3	1586	914	209	838	742	759	1299	138	277	2024
10419	Natural Gas (total); (VOC EF = 2.8 lb/MMCF)	373.3			1,333,377	CCF	190700	141490	120660	113150	93780	78160	72917	74472	73880	88158	129,650	156,360
	Natural Gas (21 MMBtu/hr boliers)				833,000	CCF	129,000	78,000	70,000	75,000	62,000	34,000	43,000	49,000	47,000	56,000	89,000	101,000
	Naturall Gas (other boilers and thermal oxidizer)				519,377	CCF	61,700	63,490	50,660	38,150	31,780	44,160	29,917	25,472	26,880	32,158	48,650	66,360
	NITRIC ACID				1,237,287	LB	116,770	93,294	104,582	110,635	108,834	105,055	98,304	109,415	86,816	104,588	109,826	89,169

If products do not show up on the above list, they are flagged in SAP for deletion.

12 MONTH ROLLING AVERAGES

VOC Emissions	total lbs		24,557
	total tons		12.3
NOx Emissions			
From 21 MMBtu/hr boilers	lbs		6,747
(EF = 81.0 lb/MMCF)	tons		3.4
From other boilers and thermal oxidizer	lbs		7,271
(EF = 140.0 lb/MMCF)	tons		3.6
From manufacturing operations (based on nitric acid used)	lbs		17,693
(EF = 0.0143 lb NOx / lb 100% HNO3)	tons		8.8
	total lbs		31,712
	total tons		15.9
CO Emissions			
From 21 MMBtu/hr boilers	lbs		5,081
(EF = 61.0 lb/MMCF)	tons		2.5
From other boilers and thermal oxidizer	lbs		1,818
(EF = 35.0 lb/MMCF)	tons		0.9
	total lbs		6,899
	total tons		3.4
PM Emissions			
From natural gas combustion	lbs	1,827	1,827
(EF = 13.7 lb/MMCF)	tons	0.9	0.9
PM 10 Emissions			
From natural gas combustion	lbs	1,827	1,827
(EF = 13.7 lb/MMCF)	tons	0.9	0.9

total IPA pounds 20,467.0

SCOEPA00022620

M#	Product Name (Instructions in comment)	12 month ave lbs VOC	Evaporation %	lbs/UOM	12 month total units	UOM	Jan-07	Feb-07	Mar-07	Apr-07	May-07	Jun-07	Jul-07	Aug-07	Sep-07	Oct-07	Nov-07	Dec-06
5406902	PAINT Krylon white enamel glossy	2.4	0.85	0.9393	3	CAN	0	0	0	0	0	0	0	0	0	3	0	0
5406903	PAINT gray primer 2X982 16 OZ.	12.8	0.85	0.9393	16	CAN	0	0	8	0	2	0	0	2	0	3	1	0
5406904	PAINT SUPERCOAT 316L SS AEROSOL CAN	1.6	0.85	0.9393	2	CAN	0	0	0	0	2	0	0	0	0	0	0	0
5406907	PAINT Equipment Orange	0.0	0.85	0.9393	-	PC	0	0	0	0	0	0	0	0	0	0	0	0
5406908	PAINT Ford red	0.8	0.85	0.9393	1	PC	0	0	0	0	0	0	0	1	0	0	0	0
5406909	PAINT high heat black	0.0	0.85	0.9393	-	PC	0	0	0	0	0	0	0	0	0	0	0	0
5406910	PAINT Chrysler blue	8.0	0.85	0.9393	10	PC	0	2	0	0	2	0	0	4	1	0	1	0
5406912	PAINT glossy black spray can #84000	10.4	0.85	0.9393	13	CAN	0	0	0	3	5	0	0	0	2	3	0	0
5407102	SEALANT silicon clear 3 oz tube	0.0	0.025	0.1875	2	PC	0	0	0	0	0	0	2	0	0	0	0	0
5407103	SEALANT silicone white 10.3 OZ tube	0.1	0.025	0.64375	7	PC	1	0	2	0	0	2	0	0	2	0	0	0
5407104	SEALANT rubber silicone RTV GE#W102	0.0	0.04	0.64375	1	PC	1	0	0	0	0	0	0	0	0	0	0	0
5407105	PASTE SILICON P12 WARMELEITPASTE	0.1	0.1	0.3308	2	PC	0	0	0	0	2	0	0	0	0	0	0	0
5407106	SILICONE RTV high temp red mak-a-gasket	0.0	1	0.4983	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407107	SILICONE RTV HIGH TEMP BLUE MAK-A-GASKET	0.1	0.08	0.5421	3	CAN	0	0	1	1	0	0	0	0	0	0	1	0
5407108	SILICONE RTV HIGH TEMP CLEAR	0.3	0.08	0.5421	7	CAN	6	0	0	0	0	0	0	0	0	0	1	0
5407328	CLEANER instant contact #CRC-03070	4.1	0.96	0.855567	5	CAN	0	0	0	0	4	0	0	0	0	0	0	1
5407330	CLEANER DUST CHASER SPRAY	48.2	1	0.62622	77	CAN	19	3	0	16	3	2	13	0	2	0	13	6
5407331	DEGREASER gel engine	0.5	0.7	0.781875	1	CAN	0	0	0	0	1	0	0	0	0	0	0	0
5407332	CLEANER electric motor KAR #65390-2	0.8	0.243	1.56375	2	CAN	0	0	0	0	0	0	0	2	0	0	0	0
5407334	STRIPPER/REMOVER PAINT, CARBON & GASKETS	0.0	0.68	0.93825	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407376	ISOPROPYL ALCOHOL (IPA) 99%	14,842.0	1	362	41	DR	3	5	5	3	4	2	3	3	2	3	3	5
5407431	LUBRICANT CRC 3-36 16oz can	3.0	0.07	0.85141	51	PC	0	12	0	0	9	12	2	0	0	16	0	0
5407432	LUBRICANT Parker-O-Lube #884-4	1.0	1	0.25	4	PC	1	0	2	0	0	1	0	0	0	0	0	0
5407433	LUBRICANT CRC 3-36 (1 gallon)	0.5	0.07	6.811278	1	GAL	0	0	0	0	1	0	0	0	0	0	0	0
5407434	GREASE ALVANIA EP 2 LITHIUM BASE	17.6	0.8	0.88	25	PC	4	0	6	10	0	0	0	3	2	0	0	0
5407435	LUBE teflon #79417	0.0	0.82	0.781875	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407436	LUBRICANT teflon dry #79418	0.0	0.125	0.6255	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407437	LUBRICANT MOLY HIGH TEMP	0.0			-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407438	LUBE OPEN CHAIN & SPROCKET #65389	8.9	1	8.86125	1	CAN	0	0	0	0	0	0	0	0	1	0	0	0
5407470	CLEANER zero residue instant tech spray	0.0	0.0541	1.04667	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407947	LUBRICANT SILICON	0.0	0.9	0.990375	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407948	GREASE MULTI PURPOSE WHITE	0.3	0.24	1.172813	1	PC	0	0	0	1	0	0	0	0	0	0	0	0
5407950	PAINT OSHA orange spray can	0.0	0.7	0.882	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407953	VINNAPAS C305 (solution) 1 liter	0.5	0.63	0.823575	1	BTL	0	1	0	0	0	0	0	0	0	0	0	0
5407955	EPOXY VALTRON AD1230 4-1 GAL/CS PART A	32.0	0.4	40.032	2	CS	0	0	1	0	0	0	0	0	1	0	0	0
5407966	ADHESIVE 10ML blue thred	0.0	0	0.02205	-	PC	0	0	0	0	0	0	0	0	0	0	0	0
5407967	ADHESIVE all purpose & trim #77160	0.0	0.88	1.368281	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5410534	OIL AEROKROIL LOOSENS FROZEN METAL PARTS	6.0	0.6	0.625	16	PC	1	0	1	1	0	10	0	0	1	0	0	2
5410872	PAINT spray yellow	0.0	0.65	0.9393	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5413542	WAX SKYLIQUID CLEAR HF4011 2 LITER	10,302.1	0.6	3.974576	4,320	BTL	480	408	438	384	348	336	378	348	384	336	288	192
5414028	LUBRICANT CRC 3-36 (5 gallon)	0.0			-	PC	0	0	0	0	0	0	0	0	0	0	0	0
5516514	BOTTLE IPA high purity (4x1-gal cs)	701.0	1	6.55107	107	PC	27	0	0	0	0	0	0	0	0	0	0	80
5522458	WAX Thin Skyliquid KN-25449 2ltr/btl	362.3	0.75	3.833571	126	BTL	0	0	12	0	0	12	6	18	36	18	18	6
5527433	TISAB II WITH CDTA	28.6	0.1	8.9238	32	GAL	2	3	3	2	3	3	3	2	3	5	1	2
5551837	ISOPROPYL ALCOHOL (IPA) Class 1 drum	4900.0	1	350	14	drum	1	1	0	1	2	2	1	2	1	1	2	0
	TexWipes (PreSat wipes)	6.1	1	0.068568	89	pk	0	0	0	0	0	0	0	0	0	47	42	0
	Parts washer solvent	1515.4				LBS	0	0	0	725	0	296	0	0	494	0	0	0
	VOC's shipped offsite or to sanitary sewer	8834.6				LBS	158	3	1586	914	209	838	742	759	1299	138	164	2024
10419	Natural Gas (total); (VOC EF = 2.8 lb/MMCF)	367.5			1,312,420	CCF	190,700	141,490	120,660	113,150	93,780	78,160	72,917	74,472	73,880	88,158	108,693	156,360
	Natural Gas (21 MMBtu/hr boilers)				798,000	CCF	129,000	78,000	70,000	75,000	62,000	34,000	43,000	49,000	47,000	56,000	65,000	90,000
	Natural Gas (other boilers and thermal oxidizer)				519,377	CCF	61,700	63,490	50,660	38,150	31,780	44,160	29,917	25,472	26,880	32,158	48,650	66,360
	NITRIC ACID				1,229,194	LB	116,770	93,294	104,582	110,635	108,834	105,055	98,304	109,415	86,816	104,588	101,733	89,169

If products do not show up on the above list, they are flagged in SAP for deletion.

12 MONTH ROLLING AVERAGES

VOC Emissions	total lbs	24,350
	total tons	12.2
NOx Emissions		
From 21 MMBtu/hr boilers	lbs	6,464
(EF = 81.0 lb/MMCF)	tons	3.2
From other boilers and thermal oxidizer	lbs	7,271
(EF = 140.0 lb/MMCF)	tons	3.6
From manufacturing operations (based on nitric acid used)	lbs	17,577
(EF = 0.0143 lb NOx / lb 100% HNO3)	tons	8.8
	total lbs	31,313
	total tons	15.7
CO Emissions		
From 21 MMBtu/hr boilers	lbs	4,868
(EF = 61.0 lb/MMCF)	tons	2.4
From other boilers and thermal oxidizer	lbs	1,818
(EF = 35.0 lb/MMCF)	tons	0.9
	total lbs	6,686
	total tons	3.3
PM Emissions		
From natural gas combustion	lbs	1,798
(EF = 13.7 lb/MMCF)	tons	0.9
PM 10 Emissions		
From natural gas combustion	lbs	1,798
(EF = 13.7 lb/MMCF)	tons	0.9

total IPA pounds 20,443.0

SCOEPA00022621

M#	Product Name (Instructions in comment)	12 month ave lbs VOC	Evaporation %	lbs/UOM	12 month total units	UOM	Jan-07	Feb-07	Mar-07	Apr-07	May-07	Jun-07	Jul-07	Aug-07	Sep-07	Oct-07	Nov-07	Dec-07
5406902	PAINT Krylon white enamel glossy	2.4	0.85	0.9393	3	CAN	0	0	0	0	0	0	0	0	0	3	0	0
5406903	PAINT gray primer 2X982 16 OZ.	12.8	0.85	0.9393	16	CAN	0	0	8	0	2	0	0	2	0	3	1	0
5406904	PAINT SUPERCOAT 316L SS AEROSOL CAN	1.6	0.85	0.9393	2	CAN	0	0	0	0	2	0	0	0	0	0	0	0
5406907	PAINT Equipment Orange	0.0	0.85	0.9393	-	PC	0	0	0	0	0	0	0	0	0	0	0	0
5406908	PAINT Ford red	0.8	0.85	0.9393	1	PC	0	0	0	0	0	0	0	1	0	0	0	0
5406909	PAINT high heat black	0.0	0.85	0.9393	-	PC	0	0	0	0	0	0	0	0	0	0	0	0
5406910	PAINT Chrysler blue	9.6	0.85	0.9393	12	PC	0	2	0	0	2	0	0	4	1	0	1	2
5406912	PAINT glossy black spray can #84000	10.4	0.85	0.9393	13	CAN	0	0	0	3	5	0	0	0	2	3	0	0
5407102	SEALANT silicon clear 3 oz tube	0.0	0.025	0.1875	2	PC	0	0	0	0	0	0	2	0	0	0	0	0
5407103	SEALANT silicone white 10.3 OZ tube	0.1	0.025	0.64375	7	PC	1	0	2	0	0	2	0	0	2	0	0	0
5407104	SEALANT rubber silicone RTV GE#W102	0.0	0.04	0.64375	1	PC	1	0	0	0	0	0	0	0	0	0	0	0
5407105	PASTE SILICON P12 WARMELEITPASTE	0.1	0.1	0.3308	2	PC	0	0	0	0	2	0	0	0	0	0	0	0
5407106	SILICONE RTV high temp red mak-a-gasket	0.0	1	0.4983	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407107	SILICONE RTV HIGH TEMP BLUE MAK-A-GASKET	0.1	0.08	0.5421	3	CAN	0	0	1	1	0	0	0	0	0	0	1	0
5407108	SILICONE RTV HIGH TEMP CLEAR	0.3	0.08	0.5421	7	CAN	6	0	0	0	0	0	0	0	0	0	1	0
5407328	CLEANER instant contact #CRC-03070	3.3	0.96	0.855567	4	CAN	0	0	0	0	4	0	0	0	0	0	0	0
5407330	CLEANER DUST CHASER SPRAY	51.4	1	0.62622	82	CAN	19	3	0	16	3	2	13	0	2	0	13	11
5407331	DEGREASER gel engine	0.5	0.7	0.781875	1	CAN	0	0	0	0	1	0	0	0	0	0	0	0
5407332	CLEANER electric motor KAR #65390-2	0.8	0.243	1.56375	2	CAN	0	0	0	0	0	0	0	2	0	0	0	0
5407334	STRIPPER/REMOVER PAINT, CARBON & GASKETS	0.0	0.68	0.93825	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407376	ISOPROPYL ALCOHOL (IPA) 99%	13,394.0	1	362	37	DR	3	5	5	3	4	2	3	3	2	3	3	1
5407431	LUBRICANT CRC 3-36 16oz can	3.0	0.07	0.85141	51	PC	0	12	0	0	9	12	2	0	0	16	0	0
5407432	LUBRICANT Parker-O-Lube #884-4	1.0	1	0.25	4	PC	1	0	2	0	0	1	0	0	0	0	0	0
5407433	LUBRICANT CRC 3-36 (1 gallon)	0.5	0.07	6.811278	1	GAL	0	0	0	0	1	0	0	0	0	0	0	0
5407434	GREASE ALVANIA EP 2 LITHIUM BASE	27.5	0.8	0.88	39	PC	4	0	6	10	0	0	0	3	2	0	0	14
5407435	LUBE teflon #79417	0.0	0.82	0.781875	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407436	LUBRICANT teflon dry #79418	0.0	0.125	0.6255	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407437	LUBRICANT MOLY HIGH TEMP	0.0			-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407438	LUBE OPEN CHAIN & SPROCKET #65389	8.9	1	8.86125	1	CAN	0	0	0	0	0	0	0	0	1	0	0	0
5407470	CLEANER zero residue instant tech spray	0.0	0.0541	1.04667	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407947	LUBRICANT SILICON	0.0	0.9	0.990375	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407948	GREASE MULTI PURPOSE WHITE	0.3	0.24	1.172813	1	PC	0	0	0	1	0	0	0	0	0	0	0	0
5407950	PAINT OSHA orange spray can	0.0	0.7	0.882	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407953	VINNAPAS C305 (solution) 1 liter	0.5	0.63	0.823575	1	BTL	0	1	0	0	0	0	0	0	0	0	0	0
5407955	EPOXY VALTRON AD1230 4-1 GAL/CS PART A	32.0	0.4	40.032	2	CS	0	0	1	0	0	0	0	0	1	0	0	0
5407966	ADHESIVE 10ML blue thred	0.0	0	0.02205	-	PC	0	0	0	0	0	0	0	0	0	0	0	0
5407967	ADHESIVE all purpose & trim #77160	0.0	0.88	1.368281	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5410534	OIL AEROKROIL LOOSENS FROZEN METAL PARTS	5.3	0.6	0.625	14	PC	1	0	1	1	0	10	0	0	1	0	0	0
5410872	PAINT spray yellow	0.0	0.65	0.9393	-	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5413542	WAX SKYLIQUID CLEAR HF4011 2 LITER	10,388.0	0.6	3.974576	4,356	BTL	480	408	438	384	348	336	378	348	384	336	288	228
5414028	LUBRICANT CRC 3-36 (5 gallon)	0.0			-	PC	0	0	0	0	0	0	0	0	0	0	0	0
5516514	BOTTLE IPA high purity (4x1-gal cs)	176.9	1	6.55107	27	PC	27	0	0	0	0	0	0	0	0	0	0	0
5522458	WAX Thin Skyliquid KN-25449 2ltr/btl	379.5	0.75	3.833571	132	BTL	0	0	12	0	0	12	6	18	36	18	18	12
5527433	TISAB II WITH CDTA	29.4	0.1	8.9238	33	GAL	2	3	3	2	3	3	3	2	3	5	1	3
5551837	ISOPROPYL ALCOHOL (IPA) Class 1 drum	5250.0	1	350	15	drum	1	1	0	1	2	2	1	2	1	1	2	1
	TexWipes (PreSat wipes)	6.1	1	0.068568	89	pk										47	42	
	Parts washer solvent	1515.4				LBS	0	0	0	725	0	296	0	0	494	0	0	0
	VOC's shipped offsite or to sanitary sewer	7717.1				LBS	158	3	1586	914	209	838	742	759	1299	138	164	907
10419	Natural Gas (total); (VOC EF = 2.8 lb/MMCF)	361.2			1,289,940	CCF	190,700	141,490	120,660	113,150	93,780	78,160	72,917	74,472	73,880	88,158	108,693	133,880
	Natural Gas (21 MMBtu/hr boilers)				781,000	CCF	129,000	78,000	70,000	75,000	62,000	34,000	43,000	49,000	47,000	56,000	65,000	73,000
	Naturall Gas (other boilers and thermal oxidizer)				508,940	CCF	61,700	63,490	50,660	38,150	31,780	44,160	29,917	25,472	26,880	32,158	43,693	60,880
	NITRIC ACID				1,232,107	LB	116,770	93,294	104,582	110,635	108,834	105,055	98,304	109,415	86,816	104,588	101,733	92,081

If products do not show up on the above list, they are flagged in SAP for deletion.

12 MONTH ROLLING AVERAGES

VOC Emissions	total lbs	23,956
	total tons	12.0
NOx Emissions		
From 21 MMBtu/hr boilers	lbs	6,326
(EF = 81.0 lb/MMCF)	tons	3.2
From other boilers and thermal oxidizer	lbs	7,125
(EF = 140.0 lb/MMCF)	tons	3.6
From manufacturing operations (based on nitric acid used)	lbs	17,619
(EF = 0.0143 lb NOx / lb 100% HNO3)	tons	8.8
	total lbs	31,070
	total tons	15.5
CO Emissions		
From 21 MMBtu/hr boilers	lbs	4,764
(EF = 61.0 lb/MMCF)	tons	2.4
From other boilers and thermal oxidizer	lbs	1,781
(EF = 35.0 lb/MMCF)	tons	0.9
	total lbs	6,545
	total tons	3.3
PM Emissions		
From natural gas combustion	lbs	1,767
(EF = 13.7 lb/MMCF)	tons	0.9
PM 10 Emissions		
From natural gas combustion	lbs	1,767
(EF = 13.7 lb/MMCF)	tons	0.9

		monthly avg	
total purchased vocs	29790.8	100%	
ipa	18,820.88	63%	1,568.41
wax	10,767.48	36%	

VOC's in waste shipments, recycling, or OWW
A summary of the waste wax, waste IPA and parts washer spreadsheets including data from 2005 Annual report

	2/1/06	3/1/06	4/1/06	5/1/06	6/1/06	7/1/06	8/1/06	9/1/06	10/1/06	11/1/06	12/1/06	1/1/07	2/1/07	3/1/07	4/1/07	5/1/07	6/1/07	7/1/07	8/1/07	9/1/07	10/1/07	11/1/07	12/1/07
lbs	612	1042	1056	846	62	1017	422	1486	221	277	2024	158	3	1586	914	209	838	742	759	1299	138	164	907
12 months	7635	8606	8356	8364	7500	8326	7061	8098	7948	7565	9515	9224	8615	9158	9016	8380	9156	8881	9218	9031	8948	8835	7717

	IPA mg/l	OWW mgd	Monthly est. of IPA OWW discharge, gals	Monthly est. of IPA OWW discharge, lbs	
1/5/06	0.5	0.602	9.3	61	
1/12/06					
1/19/06					
1/26/06					
2/2/06					
2/9/06	5.6	0.596	93.5	612	
2/16/06					
2/23/06					
3/2/06	**0.5**	0.654	10.1	66	
3/9/06					
3/16/06					
3/23/06					
3/30/06					
4/6/06					
4/13/06	7.1	0.641	136.5	894	
4/20/06					
4/27/06					
5/4/06	3.7	0.609	69.9	458	
5/11/06					
5/18/06					
5/25/06					
6/1/06	**0.5**	0.628	9.4	62	
6/8/06					
6/15/06					
6/22/06					
6/29/06					
7/6/06	**0.5**	0.890	13.8	90	
7/13/06					
7/19/06					
7/27/06					
8/2/06		0.648	64.5	422	
8/10/06					
8/17/06					
8/24/06					
8/31/06					
9/6/06	1.9	0.709	40.4	265	
9/14/06					
9/21/06					
9/25/06					
10/5/06	**0.5**	0.588	9.1	60	
10/12/06					
10/17/06					
10/26/06					
11/2/06	**0.5**	0.597	9.0	59	
11/9/06					
11/16/06					
11/23/06					
11/30/06					
12/6/06	14	0.584	253.5	1660	
12/14/06					
12/21/06					
12/28/06					
Average	3.2				4709 total
max	**14.0**				
min	**0.5**				
detection limit, ppm	1.0				
1/4/07	**0.5**	0.601	9.3	61	

1/11/07					
1/18/07					
1/25/07					
2/1/07	**0.5**	0.597	8.4	3	
2/8/07					
2/15/07					
2/22/07					
3/1/07	6.6	0.802	164.1	1075	
3/8/07					
3/15/07					
3/22/07					
3/26/07					
4/5/07	**0.5**	0.692	10.4	68	
4/12/07					
4/19/07					
4/26/07					
5/3/07	**0.5**	0.632	9.8	64	
5/10/07					
5/18/07					
5/24/07					
5/30/07					
6/7/07	5	0.581	87.2	571	
6/14/07					
6/21/07					
6/28/07					
7/5/07	**2.5**	0.6	46.5	305	
7/12/07					
7/19/07					
7/26/07					
8/2/07	5.25	0.712	115.9	759	
8/10/07					
8/16/07					
8/23/07					
8/27/07					
9/6/07	1.87	0.696	39.0	256	
9/13/07					
9/20/07					
9/27/07					
10/4/07					
10/11/07	0.5	0.567	8.8	58	
10/18/07					
10/25/07					
11/1/07	1.23	0.678	25.0	164	
11/8/07					
11/15/07					
11/22/07					
11/29/07					
12/6/07	0.5	0.781	12.1	79	
12/13/07					
12/20/07					
12/27/07					3462 total
Average	**0.6**	0.61175			
max	**0.7**	0.812			
min	**0.4**	0.414			
dectection limit, ppm	**1**	0			

Parts Washer Solvent Recycling Shipments

	1/1/06	2/1/06	3/22/06	4/1/06	5/1/06	6/1/06	7/17/06	8/1/06	9/20/06	10/1/06	11/1/06	12/1/06	1/1/07	2/1/07	3/1/07	4/1/07	5/1/07	6/1/07	7/1/07	8/1/07	9/1/07	10/1/07	11/1/07	12/1/07
purchased (gals)	0	0	120	0	0	0	120	0	120	0	0	0	0	0	0	110	0	45	0	0	75	0	0	115
purchased (lbs)	0	0	791	0	0	0	791	0	791	0	0	0	0	0	0	725	0	296	0	0	494	0	0	758
returned (lbs)	0	0	712	0	0	0	712	0	712	0	0	0	0	0	0	652	0	267	0	0	445	0	0	682

Waste wax test results for VOC content

8/15/08 results	IPA %	Toluene %	Total %
Fab 1	40.4	5.03	45.43
Fab 2	16	3.23	19.23
			32.33 average

Waste Wax Shipments (lbs)

	1/1/06	2/1/06	3/1/06	4/1/06	5/1/06	6/1/06	7/1/06	8/1/06	9/1/06	10/1/06	11/1/06	12/1/06	1/1/07	2/1/07	3/1/07	4/1/07	5/1/07	6/1/07	7/1/07	8/1/07	9/1/07	10/1/07	11/1/07	12/1/07
gals															210				180					
lbs	1201	none	818	500	1200	none	665	none	1576	500	676	1126	300	0	1580	600	449	0	1354	0	1850	250		[illegible]
VOC Content (lbs)	388	0	264	162	388	0	215	0	510	162	219	364	97	0	511	194	145	0	438	0	598	81	0	145

Monthly Air Permit Record

2007

Please record the following information within 4 calendar days of the end of the month
and save in N:\Environmental\Environmental Affairs\Environmental Affairs Folders\Permits\Air\New Permit

2007 Summary of Scrubber Readings

	F1 Epi Fume pH				F1 Section 8 pH				F1 Acid Fume pH				F2 HPM pH				NOx pH				NOx ORP			
Month	Lo	Date	Hi	Date	Lo	Date	Hi	Date	Lo	Date	Hi	Date	Lo	Date	Hi	Date	Lo	Date	Hi	Date	Lo	Date	Hi	Date
Jan	2.7	1/14	8.6	1/24	6.0	1/7	6.6	1/5	7.8	1/16	9.2	1/5	6.6	1/7	7.9	1/31	10.0	1/4	10.3	1/16	-292	1/16	13	1/27
Feb	7.4	2/27	8.4	2/3	6.0	2/1	6.1	2/1	8.4	2/2	9.1	2/12	6.7	2/2	8.4	2/11	9.8	2/20	10.3	2/1	-330	2/27	-56	2/2
Mar	4.6	3/26	10.7	3/12	6.0	2/21	6.3	3/7	7.2	3/1	9.2	3/12	6.5	3/25	7.6	3/28	10.0	3/2	10.2	3/10	-304	3/15	-129	3/5
Apr	7.2	4/6	10.0	4/4	6.0	4/13	7.8	4/28	8.7	4/17	9.7	4/27	6.7	4/5	8.0	4/3	10.0	4/1	10.2	4/9	-283	4/22	-185	4/28
May	7.3	5/30	8.3	5/22	6.0	5/2	7.8	5/3	8.7	5/6	9.2	5/20	6.5	5/30	7.4	5/26	10.0	5/4	10.2	5/13	-287	5/4	-100	5/14
Jun	7.0	6/15	8.5	6/10	5.8	6/9	7.7	6/7	8.7	6/16	9.9	6/10	6.4	6/8	8.0	6/5	10.0	6/1	10.2	6/1	-251	6/30	-52	6/1
Jul	7.3	7/17	8.6	7/8	6.1	7/2	6.7	7/17	8.7	7/25	9.2	7/25	6.4	7/26	7.3	7/8	10.0	7/1	10.3	7/18	-280	7/1	-47	7/14
Aug	7.2	8/1	8.1	8/31	6.0	8/31	6.9	8/11	8.2	8/24	9.2	8/4	6.9	8/27	7.8	8/11	10.0	8/1	10.4	8/15	-195	8/7	137	8/8
Sep	7.1	9/17	8.4	9/5	6.0	9/17	7.6	9/24	8.7	9/20	9.1	9/1	6.5	9/4	7.8	9/25	10.0	9/1	11.7	9/21	-464	9/18 & 21	-52	9/21 9/18
Oct	7.1	10/19	7.9	10/17	6.0	10/29	6.9	10/4	8.6	10/23	9.1	10/3	6.7	10/31	7.3	10/10	10.0	10/2	10.3	10/6	-219	10/14	-28	10/17
Nov	6.8	11/4	8.0	11/25	6.0	11/3	6.1	11/24	8.7	11/12	9.2	11/13	6.8	11/12	8.3	11/23	10.0	11/1	10.5	11/18	-286	11/16	-69	11/20
Dec	2.8	12/11	9.8	12/11	6.0	12/26	6.2	12/23	8.7	12/11	9.3	12/31	6.6	12/1	8.6	12/18	10.0	12/2	10.5	12/9	-275	12/12	123	12/21
Annual Lo	2.7				5.8				7.2				6.4				9.8				-464			
Annual Hi			10.7				7.8				9.9				8.6				11.7				137	

Missed Scrubber Readings
(Record if less than 2 readings were taken in a 24-hour period, at least 6 hours apart)

Month	Scrubber	Reasons
Jan	Acid	Scrubber was off for a planned shutdown in the plant
Feb		
Mar	Section 8	Only two Operators on shift on 3/13/07. Data recorded on Wonderware shows system to be within range for all of that day.
Apr		
May		
Jun		
Jul		
Aug		
Sep		
Oct		
Nov		
Dec		

Boiler Gas Use Readings
(Record end of month meter reading)

Month	Boiler 5	Change	Boiler 6	Change	Boiler 7	Change
Dec	15,663		13,990		15,839	
Jan	15,708	45	14,032	42	15,881	42
Feb	15,715	7	14,072	40	15,912	31
Mar	15,737	22	14,097	25	15,935	23
Apr	15,766	29	14,120	23	15,958	23
May	15,793	27	14,138	18	15,975	17
Jun	15,810	17	14,138	-	15,992	17
Jul	15,833	23	14,138	-	16,012	20
Aug	15,862	29	14,138	-	16,032	20
Sep	15,887	25	14,138	-	16,054	22
Oct	15,919	32	14,138	-	16,078	24
Nov	15,955	36	14,138	-	16,107	29
Dec	16,000	45	14,138	-	16,135	28

(readings are in 1000 CCF)

Exceedances of Normal Range
(Record value and reason)

	F1 Epi Fume pH		F1 Section 8 pH		F1 Acid Fume pH		F2 HPM pH		NOx pH		NOx ORP		
Month	6 to 10		6 to 10		6 to 10		6 to 10		8 to 11		-300	200	Reasons
Jan	2.7												Frozen Caustic Line
Feb											-330		Unknown reason...Put flush water to the system to get the number back in specification. We were having pump and set point issues the entire month that Facility Engineering & Maintenance have been working on.
Mar	4.6 & 10.7										-304		Epi Scrubber has an empty Caustic Barrel & Caustic Pump Overshot Set Point
													Nox for March; ORP Bouncing around -300, Changed Cycle Feed Duration Time from 3 Sec to 2 Sec Configuration
Apr													
May													
Jun			5.8										Caustic barrel ran out; new barrel installed.
Jul													
Aug													
Sep									11.7	21-Sep	-464	9/21	Sodium Sulfide Valve Mechanical Failure
Oct													
Nov													
Dec	2.8	11-Dec											LMI pump that delivers NaOH to the scrubber sump failed. Maint. had to replace with a new pump.

N:\Environmental\Enviromental Affairs\Enviromental Affairs Folders\Air\Report 2007\Monthly Air Permit Record 2007.xls

SCOEPA00022628

Fab 1 Section 8 Fume Scrubber

Day	Date	3/1	3/2	3/3	3/4	3/5	3/6	3/7	3/8	3/9	3/10	3/11	3/12	3/13	3/14	3/15
Shift	Time	0800	0830	0830	0800	0810	0900	0740	1100	0745	0810	0930	1000	0750	0820	0810
2007	Operator	SW	RB	PU	[illegible]	RB	FT	RB	FT	SW	FT	FT	[illegible]	RB	SD	[illegible]
Visually Inspect Piping for Leaks or Damage		✓	✓	✓	✓	✓	—	✓	✓	✓	✓	✓	✓	✓	✓	✓
Check Fan(s) for Excessive Vibration or Noise		✓	✓	✓	✓	✓	—	✓	✓	✓	✓	✓	✓	✓	✓	✓
Check Make-Up H_2O (3-6 gpm)		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Check Recirculation Water (Flow Rate 190 - 250 gpm)		220	222	224	222	224	220	223	220	218	220	218	223	221	223	227
Check Sump pH (6 - 10)		6.04	6.06	6.07	6.06	6.04	6.06	6.26	6.10	6.07	6.04	6.07	6.07	6.06	6.03	6.07
Check Pressure Drop Across (Scrubber 2 - 4 inches of H_2O)		2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
Check Caustic Barrel Level		50%	50%	50%	50%	50%	50	50%	50%	50%	50%	50%	50%	50%	50%	50%
Check Sump Heater & Heat Trace		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Night	Date	3/1	3/2	3/3	3/4	3/5	3/6	3/7	3/8	3/9	3/10	3/11	3/12	3/13	3/14	3/15
Shift	Time	2100	21:00	2100	2046	2040	21:15	20:53	2115	2050	2100	2104	2150		2030	2030
2007	Operator	JW	DW	JW	DG	DG	DW	DW	[illegible]	FS	FS	DG	[illegible]		[illegible]	[illegible]
Visually Inspect Piping for Leaks or Damage		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓
Check Fan(s) for Excessive Vibration or Noise		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓
Check Make-Up H_2O (3-6 gpm)		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0
Check Recirculation Water (Flow Rate 190 - 250 gpm)		221	223	224	220	222	221	220	220	221	219	221	218		222	219
Check Sump pH (6 - 10)		6.06	6.06	6.04	6.03	6.06	6.03	6.07	6.1	6.08	6.06	6.08	6.1		6.03	6.05
Check Pressure Drop Across (Scrubber 2 - 4 inches of H_2O)		3.0	2.9	2.8	3.0	3.0	3.0	3.0	2.9	3.0	2.8	2.8	3.0		2.9	2.8
Check Caustic Barrel Level		50%	50%	50%	50%	50%	50%	50	50%	50%	50%	50%	50%		45%	45%
Check Sump Heater & Heat Trace		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓

N:\Engr\Facility Operations\RODI\RODI\Log Sheets\Section 8 Fume Scrubber.xls

Comment Section

Date	Time	Problem	Duration	Corrective Action	Operator
3/13	~~2300~~	no reading taken on night shift due to only			
		having 2 operators on shift.			

4370
3640
730
4370
512

NOx Scrubber Chemical Tank Levels and DA Trending

Month: September **Year: 2007**

DAY	Time	Sod. Hydrox NaOH	Sod. Sulf Na2S	Sulf Acid H2SO4	Sod. Chlor NaClO2	Tank 3 pH 8/11	Tank 3 ORP -300/200	DA Trending	Fac Op Inits	Time	Sod. Hydrox NaOH	Sod. Sulf Na2S	Sulf Acid H2SO4	Sod. Chlor NaClO2	Tank 3 pH 8/11	Tank 3 ORP -300/200	DA Trending	Fac Op Inits
1	0830	2197	2393	470	1103	10.0	-177	✓	[illegible]	20:55	2142	2296	470	1087	10.10	-169	✓	DW
2	1000	2080	2628	470	1121	10.2	-157	✓	FT	21:54	2031	2000	470	1086	10.10	-160	✓	DW
3	0830	2013	1873	470	1094	10.1	-178	✓		2130	1921	1724	470	1086	10.1	-173	✓	FS
4	0900	1922	1599	470	1103	10.2	-166	✓	[illegible]	2150	1848	1451	470	1087	10.1	-167	✓	FS
5	0800	1828	1342	470	1103	10.0	-171	✓	RB	2230	1756	1231	490	1104	10.1	-172	✓	[illegible]
6	0500	1719	1097	460	1103	10.0	-161	✓	[illegible]	2309	1703	3967	460	1104	10.0	-171	✓	DG
7	0815	1645	3827	460	1103	10.0	-193	✓	FT	2100	1571	3662	460	1104	10.2	-173	✓	36
8	0755	1533	3551	460	1103	10.0	-171	✓	[illegible]	2100	1479	3359	460	1086	10.0	-163	✓	36
9	0805	1443	3272	460	1103	10.0	-183	✓	[illegible]	2050	1368	3117	465	1060	10.2	-177	✓	[illegible]
10	0800	1368	2997	460	1103	10.0	-181	✓	RB	2015	1277	2827	490	1086	10.1	-159	✓	[illegible]
11	0800	1277	2721	460	1104	10.0	-164	✓	[illegible]	2112	1185	2552	460	1086	10.0	-163	✓	DG
12	1000	1091	2481	460	1088	10.2	-172	✓	FT	2110	1090	2366	460	1086	10.2	-175	✓	FS
13	0945	1073	2241	460	1103	10.0	-195	✓	[illegible]	2120	1017	2129	460	1103	10.1	-186	✓	FS
14	0830	981	2048	460	1101	10.0	-181	✓	[illegible]	2130	3176	3806	480	1104	10.1	-177	✓	[illegible]
15	0830	3139	3679	460	1154	10.0	-178	✓	RB	2030	3095	3496	460	1080	10.2	-161	✓	FS
16	3800	3047	3287	460	1045	10.0	-192	✓	[illegible]	2205	2991	3126	480	1085	10.2	-187	✓	[illegible]
17	1000	2910	2832	460	1090	10.0	-165	✓	[illegible]	2100	2880	2832	460	1085	10.0	-171	✓	36
18	0600	2883	2765	460	1102	10.0	-159	✓	FT	2100	2816	2591	480	1086	10.1	-52	✓	[illegible]
19	0900	2771	2487	460	1101	10.1	-163	✓	[illegible]	20:49	2734	2332	460	1085	10.0	-202	✓	DW
20	0815	2715	2188	460	1102	10.2	-171	✓	RB	2100	2642	2057	480	1086	10.0	-161	✓	[illegible]
21	0850	2606	1931	460	1103	10.0	-175	✓	[illegible]	2050	2548	3658	460	1085	11.7	-464	✓	[illegible]
22	0810	2569	3674	460	1102	10.0	-236	✓	[illegible]	2100	2514	3662	460	1103	10.0	498	✓	[illegible]
23	0800	2477	3645	460	1103	10.0	-172	✓	[illegible]	2040	2402	3532	460	1085	10.0	-166	✓	FS
24	0800	2378	3402	460	1102	10.1	-173	✓	[illegible]	2135	2326	3309	460	1085	10.0	-184	✓	DG
25	0830	2290	3182	460	1102	10.1	-160	✓	[illegible]	23:40	2252	3054	460	1084	10.20	-169	✓	DW
26	0853	2197	2944	460	1102	10.0	-157	—	[illegible]	2100	2142	2830	460	1085	62	424	✓	[illegible]
27	0830	2133	2760	460	1103	10.0	-169	✓	[illegible]									
28																		
29																		
30																		
31																		

Comment Section

Date	Time	Problem	Duration	Corrective Action	Operator
9/5/07	10:10	NO_x, NO PM and repair			BK, JN
		started. Put NO_x, NO into			
		maintenance mode.			
		added note 9/27/07 about			
		finishing maintenance			

Boiler data
End of Month Readings (in 10^5 CF)

	2005 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
Boiler 5	14,808	14,847	14,882	14,921	14,958	14,988	15,007	15,033	15,060	15,102	15,150
Boiler 6	13,909	13,909	13,909	13,909	13,909	13,909	13,917	13,917	13,917	13,917	13,917
Boiler 7	15,136	15,172	15,205	15,240	15,270	15,299	15,320	15,345	15,374	15,409	15,442
total	43,853	43,928	43,996	44,070	44,137	44,196	44,244	44,295	44,351	44,428	44,509
monthly use		75	68	74	67	59	48	51	56	77	81

	2006											
Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
15,201	15,235	15,285	15,342	15,378	15,416	15,449	15,481	15,508	15,537	15,579	15,627	15,663
13,917	13,917	13,917	13,917	13,917	13,917	13,929	13,958	13,977	13,977	13,977	13,977	13,990
15,481	15,530	15,574	15,598	15,611	15,629	15,646	15,662	15,683	15,712	15,746	15,787	15,839
44,599	44,682	44,776	44,857	44,906	44,962	45,024	45,101	45,168	45,226	45,302	45,391	45,492
90	83	94	81	49	56	62	77	67	58	76	89	101

TestAmerica
ANALYTICAL TESTING CORPORATION

PORTLAND, OR 9405 S.W. NIMBUS AVENUE
BEAVERTON, OR 97008-7132
ph: (503) 906.9200 fax: (503) 906.9210

Amended Report

Siltronic	Project Name:	**Waste Characterization**	
7200 N.W. Front Ave	Project Number:	PO# 4500186654	Report Created:
Portland, OR 97210	Project Manager:	Thomas Rothschild	05/30/06 15:41

General Gas Chromatography Analysis

Columbia Inspection, Inc.

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PPE0213-01 (06-33-WW-1)		**Other wet**			**Sampled: 05/02/06 00:00**					
ISOPROPANOL	EPA 8015M	12.2	-----	0.00150	%WT	1x	6E22003	05/22/06 11:26	05/22/06 11:40	
Surrogate(s): ETHYL ACETATE		*96.7%*			*50 - 150 %*	"			"	
PPE0213-02 (06-34-WW-3)		**Other wet**			**Sampled: 05/02/06 00:00**					
ISOPROPANOL	EPA 8015M	12.4	-----	0.00151	%WT	1x	6E22003	05/22/06 11:26	05/22/06 11:40	
Surrogate(s): ETHYL ACETATE		*97.7%*			*50 - 150 %*	"			"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Amended Report

Brian L Cone

Brian Cone, Industrial Services Manager

SCOEPA00022635

TestAmerica
ANALYTICAL TESTING CORPORATION

PORTLAND, OR 9405 S.W. NIMBUS AVENUE
BEAVERTON, OR 97008-7132
ph: (503) 906.9200 fax: (503) 906.9210

Amended Report

Siltronic	Project Name:	**Waste Characterization**	
7200 N.W. Front Ave	Project Number:	PO# 4500186654	Report Created:
Portland, OR 97210	Project Manager:	Thomas Rothschild	05/30/06 15:41

Volatile Organic Compounds per EPA Method 8260B

TestAmerica - Portland, OR

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PPE0213-01 (06-33-WW-1)		**Other wet**			**Sampled: 05/02/06 00:00**					**PR-5**
Acetone	EPA 8260B	ND	-----	18800000	ug/kg wet	1000x	6050447	05/10/06 12:45	05/16/06 10:02	
Benzene	"	ND	-----	150000	"	"	"	"	"	
Bromobenzene	"	ND	-----	752000	"	"	"	"	"	
Bromochloromethane	"	ND	-----	752000	"	"	"	"	"	
Bromodichloromethane	"	ND	-----	752000	"	"	"	"	"	
Bromoform	"	ND	-----	752000	"	"	"	"	"	
Bromomethane	"	ND	-----	3760000	"	"	"	"	"	
2-Butanone (MEK)	"	ND	-----	7520000	"	"	"	"	"	
n-Butylbenzene	"	ND	-----	3760000	"	"	"	"	"	
sec-Butylbenzene	"	ND	-----	752000	"	"	"	"	"	
tert-Butylbenzene	"	ND	-----	752000	"	"	"	"	"	
Carbon disulfide	"	ND	-----	7520000	"	"	"	"	"	
Carbon tetrachloride	"	ND	-----	752000	"	"	"	"	"	
Chlorobenzene	"	ND	-----	752000	"	"	"	"	"	
Chloroethane	"	ND	-----	752000	"	"	"	"	"	
Chloroform	"	ND	-----	752000	"	"	"	"	"	
Chloromethane	"	ND	-----	3760000	"	"	"	"	"	
2-Chlorotoluene	"	ND	-----	752000	"	"	"	"	"	
4-Chlorotoluene	"	ND	-----	752000	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	"	ND	-----	3760000	"	"	"	"	"	
Dibromochloromethane	"	ND	-----	752000	"	"	"	"	"	
1,2-Dibromoethane	"	ND	-----	752000	"	"	"	"	"	
Dibromomethane	"	ND	-----	752000	"	"	"	"	"	
1,2-Dichlorobenzene	"	ND	-----	752000	"	"	"	"	"	
1,3-Dichlorobenzene	"	ND	-----	752000	"	"	"	"	"	
1,4-Dichlorobenzene	"	ND	-----	752000	"	"	"	"	"	
Dichlorodifluoromethane	"	ND	-----	3760000	"	"	"	"	"	
1,1-Dichloroethane	"	ND	-----	752000	"	"	"	"	"	
1,2-Dichloroethane	"	ND	-----	752000	"	"	"	"	"	
1,1-Dichloroethene	"	ND	-----	752000	"	"	"	"	"	
cis-1,2-Dichloroethene	"	ND	-----	752000	"	"	"	"	"	
trans-1,2-Dichloroethene	"	ND	-----	752000	"	"	"	"	"	
1,2-Dichloropropane	"	ND	-----	752000	"	"	"	"	"	
1,3-Dichloropropane	"	ND	-----	752000	"	"	"	"	"	
2,2-Dichloropropane	"	ND	-----	752000	"	"	"	"	"	
1,1-Dichloropropene	"	ND	-----	752000	"	"	"	"	"	
cis-1,3-Dichloropropene	"	ND	-----	752000	"	"	"	"	"	
trans-1,3-Dichloropropene	"	ND	-----	752000	"	"	"	"	"	

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Amended Report

Brian Cone, Industrial Services Manager

SCOEPA00022636

estAmerica
ANALYTICAL TESTING CORPORATION

PORTLAND, OR 9405 S.W. NIMBUS AVENUE
BEAVERTON, OR 97008-7132
ph: (503) 906.9200 fax: (503) 906.9210

Amended Report

Siltronic	Project Name:	**Waste Characterization**	
7200 N.W. Front Ave	Project Number:	PO# 4500186654	Report Created:
Portland, OR 97210	Project Manager:	Thomas Rothschild	05/30/06 15:41

Volatile Organic Compounds per EPA Method 8260B

TestAmerica - Portland, OR

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PPE0213-01 (06-33-WW-1)		**Other wet**			**Sampled: 05/02/06 00:00**					**PR-5**
Ethylbenzene	EPA 8260B	ND	-----	752000	ug/kg wet	1000x	6050447	05/10/06 12:45	05/16/06 10:02	
Hexachlorobutadiene	"	ND	-----	3010000	"	"	"	"	"	
2-Hexanone	"	ND	-----	7520000	"	"	"	"	"	
Isopropylbenzene	"	ND	-----	1500000	"	"	"	"	"	
p-Isopropyltoluene	"	ND	-----	1500000	"	"	"	"	"	
4-Methyl-2-pentanone	"	ND	-----	3760000	"	"	"	"	"	
Methyl tert-butyl ether	"	ND	-----	752000	"	"	"	"	"	
Methylene chloride	"	ND	-----	3760000	"	"	"	"	"	
Naphthalene	"	ND	-----	1500000	"	"	"	"	"	
n-Propylbenzene	"	ND	-----	752000	"	"	"	"	"	
Styrene	"	ND	-----	752000	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	"	ND	-----	752000	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	"	ND	-----	752000	"	"	"	"	"	
Tetrachloroethene	"	ND	-----	752000	"	"	"	"	"	
Toluene	"	**58800000**	-----	752000	"	"	"	"	"	
1,2,3-Trichlorobenzene	"	ND	-----	752000	"	"	"	"	"	
1,2,4-Trichlorobenzene	"	ND	-----	752000	"	"	"	"	"	
1,1,1-Trichloroethane	"	ND	-----	752000	"	"	"	"	"	
1,1,2-Trichloroethane	"	ND	-----	752000	"	"	"	"	"	
Trichloroethene	"	ND	-----	752000	"	"	"	"	"	
Trichlorofluoromethane	"	ND	-----	752000	"	"	"	"	"	
1,2,3-Trichloropropane	"	ND	-----	752000	"	"	"	"	"	
1,2,4-Trimethylbenzene	"	ND	-----	752000	"	"	"	"	"	
1,3,5-Trimethylbenzene	"	ND	-----	752000	"	"	"	"	"	
Vinyl chloride	"	ND	-----	752000	"	"	"	"	"	
o-Xylene	"	ND	-----	752000	"	"	"	"	"	
m,p-Xylene	"	ND	-----	1500000	"	"	"	"	"	

Surrogate(s):	*4-BFB*	*100%*	*75 - 125 %*	*0.01x*	"
	1,2-DCA-d4	*96.7%*	*75 - 125 %*	"	"
	Dibromofluoromethane	*96.7%*	*75 - 125 %*	"	"
	Toluene-d8	*100%*	*75 - 125 %*	"	"

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Amended Report

Brian Cone, Industrial Services Manager

SCOEPA00022637

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PORTLAND, OR 9405 S.W. NIMBUS AVENUE
BEAVERTON, OR 97008-7132
ph: (503) 906.9200 fax: (503) 906.9210

Amended Report

Siltronic	Project Name:	**Waste Characterization**	
7200 N.W. Front Ave	Project Number:	PO# 4500186654	Report Created:
Portland, OR 97210	Project Manager:	Thomas Rothschild	05/30/06 15:41

Volatile Organic Compounds per EPA Method 8260B

TestAmerica - Portland, OR

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PPE0213-02 (06-34-WW-3)		**Other wet**			**Sampled: 05/02/06 00:00**					**PR-5**
Acetone	EPA 8260B	ND	-----	18000000	ug/kg wet	1000x	6050447	05/10/06 12:45	05/16/06 10:29	
Benzene	"	ND	-----	144000	"	"	"	"	"	
Bromobenzene	"	ND	-----	719000	"	"	"	"	"	
Bromochloromethane	"	ND	-----	719000	"	"	"	"	"	
Bromodichloromethane	"	ND	-----	719000	"	"	"	"	"	
Bromoform	"	ND	-----	719000	"	"	"	"	"	
Bromomethane	"	ND	-----	3600000	"	"	"	"	"	
2-Butanone (MEK)	"	ND	-----	7190000	"	"	"	"	"	
n-Butylbenzene	"	ND	-----	3600000	"	"	"	"	"	
sec-Butylbenzene	"	ND	-----	719000	"	"	"	"	"	
tert-Butylbenzene	"	ND	-----	719000	"	"	"	"	"	
Carbon disulfide	"	ND	-----	7190000	"	"	"	"	"	
Carbon tetrachloride	"	ND	-----	719000	"	"	"	"	"	
Chlorobenzene	"	ND	-----	719000	"	"	"	"	"	
Chloroethane	"	ND	-----	719000	"	"	"	"	"	
Chloroform	"	ND	-----	719000	"	"	"	"	"	
Chloromethane	"	ND	-----	3600000	"	"	"	"	"	
2-Chlorotoluene	"	ND	-----	719000	"	"	"	"	"	
4-Chlorotoluene	"	ND	-----	719000	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	"	ND	-----	3600000	"	"	"	"	"	
Dibromochloromethane	"	ND	-----	719000	"	"	"	"	"	
1,2-Dibromoethane	"	ND	-----	719000	"	"	"	"	"	
Dibromomethane	"	ND	-----	719000	"	"	"	"	"	
1,2-Dichlorobenzene	"	ND	-----	719000	"	"	"	"	"	
1,3-Dichlorobenzene	"	ND	-----	719000	"	"	"	"	"	
1,4-Dichlorobenzene	"	ND	-----	719000	"	"	"	"	"	
Dichlorodifluoromethane	"	ND	-----	3600000	"	"	"	"	"	
1,1-Dichloroethane	"	ND	-----	719000	"	"	"	"	"	
1,2-Dichloroethane	"	ND	-----	719000	"	"	"	"	"	
1,1-Dichloroethene	"	ND	-----	719000	"	"	"	"	"	
cis-1,2-Dichloroethene	"	ND	-----	719000	"	"	"	"	"	
trans-1,2-Dichloroethene	"	ND	-----	719000	"	"	"	"	"	
1,2-Dichloropropane	"	ND	-----	719000	"	"	"	"	"	
1,3-Dichloropropane	"	ND	-----	719000	"	"	"	"	"	
2,2-Dichloropropane	"	ND	-----	719000	"	"	"	"	"	
1,1-Dichloropropene	"	ND	-----	719000	"	"	"	"	"	
cis-1,3-Dichloropropene	"	ND	-----	719000	"	"	"	"	"	
trans-1,3-Dichloropropene	"	ND	-----	719000	"	"	"	"	"	

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Brian L Cone

Amended Report

Brian Cone, Industrial Services Manager

SCOEPA00022638

TestAmerica
ANALYTICAL TESTING CORPORATION

PORTLAND, OR 9405 S.W. NIMBUS AVENUE
BEAVERTON, OR 97008-7132
ph: (503) 906.9200 fax: (503) 906.9210

Amended Report

Siltronic	Project Name:	**Waste Characterization**	
7200 N.W. Front Ave	Project Number:	PO# 4500186654	Report Created:
Portland, OR 97210	Project Manager:	Thomas Rothschild	05/30/06 15:41

Volatile Organic Compounds per EPA Method 8260B

TestAmerica - Portland, OR

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PPE0213-02 (06-34-WW-3)		**Other wet**			**Sampled: 05/02/06 00:00**					**PR-5**
Ethylbenzene	EPA 8260B	ND	-----	719000	ug/kg wet	1000x	6050447	05/10/06 12:45	05/16/06 10:29	
Hexachlorobutadiene	"	ND	-----	2880000	"	"	"	"	"	
2-Hexanone	"	ND	-----	7190000	"	"	"	"	"	
Isopropylbenzene	"	ND	-----	1440000	"	"	"	"	"	
p-Isopropyltoluene	"	ND	-----	1440000	"	"	"	"	"	
4-Methyl-2-pentanone	"	ND	-----	3600000	"	"	"	"	"	
Methyl tert-butyl ether	"	ND	-----	719000	"	"	"	"	"	
Methylene chloride	"	ND	-----	3600000	"	"	"	"	"	
Naphthalene	"	ND	-----	1440000	"	"	"	"	"	
n-Propylbenzene	"	ND	-----	719000	"	"	"	"	"	
Styrene	"	ND	-----	719000	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	"	ND	-----	719000	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	"	ND	-----	719000	"	"	"	"	"	
Tetrachloroethene	"	ND	-----	719000	"	"	"	"	"	
Toluene	"	**55600000**	-----	719000	"	"	"	"	"	
1,2,3-Trichlorobenzene	"	ND	-----	719000	"	"	"	"	"	
1,2,4-Trichlorobenzene	"	ND	-----	719000	"	"	"	"	"	
1,1,1-Trichloroethane	"	ND	-----	719000	"	"	"	"	"	
1,1,2-Trichloroethane	"	ND	-----	719000	"	"	"	"	"	
Trichloroethene	"	ND	-----	719000	"	"	"	"	"	
Trichlorofluoromethane	"	ND	-----	719000	"	"	"	"	"	
1,2,3-Trichloropropane	"	ND	-----	719000	"	"	"	"	"	
1,2,4-Trimethylbenzene	"	ND	-----	719000	"	"	"	"	"	
1,3,5-Trimethylbenzene	"	ND	-----	719000	"	"	"	"	"	
Vinyl chloride	"	ND	-----	719000	"	"	"	"	"	
o-Xylene	"	ND	-----	719000	"	"	"	"	"	
m,p-Xylene	"	ND	-----	1440000	"	"	"	"	"	
Surrogate(s): 4-BFB		*102%*			*75 - 125 %*	*0.01x*			"	
1,2-DCA-d4		*103%*			*75 - 125 %*	"			"	
Dibromofluoromethane		*98.6%*			*75 - 125 %*	"			"	
Toluene-d8		*101%*			*75 - 125 %*	"			"	

55,600 mg/L

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Amended Report

Brian L Cone

Brian Cone, Industrial Services Manager

SCOEPA00022639

Wacker Siltronic Corporation
Annual Report for 2005
ACDP No. 26-3002

13a. Quantity of natural gas and diesel oil burned on an annual basis, and resulting criteria pollutant annual emissions:

Natural gas burned: 161.09 million cubic feet

Diesel burned: 624 gallons

Resulting criteria pollutant annual emissions:

Particulate	0.28 tons
CO	2.92 tons
NOx	11.62 tons
SOx	0.11 tons
VOC	0.50 tons

13b. Annual wafer manufacturing NOx emissions:

NOx	7.93 tons

13c. The amount of VOCs emitted on an annual basis:

VOCs	13.18 tons

(includes VOCs from fuel burning and unrecovered VOCs from chemicals used)

13d. The amount of VOC cleaning solvent emitted each month:

January	0.95 tons
February	0.64 tons
March	0.93 tons
April	0.25 tons
May	0.96 tons
June	0.25 tons
July	1.10 tons
August	0.43 tons
September	0.96 tons
October	0.59 tons
November	0.76 tons
December	0.73 tons

Wacker Siltronic Corporation
Annual Report for 2005
ACDP No. 26-3002

13e. The amount of VOC used and amount of VOC waste collected on annual basis:

VOC used	16.66 tons
VOC waste collected	3.98 tons

13f. Emergency diesel generator total hours of operation:

54.9 hours

13g. Log of all planned and unplanned excess emissions in accordance with OAR 340-28-1440:

None.

13h. List all major maintenance performed on air pollution equipment:

11/15/05 Maintenance of a variety of NOx scrubber systems (please see attached list of items)

11/30/2005 Repaired epitaxial scrubber in Fab 2.

12/1/2005 Insulated chemical lines on NOx scrubber

Monthly Air Permit Record

2006

Please record the following information within 4 calendar days of the end of the month
and save in N:\Environmental\Environmental Affairs\Environmental Affairs Folders\Permits\Air\New Permit

2006 Summary of Scrubber Readings

	F1 Epi Fume pH				F1 Section 8 pH				F1 Acid Fume pH				F2 HPM pH				NOx pH				NOx ORP			
Month	Lo	Date	Hi	Date	Lo	Date	Hi	Date	Lo	Date	Hi	Date	Lo	Date	Hi	Date	Lo	Date	Hi	Date	Lo	Date	Hi	Date
Jan	6.9	1/10	9.1	1/15	6.0	1/2	6.3	1/4	7.0	1/16	9.1	1/19	6.6	1/31	7.1	1/18	10.0	1/2	10.2	1/17	-289.0	1/22	-194.0	1/11
Feb	6.7	2/18	7.7	2/22	6.0	2/12	6.3	2/21	7.9	2/4	9.2	2/16	6.2	2/26	9.9	2/16	8.8	2/1	10.8	2/2	-310	2/14	-160	2/15
Mar	6.9	3/20	8.8	3/18	6.0	3/15	6.2	3/30	8.5	3/30	9.3	3/14	6.4	3/17	8.7	3/8	10.0	3/6	10.3	3/6	-297	3/7	-160	3/7
Apr	6.3	4/19	9.8	4/30	6.0	4/2	6.4	4/25	8.1	4/17	9.1	4/19	6.3	4/12	8.9	4/1	10.0	4/3	10.3	4/20	-295	4/29	-42	4/15
May	6.7	5/1	9.0	5/13	6.0	5/17	6.3	5/11	8.0	5/8	8.9	5/3	3.1	5/8	8.5	5/25	10.0	5/2	10.3	5/11	-342	5/17	-151	5/7
Jun	6.9	6/19	8.5	6/25	6.0	6/1	7.3	6/6	8.1	6/2	8.9	6/11	6.3	6/8	7.7	6/2	10.0	6/3	10.2	6/7	-255	6/4	-96	6/3
Jul	6.8	7/25	8.4	7/21	6.0	7/3	6.3	7/12	8.1	7/16	9.1	7/31	6.7	7/22	7.9	7/26	10.0	7/1	10.4	7/24	-266	7/26	-85	7/4
Aug	6.9	8/5	9.4	8/20	6.1	8/4	7.8	8/29	8.0	8/1	9.1	8/26	6.7	8/25	8.4	8/23	10.0	8/1	10.2	8/6	-272	8/5	-158	8/18
Sep	6.8	9/7	8.0	9/16	6.3	9/4	6.6	9/16	7.8	9/4	9.2	9/2	6.9	9/6	7.4	9/22	10.0	9/9	10.9	9/3	-313	9/10	-182	9/18
Oct	6.9	10/8	7.8	10/2	6.0	10/3	6.8	10/19	8.1	10/14	9.4	10/4	7.0	10/6	7.8	10/16	10.0	10/3	10.2	10/29	-285	10/14	-11	10/2
Nov	7.0	11/30	8.0	11/24	6.0	11/26	7.1	11/15	8.1	11/25	9.3	11/1	6.7	11/27	8.0	11/3	10.0	11/3	10.2	11/4	-255	11/5	82	11/
Dec	6.5	12/3	8.5	12/13	6.0	12/1	6.1	12/22	8.1	12/11	9.1	12/31	6.6	12/15	9.9	12/8	10.0	12/2	10.3	12/1	-260	12/23	73	12
Annual Lo	6.3	4/19			6.0	1/2			7.0	1/16			3.1	5/8			8.8	2/1			-342	5/17		
Annual Hi			9.8	4/30			7.8	6/6			9.4	3/14			9.9	2/16			10.9	2/2			-42	4/15

Missed Scrubber Readings

(Record if less than 2 readings were taken in a 24-hour period, at least 6 hours apart)

Month	Scrubber	Reasons
Jan	HPM	New reading to be taken. Operators still getting used to taking it.
Feb	HPM, Sec 8, Acid	2/19 HPM Scbr Operator busy soaping RO's in UPW, Sec 8 2/2 & 2/19, 2/17 Acid Scbr
Mar		
Apr		
May		
Jun		
Jul	Section 8	7/30 : New Operator still in Training. Checked; OK since two readings were taken in a 24 hr period.
Aug		
Sep		
Oct		
Nov		
Dec		

Boiler Gas Use Readings

(Record end of month meter reading)

Month	Boiler 5	Change	Boiler 6	Change	Boiler 7	Change
Dec	15,201		13,917		15,480	
Jan	15,235	34	13,917	-	15,530	50
Feb	15,285	50	13,917	-	15,574	44
Mar	15,342	57	13,917	-	15,598	24
Apr	15,378	36	13,917	-	15,611	13
May	15,416	38	13,917	-	15,629	18
Jun	15,449	33	13,929	12	15,646	17
Jul	15,481	32	13,958	29	15,662	16
Aug	15,508	27	13,977	19	15,683	21
Sep	15,537	29	13,977	-	15,712	29
Oct	15,579	42	13,977	-	15,746	34
Nov	15,627	48	13,977	-	15,787	41
Dec	15,663	36	13,990	13	15,839	52

(readings are in 1000 CCF)

Exceedances of Normal Range

(Record value and reason)

	F1 Epi Fume pH	F1 Section 8 pH	F1 Acid Fume pH	F2 HPM pH	NOx pH	NOx ORP	
Month	6 to 10	6 to 10	6 to 10	6 to 10	8 to 11	-300	200	Reasons
Jan								
Feb						Below -300 5X's		Checking calibration, changed converter, engineers researching reasons why.
Mar								
Apr								
May				3.1 8-May				Sodium Hydroxide barrel went empty and needed to be changed.
								Orp out of spec 5/17,21,22,23,24/06 due to T-1 overflow. Na2S Valve adjusted 5/26 that fixed problem
								Fac. Maint. working on Tank 1 setpoints. Overflow goes to Tank 3.
Jun								
Jul								
Aug								
Sep						-313 on 9/10		No reason given for exceedance. Newer Operator taking readings. Will remind & better train him on parameters.
Oct								
Nov								
Dec								

5 times in Feb

~~checked~~ cleaned + probe calibration ~~pH~~ 2/13/06

foaming → anti-foam

researched control logic

possible over-feed of chemical

tested system for chemical feed balance

adj. pH settings

SCOEPA00022643

From NOx Log

timestamp	AIT_38_027_NOX_AVG_VAL0	AIT_38_027_NOX_CUM_VAL0	AIT_38_027_NOX_LBS_VAL0	AIT_38_027_NO_AVG_VAL0
12/31/05 5:00	11	18534	1.013	2
12/31/05 6:00	13	18536	1.17	2
12/31/05 6:59	13	18537	1.13	2
12/31/05 7:59	9	18538	0.801	1
12/31/05 8:59	9	18539	0.817	1
12/31/05 9:59	9	18541	0.808	1
12/31/05 10:59	10	18542	0.85	1
12/31/05 11:59	9	18543	0.845	1
12/31/05 12:59	10	18544	0.937	2
12/31/05 13:59	10	18545	0.886	1
12/31/05 14:59	10	18546	0.871	1
12/31/05 15:59	11	18548	0.951	1
12/31/05 16:59	11	18549	0.976	2
12/31/05 17:59	12	18551	1.055	2
12/31/05 18:59	13	18552	1.146	2
12/31/05 20:00	8	18553	0.754	1
12/31/05 21:00	10	18554	0.878	1
12/31/05 22:00	9	18556	0.858	1
12/31/05 23:00	9	18557	0.787	1
			15,866 lbs	
			7.93 tons	

Table 2
VOCs Detected in Quarterly Groundwater Samples
USEPA Method 8260
Siltronic Corporation
Portland, Oregon

PERIOD: From 11/16/2004 thru 11/18/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE	WS-13-105	WS-13-69	WS-14-125	WS-14-161	WS-15-140	WS-15-85
	LAB SAMPLE ID	0411108-03A	0411108-01A	0411094-06A	0411094-05A	0411108-05A	0411108-04A
	DATE	11/18/2004	11/18/2004	11/16/2004	11/16/2004	11/18/2004	11/18/2004
	DEPTH (ft)	100.00	64.00	118.00	156.00	135.00	80.00
	RESULT TYPE	Duplicate 1	Primary	Primary	Primary	Primary	Primary
TCE	(ug/l)	25.9	198000	<0.2	<0.2	2.62	186 F002
cis-1,2-DCE	(ug/l)	14.3	20900	8.54	<0.2	7.12	2640 –
trans-1,2-DCE	(ug/l)	<0.3	89.9	<0.3	<0.3	<0.3	23.6
1,1-DCE	(ug/l)	<0.2	96.6	<0.2	<0.2	<0.2	12.2
Vinyl chloride	(ug/l)	5.58	20.7	4.09	<0.2	<0.2	4.42
1,2,4-TMB	(ug/l)	<1	11.6	86.2	<1	<1	44.4
1,3,5-TMB	(ug/l)	<0.3	2.18	25.1	<0.3	<0.3	11.7
2-Butanone	(ug/l)	<10	<10	<10	<10	<10	<10
p-Isopropyltoluene	(ug/l)	<0.3	<0.3	2.18	<0.3	<0.3	1.26
Acetone	(ug/l)	<5	<5	<5	<5	<5	<5
Benzene	(ug/l)	<0.2	764	3630 –	0.430	7.99	3650 – Exempt
Ethylbenzene	(ug/l)	<0.2	132	514	<0.2	0.790	285
Isopropylbenzene	(ug/l)	<0.3	2.30	19.6	<0.3	<0.3	8.70
Naphthalene	(ug/l)	<1	648	9170 –	3.92	23.9	3470 –
Styrene	(ug/l)	<0.2	1.13	<0.2	<0.2	<0.2	<0.2
Toluene	(ug/l)	<0.2	57.3	410	<0.2	0.320	268
n-Butylbenzene	(ug/l)	<0.3	<0.3	0.970	<0.3	<0.3	<0.3
n-Propylbenzene	(ug/l)	<0.3	<0.3	2.43	<0.3	<0.3	1.03
o-Xylene	(ug/l)	<0.2	56.4	232	<0.2	<0.2	103
tert-Butylbenzene	(ug/l)	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
m,p-Xylene	(ug/l)	<0.4	103	443	<0.4	<0.4	194

Only compounds detected are shown.
See Notes Page following Tables.

Table 2
VOCs Detected in Quarterly Groundwater Samples
USEPA Method 8260
Siltronic Corporation
Portland, Oregon

PERIOD: From 11/16/2004 thru 11/18/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE	WS-13-105	WS-13-69	WS-14-125	WS-14-161	WS-15-140	WS-15-85
	LAB SAMPLE ID	0411108-03A	0411108-01A	0411094-06A	0411094-05A	0411108-05A	0411108-04A
	DATE	11/18/2004	11/18/2004	11/16/2004	11/16/2004	11/18/2004	11/18/2004
	DEPTH (ft)	100.00	64.00	118.00	156.00	135.00	80.00
	RESULT TYPE	Duplicate 1	Primary	Primary	Primary	Primary	Primary
1,1,2-Trichloroethane	(ug/l)	<0.2	13.0	<0.2	<0.2	<0.2	<0.2
1,2-Dichlorobenzene	(ug/l)	<0.3	<0.3	<0.3	<0.3	1.61	<0.3
Carbon disulfide	(ug/l)	<0.2	<0.2	<0.2	0.260	<0.2	<0.2
Chlorobenzene	(ug/l)	<0.2	<0.2	<0.2	<0.2	4.42	<0.2
Chloroform	(ug/l)	<0.2	<0.2	0.970	<0.2	<0.2	0.450
Methyl chloride	(ug/l)	0.450	0.410	<0.3	0.320	0.370	0.330
Methyl tert-butyl ether	(ug/l)	<0.5	<0.5	<0.5	<0.5	2.30	<0.5
Tetrachloroethene	(ug/l)	<0.5	1.08	<0.5	<0.5	<0.5	<0.5

14,550 ug/l

worst case

~ 14.55 ppm

10,904 ug/l

Only compounds detected are shown.
See Notes Page following Tables.

Table 2
VOCs Detected in Quarterly Groundwater Samples
USEPA Method 8260
Siltronic Corporation
Portland, Oregon

PERIOD: From 11/16/2004 thru 11/18/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT		SITE	WS-16-125	WS-16-161	WS-17-52	WS-17-94
		LAB SAMPLE ID	0411099-06A	0411099-07A	0411094-04A	0411099-01A
		DATE	11/17/2004	11/17/2004	11/16/2004	11/17/2004
		DEPTH (ft)	120.00	156.00	45.00	89.00
		RESULT TYPE	Primary	Primary	Primary	Primary
TCE	(ug/l)		<0.2	<0.2	<0.2	0.810
cis-1,2-DCE	(ug/l)		<0.2	<0.2	<0.2	<0.2
trans-1,2-DCE	(ug/l)		<0.3	<0.3	<0.3	<0.3
1,1-DCE	(ug/l)		<0.2	<0.2	<0.2	<0.2
Vinyl chloride	(ug/l)		<0.2	<0.2	<0.2	<0.2
1,2,4-TMB	(ug/l)		<1	<1	28.5	1.05
1,3,5-TMB	(ug/l)		<0.3	<0.3	7.68	<0.3
2-Butanone	(ug/l)		15.4	<10	<10	<10
p-Isopropyltoluene	(ug/l)		<0.3	<0.3	1.29	<0.3
Acetone	(ug/l)		512	<5	<5	<5
Benzene	(ug/l)		<0.2	2.40	105	7.67
Ethylbenzene	(ug/l)		<0.2	0.770	90.1	8.94
Isopropylbenzene	(ug/l)		<0.3	<0.3	3.66	0.980
Naphthalene	(ug/l)		275	13.9	1780	164
Styrene	(ug/l)		<0.2	<0.2	<0.2	<0.2
Toluene	(ug/l)		<0.2	0.750	<0.2	4.39
n-Butylbenzene	(ug/l)		0.400	<0.3	0.710	<0.3
n-Propylbenzene	(ug/l)		<0.3	<0.3	0.310	<0.3
o-Xylene	(ug/l)		<0.2	1.32	44.0	3.71
tert-Butylbenzene	(ug/l)		<0.3	<0.3	<0.3	<0.3
m,p-Xylene	(ug/l)		<0.4	<0.4	58.4	7.18

Only compounds detected are shown.
See Notes Page following Tables.

Table 2
VOCs Detected in Quarterly Groundwater Samples
USEPA Method 8260
Siltronic Corporation
Portland, Oregon

PERIOD: From 11/16/2004 thru 11/18/2004 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE	WS-16-125	WS-16-161	WS-17-52	WS-17-94
	LAB SAMPLE ID	0411099-06A	0411099-07A	0411094-04A	0411099-01A
	DATE	11/17/2004	11/17/2004	11/16/2004	11/17/2004
	DEPTH (ft)	120.00	156.00	45.00	89.00
	RESULT TYPE	Primary	Primary	Primary	Primary
1,1,2-Trichloroethane	(ug/l)	<0.2	<0.2	<0.2	<0.2
1,2-Dichlorobenzene	(ug/l)	<0.3	<0.3	<0.3	<0.3
Carbon disulfide	(ug/l)	<0.2	<0.2	0.260	0.200
Chlorobenzene	(ug/l)	2.21	<0.2	<0.2	<0.2
Chloroform	(ug/l)	<0.2	<0.2	<0.2	0.300
Methyl chloride	(ug/l)	<0.3	<0.3	<0.3	<0.3
Methyl tert-butyl ether	(ug/l)	5.06	<0.5	<0.5	<0.5
Tetrachloroethene	(ug/l)	<0.5	<0.5	<0.5	<0.5

Only compounds detected are shown.
See Notes Page following Tables.

SAP Material Number		Container Size	Form	Density/ Specific Gravity	Lb/gal	Gal/each	Lb/each	Fraction of product used	VOC Fraction	Evap Fraction	Total Evap Factor	MSDS Number	Date added to list or revised
5406902-1	Spray paints		L				0.9393	1	0.85	1	0.85		
5407102	Sealant silicon clear 3 oz tube		L				0.1875	1	0.025	1	0.025		
5407103	Sealant Silicone White 10.3 OZ tube	10.3oz Tub	Paste	1.04	8.6736		0.64375	1	0.025	1	0.025	2148	
5407104	Sealant Rubber Silicone RTV GE #W102 cart	10.3oz Car	Solid	1.06	8.8404		0.64375	1	0.04	1	0.04	2575	
5407105	Paste silicon P12 Warmeleitpaste		L				0.3308	1	0.1	1	0.1		
5407106	Silicon RTV high temp red mak-a-gasket	1 can	L				0.4983	1	1	1	1		
5407107	Silicone RTV High Temp Blue Mak-A-Gasket	8 oz Sp Can	L	1.04	8.6736	0.0625	0.5421	1	0.08	1	0.08	2337	
5407108	Silicone RTV High Temp Clear MAK-A-Gasket	8 oz Sp Can	L	1.04	8.6736	0.0625	0.5421	1	0.08	1	0.08	2337	
5407328	Cleaner Instant Contact #CRC-02016	15oz Sp Can	L	0.8754	7.30084	0.117188	0.855567	1	0.96	1	0.96	2093	
5407330	Cleaner dust chaser spray VWR# 21899-094		L				0.62622	1	1	1	1		
5407331	Degreaser gel engine	15oz Sp Can	L	0.8	6.672	0.117188	0.781875	1	0.7	1	0.7	2660	
5407332	Cleaner Electric Motor KAR #65390-2	16oz Sp Can	L	1.5	12.51	0.125	1.56375	1	0.243	1	0.243	2169	
5407334	Stripper / Remover For Paint, Carbon &	16oz Sp Can	L	0.9	7.506	0.125	0.93825	1	0.68	1	0.68	2252	
	Parts Washing Solvent	1 Gal	L	0.79	6.6	1	6.6	1	1	0.05	0.05	2582	Added 2/8/99
5407376	Isopropyl Alcohol (IPA) 99%	55 Gal Dm	L	0.7855	6.55107	55	362	1	1	1	1	2580	
5407408	Lubricant Spray Molykote 321R Dow-Corning	11oz Sp Can	L	1	8.34	0.085938	0.716719	1	0.57	1	0.57	2419	
5407431	Lubricant CRC 3-36 #03005	16oz Sp Can	L	0.8167	6.81128	0.125	0.85141	1	0.7	0.1	0.07	1011	
5407432	LUBRICANT Parker-O-Lube #884-4		L				0.25	1	1	1	1		
5407433	Lubricant CRC 3-36 (Gallon Can)	1 Gal Pl Btl	L	0.8167	6.81128	1	6.811278	1	0.7	0.1	0.07	1010	
5407434	GREASE ALVANIA EP 2 LITHIUM BASE		L				0.88	1	0.8	1	0.8		
5407435	Lube Teflon #79417	20oz Sp Can	L	0.6	5.004	0.15625	0.781875	1	0.82	1	0.82	2344	
5407436	Lubricant Teflon Dry #79418	16oz Sp Can	L	0.6	5.004	0.125	0.6255	1	1	1	1	2154	
5407439	Cement Neoprene Turntable Covering Carbo	16oz Btl	L	0.81	6.7554	0.125	0.844425	1	0.8	1	0.8	2427	
5407466	Skyliquid Wax for Enya, HF-3511	2 L Pl Btl	L	0.889	7.41426	0.528346	3.917293	0.95	0.65	0.77	0.47548	2631	
5407470	Cleaner Zero Residue Instant Tech Spray	16oz Sp Can	L	1.004	8.37336	0.125	1.04667	1	0.0541	1	0.0541	2803	
5407938	Caviclean #2 Cleaning Solution Turco	55 Gal Dm	L	1.05	8.757	55	481.635	1	0.12	1	0.12	2740	
5407946	Anti-sieze High Temp Industrial, 1 lb	1 lb bottle	L								0		
5407947	Lubricant Silicon	20oz Sp Can	L	0.76	6.3384	0.15625	0.990375	1	0.9	1	0.9	2340	
5407948	Grease Multi Purpose White	20oz Sp Can	L	0.9	7.506	0.15625	1.172813	1	0.24	1	0.24	2332	
5407950	PAINT OSHA orange spray can		L				0.882	1	0.7	1	0.7		
5407953	Vinnapas C305	1 liter bottle	L				0.823575	1	0.63	1	0.63		
5407955	Epoxy Valtron AD1230 4-1 GAL/CS Part A	4-1 Gal Cans	S	1.2	10.008	4	40.032	1	0.4	1	0.4	2750	
5407956	Hardner AD1211-B Red Pigment	16oz Can	L	1.1	9.174	0.125	1.14675	1	0.4	1	0.4	2749	
5407957	Epoxy STC Fast Cure Grey	10 oz Can	L	1.54	12.8436	0.078125	1.003406	1	0.07385	1	0.07385	2615	
5407963	Mold-Release Wiz F-57NC 1 Gallon	1 Gal Can	L	0.82	6.8388	1	6.8388	1	0.925	1	0.925	2414	
5407966	ADHESIVE 10ML blue thred		L				0.02205		100		0		
5407967	Adhesive Tixo K-10 10 Gm/Each	20oz Sp Can	L	1.05	8.757	0.15625	1.368281	1	0.88	1	0.88	2722	
5410534	Aerokroil loosens frozen metal parts		L				0.625	1	0.6	1	0.6		
5410872	PAINT spray yellow		L				0.9393	1	0.65	1	0.65		
5413542	Skyliquid Wax for Enya, HF-4011	2 L Pl Btl	L	0.902	7.52268	0.528346	3.974576	0.95	0.6	0.77	0.4389	2819	
5415107		1 Gal bottle	L	0.79	6.5886	4	26.3544	1	1	1	1		
5516514	Bottle IPA high purity (4-1 gal/case)	4x1 gal/case but SAP counts gals	L	0.7855	6.55107	1	6.55107	1	1	1	1		
5527433	Tisab II with CDTA	1 Gal bottle	L	1.07	8.9238	1	8.9238	1	0.1	1	0.1		
4467305		5 Gal Pail	L	0.9	7.506	5	35.5		0.649	1	0		
5455100		16 oz can	L	0.93	7.7562	0.129	1		0.85	1	0		
	3M Scotch-Grip HP Contact Adhesive 1357	1 Qt Can O	L	0.84	7.0056	0.25	1.7514	1	0.74	1	0.74		Added 1/16/02
5522458	Wax Thin Skyliquid KN-25449 2ltr/btl	2 L Pl Btl 132 - 2L BOT	L	0.87	7.2558	0.528346	3.833571	1	0.75	1	0.75		Added 1/16/04
10167	Microstrip 2001	4 gals/cs 100 GAL	L	1.1	9.174	4	36.696	1	1	1	1		
10173	Skyliquid SB35464	2 L Pl Btl O	L	0.94	7.8396	0.528346	4.142019	1	0.35	1	0.35		
10201	Gear Compound EP ISO 460	5 Gal Pail 5 GAL	L	0.906	7.55604	5	37.7802	1	0.01	1	0.01		
* some values in the table are given by the manufacturer, others are calculated by unit conversion.													
Values in this table may be updated as appropriate.													

SCOEPA00022649

M#	Product Name goes through scrubber in Feb 2	Stock	Mat Gp	Used	UOM	Jan-04	Feb-04	Mar-04	Apr-04	May-04	Jun-04	Jul-04	Aug-04	Sep-04	Oct-04	Nov-04	Dec-04
~~5409872~~	~~ACETIC ACID 85% non-glacial 460#/DRUM~~	0	992210	169	DR	20	13	13	14	13	14	15	13	13	14	14	13
5406902	PAINT Krylon white enamel glossy	6	220406	19	CAN	0	0	0	0	0	13	0	6	0	0	0	0
5406903	PAINT gray primer 2X982 16 OZ.	11	220406	26	CAN	2	0	3	0	2	6	5	0	0	4	2	2
5406904	PAINT SUPERCOAT 316L SS AEROSOL CAN	6	220406	12	CAN	3	0	2	0	0	4	0	0	0	3	0	0
5406905	VARNISH red insulating	2	220406	0	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5406906	PAINT John Deere Green	9	220406	0	PC	0	0	0	0	0	0	0	0	0	0	0	0
5406907	PAINT Equipment Orange	4	220406	2	PC	0	0	0	0	0	0	0	0	0	0	2	0
5406908	PAINT Ford red	3	220406	2	PC	0	0	1	0	1	0	0	0	0	0	0	0
5406909	PAINT high heat black	9	220406	5	PC	2	0	0	0	0	2	1	0	0	0	0	0
5406910	PAINT Chrysler blue	6	220406	2	PC	0	0	0	0	0	0	0	0	0	0	0	2
5406912	PAINT glossy black spray can #84000	1	220406	9	CAN	1	0	0	0	2	0	2	0	0	4	0	0
5407102	SEALANT silicon clear 3 oz tube	12	203801	4	PC	0	0	0	1	2	0	0	0	0	1	0	0
5407103	SEALANT silicone white 10.3 OZ tube	6	203801	7	PC	0	0	2	0	1	2	0	0	0	2	0	0
5407104	SEALANT rubber silicone RTV GE#W102	4	203801	1	PC	0	0	0	1	0	0	0	0	0	0	0	0
5407105	PASTE SILICON P12 WARMELEITPASTE	36	241410	2	PC	0	1	0	0	0	0	0	1	0	0	0	0
5407106	SILICONE RTV high temp red mak-a-gasket	3	203801	4	CAN	0	0	0	0	0	0	0	0	0	2	2	0
5407107	SILICONE RTV HIGH TEMP BLUE MAK-A-GASKET	4	203801	11	CAN	0	0	0	0	2	2	0	3	0	2	2	0
5407108	SILICONE RTV HIGH TEMP CLEAR	4	203801	10	CAN	1	1	0	0	2	0	4	0	1	1	0	0
5407328	CLEANER instant contact #CRC-03070	10	992210	9	CAN	2	0	2	0	0	0	0	0	0	2	3	0
5407330	CLEANER DUST CHASER SPRAY VWR# 21899-094	12	992210	125	CAN	3	12	20	3	20	10	9	10	7	17	7	7
5407331	DEGREASER gel engine	5	992210	2	CAN	0	0	2	0	0	0	0	0	0	0	0	0
5407332	CLEANER electric motor KAR #65390-2	6	992210	2	CAN	0	0	0	0	2	0	0	0	0	0	0	0
5407333	DRESSING BELT #65380	0	992210	0	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407334	STRIPPER/REMOVER PAINT, CARBON & GASKETS	7	992210	6	CAN	0	0	0	0	6	0	0	0	0	0	0	0
5407376	ISOPROPYL ALCOHOL (IPA) 99%	0	992210	65	DR	5	7	4	6	5	6	3	5	7	6	6	5
5407408	LUBRICANT spray Molykote 321R	0	230601	0	PC	0	0	0	0	0	0	0	0	0	0	0	0
5407431	LUBRICANT CRC 3-36 16oz can	24	230601	30	PC	0	0	0	0	12	0	0	2	12	0	4	0
5407432	LUBRICANT Parker-O-Lube #884-4	0	230601	0	PC	0	0	0	0	0	0	0	0	0	0	0	0
5407433	LUBRICANT CRC 3-36 (1 gallon)	2	230601	4	GAL	1	0	0	0	0	0	1	0	0	0	0	2
5407434	GREASE ALVANIA EP 2 LITHIUM BASE	10	230601	41	PC	12	8	0	2	4	0	0	5	6	0	4	0
5407435	LUBE teflon #79417	6	230601	4	CAN	0	0	0	0	1	0	0	0	0	3	0	0
5407436	LUBRICANT teflon dry #79418	6	230601	0	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407437	LUBRICANT MOLY HIGH TEMP	4	230601	0	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407438	LUBE OPEN CHAIN & SPROCKET #65389	2	230601	0	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407470	CLEANER zero residue instant tech spray	12	300203	0	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407947	LUBRICANT SILICON	5	230601	0	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407948	GREASE MULTI PURPOSE WHITE	5	230601	0	PC	0	0	0	0	0	0	0	0	0	0	0	0
5407950	PAINT OSHA orange spray can	1	220406	0	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407953	VINNAPAS C305 (solution) 1 liter	5	321610	1	BTL	0	0	0	0	0	0	0	0	1	0	0	0
5407955	EPOXY VALTRON AD1230 4-1 GAL/CS PART A	0	241410	1	CS	0	0	0	1	0	0	0	0	0	0	0	0
5407956	HARDNER AD1211-B RED PIGMENT	3	241410	1	CS	0	0	0	1	0	0	0	0	0	0	0	0
5407966	ADHESIVE 10ML blue thred	0	241410	2	PC	0	1	0	0	0	0	0	0	0	0	1	0
5407967	ADHESIVE all purpose & trim #77160	8	241410	0	CAN	0	1	0	0	0	0	0	0	-1	0	0	0
5410534	OIL AEROKROIL LOOSENS FROZEN METAL PARTS	14	230601	38	PC	0	0	2	6	4	7	0	9	4	0	6	0
5410872	PAINT spray yellow	7	220406	12	CAN	0	0	0	0	2	6	2	2	0	0	0	0
5413542	WAX SKYLIQUID CLEAR HF4011 2 LITER	0	260206	3624	BTL	276	210	306	654	72	330	336	348	306	192	372	222
5414028	LUBRICANT CRC 3-36 (5 gallon)	4	230601	0	PC	0	0	0	0	0	0	0	0	0	0	0	0
5516514	BOTTLE IPA high purity (4x1-gal cs)	0	992210	205	PC	26	14	22	18	11	21	17	20	12	16	18	10
5522458	WAX Thin Skyliquid KN-25449 2ltr/btl	0	260206	132	BTL	24	24	0	156	-78	0	0	0	0	0	0	6
5527433	TISAB II WITH CDTA	2	992210	32	GAL	3	1	3	3	3	3	2	5	2	2	2	3
Parts washing solvent					gal	45		75			45			75		75	

2004

SAP Material Number		Container Size	Form	Density/ Specific Gravity	Lb/gal	Gal/each	Lb/each	Fraction of product used	VOC Fraction	Evap Fraction	Total Evap Factor	MSDS Number	Date added to list or revised
5406902-1	Spray paints		L				0.9393	1	0.85	1	0.85		
5407102	Sealant silicon clear 3 oz tube		L				0.1875	1	0.025	1	0.025		
5407103	Sealant Silicone White 10.3 OZ tube	10.3oz Tub	Paste	1.04	8.6736		0.64375	1	0.025	1	0.025	2148	
5407104	Sealant Rubber Silicone RTV GE #W102 cart	10.3oz Car	Solid	1.06	8.8404		0.64375	1	0.04	1	0.04	2575	
5407105	Paste silicon P12 Warmeleitpaste		L				0.3308	1	0.1	1	0.1		
5407106	Silicon RTV high temp red mak-a-gasket	1 can	L				0.4983	1	1	1	1		
5407107	Silicone RTV High Temp Blue Mak-A-Gasket	8 oz Sp Can	L	1.04	8.6736	0.0625	0.5421	1	0.08	1	0.08	2337	
5407108	Silicone RTV High Temp Clear MAK-A-Gasket	8 oz Sp Can	L	1.04	8.6736	0.0625	0.5421	1	0.08	1	0.08	2337	
5407328	Cleaner Instant Contact #CRC-02016	15oz Sp Can	L	0.8754	7.30084	0.117188	0.855567	1	0.96	1	0.96	2093	
5407330	Cleaner dust chaser spray VWR# 21899-094		L				0.62622	1	1	1	1		
5407331	Degreaser gel engine	15oz Sp Can	L	0.8	6.672	0.117188	0.781875	1	0.7	1	0.7	2660	
5407332	Cleaner Electric Motor KAR #65390-2	16oz Sp Can	L	1.5	12.51	0.125	1.56375	1	0.243	1	0.243	2169	
5407334	Stripper / Remover For Paint, Carbon &	16oz Sp Can	L	0.9	7.506	0.125	0.93825	1	0.68	1	0.68	2252	
	Parts Washing Solvent	1 Gal	L	0.79	6.6	1	6.6	1	1	0.05	0.05	2582	Added 2/8/99
5407376	Isopropyl Alcohol (IPA) 99%	55 Gal Dm	L	0.7855	6.55107	55	362	1	1	1	1	2580	
5407408	Lubricant Spray Molykote 321R Dow-Corning	11oz Sp Can	L	1	8.34	0.085938	0.716719	1	0.57	1	0.57	2419	
5407431	Lubricant CRC 3-36 #03005	16oz Sp Can	L	0.8167	6.81128	0.125	0.85141	1	0.7	0.1	0.07	1011	
5407432	LUBRICANT Parker-O-Lube #884-4		L				0.25	1	1	1	1		
5407433	Lubricant CRC 3-36 (Gallon Can)	1 Gal Pl Btl	L	0.8167	6.81128	1	6.811278	1	0.7	0.1	0.07	1010	
5407434	GREASE ALVANIA EP 2 LITHIUM BASE		L				0.88	1	0.8	1	0.8		
5407435	Lube Teflon #79417	20oz Sp Can	L	0.6	5.004	0.15625	0.781875	1	0.82	1	0.82	2344	
5407436	Lubricant Teflon Dry #79418	16oz Sp Can	L	0.6	5.004	0.125	0.6255	1	1	1	1	2154	
5407439	Cement Neoprene Turntable Covering Carbo	16oz Btl	L	0.81	6.7554	0.125	0.844425	1	0.8	1	0.8	2427	
5407466	Skyliquid Wax for Enya, HF-3511	2 L Pl Btl	L	0.889	7.41426	0.528346	3.917293	0.95	0.65	0.77	0.47548	2631	
5407470	Cleaner Zero Residue Instant Tech Spray	16oz Sp Can	L	1.004	8.37336	0.125	1.04667	1	0.0541	1	0.0541	2803	
5407938	Caviclean #2 Cleaning Solution Turco	55 Gal Dm	L	1.05	8.757	55	481.635	1	0.12	1	0.12	2740	
5407946	Anti-sieze High Temp Industrial, 1 lb	1 lb bottle	L								0		
5407947	Lubricant Silicon	20oz Sp Can	L	0.76	6.3384	0.15625	0.990375	1	0.9	1	0.9	2340	
5407948	Grease Multi Purpose White	20oz Sp Can	L	0.9	7.506	0.15625	1.172813	1	0.24	1	0.24	2332	
5407950	PAINT OSHA orange spray can		L				0.882	1	0.7	1	0.7		
5407953	Vinnapas C305	1 liter bottle	L				0.823575	1	0.63	1	0.63		
5407955	Epoxy Valtron AD1230 4-1 GAL/CS Part A	4-1 Gal Cans	S	1.2	10.008	4	40.032	1	0.4	1	0.4	2750	
5407956	Hardner AD1211-B Red Pigment	16oz Can	L	1.1	9.174	0.125	1.14675	1	0.4	1	0.4	2749	
5407957	Epoxy STC Fast Cure Grey	10 oz Can	L	1.54	12.8436	0.078125	1.003406	1	0.07385	1	0.07385	2615	
5407963	Mold-Release Wiz F-57NC 1 Gallon	1 Gal Can	L	0.82	6.8388	1	6.8388	1	0.925	1	0.925	2414	
5407966	ADHESIVE 10ML blue thred		L				0.02205		100		0		
5407967	Adhesive Tixo K-10 10 Gm/Each	20oz Sp Can	L	1.05	8.757	0.15625	1.368281	1	0.88	1	0.88	2722	
5410534	Aerokroil loosens frozen metal parts		L				0.625	1	0.6	1	0.6		
5410872	PAINT spray yellow		L				0.9393	1	0.65	1	0.65		
5413542	Skyliquid Wax for Enya, HF-4011	2 L Pl Btl	L	0.902	7.52268	0.528346	3.974576	0.95	0.6	0.77	0.4389	2819	
5415107		1 Gal bottle	L	0.79	6.5886	4	26.3544	1	1	1	1		
5516514	Bottle IPA high purity (4-1 gal/case)	4x1 gal/case but SAP counts gals	L	0.7855	6.55107	1	6.55107	1	1	1	1		
5527433	Tisab II with CDTA	1 Gal bottle	L	1.07	8.9238	1	8.9238	1	0.1	1	0.1		
4467305		5 Gal Pail	L	0.9	7.506	5	35.5		0.649	1	0		
5455100		16 oz can	L	0.93	7.7562	0.129	1		0.85	1	0		
	3M Scotch-Grip HP Contact Adhesive 1357	1 Qt Can	L	0.84	7.0056	0.25	1.7514	1	0.74	1	0.74		Added 1/16/02
5522458	Wax Thin Skyliquid KN-25449 2ltr/btl	2 L Pl Btl	L	0.87	7.2558	0.528346	3.833571	1	0.75	1	0.75		Added 1/16/04
10161	Microstrip 2001	4 gals/cs	L	1.1	9.174	4	36.696	1	1	1	1		
10173	Skyliquid SB35464	2 L Pl Btl	L	0.94	7.8396	0.528346	4.142019	1	0.35	1	0.35		
10201	Gear Compound EP ISO 460	5 Gal Pail	L	0.906	7.55604	5	37.7802	1	0.01	1	0.01		

* some values in the table are given by the manufacturer, others are calculated by unit conversion.
Values in this table may be updated as appropriate.

2077 lbs. used

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Comments
Lb/each and VOC Fraction inherited with spreadsheet
MSDS in 1997 TRI Notebook
Evap Fraction left at 1 because amount shipped as waste accounted for later
Evap Fraction left at 1 because amount discharged to POTW in waste water accounted for later; Lb/Dm from VW&R Customer Sales by Product for 1997
MSDS in 1997 TRI Notebook; Specific Gravity assumed - none listed
Evap Fraction corresponds to "slow 0.01" Evaporation Rate noted on MSDS
Evap Fraction corresponds to "slow 0.01" Evaporation Rate noted on MSDS
Specific Gravity assumed - none on MSDS
MSDS in 1997 TRI Notebook
Assumed same process test data as PN 5413542 because similar formula; MSDS in 1997 TRI Notebook
VOC Fraction inherited with spreadsheet
VOC Fraction inherited with spreadsheet - none on MSDS
VOC Fraction inherited with spreadsheet - none on MSDS
process test used to determine evap fraction; MSDS in 1997 TRI Notebook
VWR MSDS #MZA0446
MSDS not on database
Specific Gravity and VOC fraction from Midori Sugimoto

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Air Emissions Calculations for 2003

Emissions from burning natural gas

Natural gas usage:	
Month	10^6 cf
Jan	18.37
Feb	17.2
Mar	18.01
Apr	16.97
May	15.09
Jun	11.25
Jul	10.34
Aug	10.45
Sep	10.39
Oct	12.37
Nov	16.43
Dec	18.89
Total (10^6 cf/year)	175.76

yellow shading indicates user input information
From montly natural gas bills

	therms	Btu factor
	115610	1.028
	106149	1.027
	106840	1.022

AP-42 emission factors, Vol. I, Table 1.4-1:		
Particulate	3 lb/10^6 cf	(avg of 1 to 5 lb/10^6 cf)
CO	35 lb/10^6 cf	
NOx	140 lb/10^6 cf	
SOx	0.6 lb/10^6 cf	
VOCs	5.8 lb/10^6 cf	(nonmethane+methane)

Assuming all fuel fired equipment behaves according to AP-42,
we can calculate using the annual natural gas usage:

	lb/year	tons/year
Particulate	527	0.26
CO	6151.5	3.08
NOx	24606	12.30
SOx	105	0.05
VOCs	1019	0.51

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Emergency generator information from Mike Iannantuano

Emissions from burning diesel fuel in emergency generators, other internal combustion engines

AP-42 emission factors, Vol. I, Table 3.4-1 (as referenced on Page 3 of ACDP Application Review Report Attachment):

	g/hphr
Particulate	0.24
CO	2.4
NOx	11
SOx	1.1
VOCs	0.33

Values used in calculating emissions:

7	test usage, in hr
	shutdown usage, in hr
400	kW rated power (Generator #1)
536.4	hp, converted using 1.341 hp = 1 kW
0.25	typical load factor (power used/power rating)

Note: Hours of operation are from the generator log sheets.

13.3	test usage, in hr
	shutdown usage, in hr
1000	kW rated power (Generator #2 and Generator #3)
1341	hp, converted using 1.341 hp = 1 kW
0.5	typical load factor (power used/power rating)

The equation given by AP-42 is: hr*hp*load factor*emission factor

This yeilds the following emission estimates:

	lb/year	tons/year
Particula	5	0.00
CO	52	0.03
NOx	239	0.12
SOx	24	0.01
VOCs	7	0.00

Notes: Load factors based on conservative estimates of shutdown loads and preventative maintenance test loads.

Calculation of fuel used:

1000 KW generators burn fuel at 38.6 gph at 50% load 513 gallons

1000 KW generators burn fuel at 70.7 gph at 100% load

$$\frac{38.6}{70.7} = 0.55$$

assume 25% load burn rate is 55% of 50% load burn rate: 38.6 x 0.55 = 21.2 gallons per hour

assume 400 KW generator burns fuel at 40% of 1000 KW rate: 8.5 gallons per hour
59.4 gallons

Other calculations not used for air report:
Calculation of gallons of L/S burned by onsite generators (excluding rental generators):

lbs of SOx (assume SO2) | 24 | x 32.1 MW sulfur / 64.1 MW SO2 = 12.0 lbs of sulfur

L/S diesel contains <0.05% sulfur: 12.0 / 0.0005 = 23939 lbs diesel c 3338 gallons diesel

SOx emissions may be better estimated using purchased fuel information and sulfur balance.
Calculating for the fuel purchased in 2001 (L/S Diesel):
Given: gal L/S Diesel delivered;
This fuel contains: maximum c 0.05 WT% sulfur;

0.86	sp.gr.		
8.34	lbs/galH2O		
7.17	lbs/gal diesel	#VALUE!	lbs diesel
0.00359	lbs sulfur/gal diesel	#VALUE!	lbs sulfur

Assuming all the sulfur goes to SOx

Assuming SOx is:	0.00% SO	then	64.1 =MW SOx
	100.00% SO2		

then from the diesel fuel the SOx emissions were:

32.1 MW sulfur, lbs/lbmol

gives	#VALUE!	lbmol sulfur
which is	#VALUE!	lbmol SOx
and equals	#VALUE!	lbs SOx emitted by the fuel
or	#VALUE!	tons SOx

Units of Item Purchased by Month		1	2	3	4	5	6	7	8	9	10	11	12	
Part No. SAP	Material	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total consumption
*	Spraypaint *	5	4	17	2	12	9	3	1	9	5	14	0	81
5407102	Sealant silicon clear 3 oz tube	0	0	1	0	2	0	0	0	0	0	1	0	4
5407103	Sealant Silicone White 10.3 OZ tube	3	0	0	0	2	0	0	2	1	0	0	0	8
5407104	Sealant Rubber Silicone RTV GE #W102 cart	0	0	0	0	0	0	0	0	1	0	0	0	1
5407105	Paste silicon P12 Warmeleitpaste	0	0	1	2	0	0	0	0	0	0	0	1	4
5407106	Silicon RTV high temp red mak-a-gasket	0	2	0	0	1	0	0	1	2	0	0	0	6
5407107	Silicone RTV High Temp Blue Mak-A-Gasket	0	2	1	1	2	2	0	0	2	3	0	0	13
5407108	Silicone RTV High Temp Clear MAK-A-Gasket	1	4	5	2	3	2	0	2	0	0	0	1	20
5407328	Cleaner Instant Contact #CRC-02016	0	0	0	0	4	0	0	0	0	0	2	0	6
5407330	Cleaner dust chaser spray VWR# 21899-094	8	15	12	3	9	5	5	13	5	2	14	10	101
5407331	Degreaser gel engine	0	0	0	0	0	0	0	0	0	0	0	0	0
5407332	Cleaner Electric Motor KAR #65390-2	0	0	0	0	0	0	0	0	0	0	2	0	2
5407334	Stripper / Remover For Paint, Carbon &	0	2	4	0	0	2	0	2	0	0	0	0	10
	Parts Washing Solvent	85	0	56	45	40	45	40	0	56	0	0	0	367
5407376	Isopropyl Alcohol (IPA) 99%	4	8	7	5	5	4	6	5	5	6	4	5	64
5407408	Lubricant Spray Molykote 321R Dow-Corning	0	0	0	0	0	0	0	0	0	0	0	0	0
5407431	Lubricant CRC 3-36 #03005	0	12	0	15	4	0	14	0	12	0	2	12	71
5407432	LUBRICANT Parker-O-Lube #884-4	0	1	0	0	0	1	0	2	0	1	0	1	6
5407433	Lubricant CRC 3-36 (Gallon Can)	0	0	1	1	0	0	0	0	0	0	0	0	2
5407434	GREASE ALVANIA EP 2 LITHIUM BASE	0	6	1	0	17	2	0	3	1	1	6	12	49
5407435	Lube Teflon #79417	0	0	0	0	0	0	0	0	0	2	0	0	2
5407436	Lubricant Teflon Dry #79418	0	0	1	0	0	0	0	0	0	0	0	0	1
5407439	Cement Neoprene Turntable Covering Carbo	0	0	0	0	0	0	0	0	0	0	0	0	0
5407466	Skyliquid Wax for Enya, HF-3511	0	0	0	0	0	0	0	0	0	0	0	0	0
5407470	Cleaner Zero Residue Instant Tech Spray	0	0	0	0	0	0	0	0	0	0	0	0	0
5407938	Caviclean #2 Cleaning Solution Turco	0	0	0	0	0	0	0	0	0	0	0	0	0
5407946	Anti-sieze High Temp Industrial, 1 lb	0	0	0	0	0	0	0	0	0	0	0	0	0
5407947	Lubricant Silicon	0	0	0	0	0	0	0	0	0	0	0	0	0
5407948	Grease Multi Purpose White	0	0	0	0	0	0	0	0	0	0	1	1	2
5407950	PAINT OSHA orange spray can	2	0	0	0	0	0	0	0	0	0	0	0	2
5407953	Vinnapas C305	0	0	0	2	0	0	0	0	0	0	0	0	2
5407955	Epoxy Valtron AD1230 4-1 GAL/CS Part A	0	1	0	0	1	0	0	0	0	0	0	0	2
5407956	Hardner AD1211-B Red Pigment	0	0	0	1	0	0	0	0	0	0	0	0	1
5407957	Epoxy STC Fast Cure Grey	0	0	0	0	0	0	0	0	0	0	0	0	0
5407963	Mold-Release Wiz F-57NC 1 Gallon	0	0	0	0	0	0	0	0	0	0	0	0	0
5407966	ADHESIVE 10ML blue thred	1	2	2	0	0	0	0	0	0	0	2	0	7
5407967	Adhesive Tixo K-10 10 Gm/Each	0	0	0	0	0	1	0	0	0	1	0	0	2
5410534	Aerokroil loosens frozen metal parts	3	2	1	2	0	2	2	0	5	0	2	0	19
5410872	PAINT spray yellow	0	0	0	2	2	0	0	3	0	0	0	0	7
5413542	Skyliquid Wax for Enya, HF-4011	240	120	102	252	306	204	252	216	174	276	192	246	2580
	3M Scotch-Grip HP Contact Adhesive 1357	0	0	0	0	0	0	0	0	0	0	0	0	0
5516514	Bottle IPA high purity (4-1 gal/case)	2	14	2	16	15	16	10	18	15	14	21	11	154
5522458	Wax Thin Skyliquid KN-25449 2ltr/btl	0	0	0	0	24	0	0	0	0	36	24	24	108
5527433	Tisab II with CDTA	3	2	3	2	5	2	2	3	3	2	3	2	32
10161	Microstrip 2001	1	1	1	1	1	1	1	1	1	1	1	1	12
10173	Skyliquid SB35464	1	0	1	0	1	0	1	0	1	0	1	0	6
10201	Gear Compound EP ISO 460	0.4	0	0	0	0	0	0	0	0	0	0	0	0.4
* this category contains part numbers 5406902-12														
Part No. SAP	Material	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total consumption
5406902	Paint Krylon White Enamel Glossy #1501	3	0	5	2	4	1	0	1	2	4	3	0	25
5406903	Paint Gray Primer 2X982 16oz.	2	3	2	0	6	0	0	0	6	0	5	0	24
5406904	Paint Supercoat 316L SS Aerosol Can	0	0	3	0	0	0	0	0	0	0	2	0	5
5406905	Varnish red insulating	0	0	0	0	0	0	0	0	0	0	0	0	0
5406906	Paint John Deere Green	0	0	2	0	0	2	0	0	0	0	0	0	4
5406907	Paint Chevrolet Orange	0	0	0	0	0	2	0	0	0	0	0	0	2
5406908	Paint Ford Red	0	0	0	0	0	1	0	0	0	0	2	0	3
5406909	Paint High Heat Black	0	0	5	0	0	2	3	0	0	0	0	0	10
5406910	Paint Chrysler Blue/ Napa	0	0	0	0	2	0	0	0	1	0	0	0	3
5406911	Paint Tan Industrial Enamel	0	0	0	0	0	0	0	0	0	0	0	0	0
5406912	Paint Glossy Black Spray Can #84000	0	1	0	0	0	1	0	0	0	1	2	0	5

SAP Material Number		Container Size	Form	Density/ Specific Gravity	Lb/gal	Gal/each	Lb/each	Fraction of product used	VOC Fraction	Evap Fraction	MSDS Number	Date added to list or revised
5406902-1	Spray paints		L				0.9393	1	0.85	1		
5407102	Sealant silicon clear 3 oz tube		L				0.1875	1	0.025	1		
5407103	Sealant Silicone White 10.3 OZ tube	10.3oz Tub	Paste	1.04	8.6736		0.64375	1	0.025	1	2148	
5407104	Sealant Rubber Silicone RTV GE #W102 cart	10.3oz Car	Solid	1.06	8.8404		0.64375	1	0.04	1	2575	
5407105	Paste silicon P12 Warmeleitpaste		L				0.3308	1	0.1	1		
5407106	Silicon RTV high temp red mak-a-gasket	1 can	L				0.4983	1	1	1		
5407107	Silicone RTV High Temp Blue Mak-A-Gasket	8 oz Sp Can	L	1.04	8.6736	0.0625	0.5421	1	0.08	1	2337	
5407108	Silicone RTV High Temp Clear MAK-A-Gasket	8 oz Sp Can	L	1.04	8.6736	0.0625	0.5421	1	0.08	1	2337	
5407328	Cleaner Instant Contact #CRC-02016	15oz Sp Can	L	0.8754	7.30084	0.117188	0.855567	1	0.96	1	2093	
5407330	Cleaner dust chaser spray VWR# 21899-094		L				0.62622	1	1	1		
5407331	Degreaser gel engine	15oz Sp Can	L	0.8	6.672	0.117188	0.781875	1	0.7	1	2660	
5407332	Cleaner Electric Motor KAR #65390-2	16oz Sp Can	L	1.5	12.51	0.125	1.56375	1	0.243	1	2169	
5407334	Stripper / Remover For Paint, Carbon &	16oz Sp Can	L	0.9	7.506	0.125	0.93825	1	0.68	1	2252	
	Parts Washing Solvent	1 Gal	L	0.79	6.6	1	6.6	1	1	1	2582	Added 2/8/99
5407376	Isopropyl Alcohol (IPA) 99%	55 Gal Dm	L	0.7855	6.55107	55	362	1	1	1	2580	
5407408	Lubricant Spray Molykote 321R Dow-Corning	11oz Sp Can	L	1	8.34	0.085938	0.716719	1	0.57	1	2419	
5407431	Lubricant CRC 3-36 #03005	16oz Sp Can	L	0.8167	6.81128	0.125	0.85141	1	0.7	0.1	1011	
5407432	LUBRICANT Parker-O-Lube #884-4		L				0.25	1	1	1		
5407433	Lubricant CRC 3-36 (Gallon Can)	1 Gal Pl Btl	L	0.8167	6.81128	1	6.811278	1	0.7	0.1	1010	
5407434	GREASE ALVANIA EP 2 LITHIUM BASE		L				0.88	1	0.8	1		
5407435	Lube Teflon #79417	20oz Sp Can	L	0.6	5.004	0.15625	0.781875	1	0.82	1	2344	
5407436	Lubricant Teflon Dry #79418	16oz Sp Can	L	0.6	5.004	0.125	0.6255	1	1	1	2154	
5407439	Cement Neoprene Turntable Covering Carbo	16oz Btl	L	0.81	6.7554	0.125	0.844425	1	0.8	1	2427	
5407466	Skyliquid Wax for Enya, HF-3511	2 L Pl Btl	L	0.889	7.41426	0.528346	3.917293	0.95	0.65	0.77	2631	
5407470	Cleaner Zero Residue Instant Tech Spray	16oz Sp Can	L	1.004	8.37336	0.125	1.04667	1	0.0541	1	2803	
5407938	Caviclean #2 Cleaning Solution Turco	55 Gal Dm	L	1.05	8.757	55	481.635	1	0.12	1	2740	
5407946	Anti-sieze High Temp Industrial, 1 lb	1 lb bottle	L									
5407947	Lubricant Silicon	20oz Sp Can	L	0.76	6.3384	0.15625	0.990375	1	0.9	1	2340	
5407948	Grease Multi Purpose White	20oz Sp Can	L	0.9	7.506	0.15625	1.172813	1	0.24	1	2332	
5407950	PAINT OSHA orange spray can		L				0.882	1	0.7	1		
5407953	Vinnapas C305	1 liter bottle	L				0.823575	1	0.63	1		
5407955	Epoxy Valtron AD1230 4-1 GAL/CS Part A	4-1 Gal Cans	S	1.2	10.008	4	40.032	1	0.4	1	2750	
5407956	Hardner AD1211-B Red Pigment	16oz Can	L	1.1	9.174	0.125	1.14675	1	0.4	1	2749	
5407957	Epoxy STC Fast Cure Grey	10 oz Can	L	1.54	12.8436	0.078125	1.003406	1	0.07385	1	2615	
5407963	Mold-Release Wiz F-57NC 1 Gallon	1 Gal Can	L	0.82	6.8388	1	6.8388	1	0.925	1	2414	
5407966	ADHESIVE 10ML blue thred		L				0.02205		100			
5407967	Adhesive Tixo K-10 10 Gm/Each	20oz Sp Can	L	1.05	8.757	0.15625	1.368281	1	0.88	1	2722	
5410534	Aerokroil loosens frozen metal parts		L				0.625	1	0.6	1		
5410872	PAINT spray yellow		L				0.9393	1	0.65	1		
5413542	Skyliquid Wax for Enya, HF-4011	2 L Pl Btl	L	0.902	7.52268	0.528346	3.974576	0.95	0.6	0.77	2819	
5415107		1 Gal bottle	L	0.79	6.5886	4	26.3544	1	1	1		
5516514	Bottle IPA high purity (4-1 gal/case)	4x1 gal/case but SAP counts gals	L	0.7855	6.55107	1	6.55107	1	1	1		
5527433	Tisab II with CDTA	1 Gal bottle	L	1.07	8.9238	1	8.9238	1	0.1	1		
4467305		5 Gal Pail	L	0.9	7.506	5	35.5		0.649	1		
5455100		16 oz can	L	0.93	7.7562	0.129	1		0.85	1		
	3M Scotch-Grip HP Contact Adhesive 1357	1 Qt Can	L	0.84	7.0056	0.25	1.7514	1	0.74	1		Added 1/16/02
5522458	Wax Thin Skyliquid KN-25449 2ltr/btl	2 L Pl Btl	L	0.87	7.2558	0.528346	3.833571	1	0.75	1		Added 1/16/04
10161	Microstrip 2001	4 gals/cs	L	1.1	9.174	4	36.696	1	1	1		
10173	Skyliquid SB35464	2 L Pl Btl	L	0.94	7.8396	0.528346	4.142019	1	0.35	1		
10201	Gear Compound EP ISO 460	5 Gal Pail	L	0.906	7.55604	5	37.7802	1	0.01	1		

* some values in the table are given by the manufacturer, others are calculated by unit conversion.
Values in this table may be updated as appropriate.

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Comments
Lb/each and VOC Fraction inherited with spreadsheet
MSDS in 1997 TRI Notebook
Evap Fraction left at 1 because amount shipped as waste accounted for later
Evap Fraction left at 1 because amount discharged to POTW in waste water accounted for later; Lb/Dm from VW&R Customer Sales by Product for 1997
MSDS in 1997 TRI Notebook; Specific Gravity assumed - none listed
Evap Fraction corresponds to "slow 0.01" Evaporation Rate noted on MSDS
Evap Fraction corresponds to "slow 0.01" Evaporation Rate noted on MSDS
Specific Gravity assumed - none on MSDS
MSDS in 1997 TRI Notebook
Assumed same process test data as PN 5413542 because similar formula; MSDS in 1997 TRI Notebook
VOC Fraction inherited with spreadsheet
VOC Fraction inherited with spreadsheet - none on MSDS
VOC Fraction inherited with spreadsheet - none on MSDS
process test used to determine evap fraction; MSDS in 1997 TRI Notebook
VWR MSDS #MZA0446
MSDS not on database
Specific Gravity and VOC fraction from Midori Sugimoto

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Pounds VOCs Purchased (2003)

Part no SAP	Material	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Yearly total	
all	Spraypaints	3.99	3.19	13.57	1.60	9.58	7.19	2.40	0.80	7.19	3.99	11.18	0.00	64.67	
5407102	Sealant silicon clear 3 oz tube	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	
5407103	Sealant Silicone White 10.3 OZ tube	0.05	0.00	0.00	0.00	0.03	0.00	0.00	0.03	0.02	0.00	0.00	0.00	0.13	
5407104	Sealant Rubber Silicone RTV GE #W102 cart	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.03	
5407105	Paste silicon P12 Warmeleitpaste	0.00	0.00	0.03	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.13	
5407106	Silicon RTV high temp red mak-a-gasket	0.00	1.00	0.00	0.00	0.50	0.00	0.00	0.50	1.00	0.00	0.00	0.00	2.99	
5407107	Silicone RTV High Temp Blue Mak-A-Gasket	0.00	0.09	0.04	0.04	0.09	0.09	0.00	0.00	0.09	0.13	0.00	0.00	0.56	
5407109	Silicone RTV High Temp Clear MAK-A-Gasket	0.04	0.17	0.22	0.09	0.13	0.09	0.00	0.09	0.00	0.00	0.00	0.04	0.87	
5407328	Cleaner Instant Contact #CRC-02016	0.00	0.00	0.00	0.00	3.29	0.00	0.00	0.00	0.00	0.00	1.64	0.00	4.93	
5407330	Cleaner dust chaser spray VWR# 21899-094	5.01	9.39	7.51	1.88	5.64	3.13	3.13	8.14	3.13	1.25	8.77	6.26	63.25	
5407331	Degreaser gel engine	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5407332	Cleaner Electric Motor KAR #65390-2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.76	0.00	0.76	
5407334	Stripper / Remover For Paint, Carbon &	0.00	1.28	2.55	0.00	0.00	1.28	0.00	1.28	0.00	0.00	0.00	0.00	6.38	
	Parts Washing Solvent	560.03	0.00	368.96	296.49	263.54	296.49	263.54	0.00	368.96	0.00	0.00	0.00	2418.02	
5407376	Isopropyl Alcohol (IPA) 99%	1448.00	2896.00	2534.00	1810.00	1810.00	1448.00	2172.00	1810.00	1810.00	2172.00	1448.00	1810.00	23168.00	
5407406	Lubricant Spray Molykote 321R Dow-Corning	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5407431	Lubricant CRC 3-36 #03005	0.00	7.15	0.00	8.94	2.38	0.00	8.34	0.00	7.15	0.00	1.19	7.15	42.32	
5407432	LUBRICANT Parker-O-Lube #884-4	0.00	0.25	0.00	0.00	0.00	0.25	0.00	0.50	0.00	0.25	0.00	0.25	1.50	
5407433	Lubricant CRC 3-36 (Gallon Can)	0.00	0.00	4.77	4.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.54	
5407434	GREASE ALVANIA EP 2 LITHIUM BASE	0.00	4.22	0.70	0.00	11.97	1.41	0.00	2.11	0.70	0.70	4.22	8.45	34.50	
5407435	Lube Teflon #79417	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.28	0.00	0.00	1.28	
5407436	Lubricant Teflon Dry #79418	0.00	0.00	0.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.63	
5407439	Cement Neoprene Turntable Covering Carbo	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5407466	Skyliquid Wax for Enya	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5407470	Cleaner Zero Residue Instant Teck Spray	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5407938	Caviclean #2 Cleaning Solution Turco	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5407946	Anti-sieze High Temp Industrial, 1 lb	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5407947	Lubricant Silicon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5407948	Grease Multi Purpose White	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.28	0.28	0.56	
5407950	PAINT OSHA orange spray can	1.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.23	
5407953	Vinnapas C305	0.00	0.00	0.00	1.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.04	
5407955	Epoxy Valtron AD1230 4-1 GAL/CS Part A	0.00	16.01	0.00	0.00	16.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	32.03	
5407956	Hardner AD1211-B Red Pigment	0.00	0.00	0.00	0.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.46	
5407957	Epoxy STC Fast Cure Grey	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5407963	Mold-Release Wiz F-57NC 1 Gallon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5407966	ADHESIVE 10ML blue thred	2.21	4.41	4.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.41	0.00	15.44	
5407967	Adhesive Tixo K-10 10 Gm/Each	0.00	0.00	0.00	0.00	0.00	1.20	0.00	0.00	0.00	1.20	0.00	0.00	2.41	
5410534	Aerokroil loosens frozen metal parts	1.13	0.75	0.38	0.75	0.00	0.75	0.75	0.00	1.88	0.00	0.75	0.00	7.13	
5410872	PAINT spray yellow	0.00	0.00	0.00	1.22	1.22	0.00	0.00	1.83	0.00	0.00	0.00	0.00	4.27	
5413542	Skyliquid Wax for Enya, HF-4011	572.34	296.17	243.24	600.96	729.73	486.49	600.96	515.11	414.95	658.19	457.87	586.65	6152.64	
	3M Scotch-Grip HP Contact Adhesive 1357	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5516514	Bottle IPA high purity (4-1 gal/case)	13.10	91.71	13.10	104.82	98.27	104.82	65.51	117.92	98.27	91.71	137.57	72.06	1008.86	
5522458	Wax Thin Skyliquid KN-25449 2lb/btl	0.00	0.00	0.00	0.00	69.00	0.00	0.00	0.00	0.00	103.51	69.00	69.00	310.52	
5527433	Tiseb II with CDTA	2.68	1.78	2.68	1.78	4.46	1.78	1.78	2.68	2.68	1.78	2.68	1.78	28.56	
10236*	Dow Corning 795 Silicone Building Sealant Gray													0.00	
10237*	Dow Corning All Guard Silicone Elastomeric Coating													0.00	
10242*	RemovAll 310 (Spray Grade)													0.00	
10243*	Sher-Cryl HPA B66T304 Clear Base													0.00	
10244*	DTM Bonding Primer B66W1 Primer White													0.00	
10245*	Corothane B65C10 Pre-prime Clear													0.00	
10247*	Super Paint A84W507 Super White													0.00	
10251*	DTM Bonding Primer B66A50													0.00	
10252*	Acrylic Primer A24W300 White													0.00	
10253*	ConSeal A5W610													0.00	
10045**	Adhesive System EA 4000 (2 cans)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		***
10053**	Scotch Grip 1300 Rubber and Gasket Adhesive	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		***
10090**	Amerlock 65 Thinner	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		***
10098**	Paint thinner 160	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		***
10100**	True Bond	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		***
10116**	Tri Flow Lubricant (McMaster #1202K431)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		***
10121**	Dry PTFE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		***
10143**	Dyna Might II	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		***
10155**	Mobilith AW-2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		***
10160**	HPR 504	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		***
10166**	PC501 Superflash Neoprene CMT	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		***
10189**	Loctite Cleaner 7471	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		***
10191**	Loctite 648 Retaining Cpd High Strength/Fast S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		***
10193**	Donax TG Transmission Fluid	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		***
10194**	Vulkem 116	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		***
10202**	Supreme Motor Oil SAE 10W-40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		***
10250**	Sikaflex 15LM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		***
10255**	ML Hood 490	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		***
10263**	Dyna-Might	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		***
10278**	Skyliquid K3-30492	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		***
10279**	Coulomat C, Safer Formualtion	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		***
10280**	Aquastar (R) Coulomat A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		***
10161	Microstrip 2001	36.70	36.70	36.70	36.70	36.70	36.70	36.70	36.70	36.70	36.70	36.70	36.70	440.35	
10173	Skyliquid SB35464	1.45	0.00	1.45	0.00	1.45	0.00	1.45	0.00	1.45	0.00	1.45	0.00	8.70	
10201	Gear Compound EP ISO 460	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	
	Total Per Month:	2648.10	3360.29	3234.95	2871.59	3064.00	2389.65	3156.56	2497.67	2754.17	3072.71	2186.48	2598.66		

Total VOCs Purchased (2003): 33,835 lbs or 16.92 tons

Includes both VOC's that do and do not volatilize (ie,
for Skyliquid Wax for Enya, 77% of VOC's
will volatilize, but there are still included in these totals.
The non-volatile portion of the VOC's are not considered as being used.

* From Major Repainting of Fab buildings and Admin building.
Calculations done in Aspect Database. Copies of reports in 2002 Annual Air Report file.

** Calculations from Aspect Database. Copies of reports in 2002 Annual Air Reprot file.

*** Monthly values are calculated from annual total by dividing by 12.

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VOCs evaporated or in wastes

Pounds VOCs Evaporated or In Wastes (2003)

Part no SAP	Material	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Yearly total	
5406902	Spraypaint *	3.99	3.19	13.57	1.60	9.58	7.19	2.40	0.80	7.19	3.99	11.18	0.00	64.67	
5407102	Sealant silicon clear 3 oz tube	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	
5407103	Sealant Silicone White 10.3 OZ tube	0.05	0.00	0.00	0.00	0.03	0.00	0.00	0.03	0.02	0.00	0.00	0.00	0.13	
5407104	Sealant Rubber Silicone RTV GE #W102 cart	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.03	
5407105	Paste silicon P12 Warmeleitpaste	0.00	0.00	0.03	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.13	
5407106	Silicon RTV high temp red mak-a-gasket	0.00	1.00	0.00	0.00	0.50	0.00	0.00	0.50	1.00	0.00	0.00	0.00	2.99	
5407107	Silicone RTV High Temp Blue Mak-A-Gasket	0.00	0.09	0.04	0.04	0.09	0.09	0.00	0.00	0.09	0.13	0.00	0.00	0.56	
5407108	Silicone RTV High Temp Clear MAK-A-Gasket	0.04	0.17	0.22	0.09	0.13	0.09	0.00	0.09	0.00	0.00	0.00	0.04	0.87	
5407328	Cleaner Instant Contact #CRC-02016	0.00	0.00	0.00	0.00	3.29	0.00	0.00	0.00	0.00	0.00	1.64	0.00	4.93	
5407330	Cleaner dust chaser spray VWR# 21899-094	5.01	9.39	7.51	1.88	5.64	3.13	3.13	8.14	3.13	1.25	8.77	6.26	63.25	
5407331	Degreaser gel engine	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5407332	Cleaner Electric Motor KAR #65390-2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.76	0.00	0.76	
5407334	Stripper / Remover For Paint, Carbon &	0.00	1.28	2.55	0.00	0.00	1.28	0.00	1.28	0.00	0.00	0.00	0.00	6.38	
	Parts Washing Solvent	560.03	0.00	368.96	296.49	263.54	296.49	263.54	0.00	368.96	0.00	0.00	0.00	2418.02	
5407376	Isopropyl Alcohol (IPA) 99%	1448.00	2896.00	2534.00	1810.00	1810.00	1448.00	2172.00	1810.00	1810.00	2172.00	1448.00	1810.00	23168.00	
5407408	Lubricant Spray Molykote 321R Dow-Corning	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5407431	Lubricant CRC 3-36 #03005	0.00	0.72	0.00	0.89	0.24	0.00	0.83	0.00	0.72	0.00	0.12	0.72	4.23	
5407432	LUBRICANT Parker-O-Lube #884-4	0.00	0.25	0.00	0.00	0.00	0.25	0.00	0.50	0.00	0.25	0.00	0.25	1.50	
5407433	Lubricant CRC 3-36 (Gallon Can)	0.00	0.00	0.48	0.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.95	
5407434	GREASE ALVANIA EP 2 LITHIUM BASE	0.00	4.22	0.70	0.00	11.97	1.41	0.00	2.11	0.70	0.70	4.22	8.45	34.50	
5407435	Lube Teflon #79417	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.28	0.00	0.00	1.28	
5407436	Lubricant Teflon Dry #79418	0.00	0.00	0.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.63	
5407439	Cement Neoprene Turntable Covering Carbo	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5407466	Skyliquid Wax for Enya, HF-3511	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5407470	Cleaner Zero Residue Instant Teck Spray	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5407938	Caviclean #2 Cleaning Solution Turco	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5407946	Anti-sieze High Temp Industrial, 1 lb	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5407947	Lubricant Silicon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5407948	Grease Multi Purpose White	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.28	0.28	0.56	
5407950	PAINT OSHA orange spray can	1.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.23	
5407953	Vinnapas C305	0.00	0.00	0.00	1.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.04	
5407955	Epoxy Valtron AD1230 4-1 GAL/CS Part A	0.00	16.01	0.00	0.00	16.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	32.03	
5407956	Hardner AD1211-B Red Pigment	0.00	0.00	0.00	0.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.46	
5407957	Epoxy STC Fast Cure Grey	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5407963	Mold-Release Wiz F-57NC 1 Gallon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5407966	ADHESIVE 10ML blue thred	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5407967	Adhesive Tixo K-10 10 Gm/Each	0.00	0.00	0.00	0.00	0.00	1.20	0.00	0.00	0.00	1.20	0.00	0.00	2.41	
5410534	Oil Aerokroil Loosens Frozen Metal Parts	1.13	0.75	0.38	0.75	0.00	0.75	0.75	0.00	1.88	0.00	0.75	0.00	7.13	
5410872	PAINT spray yellow	0.00	0.00	0.00	1.22	1.22	0.00	0.00	1.83	0.00	0.00	0.00	0.00	4.27	
5413542	Skyliquid Wax for Enya, HF-4011	418.67	209.33	177.93	439.60	533.80	355.87	439.60	376.80	303.53	481.47	334.93	429.13	4500.66	
	Contact Adhesive 1357	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5516514	Bottle IPA high purity	13.10	91.71	13.10	104.82	98.27	104.82	65.51	117.92	98.27	91.71	137.57	72.06	1008.86	
5522458	Wax Thin Skyliquid KN-25449 2ltr/btl	0.00	0.00	0.00	0.00	69.00	0.00	0.00	0.00	0.00	103.51	69.00	69.00	310.52	
5527433	Tisab II with CDTA	2.68	1.78	2.68	1.78	4.46	1.78	1.78	2.68	2.68	1.78	2.68	1.78	28.56	
10236*	Dow Corning 795 Silicone Building Sealant Gray													0.00	
10237*	Dow Corning All Guard Silicone Elastomeric Coating													0.00	
10242*	RemovAll 310 (Spray Grade)													0.00	
10243*	Sher-Cryl HPA B66T304 Clear Base													0.00	
10244*	DTM Bonding Primer B66W1 Primer White													0.00	
10245*	Corothane B65C10 Pre-prime Clear													0.00	
10247*	Super Paint A84W507 Super White													0.00	
10251*	DTM Bonding Primer B66A50													0.00	
10252*	Acrylic Primer A24W300 White													0.00	
10253*	ConSeal A5W610													0.00	
10045**	Adhesive System EA 4000 (2 cans)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		***
10053**	Scotch Grip 1300 Rubber and Gasket Adhesive	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		***
10090**	Amerlock 65 Thinner	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		***
10098**	Paint thinner 160	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		***
10100**	True Bond	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		***
10116**	Tri Flow Lubricant (McMasre #1202K431)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		***
10121**	Dry PTFE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		***
10143**	Dyna Might II	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		***
10155**	Mobilith AW-2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		***
10160**	HPR 504	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		***
10161**	Microstrip 2001	36.70	36.70	36.70	36.70	36.70	36.70	36.70	36.70	36.70	36.70	36.70	36.70	440.35	
10166**	PC501 Superflash Neoprene CMT	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		***
10173**	Skyliquid SB35464	1.45	0.00	1.45	0.00	1.45	0.00	1.45	0.00	1.45	0.00	1.45	0.00	8.70	
10189**	Loctite Cleaner 7471	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		***
10191**	Loctite 648 Retaining Cpd High Strength/Fast Set	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		***
10193**	Donax TG Transmission Fluid	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		***
10194**	Vulkem 116	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		***
10201**	Gear Compound EP ISO 460	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	
10202**	Supreme Motor Oil SAE 10W-40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		***
10250**	Sikaflex 15LM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		***
10255**	Mt. Hood 490	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		***
10263**	Dyna-Might	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		***
10276**	Skyliquid K3-30492	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		***
10279**	Coulomat C, Safer Formualtion	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		***
10280**	Aquastar (R) Coulomat A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		***
	estimated VOC's for non-SAP items****	48.55	48.55	48.55	48.55	48.55	48.55	48.55	48.55	48.55	48.55	48.55	48.55	582.61	
	Total Per Month:	2492.23	3272.60	3160.94	2697.89	2865.92	2259.03	2987.70	2359.37	2636.32	2895.98	2058.06	2434.71		

Total VOCs Used (2003): 32,703 lbs or 16.35 tons

VOCs to waste water: 8810 lbs or 4.41 tons

VOCs to waste: 3878 lbs or 1.94 tons

Total VOCs Evaporated (2003): 20,015 lbs or 10.01 tons

* From Major Repainting of Fab buildings and Admin building.
Calculations done in Aspect Database. Copies of reports in 2002 Annual Air Report file.

** Calculations from Aspect Database. Copies of reports in 2002 Annual Air Reprot file.

*** Monthly values are calculated from annual total by dividing by 12.

**** Estimated VOC's from non-SAP items are taken from the Chemical Components Report (CID Database) and spread equally over each month.

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Worksheet for Cleaning Solvent VOC Emissions

Part no SAP	Material	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Yearly total	
5407328	Cleaner Instant Contact #CRC-02016	0.00	0.00	0.00	0.00	3.29	0.00	0.00	0.00	0.00	0.00	1.64	0.00	4.93	
5407331	Degreaser gel engine	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5407332	Cleaner Electric Motor KAR #65390-2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.76	0.00	0.76	
5407334	Stripper / Remover For Paint, Carbon &	0.00	1.28	2.55	0.00	0.00	1.28	0.00	1.28	0.00	0.00	0.00	0.00	6.38	
	Parts Washing Solvent	56.00	0.00	36.90	29.65	26.35	29.65	26.35	0.00	36.90	0.00	0.00	0.00	241.80	
10161	Microstrip 2001	36.70	36.70	36.70	36.70	36.70	36.70	36.70	36.70	36.70	36.70	36.70	36.70	440.35	
5407376	Isopropyl Alcohol (IPA) 99%	1448.00	2896.00	2534.00	1810.00	1810.00	1448.00	2172.00	1810.00	1810.00	2172.00	1448.00	1810.00	23168.00	
5516514	Bottle IPA high purity (4-1 gal/case)	13.10	91.71	13.10	104.82	98.27	104.82	65.51	117.92	98.27	91.71	137.57	72.06	1008.86	
5407470	Cleaner Zero Residue Instant Teck Spray	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5407938	Caviclean #2 Cleaning Solution Turco	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	Total lbs	1553.80	3025.69	2623.25	1981.16	1974.60	1620.44	2300.56	1965.89	1981.86	2300.41	1624.67	1918.76	24871.09	Total lbs
	Total tons	0.78	1.51	1.31	0.99	0.99	0.81	1.15	0.98	0.99	1.15	0.81	0.96	12.44	Total tons
Recovered VOCs	Monthly avg. IPA in OWW (lbs)	734.20	734.20	734.20	734.20	734.20	734.20	734.20	734.20	734.20	734.20	734.20	734.20	8810.35	
	Monthly avg. recovered parts washer solvent (lbs	201.50	201.50	201.50	201.50	201.50	201.50	201.50	201.50	201.50	201.50	201.50	201.50	2418.02	
	Monthly avg. mixed flammables, labpack (lbs)	31.92	31.92	31.92	31.92	31.92	31.92	31.92	31.92	31.92	31.92	31.92	31.92	383.00	
	Monthly avg. partially full aerosols (lbs)	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	120.00	Total recovered VOCs:
	Monthly avg. wax waste (lbs)	99.87	99.87	99.87	99.87	99.87	99.87	99.87	99.87	99.87	99.87	99.87	99.87225	1198.47	12930 total lbs 6.46 total tons
Unrecovered	lbs	486.32	1958.20	1555.76	913.68	907.12	552.95	1233.08	898.41	914.37	1232.92	557.19	851.27	12061.25	
	tons	0.24	0.98	0.78	0.46	0.45	0.28	0.62	0.45	0.46	0.62	0.28	0.43	6.03	Total cleaning solvent VOCs emitted

SCOEPA00022661

OWW IPA			
Month	lbs/day	lbs/month	
Jan	4.8	149	
Feb		673	based on lb/day avg
Mar	55.0	1705	
Apr	4.7	141	
May	5.0	155	
Jun	10.5	315	
Jul	77.9	2415	
Aug	28.8	893	
Sep	5.0	150	
Oct	4.9	152	
Nov		746	based on lb/day avg
Dec	43.9	1317	
*Average:	24.1	8810	total lbs
		4.41	total tons

Source: N:/WWTP/Baseline/Permit + Testing.xls

Mixed Flammables (Labpack)			
		Avg	Avg
Date Shipped	lbs	lb/day	lb/month
13-Jan	40		31.92
20-May	10		
26-Jun	150		
13-Aug	175		
1-Dec	8		
Total lbs:	383		
lbs VOC:	383		

Parts Washer Solvent Waste (100% VOC)		
Date Shipped	gals	lbs
Jan	85	560.0
Mar	56	369.0
Apr	45	296.5
May	40	263.5
Jun	45	296.5
Jul	40	263.5
Sep	56	369.0
Total lbs:		2418.0
lbs VOC:	367	2418.0
estimated actual recovery		2176.2

(Spencer parts washer solvent: naptha)

Wax Waste*			Avg
Date Shipped	lbs		lb/month
6-Feb	380		363.83
2-Apr	548		
20-May	676		
26-Jun	354		
13-Aug	757		
6-Oct	789		
1-Dec	862		
Total lbs:	4366		
lbs VOC:	1198	(Waste Profile Number:	325054)

* Fab 1 Waste Wax has 23.2% VOC content.
Fab 2 Waste Wax has 31.7% VOC content.
Average VOC content is 27.45%.

Partially Full Aerosols	
Date Shipped	lbs
2/6/03	10
5/20/03	10
8/13/03	75
12/1/03	25
Total lbs.	120

Total lbs VOC in waste shipments for 2003:

lbs		tons
3,878	or	1.94

Waste shipment data from
L:\Environmental\Hazardous Waste\2003\Waste 2003.mdb

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M#	Product Name	Stock	Mat Gp	Used	UOM	Jan-03	Feb-03	Mar-03	Apr-03	May-03	Jun-03	Jul-03	Aug-03	Sep-03	Oct-03	Nov-03	Dec-03
5403872	ACETIC ACID 35% non-glacial 450#/DRUM	3	992210	174	DR	16	12	15	14	15	15	12	15	14	15	16	15
5406902	PAINT Krylon white enamel glossy	13	220406	25	CAN	3	0	5	2	4	1	0	1	2	4	3	0
5406903	PAINT gray primer 2X982 16 OZ.	13	220406	24	CAN	2	3	2	0	6	0	0	0	6	0	5	0
5406904	PAINT SUPERCOAT 316L SS AEROSOL CAN	6	220406	5	CAN	0	0	3	0	0	0	0	0	0	0	2	0
5406905	VARNISH red insulating	2	220406	0	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5406906	PAINT John Deere Green	9	220406	4	PC	0	0	2	0	0	2	0	0	0	0	0	0
5406907	PAINT Equipment Orange	2	220406	2	PC	0	0	0	0	0	2	0	0	0	0	0	0
5406908	PAINT Ford red	1	220406	3	PC	0	0	0	0	0	1	0	0	0	0	2	0
5406909	PAINT high heat black	2	220406	10	PC	0	0	5	0	0	2	3	0	0	0	0	0
5406910	PAINT Chrysler blue	2	220406	3	PC	0	0	0	0	2	0	0	0	1	0	0	0
5406912	PAINT glossy black spray can #84000	5	220406	5	CAN	0	1	0	0	0	1	0	0	0	1	2	0
5407102	SEALANT silicon clear 3 oz tube	4	203801	4	PC	0	0	1	0	2	0	0	0	0	0	1	0
5407103	SEALANT silicone white 10.3 OZ tube	3	203801	8	PC	3	0	0	0	2	0	0	2	1	0	0	0
5407104	SEALANT rubber silicone RTV GE#W102	5	203801	1	PC	0	0	0	0	0	0	0	0	1	0	0	0
5407105	PASTE SILICON P12 WARMELEITPASTE	38	241410	4	PC	0	0	1	2	0	0	0	0	0	0	0	1
5407106	SILICONE RTV high temp red mak-a-gasket	7	203801	6	CAN	0	2	0	0	1	0	0	1	2	0	0	0
5407107	SILICONE RTV HIGH TEMP BLUE MAK-A-GASKET	9	203801	13	CAN	0	2	1	1	2	2	0	0	2	3	0	0
5407108	SILICONE RTV HIGH TEMP CLEAR	8	203801	20	CAN	1	4	5	2	3	2	0	2	0	0	0	1
5407328	CLEANER instant contact #CRC-02016	6	992210	6	CAN	0	0	0	0	4	0	0	0	0	0	2	0
5407330	CLEANER DUST CHASER SPRAY VWR# 21899-094	17	992210	101	CAN	8	15	12	3	9	5	5	13	5	2	14	10
5407331	DEGREASER gel engine	2	992210	0	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407332	CLEANER electric motor KAR #65390-2	8	992210	2	CAN	0	0	0	0	0	0	0	0	0	0	2	0
5407333	DRESSING BELT #65380	1	992210	0	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407334	STRIPPER/REMOVER PAINT, CARBON & GASKETS	13	992210	10	CAN	0	2	4	0	0	2	0	2	0	0	0	0
5407376	ISOPROPYL ALCOHOL (IPA) 99%	3	992210	64	DR	4	8	7	5	5	4	6	5	5	6	4	5
5407408	LUBRICANT spray Molykote 321R	0	230601	0	PC	0	0	0	0	0	0	0	0	0	0	0	0
5407431	LUBRICANT CRC 3-36 16oz can	30	230601	71	PC	0	12	0	15	4	0	14	0	12	0	2	12
5407432	LUBRICANT Parker-O-Lube #884-4	0	230601	6	PC	0	1	0	0	0	1	0	2	0	1	0	1
5407433	LUBRICANT CRC 3-36 (1 gallon)	2	230601	2	GAL	0	0	1	1	0	0	0	0	0	0	0	0
5407434	GREASE ALVANIA EP 2 LITHIUM BASE	21	230601	49	PC	0	6	1	0	17	2	0	3	1	1	6	12
5407435	LUBE teflon #79417	2	230601	2	CAN	0	0	0	0	0	0	0	0	0	2	0	0
5407436	LUBRICANT teflon dry #79418	6	230601	1	CAN	0	0	1	0	0	0	0	0	0	0	0	0
5407437	LUBRICANT MOLY HIGH TEMP	4	230601	0	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407438	LUBE OPEN CHAIN & SPROCKET #65389	2	230601	0	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407470	CLEANER zero residue instant tech spray	12	300203	0	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407947	LUBRICANT SILICON	5	230601	0	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407948	GREASE MULTI PURPOSE WHITE	5	230601	2	PC	0	0	0	0	0	0	0	0	0	0	1	1
5407950	PAINT OSHA orange spray can	1	220406	2	CAN	2	0	0	0	0	0	0	0	0	0	0	0
5407953	VINNAPAS C305 (solution) 1 liter	6	321610	2	BTL	0	0	0	2	0	0	0	0	0	0	0	0
5407955	EPOXY VALTRON AD1230 4-1 GAL/CS PART A	4	241410	2	CS	0	1	0	0	1	0	0	0	0	0	0	0
5407956	HARDNER AD1211-B RED PIGMENT	4	241410	1	CS	0	0	0	1	0	0	0	0	0	0	0	0
5407966	ADHESIVE 10ML blue thred	0	241410	7	PC	1	2	2	0	0	0	0	0	0	0	2	0
5407967	ADHESIVE all purpose & trim #77160	2	241410	2	CAN	0	0	0	0	0	1	0	0	0	1	0	0
5410534	OIL AEROKROIL LOOSENS FROZEN METAL PARTS	4	230601	19	PC	3	2	1	2	0	2	2	0	5	0	2	0
5410872	PAINT spray yellow	1	220406	7	CAN	0	0	0	2	2	0	0	3	0	0	0	0
5413542	WAX SKYLIQUID CLEAR HF4011 2 LITER	0	260206	2580	BTL	240	120	102	252	306	204	252	216	174	276	192	246
5414028	LUBRICANT CRC 3-36 (5 gallon)	4	230601	0	PC	0	0	0	0	0	0	0	0	0	0	0	0
5516514	BOTTLE IPA high purity (4x1-gal cs)	5	992210	154	PC	2	14	2	16	15	16	10	18	15	14	21	11
5522458	WAX Thin Skyliquid KN-25449 2ltr/btl	0	260206	108	BTL	0	0	0	0	24	0	0	0	0	36	24	24
5527433	TISAB II WITH CDTA	0	992210	32	GAL	3	2	3	2	5	2	2	3	3	2	3	2

VOC'S MARCH

STOCK USAGE

5403872 9 992210 44 DR
ACETIC ACID 35% non-glacial 450#/DRUM

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
16	12	15	1	0	0	0	0	0	0	0	0

5406902 12 981580 8 CAN
PAINT Krylon white enamel glossy

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
3	0	5	0	0	0	0	0	0	0	0	0

5406903 6 981580 7 CAN
PAINT gray primer 2X982 16 OZ.

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
2	3	2	0	0	0	0	0	0	0	0	0

5406905 2 981580 0 CAN
VARNISH red insulating

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0

5406906 11 981580 2 PC
PAINT John Deere Green

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	2	0	0	0	0	0	0	0	0	0

5406907 4 981580 0 PC
PAINT Equipment Orange

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0

5406908 4 981580 0 PC
PAINT Ford red

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0

5406909 1 981580 5 PC
PAINT high heat black

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	5	0	0	0	0	0	0	0	0	0

5406910 5 981580 0 PC
PAINT Chrysler blue

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0

5406912 3 981580 1 CAN
PAINT glossy black spray can #84000

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	1	0	0	0	0	0	0	0	0	0	0

5407103 3 993870 3 PC
SEALANT silicone white 10.3 OZ tube

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
3	0	0	0	0	0	0	0	0	0	0	0

5407104 6 993870 0 PC
SEALANT rubber silicone RTV GE#W102

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0

5407107 7 993870 3 CAN
SILICONE RTV HIGH TEMP BLUE MAK-A-GASKET

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	2	1	0	0	0	0	0	0	0	0	0

5407108 18 993870 10 CAN
SILICONE RTV HIGH TEMP CLEAR

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
1	4	5	0	0	0	0	0	0	0	0	0

5407328 12 992210 0 CAN
CLEANER instant contact #CRC-02016

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0

5407331 2 992210 0 CAN
DEGREASER gel engine

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0

5407332 4 992210 0 CAN
CLEANER electric motor KAR #65390-2

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0

5407333 1 992210 0 CAN
DRESSING BELT #65380

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0

5407334 5 992210 6 CAN
STRIPPER/REMOVER PAINT, CARBON & GASKETS

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	2	4	0	0	0	0	0	0	0	0	0

5407376 3 992210 19 DR
ISOPROPYL ALCOHOL (IPA) 99%

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
4	8	7	0	0	0	0	0	0	0	0	0

5407408 0 230601 0 PC FLAGGED FOR DELETION
LUBRICANT spray Molykote 321R

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0

5407431 29 230601 12 PC
LUBRICANT CRC 3-36 16oz can

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	12	0	0	0	0	0	0	0	0	0	0

5407433 3 230601 1 GAL
LUBRICANT CRC 3-36 (1 gallon)

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	1	0	0	0	0	0	0	0	0	0

5407435 2 230601 0 CAN
LUBE teflon #79417

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0

5407436 0 230601 1 CAN
LUBRICANT teflon dry #79418

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	1	0	0	0	0	0	0	0	0	0

5407438 2 230601 0 CAN
LUBE OPEN CHAIN & SPROCKET #65389

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0

5407470 12 300203 0 CAN
CLEANER zero residue instant tech spray

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0

5407947 5 230601 0 CAN
LUBRICANT SILICON

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0

5407948 1 230601 0 PC
GREASE MULTI PURPOSE WHITE

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0

5407953 2 993890 2 BTL
VINNAPAS C305 (solution) 1 liter

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	2	0	0	0	0	0	0	0	0

5407955 5 993890 1 CS
EPOXY VALTRON AD1230 4-1 GAL/CS PART A

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	1	0	0	0	0	0	0	0	0	0	0

5407956 5 993890 0 CS
HARDNER AD1211-B RED PIGMENT

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0

5407957 0 993890 0 CAN FLAGGED FOR DELETION
EPOXY fast cure grey

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0

5407967 4 993890 0 CAN
ADHESIVE all purpose & trim #77160

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0

5410534 5 230601 6 PC
OIL AEROKROIL LOOSENS FROZEN METAL PARTS

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
3	2	1	0	0	0	0	0	0	0	0	0

5413542 504 993870 462 BTL
WAX SKYLIQUID CLEAR HF4011 2 LITER

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
240	120	102	0	0	0	0	0	0	0	0	0

5414028 4 230601 0 PC
LUBRICANT CRC 3-36 (5 gallon)

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0

5516514 8 992210 24 PC
BOTTLE IPA high purity (4x1-gal cs)

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
2	14	2	6	0	0	0	0	0	0	0	0

5522458 294 993870 0 BTL
WAX Thin Skyliquid KN-25449 2ltr/btl

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0

5527433 3 992210 8 GAL
TISAB II, WITH CDTA

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
3	2	3	0	0	0	0	0	0	0	0	0

VOC's Feb 2003

5403872	3 992210	32	DR								
ACETIC ACID 35% non-glacial 450#/DRUM											
01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
16	12	4	0	0	0	0	0	0	0	0	0
5406902	0 981580	8	CAN								
PAINT Krylon white enamel glossy											
01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
3	0	5	0	0	0	0	0	0	0	0	0
5406903	8 981580	5	CAN								
PAINT gray primer 2X982 16 OZ.											
01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
2	3	0	0	0	0	0	0	0	0	0	0
5406905	2 981580	0	CAN								
VARNISH red insulating											
01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0
5406906	13 981580	0	PC								
PAINT John Deere Green											
01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0
5406907	4 981580	0	PC								
PAINT Equipment Orange											
01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0
5406908	4 981580	0	PC								
PAINT Ford red											
01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0
5406909	6 981580	0	PC								
PAINT high heat black											
01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0
5406910	5 981580	0	PC								
PAINT Chrysler blue											
01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0
5406912	3 981580	1	CAN								
PAINT glossy black spray can #84000											
01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	1	0	0	0	0	0	0	0	0	0	0
5407103	3 993870	3	PC								
SEALANT silicone white 10.3 OZ tube											
01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
3	0	0	0	0	0	0	0	0	0	0	0
5407104	6 993870	0	PC								
SEALANT rubber silicone RTV GE#W102											
01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0

5407107 8 993870 2 CAN
SILICONE RTV HIGH TEMP BLUE MAK-A-GASKET

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	2	0	0	0	0	0	0	0	0	0	0

5407108 21 993870 7 CAN
SILICONE RTV HIGH TEMP CLEAR

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
1	4	2	0	0	0	0	0	0	0	0	0

5407328 12 992210 0 CAN
CLEANER instant contact #CRC-02016

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0

5407331 2 992210 0 CAN
DEGREASER gel engine

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0

5407332 4 992210 0 CAN
CLEANER electric motor KAR #65390-2

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0

5407333 1 992210 0 CAN
DRESSING BELT #65380

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0

5407334 1 992210 4 CAN
STRIPPER/REMOVER PAINT, CARBON & GASKETS

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	2	2	0	0	0	0	0	0	0	0	0

5407376 3 992210 15 DR
ISOPROPYL ALCOHOL (IPA) 99%

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
4	8	3	0	0	0	0	0	0	0	0	0

5407408 0 230601 0 PC FLAGGED FOR DELETION
LUBRICANT spray Molykote 321R

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0

5407431 29 230601 12 PC
LUBRICANT CRC 3-36 16oz can

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	12	0	0	0	0	0	0	0	0	0	0

5407433 4 230601 0 GAL
LUBRICANT CRC 3-36 (1 gallon)

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0

5407435 2 230601 0 CAN
LUBE teflon #79417

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0

5407436 1 230601 0 CAN
LUBRICANT teflon dry #79418

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0

5407438 2 230601 0 CAN
LUBE OPEN CHAIN & SPROCKET #65389

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0

5407470 12 300203 0 CAN
CLEANER zero residue instant tech spray

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0

5407947 5 230601 0 CAN
LUBRICANT SILICON

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0

5407948 1 230601 0 PC
GREASE MULTI PURPOSE WHITE

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0

5407953 4 993890 0 BTL
VINNAPAS C305 (solution) 1 liter

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0

5407955 5 993890 1 CS
EPOXY VALTRON AD1230 4-1 GAL/CS PART A

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	1	0	0	0	0	0	0	0	0	0	0

5407956 5 993890 0 CS
HARDNER AD1211-B RED PIGMENT

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0

5407957 0 993890 0 CAN FLAGGED FOR DELETION
EPOXY fast cure grey

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0

5407967 4 993890 0 CAN
ADHESIVE all purpose & trim #77160

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0

5410534 5 230601 6 PC
OIL AEROKROIL LOOSENS FROZEN METAL PARTS

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
3	2	1	0	0	0	0	0	0	0	0	0

5413542 192 993870 378 BTL
WAX SKYLIQUID CLEAR HF4011 2 LITER

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
240	120	18	0	0	0	0	0	0	0	0	0

5414028 4 230601 0 PC
LUBRICANT CRC 3-36 (5 gallon)

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0

5516514 8 992210 16 PC
BOTTLE IPA high purity (4x1-gal cs)

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
2	14	0	0	0	0	0	0	0	0	0	0

5522458 294 993870 0 BTL
WAX Thin Skyliquid KN-25449 2ltr/btl

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0

5527433 1 992210 6 GAL
TISAB II WITH CDTA

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
3	2	1	0	0	0	0	0	0	0	0	0

VOCs from SAP for Jan 03

ZMR00031

Wacker Siltronic
Annual Chemical Usage Review

Date: 02/10/2003
Time: 11:49:48
Page: 1

Material Number	Stock	Material Group	Total Consumption	Unit of Measure
5403872		6 992210	21	DR
ACETIC ACID 35% non-glacial 450#/DRUM				
01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
16	5	0	0	0	0	0	0	0	0	0	0
5406902		5 981580	3	CAN
PAINT Krylon white enamel glossy				
01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
3	0	0	0	0	0	0	0	0	0	0	0
5406903		8 981580	5	CAN
PAINT gray primer 2X982 16 OZ.				
01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
2	3	0	0	0	0	0	0	0	0	0	0
5406905		2 981580	0	CAN
VARNISH red insulating				
01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0
5406906		13 981580	0	PC
PAINT John Deere Green				
01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0
5406907		4 981580	0	PC
PAINT Equipment Orange				
01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0
5406908		4 981580	0	PC
PAINT Ford red				
01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0
5406909		6 981580	0	PC
PAINT high heat black				
01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0
5406910		5 981580	0	PC
PAINT Chrysler blue				
01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0
5406912		4 981580	0	CAN
PAINT glossy black spray can #84000				
01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0
5407103		3 993870	3	PC

Material Number	Stock	Material Group	Total Consumption	Unit of Measure							
SEALANT silicone white 10.3 OZ tube											
01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
3	0	0	0	0	0	0	0	0	0	0	0
5407104	6	993870	0	PC							
SEALANT rubber silicone RTV GE#W102											
01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0
5407107	10	993870	0	CAN							
SILICONE RTV HIGH TEMP BLUE MAK-A-GASKET											
01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0
5407108	11	993870	5	CAN							
SILICONE RTV HIGH TEMP CLEAR											
01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
1	4	0	0	0	0	0	0	0	0	0	0
5407328	12	992210	0	CAN							
CLEANER instant contact #CRC-02016											
01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0
5407331	2	992210	0	CAN							
DEGREASER gel engine											
01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0
5407332	4	992210	0	CAN							
CLEANER electric motor KAR #65390-2											
01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0
5407333	1	992210	0	CAN							
DRESSING BELT #65380											
01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0
5407334	3	992210	2	CAN							
STRIPPER/REMOVER PAINT, CARBON & GASKETS											
01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	2	0	0	0	0	0	0	0	0	0	0
5407376	3	992210	7	DR							
ISOPROPYL ALCOHOL (IPA) 99%											
01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
4	3	0	0	0	0	0	0	0	0	0	0
5407408	0	230601	0	PC	FLAGGED FOR DELETION						
LUBRICANT spray Molykote 321R											
01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003

Material Number	Stock	Material Group	Total Consumption	Unit of Measure							
0	0	0	0	0	0	0	0	0	0	0	0
5407431	41	230601	0	PC							
LUBRICANT CRC 3-36 16oz can											
01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0
5407433	4	230601	0	GAL							
LUBRICANT CRC 3-36 (1 gallon)											
01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0
5407435	2	230601	0	CAN							
LUBE teflon #79417											
01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0
5407436	1	230601	0	CAN							
LUBRICANT teflon dry #79418											
01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0
5407438	2	230601	0	CAN							
LUBE OPEN CHAIN & SPROCKET #65389											
01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0
5407470	12	300203	0	CAN							
CLEANER zero residue instant tech spray											
01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0
5407947	5	230601	0	CAN							
LUBRICANT SILICON											
01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0
5407948	1	230601	0	PC							
GREASE MULTI PURPOSE WHITE											
01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0
5407953	4	993890	0	BTL							
VINNAPAS C305 (solution) 1 liter											
01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0
5407955	6	993890	0	CS							
EPOXY VALTRON AD1230 4-1 GAL/CS PART A											
01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0

Material Number	Stock	Material Group	Total Consumption	Unit of Measure	
5407956	5	993890	0	CS	
HARDNER AD1211-B RED PIGMENT					
5407957	0	993890	0	CAN	FLAGGED FOR DELETION
EPOXY fast cure grey					
5407967	4	993890	0	CAN	
ADHESIVE all purpose & trim #77160					
5410534	8	230601	3	PC	
OIL AEROKROIL LOOSENS FROZEN METAL PARTS					
5413542	270	993870	300	BTL	
WAX SKYLIQUID CLEAR HF4011 2 LITER					
5414028	4	230601	0	PC	
LUBRICANT CRC 3-36 (5 gallon)					
5516514	9	992210	7	PC	
BOTTLE IPA high purity (4x1-gal cs)					
5522458	294	993870	0	BTL	
WAX Thin Skyliquid KN-25449 2ltr/btl					
5527433	3	992210	4	GAL	
TISAB II WITH CDTA					

01/2003	02/2003	03/2003	04/2003	05/2003	06/2003	07/2003	08/2003	09/2003	10/2003	11/2003	12/2003
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0
240	60	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
2	5	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
3	1	0	0	0	0	0	0	0	0	0	0

SCOEPA00022675

Air Emissions Calculations for 2002

Emissions from burning natural gas

Natural gas usage:	
Month	10^6 cf
Jan	19.15
Feb	17.2
Mar	19.02
Apr	15.5
May	14.14
Jun	11.56
Jul	10.66
Aug	10.06
Sep	10.35
Oct	14.4
Nov	17.41
Dec	18.2
Total (10^6 cf/year)	177.65

yellow shading indicates user input information
From montly natural gas bills

AP-42 emission factors, Vol. I, Table 1.4-1:		
Particulate	3 lb/10^6 cf	(avg of 1 to 5 lb/10^6 cf)
CO	35 lb/10^6 cf	
NOx	140 lb/10^6 cf	
SOx	0.6 lb/10^6 cf	
VOCs	5.8 lb/10^6 cf	(nonmethane+methane)

Assuming all fuel fired equipment behaves according to AP-42,
we can calculate using the annual natural gas usage:

	lb/year	tons/year
Particulate	533	0.27
CO	6217.8	3.11
NOx	24871	12.44
SOx	107	0.05
VOCs	1030	0.52

::

SCOEPA00022676

NOx Summary for 2002

Data Source	lbs	tons
NOx from NOx Log	14,491	7.25
NOx from strip chart	24	0.01
Totals	14,516	7.26

timestamp	AIT_38_027_NOX_AVG_VAL0	AIT_38_027_NOX_CUM_VAL0
1/11/02 11:00:00 AM	24	8101
1/11/02 12:00:00 PM	35	8103
1/11/02 1:00:00 PM	24	8106
1/11/02 2:00:00 PM	41	8110
1/11/02 3:00:00 PM	40	8113
1/11/02 4:00:00 PM	36	8115
1/11/02 5:00:00 PM	31	8119
1/11/02 6:00:00 PM	47	8123

PPM

SCOEPA00022678

AIT_38_027_NOX_LBS_VAL0	AIT_38_027_NO_AVG_VAL0	FT_38_028_AVG_VAL0
2.086	0	11863
2.971	1	11878
2.038	0	11921
3.47	1	11924
3.431	1	11891
3.049	1	11816
2.683	1	11860
4.069	2	11939

SCOEPA00022679

AIT_38_027_NO_LBS_VAL0	TT_28_026_AVG_VAL0
0.015	64
0.004	66
0.023	66
0.038	66
0.024	66
0.007	66
0.037	66
0.035	66

Temp

SCOEPA00022680

NOX_REPORT_LOG 7/25/02

PPM CUM. LBS.

timestamp	AIT_38_027_NOX_AVG_VAL0	AIT_38_027_NOX_CUM_VAL0
1/1/02	3	7718
1/1/02 1:00:00 AM	4	7718
1/1/02 2:00:00 AM	0	7718
1/1/02 3:00:00 AM	7	7719
1/1/02 4:00:00 AM	7	7719
1/1/02 5:00:00 AM	5	7720
1/1/02 6:00:00 AM	7	7721
1/1/02 7:00:00 AM	7	7721
1/1/02 8:00:00 AM	3	7721

SCOEPA00022681

AIT_38_027_NOX_LBS_VAL0	AIT_38_027_NO_AVG_VAL0	FT_38_028_AV
0.251	0	11599
0.32	0	11570
0.031	0	11561
0.597	1	11542
0.584	1	11559
0.436	1	11569
0.567	1	11592
0.587	1	11548
0.251	0	11545

SCOEPA00022682

AIT_38_027_NO_LBS_VAL0	TT_28_026_AV
0.008	58
0.004	59
0.027	59
0.029	59
0.019	60
0.025	60
0.027	60
0.02	60
0.05	60

SCOEPA00022683

Units of Item Purchased by Month		1	2	3	4	5	6	7	8	9	10	11	12	
Part No. SAP	Material	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total consumption
*	Spraypaint *	13	10	15	2	15	6	9	37	9	11	0	8	135
5407103	Sealant Silicone White 10.3 OZ tube	0	4	0	0	0	2	0	0	3	0	0	2	11
5407104	Sealant Rubber Silicone RTV GE #W102 cart	0	0	0	3	0	0	0	0	1	0	2	0	6
5407107	Silicone RTV High Temp Blue Mak-A-Gasket	1	0	1	0	4	0	1	2	2	0	0	0	11
5407108	Silicone RTV High Temp Clear MAK-A-Gasket	0	2	3	7	0	6	3	1	3	1	2	2	30
5407328	Cleaner Instant Contact #CRC-02016	4	0	1	2	2	1	0	4	0	0	0	0	14
5407331	Degreaser gel engine	0	0	0	0	7	1	0	4	2	1	0	0	15
5407332	Cleaner Electric Motor KAR #65390-2	2	0	0	0	0	0	0	0	0	4	0	0	6
5407334	Stripper / Remover For Paint, Carbon &	0	0	2	0	0	0	0	0	0	0	0	0	2
	Parts Washing Solvent	0	30	0	45	0	30	0	40	30	0	56	0	231
5407376	Isopropyl Alcohol (IPA) 99%	8	5	8	9	8	6	6	9	5	5	6	4	79
5407408	Lubricant Spray Molykote 321R Dow-Corning	0	0	0	0	0	0	0	0	0	0	0	0	0
5407431	Lubricant CRC 3-36 #03005	12	14	4	27	13	17	14	3	12	12	18	1	147
5407433	Lubricant CRC 3-36 (Gallon Can)	0	0	0	0	0	1	0	0	1	0	1	0	3
5407435	Lube Teflon #79417	0	0	0	0	2	0	0	0	0	0	0	0	2
5407436	Lubricant Teflon Dry #79418	0	0	0	0	0	0	0	0	0	0	0	0	0
5407439	Cement Neoprene Turntable Covering Carbo	0	0	0	0	0	0	0	0	0	0	0	0	0
5407466	Skyliquid Wax for Enya, HF-3511	0	0	0	0	0	0	0	0	0	0	0	0	0
5407470	Cleaner Zero Residue Instant Tech Spray	0	6	0	0	2	1	9	0	0	8	0	4	30
5407938	Caviclean #2 Cleaning Solution Turco	0	0	0	0	0	0	0	0	0	0	0	0	0
5407946	Anti-sieze High Temp Industrial, 1 lb	0	0	0	0	0	0	3	0	0	1	0	0	4
5407947	Lubricant Silicon	0	0	0	0	0	0	0	0	0	0	0	0	0
5407948	Grease Multi Purpose White	1	0	0	0	0	0	0	0	0	0	0	0	1
5407953	Vinnapas C305	0	0	0	0	0	2	6	0	0	0	0	0	8
5407955	Epoxy Valtron AD1230 4-1 GAL/CS Part A	1	1	2	0	1	0	1	1	1	0	1	1	10
5407956	Hardner AD1211-B Red Pigment	1	0	1	1	0	1	0	1	0	1	0	1	7
5407957	Epoxy STC Fast Cure Grey	192	166	152	240	20	39	0	80	12	20	0	36	957
5407963	Mold-Release Wiz F-57NC 1 Gallon	0	0	0	0	0	0	0	0	0	0	0	0	0
5407967	Adhesive Tixo K-10 10 Gm/Each	0	0	0	0	0	0	0	1	0	0	0	0	1
5410534	Aerokroil loosens frozen metal parts	0	2	5	4	2	1	4	1	5	2	2	0	28
5413542	Skyliquid Wax for Enya, HF-4011	276	198	306	270	336	300	264	282	168	186	150	192	2928
	3M Scotch-Grip HP Contact Adhesive 1357	0	0	0	0	0	0	0	0	0	0	0	0	0
5516514	Bottle IPA high purity (4-1 gal/case)	19	18	5	16	15	23	9	7	8	0	16	10	146
5522458	Wax Thin Skyliquid KN-25449 2ltr/btl	24	0	0	12	24	0	12	0	0	0	12	24	108
5527433	Tisab II with CDTA	0	0	0	0	0	0	4	3	0	3	4	1	15
10161	Microstrip 2001	0	0	2	0	0	2	0	4	0	2	2	0	12
10173	Skyliquid SB35464	0	6	0	0	0	0	0	0	0	0	0	0	6
10201	Gear Compound EP ISO 460	0	0	3	0	0	0	0	0	0	0	0	0	3
* this category contains part numbers 5406902-12														
Part No. SAP	Material	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total consumption
5406902	Paint Krylon White Enamel Glossy #1501	3	3	4	2	4	1	0	12	2	6	0	0	37
5406903	Paint Gray Primer 2X982 16oz.	2	4	3	0	4	3	6	19	4	0	0	0	45
5406904	Paint Supercoat 316L SS Aerosol Can	0	0	0	0	0	0	0	0	0	0	0	0	0
5406905	Varnish red insulating	0	0	0	0	0	0	0	2	0	0	0	0	2
5406906	Paint John Deere Green	4	1	3	0	0	0	0	3	0	0	0	0	11
5406907	Paint Chevrolet Orange	0	0	0	0	0	0	0	0	1	0	0	0	1
5406908	Paint Ford Red	0	0	0	0	0	0	0	0	0	0	0	0	0
5406909	Paint High Heat Black	2	0	0	0	2	0	2	0	0	3	0	0	9
5406910	Paint Chrysler Blue/ Napa	2	1	2	0	4	2	0	1	0	0	0	0	12
5406911	Paint Tan Industrial Enamel	0	0	0	0	0	0	0	0	0	0	0	0	0
5406912	Paint Glossy Black Spray Can #84000	0	1	3	0	1	0	1	0	2	2	0	0	10

SAP Material Number	Container Size	Form	Density/ Specific Gravity	Lb/gal	Gal/each	Lb/each	Fraction of product used	VOC Fraction	Evap Fraction	MSDS Number	Date added to list or revised	Comments
5406902		L		0		0.9393	1	0.85	1			Lb/each and VOC Fraction inherited with spreadsheet
5407103	10.3oz Tub	Paste	1.04	8.6736		0.64375	1	0.025	1	2148		
5407104	10.3oz Car	Solid	1.06	8.8404		0.64375	1	0.04	1	2575		
5407107	8 oz Sp Can	L	1.04	8.6736	0.0625	0.5421	1	0.08	1	2337		
5407108	8 oz Sp Can	L	1.04	8.6736	0.0625	0.5421	1	0.08	1	2337		
5407328	15oz Sp Can	L	0.8754	7.30084	0.117188	0.855567	1	0.96	1	2093		MSDS in 1997 TRI Notebook
5407331	15oz Sp Can	L	0.8	6.672	0.117188	0.781875	1	0.7	1	2660		
5407332	16oz Sp Can	L	1.5	12.51	0.125	1.56375	1	0.243	1	2169		
5407334	16oz Sp Can	L	0.9	7.506	0.125	0.93825	1	0.68	1	2252		
	1 Gal	L	0.79	6.6	1	6.6	1	1	1	2582	Added 2/8/99	Evap Fraction left at 1 because amount shipped as waste accounted for later
5407376	55 Gal Dm	L	0.7855	6.55107	55	362	1	1	1	2580		Evap Fraction left at 1 because amount discharged to POTW in waste water accounted for later; Lb/Dm from VW&R Customer Sales by Product for 1997
5407408	11oz Sp Can	L	1	8.34	0.085938	0.716719	1	0.57	1	2419		MSDS in 1997 TRI Notebook; Specific Gravity assumed - none listed
5407431	16oz Sp Can	L	0.8167	6.81128	0.125	0.85141	1	0.7	0.1	1011		Evap Fraction corresponds to "slow 0.01" Evaporation Rate noted on MSDS
5407433	1 Gal Pl Btl	L	0.8167	6.81128	1	6.811278	1	0.7	0.1	1010		Evap Fraction corresponds to "slow 0.01" Evaporation Rate noted on MSDS
5407435	20oz Sp Can	L	0.6	5.004	0.15625	0.781875	1	0.82	1	2344		
5407436	16oz Sp Can	L	0.6	5.004	0.125	0.6255	1	1	1	2154		Specific Gravity assumed - none on MSDS
5407439	16oz Btl	L	0.81	6.7554	0.125	0.844425	1	0.8	1	2427		MSDS in 1997 TRI Notebook
5407466	2 L Pl Btl	L	0.889	7.41426	0.528346	3.917293	0.95	0.65	0.77	2631		Assumed same process test data as PN 5413542 because similar formula; MSDS in 1997 TRI Notebook
5407470	16oz Sp Can	L	1.004	8.37336	0.125	1.04667	1	0.0541	1	2803		
5407938	55 Gal Dm	L	1.05	8.757	55	481.635	1	0.12	1	2740		VOC Fraction inherited with spreadsheet
5407946	1 lb bottle	L										
5407947	20oz Sp Can	L	0.76	6.3384	0.15625	0.990375	1	0.9	1	2340		
5407948	20oz Sp Can	L	0.9	7.506	0.15625	1.172813	1	0.24	1	2332		
5407953	1 liter bottle	L										
5407955	4-1 Gal Cans	S	1.2	10.008	4	40.032	1	0.4	1	2750		VOC Fraction inherited with spreadsheet - none on MSDS
5407956	16oz Can	L	1.1	9.174	0.125	1.14675	1	0.4	1	2749		
5407957	10 oz Can	L	1.54	12.8436	0.078125	1.003406	1	0.07385	1	2615		
5407963	1 Gal Can	L	0.82	6.8388	1	6.8388	1	0.925	1	2414		
5407967	20oz Sp Can	L	1.05	8.757	0.15625	1.368281	1	0.88	1	2722		VOC Fraction inherited with spreadsheet - none on MSDS
5410534		L				0.625	1	0.6	1			
5413542	2 L Pl Btl	L	0.902	7.52268	0.528346	3.974576	0.95	0.6	0.77	2819		process test used to determine evap fraction; MSDS in 1997 TRI Notebook
5415107	1 Gal bottle	L	0.79	6.5886	4	26.3544	1	1	1			VWR MSDS #MZA0446
5516514	4x1 gal/case	L	0.7855	6.55107	4	26.20428	6.551071	1	1			
5527433	1 Gal bottle	L	1.07	8.9238	1	8.9238	1	0.1	1			
4467305	5 Gal Pail	L	0.9	7.506	5	35.5		0.649	1			
5455100	16 oz can	L	0.93	7.7562	0.129	1		0.85	1			

but reported by SAP in PC's which are actually "gallons"

SCOEPA00022685

Pounds VOCs Purchased (2002)

Part no SAP	Material	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Yearly total	
all	Spraypaints	10.38	7.98	11.98	1.60	11.98	4.79	7.19	29.54	7.19	8.78	0.00	6.39	107.78	
5407103	Sealant Silicone White 10.3 OZ tube	0.00	0.06	0.00	0.00	0.00	0.03	0.00	0.00	0.05	0.00	0.00	0.03	0.18	
5407104	Sealant Rubber Silicone RTV GE #W102 cart	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.03	0.00	0.05	0.00	0.15	
5407107	Silicone RTV High Temp Blue Mak-A-Gasket	0.04	0.00	0.04	0.00	0.17	0.00	0.04	0.09	0.09	0.00	0.00	0.00	0.48	
5407108	Silicone RTV High Temp Clear MAK-A-Gasket	0.00	0.09	0.13	0.30	0.00	0.26	0.13	0.04	0.13	0.04	0.09	0.09	1.30	
5407328	Cleaner Instant Contact #CRC-02016	3.29	0.00	0.82	1.64	1.64	0.82	0.00	3.29	0.00	0.00	0.00	0.00	11.50	
5407331	Degreaser gel engine	0.00	0.00	0.00	0.00	3.83	0.55	0.00	2.19	1.09	0.55	0.00	0.00	8.21	
5407332	Cleaner Electric Motor KAR #65390-2	0.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.52	0.00	0.00	2.28	
5407334	Stripper / Remover For Paint, Carbon &	0.00	0.00	1.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.28	
	Parts Washing Solvent	0.00	197.66	0.00	296.49	0.00	197.66	0.00	263.54	197.66	0.00	368.96	0.00	1521.97	
5407376	Isopropyl Alcohol (IPA) 99%	2896.00	1810.00	2896.00	3258.00	2896.00	2172.00	2172.00	3258.00	1810.00	1810.00	2172.00	1448.00	28598.00	
5407408	Lubricant Spray Molykote 321R Dow-Corning	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5407431	Lubricant CRC 3-36 #03005	7.15	8.34	2.38	16.09	7.75	10.13	8.34	1.79	7.15	7.15	10.73	0.60	87.61	
5407433	Lubricant CRC 3-36 (Gallon Can)	0.00	0.00	0.00	0.00	0.00	4.77	0.00	0.00	4.77	0.00	4.77	0.00	14.30	
5407435	Lube Teflon #79417	0.00	0.00	0.00	0.00	1.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.28	
5407436	Lubricant Teflon Dry #79418	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5407439	Cement Neoprene Turntable Covering Carbo	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5407466	Skyliquid Wax for Enya	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5407470	Cleaner Zero Residue Instant Teck Spray	0.00	0.34	0.00	0.00	0.11	0.06	0.51	0.00	0.00	0.45	0.00	0.23	1.70	
5407938	Caviclean #2 Cleaning Solution Turco	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5407946	Anti-sieze High Temp Industrial, 1 lb	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5407947	Lubricant Silicon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5407948	Grease Multi Purpose White	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.28	
5407953	Vinnapas C305	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5407955	Epoxy Valtron AD1230 4-1 GAL/CS Part A	16.01	16.01	32.03	0.00	16.01	0.00	16.01	16.01	16.01	0.00	16.01	16.01	160.13	
5407956	Hardner AD1211-B Red Pigment	0.46	0.00	0.46	0.46	0.00	0.46	0.00	0.46	0.00	0.46	0.00	0.46	3.21	
5407957	Epoxy STC Fast Cure Grey	14.23	12.30	11.26	17.78	1.48	2.89	0.00	5.93	0.89	1.48	0.00	2.67	70.92	
5407963	Mold-Release Wiz F-57NC 1 Gallon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5407967	Adhesive Tixo K-10 10 Gm/Each	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.20	0.00	0.00	0.00	0.00	1.20	
5410534	Aerokroil loosens frozen metal parts	0.00	0.75	1.88	1.50	0.75	0.38	1.50	0.38	1.88	0.75	0.75	0.00	10.50	
5413542	Skyliquid Wax for Enya, HF-4011	658.19	472.18	729.73	643.88	801.27	715.42	629.57	672.50	400.64	443.56	357.71	457.87	6982.54	
	3M Scotch-Grip HP Contact Adhesive 1357	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5516514	Bottle IPA high purity (4-1 gal/case)	497.88	471.68	131.02	419.27	393.06	602.70	235.84	183.43	209.63	0.00	419.27	262.04	3825.82	
5522458	Wax Thin Skyliquid KN-25449 2ltr/btl	69.00	0.00	0.00	34.50	69.00	0.00	34.50	0.00	0.00	0.00	34.50	69.00	310.52	
5527433	Tisab II with CDTA	0.00	0.00	0.00	0.00	0.00	0.00	3.57	2.68	0.00	2.68	3.57	0.89	13.39	
10236*	Dow Corning 795 Silicone Building Sealant Gray	0.00	0.00	0.00	0.00	0.00	0.00	104.30	0.00	0.00	0.00	0.00	0.00	104.30	
10237*	Dow Corning All Guard Silicone Elastomeric Co	0.00	0.00	0.00	0.00	0.00	0.00	494.53	0.00	0.00	0.00	0.00	0.00	494.53	
10242*	RemovAll 310 (Spray Grade)	0.00	0.00	0.00	0.00	0.00	0.00	35.86	0.00	0.00	0.00	0.00	0.00	35.86	
10243*	Sher-Cryl HPA B66T304 Clear Base	0.00	0.00	0.00	0.00	0.00	0.00	12.43	12.43	27.61	3.45	0.00	0.00	55.92	
10244*	DTM Bonding Primer B66W1 Primer White	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	54.43	12.81	0.00	0.00	71.24	
10245*	Corothane B65C10 Pre-prime Clear	0.00	0.00	0.00	0.00	0.00	0.00	5.44	2.72	5.44	8.61	0.00	0.00	22.21	
10247*	Super Paint A84W507 Super White	0.00	0.00	0.00	0.00	0.00	0.00	310.82	58.47	82.31	82.31	0.00	0.00	533.91	
10251*	DTM Bonding Primer B66A50	0.00	0.00	0.00	0.00	0.00	0.00	3.20	0.00	0.00	0.00	0.00	0.00	3.20	
10252*	Acrylic Primer A24W300 White	0.00	0.00	0.00	0.00	0.00	0.00	5.00	2.50	0.00	0.00	0.00	0.00	7.50	
10253*	ConSeal A5W610	0.00	0.00	0.00	0.00	0.00	0.00	0.32	0.16	0.40	0.80	0.00	0.00	1.68	
10045**	Adhesive System EA 4000 (2 cans)	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.80	***
10053**	Scotch Grip 1300 Rubber and Gasket Adhesive	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.98	***
10090**	Amerlock 65 Thinner	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	7.25	***
10098**	Paint thinner 160	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	14.80	***
10100**	True Bond	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	10.46	***
10116**	Tri Flow Lubricant (McMasre #1202K431)	7.32	7.32	7.32	7.32	7.32	7.32	7.32	7.32	7.32	7.32	7.32	7.32	87.84	***
10121**	Dry PTFE	5.85	5.85	5.85	5.85	5.85	5.85	5.85	5.85	5.85	5.85	5.85	5.85	70.21	***
10143**	Dyna Might II	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	8.80	***
10155**	Mobilith AW-2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	***
10160**	HPR 504	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	18.02	***
10166**	PC501 Superflash Neoprene CMT	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.50	***
10189**	Loctite Cleaner 7471	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.10	***
10191**	Loctite 648 Retaining Cpd High Strength/Fast S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	***
10193**	Donax TG Transmission Fluid	5.82	5.82	5.82	5.82	5.82	5.82	5.82	5.82	5.82	5.82	5.82	5.82	69.81	***
10194**	Vulkem 116	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.76	***
10202**	Supreme Motor Oil SAE 10W-40	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.11	***
10250**	Sikaflex 15LM	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	10.43	***
10255**	Mt. Hood 490	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	19.79	***
10263**	Dyna-Might	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	10.62	***
10278**	Skyliquid K3-30492	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	5.43	***
10279**	Coulomat C, Safer Formualtion	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.11	***
10280**	Aquastar (R) Coulomat A	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.11	***
10161	Microstrip 2001	0.00	0.00	73.39	0.00	0.00	73.39	0.00	146.78	0.00	73.39	73.39	0.00	440.35	
10173	Skyliquid SB35464	0.00	8.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.70	
10201	Gear Compound EP ISO 460	0.00	0.00	1.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.13	
	Total Per Month:	4201.76	3034.18	3921.61	4719.68	4232.44	3814.39	4109.19	4696.21	2855.47	2486.88	3489.88	2292.36		

Total VOCs Purchased (2002): 43,854 lbs or 21.93 tons

Includes both VOC's that do and do not volatilize (ie,
for Skyliquid Wax for Enya, 77% of VOC's
will volatilize, but there are still included in these totals.
The non-volatile portion of the VOC's are not considered as being used.

* From Major Repainting of Fab buildings and Admin building.
Calculations done in Aspect Database. Copies of reports in 2002 Annual Air Report file.

** Calculations from Aspect Database. Copies of reports in 2002 Annual Air Reprot file.

*** Monthly values are calculated from annual total by dividing by 12.

SCOEPA00022686

Worksheet for Cleaning Solvent VOC Emissions

Part no SAP	Material	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Yearly total	
5407328	Cleaner Instant Contact #CRC-02016	3.29	0.00	0.82	1.64	1.64	0.82	0.00	3.29	0.00	0.00	0.00	0.00	11.50	
5407331	Degreaser gel engine	0.00	0.00	0.00	0.00	3.83	0.55	0.00	2.19	1.09	0.55	0.00	0.00	8.21	
5407332	Cleaner Electric Motor KAR #65390-2	0.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.52	0.00	0.00	2.28	
5407334	Stripper / Remover For Paint, Carbon &	0.00	0.00	1.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.28	
	Parts Washing Solvent	0.00	197.66	0.00	296.49	0.00	197.66	0.00	263.54	197.66	0.00	368.96	0.00	1521.97	
10161	Microstrip 2001	0.00	0.00	73.39	0.00	0.00	73.39	0.00	146.78	0.00	73.39	73.39	0.00	440.35	
5407376	Isopropyl Alcohol (IPA) 99%	2896.00	1810.00	2896.00	3258.00	2896.00	2172.00	2172.00	3258.00	1810.00	1810.00	2172.00	1448.00	28598.00	
5516514	Bottle IPA high purity (4-1 gal/case)	497.88	471.68	131.02	419.27	393.06	602.70	235.84	183.43	209.63	0.00	419.27	262.04	3825.82	
5407470	Cleaner Zero Residue Instant Teck Spray	0.00	0.34	0.00	0.00	0.11	0.06	0.51	0.00	0.00	0.45	0.00	0.23	1.70	
5407938	Caviclean #2 Cleaning Solution Turco	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	Total lbs	3397.93	2479.67	3102.51	3975.40	3294.65	3047.17	2408.35	3857.23	2218.39	1885.91	3033.62	1710.27	34411.11	Total lbs
	Total tons	1.70	1.24	1.55	1.99	1.65	1.52	1.20	1.93	1.11	0.94	1.52	0.86	17.21	Total tons
Recovered															
VOCs	Monthly avg. IPA in OWW (lbs)	371.08	371.08	371.08	371.08	371.08	371.08	371.08	371.08	371.08	371.08	371.08	371.08	4453.00	
	Monthly avg. recovered parts washer solvent (lbs	135.07	135.07	135.07	135.07	135.07	135.07	135.07	135.07	135.07	135.07	135.07	135.07	1620.80	
	Monthly avg. mixed flammables, labpack (lbs)	24.67	24.67	24.67	24.67	24.67	24.67	24.67	24.67	24.67	24.67	24.67	24.67	296.00	
	Monthly avg. partially full aerosols (lbs)	15.42	15.42	15.42	15.42	15.42	15.42	15.42	15.42	15.42	15.42	15.42	15.42	185.00	Total recovered VOCs:
	Monthly avg. wax waste (lbs)	124.75	124.75	124.75	124.75	124.75	124.75	124.75	124.75	124.75	124.75	124.75	124.747	1496.96	8052 total lbs 4.03 total tons
Unrecovered	lbs	2742.36	1824.11	2446.95	3319.83	2639.09	2391.61	1752.78	3201.67	1562.82	1230.35	2378.06	1054.71	26544.35	
	tons	1.37	0.91	1.22	1.66	1.32	1.20	0.88	1.60	0.78	0.62	1.19	0.53	13.27	Total cleaning solvent VOCs emitted

SCOEPA00022687

OWW IPA		
Month, 2001	lbs/day	lbs/month
Jan	4.9	152
Feb	74.1	2075
Mar	4.9	152
Apr	5.5	165
May	14.6	453
Jun	4.9	147
Jul	10.3	319
Aug	5.4	167
Sep	5.8	174
Oct	6.0	186
Nov	4.9	147
Dec	5.1	158
*Average:	12.2	

4,453 total lbs
2.23 total tons
Source: L;/WWTP/Baseline/Permit + Testing.xls

Mixed Flammables (Labpack)			
		Avg	Avg
Date Shipped	lbs	lb/day	lb/month
10-Jul	280	0.01	24.67
17-Sep	16		
Total lbs:	296		
lbs VOC:	296		

Parts Washer Solvent Waste (100% VOC)		
Date Shipped	gals	lbs
Feb	30	197.7
April	45	296.5
June	30	197.7
Aug	40	263.5
Sep	30	197.7
Sep *	15	98.8
Nov	56	369.0
Total lbs:		1620.8
lbs VOC:		1620.8

(Spencer parts washer solvent: naptha)
* Sakety Kleen solvent

Wax Waste*		Avg
Date Shipped	lbs	lb/month
10-Jan	473	439.25
21-Feb	400	
8-Apr	715	
13-Jun	943	
1-Aug	901	
29-Aug	414	
17-Sep	247	
30-Oct	532	
19-Dec	646	
Total lbs:	5271	

lbs VOC: 1497 (Waste Profile Number: 325054)
* Fab 1 Waste Wax has 30% VOC content.
Fab 2 Waste Wax has 26.8% VOC content.
Average VOC content is 28.4%.

Partially Full Aerosols

Date Shipped	lbs
2/21/02	15
4/8/02	50
7/10/02	60
8/29/02	10
12/19/02	50
	185

Total lbs VOC in waste shipments for 2002:

lbs		tons
3599	or	1.80

Waste shipment data from
L:\Hazardous Waste\2002\list of wastes.xls

SCOEPA00022688

Chemical Componets Report 2002

Ran 1/18/03

CAS # 99990004 **Chemical Name** VOC

Aspect	Material No	Usage	lbs/Unit	Total lbs	% of CAS	Amount of CAS in lbs	
Fossil Fuel (Natural Gas)	1001	177650000 SCF	1	177,650,000.00	0.00058	1,030.37	☐
Generator #1 400 KW (536.4 hp, 0.25 load)	10001	4 HOUR	29.569	118.28	0.33	0.39	☐
Generators # 2 & 3 1000 KW (1341 hp, 0.5 load)	10002	11 HOUR	147.85	1,626.35	0.33	5.37	☑
Fluorad FC-93 (2L)	10041	1 BTL			20		☑
Adhesive System EA 4000 (2 cans)	10045	2 CAN	2	4.00	20	0.80	☑
Scotch-Grip 1300 Rubber and Gasket Adhesive	10053	5	0.3125	1.56	62.5	0.98	☑
Triethanolamine 98%	10067	BTL	2.478		98		☑
Xylenes/Baker Analyzed	10080	BTL			100		☑
Amerlock 400 Ivory Resin	10089		12.644		11.09		☑
Amerlock 65 Thinner	10090	1	7.25	7.25	100	7.25	☑
Mobiltemp SHC 32	10093		0.5		0.93		☑
Paint Thinner 160	10098	2	7.4	14.80	100	14.80	☑
True Bond	10100	3	9.3	27.90	37.5	10.46	☑
Tri Flow Lubricant (McMaster #1202K431)	10116	12 TUBE	7.32	87.84	100	87.84	☑
Dry PTFE	10121	24	7.2	172.80	40.63	70.21	☑
Propanol (-2) — assigned SAP# 5516514 (see page 4)	10126	0 BTL	6.55	0.00	100	0.00	☑
Shell Sol 142HT (Solvent Naphtha)	10128	231 GAL	6.59	1,522.29	100	1,522.29	☑
Dyna Might II	10143	2 PAIL	44	88.00	10	8.80	☑
Mobilith AW-2	10155	2 TUBE	0.875	1.75	1	0.02	☑
HPR 504	10160	2 BTL	9.01	18.02	100	18.02	☐
Microstrip 2001	10161	12 CS	36.69	440.28	100	440.28	☐
PC501 Superflash Neoprene CMT	10166	2 TUBE	0.625	1.25	40	0.50	☑
Skyliquid SB35464	10173	6 BTL	4.1454	24.87	35	8.71	☑

included in VOC's from combustion of natural gas

SCOEPA00022689

CAS # **99990004** *Chemical Name* VOC

Aspect	*Material No*	*Usage*	*lbs/Unit*	*Total lbs*	*% of CAS*	*Amount of CAS in lbs*	
Loctite Cleaner 7471	10189	2 CAN	0.625	1.25	8.306	0.10	☑
Loctite 648 Retaining Cpd High Strength/Fast Set	10191	4 TUBE	0.0243	0.10	25.8	0.03	☑
ShellSol D60	10192	0 Gal	6.593	0.00	99	0.00	☐
Donax TG Transmission Fluid	10193	215 GAL	7.43	1,597.45	4.37	69.81	☑
Vulkem 116	10194	12 TUBE	0.63125	7.58	10	0.76	☑
Gear Compound EP ISO 460	10201	0.4 PL	37.761	15.10	1	0.15	☑
Supreme Motor Oil SAE 10W-40	10202	6 Qt	1.836	11.02	1	0.11	☑
Electro-Solv	10225	CAN			4		☑
KAR Gold Degreaser	10226	CAN			98		☑
Dow Corning 795 Silicone Building Sealant Gray	10236	200 GAL	10.43	2,086.00	5	104.30	☐
Dow Corning All Guard Silicone Elastomeric Coating	10237	1080 GAL	9.64	10,411.20	4.75	494.53	☐
Super Paint Exterior Gloss Latex A84W53	10238	PAIL	45		4.7		☑
RemovAll 310 (Spray Grade)	10242	20 GAL	8.34	166.80	21.5	35.86	☐
Sher-Cryl HPA B66T304 Clear Base	10243	81 GAL	8.75	708.75	7.89	55.92	☐
DTM Bonding Primer B66W1 Primer White	10244	89 GAL	10.21	908.69	7.84	71.24	☐
Corothane B65C10 Pre-prime Clear	10245	8 GAL	8.6	68.80	31.63	21.76	☐
Super Paint A84W501 Base A	10246	GAL	9.55		4.71		☑
Super Paint A84W507 Super White	10247	1187 GAL	9.55	11,335.85	4.71	533.92	☐
Sikaflex 15LM	10250	20 TUBE	12.5	250.00	4.17	10.43	☐
DTM Bonding Primer B66A50	10251	20 GAL	11.19	223.80	1.43	3.20	☐
Acrylic Primer A24W300 White	10252	15 GAL	10.67	160.05	4.69	7.51	☐
ConSeal A5W610	10253	21 GAL	11	231.00	0.73	1.69	☐
Mt. Hood 490	10255	3 PAIL	43.19	129.57	15.27	19.79	☑
WAWAX.2/KITT	10257	1 BTL	5.65	5.65			☑

SCOEPA00022690

CAS # 99990004 **Chemical Name** VOC

Aspect	Material No	Usage	lbs/Unit	Total lbs	% of CAS	Amount of CAS in lbs	
Dyna-Might	10263	4 PAIL	44.23	176.92	6	10.62	☑
W Bond NC-25K Resin	10265	1	2.2	2.20	0	0.00	☑
W Bond NC-25K Hardener	10266	1	2.2	2.20	0	0.00	☑
Q Bond 4MR Resin	10267	1	2.2	2.20	0	0.00	☑
Q Bond 4MR Hadrener	10268	1	2.2	2.20	0	0.00	☑
Skyliquid K3-30492	10278	2 BTL	3.88	7.76	70	5.43	☑
Coulomat C, Safer Formulation	10279	12 BTL	0.0092	0.11	100	0.11	☑
Aquastar (R) Coulomat A	10280	12 BTL	0.0092	0.11	100	0.11	☑
Paint Krylon white enamel glossy	5406902	37 CAN	0.9393	34.75	85	29.54	☐
Paint gray primer 2X982 16 OZ	5406903	45 CAN	1	45.00	78.63	35.38	☐
VARNISH red insulating	5406905	2 CAN	1	2.00	79	1.58	☐
Paint John Deere Green	5406906	11 CAN	0.882	9.70	91.36	8.86	☐
Paint Chevrolet Orange	5406907	1 CAN	0.9393	0.94	85.2	0.80	☐
Paint Ford red	5406908	0 CAN	0.9393	0.00	50.1	0.00	☐
Paint high heat black	5406909	9 CAN	0.9393	8.45	79.6	6.73	☐
Paint Chrysler blue	5406910	12 CAN	0.9393	11.27	97.61	11.00	☐
PAINT glossy balck spray can #84000	5406912	10 CAN	0.875	8.75	46.4	4.06	☐
Sealant Silicone white 10.3 OZ tube	5407103	11 PC	0.64375	7.08	2.5	0.18	☐
Sealant rubber silicone RTV GE#W102	5407104	6 PC	0.64375	3.86	4	0.15	☐
Silicone RTV High-Temp Blue Mak-a-gasket	5407107	11 CAN	0.4983	5.48	8	0.44	☐
SILICONE RTV HIGH TEMP CLEAR MAK-A-GASKE	5407108	30 CAN	0.5	15.00	8	1.20	☐
Cleaner instant contact #CRC-02016	5407328	14 CAN	0.8754	12.26	96	11.77	☐
Degreaser gel engine	5407331	15 CAN	1.102	16.53	70	11.57	☐
Cleaner electric motor KAR #65390-2	5407332	6 CAN	1.233	7.40	24.3	1.80	☐
Dressing Belt #65380	5407333	0 CAN	0.7188	0.00	68	0.00	☐

SCOEPA00022691

CAS # 99990004 ***Chemical Name*** VOC

Aspect	*Material No*	*Usage*	*lbs/Unit*	*Total lbs*	*% of CAS*	*Amount of CAS in lbs*	
Stripper/Remover Paint, Carbon & Gaskets	5407334	2 CAN	1.109	2.22	68	1.51	☐
ETHANOL V-1 200 (VANZOL)	5407374	0 DR					☐
IPA 99% (Isopropyl Alcohol)	5407376	79 DR	362	28,598.00	100	28,598.00	☐
Lubricant spray Molykote 321R Dow-Cornin	5407408	0 PC	0.688	0.00	57	0.00	☐
Lubricant CRC 3-36 16oz	5407431	147 PC	0.8167	120.05	0.1	0.12	☐
Lubricant CRC 3-36 (1 gallon)	5407433	3 GAL	6.811	20.43	0.1	0.02	☐
Lube teflon #79417	5407435	2 CAN	0.688	1.38	82	1.13	☐
Lubricant teflon dry #79418	5407436	0 CAN	1.25	0.00	52	0.00	☐
Permatex Chain Lubricant	5407438	0 CAN	0.75	0.00	12	0.00	☐
Cleaner zero residue instant tech spray	5407470	30 CAN	1.374	41.22	5.41	2.23	☐
Lubricant Silicone Kar	5407947	0 CAN	1.045	0.00	90	0.00	☐
GREASE multi-purpose white	5407948	1 PC	0.8754	0.88	24	0.21	☐
Vinnapas C305 (Solution) 16oz	5407953	8 BTL	0.823575	6.59	63	4.15	☐
Valtron Epoxy Resin AD1230 4-1 GAL/CS PART A	5407955	10 CS	40.03	400.30	40	160.12	☐
Valtron Epoxy Hardener AD1211-B RED PIGMENT	5407956	7 CS	1.14675	8.03	40	3.21	☐
Epoxy fast cure grey Loctite 445	5407957	957 CAN	0.624	597.17	14.77	88.20	☐
Adhesive all purpose & trim #77160	5407967	1 CAN	0.8269	0.83	75.5	0.62	☐
Oil Aerokroil	5410534	28 PC	0.625	17.50	60	10.50	☐
Wax Skyliquid Clear HF4011	5413542	2928 BTL	3.974996	11,638.79	34.65	4,032.84	☐
Lubricant CRC 3-36 (5 gal)	5414028	0 PC	34.05639	0.00	70	0.00	☐
BOTTLE IPA high purity	5516514	146 PC	4.5	657.00	100	657.00	☐
Skyliquid KN-25449	5522458	108 BTL	3.836	414.29	75	310.72	☑
TISAB II with CDTA	5527433	15 BTL	8.93	133.95	10	13.40	☑
			Total lbs	177,725,516.69	Total lbs of CAS	38,683.48	

SCOEPA00022692

Ram 1/18/03

5403872 3 992210 319 DR
ACETIC ACID 35% non-glacial 450#/DRUM

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
31	29	30	30	31	31	30	31	21	28	18	9

5406902 7 981580 37 CAN
PAINT Krylon white enamel glossy

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
3	3	4	2	4	1	0	12	2	6	0	0

5406903 13 981580 45 CAN
PAINT gray primer 2X982 16 OZ.

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
2	4	3	0	4	3	6	19	4	0	0	0

5406905 2 981580 2 CAN
VARNISH red insulating

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	2	0	0	0	0

5406906 13 981580 11 PC
PAINT John Deere Green

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
4	1	3	0	0	0	0	3	0	0	0	0

5406907 4 981580 1 PC
PAINT Equipment Orange

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	1	0	0	0

5406908 4 981580 0 PC
PAINT Ford red

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5406909 6 981580 9 PC
PAINT high heat black

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
2	0	0	0	2	0	2	0	0	3	0	0

5406910 5 981580 12 PC
PAINT Chrysler blue

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
2	1	2	0	4	2	0	1	0	0	0	0

5406912 4 981580 10 CAN
PAINT glossy black spray can #84000

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	1	3	0	1	0	1	0	2	2	0	0

✓5407103 6 993870 11 PC
SEALANT silicone white 10.3 OZ tube

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	4	0	0	0	2	0	0	3	0	0	2

✓5407104 6 993870 6 PC
SEALANT rubber silicone RTV GE#W102

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	3	0	0	0	0	1	0	2	0

5407107 10 993870 11 CAN
SILICONE RTV HIGH TEMP BLUE MAK-A-GASKET

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
1	0	1	0	4	0	1	2	2	0	0	0

5407108 16 993870 30 CAN
SILICONE RTV HIGH TEMP CLEAR

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	2	3	7	0	6	3	1	3	1	2	2

5407328 12 992210 14 CAN
CLEANER instant contact #CRC-02016

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
4	0	1	2	2	1	0	4	0	0	0	0

5407331 2 992210 15 CAN
DEGREASER gel engine

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	7	1	0	4	2	1	0	0

5407332 4 992210 6 CAN
CLEANER electric motor KAR #65390-2

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
2	0	0	0	0	0	0	0	0	4	0	0

5407333 1 992210 0 CAN
DRESSING BELT #65380

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5407334 5 992210 2 CAN
STRIPPER/REMOVER PAINT, CARBON & GASKETS

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	2	0	0	0	0	0	0	0	0	0

5407374 0 992210 0 DR FLAGGED FOR DELETION
ETHANOL V-1 200 (VANZOL)

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5407375 0 992210 0 DR FLAGGED FOR DELETION
ACETONE

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5407376 8 992210 79 DR
ISOPROPYL ALCOHOL (IPA) 99%

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
8	5	8	9	8	6	6	9	5	5	6	4

5407408 0 230601 0 PC FLAGGED FOR DELETION
LUBRICANT spray Molykote 321R

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5407431 41 230601 147 PC
LUBRICANT CRC 3-36 16oz can

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
12	14	4	27	13	17	14	3	12	12	18	1

5407433 4 230601 3 GAL
LUBRICANT CRC 3-36 (1 gallon)

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	1	0	0	1	0	1	0

5407435 2 230601 2 CAN
LUBE teflon #79417

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	2	0	0	0	0	0	0	0	0

5407436 1 230601 0 CAN
LUBRICANT teflon dry #79418

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5407438 2 230601 0 CAN
LUBE OPEN CHAIN & SPROCKET #65389

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5407470 12 300203 30 CAN
CLEANER zero residue instant tech spray

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	6	0	0	2	1	9	0	0	8	0	4

5407947 5 230601 0 CAN
LUBRICANT SILICON

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5407948 1 230601 1 PC
GREASE MULTI PURPOSE WHITE

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
1	0	0	0	0	0	0	0	0	0	0	0

5407953 4 993890 8 BTL
VINNAPAS C305 (solution) 1 liter

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	2	6	0	0	0	0	0

5407955 6 993890 10 CS
EPOXY VALTRON AD1230 4-1 GAL/CS PART A

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
1	1	2	0	1	0	1	1	1	0	1	1

5407956 5 993890 7 CS
HARDNER AD1211-B RED PIGMENT

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
1	0	1	1	0	1	0	1	0	1	0	1

5407957 0 993890 957 CAN FLAGGED FOR DELETION
EPOXY fast cure grey

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
192	166	152	240	20	39	0	80	12	20	0	36

5407967 4 993890 1 CAN
ADHESIVE all purpose & trim #77160

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	1	0	0	0	0

5410534 8 230601 28 PC
OIL AEROKROIL LOOSENS FROZEN METAL PARTS

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	2	5	4	2	1	4	1	5	2	2	0

5413542 156 993870 2,928 BTL
WAX SKYLIQUID CLEAR HF4011 2 LITER

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
276	198	306	270	336	300	264	282	168	186	150	192

5414028 4 230601 0 PC
LUBRICANT CRC 3-36 (5 gallon)

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5415107 6 992210 29 CS
ACETONE semiconductor grade 4 gal/CS

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
6	4	2	4	4	3	3	3	1-	0	0	1

5516514 8 992210 146 PC
BOTTLE IPA high purity (4x1-gal cs)

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
19	18	5	16	15	23	9	7	8	0	16	10

5522458 294 993870 108 BTL
WAX Thin Skyliquid KN-25449 2ltr/btl

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
24	0	0	12	24	0	12	0	0	0	12	24

5527433 1 992210 15 GAL
TISAB II WITH CDTA

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	4	3	0	3	4	1

5403872		4	992210		319		DR					
ACETIC ACID 35% non-glacial 450#/DRUM												
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002	
31	29	30	30	31	31	30	31	21	28	18	9	
5406902		7	981580		37		CAN					
PAINT Krylon white enamel glossy												
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002	
3	3	4	2	4	1	0	12	2	6	0	0	
5406903		13	981580		45		CAN					
PAINT gray primer 2X982 16 OZ.												
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002	
2	4	3	0	4	3	6	19	4	0	0	0	
5406905		2	981580		2		CAN					
VARNISH red insulating												
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002	
0	0	0	0	0	0	0	2	0	0	0	0	
5406906		13	981580		11		PC					
PAINT John Deere Green												
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002	
4	1	3	0	0	0	0	3	0	0	0	0	
5406907		4	981580		1		PC					
PAINT Equipment Orange												
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002	
0	0	0	0	0	0	0	0	1	0	0	0	
5406908		4	981580		0		PC					
PAINT Ford red												
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002	
0	0	0	0	0	0	0	0	0	0	0	0	
5406909		6	981580		9		PC					
PAINT high heat black												
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002	
2	0	0	0	2	0	2	0	0	3	0	0	
5406910		5	981580		12		PC					
PAINT Chrysler blue												
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002	
2	1	2	0	4	2	0	1	0	0	0	0	
5406912		4	981580		10		CAN					
PAINT glossy black spray can #84000												
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002	
0	1	3	0	1	0	1	0	2	2	0	0	
5407103		6	993870		11		PC					
SEALANT silicone white 10.3 OZ tube												
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002	
0	4	0	0	0	2	0	0	3	0	0	2	
5407104		6	993870		6		PC					
SEALANT rubber silicone RTV GE#W102												
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002	
0	0	0	3	0	0	0	0	1	0	2	0	

5407107 10 993870 11 CAN
SILICONE RTV HIGH TEMP BLUE MAK-A-GASKET

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
1	0	1	0	4	0	1	2	2	0	0	0

5407108 16 993870 30 CAN
SILICONE RTV HIGH TEMP CLEAR

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	2	3	7	0	6	3	1	3	1	2	2

5407328 12 992210 14 CAN
CLEANER instant contact #CRC-02016

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
4	0	1	2	2	1	0	4	0	0	0	0

5407331 2 992210 15 CAN
DEGREASER gel engine

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	7	1	0	4	2	1	0	0

5407332 4 992210 6 CAN
CLEANER electric motor KAR #65390-2

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
2	0	0	0	0	0	0	0	0	4	0	0

5407333 1 992210 0 CAN
DRESSING BELT #65380

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5407334 5 992210 2 CAN
STRIPPER/REMOVER PAINT, CARBON & GASKETS

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	2	0	0	0	0	0	0	0	0	0

5407374 0 992210 0 DR FLAGGED FOR DELETION
ETHANOL V-1 200 (VANZOL)

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5407375 0 992210 0 DR FLAGGED FOR DELETION
ACETONE

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5407376 8 992210 79 DR
ISOPROPYL ALCOHOL (IPA) 99%

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
8	5	8	9	8	6	6	9	5	5	6	4

5407408 0 230601 0 PC FLAGGED FOR DELETION
LUBRICANT spray Molykote 321R

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5407431 41 230601 147 PC
LUBRICANT CRC 3-36 16oz can

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
12	14	4	27	13	17	14	3	12	12	18	1

5407433 4 230601 3 GAL
LUBRICANT CRC 3-36 (1 gallon)

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	1	0	0	1	0	1	0

5407435 2 230601 2 CAN
LUBE teflon #79417

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	2	0	0	0	0	0	0	0	0

5407436 1 230601 0 CAN
LUBRICANT teflon dry #79418

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5407438 2 230601 0 CAN
LUBE OPEN CHAIN & SPROCKET #65389

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5407470 12 300203 30 CAN
CLEANER zero residue instant tech spray

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	6	0	0	2	1	9	0	0	8	0	4

5407947 5 230601 0 CAN
LUBRICANT SILICON

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5407948 1 230601 1 PC
GREASE MULTI PURPOSE WHITE

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
1	0	0	0	0	0	0	0	0	0	0	0

5407953 4 993890 8 BTL
VINNAPAS C305 (solution) 1 liter

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	2	6	0	0	0	0	0

5407955 6 993890 10 CS
EPOXY VALTRON AD1230 4-1 GAL/CS PART A

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
1	1	2	0	1	0	1	1	1	0	1	1

5407956 5 993890 7 CS
HARDNER AD1211-B RED PIGMENT

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
1	0	1	1	0	1	0	1	0	1	0	1

5407957 0 993890 957 CAN FLAGGED FOR DELETION
EPOXY fast cure grey

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
192	166	152	240	20	39	0	80	12	20	0	36

5407967 4 993890 1 CAN
ADHESIVE all purpose & trim #77160

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	1	0	0	0	0

5410534 8 230601 28 PC
OIL AEROKROIL LOOSENS FROZEN METAL PARTS

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	2	5	4	2	1	4	1	5	2	2	0

5413542 156 993870 2,928 BTL
WAX SKYLIQUID CLEAR HF4011 2 LITER

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
276	198	306	270	336	300	264	282	168	186	150	192

5414028 4 230601 0 PC
LUBRICANT CRC 3-36 (5 gallon)

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5415107 6 992210 29 CS
ACETONE semiconductor grade 4 gal/CS

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
6	4	2	4	4	3	3	3	1-	0	0	1

5522458 294 993870 108 BTL
WAX Thin Skyliquid KN-25449 2ltr/btl

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
24	0	0	12	24	0	12	0	0	0	12	24

5527433 1 992210 15 GAL
TISAB II WITH CDTA

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	4	3	0	3	4	1

VOC's

5407408 — 0 230601 0 PC FLAGGED FOR DELETION
LUBRICANT spray Molykote 321R

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5407431 — 41 230601 147 PC
LUBRICANT CRC 3-36 16oz can

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
12	14	4	27	13	17	14	3	12	12	18	1

5407433 — 4 230601 3 GAL
LUBRICANT CRC 3-36 (1 gallon)

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	1	0	0	1	0	1	0

5407435 — 2 230601 2 CAN
LUBE teflon #79417

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	2	0	0	0	0	0	0	0	0

5407436 — 1 230601 0 CAN
LUBRICANT teflon dry #79418

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5407947 — 5 230601 0 CAN
LUBRICANT SILICON

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5407948 — 1 230601 1 PC
GREASE MULTI PURPOSE WHITE

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
1	0	0	0	0	0	0	0	0	0	0	0

5407470 — 0 300203 30 CAN
CLEANER zero residue instant tech spray

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	6	0	0	2	1	9	0	0	8	0	4

5406902 — 7 981580 37 CAN
PAINT Krylon white enamel glossy

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
3	3	4	2	4	1	0	12	2	6	0	0

5406903 — 13 981580 45 CAN
PAINT gray primer 2X982 16 OZ.

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
2	4	3	0	4	3	6	19	4	0	0	0

5406905 — 2 981580 2 CAN
VARNISH red insulating

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	2	0	0	0	0

5406906 — 13 981580 11 PC
PAINT John Deere Green

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
4	1	3	0	0	0	0	3	0	0	0	0

5406907 — 4 981580 1 PC
PAINT Equipment Orange

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	1	0	0	0

5406908 — 4 981580 0 PC
PAINT Ford red

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5406909 — 6 981580 9 PC
PAINT high heat black

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
2	0	0	0	2	0	2	0	0	3	0	0

5406910 — 5 981580 12 PC
PAINT Chrysler blue

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
2	1	2	0	4	2	0	1	0	0	0	0

5406912 — 4 981580 10 CAN
PAINT glossy black spray can #84000

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	1	3	0	1	0	1	0	2	2	0	0

5403872 no emissions due to highly eff. scrubbers. 2 992210 319 DR
ACETIC ACID 35% non-glacial 450#/DRUM

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
31	29	30	30	31	31	30	31	21	28	18	9

5407328 — 12 992210 14 CAN
CLEANER instant contact #CRC-02016

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
4	0	1	2	2	1	0	4	0	0	0	0

5407330 not VOC 20 992210 134 CAN
CLEANER DUST CHASER SPRAY VWR# 21899-094

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
15	3	13	18	5	7	10	19	15	8	10	11

5407331 — 2 992210 15 CAN
DEGREASER gel engine

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	7	1	0	4	2	1	0	0

5407332 — 4 992210 6 CAN
CLEANER electric motor KAR #65390-2

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
2	0	0	0	0	0	0	0	0	4	0	0

5407334 — 5 992210 2 CAN
STRIPPER/REMOVER PAINT, CARBON & GASKETS

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	2	0	0	0	0	0	0	0	0	0

5407347 not VOC 3 992210 1 DR
REFRIGERANT R-22 (30 LBS)

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
1	0	0	0	0	0	0	0	0	0	0	0

l 5407330 / 5407347

Add ~~5407332~~ ~~5407333~~ ~~5407438~~ ~~5407953~~ ~~5410534~~ ~~5414028~~

5407374 0 992210 0 DR FLAGGED FOR DELETION
ETHANOL V-1 200 (VANZOL)

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5407375 0 992210 0 DR FLAGGED FOR DELETION
ACETONE

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5407376 — 9 992210 79 DR
ISOPROPYL ALCOHOL (IPA) 99%

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
8	5	8	9	8	6	6	9	5	5	6	4

5407946 — new 4 992210 4 BTL
ANTI-SEIZE HIGH TEMP INDUSTRIAL 1LB

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	3	0	0	1	0	0

5415107 not VOC 6 992210 29 CS
ACETONE semiconductor grade 4 gal/CS

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
6	4	2	4	4	3	3	3	1-	0	0	1

5527433 new 2 992210 15 GAL
TISAB II WITH CDTA

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	4	3	0	3	4	1

5407103 — 6 993870 11 PC
SEALANT silicone white 10.3 OZ tube

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	4	0	0	0	2	0	0	3	0	0	2

5407104 — 6 993870 6 PC
SEALANT rubber silicone RTV GE#W102

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	3	0	0	0	0	1	0	2	0

5407107 — 10 993870 11 CAN
SILICONE RTV HIGH TEMP BLUE MAK-A-GASKET

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
1	0	1	0	4	0	1	2	2	0	0	0

5407108 — 16 993870 30 CAN
SILICONE RTV HIGH TEMP CLEAR

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	2	3	7	0	6	3	1	3	1	2	2

5413542 · 204 993870 2,928 BTL
WAX SKYLIQUID CLEAR HF4011 2 LITER

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
276	198	306	270	336	300	264	282	168	186	150	192

5522458 294 993870 108 BTL
WAX Thin Skyliquid KN-25449 2ltr/btl

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
24	0	0	12	24	0	12	0	0	0	12	24

5407955 6 993890 10 CS
EPOXY VALTRON AD1230 4-1 GAL/CS PART A

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
1	1	2	0	1	0	1	1	1	0	1	1

5407956 3 993890 7 CS
HARDNER AD1211-B RED PIGMENT

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
1	0	1	1	0	1	0	1	0	1	0	1

5407957 0 993890 957 CAN FLAGGED FOR DELETION
EPOXY fast cure grey

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
192	166	152	240	20	39	0	80	12	20	0	36

5407967 4 993890 1 CAN
ADHESIVE all purpose & trim #77160

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	1	0	0	0	0

5412997 new 1 993890 1 KIT
ADHESIVE high-temp epoxy Duralco 4703-1

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	1	0	0	0	0	0	0	0	0	0	0

out

5407953
Vinnapas C305

5410534
Oil Aerobrid Loosens Frozen Metal Parts

5414028
Lubricant CRC 3-36

VOCs November 2002

ZMR00031

Wacker Siltronic
Annual Chemical Usage Review

Date: 12/09/2002
Time: 12:10:57
Page: 1

Material Number	Stock	Material Group	Total Consumption	Unit of Measure	01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
5407408	4	230601	0	PC												
LUBRICANT spray Molykote 321R					0	0	0	0	0	0	0	0	0	0	0	0
5407431	18	230601	146	PC												
LUBRICANT CRC 3-36 16oz can					12	14	4	27	13	17	14	3	12	12	18	0
5407433	4	230601	3	GAL												
LUBRICANT CRC 3-36 (1 gallon)					0	0	0	0	0	1	0	0	1	0	1	0
5407435	2	230601	2	CAN												
LUBE teflon #79417					0	0	0	2	0	0	0	0	0	0	0	0
5407436	1	230601	0	CAN												
LUBRICANT teflon dry #79418					0	0	0	0	0	0	0	0	0	0	0	0
5407947	5	230601	0	CAN												
LUBRICANT SILICON					0	0	0	0	0	0	0	0	0	0	0	0
5407948	1	230601	1	PC												
GREASE MULTI PURPOSE WHITE					1	0	0	0	0	0	0	0	0	0	0	0
5407470	4	300203	26	CAN												
CLEANER zero residue instant tech spray					0	6	0	0	2	1	9	0	0	8	0	0
5406902	8	981580	37	CAN												
PAINT Krylon white enamel glossy					3	3	4	2	4	1	0	12	2	6	0	0
5406903	13	981580	45	CAN												
PAINT gray primer 2X982 16 OZ.					2	4	3	0	4	3	6	19	4	0	0	0
5406905	2	981580	2	CAN												

Material Number	Stock	Material Group	Total Consumption	Unit of Measure								
VARNISH red insulating												
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002	
0	0	0	0	0	0	0	2	0	0	0	0	
5406906	13	981580	11	PC								
PAINT John Deere Green												
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002	
4	1	3	0	0	0	0	3	0	0	0	0	
5406907	4	981580	1	PC								
PAINT Equipment Orange												
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002	
0	0	0	0	0	0	0	0	1	0	0	0	
5406908	4	981580	0	PC								
PAINT Ford red												
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002	
0	0	0	0	0	0	0	0	0	0	0	0	
5406909	6	981580	9	PC								
PAINT high heat black												
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002	
2	0	0	0	2	0	2	0	0	3	0	0	
5406910	5	981580	12	PC								
PAINT Chrysler blue												
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002	
2	1	2	0	4	2	0	1	0	0	0	0	
5406912	4	981580	10	CAN								
PAINT glossy black spray can #84000												
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002	
0	1	3	0	1	0	1	0	2	2	0	0	
5403872	3	992210	314	DR								
ACETIC ACID 35% non-glacial 450#/DRUM												
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002	
31	29	30	30	31	31	30	31	21	28	18	4	
5407328	12	992210	14	CAN								
CLEANER instant contact #CRC-02016												
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002	
4	0	1	2	2	1	0	4	0	0	0	0	
5407330	32	992210	124	CAN								
CLEANER DUST CHASER SPRAY VWR# 21899-094												
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002	
15	3	13	18	5	7	10	19	15	8	10	1	
5407331	2	992210	15	CAN								
DEGREASER gel engine												
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002	

Material Number	Stock	Material Group	Total Consumption	Unit of Measure							
0	0	0	0	7	1	0	4	2	1	0	0
5407332		4 992210		6	CAN						
CLEANER electric motor KAR #65390-2											
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
2	0	0	0	0	0	0	0	0	4	0	0
5407334		5 992210		2	CAN						
STRIPPER/REMOVER PAINT, CARBON & GASKETS											
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	2	0	0	0	0	0	0	0	0	0
5407347		4 992210		1	DR						
REFRIGERANT R-22 (30 LBS)											
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
1	0	0	0	0	0	0	0	0	0	0	0
5407374		0 992210		0	DR	FLAGGED FOR DELETION					
ETHANOL V-1 200 (VANZOL)											
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0
5407375		0 992210		0	DR	FLAGGED FOR DELETION					
ACETONE											
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0
5407376		3 992210		78	DR						
ISOPROPYL ALCOHOL (IPA) 99%											
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
8	5	8	9	8	6	6	9	5	5	6	3
5407946		4 992210		4	BTL						
ANTI-SEIZE HIGH TEMP INDUSTRIAL 1LB											
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	3	0	0	1	0	0
5415107		6 992210		29	CS						
ACETONE semiconductor grade 4 gal/CS											
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
6	4	2	4	4	3	3	3	1-	0	0	1
5512904		0 992210		0	L						
ACETONE EG 2.5L/BOTTLE											
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0
5527433		3 992210		15	GAL						
TISAB II WITH CDTA											
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	4	3	0	3	4	1

Material Number	Stock	Material Group	Total Consumption	Unit of Measure
5407103	1	993870	11	PC

SEALANT silicone white 10.3 OZ tube

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	4	0	0	0	2	0	0	3	0	0	2

5407104	6	993870	6	PC

SEALANT rubber silicone RTV GE#W102

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	3	0	0	0	0	1	0	2	0

5407107	10	993870	11	CAN

SILICONE RTV HIGH TEMP BLUE MAK-A-GASKET

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
1	0	1	0	4	0	1	2	2	0	0	0

5407108	6	993870	28	CAN

SILICONE RTV HIGH TEMP CLEAR

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	2	3	7	0	6	3	1	3	1	2	0

5413542	318	993870	2,886	BTL

WAX SKYLIQUID CLEAR HF4011 2 LITER

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
276	198	306	270	336	300	264	282	168	186	150	150

5522458	294	993870	108	BTL

WAX Thin Skyliquid KN-25449 2ltr/btl

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
24	0	0	12	24	0	12	0	0	0	12	24

5407955	4	993890	9	CS

EPOXY VALTRON AD1230 4-1 GAL/CS PART A

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
1	1	2	0	1	0	1	1	1	0	1	0

5407956	4	993890	6	CS

HARDNER AD1211-B RED PIGMENT

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
1	0	1	1	0	1	0	1	0	1	0	0

5407957	36	993890	921	CAN

EPOXY fast cure grey

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
192	166	152	240	20	39	0	80	12	20	0	0

5407967	4	993890	1	CAN

ADHESIVE all purpose & trim #77160

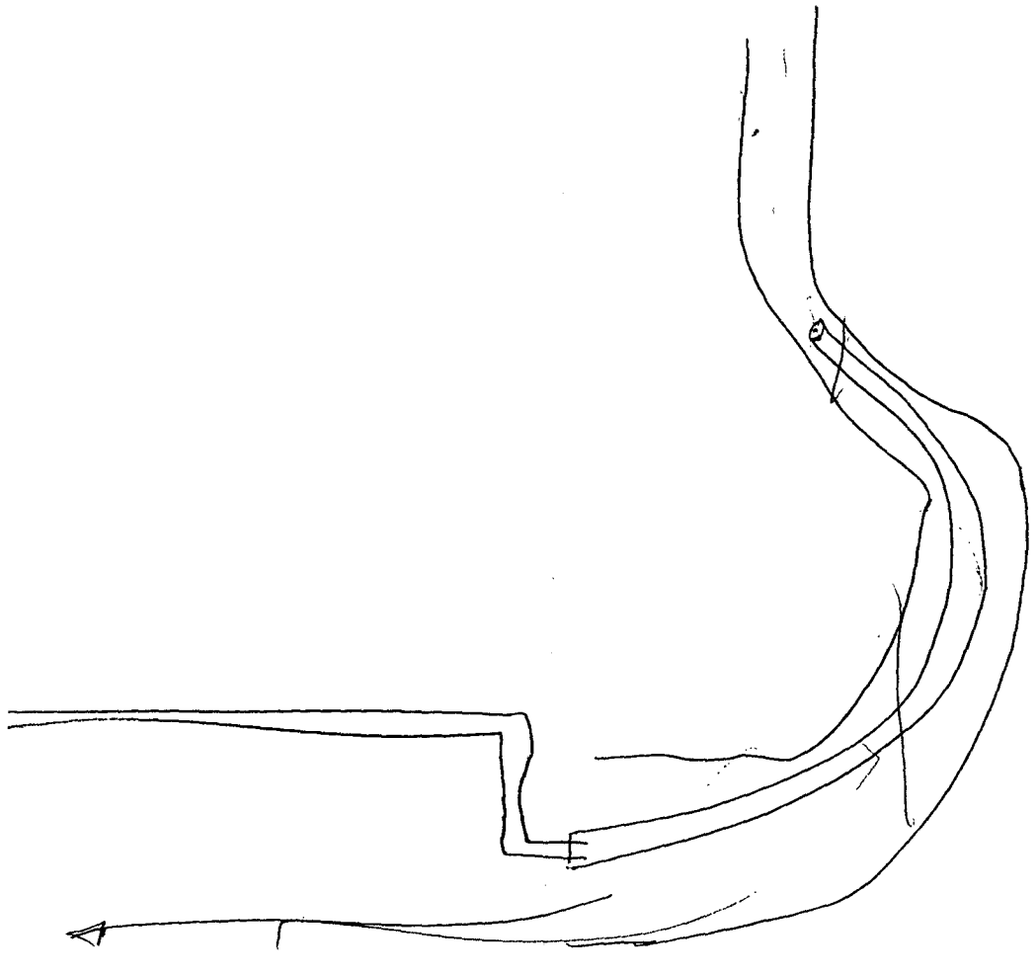
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	1	0	0	0	0

5412997	1	993890	1	KIT

ADHESIVE high-temp epoxy Duralco 4703-1

Material Number	Stock	Material Group	Total Consumption	Unit of Measure

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	1	0	0	0	0	0	0	0	0	0	0



VOCs October

5403872 7 992210 302 DR
ACETIC ACID 35% non-glacial 450#/DRUM

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
31	29	30	30	31	31	30	31	21	28	10	0

5406902 8 981580 37 CAN
PAINT Krylon white enamel glossy

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
3	3	4	2	4	1	0	12	2	6	0	0

5406903 13 981580 45 CAN
PAINT gray primer 2X982 16 OZ.

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
2	4	3	0	4	3	6	19	4	0	0	0

5406905 2 981580 2 CAN
VARNISH red insulating

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	2	0	0	0	0

5406906 13 981580 11 PC
PAINT John Deere Green

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
4	1	3	0	0	0	0	3	0	0	0	0

5406907 4 981580 1 PC
PAINT Equipment Orange

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	1	0	0	0

5406908 4 981580 0 PC
PAINT Ford red

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5406909 6 981580 9 PC
PAINT high heat black

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
2	0	0	0	2	0	2	0	0	3	0	0

5406910 5 981580 12 PC
PAINT Chrysler blue

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
2	1	2	0	4	2	0	1	0	0	0	0

5406912 4 981580 10 CAN
PAINT glossy black spray can #84000

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	1	3	0	1	0	1	0	2	2	0	0

5407103 3 993870 9 PC
SEALANT silicone white 10.3 OZ tube

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	4	0	0	0	2	0	0	3	0	0	0

5407104 8 993870 4 PC
SEALANT rubber silicone RTV GE#W102

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	3	0	0	0	0	1	0	0	0

5407107 10 993870 11 CAN
SILICONE RTV HIGH TEMP BLUE MAK-A-GASKET

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
1	0	1	0	4	0	1	2	2	0	0	0

5407108 8 993870 26 CAN
SILICONE RTV HIGH TEMP CLEAR

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	2	3	7	0	6	3	1	3	1	0	0

5407328 12 992210 14 CAN
CLEANER instant contact #CRC-02016

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
4	0	1	2	2	1	0	4	0	0	0	0

5407330 15 992210 117 CAN
CLEANER DUST CHASER SPRAY VWR# 21899-094

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
15	3	13	18	5	7	10	19	15	8	4	0

5407331 2 992210 15 CAN
DEGREASER gel engine

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	7	1	0	4	2	1	0	0

5407332 4 992210 6 CAN
CLEANER electric motor KAR #65390-2

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
2	0	0	0	0	0	0	0	0	4	0	0

5407334 5 992210 2 CAN
STRIPPER/REMOVER PAINT, CARBON & GASKETS

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	2	0	0	0	0	0	0	0	0	0

5407347 4 992210 1 DR
REFRIGERANT R-22 (30 LBS)

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
1	0	0	0	0	0	0	0	0	0	0	0

5407374 0 992210 0 DR FLAGGED FOR DELETION
ETHANOL V-1 200 (VANZOL)

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5407375 0 992210 0 DR FLAGGED FOR DELETION
ACETONE

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5407376 5 992210 72 DR
ISOPROPYL ALCOHOL (IPA) 99%

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
8	5	8	9	8	6	6	9	5	5	3	0

5407408 4 230601 0 PC
LUBRICANT spray Molykote 321R

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5407431 32 230601 132 PC
LUBRICANT CRC 3-36 16oz can

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
12	14	4	27	13	17	14	3	12	12	4	0

5407433 1 230601 2 GAL
LUBRICANT CRC 3-36 (1 gallon)

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	1	0	0	1	0	0	0

5407435 2 230601 2 CAN
LUBE teflon #79417

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	2	0	0	0	0	0	0	0	0

5407436 1 230601 0 CAN
LUBRICANT teflon dry #79418

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5407470 4 300203 26 CAN
CLEANER zero residue instant tech spray

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	6	0	0	2	1	9	0	0	8	0	0

5407946 4 992210 4 BTL
ANTI-SEIZE HIGH TEMP INDUSTRIAL 1LB

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	3	0	0	1	0	0

5407947 5 230601 0 CAN
LUBRICANT SILICON

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5407948 1 230601 1 PC
GREASE MULTI PURPOSE WHITE

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
1	0	0	0	0	0	0	0	0	0	0	0

5407955 4 993890 9 CS
EPOXY VALTRON AD1230 4-1 GAL/CS PART A

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
1	1	2	0	1	0	1	1	1	0	1	0

5407956 4 993890 6 CS
HARDNER AD1211-B RED PIGMENT

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
1	0	1	1	0	1	0	1	0	1	0	0

5407957 36 993890 921 CAN
EPOXY fast cure grey

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
192	166	152	240	20	39	0	80	12	20	0	0

5407967 4 993890 1 CAN
ADHESIVE all purpose & trim #77160

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	1	0	0	0	0

5412997 1 993890 1 KIT
ADHESIVE high-temp epoxy Duralco 4703-1

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	1	0	0	0	0	0	0	0	0	0	0

5413542 558 993870 2,646 BTL
WAX SKYLIQUID CLEAR HF4011 2 LITER

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
276	198	306	270	336	300	264	282	168	186	60	0

5415107 7 992210 28 CS
ACETONE semiconductor grade 4 gal/CS

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
6	4	2	4	4	3	3	3	1-	0	0	0

5522458 330 993870 72 BTL
WAX Thin Skyliquid KN-25449 2ltr/btl

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
24	0	0	12	24	0	12	0	0	0	0	0

5527433 2 992210 11 GAL
TISAB II WITH CDTA

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	4	3	0	3	1	0

CAS # 99990004 **Chemical Name** VOC

July 2002 FAB1 & FAB2 Painting

Aspect	Material No	Usage	lbs/Unit	Total lbs	% of CAS	Amount of CAS in lbs	
Skyliquid SB35464	10173	6 BTL	4.1454	24.87	35	8.71	☑
Loctite Cleaner 7471	10189	2 CAN	0.625	1.25	8.306	0.10	☑
Loctite 648 Retaining Cpd High Strength/Fast Set	10191	4 TUBE	0.0243	0.10	25.8	0.03	☑
ShellSol D60	10192	126 Gal	6.593	830.72	99	822.41	☐
Donax TG Fluid	10193	300 GAL	7.43	2,229.00	4.37	97.41	☑
Vulkem 116	10194	12 TUBE	0.63125	7.58	10	0.76	☑
Gear Compound EP ISO 460	10201	0.4 PL	37.761	15.10	1	0.15	☑
Supreme Motor Oil SAE 10W-40	10202	6 Qt	1.836	11.02	1	0.11	☑
Electro-Solv	10225	CAN			4		☑
KAR Gold Degreaser	10226	CAN			98		☑
Dow Corning 795 Silicone Building Sealant Gray	10236	200 GAL	10.43	2,086.00	5	104.30	☑
Dow Corning All Guard Silicone Elastomeric Coating	10237	1080 GAL	9.64	10,411.20	4.75	494.53	☑
Super Paint Exterior Gloss Latex A84W53	10238	54 PAIL	45	2,430.00	4.7	114.21	☑
RemovAll 310 (Spray Grade)	10242	20 GAL	8.34	166.80	21.5	35.86	☑
Sher-Cryl HPA B66T304 Clear Base	10243	18 GAL	8.75	157.50	7.89	12.43	☑
DTM Bonding Primer B66W1 Primer White	10244	GAL	10.21		7.84		☑
Corothane B65C10 Pre-prime Clear	10245	2 GAL	8.6	17.20	31.63	5.44	☑
Super Paint A84W501 Base A	10246	55 GAL	9.55	525.25	4.71	24.74	☑
Super Paint A84W507 Super White	10247	691 GAL	9.55	6,599.05	4.71	310.82	☑
Sikaflex 15LM	10250	20 TUBE	12.5	250.00	4.17	10.43	☑
DTM Bonding Primer B66A50	10251	20 GAL	11.19	223.80	1.43	3.20	☑
Acrylic Primer A24W300 White	10252	10 GAL	10.67	106.70	4.69	5.00	☑
ConSeal A5W610	10253	4 GAL	11	44.00	0.73	0.32	☑
Mt. Hood 490	10255	3 PAIL	43.19	129.57	15.27	19.79	☑

971.90 lbs

SCOEPA00022715

CAS # 99990004 **Chemical Name** VOC

August 2002 FAB1 & FAB2 Painting

Aspect	Material No	Usage	lbs/Unit	Total lbs	% of CAS	Amount of CAS in lbs	
Skyliquid SB35464	10173	6 BTL	4.1454	24.87	35	8.71	☑
Loctite Cleaner 7471	10189	2 CAN	0.625	1.25	8.306	0.10	☑
Loctite 648 Retaining Cpd High Strength/Fast Set	10191	4 TUBE	0.0243	0.10	25.8	0.03	☑
ShellSol D60	10192	126 Gal	6.593	830.72	99	822.41	☐
Donax TG Fluid	10193	300 GAL	7.43	2,229.00	4.37	97.41	☑
Vulkem 116	10194	12 TUBE	0.63125	7.58	10	0.76	☑
Gear Compound EP ISO 460	10201	0.4 PL	37.761	15.10	1	0.15	☑
Supreme Motor Oil SAE 10W-40	10202	6 Qt	1.836	11.02	1	0.11	☑
Electro-Solv	10225	CAN			4		☑
KAR Gold Degreaser	10226	CAN			98		☑
Dow Corning 795 Silicone Building Sealant Gray	10236	GAL	10.43		5		☑
Dow Corning All Guard Silicone Elastomeric Coating	10237	GAL	9.64		4.75		☑
Super Paint Exterior Gloss Latex A84W53	10238	54 PAIL	45	2,430.00	4.7	114.21	☑
RemovAll 310 (Spray Grade)	10242	GAL	8.34		21.5		☑
Sher-Cryl HPA B66T304 Clear Base	10243	18 GAL	8.75	157.50	7.89	12.43	☑
DTM Bonding Primer B66W1 Primer White	10244	5 GAL	10.21	51.05	7.84	4.00	☑
Corothane B65C10 Pre-prime Clear	10245	1 GAL	8.6	8.60	31.63	2.72	☑
Super Paint A84W501 Base A	10246	55 GAL	9.55	525.25	4.71	24.74	☑
Super Paint A84W507 Super White	10247	130 GAL	9.55	1,241.50	4.71	58.47	☑
Sikaflex 15LM	10250	20 TUBE	12.5	250.00	4.17	10.43	☑
DTM Bonding Primer B66A50	10251	GAL	11.19		1.43		☑
Acrylic Primer A24W300 White	10252	5 GAL	10.67	53.35	4.69	2.50	☑
ConSeal A5W610	10253	2 GAL	11	22.00	0.73	0.16	☑
Mt. Hood 490	10255	3 PAIL	43.19	129.57	15.27	19.79	☑

80.28 lbs

SCOEPA00022716

CAS # 99990004 **Chemical Name** VOC

September 2002 FAB1 & FAB2 Painting

Aspect	Material No	Usage	lbs/Unit	Total lbs	% of CAS	Amount of CAS in lbs	
Skyliquid SB35464	10173	6 BTL	4.1454	24.87	35	8.71	☑
Loctite Cleaner 7471	10189	2 CAN	0.625	1.25	8.306	0.10	☑
Loctite 648 Retaining Cpd High Strength/Fast Set	10191	4 TUBE	0.0243	0.10	25.8	0.03	☑
ShellSol D60	10192	126 Gal	6.593	830.72	99	822.41	☐
Donax TG Fluid	10193	300 GAL	7.43	2,229.00	4.37	97.41	☑
Vulkem 116	10194	12 TUBE	0.63125	7.58	10	0.76	☑
Gear Compound EP ISO 460	10201	0.4 PL	37.761	15.10	1	0.15	☑
Supreme Motor Oil SAE 10W-40	10202	6 Qt	1.836	11.02	1	0.11	☑
Electro-Solv	10225	CAN			4		☑
KAR Gold Degreaser	10226	CAN			98		☑
Dow Corning 795 Silicone Building Sealant Gray	10236	GAL	10.43		5		☑
Dow Corning All Guard Silicone Elastomeric Coating	10237	GAL	9.64		4.75		☑
Super Paint Exterior Gloss Latex A84W53	10238	54 PAIL	45	2,430.00	4.7	114.21	☑
RemovAll 310 (Spray Grade)	10242	GAL	8.34		21.5		☑
Sher-Cryl HPA B66T304 Clear Base	10243	40 GAL	8.75	350.00	7.89	27.61	☑
DTM Bonding Primer B66W1 Primer White	10244	68 GAL	10.21	694.28	7.84	54.43	☑
Corothane B65C10 Pre-prime Clear	10245	2 GAL	8.6	17.20	31.63	5.44	☑
Super Paint A84W501 Base A	10246	55 GAL	9.55	525.25	4.71	24.74	☑
Super Paint A84W507 Super White	10247	183 GAL	9.55	1,747.65	4.71	82.31	☑
Sikaflex 15LM	10250	20 TUBE	12.5	250.00	4.17	10.43	☑
DTM Bonding Primer B66A50	10251	GAL	11.19		1.43		☑
Acrylic Primer A24W300 White	10252	GAL	10.67		4.69		☑
ConSeal A5W610	10253	5 GAL	11	55.00	0.73	0.40	☑
Mt. Hood 490	10255	3 PAIL	43.19	129.57	15.27	19.79	☑

170.19 lbs

CAS # 99990004 ***Chemical Name*** VOC

Oct 2002 FAB1 & FAB2 Painting

Aspect	*Material No*	*Usage*	*lbs/Unit*	*Total lbs*	*% of CAS*	*Amount of CAS in lbs*	
Skyliquid SB35464	10173	6 BTL	4.1454	24.87	35	8.71	☑
Loctite Cleaner 7471	10189	2 CAN	0.625	1.25	8.306	0.10	☑
Loctite 648 Retaining Cpd High Strength/Fast Set	10191	4 TUBE	0.0243	0.10	25.8	0.03	☑
ShellSol D60	10192	126 Gal	6.593	830.72	99	822.41	☐
Donax TG Fluid	10193	300 GAL	7.43	2,229.00	4.37	97.41	☑
Vulkem 116	10194	12 TUBE	0.63125	7.58	10	0.76	☑
Gear Compound EP ISO 460	10201	0.4 PL	37.761	15.10	1	0.15	☑
Supreme Motor Oil SAE 10W-40	10202	6 Qt	1.836	11.02	1	0.11	☑
Electro-Solv	10225	CAN			4		☑
KAR Gold Degreaser	10226	CAN			98		☑
Dow Corning 795 Silicone Building Sealant Gray	10236	GAL	10.43		5		☑
Dow Corning All Guard Silicone Elastomeric Coating	10237	GAL	9.64		4.75		☑
Super Paint Exterior Gloss Latex A84W53	10238	54 PAIL	45	2,430.00	4.7	114.21	☑
RemovAll 310 (Spray Grade)	10242	GAL	8.34		21.5		☑
Sher-Cryl HPA B66T304 Clear Base	10243	5 GAL	8.75	43.75	7.89	3.45	☑
DTM Bonding Primer B66W1 Primer White	10244	16 GAL	10.21	163.36	7.84	12.81	☑
Corothane B65C10 Pre-prime Clear	10245	3 GAL	8.6	25.80	31.63	8.16	☑
Super Paint A84W501 Base A	10246	55 GAL	9.55	525.25	4.71	24.74	☑
Super Paint A84W507 Super White	10247	183 GAL	9.55	1,747.65	4.71	82.31	☑
Sikaflex 15LM	10250	20 TUBE	12.5	250.00	4.17	10.43	☑
DTM Bonding Primer B66A50	10251	GAL	11.19		1.43		☑
Acrylic Primer A24W300 White	10252	GAL	10.67		4.69		☑
ConSeal A5W610	10253	10 GAL	11	110.00	0.73	0.80	☑
Mt. Hood 490	10255	3 PAIL	43.19	129.57	15.27	19.79	☑

107.53 lbs

SCOEPA00022718

FAB1 & FAB2 Painting TOTAL VOC

CAS # 99990004 ***Chemical Name*** VOC

Aspect	*Material No*	*Usage*	*lbs/Unit*	*Total lbs*	*% of CAS*	*Amount of CAS in lbs*	
Skyliquid SB35464	10173	6 BTL	4.1454	24.87	35	8.71	☑
Loctite Cleaner 7471	10189	2 CAN	0.625	1.25	8.306	0.10	☑
Loctite 648 Retaining Cpd High Strength/Fast Set	10191	4 TUBE	0.0243	0.10	25.8	0.03	☑
ShellSol D60	10192	126 Gal	6.593	830.72	99	822.41	☐
Donax TG Fluid	10193	300 GAL	7.43	2,229.00	4.37	97.41	☑
Vulkem 116	10194	12 TUBE	0.63125	7.58	10	0.76	☑
Gear Compound EP ISO 460	10201	0.4 PL	37.761	15.10	1	0.15	☑
Supreme Motor Oil SAE 10W-40	10202	6 Qt	1.836	11.02	1	0.11	☑
Electro-Solv	10225	CAN			4		☑
KAR Gold Degreaser	10226	CAN			98		☑
Dow Corning 795 Silicone Building Sealant Gray	10236	200 GAL	10.43	2,086.00	5	104.30	☑
Dow Corning All Guard Silicone Elastomeric Coating	10237	1080 GAL	9.64	10,411.20	4.75	494.53	☑
~~Super Paint Exterior Gloss Latex A84W53~~	10238	54 PAIL	45	2,430.00	4.7	~~114.21~~	☑
RemovAll 310 (Spray Grade)	10242	20 GAL	8.34	166.80	21.5	35.86	☑
Sher-Cryl HPA B66T304 Clear Base	10243	81 GAL	8.75	708.75	7.89	55.92	☑
DTM Bonding Primer B66W1 Primer White	10244	89 GAL	10.21	908.69	7.84	71.24	☑
Corothane B65C10 Pre-prime Clear	10245	8 GAL	8.6	68.80	31.63	21.76	☑
Super Paint A84W501 Base A	10246	55 GAL	9.55	525.25	4.71	~~24.74~~	☑
Super Paint A84W507 Super White	10247	1187 GAL	9.55	11,335.85	4.71	533.92	☑
Sikaflex 15LM	10250	20 TUBE	12.5	250.00	4.17	10.43	☑
DTM Bonding Primer B66A50	10251	20 GAL	11.19	223.80	1.43	3.20	☑
Acrylic Primer A24W300 White	10252	15 GAL	10.67	160.05	4.69	7.51	☑
ConSeal A5W610	10253	21 GAL	11	231.00	0.73	1.69	☑
Mt. Hood 490	10255	3 PAIL	43.19	129.57	15.27	19.79	☑

1329.93lbs Total

SCOEPA00022719

2002 EXTERIOR PAINTING PROJECT

Fab 1, WALKWAY + ADMIN

Materials Summary

Month	Product (Gallons)											
	Removall 310 10242	SuperPaint 10247				Loxon primer 10252	DTM bond 10251	CORO 1 preprime 10245	Shercry Paint 10243	Conseal 10253	DTM Paint 10244
		Gray	Green	White	Yellow						
July	20	568	58	60	5	10	20	2	18	4	
			691								
August	0	80	0	50	0	5	0	1	13	2	2
			130								
Sept	0	182	0	1	0	0	0	2	25	5	67
			183								
October	0	161	22	0	0	0	0	3	5	10	16
			183								
Project Total	20	991	80	111	5	15	20	8	61	21	85
			187								

11/7/02

Material Summary, Fab 1.xls

2002 EXTERIOR PAINTING PROJECT
Fab 2
Materials Summary

Month	Product (Gallons)				
	10237 Allguard Paint	10236 DC 795 Sealent	DC 1-2-3 Strip (feet)	Shercryl 10243 Paint	DTM 10294 Paint
July	1,080	200	21,824		
August				5	3
Sept				15	1
Project Total	1,080	200	21,824	20	4

VOC's Sept ↓ Does not include Paint usage

5407408	4	230601		0	PC							
LUBRICANT spray Molykote 321R												
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002	
0	0	0	0	0	0	0	0	0	0	0	0	
5407431	48	230601		116	PC							
LUBRICANT CRC 3-36 16oz can												
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002	
12	14	4	27	13	17	14	3	12	0	0	0	
5407433	1	230601		2	GAL							
LUBRICANT CRC 3-36 (1 gallon)												
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002	
0	0	0	0	0	1	0	0	1	0	0	0	
5407435	2	230601		2	CAN							
LUBE teflon #79417												
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002	
0	0	0	2	0	0	0	0	0	0	0	0	
5407436	1	230601		0	CAN							
LUBRICANT teflon dry #79418												
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002	
0	0	0	0	0	0	0	0	0	0	0	0	
5407947	5	230601		0	CAN							
LUBRICANT SILICON												
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002	
0	0	0	0	0	0	0	0	0	0	0	0	
5407948	1	230601		1	PC							
GREASE MULTI PURPOSE WHITE												
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002	
1	0	0	0	0	0	0	0	0	0	0	0	
5407470	12	300203		18	CAN							
CLEANER zero residue instant tech spray												
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002	
0	6	0	0	2	1	9	0	0	0	0	0	
5406902	2	981580		31	CAN							
PAINT Krylon white enamel glossy												
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002	
3	3	4	2	4	1	0	12	2	0	0	0	
5406903	13	981580		45	CAN							
PAINT gray primer 2X982 16 OZ.												
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002	
2	4	3	0	4	3	6	19	4	0	0	0	
5406905	2	981580		2	CAN							
VARNISH red insulating												
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002	
0	0	0	0	0	0	0	2	0	0	0	0	
5406906	13	981580		11	PC							
PAINT John Deere Green												
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002	
4	1	3	0	0	0	0	3	0	0	0	0	

5406907		4	981580		1	PC						
PAINT Equipment Orange												
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002	
0	0	0	0	0	0	0	0	1	0	0	0	
5406908		4	981580		0	PC						
PAINT Ford red												
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002	
0	0	0	0	0	0	0	0	0	0	0	0	
5406909		9	981580		6	PC						
PAINT high heat black												
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002	
2	0	0	0	2	0	2	0	0	0	0	0	
5406910		5	981580		12	PC						
PAINT Chrysler blue												
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002	
2	1	2	0	4	2	0	1	0	0	0	0	
5406912		6	981580		8	CAN						
PAINT glossy black spray can #84000												
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002	
0	1	3	0	1	0	1	0	2	0	0	0	
5403872		7	992210		265	DR						
ACETIC ACID 35% non-glacial 450#/DRUM												
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002	
31	29	30	30	31	31	30	31	21	1	0	0	
5407328		12	992210		14	CAN						
CLEANER instant contact #CRC-02016												
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002	
4	0	1	2	2	1	0	4	0	0	0	0	
5407330		27	992210		105	CAN						
CLEANER DUST CHASER SPRAY VWR# 21899-094												
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002	
15	3	13	18	5	7	10	19	15	0	0	0	
5407331		3	992210		14	CAN						
DEGREASER gel engine												
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002	
0	0	0	0	7	1	0	4	2	0	0	0	
5407332		8	992210		2	CAN						
CLEANER electric motor KAR #65390-2												
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002	
2	0	0	0	0	0	0	0	0	0	0	0	
5407334		5	992210		2	CAN						
STRIPPER/REMOVER PAINT, CARBON & GASKETS												
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002	
0	0	2	0	0	0	0	0	0	0	0	0	
5407347		4	992210		1	DR						
REFRIGERANT R-22 (30 LBS)												
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002	
1	0	0	0	0	0	0	0	0	0	0	0	

5407374 0 992210 0 DR FLAGGED FOR DELETION
ETHANOL V-1 200 (VANZOL)

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5407375 0 992210 0 DR FLAGGED FOR DELETION
ACETONE

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5407376 5 992210 64 DR
ISOPROPYL ALCOHOL (IPA) 99%

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
8	5	8	9	8	6	6	9	5	0	0	0

5407946 5 992210 3 BTL
ANTI-SEIZE HIGH TEMP INDUSTRIAL 1LB

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	3	0	0	0	0	0

5415107 7 992210 28 CS
ACETONE semiconductor grade 4 gal/CS

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
6	4	2	4	4	3	3	3	1-	0	0	0

5527433 2 992210 7 GAL
TISAB II WITH CDTA

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	4	3	0	0	0	0

5407103 3 993870 9 PC
SEALANT silicone white 10.3 OZ tube

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	4	0	0	0	2	0	0	3	0	0	0

5407104 8 993870 4 PC
SEALANT rubber silicone RTV GE#W102

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	3	0	0	0	0	1	0	0	0

5407107 10 993870 11 CAN
SILICONE RTV HIGH TEMP BLUE MAK-A-GASKET

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
1	0	1	0	4	0	1	2	2	0	0	0

5407108 9 993870 25 CAN
SILICONE RTV HIGH TEMP CLEAR

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	2	3	7	0	6	3	1	3	0	0	0

5413542 504 993870 2,400 BTL
WAX SKYLIQUID CLEAR HF4011 2 LITER

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
276	198	306	270	336	300	264	282	168	0	0	0

5522458 330 993870 72 BTL
WAX Thin Skyliquid KN-25449 2ltr/btl

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
24	0	0	12	24	0	12	0	0	0	0	0

5407955 5 993890 8 CS
EPOXY VALTRON AD1230 4-1 GAL/CS PART A

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
1	1	2	0	1	0	1	1	1	0	0	0

5407956 5 993890 5 CS
HARDNER AD1211-B RED PIGMENT

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
1	0	1	1	0	1	0	1	0	0	0	0

5407957 56 993890 901 CAN FLAGGED FOR DELETION
EPOXY fast cure grey

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
192	166	152	240	20	39	0	80	12	0	0	0

5407967 4 993890 1 CAN
ADHESIVE all purpose & trim #77160

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	1	0	0	0	0

5412997 1 993890 1 KIT
ADHESIVE high-temp epoxy Duralco 4703-1

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	1	0	0	0	0	0	0	0	0	0	0

5403872 3 992210 254 DR
ACETIC ACID 35% non-glacial 450#/DRUM

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
31	29	30	30	31	31	30	31	11	0	0	0

5406902 4 981580 29 CAN
PAINT Krylon white enamel glossy

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
3	3	4	2	4	1	0	12	0	0	0	0

5406903 5 981580 41 CAN
PAINT gray primer 2X982 16 OZ.

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
2	4	3	0	4	3	6	19	0	0	0	0

5406905 2 981580 2 CAN
VARNISH red insulating

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	2	0	0	0	0

5406906 13 981580 11 PC
PAINT John Deere Green

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
4	1	3	0	0	0	0	3	0	0	0	0

5406907 5 981580 0 PC
PAINT Equipment Orange

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5406908 4 981580 0 PC
PAINT Ford red

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5406909 9 981580 6 PC
PAINT high heat black

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
2	0	0	0	2	0	2	0	0	0	0	0

5406910 5 981580 12 PC
PAINT Chrysler blue

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
2	1	2	0	4	2	0	1	0	0	0	0

5406912 8 981580 6 CAN
PAINT glossy black spray can #84000

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	1	3	0	1	0	1	0	0	0	0	0

5407103 6 993870 6 PC
SEALANT silicone white 10.3 OZ tube

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	4	0	0	0	2	0	0	0	0	0	0

5407104 9 993870 3 PC
SEALANT rubber silicone RTV GE#W102

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	3	0	0	0	0	0	0	0	0

5407107 10 993870 11 CAN
SILICONE RTV HIGH TEMP BLUE MAK-A-GASKET

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
1	0	1	0	4	0	1	2	2	0	0	0

5407108 12 993870 22 CAN
SILICONE RTV HIGH TEMP CLEAR

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	2	3	7	0	6	3	1	0	0	0	0

5407328 12 992210 14 CAN
CLEANER instant contact #CRC-02016

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
4	0	1	2	2	1	0	4	0	0	0	0

5407330 13 992210 95 CAN
CLEANER DUST CHASER SPRAY VWR# 21899-094

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
15	3	13	18	5	7	10	19	5	0	0	0

5407331 3 992210 14 CAN
DEGREASER gel engine

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	7	1	0	4	2	0	0	0

5407332 8 992210 2 CAN
CLEANER electric motor KAR #65390-2

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
2	0	0	0	0	0	0	0	0	0	0	0

5407334 5 992210 2 CAN
STRIPPER/REMOVER PAINT, CARBON & GASKETS

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	2	0	0	0	0	0	0	0	0	0

5407347 4 992210 1 DR
REFRIGERANT R-22 (30 LBS)

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
1	0	0	0	0	0	0	0	0	0	0	0

5407374 0 992210 0 DR FLAGGED FOR DELETION
ETHANOL V-1 200 (VANZOL)

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5407375 0 992210 0 DR FLAGGED FOR DELETION
ACETONE

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5407376 6 992210 60 DR
ISOPROPYL ALCOHOL (IPA) 99%

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
8	5	8	9	8	6	6	9	1	0	0	0

5407408 4 230601 0 PC
LUBRICANT spray Molykote 321R

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5407431 48 230601 116 PC
LUBRICANT CRC 3-36 16oz can

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
12	14	4	27	13	17	14	3	12	0	0	0

5407433 2 230601 1 GAL
LUBRICANT CRC 3-36 (1 gallon)

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	1	0	0	0	0	0	0

5407435 2 230601 2 CAN
LUBE teflon #79417

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	2	0	0	0	0	0	0	0	0

5407436 1 230601 0 CAN
LUBRICANT teflon dry #79418

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5407470 12 300203 18 CAN
CLEANER zero residue instant tech spray

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	6	0	0	2	1	9	0	0	0	0	0

5407946 5 992210 3 BTL
ANTI-SEIZE HIGH TEMP INDUSTRIAL 1LB

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	3	0	0	0	0	0

5407947 5 230601 0 CAN
LUBRICANT SILICON

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5407948 1 230601 1 PC
GREASE MULTI PURPOSE WHITE

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
1	0	0	0	0	0	0	0	0	0	0	0

5407955 6 993890 7 CS
EPOXY VALTRON AD1230 4-1 GAL/CS PART A

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
1	1	2	0	1	0	1	1	0	0	0	0

5407956 5 993890 5 CS
HARDNER AD1211-B RED PIGMENT

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
1	0	1	1	0	1	0	1	0	0	0	0

5407957 56 993890 901 CAN
EPOXY fast cure grey

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
192	166	152	240	20	39	0	80	12	0	0	0

5407967 4 993890 1 CAN
ADHESIVE all purpose & trim #77160

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	1	0	0	0	0

5412997 1 993890 1 KIT
ADHESIVE high-temp epoxy Duralco 4703-1

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	1	0	0	0	0	0	0	0	0	0	0

5413542 306 993870 2,298 BTL
WAX SKYLIQUID CLEAR HF4011 2 LITER

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
276	198	306	270	336	300	264	282	66	0	0	0

5415107 6 992210 29 CS
ACETONE semiconductor grade 4 gal/CS

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
6	4	2	4	4	3	3	3	0	0	0	0

5522458 330 993870 72 BTL
WAX Thin Skyliquid KN-25449 2ltr/btl

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
24	0	0	12	24	0	12	0	0	0	0	0

5527433 2 992210 7 GAL
TISAB II WITH CDTA

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	4	3	0	0	0	0

CAS # 99990004 **Chemical Name** VOC

for August 02

Aspect	Material No	Usage	lbs/Unit	Total lbs	% of CAS	Amount of CAS in lbs	
Skyliquid SB35464	10173	6 BTL	4.1454	24.87	35	8.71	☑
Loctite Cleaner 7471	10189	2 CAN	0.625	1.25	8.306	0.10	☑
Loctite 648 Retaining Cpd High Strength/Fast Set	10191	4 TUBE	0.0243	0.10	25.8	0.03	☑
ShellSol D60	10192	126 Gal	6.593	830.72	99	822.41	☐
Donax TG Fluid	10193	300 GAL	7.43	2,229.00	4.37	97.41	☑
Vulkem 116	10194	12 TUBE	0.63125	7.58	10	0.76	☑
Gear Compound EP	10201	0.4 PL	37.761	15.10	1	0.15	☑
Supreme Motor Oil	10202	6 Qt	1.836	11.02	1	0.11	☑
Electro-Solv	10225	CAN			4		☑
KAR Gold Degreaser	10226	CAN			98		☑
Dow Corning 795 Silicone Building Sealant Gray	10236	10 PAIL	63.422	634.22	5	31.71	☑
Dow Corning All Guard Silicone Elastomeric Coating	10237	120 PAIL	45.898	5,507.76	4.75	261.62	☑
Super Paint Exterior Gloss Latex A84W53	10238	80 PAIL	45	3,600.00	4.7	169.20	☑
RemovAll 310 (Spray Grade)	10242	10 PAIL	41.7	417.00	21.5	89.66	☑
Sher-Cryl HPA B66T304 Clear Base	10243	50 PAIL	43.75	2,187.50	7.89	172.59	☑
DTM Bonding Primer B66W1 Primer White	10244	50 PAIL	51.05	2,552.50	7.84	200.12	☑
Corothane B65C10 Pre-prime Clear	10245	50 PAIL	43	2,150.00	31.63	680.04	☑
Super Paint A84W501 Base A	10246	55 PAIL	47.75	2,626.25	4.71	123.70	☑
Super Paint A84W507 Super White	10247	50 PAIL	47.75	2,387.50	4.71	112.45	☑
Sikaflex 15LM	10250	20 TUBE	12.5	250.00	4.17	10.43	☑
DTM Bonding Primer B66A50	10251	40 PAIL	11.19	447.60	1.43	6.40	☑
Acrylic Primer A24W300 White	10252	40 PAIL	10.67	426.80	4.69	20.02	☑
ConSeal A5W610	10253	40 PAIL	11	440.00	0.73	3.21	☑

Paint Usage

August, 2002

Allguard (10237) 600 gal (120 x 5 gal)

Super Paint (10238) ~~(10238)~~ 400 gal (80-5 gal) (VOC - 169 lbs)

20 - 12½ # boxes

Sikaflex caulking (10250) 24 gal (250 lbs) (VOC - 10.4 lbs)

795 caulking (10236) 640 lbs (VOC 32 lbs)

(10 x 63.4 lbs)

$$55\,g/L \times \frac{3.785\,L}{gal} \times \frac{2.201\,lb}{kg} \times \frac{kg}{1000\,g}$$

$$0.4582\,lb/gal$$

$$\frac{0.4582\,lb}{9.64\,lb} \times 100$$

SCOEPA00022732

ZMR00031

Wacker Siltronic
Annual Chemical Usage Review

Date: 08/01/2002
Time: 14:31:52
Page: 1

Material Number	Stock	Material Group	Total Consumption	Unit of Measure
5403872	7	992210	213	DR
ACETIC ACID 35% non-glacial 450#/DRUM				

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
31	29	30	30	31	31	30	1	0	0	0	0

5406902	16	981580	17	CAN
PAINT Krylon white enamel glossy				

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
3	3	4	2	4	1	0	0	0	0	0	0

5406903	12	981580	22	CAN
PAINT gray primer 2X982 16 OZ.				

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
2	4	3	0	4	3	6	0	0	0	0	0

5406905	2	981580	0	CAN
VARNISH red insulating				

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5406906	16	981580	8	PC
PAINT John Deere Green				

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
4	1	3	0	0	0	0	0	0	0	0	0

5406907	5	981580	0	PC
PAINT Equipment Orange				

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5406908	4	981580	0	PC
PAINT Ford red				

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5406909	9	981580	6	PC
PAINT high heat black				

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
2	0	0	0	2	0	2	0	0	0	0	0

5406910	6	981580	11	PC
PAINT Chrysler blue				

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
2	1	2	0	4	2	0	0	0	0	0	0

5406912	8	981580	6	CAN
PAINT glossy black spray can #84000				

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	1	3	0	1	0	1	0	0	0	0	0

5407103	6	993870	6	PC

SCOEPA00022733

Material Number	Stock	Material Group	Total Consumption	Unit of Measure	01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
SEALANT silicone white 10.3 OZ tube																
					0	4	0	0	0	2	0	0	0	0	0	0
5407104	9	993870	3	PC												
SEALANT rubber silicone RTV GE#W102																
					01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
					0	0	0	3	0	0	0	0	0	0	0	0
5407107	2	993870	7	CAN												
SILICONE RTV HIGH TEMP BLUE MAK-A-GASKET																
					01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
					1	0	1	0	4	0	1	0	0	0	0	0
5407108	13	993870	21	CAN												
SILICONE RTV HIGH TEMP CLEAR																
					01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
					0	2	3	7	0	6	3	0	0	0	0	0
5407328	16	992210	10	CAN												
CLEANER instant contact #CRC-02016																
					01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
					4	0	1	2	2	1	0	0	0	0	0	0
5407330	13	992210	71	CAN												
CLEANER DUST CHASER SPRAY VWR# 21899-094																
					01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
					15	3	13	18	5	7	10	0	0	0	0	0
5407331	4	992210	8	CAN												
DEGREASER gel engine																
					01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
					0	0	0	0	7	1	0	0	0	0	0	0
5407332	8	992210	2	CAN												
CLEANER electric motor KAR #65390-2																
					01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
					2	0	0	0	0	0	0	0	0	0	0	0
5407334	5	992210	2	CAN												
STRIPPER/REMOVER PAINT, CARBON & GASKETS																
					01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
					0	0	2	0	0	0	0	0	0	0	0	0
5407347	4	992210	1	DR												
REFRIGERANT R-22 (30 LBS)																
					01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
					1	0	0	0	0	0	0	0	0	0	0	0
5407374	0	992210	0	DR	FLAGGED FOR DELETION											
ETHANOL V-1 200 (VANZOL)																
					01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002

Material Number	Stock	Material Group	Total Consumption	Unit of Measure							
0	0	0	0	0	0	0	0	0	0	0	0
5407375	0	992210	0	DR	FLAGGED FOR DELETION						
ACETONE											
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0
5407376	6	992210	50	DR							
ISOPROPYL ALCOHOL (IPA) 99%											
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
8	5	8	9	8	6	6	0	0	0	0	0
5407408	4	230601	0	PC							
LUBRICANT spray Molykote 321R											
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0
5407431	27	230601	101	PC							
LUBRICANT CRC 3-36 16oz can											
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
12	14	4	27	13	17	14	0	0	0	0	0
5407433	2	230601	1	GAL							
LUBRICANT CRC 3-36 (1 gallon)											
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	1	0	0	0	0	0	0
5407435	2	230601	2	CAN							
LUBE teflon #79417											
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	2	0	0	0	0	0	0	0	0
5407436	1	230601	0	CAN							
LUBRICANT teflon dry #79418											
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0
5407470	12	300203	18	CAN							
CLEANER zero residue instant tech spray											
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	6	0	0	2	1	9	0	0	0	0	0
5407946	5	992210	3	BTL							
ANTI-SEIZE HIGH TEMP INDUSTRIAL 1LB											
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	3	0	0	0	0	0
5407947	5	230601	0	CAN							
LUBRICANT SILICON											
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

Material Number	Stock	Material Group	Total Consumption	Unit of Measure
5407948	1	230601	1	PC
GREASE MULTI PURPOSE WHITE				

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
1	0	0	0	0	0	0	0	0	0	0	0

5407955	7	993890	6	CS
EPOXY VALTRON AD1230 4-1 GAL/CS PART A				

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
1	1	2	0	1	0	1	0	0	0	0	0

5407956	6	993890	4	CS
HARDNER AD1211-B RED PIGMENT				

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
1	0	1	1	0	1	0	0	0	0	0	0

5407957	148	993890	809	CAN
EPOXY fast cure grey				

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
192	166	152	240	20	39	0	0	0	0	0	0

5407967	5	993890	0	CAN
ADHESIVE all purpose & trim #77160				

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5412997	1	993890	1	KIT
ADHESIVE high-temp epoxy Duralco 4703-1				

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	1	0	0	0	0	0	0	0	0	0	0

5413542	354	993870	1,950	BTL
WAX SKYLIQUID CLEAR HF4011 2 LITER				

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
276	198	306	270	336	300	264	0	0	0	0	0

5415107	5	992210	26	CS
ACETONE semiconductor grade 4 gal/CS				

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
6	4	2	4	4	3	3	0	0	0	0	0

5512904	0	992210	0	L
ACETONE EG 2.5L/BOTTLE				

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5522458	330	993870	72	BTL
WAX Thin Skyliquid KN-25449 2ltr/btl				

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
24	0	0	12	24	0	12	0	0	0	0	0

5527433	1	992210	4	GAL
TISAB II WITH CDTA				

Material Number	Stock	Material Group	Total Consumption	Unit of Measure

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	4	0	0	0	0	0

		QT used	% VOC	lbs VOC	
10236	Dow Corning 795	15 gal	5%	9.5 lbs	
10246	Super Paint A84W501	275 gal	4.71%	123.7 lbs	
10250	Silkaflex 15LM	96 tubes	4.17%	50.0 lbs	
10004	Wright Etch		22.5%		Acetic Acid Call Walt
10159	Aluminum Etch		5%		
10200	Glacial Acetic Acid	1 gal	100%	8 lbs	(guess)

VOC's from SAP for MAY 02

ZMR00031

Wacker Siltronic
Annual Chemical Usage Review

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Material Number	Stock	Material Group	Total Consumption	Unit of Measure	01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
5406902	17	981580	16	CAN												
PAINT Krylon white enamel glossy					01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
					3	3	4	2	4	0	0	0	0	0	0	0
5406903	8	981580	16	CAN												
PAINT gray primer 2X982 16 OZ.					01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
					2	4	3	0	4	3	0	0	0	0	0	0
5406905	2	981580	0	CAN												
VARNISH red insulating					01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
					0	0	0	0	0	0	0	0	0	0	0	0
5406906	16	981580	8	PC												
PAINT John Deere Green					01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
					4	1	3	0	0	0	0	0	0	0	0	0
5406907	5	981580	0	PC												
PAINT Equipment Orange					01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
					0	0	0	0	0	0	0	0	0	0	0	0
5406908	4	981580	0	PC												
PAINT Ford red					01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
					0	0	0	0	0	0	0	0	0	0	0	0
5406909	11	981580	4	PC												
PAINT high heat black					01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
					2	0	0	0	2	0	0	0	0	0	0	0
5406910	6	981580	11	PC												
PAINT Chrysler blue					01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
					2	1	2	0	4	2	0	0	0	0	0	0
5406912	9	981580	5	CAN												
PAINT glossy black spray can #84000					01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
					0	1	3	0	1	0	0	0	0	0	0	0
5407103	6	993870	6	PC												
SEALANT silicone white 10.3 OZ tube					01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
					0	4	0	0	0	2	0	0	0	0	0	0
5407104	9	993870	3	PC												

Material Number	Stock	Material Group	Total Consumption	Unit of Measure							
SEALANT rubber silicone RTV GE#W102											
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	3	0	0	0	0	0	0	0	0
5407107	3	993870	6	CAN							
SILICONE RTV HIGH TEMP BLUE MAK-A-GASKET											
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
1	0	1	0	4	0	0	0	0	0	0	0
5407108	10	993870	12	CAN							
SILICONE RTV HIGH TEMP CLEAR											
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	2	3	7	0	0	0	0	0	0	0	0
5407328	16	992210	10	CAN							
CLEANER instant contact #CRC-02016											
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
4	0	1	2	2	1	0	0	0	0	0	0
5407330	27	992210	57	CAN							
CLEANER DUST CHASER SPRAY VWR# 21899-094											
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
15	3	13	18	5	3	0	0	0	0	0	0
5407331	4	992210	8	CAN							
DEGREASER gel engine											
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	7	1	0	0	0	0	0	0
5407332	8	992210	2	CAN							
CLEANER electric motor KAR #65390-2											
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
2	0	0	0	0	0	0	0	0	0	0	0
5407334	5	992210	2	CAN							
STRIPPER/REMOVER PAINT, CARBON & GASKETS											
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	2	0	0	0	0	0	0	0	0	0
5407347	4	992210	1	DR							
REFRIGERANT R-22 (30 LBS)											
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
1	0	0	0	0	0	0	0	0	0	0	0
5407374	0	992210	0	DR	FLAGGED FOR DELETION						
ETHANOL V-1 200 (VANZOL)											
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0
5407375	0	992210	0	DR	FLAGGED FOR DELETION						
ACETONE											
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002

Material Number	Stock		Material Group	Total Consumption	Unit of Measure							
0	0		0	0	0	0	0	0	0	0	0	0
5407376		6	992210	42	DR							
ISOPROPYL ALCOHOL (IPA) 99%												
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002	
8	5	8	9	8	4	0	0	0	0	0	0	
5407408		4	230601	0	PC							
LUBRICANT spray Molykote 321R												
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002	
0	0	0	0	0	0	0	0	0	0	0	0	
5407431		33	230601	71	PC							
LUBRICANT CRC 3-36 16oz can												
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002	
12	14	4	27	13	1	0	0	0	0	0	0	
5407433		2	230601	1	GAL							
LUBRICANT CRC 3-36 (1 gallon)												
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002	
0	0	0	0	0	1	0	0	0	0	0	0	
5407435		2	230601	2	CAN							
LUBE teflon #79417												
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002	
0	0	0	2	0	0	0	0	0	0	0	0	
5407436		1	230601	0	CAN							
LUBRICANT teflon dry #79418												
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002	
0	0	0	0	0	0	0	0	0	0	0	0	
5407470		9	300203	9	CAN							
CLEANER zero residue instant tech spray												
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002	
0	6	0	0	2	1	0	0	0	0	0	0	
5407946		8	992210	0	BTL							
ANTI-SEIZE HIGH TEMP INDUSTRIAL 1LB												
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002	
0	0	0	0	0	0	0	0	0	0	0	0	
5407947		5	230601	0	CAN							
LUBRICANT SILICON												
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002	
0	0	0	0	0	0	0	0	0	0	0	0	
5407948		1	230601	1	PC							
GREASE MULTI PURPOSE WHITE												
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002	
1	0	0	0	0	0	0	0	0	0	0	0	

Material Number	Stock	Material Group	Total Consumption	Unit of Measure
5407955		8 993890	5	CS
EPOXY VALTRON AD1230 4-1 GAL/CS PART A				

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
1	1	2	0	1	0	0	0	0	0	0	0

5407956		7 993890	3	CS
HARDNER AD1211-B RED PIGMENT				

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
1	0	1	1	0	0	0	0	0	0	0	0

5407957		148 993890	809	CAN
EPOXY fast cure grey				

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
192	166	152	240	20	39	0	0	0	0	0	0

5407967		5 993890	0	CAN
ADHESIVE all purpose & trim #77160				

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5412997		1 993890	1	KIT
ADHESIVE high-temp epoxy Duralco 4703-1				

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	1	0	0	0	0	0	0	0	0	0	0

5413542		174 993870	1,530	BTL
WAX SKYLIQUID CLEAR HF4011 2 LITER				

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
276	198	306	270	336	144	0	0	0	0	0	0

5415107		5 992210	21	CS
ACETONE semiconductor grade 4 gal/CS				

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
6	4	2	4	4	1	0	0	0	0	0	0

5512904		0 992210	0	L
ACETONE EG 2.5L/BOTTLE				

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5522458		90 993870	60	BTL
WAX Thin Skyliquid KN-25449 21tr/btl				

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
24	0	0	12	24	0	0	0	0	0	0	0

VOC'S for 4/02 from SAP

5407408 4 230601 0 PC
LUBRICANT spray Molykote 321R

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5407431 47 230601 57 PC
LUBRICANT CRC 3-36 16oz can

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
12	14	4	27	0	0	0	0	0	0	0	0

5407433 3 230601 0 GAL
LUBRICANT CRC 3-36 (1 gallon)

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5407435 2 230601 2 CAN
LUBE teflon #79417

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	2	0	0	0	0	0	0	0	0

5407436 1 230601 0 CAN
LUBRICANT teflon dry #79418

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5407947 5 230601 0 CAN
LUBRICANT SILICON

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5407948 1 230601 1 PC
GREASE MULTI PURPOSE WHITE

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
1	0	0	0	0	0	0	0	0	0	0	0

5407470 12 300203 6 CAN
CLEANER zero residue instant tech spray

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	6	0	0	0	0	0	0	0	0	0	0

5406902 9 981580 12 CAN
PAINT Krylon white enamel glossy

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
3	3	4	2	0	0	0	0	0	0	0	0

5406903 9 981580 9 CAN
PAINT gray primer 2X982 16 OZ.

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
2	4	3	0	0	0	0	0	0	0	0	0

5406905 2 981580 0 CAN
VARNISH red insulating

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5406906 10 981580 8 PC
PAINT John Deere Green

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
4	1	3	0	0	0	0	0	0	0	0	0

5405907 2 981580 0 PC
PAINT Equipment Orange

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5406908 1 981580 0 PC
PAINT Ford red

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5406909 7 981580 2 PC
PAINT high heat black

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
2	0	0	0	0	0	0	0	0	0	0	0

5406910 6 981580 5 PC
PAINT Chrysler blue

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
2	1	2	0	0	0	0	0	0	0	0	0

5406912 4 981580 4 CAN
PAINT glossy black spray can #84000

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	1	3	0	0	0	0	0	0	0	0	0

5407328 7 992210 7 CAN
CLEANER instant contact #CRC-02016

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
4	0	1	2	0	0	0	0	0	0	0	0

5407330 11 992210 49 CAN
CLEANER DUST CHASER SPRAY VWR# 21899-094

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
15	3	13	18	0	0	0	0	0	0	0	0

5407331 5 992210 0 CAN
DEGREASER gel engine

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5407332 8 992210 2 CAN
CLEANER electric motor KAR #65390-2

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
2	0	0	0	0	0	0	0	0	0	0	0

5407334 5 992210 2 CAN
STRIPPER/REMOVER PAINT, CARBON & GASKETS

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	2	0	0	0	0	0	0	0	0	0

5407347 4 992210 1 DR
REFRIGERANT R-22 (30 LBS)

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
1	0	0	0	0	0	0	0	0	0	0	0

5407374 0 992210 0 DR
ETHANOL V-1 200 (VANZOL)

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5407375 0 992210 0 DR
ACETONE

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5407376 4 992210 30 DR
ISOPROPYL ALCOHOL (IPA) 99%

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
8	5	8	9	0	0	0	0	0	0	0	0

5407946 8 992210 0 BTL
ANTI-SEIZE HIGH TEMP INDUSTRIAL 1LB

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5415107 4 992210 16 CS
ACETONE semiconductor grade 4 gal/CS

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
6	4	2	4	0	0	0	0	0	0	0	0

5407103 8 993870 4 PC
SEALANT silicone white 10.3 OZ tube

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	4	0	0	0	0	0	0	0	0	0	0

5407104 9 993870 3 PC
SEALANT rubber silicone RTV GE#W102

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	3	0	0	0	0	0	0	0	0

5407107 7 993870 2 CAN
SILICONE RTV HIGH TEMP BLUE MAK-A-GASKET

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
1	0	1	0	0	0	0	0	0	0	0	0

5407108 10 993870 12 CAN
SILICONE RTV HIGH TEMP CLEAR

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	2	3	7	0	0	0	0	0	0	0	0

5413542 450 993870 1,050 BTL
WAX SKYLIQUID CLEAR HF4011 2 LITER

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
276	198	306	270	0	0	0	0	0	0	0	0

5522458 66 993870 36 BTL
WAX Thin Skyliquid KN-25449 21tr/btl

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
24	0	0	12	0	0	0	0	0	0	0	0

5407955 9 993890 4 CS
EPOXY VALTRON AD1230 4-1 GAL/CS PART A

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
1	1	2	0	0	0	0	0	0	0	0	0

5407956 7 993890 3 CS
HARDNER AD1211-B RED PIGMENT

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
1	0	1	1	0	0	0	0	0	0	0	0

5407957 7 993890 750 CAN
EPOXY fast cure grey

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
192	166	152	240	0	0	0	0	0	0	0	0

5407967 5 993890 0 CAN
ADHESIVE all purpose & trim #77160

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5412997 1 993890 1 KIT
ADHESIVE high-temp epoxy Duralco 4703-1

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	1	0	0	0	0	0	0	0	0	0	0

ZMR00031 VOC

Wacker Siltronic
Annual Chemical Usage Review

Date: 04/03/2002
Time: 08:26:21
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Material Number	Stock	Material Group	Total Consumption	Unit of Measure	01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
5406902 ✓	11	981580	10	CAN												
PAINT Krylon white enamel glossy					3	3	4	0	0	0	0	0	0	0	0	0
5406903 ✓	9	981580	9	CAN												
PAINT gray primer 2X982 16 OZ.					2	4	3	0	0	0	0	0	0	0	0	0
5406905 ✓	2	981580	0	CAN												
VARNISH red insulating					0	0	0	0	0	0	0	0	0	0	0	0
5406906 ✓	10	981580	8	PC												
PAINT John Deere Green					4	1	3	0	0	0	0	0	0	0	0	0
5406907 ✓	2	981580	0	PC												
PAINT Equipment Orange					0	0	0	0	0	0	0	0	0	0	0	0
5406908 ✓	1	981580	0	PC												
PAINT Ford red					0	0	0	0	0	0	0	0	0	0	0	0
5406909 ✓	7	981580	2	PC												
PAINT high heat black					2	0	0	0	0	0	0	0	0	0	0	0
5406910 ✓	6	981580	5	PC												
PAINT Chrysler blue					2	1	2	0	0	0	0	0	0	0	0	0
5406912 ✓	4	981580	4	CAN												
PAINT glossy black spray can #84000					0	1	3	0	0	0	0	0	0	0	0	0
5407103 ✓	8	993870	4	PC												
SEALANT silicone white 10.3 OZ tube					0	4	0	0	0	0	0	0	0	0	0	0
5407104 ✓	12	993870	0	PC												

SCOEPA00022746

Material Number	Stock	Material Group	Total Consumption	Unit of Measure

SEALANT rubber silicone RTV GE#W102

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5407107 ✓		7	993870	2	CAN

SILICONE RTV HIGH TEMP BLUE MAK-A-GASKET

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
1	0	1	0	0	0	0	0	0	0	0	0

5407108 ✓		17	993870	5	CAN

SILICONE RTV HIGH TEMP CLEAR

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	2	3	0	0	0	0	0	0	0	0	0

5407328 ✓		9	992210	5	CAN

CLEANER instant contact #CRC-02016

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
4	0	1	0	0	0	0	0	0	0	0	0

5407330 ✓		29	992210	31	CAN

CLEANER DUST CHASER SPRAY VWR# 21899-094

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
15	3	13	0	0	0	0	0	0	0	0	0

5407331 ✓		5	992210	0	CAN

DEGREASER gel engine

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5407332 ✓		8	992210	2	CAN

CLEANER electric motor KAR #65390-2

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
2	0	0	0	0	0	0	0	0	0	0	0

5407334 ✓		5	992210	2	CAN

STRIPPER/REMOVER PAINT, CARBON & GASKETS

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	2	0	0	0	0	0	0	0	0	0

5407347 ✓		4	992210	1	DR

REFRIGERANT R-22 (30 LBS)

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
1	0	0	0	0	0	0	0	0	0	0	0

5407374 ✓		0	992210	0	DR

ETHANOL V-1 200 (VANZOL)

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5407375 ✓		0	992210	0	DR

ACETONE

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002

Material Number	Stock	Material Group	Total Consumption	Unit of Measure							
0	0	0	0	0	0	0	0	0	0	0	0
5407376 ✓	5	992210	21	DR							
ISOPROPYL ALCOHOL (IPA) 99%											
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
8	5	8	0	0	0	0	0	0	0	0	0
5407408 ✓	4	230601	0	PC							
LUBRICANT spray Molykote 321R											
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0
5407431 ✓	26	230601	42	PC							
LUBRICANT CRC 3-36 16oz can											
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
12	14	4	12	0	0	0	0	0	0	0	0
5407433 ✓	3	230601	0	GAL							
LUBRICANT CRC 3-36 (1 gallon)											
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0
5407435 ✓	2	230601	0	CAN							
LUBE teflon #79417											
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0
5407436 ✓	1	230601	0	CAN							
LUBRICANT teflon dry #79418											
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0
5407470 ✓	12	300203	6	CAN							
CLEANER zero residue instant tech spray											
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	6	0	0	0	0	0	0	0	0	0	0
5407946 ✓	8	992210	0	BTL							
ANTI-SEIZE HIGH TEMP INDUSTRIAL 1LB											
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0
5407947 ✓	5	230601	0	CAN							
LUBRICANT SILICON											
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0
5407948 ✓	1	230601	1	PC							
GREASE MULTI PURPOSE WHITE											
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
1	0	0	0	0	0	0	0	0	0	0	0

Material Number	Stock	Material Group	Total Consumption	Unit of Measure
5407955	9	993890	4	CS

EPOXY VALTRON AD1230 4-1 GAL/CS PART A

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
1	1	2	0	0	0	0	0	0	0	0	0

5407956	8	993890	2	CS

HARDNER AD1211-B RED PIGMENT

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
1	0	1	0	0	0	0	0	0	0	0	0

5407957	67	993890	510	CAN

EPOXY fast cure grey

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
192	166	152	0	0	0	0	0	0	0	0	0

5407967	5	993890	0	CAN

ADHESIVE all purpose & trim #77160

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5412997	1	993890	1	KIT

ADHESIVE high-temp epoxy Duralco 4703-1

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	1	0	0	0	0	0	0	0	0	0	0

5413542	516	993870	780	BTL

WAX SKYLIQUID CLEAR HF4011 2 LITER

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
276	198	306	0	0	0	0	0	0	0	0	0

5415107	4	992210	12	CS

ACETONE semiconductor grade 4 gal/CS

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
6	4	2	0	0	0	0	0	0	0	0	0

5512904	0	992210	0	L

ACETONE EG 1.5L/BOTTLE

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5522458	30	993870	24	BTL

WAX Thin Skyliquid KN-25449 2ltr/btl

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
24	0	0	0	0	0	0	0	0	0	0	0

39 Total MYRON

VOC

ZMR00031

Wacker Siltronic
Annual Chemical Usage Review

Date: 02/05/2002
Time: 14:15:01
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Material Number	Stock	Material Group	Total Consumption Annual	Unit of Measure
5406902 ✓		6 981580	3	CAN
PAINT Krylon white enamel glossy				
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
3	0	0	0	0	0	0	0	0	0	0	0
5406903 ✓		6 981580	2	CAN
PAINT gray primer 2X982 16 OZ.				
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
2	0	0	0	0	0	0	0	0	0	0	0
5406905 ✓		2 981580	0	CAN
VARNISH red insulating				
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0
5406906 ✓		2 981580	4	PC
PAINT John Deere Green				
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
4	0	0	0	0	0	0	0	0	0	0	0
5406907 ✓		2 981580	0	PC
PAINT Equipment Orange				
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0
5406908 ✓		1 981580	0	PC
PAINT Ford red				
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0
5406909 ✓		7 981580	2	PC
PAINT high heat black				
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
2	0	0	0	0	0	0	0	0	0	0	0
5406910 ✓		3 981580	2	PC
PAINT Chrysler blue				
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
2	0	0	0	0	0	0	0	0	0	0	0
5406912 ✓		1 981580	1	CAN
PAINT glossy black spray can #84000				
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	1	0	0	0	0	0	0	0	0	0	0
5407103 ✓		6 993870	0	PC
SEALANT silicone white 10.3 OZ tube				
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0
5407104 ✓		12 993870	0	PC

SCOEPA00022750

Material Number	Stock	Material Group	Total Consumption	Unit of Measure	01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
SEALANT rubber silicone RTV GE#W102					0	0	0	0	0	0	0	0	0	0	0	0
5407107 ✓		2 993870	1	CAN												
SILICONE RTV HIGH TEMP BLUE MAK-A-GASKET					1	0	0	0	0	0	0	0	0	0	0	0
5407108 ✓		10 993870	0	CAN												
SILICONE RTV HIGH TEMP CLEAR MAK-A-GASKE					0	0	0	0	0	0	0	0	0	0	0	0
5[redacted]28 ✓		10 992210	4	CAN												
C[redacted]ER instant contact #CRC-02016					4	0	0	0	0	0	0	0	0	0	0	0
5407330 ✓		21 992210	15	CAN												
CLEANER DUST CHASER SPRAY VWR# 21899-094					15	0	0	0	0	0	0	0	0	0	0	0
5407331 ✓		5 992210	0	CAN												
DEGREASER gel engine					0	0	0	0	0	0	0	0	0	0	0	0
5407332 ✓		8 992210	2	CAN												
CLEANER electric motor KAR #65390-2					2	0	0	0	0	0	0	0	0	0	0	0
5407334 ✓		7 992210	0	CAN												
STRIPPER/REMOVER PAINT, CARBON & GASKETS					0	0	0	0	0	0	0	0	0	0	0	0
5[redacted]347 ✓		4 992210	1	DR												
R[redacted]GERANT R-22 (30 LBS)					1	0	0	0	0	0	0	0	0	0	0	0
5407374 ✓		0 992210	0	DR												
ETHANOL V-1 200 (VANZOL)					0	0	0	0	0	0	0	0	0	0	0	0
5407375 ✓		0 992210	0	DR												
ACETONE					01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002

Material Number	Stock	Material Group	Total Consumption	Unit of Measure							
0	0	0	0	0	0	0	0	0	0	0	0
5407376		5 992210	9	DR							
ISOPROPYL ALCOHOL (IPA) 99%											
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
8	1	0	0	0	0	0	0	0	0	0	0
5407408		4 230601	0	PC							
LUBRICANT spray Molykote 321R											
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0
5407431		32 230601	12	PC							
LUBRICANT CRC 3-36 16oz can											
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
12	0	0	0	0	0	0	0	0	0	0	0
5407433		3 230601	0	GAL							
LUBRICANT CRC 3-36 (1 gallon)											
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0
5407435		2 230601	0	CAN							
LUBE teflon #79417											
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0
5407436		1 230601	0	CAN							
LUBRICANT teflon dry #79418											
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0
5407470		6 300203	0	CAN							
CLEANER zero residue instant tech spray											
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0
5407946		8 992210	0	BTL							
ANTI-SEIZE HIGH TEMP INDUSTRIAL 1LB											
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0
5407947		5 230601	0	CAN							
LUBRICANT SILICON											
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0
5407948		1 230601	1	PC							
GREASE MULTI PURPOSE WHITE											
01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
1	0	0	0	0	0	0	0	0	0	0	0

Material Number	Stock	Material Group	Total Consumption	Unit of Measure
5407955	✓	11 993890	2	CS

EPOXY VALTRON AD1230 4-1 GAL/CS PART A

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
1	1	0	0	0	0	0	0	0	0	0	0

5407956	✓	9 993890	1	CS

HARDNER AD1211-B RED PIGMENT

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
1	0	0	0	0	0	0	0	0	0	0	0

5407957	✓	120 993890	217	CAN

EPOXY fast cure grey

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
192	25	0	0	0	0	0	0	0	0	0	0

[redacted]967	✓	5 993890	0	CAN

ADHESIVE all purpose & trim #77160

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

5412997	✓	0 993890	1	KIT

ADHESIVE high-temp epoxy Duralco 4703-1

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	1	0	0	0	0	0	0	0	0	0	0

5413542	✓	612 993870	276	BTL

WAX SKYLIQUID CLEAR HF4011 2 LITER

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
276	0	0	0	0	0	0	0	0	0	0	0

5415107	✓	5 992210	7	CS

ACETONE semiconductor grade 4 gal/CS

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
6	1	0	0	0	0	0	0	0	0	0	0

55[illegible]904	✓	0 992210	0	L

delete

ACETONE EG 2.5L/BOTTLE

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
0	0	0	0	0	0	0	0	0	0	0	0

[redacted]458	✓	6 993870	24	BTL

[redacted]Thin Skyliquid KN-25449 21tr/btl

01/2002	02/2002	03/2002	04/2002	05/2002	06/2002	07/2002	08/2002	09/2002	10/2002	11/2002	12/2002
24	0	0	0	0	0	0	0	0	0	0	0

Air Emissions Calculations for 2001

Emissions from burning natural gas

Natural gas usage:	
Month	10^6 cf
Jan	20.71
Feb	18.91
Mar	18.17
Apr	17.93
May	13.86
Jun	12.86
Jul	12.89
Aug	12.23
Sep	11.78
Oct	13.83
Nov	15.4
Dec	18.83
Total (cf/year):	187.40

yellow shading indicates user input information
From montly natural gas bills

AP-42 emission factors, Vol. I, Table 1.4-1:		
Particulate	3 lb/10^6 cf	(avg of 1 to 5 lb/10^6 cf)
CO	35 lb/10^6 cf	
NOx	140 lb/10^6 cf	
SOx	0.6 lb/10^6 cf	
VOCs	5.8 lb/10^6 cf	(nonmethane+methane)

Assuming all fuel fired equipment behaves according to AP-42,
we can calculate using the annual natural gas usage:

	lb/year	tons/year
Particulate	562	0.28
CO	6559	3.3
NOx	26236	13
SOx	112	0.06
VOCs	1087	0.54

::

SCOEPA00022754

Summary

NOx pounds for 2000

Jan	1828.09
Feb	1934.33
Mar	1478.64
Apr	1080.42
May	1244.58
Jun	1227.56
Jul	804.26
Aug	1273.02
Sep	1025.70
Oct	1208.54
Nov	1323.89
Dec	586.02
*strip chart	526.33

Pounds NOx: 15541.38 Tons Nox: 7.77

Data logger up time:

Total days up:	356
Days up, but data unrecovered:	9
	0
% recovered data:	100%

*On January 1-8, March 4, and June 14 the data logger wasn't up; however, the data was recovered from strip charts.

Estimating total NOx pounds:

15541.38 Tons Nox 7.77

SCOEPA00022755

Day	CountOfAIT_38	CountOfAIT_38	CountOfAIT_38	CountOfAIT_38	CountOfFT_38
12/31/01	24	24	24	24	24
12/30/01	24	24	24	24	24
12/29/01	24	24	24	24	24
12/28/01	24	24	24	24	24
12/27/01	24	24	24	24	24
12/26/01	24	24	24	24	24
12/25/01	24	24	24	24	24
12/24/01	24	24	24	24	24
12/23/01	24	24	24	24	24
12/22/01	24	24	24	24	24
12/21/01	24	24	24	24	24
12/20/01	24	24	24	24	24
12/19/01	24	24	24	24	24
12/18/01	24	24	24	24	24
12/17/01	24	24	24	24	24
12/16/01	24	24	24	24	24
12/15/01	24	24	24	24	24
12/14/01	24	24	24	24	24
12/13/01	24	24	24	24	24
12/12/01	24	24	24	24	24
12/11/01	24	24	24	24	24
12/10/01	24	24	24	24	24
12/09/01	24	24	24	24	24
12/08/01	24	24	24	24	24
12/07/01	24	24	24	24	24
12/06/01	24	24	24	24	24
12/05/01	24	24	24	24	24
12/04/01	24	24	24	24	24
12/03/01	24	24	24	24	24
12/02/01	24	24	24	24	24
12/01/01	24	24	24	24	24
11/30/01	23	23	23	23	23
11/29/01	24	24	24	24	24
11/28/01	21	21	21	21	21
11/27/01	24	24	24	24	24
11/26/01	24	24	24	24	24
11/25/01	24	24	24	24	24
11/24/01	24	24	24	24	24
11/23/01	24	24	24	24	24
11/22/01	24	24	24	24	24
11/21/01	24	24	24	24	24
11/20/01	23	23	23	23	23
11/19/01	23	23	23	23	23
11/18/01	24	24	24	24	24
11/17/01	23	23	23	23	23
11/16/01	24	24	24	24	24
11/15/01	24	24	24	24	24

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CountOfAIT_38	CountOfTT_28
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Day	CountOfAIT_38	CountOfAIT_38	CountOfAIT_38	CountOfAIT_38	CountOfFT_38
11/14/01	22	22	22	22	22
11/13/01	24	24	24	24	24
11/12/01	24	24	24	24	24
11/11/01	24	24	24	24	24
11/10/01	24	24	24	24	24
11/09/01	24	24	24	24	24
11/08/01	24	24	24	24	24
11/07/01	24	24	24	24	24
11/06/01	24	24	24	24	24
11/05/01	24	24	24	24	24
11/04/01	24	24	24	24	24
11/03/01	24	24	24	24	24
11/02/01	24	24	24	24	24
11/01/01	24	24	24	24	24
10/31/01	24	24	24	24	24
10/30/01	24	24	24	24	24
10/29/01	24	24	24	24	24
10/28/01	24	24	24	24	24
10/27/01	24	24	24	24	24
10/26/01	24	24	24	24	24
10/25/01	24	24	24	24	24
10/24/01	24	24	24	24	24
10/23/01	24	24	24	24	24
10/22/01	24	24	24	24	24
10/21/01	24	24	24	24	24
10/20/01	24	24	24	24	24
10/19/01	24	24	24	24	24
10/18/01	24	24	24	24	24
10/17/01	24	24	24	24	24
10/16/01	24	24	24	24	24
10/15/01	24	24	24	24	24
10/14/01	24	24	24	24	24
10/13/01	24	24	24	24	24
10/12/01	24	24	24	24	24
10/11/01	24	24	24	24	24
10/10/01	24	24	24	24	24
10/09/01	24	24	24	24	24
10/08/01	24	24	24	24	24
10/07/01	24	24	24	24	24
10/06/01	24	24	24	24	24
10/05/01	24	24	24	24	24
10/04/01	24	24	24	24	24
10/03/01	24	24	24	24	24
10/02/01	24	24	24	24	24
10/01/01	24	24	24	24	24
09/30/01	24	24	24	24	24
09/29/01	24	24	24	24	24

SCOEPA00022758

CountOfAIT_38	CountOfTT_28
22	22
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Day	CountOfAIT_38	CountOfAIT_38	CountOfAIT_38	CountOfAIT_38	CountOfFT_38
09/28/01	24	24	24	24	24
09/27/01	24	24	24	24	24
09/26/01	24	24	24	24	24
09/25/01	24	24	24	24	24
09/24/01	24	24	24	24	24
09/23/01	24	24	24	24	24
09/22/01	24	24	24	24	24
09/21/01	24	24	24	24	24
09/20/01	24	24	24	24	24
09/19/01	24	24	24	24	24
09/18/01	24	24	24	24	24
09/17/01	24	24	24	24	24
09/16/01	24	24	24	24	24
09/15/01	24	24	24	24	24
09/14/01	24	24	24	24	24
09/13/01	24	24	24	24	24
09/12/01	24	24	24	24	24
09/11/01	24	24	24	24	24
09/10/01	24	24	24	24	24
09/09/01	24	24	24	24	24
09/08/01	24	24	24	24	24
09/07/01	24	24	24	24	24
09/06/01	24	24	24	24	24
09/05/01	24	24	24	24	24
09/04/01	24	24	24	24	24
09/03/01	24	24	24	24	24
09/02/01	24	24	24	24	24
09/01/01	24	24	24	24	24
08/31/01	24	24	24	24	24
08/30/01	24	24	24	24	24
08/29/01	24	24	24	24	24
08/28/01	24	24	24	24	24
08/27/01	24	24	24	24	24
08/26/01	24	24	24	24	24
08/25/01	24	24	24	24	24
08/24/01	24	24	24	24	24
08/23/01	24	24	24	24	24
08/22/01	24	24	24	24	24
08/21/01	24	24	24	24	24
08/20/01	24	24	24	24	24
08/19/01	24	24	24	24	24
08/18/01	24	24	24	24	24
08/17/01	24	24	24	24	24
08/16/01	24	24	24	24	24
08/15/01	24	24	24	24	24
08/14/01	24	24	24	24	24
08/14/00	12	12	12	12	12

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CountOfAIT_38	CountOfTT_28
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12	12

Day	CountOfAIT_38	CountOfAIT_38	CountOfAIT_38	CountOfAIT_38	CountOfFT_38
08/13/01	24	24	24	24	24
08/13/00	24	24	24	24	24
08/12/01	24	24	24	24	24
08/12/00	24	24	24	24	24
08/11/01	24	24	24	24	24
08/11/00	24	24	24	24	24
08/10/01	24	24	24	24	24
08/10/00	24	24	24	24	24
08/09/01	24	24	24	24	24
08/09/00	24	24	24	24	24
08/08/01	24	24	24	24	24
08/08/00	24	24	24	24	24
08/07/01	24	24	24	24	24
08/07/00	24	24	24	24	24
08/06/01	24	24	24	24	24
08/06/00	24	24	24	24	24
08/05/01	24	24	24	24	24
08/05/00	24	24	24	24	24
08/04/01	24	24	24	24	24
08/04/00	24	24	24	24	24
08/03/01	24	24	24	24	24
08/03/00	24	24	24	24	24
08/02/01	24	24	24	24	24
08/02/00	24	24	24	24	24
08/01/01	24	24	24	24	24
08/01/00	24	24	24	24	24
07/31/01	24	24	24	24	24
07/31/00	24	24	24	24	24
07/30/01	24	24	24	24	24
07/30/00	24	24	24	24	24
07/29/01	24	24	24	24	24
07/29/00	24	24	24	24	24
07/28/01	24	24	24	24	24
07/28/00	24	24	24	24	24
07/27/01	24	24	24	24	24
07/27/00	24	24	24	24	24
07/26/01	24	24	24	24	24
07/26/00	24	24	24	24	24
07/25/01	24	24	24	24	24
07/25/00	24	24	24	24	24
07/24/01	24	24	24	24	24
07/24/00	24	24	24	24	24
07/23/01	24	24	24	24	24
07/23/00	24	24	24	24	24
07/22/01	24	24	24	24	24
07/22/00	24	24	24	24	24
07/21/01	24	24	24	24	24

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CountOfAIT_38	CountOfTT_28
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Day	CountOfAIT_38	CountOfAIT_38	CountOfAIT_38	CountOfAIT_38	CountOfFT_38
07/21/00	24	24	24	24	24
07/20/01	24	24	24	24	24
07/20/00	24	24	24	24	24
07/19/01	24	24	24	24	24
07/19/00	24	24	24	24	24
07/18/01	24	24	24	24	24
07/18/00	24	24	24	24	24
07/17/01	24	24	24	24	24
07/17/00	24	24	24	24	24
07/16/01	24	24	24	24	24
07/16/00	24	24	24	24	24
07/15/01	24	24	24	24	24
07/15/00	24	24	24	24	24
07/14/01	24	24	24	24	24
07/14/00	24	24	24	24	24
07/13/01	24	24	24	24	24
07/13/00	24	24	24	24	24
07/12/01	24	24	24	24	24
07/12/00	24	24	24	24	24
07/11/01	24	24	24	24	24
07/11/00	24	24	24	24	24
07/10/01	24	24	24	24	24
07/10/00	24	24	24	24	24
07/09/01	24	24	24	24	24
07/09/00	24	24	24	24	24
07/08/01	24	24	24	24	24
07/08/00	24	24	24	24	24
07/07/01	24	24	24	24	24
07/07/00	24	24	24	24	24
07/06/01	24	24	24	24	24
07/06/00	24	24	24	24	24
07/05/01	24	24	24	24	24
07/05/00	24	24	24	24	24
07/04/01	24	24	24	24	24
07/04/00	24	24	24	24	24
07/03/01	24	24	24	24	24
07/03/00	24	24	24	24	24
07/02/01	24	24	24	24	24
07/02/00	24	24	24	24	24
07/01/01	24	24	24	24	24
07/01/00	24	24	24	24	24
06/30/01	24	24	24	24	24
06/30/00	24	24	24	24	24
06/29/01	24	24	24	24	24
06/29/00	24	24	24	24	24
06/28/01	24	24	24	24	24
06/28/00	24	24	24	24	24

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CountOfAIT_38	CountOfTT_28
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Day	CountOfAIT_38	CountOfAIT_38	CountOfAIT_38	CountOfAIT_38	CountOfFT_38
06/27/01	24	24	24	24	24
06/27/00	24	24	24	24	24
06/26/01	24	24	24	24	24
06/26/00	24	24	24	24	24
06/25/01	24	24	24	24	24
06/25/00	24	24	24	24	24
06/24/01	24	24	24	24	24
06/24/00	24	24	24	24	24
06/23/01	24	24	24	24	24
06/23/00	24	24	24	24	24
06/22/01	24	24	24	24	24
06/22/00	24	24	24	24	24
06/21/01	24	24	24	24	24
06/21/00	24	24	24	24	24
06/20/01	24	24	24	24	24
06/20/00	24	24	24	24	24
06/19/01	24	24	24	24	24
06/19/00	24	24	24	24	24
06/18/01	24	24	24	24	24
06/18/00	24	24	24	24	24
06/17/01	24	24	24	24	24
06/17/00	24	24	24	24	24
06/16/01	24	24	24	24	24
06/16/00	24	24	24	24	24
06/15/01	24	24	24	24	24
06/15/00	24	24	24	24	24
06/14/01	10	10	10	10	10
06/14/00	24	24	24	24	24
06/13/01	24	24	24	24	24
06/13/00	24	24	24	24	24
06/12/01	24	24	24	24	24
06/12/00	24	24	24	24	24
06/11/01	24	24	24	24	24
06/11/00	24	24	24	24	24
06/10/01	24	24	24	24	24
06/10/00	24	24	24	24	24
06/09/01	24	24	24	24	24
06/09/00	24	24	24	24	24
06/08/01	24	24	24	24	24
06/08/00	24	24	24	24	24
06/07/01	24	24	24	24	24
06/07/00	24	24	24	24	24
06/06/01	24	24	24	24	24
06/06/00	24	24	24	24	24
06/05/01	24	24	24	24	24
06/05/00	24	24	24	24	24
06/04/01	24	24	24	24	24

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CountOfAIT_38	CountOfTT_28
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Day	CountOfAIT_38	CountOfAIT_38	CountOfAIT_38	CountOfAIT_38	CountOfFT_38
06/04/00	24	24	24	24	24
06/03/01	24	24	24	24	24
06/03/00	24	24	24	24	24
06/02/01	23	23	23	23	23
06/02/00	24	24	24	24	24
06/01/00	24	24	24	24	24
05/31/00	24	24	24	24	24
05/30/00	24	24	24	24	24
05/29/00	24	24	24	24	24
05/28/00	24	24	24	24	24
05/27/00	24	24	24	24	24
05/26/00	24	24	24	24	24
05/25/00	24	24	24	24	24
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05/23/00	24	24	24	24	24
05/22/00	24	24	24	24	24
05/21/00	24	24	24	24	24
05/20/00	20	20	20	20	20
05/19/00	22	22	22	22	22
05/18/00	24	24	24	24	24
05/17/00	24	24	24	24	24
05/16/00	24	24	24	24	24
05/15/00	24	24	24	24	24
05/14/00	24	24	24	24	24
05/13/00	24	24	24	24	24
05/12/00	24	24	24	24	24
05/11/00	24	24	24	24	24
05/10/00	24	24	24	24	24
05/09/00	24	24	24	24	24
05/08/00	24	24	24	24	24
05/07/00	24	24	24	24	24
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05/05/00	24	24	24	24	24
05/04/00	24	24	24	24	24
05/03/00	23	23	23	23	23
05/02/00	24	24	24	24	24
05/01/00	24	24	24	24	24
04/30/00	24	24	24	24	24
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04/23/00	24	24	24	24	24
04/22/00	24	24	24	24	24
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CountOfAIT_38	CountOfTT_28
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Day	CountOfAIT_38	CountOfAIT_38	CountOfAIT_38	CountOfAIT_38	CountOfFT_38
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04/19/00	24	24	24	24	24
04/18/00	24	24	24	24	24
04/17/00	24	24	24	24	24
04/16/00	24	24	24	24	24
04/15/00	24	24	24	24	24
04/14/00	24	24	24	24	24
04/13/00	24	24	24	24	24
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04/11/00	24	24	24	24	24
04/10/00	24	24	24	24	24
04/09/00	24	24	24	24	24
04/08/00	24	24	24	24	24
04/07/00	24	24	24	24	24
04/06/00	24	24	24	24	24
04/05/00	24	24	24	24	24
04/04/00	24	24	24	24	24
04/03/00	24	24	24	24	24
04/02/00	22	22	22	22	22
04/01/00	24	24	24	24	24
03/31/00	24	24	24	24	24
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03/29/00	24	24	24	24	24
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03/27/00	24	24	24	24	24
03/26/00	24	24	24	24	24
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03/09/00	24	24	24	24	24
03/08/00	24	24	24	24	24
03/07/00	24	24	24	24	24
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CountOfAIT_38	CountOfTT_28
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Day	CountOfAIT_38	CountOfAIT_38	CountOfAIT_38	CountOfAIT_38	CountOfFT_38
03/04/00	13	13	13	13	13
03/03/00	24	24	24	24	24
03/02/00	24	24	24	24	24
03/01/00	24	24	24	24	24
02/29/00	24	24	24	24	24
02/28/00	24	24	24	24	24
02/27/00	24	24	24	24	24
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02/19/00	24	24	24	24	24
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02/16/00	24	24	24	24	24
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02/11/00	24	24	24	24	24
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02/08/00	24	24	24	24	24
02/07/00	24	24	24	24	24
02/06/00	24	24	24	24	24
02/05/00	24	24	24	24	24
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01/22/00	24	24	24	24	24
01/21/00	24	24	24	24	24
01/20/00	24	24	24	24	24
01/19/00	24	24	24	24	24
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CountOfAIT_38	CountOfTT_28
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Day	CountOfAIT_38	CountOfAIT_38	CountOfAIT_38	CountOfAIT_38	CountOfFT_38
01/17/00	24	24	24	24	24
01/16/00	24	24	24	24	24
01/15/00	24	24	24	24	24
01/14/00	24	24	24	24	24
01/13/00	24	24	24	24	24
01/12/00	24	24	24	24	24
01/11/00	24	24	24	24	24
01/10/00	24	24	24	24	24
01/09/00	24	24	24	24	24
01/08/02	11	11	11	11	11
01/08/00	24	24	24	24	24
01/07/02	24	24	24	24	24
01/07/00	24	24	24	24	24
01/06/02	24	24	24	24	24
01/06/00	24	24	24	24	24
01/05/02	24	24	24	24	24
01/05/00	24	24	24	24	24
01/04/02	24	24	24	24	24
01/04/00	24	24	24	24	24
01/03/02	24	24	24	24	24
01/03/00	24	24	24	24	24
01/02/02	24	24	24	24	24
01/02/00	24	24	24	24	24
01/01/02	24	24	24	24	24
01/01/00	24	24	24	24	24

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CountOfAIT_38	CountOfTT_28
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Units of Item Purchased by Month		1	2	3	4	5	6	7	8	9	10	11	12	
Part No. SAP	Material	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total consumption
*	Spraypaint *	19	10	12	7	10	8	21	23	16	9	6	8	149
5407103	Sealant Silicone White 10.3 OZ tube	0	2	1	2	0	0	1	0	0	2	4	0	12
5407104	Sealant Rubber Silicone RTV GE #W102 cart	1	4	2	2	6	2	2	0	0	6	8	0	33
5407107	Silicone RTV High Temp Blue Mak-A-Gasket	3	3	2	6	5	3	0	5	0	0	0	1	28
5407108	Silicone RTV High Temp Clear MAK-A-Gasket	3	8	4	2	6	3	4	5	3	5	14	8	65
5407328	Cleaner Instant Contact #CRC-02016	3	6	0	0	0	11	0	2	1	4	0	0	27
5407330	Cleaner Dust Chaser Spray VWR# 21899-094	17	11	4	11	20	1	17	0	2	8	9	8	108
5407331	Degreaser gel engine	1	4	0	0	0	0	0	0	1	0	0	0	6
5407332	Cleaner Electric Motor KAR #65390-2	3	0	0	0	1	1	0	1	0	0	0	0	6
5407334	Stripper / Remover For Paint, Carbon &	1	0	0	0	0	0	1	0	1	0	2	0	5
5407347	Refrigerant R-22 (30 LBS)	0	0	0	6	0	0	0	0	0	1	0	0	7
	Parts Washing Solvent	12	30	0	0	41	28	0	0	0	30	0	0	141
5407376	Isopropyl Alcohol (IPA) 99%	7	7	8	5	6	6	5	5	4	5	7	5	70
5407408	Lubricant Spray Molykote 321R Dow-Corning	0	0	0	0	0	0	0	0	0	0	0	0	0
5407431	Lubricant CRC 3-36 #03005	36	6	30	10	8	12	24	7	24	0	8	13	178
5407433	Lubricant CRC 3-36 (Gallon Can)	0	2	0	0	0	1	2	0	0	0	0	0	5
5407435	Lube Teflon #79417	0	0	0	0	0	0	0	0	0	0	2	0	2
5407436	Lubricant Teflon Dry #79418	0	0	0	0	0	1	1	0	0	0	0	0	2
5407439	Cement Neoprene Turntable Covering Carbo	0	0	0	0	0	0	0	0	0	0	0	0	0
5407466	Skyliquid Wax for Enya, HF-3511	0	0	0	0	0	0	0	0	0	0	0	0	0
5407470	Cleaner Zero Residue Instant Tech Spray	9	8	7	0	8	4	0	0	8	0	4	6	54
5407938	Caviclean #2 Cleaning Solution Turco	0	0	0	0	0	0	0	0	0	0	0	0	0
5407947	Lubricant Silicon	1	0	0	0	0	0	0	0	0	0	0	1	2
5407948	Grease Multi Purpose White	1	0	0	0	0	0	0	0	0	0	0	1	2
5407955	Epoxy Valtron AD1230 4-1 GAL/CS Part A	2	3	4	0	1	1	1	1	1	1	1	1	17
5407956	Hardner AD1211-B Red Pigment	2	2	4	4	0	0	1	0	0	0	0	0	13
5407957	Epoxy STC Fast Cure Grey	486	376	407	330	341	326	163	260	161	240	163	82	3335
5407963	Mold-Release Wiz F-57NC 1 Gallon	0	0	0	0	0	0	0	0	0	0	0	0	0
5407967	Adhesive Tixo K-10 10 Gm/Each	1	0	1	0	0	0	0	0	1	1	0	0	4
5413542	Skyliquid Wax for Enya, HF-4011	390	282	354	329	198	186	173	217	144	174	222	186	2855
5415107	Acetone semicondcutor grade	6	6	5	3	7	2	2	4	6	6	2	3	52
	3M Scotch-Grip HP Contact Adhesive 1357	0	0	0	0	0	0	0	0	0	1	1	1	3
5522458	Wax Thin Skyliquid KN-25449 2ltr/btl	0	0	0	0	0	0	0	0	0	6	0	0	6
* this category contains part numbers 5406902-12														
Part No. SAP	Material	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total consumption
5406902	Paint Krylon White Enamel Glossy #1501	5	3	7	4	0	1	7	12	10	4	0	3	56
5406903	Paint Gray Primer 2X982 16oz.	5	2	0	0	9	2	3	5	4	3	0	4	37
5406904	Paint Supercoat 316L SS Aerosol Can	3	2	1	1	0	0	0	2	0	0	0	0	9
5406905	Varnish red insulating	0	0	0	0	0	0	7	0	0	0	0	0	7
5406906	Paint John Deere Green	0	2	4	0	1	2	0	0	0	0	2	1	12
5406907	Paint Chevrolet Orange	0	0	0	0	0	0	0	1	0	1	2	0	4
5406908	Paint Ford Red	0	0	0	0	0	0	0	0	0	0	0	0	0
5406909	Paint High Heat Black	2	0	0	1	0	2	1	1	2	0	0	0	9
5406910	Paint Chrysler Blue/ Napa	0	1	0	1	0	0	1	1	0	0	2	0	6
5406911	Paint Tan Industrial Enamel	0	0	0	0	0	0	0	0	0	0	0	0	0
5406912	Paint Glossy Black Spray Can #84000	4	0	0	0	0	1	2	1	0	1	0	0	9

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SAP Material Number	Container Size	Form	Density/ Specific Gravity	Lb/gal	Gal/each	Lb/each	Fraction of product used	VOC Fraction	Evap Fraction	MSDS Number	Date added to list or revised	Comments
5406902		L		0		1.4	1	0.85	1			Lb/each and VOC Fraction inherited with spreadsheet
5407103	10.3oz Tub	Paste	1.04	8.6736		0.64375	1	0.025	1	2148		
5407104	10.3oz Car	Solid	1.06	8.8404		0.64375	1	0.04	1	2575		
5407107	8 oz Sp Can	L	1.04	8.6736	0.0625	0.5421	1	0.08	1	2337		
5407108	8 oz Sp Can	L	1.04	8.6736	0.0625	0.5421	1	0.08	1	2337		
5407328	15oz Sp Can	L	1.57	13.0938	0.117188	1.53443	1	0.96	1	2093		MSDS in 1997 TRI Notebook
5407330	15oz Sp Can	L	1.19	9.9246	0.117188	1.163039	1	1	1			MSDS not in File Magic; Specific Gravity inherited with spreadsheet
5407331	15oz Sp Can	L	0.8	6.672	0.117188	0.781875	1	0.7	1	2660		
5407332	16oz Sp Can	L	1.5	12.51	0.125	1.56375	1	0.243	1	2169		
5407334	16oz Sp Can	L	0.9	7.506	0.125	0.93825	1	0.68	1	2252		
5407347	30 Lb Dm	L					1	1	1			
	1 Gal	L	0.80335	6.7	1	6.7	1	1	1	2582	Added 2/8/99	Evap Fraction left at 1 because amount shipped as waste accounted
5407376	55 Gal Dm	L	0.7855	6.55107	55	362	1	1	1	2580		Evap Fraction left at 1 because amount discharged to POTW in wast
5407408	11oz Sp Can	L	1	8.34	0.085938	0.716719	1	0.57	1	2419		MSDS in 1997 TRI Notebook; Specific Gravity assumed - none listed
5407431	16oz Sp Can	L	0.8167	6.81128	0.125	0.85141	1	0.7	0.1	1011		Evap Fraction corresponds to "slow 0.01" Evaporation Rate noted on
5407433	1 Gal Pl Btl	L	0.8167	6.81128	1	6.811278	1	0.7	0.1	1010		Evap Fraction corresponds to "slow 0.01" Evaporation Rate noted on
5407435	20oz Sp Can	L	0.6	5.004	0.15625	0.781875	1	0.82	1	2344		
5407436	16oz Sp Can	L	0.6	5.004	0.125	0.6255	1	1	1	2154		Specific Gravity assumed - none on MSDS
5407439	16oz Btl	L	0.81	6.7554	0.125	0.844425	1	0.8	1	2427		MSDS in 1997 TRI Notebook
5407466	2 L Pl Btl	L	0.889	7.41426	0.528346	3.917293	0.75	0.65	0.77	2631		Assumed same process test data as PN 5413542 because similar fo
5407470	16oz Sp Can	L	1.004	8.37336	0.125	1.04667	1	0.0541	1	2803		
5407938	55 Gal Dm	L	1.05	8.757	55	481.635	1	0.12	1	2740		VOC Fraction inherited with spreadsheet
5407947	20oz Sp Can	L	0.76	6.3384	0.15625	0.990375	1	0.9	1	2340		
5407948	20oz Sp Can	L	0.9	7.506	0.15625	1.172813	1	0.24	1	2332		
5407955	1 Gal Can	S	1.2	10.008	1	10.008	1	0.4	1	2750		VOC Fraction inherited with spreadsheet - none on MSDS
5407956	16oz Can	L	1.1	9.174	0.125	1.14675	1	0.4	1	2749		
5407957	10 oz Can	L	1.54	12.8436	0.078125	1.003406	1	0.07385	1	2615		
5407963	1 Gal Can	L	0.82	6.8388	1	6.8388	1	0.925	1	2414		
5407967	20oz Sp Can	L	1.05	8.757	0.15625	1.368281	1	0.88	1	2722		VOC Fraction inherited with spreadsheet - none on MSDS
5413542	2 L Pl Btl	L	0.902	7.52268	0.528346	3.974576	0.75	0.6	0.77	2819		process test used to determine evap fraction; MSDS in 1997 TRI Not
5415107	! Gal bottle	L	0.79	6.5886	4	26.3544	1	1	1			VWR MSDS #MZA0446
* some values in the table are given by the manufacturer, others are calculated by unit conversion.												
Values in this table may be updated as appropriate.												
4467305	5 Gal Pail	L	0.9	7.506	5	35.5		0.649	1			
5455100	16 oz can	L	0.93	7.7562	0.129	1		0.85	1			

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for late							
e water accounted for later; Lb/Dm from VW&R Customer Sales by Product for 199							
MSDS							
MSDS							
mula; MSDS in 1997 TRI Notebool							
ebool							

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Pounds VOCs Purchased (2001)														
Part no SAP	Material	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Yearly total
5406902	Spraypaint *	22.61	11.90	14.28	8.33	11.90	9.52	24.99	27.37	19.04	10.71	7.14	9.52	177.31
5407103	Sealant Silicone White 10.3 OZ tube	0.00	0.03	0.02	0.03	0.00	0.00	0.02	0.00	0.00	0.03	0.06	0.00	0.19
5407104	Sealant Rubber Silicone RTV GE #W102 cart	0.03	0.10	0.05	0.05	0.15	0.05	0.05	0.00	0.00	0.15	0.21	0.00	0.85
5407107	Silicone RTV High Temp Blue Mak-A-Gasket	0.13	0.13	0.09	0.26	0.22	0.13	0.00	0.22	0.00	0.00	0.00	0.04	1.21
5407108	Silicone RTV High Temp Clear MAK-A-Gasket	0.13	0.35	0.17	0.09	0.26	0.13	0.17	0.22	0.13	0.22	0.61	0.35	2.82
5407328	Cleaner Instant Contact #CRC-02016	4.42	8.84	0.00	0.00	0.00	16.20	0.00	2.95	1.47	5.89	0.00	0.00	39.77
5407330	Cleaner Dust Chaser Spray VWR# 21899-094	19.77	12.79	4.65	12.79	23.26	1.16	19.77	0.00	2.33	9.30	10.47	9.30	125.61
5407331	Degreaser gel engine	0.55	2.19	0.00	0.00	0.00	0.00	0.00	0.00	0.55	0.00	0.00	0.00	3.28
5407332	Cleaner Electric Motor KAR #65390-2	1.14	0.00	0.00	0.00	0.38	0.38	0.00	0.38	0.00	0.00	0.00	0.00	2.28
5407334	Stripper / Remover For Paint, Carbon &	0.64	0.00	0.00	0.00	0.00	0.00	0.64	0.00	0.64	0.00	2.33	0.00	4.24
5407347	Refrigerant R-22 (30 LBS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.16	0.00	0.00	1.16
	Parts Washing Solvent	80.40	201.00	0.00	0.00	274.70	187.60	0.00	0.00	0.00	201.00	0.00	0.00	944.69
5407376	Isopropyl Alcohol (IPA) 99%	2534.00	2534.00	2896.00	1810.00	2172.00	2172.00	1810.00	1810.00	1448.00	1810.00	2534.00	1810.00	25340.00
5407408	Lubricant Spray Molykote 321R Dow-Corning	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5407431	Lubricant CRC 3-36 #03005	21.46	3.58	17.88	5.96	4.77	7.15	14.30	4.17	14.30	0.00	4.77	7.75	106.09
5407433	Lubricant CRC 3-36 (Gallon Can)	0.00	9.54	0.00	0.00	0.00	4.77	9.54	0.00	0.00	0.00	0.00	0.00	23.84
5407435	Lube Teflon #79417	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.28	0.00	1.28
5407436	Lubricant Teflon Dry #79418	0.00	0.00	0.00	0.00	0.00	0.63	0.63	0.00	0.00	0.00	0.00	0.00	1.25
5407439	Cement Neoprene Turntable Covering Carbo	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5407466	Skyliquid Wax for Enya	0.00	0.00	7.52	0.00	0.00	0.00	0.60	0.00	0.00	0.00	0.00	0.00	8.12
5407470	Cleaner Zero Residue Instant Teck Spray	0.51	0.45	0.40	0.00	0.45	0.23	0.00	0.00	0.45	0.00	0.23	0.34	3.06
5407938	Caviclean #2 Cleaning Solution Turco	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5407947	Lubricant Silicon	0.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.89	1.78
5407948	Grease Multi Purpose White	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.28	0.56
5407955	Epoxy Valtron AD1230 4-1 GAL/CS Part A	8.01	12.01	16.01	0.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	68.05
5407956	Hardner AD1211-B Red Pigment	0.92	0.92	1.83	1.83	0.00	0.00	0.46	0.00	0.00	0.00	0.00	0.00	5.96
5407957	Epoxy STC Fast Cure Grey	36.01	27.86	30.16	24.45	25.27	24.16	12.08	19.27	11.93	17.78	12.08	6.08	247.13
5407963	Mold-Release Wiz F-57NC 1 Gallon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5407967	Adhesive Tixo K-10 10 Gm/Each	1.20	0.00	1.20	0.00	0.00	0.00	0.00	0.00	1.20	1.20	0.00	0.00	4.82
5413542	Skyliquid Wax for Enya, HF-4011	930.05	672.50	844.20	784.58	472.18	443.56	412.56	517.49	343.40	414.95	529.41	443.56	6808.45
5415107	Acetone semicondcutor grade	158.13	158.13	131.77	79.06	184.48	52.71	52.71	105.42	158.13	14.31	4.77	7.15	1106.76
	3M Scotch-Grip HP Contact Adhesive 1357	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.30	1.30	1.30	3.89
5522458	Wax Thin Skyliquid KN-25449 2ltr/btl	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.25	0.00	0.00	17.25
	Total Per Month:	3821.27	3656.31	3966.24	2727.45	3174.02	2924.38	2362.52	2491.48	2005.58	2509.26	3112.65	2300.57	

Total VOCs Purchased (2001): 35051.72 lbs or 17.53 tons

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Pounds VOCs Evaporated or In Wastes (2001)

Part no SAP	Material	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Yearly total
5406902	Spraypaint *	22.61	11.90	14.28	8.33	11.90	9.52	24.99	27.37	19.04	10.71	7.14	9.52	177.31
5407103	Sealant Silicone White 10.3 OZ tube	0.00	0.03	0.02	0.03	0.00	0.00	0.02	0.00	0.00	0.03	0.06	0.00	0.19
5407104	Sealant Rubber Silicone RTV GE #W102 cart	0.03	0.10	0.05	0.05	0.15	0.05	0.05	0.00	0.00	0.15	0.21	0.00	0.85
5407107	Silicone RTV High Temp Blue Mak-A-Gasket	0.13	0.13	0.09	0.26	0.22	0.13	0.00	0.22	0.00	0.00	0.00	0.04	1.21
5407108	Silicone RTV High Temp Clear MAK-A-Gasket	0.13	0.35	0.17	0.09	0.26	0.13	0.17	0.22	0.13	0.22	0.61	0.35	2.82
5407328	Cleaner Instant Contact #CRC-02016	4.42	8.84	0.00	0.00	0.00	16.20	0.00	2.95	1.47	5.89	0.00	0.00	39.77
5407330	Cleaner Dust Chaser Spray VWR# 21899-094	19.77	12.79	4.65	12.79	23.26	1.16	19.77	0.00	2.33	9.30	10.47	9.30	125.61
5407331	Degreaser gel engine	0.55	2.19	0.00	0.00	0.00	0.00	0.00	0.00	0.55	0.00	0.00	0.00	3.28
5407332	Cleaner Electric Motor KAR #65390-2	1.14	0.00	0.00	0.00	0.38	0.38	0.00	0.38	0.00	0.00	0.00	0.00	2.28
5407334	Stripper / Remover For Paint, Carbon &	0.64	0.00	0.00	0.00	0.00	0.00	0.64	0.00	0.64	0.00	1.28	0.00	3.19
5407347	Refrigerant R-22 (30 LBS)	0.00	0.00	0.00	3.83	0.00	0.00	0.00	0.00	0.00	0.64	0.00	0.00	4.47
	Parts Washing Solvent	80.40	201.00	0.00	0.00	274.70	187.60	0.00	0.00	0.00	201.00	0.00	0.00	944.69
5407376	Isopropyl Alcohol (IPA) 99%	2534.00	2534.00	2896.00	1810.00	2172.00	2172.00	1810.00	1810.00	1448.00	1810.00	2534.00	1810.00	25340.00
5407408	Lubricant Spray Molykote 321R Dow-Corning	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5407431	Lubricant CRC 3-36 #03005	2.15	0.36	1.79	0.60	0.48	0.72	1.43	0.42	1.43	0.00	0.48	0.77	10.61
5407433	Lubricant CRC 3-36 (Gallon Can)	0.00	0.95	0.00	0.00	0.00	0.48	0.95	0.00	0.00	0.00	0.00	0.00	2.38
5407435	Lube Teflon #79417	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.28	0.00	1.28
5407436	Lubricant Teflon Dry #79418	0.00	0.00	0.00	0.00	0.00	0.63	0.63	0.00	0.00	0.00	0.00	0.00	1.25
5407439	Cement Neoprene Turntable Covering Carbo	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5407466	Skyliquid Wax for Enya, HF-3511	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5407470	Cleaner Zero Residue Instant Teck Spray	0.51	0.45	0.40	0.00	0.45	0.23	0.00	0.00	0.45	0.00	0.23	0.34	3.06
5407938	Caviclean #2 Cleaning Solution Turco	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5407947	Lubricant Silicon	0.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.89	1.78
5407948	Grease Multi Purpose White	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.28	0.56
5407955	Epoxy Valtron AD1230 4-1 GAL/CS Part A	8.01	12.01	16.01	0.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	68.05
5407956	Hardner AD1211-B Red Pigment	0.92	0.92	1.83	1.83	0.00	0.00	0.46	0.00	0.00	0.00	0.00	0.00	5.96
5407957	Epoxy STC Fast Cure Grey	36.01	27.86	30.16	24.45	25.27	24.16	12.08	19.27	11.93	17.78	12.08	6.08	247.13
5407963	Mold-Release Wiz F-57NC 1 Gallon	0.00	0.00	6.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.33
5407967	Adhesive Tixo K-10 10 Gm/Each	1.20	0.00	1.20	0.00	0.00	0.00	0.00	0.00	1.20	1.20	0.00	0.00	4.82
5413542	Skyliquid Wax for Enya, HF-4011	537.10	388.37	487.53	453.10	272.68	256.16	238.25	298.85	198.32	239.63	305.74	256.16	3931.88
5415107	Acetone semicondcutor grade	158.13	158.13	131.77	79.06	184.48	52.71	52.71	105.42	158.13	158.13	52.71	79.06	1370.43
	Contact Adhesive 1357	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.30	1.30	1.30	3.89
5522458	Wax Thin Skyliquid KN-25449 2ltr/btl	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.25	0.00	0.00	17.25
	Total Per Month:	3409.01	3360.38	3592.28	2394.43	2970.24	2726.25	2166.15	2269.08	1847.62	2477.24	2931.57	2178.10	

Total VOCs Evaporated or In Wastes (2001): 32322.34 lbs or 16.16 tons

VOCs to waste water: 5561 (voc to waste water and waste.xls - 2001)

VOCs to waste: 540 (voc to waste water and waste.xls - 2001)

Total VOCs Evaporated (2001): 26221.01 lbs or 13.11 tons

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Analytical data from North Creek Analytical 2001
(reports from Dianne Mullan/Facilities Lab)

OWW IPA		
Month, 2001	Detection Limit	Result (ppm)
Jan	1.0	< 1
Feb	1.0	5.0
Mar	1.0	5.0
Apr	1.0	1.0
May	1.0	2.0
Jun	1.0	6.0
Jul	1.0	<1.0
Aug	1.0	<1.0
Sep	1.0	3.0
Oct	1.0	<1.0
Nov	1.0	<1.0
Dec	1.0	<1.0
*Average:		3.7

	Million Gallons	
Month	Process WW Flow	OWW Flow
Jan	32.736	25.565
Feb	29.26	19.366
Mar	31.465	19.959
Apr	28.5	19.18
May	26.939	17.956
Jun	27.42	17.507
Jul	27.807	17.395
Aug	28.303	18.608
Sep	25.575	22.565
Oct	28.83	18.225
Nov	27.54	17.185
Dec	27.807	16.645
Total	342.182	230.156

OWW = Organic Waste Water

Process WW = Process Waste Water Flow, Average, (from DMRs)
aka (Weak Acid Drain, or WAD + Concentrated Acid Drain, or CAD)
OWW flows from Facilities (L:\RODI\CCR\"totals".xls)

ppm = mg/l
ND = Not Detected
*Did not include NDs in average.
POTW Flow: (OWW system)
230156000 gallons for the year
19179666.67 per month, assuming flow is consistent

River Flow: (CE)
342182000 gallons for the year
28515167 per month, assuming flow is consistent

calculating yearly amount of IPA to POTW:

$$\frac{3.7 \text{ gal IPA}}{1000000 \text{ gal water}} \times \frac{230156000 \text{ gal water}}{\text{year}} \times \frac{6.59 \text{ lb IPA}}{\text{gal IPA}} = \frac{5561 \text{ lb IPA}}{\text{year}}$$

5561 lb IPA / year to waste water

::
Total lb VOC in waste water for 2001: 5561 or 2.8 tons

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All input data (yellow shaded areas) received from Petra Hoy in 2001 Waste Shipment Information.
L:\Hazardous Waste\2001\list of wastes "for VOC report".xls

Mixed Alcohols Waste (90% VOC)			
Date Shipped	lbs	Avg lb/day	Avg lb/month
			50.00
8-Feb	600	0.01	
Total lbs:	600		

lbs VOC: 540 (Waste Profile Number: 321346)

Parts Washer Solvent Waste (100% VOC)			
Date Shipped	lbs	Avg lb/day	Avg lb/month
18-Jan	80.4	0.002	78.73
9-Feb	201	9.14	
4-May	274.7	3.27	
14-Jun	187.6	4.58	
18-Oct	201	1.60	
Total lbs:	944.7		

lbs VOC: 945 (Safety-Kleen Premium Gold Solvent)

Wax Waste (from Fab 2 - Enya) 20% / 60% VOC*			
Date Shipped	lbs	Avg lb/day	Avg lb/month
			399.92
11-Jan	626	0.02	
8-Feb	593	21.18	
15-Mar	620	17.71	
12-Apr	200	7.14	
10-May	419	14.96	
11-Jun	231	7.22	
27-Jun	423	26.44	
31-Jul	225	6.62	
17-Sep	476	9.92	
2-Oct	213	14.20	
6-Nov	400	11.43	
7-Dec	373	0.94	
Total lbs:	4799		

lbs VOC: 2144 (Waste Profile Number: 325054)

* As of March 2000 the Mixed Alcohol and Wax Waste profiles are combined
There by increasing the % VOC in the Wax Waste to 60%

Total lbs VOC in waste shipments for 2001:	3629	or	1.8 tons	
	1485	or	0.7 tons	(not including Wax Waste)
	540	or	0.3 tons	(cleaning solvent VOCs only, not including Safety-Kleen)

SCOEPA00022782

Worksheet for Cleaning Solvent VOC Emissions

Part no SAP	Material	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Yearly total	
5407328	Cleaner Instant Contact #CRC-02016	4.42	8.84	0.00	0.00	0.00	16.20	0.00	2.95	1.47	5.89	0.00	0.00	39.77	
5407330	Cleaner Dust Chaser Spray VWR# 21899-094	19.77	12.79	4.65	12.79	23.26	1.16	19.77	0.00	2.33	9.30	10.47	9.30	125.61	
5407331	Degreaser gel engine	0.55	2.19	0.00	0.00	0.00	0.00	0.00	0.00	0.55	0.00	0.00	0.00	3.28	
5407332	Cleaner Electric Motor KAR #65390-2	1.14	0.00	0.00	0.00	0.38	0.38	0.00	0.38	0.00	0.00	0.00	0.00	2.28	
5407334	Stripper / Remover For Paint, Carbon &	0.64	0.00	0.00	0.00	0.00	0.00	0.64	0.00	0.64	0.00	1.28	0.00	3.19	
	Parts Washing Solvent	80.40	201.00	0.00	0.00	274.70	187.60	0.00	0.00	0.00	201.00	0.00	0.00	944.69	
5407376	Isopropyl Alcohol (IPA) 99%	2534.00	2534.00	2896.00	1810.00	2172.00	2172.00	1810.00	1810.00	1448.00	1810.00	2534.00	1810.00	25340.00	
5407470	Cleaner Zero Residue Instant Teck Spray	0.51	0.45	0.40	0.00	0.45	0.23	0.00	0.00	0.45	0.00	0.23	0.34	3.06	
5407938	Caviclean #2 Cleaning Solution Turco	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	Total lbs	2641.43	2759.27	2901.05	1822.79	2470.79	2377.57	1830.41	1813.33	1453.44	2026.19	2545.97	1819.64	26461.88	Total lbs
	Total tons	1.32	1.38	1.45	0.91	1.24	1.19	0.92	0.91	0.73	1.01	1.27	0.91	13.23	Total tons
Recovered VOCs	Monthly average IPA in OWW (lbs)	463.44	463.44	463.44	463.44	463.44	463.44	463.44	463.44	463.44	463.44	463.44	463.44	5561.34	
	Monthly avg. recovered parts washer solvent (lbs	78.73	78.73	78.73	78.73	78.73	78.73	78.73	78.73	78.73	78.73	78.73	78.73	944.70	
	Monthly avg. mixed alcohols waste (lbs)	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	540.00	Total recovered VOCs:
	Monthly avg. wax waste (lbs)	178.65	178.65	178.65	178.65	178.65	178.65	178.65	178.65	178.65	178.65	178.65	178.65	2143.80	9190 total lbs 4.59 total tons
Unrecovered VOCs		1875.61	1993.45	2135.23	1056.97	1704.97	1611.75	1064.59	1047.51	687.62	1260.38	1780.15	1053.82	17272.05	
		0.94	1.00	1.07	0.53	0.85	0.81	0.53	0.52	0.34	0.63	0.89	0.53	8.64	Total cleaning solvent VOCs emitted

SCOEPA00022783

CONSUMPTION TOTALS

Year 2001

SYSTEM	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC	
NATURAL GAS	MCF	MCF	MCF	MCF	MCF	MCF	MCF	MCF	MCF	MCF	MCF	MCF	
NATURAL GAS USE	20.71	18.93	18.16	17.99	19.94	12.95	12.93	12.26	11.42	14.17	15.43	18.72	187
Boiler 5	6.00	4.10	4.90	9.20	2.40	9.10	1.70	2.90	2.90	3.40	3.90	3.60	
Boiler 6	2.70	2.90	1.60	2.50	2.50	1.40	2.20	2.50	2.70	2.80	2.50	8.00	
Boiler 7	2.90	3.30	4.50	2.30	2.30	3.00	2.60	3.00	2.40	2.20	3.20	5.80	
WATER USE	1,000 GAL	1,000 GAL	1,000 GAL	1,000 GAL	1,000 GAL	1,000 GAL	1,000 GAL	1,000 GAL	1,000 GAL	1,000 GAL	1,000 GAL	1,000 GAL	
FAB 1 DEAERATOR #1 MAKEUP													
FAB 1 DEAERATOR #2 MAKEUP	92	50	74	147	101	53	48	51	94	53	70		
FAB 2 DEAERATOR #3 MAKEUP	54	38	39	21	29	15	29	31	43	39	21	68	
TOTAL BOILER MAKEUP	95	88	113	168	130	68	77	82	76	92	91	68	1,079
COOLING LOOPS:													
LOOP #1 MAKEUP								2					
LOOP #2 MAKEUP	145	97	196	153	149	(125)	(154)	(39)	(87)	(272)	(231)	(209)	
LOOP #3 MAKEUP	2,921	2,464	2,481	2,155	2,018	1,981	1,900	1,856	1,910	2,523	2,227	1,857	
LOOP #4 MAKEUP	10	7	6	8	8	7	7	15	103	205	189	190	
LOOP #5a MAKEUP	3	6	2	0	5	0	1	0	0	1	2	3	
LOOP #5b MAKEUP	0	0	0	5	0	7	1	0	1	1	3	0	
FAB 2 PCW MAKEUP	10	8	9	8	19	2	4	3	5	3	2	1	
FAB 2 CHILLER MAKEUP	1	1	2	2	2	39	119	149	473	164	25	29	
FAB 2 GLYCOL MAKEUP													
HEAT RECOVERY MAKEUP	12	11	19	22	55	119	81	57	59	45	39	41	
TOTAL LOOP MAKEUP	3,101	2,594	2,704	2,351	2,255	2,023	1,852	2,058	2,463	2,670	2,251	1,907	28,226
COOLING TOWERS:													
HVAC TOWER MAKEUP	8	8	7	7	7	6	7	7	6	5	7	6	
GROWING TOWER MAKEUP	181	164	176	189	206	190	198	280	205	212	160	145	
LOOP 3 TOWER	65	89	102	95	117	129	153	162	142	147	109	94	
FAB 1 TOWER # 16 MAKE UP	89	109		0	117		1	26	35	1	106	132	
FAB 1 TOWER # 10 MAKE UP	139	118	114	109	90	60	21	58	741	813	734	686	
FAB 1 TOWER # 11 MAKE UP	365	301	328	290	220	226	129	297	159	196	76	34	
FAB 2 TOWER #17	58	9	1	5	128	395	447	536	170	0	8	5	
FAB 2 TOWER #18	11	17	147	162	209	33	338	278	239	263	199		
FAB 2 TOWER #19	148	194	150	170	224	353	569	567	534	514	214	171	
FAB 2 TOWER #20								0	0		1		
FAB 2 TOWER #21					0	0		1	5	1	0	30	
TOTAL TOWER MAKEUP	1,049	994	1,017	1,005	1,301	1,326	1,849	2,146	2,227	2,087	1,599	1,296	17,896
FAB 1 RODI PRODUCTION:													
RO METER 1A	1,374	1,212	1,395	1,157	1,040	1,061	290						
RO METER 1B					0							154,059	
RO METER 1C					0							70,000	
RO METER 2A	395	142	336	307	86	40	466	490	165	21	940	222	
RO METER 2B	1,951	1,969	1,499	1,578	1,325	1,446	1,496	1,799	1,272	1,243	1,543	1,277	
RO METER 2C	1,819	1,696	1,659	1,403	1,318	1,575	1,450	1,906	1,328	1,997	1,469	1,196	
FAB 1 RO #1	1,374	1,212	1,395	1,157	1,040	1,061	290					224,059	
FAB 1 RO #2	4,155	3,206	3,495	3,288	2,729	3,061	3,413	4,085	2,765	2,561	3,952	2,696	
FAB 1 RO Output	5,529	4,418	4,889	4,445	3,769	4,122	3,703	4,085	2,765	2,561	3,952	225,755	270,493
EST Fab 1 RO Reject	1,659	1,325	1,467	1,333	1,131	1,237	1,111	1,225	830	768	1,006	68,026	
EST Fab 1 MM Backwash	92	92	92	92	92	92	92	92	92	92	92	92	
TOTAL FAB 1 RODI USE	7,279	5,835	6,447	5,870	4,992	5,450	4,905	5,402	3,686	3,551	4,449	294,872	352,739
Fab 1 RO Total Feed													
Fab 1 RO Total Product													
FAB 2 UPW PRODUCTION:													
FAB 2 RO TRAIN 1, BANK 1	2,429	2,429	2,549	2,552	2,344	2,359	1,885	2,373	1,918	2,554	2,227	2,237	
FAB 2 RO TRAIN 1, BANK 2	2,400	2,425	2,537	2,518	2,340	2,343	1,855	2,332	4,590	8,634	3,424	2,199	
FAB 2 RO TRAIN 2, BANK 1	2,916	2,473	2,254	2,435	1,794	1,780	2,272	2,519	1,495	2,675	2,976	2,994	
FAB 2 RO TRAIN 2, BANK 2	2,823	2,442	2,308	2,468	2,155	1,950	2,357	2,420	1,251	2,872	2,404	2,414	
FAB 2 RO TRAIN 3, BANK 1	2,669	1,908	2,555	1,794	2,007	2,282	2,228	1,652	2,001	2,912	2,274	2,144	
FAB 2 RO TRAIN 3, BANK 2	2,677	1,937	2,544	1,840	2,201	2,193	1,972	1,628	2,148	2,539	2,066	1,979	
FAB 2 RO TRAIN 4, BANK 1	2,681	2,427	2,417	2,555	2,253	2,132	2,069	2,453	1,853	1,680	2,334	2,216	
FAB 2 RO TRAIN 4, BANK 2	5,284	2,510	2,577	2,500	2,281	2,209	1,897	2,944	1,929	1,736	2,331	2,010	
FAB 2 RO Output	23,979	18,544	19,858	18,757	17,375	17,132	16,529	17,721	17,184	24,996	19,436	17,592	229,003
EST Fab 2 RO Reject	7,164	5,563	5,957	5,627	5,213	5,140	4,959	5,316	5,155	7,499	5,831	5,278	
EST Fab 2 MM Backwash	2,328	1,808	1,936	1,829	1,694	1,670	1,612	1,728	1,675	2,437	1,895	1,715	
TOTAL FAB 2 UPW USE	33,471	25,915	27,751	26,213	24,282	23,942	23,099	24,765	24,015	34,932	27,161	24,585	320,092
ESTIMATED DOMESTIC USE	868	722	789	910	1,025	1,218	1,628	1,219	836	887	1,056	1,074	
FAB 2 Tie across flow to FAB 1 %		due to well water flow was increased to fab 1			19%	24%	16%	27%	20%	54%	10%	20%	
FAB 2 Tie across flow to FAB 1					3,924	4,115	2,692	4,761	3,380	13,495	1,856	3,568	
TOTAL WATER USE	45,764	36,088	38,821	36,517	33,965	34,027	33,410	35,569	33,303	44,219	35,508	329,802	
													called this 25% as it's don't look out
WASTE TREATMENT:													
Forwarding Flows													
Fab 1 To Fab 2 Flows													
OWW	10,900	9,700	10,500	9,600	8,800	8,500	7,900	9,000	7,300	9,200	8,400	7,300	
CAD	5,100	5,000	5,100	4,100	3,800	3,900	4,100	4,200	3,800	4,400	4,100	3,500	
WAD	11,400	9,800	10,900	9,500	8,900	8,900	8,500	8,800	8,100	8,900	8,500	6,500	
Fab 2 Flows (Not incl Fab 1)													
OWW										0			
CAD													
WAD													
WWTP Effluent													
FAB 1 OE													No discharg
FAB 2 OE	32,652	29,526	31,946	29,215	26,616	28,369	27,784	26,969	24,079	29,924	28,406	26,599	343,992
FAB 1 OWW													No discharg
FAB 2 OWW	25,566	19,366	19,959	19,180	17,956	17,507	17,395	16,608	22,565	18,225	17,185	16,545	230,155
MV-3	3,795	3,296	3,236	2,955	11,839	2,900	2,840	3,514	3,552	4,937	4,141	3,422	49,826
SANITARY/MV-2	868	722	789	910	1,025	1,218	1,628	1,219	836	887	1,056	1,074	12,232
TOTAL WASTE	62,879	52,910	55,929	52,259	57,435	49,993	49,647	52,310	51,033	53,373	50,788	47,739	636,196
CITY METER													
FAB 1 CITY WATER	23,222	20,064	21,145	19,882	19,089	18,390	17,896	19,459	16,990	17,477	16,909	14,055	
FAB 2 CITY WATER	36,218	32,699	34,801	33,353	32,385	32,639	33,901	35,298	29,243	37,164	34,972	33,884	
TOTAL CITY WATER	59,440	52,763	55,946	53,235	51,474	51,029	51,197	54,598	46,233	54,641	51,790	47,939	630,384
Loop #7 Makeup	13,675	15,695	17,125	15,718	17,489	17,002	17,787	19,028	12,919	10,423	15,172	(275,953)	
OVERALL WATER BALANCE	7	2	2	0	13	1	1	(0)	14	2	1	2	

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WACKER WWTP OWW MONTHLY GRABS
2001

2001	mg/L
Jan	< 1
Feb	5.0
Mar	5.0
Apr	1.0
May	2.0
Jun	6.0
Jul	<1.0
Aug	<1.0
Sep	3.0
Oct	<1.0
Nov	<1.0
Dec	<1.0

VOCs through Dec 2001

ZMR00031

Wacker Siltronic
Annual Chemical Usage Review

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Material Number	Stock	Material Group	Total Consumption	Unit of Measure	01/2001	02/2001	03/2001	04/2001	05/2001	06/2001	07/2001	08/2001	09/2001	10/2001	11/2001	12/2001
5406902		9 981580	56	CAN												
PAINT Krylon white enamel glossy					5	3	7	4	0	1	7	12	10	4	0	3
5406903		6 981580	37	CAN												
PAINT gray primer 2X982 16 OZ.					5	2	0	0	9	2	3	5	4	3	0	4
5406905		2 981580	2	CAN												
VARNISH red insulating					0	0	0	0	0	0	2	0	0	0	0	0
5406906		4 981580	12	PC												
PAINT John Deere Green					0	2	4	0	1	2	0	0	0	0	2	1
5406907		2 981580	4	PC												
PAINT Equipment Orange					0	0	0	0	0	0	0	1	0	1	2	0
5406908		1 981580	0	PC												
PAINT Ford red					0	0	0	0	0	0	0	0	0	0	0	0
5406909		3 981580	9	PC												
PAINT high heat black					2	0	0	1	0	2	1	1	2	0	0	0
5406910		3 981580	6	PC												
PAINT Chrysler blue					0	1	0	1	0	0	1	1	0	0	2	0
5406912		2 981580	9	CAN												
PAINT glossy black spray can #84000					4	0	0	0	0	1	2	1	0	1	0	0
5407103		6 993870	12	PC												
SEALANT silicone white 10.3 OZ tube					0	2	1	2	0	0	1	0	0	2	4	0
5407104		12 993870	33	PC												

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Material Number	Stock	Material Group	Total Consumption	Unit of Measure								
SEALANT rubber silicone RTV GE#W102												
01/2001	02/2001	03/2001	04/2001	05/2001	06/2001	07/2001	08/2001	09/2001	10/2001	11/2001	12/2001	
1	4	2	2	6	2	2	0	0	6	8	0	
5407107		3 993870	28	CAN								
SILICONE RTV HIGH TEMP BLUE MAK-A-GASKET												
01/2001	02/2001	03/2001	04/2001	05/2001	06/2001	07/2001	08/2001	09/2001	10/2001	11/2001	12/2001	
3	3	2	6	5	3	0	5	0	0	0	1	
5407108		10 993870	65	CAN								
SILICONE RTV HIGH TEMP CLEAR MAK-A-GASKE												
01/2001	02/2001	03/2001	04/2001	05/2001	06/2001	07/2001	08/2001	09/2001	10/2001	11/2001	12/2001	
3	8	4	2	6	3	4	5	3	5	14	8	
[redacted]7328		14 992210	27	CAN								
CLEANER instant contact #CRC-02016												
01/2001	02/2001	03/2001	04/2001	05/2001	06/2001	07/2001	08/2001	09/2001	10/2001	11/2001	12/2001	
3	6	0	0	0	11	0	2	1	4	0	0	
5407330		26 992210	108	CAN								
CLEANER DUST CHASER SPRAY VWR# 21899-094												
01/2001	02/2001	03/2001	04/2001	05/2001	06/2001	07/2001	08/2001	09/2001	10/2001	11/2001	12/2001	
17	11	4	11	20	1	17	0	2	8	9	8	
5407331		5 992210	6	CAN								
DEGREASER gel engine												
01/2001	02/2001	03/2001	04/2001	05/2001	06/2001	07/2001	08/2001	09/2001	10/2001	11/2001	12/2001	
1	4	0	0	0	0	0	0	1	0	0	0	
5407332		4 992210	6	CAN								
CLEANER electric motor KAR #65390-2												
01/2001	02/2001	03/2001	04/2001	05/2001	06/2001	07/2001	08/2001	09/2001	10/2001	11/2001	12/2001	
3	0	0	0	1	1	0	1	0	0	0	0	
5407334		7 992210	5	CAN								
STRIPPER/REMOVER PAINT, CARBON & GASKETS												
01/2001	02/2001	03/2001	04/2001	05/2001	06/2001	07/2001	08/2001	09/2001	10/2001	11/2001	12/2001	
1	0	0	0	0	0	1	0	1	0	2	0	
[redacted]07347		4 992210	7	DR								
FRIGERANT R-22 (30 LBS)												
01/2001	02/2001	03/2001	04/2001	05/2001	06/2001	07/2001	08/2001	09/2001	10/2001	11/2001	12/2001	
0	0	0	6	0	0	0	0	0	1	0	0	
5407374		0 992210	0	DR								
ETHANOL V-1 200 (VANZOL)												
01/2001	02/2001	03/2001	04/2001	05/2001	06/2001	07/2001	08/2001	09/2001	10/2001	11/2001	12/2001	
0	0	0	0	0	0	0	0	0	0	0	0	
5407375		0 992210	0	DR								
ACETONE												
01/2001	02/2001	03/2001	04/2001	05/2001	06/2001	07/2001	08/2001	09/2001	10/2001	11/2001	12/2001	

Material Number	Stock	Material Group	Total Consumption	Unit of Measure								
0	0	0	0	0	0	0	0	0	0	0	0	0
5407376	3	992210	70	DR								
ISOPROPYL ALCOHOL (IPA) 99%												
	01/2001	02/2001	03/2001	04/2001	05/2001	06/2001	07/2001	08/2001	09/2001	10/2001	11/2001	12/2001
	7	7	8	5	6	6	5	5	4	5	7	5
5407408	4	230601	0	PC								
LUBRICANT spray Molykote 321R												
	01/2001	02/2001	03/2001	04/2001	05/2001	06/2001	07/2001	08/2001	09/2001	10/2001	11/2001	12/2001
	0	0	0	0	0	0	0	0	0	0	0	0
5407431	44	230601	178	PC								
LUBRICANT CRC 3-36 16oz can												
	01/2001	02/2001	03/2001	04/2001	05/2001	06/2001	07/2001	08/2001	09/2001	10/2001	11/2001	12/2001
	36	6	30	10	8	12	24	7	24	0	8	13
5407433	3	230601	5	GAL								
LUBRICANT CRC 3-36 (1 gallon)												
	01/2001	02/2001	03/2001	04/2001	05/2001	06/2001	07/2001	08/2001	09/2001	10/2001	11/2001	12/2001
	0	2	0	0	0	1	2	0	0	0	0	0
5407435	2	230601	2	CAN								
LUBE teflon #79417												
	01/2001	02/2001	03/2001	04/2001	05/2001	06/2001	07/2001	08/2001	09/2001	10/2001	11/2001	12/2001
	0	0	0	0	0	0	0	0	0	0	2	0
5407436	1	230601	2	CAN								
LUBRICANT teflon dry #79418												
	01/2001	02/2001	03/2001	04/2001	05/2001	06/2001	07/2001	08/2001	09/2001	10/2001	11/2001	12/2001
	0	0	0	0	0	1	1	0	0	0	0	0
5407470	6	300203	54	CAN								
CLEANER zero residue instant tech spray												
	01/2001	02/2001	03/2001	04/2001	05/2001	06/2001	07/2001	08/2001	09/2001	10/2001	11/2001	12/2001
	9	8	7	0	8	4	0	0	8	0	4	6
5407946	8	992210	0	BTL								
ANTI-SEIZE HIGH TEMP INDUSTRIAL 1LB												
	01/2001	02/2001	03/2001	04/2001	05/2001	06/2001	07/2001	08/2001	09/2001	10/2001	11/2001	12/2001
	0	0	0	0	0	0	0	0	0	0	0	0
5407947	5	230601	2	CAN								
LUBRICANT SILICON												
	01/2001	02/2001	03/2001	04/2001	05/2001	06/2001	07/2001	08/2001	09/2001	10/2001	11/2001	12/2001
	1	0	0	0	0	0	0	0	0	0	0	1
5407948	1	230601	2	PC								
GREASE MULTI PURPOSE WHITE												
	01/2001	02/2001	03/2001	04/2001	05/2001	06/2001	07/2001	08/2001	09/2001	10/2001	11/2001	12/2001
	1	0	0	0	0	0	0	0	0	0	0	1

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Material Number	Stock	Material Group	Total Consumption	Unit of Measure
5407955	12	993890	17	CS

EPOXY VALTRON AD1230 4-1 GAL/CS PART A

01/2001	02/2001	03/2001	04/2001	05/2001	06/2001	07/2001	08/2001	09/2001	10/2001	11/2001	12/2001
2	3	4	0	1	1	1	1	1	1	1	1

5407956	9	993890	13	CS

HARDNER AD1211-B RED PIGMENT

01/2001	02/2001	03/2001	04/2001	05/2001	06/2001	07/2001	08/2001	09/2001	10/2001	11/2001	12/2001
2	2	4	4	0	0	1	0	0	0	0	0

5407957	195	993890	3,335	CAN

EPOXY fast cure grey

01/2001	02/2001	03/2001	04/2001	05/2001	06/2001	07/2001	08/2001	09/2001	10/2001	11/2001	12/2001
486	376	407	330	341	326	163	260	161	240	163	82

5407967	5	993890	4	CAN

ADHESIVE all purpose & trim #77160

01/2001	02/2001	03/2001	04/2001	05/2001	06/2001	07/2001	08/2001	09/2001	10/2001	11/2001	12/2001
1	0	1	0	0	0	0	0	1	1	0	0

5412997	1	993890	2	KIT

ADHESIVE high-temp epoxy Duralco 4703-1

01/2001	02/2001	03/2001	04/2001	05/2001	06/2001	07/2001	08/2001	09/2001	10/2001	11/2001	12/2001
1	0	0	0	0	0	0	0	0	0	0	1

5413542	354	993870	2,855	BTL

WAX SKYLIQUID CLEAR HF4011 2 LITER

01/2001	02/2001	03/2001	04/2001	05/2001	06/2001	07/2001	08/2001	09/2001	10/2001	11/2001	12/2001
390	282	354	329	198	186	173	217	144	174	222	186

5415107	6	992210	52	CS

ACETONE semiconductor grade 4 gal/CS

01/2001	02/2001	03/2001	04/2001	05/2001	06/2001	07/2001	08/2001	09/2001	10/2001	11/2001	12/2001
6	6	5	3	7	2	2	4	6	6	2	3

5512904	0	992210	0	L

ACETONE EG 2.5L/BOTTLE

01/2001	02/2001	03/2001	04/2001	05/2001	06/2001	07/2001	08/2001	09/2001	10/2001	11/2001	12/2001
0	0	0	0	0	0	0	0	0	0	0	0

[redacted]22458	18	993870	6	BTL

WAX Thin Skyliquid KN-25449 2ltr/btl

01/2001	02/2001	03/2001	04/2001	05/2001	06/2001	07/2001	08/2001	09/2001	10/2001	11/2001	12/2001
0	0	0	0	0	0	0	0	0	6	0	0

WACKER
Wacker Siltronic Corporation

September 4, 2001 ER: 044JWC

Greg Grunow
Air Quality Program
Department of Environmental Quality
State of Oregon, NW Region
2020 SW Fourth Avenue, Suite 400
Portland, Oregon 97201-4987

Dear Mr. Grunow

Wacker Siltronic Corporation will be limiting manufacturing for one week beginning 9/8/01 and ending 9/16/01.

During this time, all production activities in FAB 1 will stop. All production baths will be emptied and all manufacturing equipment will be placed in a stand-by mode. There will be some limited production in FAB 2.

All pollution equipment will be operational in both FABs during this time. This includes all air scrubbers, Wacker's Wastewater Treatment Plant and sewer system.

If you have any questions, please contact Jim Claxton @ 503-219-7313

Regards,

WACKER SILTRONIC CORPORATION

Thomas C. McCue
Environmental Manager

Wacker Siltronic Corporation
7200 NW Front Avenue
Portland, OR 97210-3676
Phone (503) 243-2020
TDD (503) 241-7519

SCOEPA00022790

WACKER
Wacker Siltronic Corporation

May 4, 2001 ER: 017JWC

Greg Grunow
Air Quality Program
Department of Environmental Quality
State of Oregon, NW Region
2020 SW Fourth Avenue, Suite 400
Portland, Oregon 97201-4987

Dear Mr. Grunow

Wacker Siltronic will be conducting a maintenance shutdown beginning 5/21/01 and lasting until 5/25/01. During this time all production activities in FAB 1 and FAB 2 will stop. All water flows will be stopped and no wastes will be generated. There will be no discharges to air handling systems and water systems. Maintenance will be servicing pollution control equipment during the shutdown. Electrically power to the wastewater treatment plant will be off for about 12 hours beginning at about 7am, 5/21/01.

Manufacturing equipment start up will begin at 5/24/01, and production should resume 5/25/01.

If you have any questions, please contact Jim Claxton @ 503-219-7313

Sincerely,

WACKER SILTRONIC CORPORATION

Thomas C. McCue
Environmental Manager

Wacker Siltronic Corporation
7200 NW Front Avenue
Portland, OR 97210-3676
Phone (503) 243-2020
TDD (503) 241-7519

F. EMERGENCY GENERATOR

Emergency generator information from Mike Iannantuano

Emissions from burning diesel fuel in emergency generators, other internal combustion engines

AP-42 emission factors, Vol. I, Table 3.4-1 (as referenced on Page 3 of ACDP Application Review Report Attachment):

	g/hphr
Particulate	0.24
CO	2.4
NOx	11
SOx	1.1
VOCs	0.33

Values used in calculating emissions:

2.71	test usage, in hr
0	shutdown usage, in hr
400	kW rated power (Generator #1)
536.4	hp, converted using 1.341 hp = 1 kW
0.25	typical load factor (power used/power rating)

10.78	test usage, in hr
0	shutdown usage, in hr
1000	kW rated power (Generator #2 and Generator #3)
1341	hp, converted using 1.341 hp = 1 kW
0.5	typical load factor (power used/power rating)

Note: Hours of operation are from the generator log sheets.

Rental Generator info from Chritiansen Electric:
Generators rented from 5/17-25/01

KW	25	100	4.1	6.1	7.5	
QTY	1	2	10	5	2	
HRS/Machine	200	40	6/5	4/3	2/6	280 total diesel hours
Fuel Type	diesel	diesel	gas	gas	gas	
Fuel Use	250	200	12			total for all of the gas generators combined

The equation given by AP-42 is: hr*hp*load factor*emission factor
This yeilds the following emission estimates:

	lb/year	tons/year
Particula	10	0.005
CO	104	0.05
NOx	477	0.24
SOx	48	0.02
VOCs	14	0.01

Notes: Load factors based on conservative estimates of shutdown loads and preventative maintenance test loads.

Calculation of fuel used:
1000 KW generators burn fuel at 38.6 gph at 50% load 416 gallons
1000 KW generators burn fuel at 70.7 gph at 100% load

$$\frac{38.6}{70.7} = 0.55$$

assume 25% load burn rate is 55% of 50% load burn rate: 38.6 x 0.55 = 21.2 gallons per hour

assume 400 KW generator burns fuel at 40% of 1000 KW rate: 8.5 gallons per hour
23.0

Other calculations not used for air report:
Calculation of gallons of L/S burned by onsite generators (excluding rental generators):
lbs of SOx (assume SO2) 18 x $\frac{32.1 \text{ MW sulfur}}{64.1 \text{ MW SO2}}$ = 9.2 lbs of sulfur

L/S diesel contains <0.05% sulfur: $\frac{9.2}{0.0005} =$ 18438 lbs diesel c 2571 gallons diesel

SOx emissions may be better estimated using purchased fuel information and sulfur balance.
Calculating for the fuel purchased in 2001 (L/S Diesel):
Given: 1546 gal L/S Diesel delivered;
This fuel contains: maximum 0.05 WT% sulfur;

0.86	sp.gr.	
8.34	lbs/galH2O	
7.1724	lbs/gal diesel	11088.53 lbs diesel
0.003586	lbs sulfur/gal diesel	5.544265 lbs sulfur

Assuming all the sulfur goes to SOx

Assuming SOx is:	0.00% SO	then	64.1 =MW SOx
	100.00% SO2		

then from the diesel fuel the SOx emissions were:

	32.1	MW sulfur, lbs/lbmol
gives	0.172718542	lbmol sulfur
which is	0.172718542	lbmol SOx
and equals	11.07125855	lbs SOx emitted by the fuel
or	0.005535629	tons SOx

Dates:
5/17-25/01

Date: 2/8/02
Sender: "MIKE FULLER" <SMTP:MIKEF@christenson.com>
To: Myron Burr
Priority: Normal
Subject: Fwd: EPA Report

Here is the information you requested.
From: "CHAD BRIGGS" <SMTP:CHADB@christenson.com> at PTL01
To: "MIKE FULLER" <SMTP:MIKEF@christenson.com> at PTL01
Subject: EPA Report
Date: 2/8/02 9:02:21 AM

Mike,
This is the information you have requested about the rental generators for the Wacker Siltronics Project.

250 gals diesel; 200 gals diesel; 12 gallons of gas

KW			25	100	4100W	6100W	7500W
QTY			1	2	10	5	2
HRS/MACHINE	200	40	6/5 each	4/3	2/6	(#/HRS RAN)	
FUEL TYPE		D	D	G	G	G	(D= DIESEL/G= GAS)

Please understand the run times are the closest estimate that can be determined
and they are not exacts. Thank you and if you need any other info please contact
me at 360-694-9636.
Chad.

	diesel	gas
total fuel use:	450 gallons	12 gallons

503-720-5446 cell

Date: 2/8/02
Sender: "MIKE FULLER" <SMTP:MIKEF@christenson.com>
To: Myron Burr
Priority: Normal
Subject: Fwd: Re: EPA Report

From: "CHAD BRIGGS" <SMTP:CHADB@christenson.com> at PTL01
To: "MIKE FULLER" <SMTP:MIKEF@christenson.com> at PTL01
Subject: Re: EPA Report
Date: 2/8/02 9:13:45 AM

You would have used approximatly 450 gallons of diesel fuel and about 12 gallons
of gasoline.

>>> MIKE FULLER 02/08/02 09:05AM >>>
Thanks. They may ask about the amount of fuel consumed.

Wacker Siltronic Corporation

TO: Spill File

CC: Tom McCue
Air Contaminant Discharge Permit – Data File

FROM: Petra Hoy

SUBJECT: Fab 1 TCS release
September 26, 2001

DATE: September 26, 2001

On Wednesday, September 26, 2001, at approximately 10:15 a.m. and lasting for approximately 3 minutes, Trichlorosilane (TCS) was released from an empty cylinder behind Fab 1. The cylinder was in the chemical storage unit, which is ventilated to general exhaust. The ERT responded to the event, quickly contained the cylinder and stopped the release. A copy of the Emergency Response Team (ERT) report describing this event is attached.

While replacing the "empty" TCS cylinder the valve became stuck in the open position for an estimated 3 minutes before the valve could be closed. Barry Kelly confirmed that the dip tube extends to 0.25 " from the bottom of the tank and calculated the total mass of TCS left in an "empty" drum to be approximately 0.13 pounds (attached calculations). Mike Dever, BOC representative (503-693-9562) confirmed that "empty" cylinder contain less than one pound of material.

The RQ (Reportable Quantity) for Trichlorosilane is 1 lb (which is equivalent to 0.002 cylinders). This release was well below the RQ. Reporting to the National Response Center (1-800-424-8802) and DEQ (Cory Ann Chang 503-229-5567, the new Air Contaminant Discharge Permit (ACDP) contact) was not necessary.

However, this document will be placed in Wacker's ACDP – Data File with the follow-up corrective action.

WACKER
Wacker Siltronic

PO Box 83180
Portland, OR 97283-0180
Phone: (503) 243-2020

☐ Fax: (503) 417-4120 Fab 2 Operations
■ Fax: (503) 417-4121 Fab 2 Engineering

FACSIMILE TRANSMITTAL SHEET

Fax No: 7599

Date: 9/26/01

From: BARRY KELLY

To: Petra Hoy

Attn:

Number of Pages (including this page): 7

Message/Special Instructions

- This should work-

- This has not been checked.

- hard copy in mail

9/26/01 [illegible]RRY KELLY 1/2

Given: That the drum was "empty" the liquid level was below the dip tube extending into the drum.

The maximum TCS remaining in the drum would be the volume in the head up to the level of the bottom of the dip tube

* from the Taylor Wharton dwg of the cylinder 55GAIRCO Rev P The dip tube is .25" from the bottom of the cylinder. Also the head design is 2:1 semiellipsodal

* contacted NW copper works to get the meaning of the head dimensions Ken Twiss provided the attached fax. A scale drawing of our drum was made. It showed at .25" off of the bottom the head is still spherical.

* from drawing use ID = 27.0" (conservative)

Volume of a spherical segment

$$V = \pi h^2 \left(r - \frac{h}{3}\right)$$

from The Engr's companion Mott Souders

$r = 27/2" = 13.5$ in

$h = .25$ in

$$V = \pi (.25)^2 in^2 \left(13.5" - \frac{.25"}{3}\right)$$

$Vol = 2.6344 \ in^3$

spgr of TCS from Handbook of Physics & Chemistry 56th ed

= 1.34

$$62.4 \frac{lbm}{ft^3} * 1.34 * \left(\frac{ft}{12in}\right)^3 = 0.0484 \, lbm/in^3$$

$$mass = \rho \, vol = .0484 \, lbm/in^3 * 2.6344 \, in^3$$

$$= .1275 \, lbm$$

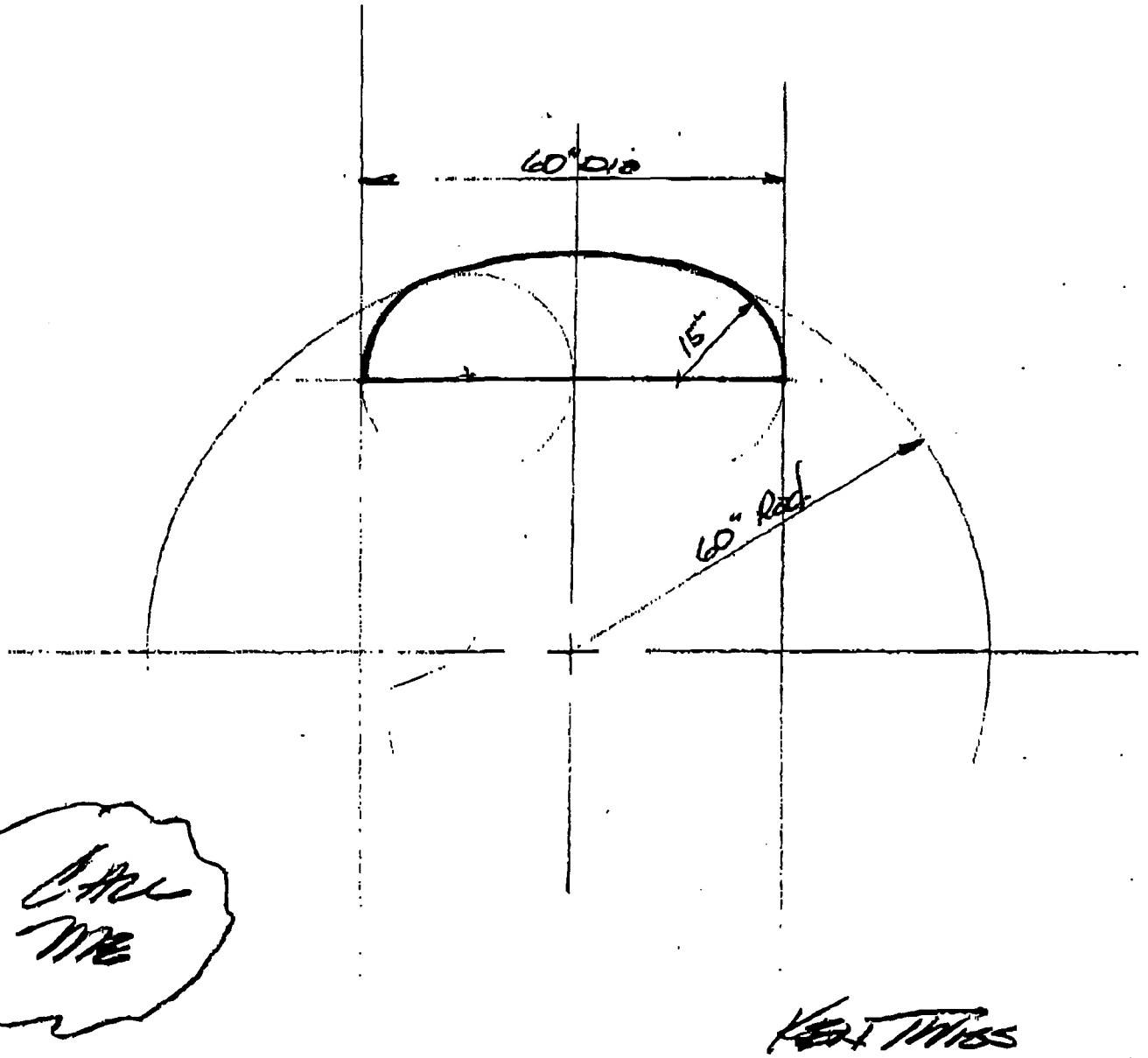
Total mass of TCS left in drum when "empty" ≈ .13 lbm

SCOEPA00022800

T. Berry Kelly

2:1 Ellip. Head is Similar to a 90° Conn. Rad. w/ a 25° Knuckle

Assume 60" I.D Vessel!

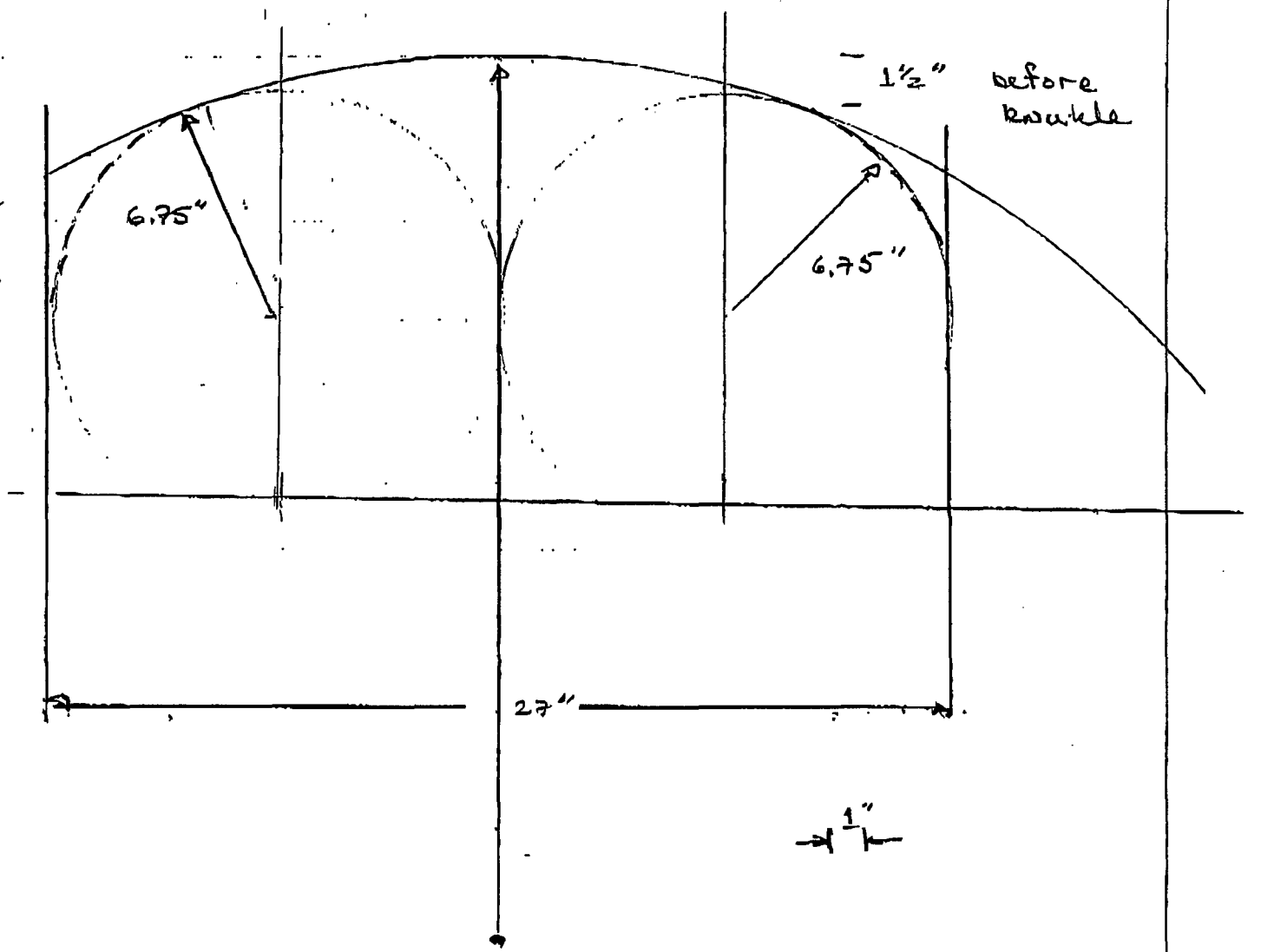


Call Me

Keri Titus

SCOEPA00022801

head sketch

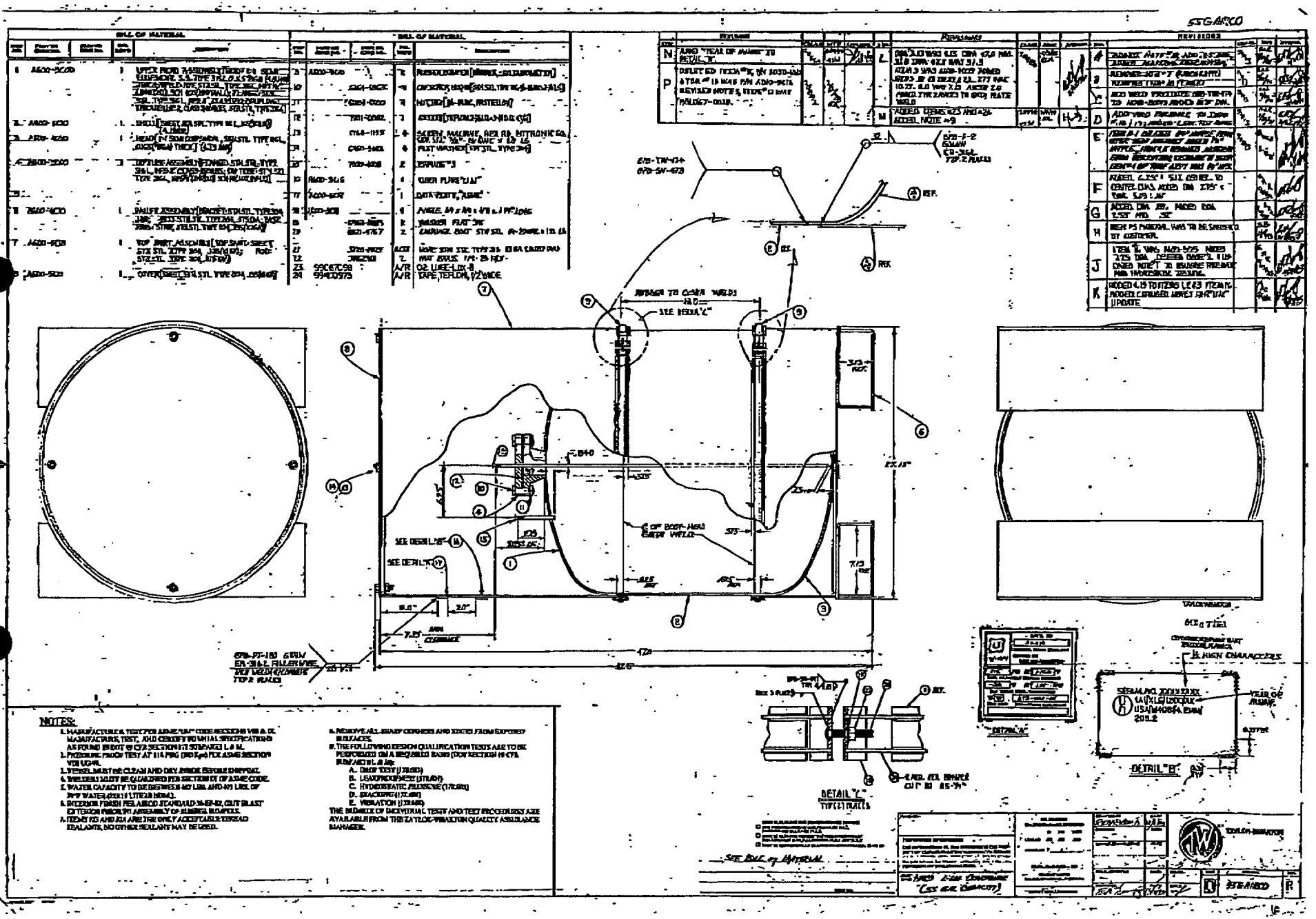


∴ @ ¼" off bottom only spherical.

SCOEPA00022802

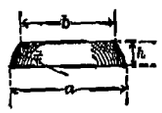
SEP.26.2001 4:37PM WA[illegible]R FAB2 ENG/PTD NO.492 P.6/7

09/26/2001 WED 16:11 [TX/RX NO 5396] 006



SCOEPA00022803

38. Spherical Zone (and Spherical Segment)



For Spherical Zone Bounded by Two Planes:

$A_t = 2\pi rh$; $A_t = \frac{\pi}{4}(8rh + a^2 + b^2)$.

For Spherical Zone Bounded by One Plane ($b = 0$):

$A_t = 2\pi rh = \frac{\pi}{4}(4h^2 + a^2)$;

$A_t = \frac{\pi}{4}(8rh + a^2) = \frac{\pi}{2}(2h^2 + a^2)$.

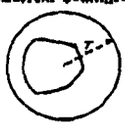
For Spherical Segment with Two Bases:

$V = \frac{\pi h}{24}(3a^2 + 3b^2 + 4h^2)$.

For Spherical Segment with One Base ($b = 0$):

$V = \frac{\pi h}{24}(3a^2 + 4h^2) = \pi h^2\left(r - \frac{h}{3}\right)$.

39. Spherical Polygon (and Spherical Triangle)



For Spherical Polygon:

Let sum of angles in radians $= \theta$ and number of sides $= n$.

$A = [\theta - (n - 2)\pi]r^2$

(The quantity $[\theta - (n - 2)\pi]$ is called "spherical excess.")

For Spherical Triangle ($n = 3$):

$A = (\theta - \pi)r^2$

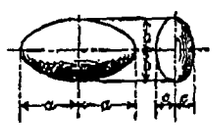
For additional formulas, see trigonometry.

40. Torus

$A_t = 4\pi^2 Rr$;

$V = 2\pi^2 Rr^2$.

41. Ellipsoid (and Spheroids)



For Ellipsoid:

$V = \frac{4}{3}\pi abc$.

For Prolate Spheroid:

Let $a = b$ and $\frac{\sqrt{a^2 - b^2}}{a} = e$.

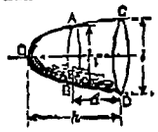
$A_t = 2\pi b^2 + 2\pi ab\frac{\sin^{-1} e}{e}$; $V = \frac{4}{3}\pi ab^2$.

For Oblate Spheroid:

Let $c = a$ and $\frac{\sqrt{a^2 - b^2}}{a} = e$.

$A_t = 2\pi a^2 + \frac{\pi b^2}{e}\ln\left(\frac{1 + e}{1 - e}\right)$; $V = \frac{4}{3}\pi a^2 b$.

42. Paraboloid of Revolution



A_t of segment $DOC = \frac{2\pi l}{3h^2}\left[\left(\frac{l^2}{16} + h^2\right)^{3/2} - \left(\frac{l}{4}\right)^3\right]$.

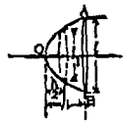
For Paraboloidal Segment with Two Bases:

V of $ABCD = \frac{\pi d}{8}(l^2 + l_1^2)$.

For Paraboloidal Segment with One Base ($l_1 = 0$ and $d = h$):

V of $DOC = \frac{\pi h l^2}{8}$.

43. Hyperboloid of Revolution



V of segment $AOB = \frac{\pi h}{24}(l^2 + 4l_1^2)$.

ANALYT

Equations of a Straight Line

General form	$Ax + B$
Slope form	$y = mx$
Point-slope form	$y - y_1$
Intercept form	$\frac{x}{a} + \frac{y}{b}$
Two-point form	$\frac{y - y_1}{x - x_1}$
Normal form (Fig. 1-1)	$x\cos\alpha$
Polar form	$r\sin\theta$

Points and Lines

Distance p_1 between point P_1 and

$p_1 = \frac{A}{}$

Parallel lines	$\frac{A_1}{A_2} = \frac{1}{1}$
Perpendicular lines	A_1A_2
Intersecting lines	$x_1 = \frac{B}{}$
Angle θ between lines	$\tan\theta$

Transformation of Coordinates

Change of origin O to O' (Fig. 1-

$x = x' +$

Rotation of axes about the ori

$x = x'\cos\theta - y'\sin$

Axes both translated and rota

$x = x'\cos\theta - y'\sin\theta +$

Relations between rectangular a

$x = r\cos\theta, \quad y = r\sin$

Conic Sections

A conic section is the locus of of its distances from a fixed p constant. In Figs. 1-4, 1-5, and some properties and equations

SCOEPA00022804

WSP 5 - Spill Notification Requirements1

Reportable Quantities (RQ's) for Releases into Environment[2]

Chemical Name	Type	Physical State	Regulatory RQ (lb)	Wacker RQ	Units
Acetic Acid	Organic Salt	Liquid	5000	572	Gal
Acetone	Solvent	Liquid	5000	770	Gal
Aluminum Sulfate	Inorganic Salt	Liquid	5000	1092	Gal
Ammonium Hydroxide	Strong Base	Liquid	1000	459	Gal
Antimony	Heavy Metal	Solid	5000	5000	Lb
Arsine, 50 ppm	Poisonous Gas	Gas	1	833	Cyl
Chromic Acid	Heavy Metal Acid	Liquid	10	0.65	Gal
Diborane	Poisonous Gas	Gas	1	13	Cyl
Ethylene Glycol	Coolant	Liquid	5000	550	Gal
Hydrochloric Acid	Strong Acid	Liquid	5000	1352	Gal
Hydrofluoric Acid	Strong Acid	Liquid	100	20	Gal
Hydrogen Chloride	Corrosive Gas	Gas	500	8.3	Cyl
Mercury	Acid	Liquid	1	1	Lb
Nitric Acid	Strong Acid	Liquid	1000	86	Gal
Oil	Oil	Liquid		42	Gal
Phosphine, 50 ppm	Poisonous Gas	Gas	100	147059	Cyl
Phosphoric Acid	Strong Acid	Liquid	5000	535	Gal
Potassium Hydroxide	Reducing Agent	Solid	1000	1000	Lb
Sodium bisulfite	Reducing Agent	Liquid	5000	5000	Lb
Sodium hydroxide	Strong Base	Liquid	1000	158	Gal
Sodium Hypochlorite	Oxidizer	Liquid	100	80	Gal
Sulfuric Acid	Strong Acid	Liquid	1000	65	Gal
Trichlorosilane	Corrosive Gas	Gas	1	0.002	Cyl

Notes:

[1] Notification to National Response Center (1-800-424-8802) required as soon as person in charge has knowledge of release *and* within 24 hours.

[2] If spill is contained (i.e., spill does not enter surface or ground water, soil, or ambient air). RQs do not apply.

* Other notification or reporting requirements may apply to spills. Please inform Environmental Department of all notifications made and of all uncontained spills.

SCOEPA00022805

Date: 9/26/01
Sender: Jim Claxton
To: Petra Hoy
Priority: Normal
Subject: TCS

I spoke with Mike Dever with BOC @ 503-693-9562. He felt that if the TCS was below the tank dip tube that very little TCS was released. The vapor pressure of the TCS would be suppressed resulting in a very small amount of TCS in the Argon gas. A small amount of TCS gas release is not unusual when dealing with the material. He did not feel that we lost a pound of material.

Date: 9/27/01
Sender: Brian Bailey
To: #ERT Reports, Clayton Abel, Henry Alvarez, Romil Arcinas, Ron Becker, Richard Bell, Kirk Benson, Nick Bloom, John Breckens, Andrea Buchholz, Larry Buzan, Linda Canham, Tom Cates, Ravin Chandra, Jim Claxton, Aaron Cox, Justin Darr, Phillip Dinh, David Diver, Johnny Ecaruan, Ryan Feely, Lance Fields, Jon Finley, Joe Gipson, Jeff Goode, Sam Gulmahong, Doug Hall, Eric Hart, Awal Hassan, Anthony Hecker, Marrina Hester, Petra Hoy, Mike Iannantuano, Kevin James, John Jeglum, Nathan Jones, Craig Jordan, Kenneth Kemper, Moe Khorsandian, Junior Kilafwakun, Toni Lathrop, Donald Lepoidevin, Daryl Lindsey, Steve Mahoney, Tom McCue, David Metje, Jimmy MuongVang, Dennis Netsch, Khanh Nguyen, Toan Nguyen, Jeffrey Norris, Richard Ontiveros, Dwain Oster, Steve Palmore, Tuan Pham, Olom Philavanh, Sisomphone Phommavanh, Randolph Raetz, Chrystal Reed, Robert Sanchez, FAB1 Security, FAB2 Security, Alex Siliang, John Smith, Robbie Stamper, Todd Taylor, Frank Thrasher, Souk Tran, Thanh Tran, Casey Vu
Priority: Normal
Subject: Fwd:Chemical ERT Report

Forward Header

Subject: Chemical ERT Report
Author: "Marrina Hester" <SMTP:Marrina Hester>
Date: 9/25/01 11:38 PM

start:
10:05

stop:
10:30

date:
Sept 26, 2001

location:
fab1

room:
TCS Bunker

ert_personnel:
ERT ALL CALL.

other_personnel:
Larry Oakley

ec_notify:
none

incident:
Epi support operator (Marrina) was doing the tank change over.
I closed off the valve on the empty tank and put the new tank on Line.
A gasket failed on the liquid line cause a vapor cloud to fill the room.
Larry put on SCBA and went in to close off valve.
Vapor disapated shortly after that.
ERT members were released and it was turned over to maintanence who will replace both liquid and gas lines and gaskets.
Epi support team did clean up,decon and tank removal.

ppe_used:

Acid aprons and gloves.

ert_equipment_used:
SCBA
cartridge respirator

lss_alarm:
MDA Alarm - TCS Bunker

chem_id:
vapor from an empty TCS tank.

chem_amount:
ammount unknown. was contained with minutes.

air_sample_results_initial:
5ppm

chem_disposal:
none

ECAPA # 33

Problem with valve alignment in TCS shed

Report Date	Due Date	ECAPA Owner	Priority	Type on Incident	Date Completed
9/25/01	10/3/01	Marrina Hester	1	Chemical spill	9/27/01

Reported By	Phone	Department	Location
ERT Report		EPI	TCS Shed

Description of Incident

During a tank change, TCS was released due to the miss alignment of the system valves.

Immediate Action Taken (if applicable)

1. Area secured and leak stopped
2. Calculations were preformed to determine the amount of escaped TCS gas. The RQ for TCS is 1lb. Based on calculation and discussions with Mike Dever with BOC gas and Barry Kelly with Fab 2 Engineering, it was determined that less than 1lb was released. No

Corrective Action	*Owner*	*Due Date*	*Date Finished*
Per Craig Jordan, the following have taken place: Repair of TCS ventilation fans Create PM for TCS ventilation fans Upgrade PPE for TCS bottle changes	Marrina Hester	10/3/01	10/3/01
The TCS tank change procedure will be changed to include that the valves need to be on opposite sides of the tank.	Marrina Hester	10/15/01	
New procedure for tank changes. Marrina Hester is changing the procedure to insure that the valves are on opposite sides. E-mails will be sent out to all Cell 10 personnel.	Marrina Hester	9/27/01	9/27/01

SCOEPA00022809

WACKER
Wacker Siltronic Corporation

May 4, 2001 ER: 017JWC

Greg Grunow
Air Quality Program
Department of Environmental Quality
State of Oregon, NW Region
2020 SW Fourth Avenue, Suite 400
Portland, Oregon 97201-4987

Dear Mr. Grunow

Wacker Siltronic will be conducting a maintenance shutdown beginning 5/21/01 and lasting until 5/25/01. During this time all production activities in FAB 1 and FAB 2 will stop. All water flows will be stopped and no wastes will be generated. There will be no discharges to air handling systems and water systems. Maintenance will be servicing pollution control equipment during the shutdown. Electrically power to the wastewater treatment plant will be off for about 12 hours beginning at about 7am, 5/21/01.

Manufacturing equipment start up will begin at 5/24/01, and production should resume 5/25/01.

If you have any questions, please contact Jim Claxton @ 503-219-7313

Sincerely,

WACKER SILTRONIC CORPORATION

Thomas C. McCue
Environmental Manager

Wacker Siltronic Corporation
7200 NW Front Avenue
Portland, OR 97210-3676
Phone (503) 243-2020
TDD (503) 241-7519

A QS-9000 and ISO 14001 Certified Corporation

Air Emissions Calculations for 2000

Emissions from burning natural gas

Natural gas usage:	
Month	10^6 cf
Jan	18.73
Feb	16.553
Mar	16.778
Apr	14.494
May	14.247
Jun	13.234
Jul	13.164
Aug	13.371
Sep	13.103
Oct	15.236
Nov	18.454
Dec	20.662
Total (cf/year):	188.026

yellow shading indicates user input information

AP-42 emission factors, Vol. I, Table 1.4-1:			
Particulate	3	lb/10^6 cf	(avg of 1 to 5 lb/10^6 cf)
CO	35	lb/10^6 cf	
NOx	140	lb/10^6 cf	
SOx	0.6	lb/10^6 cf	
VOCs	5.8	lb/10^6 cf	(nonmethane+methane)

Assuming all fuel fired equipment behaves according to AP-42,
we can calculate using the annual natural gas usage:

	lb/year	tons/year
Particulate	564	0.28
CO	6580.9	3.3
NOx	26324	13
SOx	113	0.06
VOCs	1091	0.55

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SCOEPA00022811

Summary

NOx pounds for 2000

Jan	1705.88
Feb	1666.14
Mar	1829.27
Apr	1493.71
May	1505.81
Jun	1233.97
Jul	1495.26
Aug	2095.59
Sep	2218.45
Oct	1915.05
Nov	1945.07
Dec	1397.94

Pounds NOx: 20502.12 Tons Nox: 10.25

Data logger up time:

Total days up:	350
Days up, but data unrecovered:	15
% recovered data:	96%

On October 3-8, June 29-30 and July 1-7 the data logger was up; however, the data was recovered from strip charts.

Estimating total NOx pounds:

21420.12 Tons Nox 10.71

SCOEPA00022812

timestamp	IT_38_027_NOX_LBS_VAL0
31-Dec-00	0.902
31-Dec-00	1.269
31-Dec-00	0.942
31-Dec-00	0.641
31-Dec-00	0.879
31-Dec-00	0.87
31-Dec-00	0.829
31-Dec-00	1.059
31-Dec-00	0.992
31-Dec-00	0.76
31-Dec-00	0.835
31-Dec-00	0.885
31-Dec-00	0.67
31-Dec-00	0.822
31-Dec-00	0.889
31-Dec-00	0.717
31-Dec-00	0.941
31-Dec-00	0.903
31-Dec-00	1.028
31-Dec-00	1.228
31-Dec-00	1.052
31-Dec-00	1.04
31-Dec-00	1.298
31-Dec-00	1.339
30-Dec-00	1.087
30-Dec-00	1.205
30-Dec-00	0.959
30-Dec-00	0.894
30-Dec-00	0.768
30-Dec-00	0.636
30-Dec-00	0.828
30-Dec-00	0.836
30-Dec-00	0.956
30-Dec-00	0.884
30-Dec-00	0.974
30-Dec-00	0.875
30-Dec-00	0.79
30-Dec-00	0.685
30-Dec-00	0.741
30-Dec-00	0.906

• Sample pages. For complete spread sheet go to L:\Environmental \permits\Air\Reports 2000

PH 1/30/01

30-Dec-00	1.197
30-Dec-00	1.346
30-Dec-00	1.168
30-Dec-00	1.126
30-Dec-00	1.271
30-Dec-00	1.08
30-Dec-00	1.231
30-Dec-00	1.262
29-Dec-00	1.137
29-Dec-00	1.031
29-Dec-00	1.06
29-Dec-00	1.15
29-Dec-00	1.31
29-Dec-00	0.885
29-Dec-00	0.838
29-Dec-00	1
29-Dec-00	1.066
29-Dec-00	1.146
29-Dec-00	1.268
29-Dec-00	1.254
29-Dec-00	1.099
29-Dec-00	1.172
29-Dec-00	1.065
29-Dec-00	1.046
29-Dec-00	1.061
29-Dec-00	1.121
29-Dec-00	0.917
29-Dec-00	0.87
29-Dec-00	0.893
29-Dec-00	0.841
29-Dec-00	0.889
29-Dec-00	1.039
28-Dec-00	1.037
28-Dec-00	1.102
28-Dec-00	0.97
28-Dec-00	0.994
28-Dec-00	1.041
28-Dec-00	1.211
28-Dec-00	1.438
28-Dec-00	1.409
28-Dec-00	0.67

26-Dec-00	0.948
26-Dec-00	0.996
26-Dec-00	0.898
26-Dec-00	0.72
26-Dec-00	0.895
26-Dec-00	1.011
26-Dec-00	0.886
26-Dec-00	0.863
26-Dec-00	0.89
26-Dec-00	0.94
26-Dec-00	0.8
26-Dec-00	0.96
26-Dec-00	1.06
26-Dec-00	0.972
26-Dec-00	1.132
26-Dec-00	0.926
26-Dec-00	0.944
26-Dec-00	1.113
26-Dec-00	1.03
26-Dec-00	1.029
26-Dec-00	0.972
26-Dec-00	0.951
25-Dec-00	0.799
25-Dec-00	0.778
25-Dec-00	0.872
25-Dec-00	0.877
25-Dec-00	1.053
25-Dec-00	0.946
25-Dec-00	0.936
25-Dec-00	1.188
25-Dec-00	0.938
25-Dec-00	0.952
25-Dec-00	0.94
25-Dec-00	0.932
25-Dec-00	0.812
25-Dec-00	0.904
25-Dec-00	1.083
25-Dec-00	1.042
25-Dec-00	0.955
25-Dec-00	1.315
25-Dec-00	1.435

25-Dec-00	1.31
25-Dec-00	1.05
25-Dec-00	0.961
25-Dec-00	0.952
25-Dec-00	0.851
24-Dec-00	0.868
24-Dec-00	1.033
24-Dec-00	0.965
24-Dec-00	0.547
24-Dec-00	1.059
24-Dec-00	1.119
24-Dec-00	1.522
24-Dec-00	1.881
24-Dec-00	1.833
24-Dec-00	1.807
24-Dec-00	1.467
24-Dec-00	1.258
24-Dec-00	1.346
24-Dec-00	1.249
24-Dec-00	1.106
24-Dec-00	1.234
24-Dec-00	1.552
24-Dec-00	1.277
24-Dec-00	1.212
24-Dec-00	0.974
24-Dec-00	1.332
24-Dec-00	1.304
24-Dec-00	1.384
24-Dec-00	1.215
23-Dec-00	1.222
23-Dec-00	1.199
23-Dec-00	1.202
23-Dec-00	1.196
23-Dec-00	1.307
23-Dec-00	1.559
23-Dec-00	1.612
23-Dec-00	1.472
23-Dec-00	1.402
23-Dec-00	1.435
23-Dec-00	1.264
23-Dec-00	1.326

Worksheet for Cleaning Solvent VOC Emissio

	Cleaning Solvent VOCs				
	5407376				
	Isopropyl Alcohol (IPA) 99%	Total Evaporated or In Wastes	Ratio of monthly to total	VOC Emissions (lbs)	VOC Emissions (tons)
jan	1810.00	1810.00	0.06024096	1520	0.76
feb	2896.00	2896.00	0.09638554	2433	1.22
mar	2534.00	2534.00	0.08433735	2129	1.06
apr	2534.00	2534.00	0.08433735	2129	1.06
may	3258.00	3258.00	0.10843373	2737	1.37
jun	2172.00	2172.00	0.07228916	1824	0.91
jul	2534.00	2534.00	0.08433735	2129	1.06
aug	2896.00	2896.00	0.09638554	2433	1.22
sep	1810.00	1810.00	0.06024096	1520	0.76
oct	1810.00	1810.00	0.06024096	1520	0.76
nov	3258.00	3258.00	0.10843373	2737	1.37
dec	2534.00	2534.00	0.08433735	2129	1.06
total	30046	30046		25238	12.6

Total cleaning solvent VOCs: 30046 lbs
Total cleaning solvent VOCs in waste shipments: 600 lbs (voc to waste water and waste.xls)
Total IPA in waste water: 4207 lbs (voc to waste water and waste.xls)

Total Cleaning Solvent VOC Emissions: 25238 lbs or 12.6 tons

Pounds VOCs Purchased (2000)														
Part no SAP	Material	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Yearly total
5406902	Spraypaint *	13.09	3.57	5.95	3.57	8.33	14.28	13.09	10.71	11.90	0.00	3.57	21.42	109.48
5407103	Sealant Silicone White 10.3 OZ tube	0.03	0.00	0.00	0.00	0.14	0.03	0.02	0.11	0.05	0.00	0.00	0.00	0.39
5407104	Sealant Rubber Silicone RTV GE #W102 cart	0.03	0.36	0.23	0.10	0.13	0.00	0.03	0.28	0.00	0.05	0.10	0.00	1.31
5407107	Silicone RTV High Temp Blue Mak-A-Gasket	0.00	0.00	0.04	0.17	0.09	0.22	0.00	0.00	0.13	0.17	0.04	0.00	0.87
5407108	Silicone RTV High Temp Clear MAK-A-Gasket	0.13	0.13	0.04	0.00	0.22	0.09	0.13	0.22	0.43	0.48	0.00	0.52	2.39
5407328	Cleaner Instant Contact #CRC-02016	0.00	0.00	4.42	0.00	10.31	0.00	0.00	13.26	0.00	8.84	1.47	0.00	38.30
5407330	Cleaner Dust Chaser Spray VWR# 21899-094	23.26	22.10	17.45	11.63	11.63	20.93	8.14	11.63	13.96	4.65	9.30	16.28	170.97
5407332	Cleaner Electric Motor KAR #65390-2	0.00	0.00	0.00	0.38	1.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.52
5407334	Stripper / Remover For Paint, Carbon &	0.00	0.00	0.64	0.00	0.00	0.00	0.64	0.00	0.00	0.64	0.00	0.00	1.91
5407347	Refrigerant R-22 (30 LBS)													0.00
	Safety-Kleen Premium Gold Solvent	0.00	113.90	201.00	113.90	0.00	328.30	0.00	428.80	422.10	160.80	408.70	736.99	2914.47
5407376	Isopropyl Alcohol (IPA) 99%	1810.00	2896.00	2534.00	2534.00	3258.00	2172.00	2534.00	2896.00	1810.00	1810.00	3258.00	2534.00	30046.00
5407408	Lubricant Spray Molykote 321R Dow-Corning	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5407431	Lubricant CRC 3-36 #03005	17.88	13.11	5.36	14.30	22.05	13.11	7.15	9.54	10.73	17.88	7.15	9.54	147.80
5407433	Lubricant CRC 3-36 (Gallon Can)	0.00	0.00	0.00	0.00	0.00	0.00	4.77	0.00	4.77	4.77	0.00	0.00	14.30
5407435	Lube Teflon #79417	0.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.28	0.00	0.00	0.00	1.92
5407436	Lubricant Teflon Dry #79418	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.63	0.00	0.00	0.63
5407439	Cement Neoprene Turntable Covering Carbo	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5407466	Skyliquid Wax for Enya	0.00	0.00	7.52	0.00	0.00	0.00	0.60	0.00	0.00	0.00	0.00	0.00	8.12
5407470	Cleaner Zero Residue Instant Teck Spray	0.00	0.00	0.00	0.11	0.40	0.23	0.40	1.02	0.45	0.23	0.00	0.68	3.51
5407938	Caviclean #2 Cleaning Solution Turco	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5407947	Lubricant Silicon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5407948	Grease Multi Purpose White	0.00	0.00	0.28	0.00	0.00	0.00	1.13	0.00	0.00	0.00	0.00	0.00	1.41
5407955	Epoxy Valtron AD1230 4-1 GAL/CS Part A	0.00	8.01	4.00	16.01	8.01	16.01	4.00	4.00	8.01	12.01	8.01	12.01	100.08
5407956	Hardner AD1211-B Red Pigment	0.00	0.92	-0.46	1.83	0.46	0.00	1.38	0.46	0.92	0.92	0.92	0.46	7.80
5407957	Epoxy STC Fast Cure Grey	36.83	30.97	36.98	35.57	40.24	30.53	38.31	37.72	35.64	34.75	33.27	29.86	420.67
5407963	Mold-Release Wiz F-57NC 1 Gallon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5407967	Adhesive Tixo K-10 10 Gm/Each	1.20	0.00	0.00	0.00	0.00	0.00	0.00	1.20	1.20	0.00	1.20	0.00	4.82
5413542	Skyliquid Wax for Enya, HF-4011	767.89	803.66	1423.69	810.81	901.43	887.13	930.05	200.32	1490.47	228.94	1101.75	786.97	10333.10
	Total Per Month:	2670.98	3892.73	4241.15	3542.40	4262.57	3482.85	3543.82	3615.26	3812.03	2285.74	4833.49	4148.73	

Total VOCs Purchased (2000): 44331.78 lbs or 22.17 tons

SCOEPA00022818

Units of Item Purchased by Month		1	2	3	4	5	6	7	8	9	10	11	12	
Part No. SAP	Material	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total consumption
*	Spraypaint *	11	3	5	3	7	12	11	9	10	0	3	18	92
5407103	Sealant Silicone White 10.3 OZ tube	2	0	0	0	9	2	1	7	3	0	0	0	24
5407104	Sealant Rubber Silicone RTV GE #W102 cart	1	14	9	4	5	0	1	11	0	2	4	0	51
5407107	Silicone RTV High Temp Blue Mak-A-Gasket	0	0	1	4	2	5	0	0	3	4	1	0	20
5407108	Silicone RTV High Temp Clear MAK-A-Gasket	3	3	1	0	5	2	3	5	10	11	0	12	55
5407328	Cleaner Instant Contact #CRC-02016	0	0	3	0	7	0	0	9	0	6	1	0	26
5407330	Cleaner Dust Chaser Spray VWR# 21899-094	20	19	15	10	10	18	7	10	12	4	8	14	147
5407332	Cleaner Electric Motor KAR #65390-2	0	0	0	1	3	0	0	0	0	0	0	0	4
5407334	Stripper / Remover For Paint, Carbon &	0	0	1	0	0	0	1	0	0	1	0	0	3
5407347	Refrigerant R-22 (30 LBS)	0	1	3	1	0	0	0	2	1	0	0	0	8
	Safety-Kleen Premium Gold Solvent	0	17	30	17	0	49	0	64	63	24	61	110	435
5407376	Isopropyl Alcohol (IPA) 99%	5	8	7	7	9	6	7	8	5	5	9	7	83
5407408	Lubricant Spray Molykote 321R Dow-Corning	0	0	0	0	0	0	0	0	0	0	0	0	0
5407431	Lubricant CRC 3-36 #03005	30	22	9	24	37	22	12	16	18	30	12	16	248
5407433	Lubricant CRC 3-36 (Gallon Can)	0	0	0	0	0	0	1	0	1	1	0	0	3
5407435	Lube Teflon #79417	1	0	0	0	0	0	0	0	2	0	0	0	3
5407436	Lubricant Teflon Dry #79418	0	0	0	0	0	0	0	0	0	1	0	0	1
5407439	Cement Neoprene Turntable Covering Carbo	0	0	0	0	0	0	0	0	0	0	0	0	0
5407466	Skyliquid Wax for Enya, HF-3511	0	0	0	0	0	0	0	0	0	0	0	0	0
5407470	Cleaner Zero Residue Instant Teck Spray	0	0	0	2	7	4	7	18	8	4	0	12	62
5407938	Caviclean #2 Cleaning Solution Turco	0	0	0	0	0	0	0	0	0	0	0	0	0
5407947	Lubricant Silicon	0	0	0	0	0	0	0	0	0	0	0	0	0
5407948	Grease Multi Purpose White	0	0	1	0	0	0	4	0	0	0	0	0	5
5407955	Epoxy Valtron AD1230 4-1 GAL/CS Part A	0	2	1	4	2	4	1	1	2	3	2	3	25
5407956	Hardner AD1211-B Red Pigment	0	2	-1	4	1	0	3	1	2	2	2	1	17
5407957	Epoxy STC Fast Cure Grey	497	418	499	480	543	412	517	509	481	469	449	403	5677
5407963	Mold-Release Wiz F-57NC 1 Gallon	0	0	0	0	0	0	0	0	0	0	0	0	0
5407967	Adhesive Tixo K-10 10 Gm/Each	1	0	0	0	0	0	0	1	1	0	1	0	4
5413542	Skyliquid Wax for Enya, HF-4011	322	337	597	340	378	372	390	84	625	96	462	330	4333
* this category contains part numbers 5406902-12														
5406902	Paint Krylon White Enamel Glossy #1501	3	0	0	2	0	5	5	1	5	0	1	10	32
5406903	Paint Gray Primer 2X982 16oz.	3	2	3	0	4	3	3	3	1	0	0	2	24
5406904	Paint Supercoat 316L SS Aerosol Can	0	0	2	1	0	0	1	2	2	0	0	2	10
5406905	Varnish red insulating	0	0	0	0	0	0	1	0	0	0	0	0	
5406906	Paint John Deere Green	0	0	0	0	0	0	0	2	2	0	0	2	6
5406907	Paint Chevrolet Orange	0	0	0	0	1	0	0	0	0	0	0	0	1
5406908	Paint Ford Red	0	0	0	0	0	0	0	0	0	0	0	0	0
5406909	Paint High Heat Black	1	1	0	0	0	2	0	0	0	0	0	0	4
5406910	Paint Chrysler Blue/ Napa	2	0	0	0	2	2	1	0	0	0	2	2	11
5406911	Paint Tan Industrial Enamel	0	0	0	0	0	0	0	0	0	0	0	0	0
5406912	Paint Glossy Black Spray Can #84000	2	0	0	0	0	0	0	1	0	0	0	0	3

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Pounds VOCs Evaporated or In Wastes (2000)														
Part no SAP	Material	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Yearly total
5406902	Spraypaint *	13.09	3.57	5.95	3.57	8.33	14.28	13.09	10.71	11.90	0.00	3.57	21.42	109.48
5407103	Sealant Silicone White 10.3 OZ tube	0.03	0.00	0.00	0.00	0.14	0.03	0.02	0.11	0.05	0.00	0.00	0.00	0.39
5407104	Sealant Rubber Silicone RTV GE #W102 cart	0.03	0.36	0.23	0.10	0.13	0.00	0.03	0.28	0.00	0.05	0.10	0.00	1.31
5407107	Silicone RTV High Temp Blue Mak-A-Gasket	0.00	0.00	0.04	0.17	0.09	0.22	0.00	0.00	0.13	0.17	0.04	0.00	0.87
5407108	Silicone RTV High Temp Clear MAK-A-Gasket	0.13	0.13	0.04	0.00	0.22	0.09	0.13	0.22	0.43	0.48	0.00	0.52	2.39
5407328	Cleaner Instant Contact #CRC-02016	0.00	0.00	4.42	0.00	10.31	0.00	0.00	13.26	0.00	8.84	1.47	0.00	38.30
5407330	Cleaner Dust Chaser Spray VWR# 21899-094	23.26	22.10	17.45	11.63	11.63	20.93	8.14	11.63	13.96	4.65	9.30	16.28	170.97
5407332	Cleaner Electric Motor KAR #65390-2	0.00	0.00	0.00	0.38	1.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.52
5407334	Stripper / Remover For Paint, Carbon &	0.00	0.00	0.64	0.00	0.00	0.00	0.64	0.00	0.00	0.64	0.00	0.00	1.91
5407347	Refrigerant R-22 (30 LBS)	0.00	0.64	1.91	0.64	0.00	0.00	0.00	1.28	0.64	0.00	0.00	0.00	5.10
	Safety-Kleen Premium Gold Solvent	0.00	113.90	201.00	113.90	0.00	328.30	0.00	428.80	422.10	160.80	408.70	736.99	2914.47
5407376	Isopropyl Alcohol (IPA) 99%	1810.00	2896.00	2534.00	2534.00	3258.00	2172.00	2534.00	2896.00	1810.00	1810.00	3258.00	2534.00	30046.00
5407408	Lubricant Spray Molykote 321R Dow-Corning	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5407431	Lubricant CRC 3-36 #03005	1.79	1.31	0.54	1.43	2.21	1.31	0.72	0.95	1.07	1.79	0.72	0.95	14.78
5407433	Lubricant CRC 3-36 (Gallon Can)	0.00	0.00	0.00	0.00	0.00	0.00	0.48	0.00	0.48	0.48	0.00	0.00	1.43
5407435	Lube Teflon #79417	0.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.28	0.00	0.00	0.00	1.92
5407436	Lubricant Teflon Dry #79418	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.63	0.00	0.00	0.63
5407439	Cement Neoprene Turntable Covering Carbo	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5407466	Skyliquid Wax for Enya, HF-3511	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5407470	Cleaner Zero Residue Instant Teck Spray	0.00	0.00	0.00	0.11	0.40	0.23	0.40	1.02	0.45	0.23	0.00	0.68	3.51
5407938	Caviclean #2 Cleaning Solution Turco	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5407947	Lubricant Silicon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5407948	Grease Multi Purpose White	0.00	0.00	0.28	0.00	0.00	0.00	1.13	0.00	0.00	0.00	0.00	0.00	1.41
5407955	Epoxy Valtron AD1230 4-1 GAL/CS Part A	0.00	8.01	4.00	16.01	8.01	16.01	4.00	4.00	8.01	12.01	8.01	12.01	100.08
5407956	Hardner AD1211-B Red Pigment	0.00	0.92	-0.46	1.83	0.46	0.00	1.38	0.46	0.92	0.92	0.92	0.46	7.80
5407957	Epoxy STC Fast Cure Grey	36.83	30.97	36.98	35.57	40.24	30.53	38.31	37.72	35.64	34.75	33.27	29.86	420.67
5407963	Mold-Release Wiz F-57NC 1 Gallon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5407967	Adhesive Tixo K-10 10 Gm/Each	1.20	0.00	0.00	0.00	0.00	0.00	0.00	1.20	1.20	0.00	1.20	0.00	4.82
5413542	Skyliquid Wax for Enya, HF-4011	443.46	464.11	822.18	468.24	520.58	512.31	537.10	115.68	860.74	132.21	636.26	454.47	5967.37
	Total Per Month:	2330.46	3542.02	3629.21	3187.60	3861.87	3096.24	3139.55	3523.32	3169.00	2168.64	4361.57	3807.65	

Total VOCs Evaporated or In Wastes (2000): 39817.12 lbs or 19.91 tons

VOCs to waste water: 4207 (voc to waste water and waste.xls - 1999)

VOCs to waste: 972 (voc to waste water and waste.xls - 1999)

Total VOCs Evaporated (2000): 34637.84 lbs or 17.32 tons

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SAP Material Number	Container Size	Form	Density/ Specific Gravity	Lb/gal	Gal/each	Lb/each	Fraction of product used	VOC Fraction	Evap Fraction	MSDS Number	Date added to list or revised	Comments
5406902		L		0		1.4	1	0.85	1			Lb/each and VOC Fraction inherited with spreadsheet
5407103	10.3oz Tub	Paste	1.04	8.6736		0.64375	1	0.025	1	2148		
5407104	10.3oz Car	Solid	1.06	8.8404		0.64375	1	0.04	1	2575		
5407107	8 oz Sp Can	L	1.04	8.6736	0.0625	0.5421	1	0.08	1	2337		
5407108	8 oz Sp Can	L	1.04	8.6736	0.0625	0.5421	1	0.08	1	2337		
5407328	15oz Sp Can	L	1.57	13.0938	0.117188	1.53443	1	0.96	1	2093		MSDS in 1997 TRI Notebook
5407330	15oz Sp Can	L	1.19	9.9246	0.117188	1.163039	1	1	1			MSDS not in File Magic; Specific Gravity inherited with spreadsheet
5407332	16oz Sp Can	L	1.5	12.51	0.125	1.56375	1	0.243	1	2169		
5407334	16oz Sp Can	L	0.9	7.506	0.125	0.93825	1	0.68	1	2252		
5407347	30 Lb Dm	L										
	1 Gal	L	0.80335	6.7	1	6.7	1	1	1	2582	Added 2/8/99	Evap Fraction left at 1 because amount shipped as waste accounted for later
5407376	55 Gal Dm	L	0.7855	6.55107	55	362	1	1	1	2580		Evap Fraction left at 1 because amount discharged to POTW in waste water accounted for later; Lb/Dm from VW&R Customer Sales by Product for 1997
5407408	11oz Sp Can	L	1	8.34	0.085938	0.716719	1	0.57	1	2419		MSDS in 1997 TRI Notebook; Specific Gravity assumed - none listed
5407431	16oz Sp Can	L	0.8167	6.81128	0.125	0.85141	1	0.7	0.1	1011		Evap Fraction corresponds to "slow 0.01" Evaporation Rate noted on MSDS
5407433	1 Gal Pl Btl	L	0.8167	6.81128	1	6.811278	1	0.7	0.1	1010		Evap Fraction corresponds to "slow 0.01" Evaporation Rate noted on MSDS
5407435	20oz Sp Can	L	0.6	5.004	0.15625	0.781875	1	0.82	1	2344		
5407436	16oz Sp Can	L	0.6	5.004	0.125	0.6255	1	1	1	2154		Specific Gravity assumed - none on MSDS
5407439	16oz Btl	L	0.81	6.7554	0.125	0.844425	1	0.8	1	2427		MSDS in 1997 TRI Notebook
5407466	2 L Pl Btl	L	0.889	7.41426	0.528346	3.917293	0.75	0.65	0.77	2631		Assumed same process test data as PN 5413542 because similar formula; MSDS in 1997 TRI Notebook
5407470	16oz Sp Can	L	1.004	8.37336	0.125	1.04667	1	0.0541	1	2803		
5407938	55 Gal Dm	L	1.05	8.757	55	481.635	1	0.12	1	2740		VOC Fraction inherited with spreadsheet
5407947	20oz Sp Can	L	0.76	6.3384	0.15625	0.990375	1	0.9	1	2340		
5407948	20oz Sp Can	L	0.9	7.506	0.15625	1.172813	1	0.24	1	2332		
5407955	1 Gal Can	S	1.2	10.008	1	10.008	1	0.4	1	2750		VOC Fraction inherited with spreadsheet - none on MSDS
5407956	16oz Can	L	1.1	9.174	0.125	1.14675	1	0.4	1	2749		
5407957	10 oz Can		1.54	12.8436	0.078125	1.003406	1	0.07385	1	2615		
5407963	1 Gal Can	L	0.82	6.8388	1	6.8388	1	0.925	1	2414		
5407967	20oz Sp Can	L	1.05	8.757	0.15625	1.368281	1	0.88	1	2722		VOC Fraction inherited with spreadsheet - none on MSDS
5413542	2 L Pl Btl	L	0.902	7.52268	0.528346	3.974576	0.75	0.6	0.77	2819		process test used to determine evap fraction; MSDS in 1997 TRI Notebook
* some values in the table are given by the manufacturer, others are calculated by unit conversion.												
Values in this table may be updated as appropriate.												
4467305	5 Gal Pail	L	0.9	7.506	5	35.5		0.649	1			
5455100	16 oz can	L	0.93	7.7562	0.129	1		0.85	1			

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2000 purchases of products containing VOC's

SAP#	Material	Stock	Group	Usage	Units	Jan-00	Feb-00	Mar-00	Apr-00	May-00	Jun-00	Jul-00	Aug-00	Sep-00	Oct-00	Nov-00	Dec-00
5406902	PAINT Krylon white enamel glossy	12	401580	32	CAN	3	0	0	2	0	5	5	1	5	0	1	10
5406903	PAINT gray primer 2X982 16 OZ.	1	401580	24	CAN	3	2	3	0	4	3	3	3	1	0	0	2
5406904	PAINT SUPERCOAT 316L SS AEROSOL CAN	5	401580	10	CAN	0	0	2	1	0	0	1	2	2	0	0	2
5406905	VARNISH red insulating	4	401580	1	CAN	0	0	0	0	0	0	1	0	0	0	0	0
5406906	PAINT John Deere Green	6	401580	6	PC	0	0	0	0	0	0	0	2	2	0	0	2
5406907	PAINT Chevrolet Orange	2	401580	1	PC	0	0	0	0	1	0	0	0	0	0	0	0
5406908	PAINT Ford red	1	401580	0	PC	0	0	0	0	0	0	0	0	0	0	0	0
5406909	PAINT high heat black	6	401580	4	PC	1	1	0	0	0	2	0	0	0	0	0	0
5406910	PAINT Chrysler blue	5	401580	11	PC	2	0	0	0	2	2	1	0	0	0	2	2
5406912	PAINT glossy black spray can #84000	5	401580	3	CAN	2	0	0	0	0	0	0	1	0	0	0	0
5407103	SEALANT silicone white 10.3 OZ tube	5	403575	24	PC	2	0	0	0	9	2	1	7	3	0	0	0
5407104	SEALANT rubber silicone RTV GE#W102	5	403575	51	PC	1	14	9	4	5	0	1	11	0	2	4	0
5407107	SILICONE RTV HIGH TEMP BLUE MAK-A-GASKET	5	403575	20	CAN	0	0	1	4	2	5	0	0	3	4	1	0
5407108	SILICONE RTV HIGH TEMP CLEAR MAK-A-GASKE	12	403575	55	CAN	3	3	1	0	5	2	3	5	10	11	0	12
5407328	CLEANER instant contact #CRC-02016	16	405510	26	CAN	0	0	3	0	7	0	0	9	0	6	1	0
5407330	CLEANER DUST CHASER SPRAY VWR# 21899-094	33	405510	147	CAN	20	19	15	10	10	18	7	10	12	4	8	14
5407332	CLEANER electric motor KAR #65390-2	7	403560	4	CAN	0	0	0	1	3	0	0	0	0	0	0	0
5407334	STRIPPER/REMOVER PAINT, CARBON & GASKETS	11	403560	3	CAN	0	0	1	0	0	0	1	0	0	1	0	0
5407347	REFRIGERANT R-22 (30 LBS)	3	405510	8	DR	0	1	3	1	0	0	0	2	1	0	0	0
5407374	ETHANOL V-1 200 (VANZOL)	0	403560	0	DR	0	0	0	0	0	0	0	0	0	0	0	0
5407375	ACETONE	0	403560	0	DR	0	0	0	0	0	0	0	0	0	0	0	0
5407376	ISOPROPYL ALCOHOL (IPA) 99%	5	403560	83	DR	5	8	7	7	9	6	7	8	5	5	9	7
5407408	LUBRICANT spray Molykote 321R	4	8705	0	PC	0	0	0	0	0	0	0	0	0	0	0	0
5407431	LUBRICANT CRC 3-36 16oz can	42	8705	248	PC	30	22	9	24	37	22	12	16	18	30	12	16
5407433	LUBRICANT CRC 3-36 (1 gallon)	4	8705	3	GAL	0	0	0	0	0	0	1	0	1	1	0	0
5407435	LUBE teflon #79417	2	8705	3	CAN	1	0	0	0	0	0	0	0	2	0	0	0
5407436	LUBRICANT teflon dry #79418	1	8705	1	CAN	0	0	0	0	0	0	0	0	0	1	0	0
5407470	CLEANER zero residue instant tech spray	3	8810	62	CAN	0	0	0	2	7	4	7	18	8	4	0	12
5407947	LUBRICANT SILICON	6	8705	0	CAN	0	0	0	0	0	0	0	0	0	0	0	0
5407948	GREASE MULTI PURPOSE WHITE	3	8705	5	PC	0	0	1	0	0	0	4	0	0	0	0	0
5407955	EPOXY VALTRON AD1230 4-1 GAL/CS PART A	4	403580	25	CS	0	2	1	4	2	4	1	1	2	3	2	3
5407956	HARDNER AD1211-B RED PIGMENT	6	403580	17	CS	0	2	-1	4	1	0	3	1	2	2	2	1
5407957	EPOXY fast cure grey	1	403580	5,677	CAN	497	418	499	480	543	412	517	509	481	469	449	403
5407967	ADHESIVE all purpose & trim #77160	2	403580	4	CAN	1	0	0	0	0	0	0	1	1	0	1	0
5413542	WAX SKYLIQUID CLEAR HF4011 2 LITER	863	403575	4,333	BTL	322	337	597	340	378	372	390	84	625	96	462	330

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Analytical data from North Creek Analytical 2000
(reports from Dianne Mullan/Facilities Lab)

OWW IPA		
Month, 2000	Detection Limit	Result (ppm)
Jan	1.0	ND
Feb	1.0	1.5
Mar	1.0	3.0
Apr	1.0	4.3
May	1.0	4.0
Jun	1.0	2.2
Jul	1.0	3.3
Aug	1.0	3.0
Sep	1.0	1.0
Oct	1.0	ND
Nov	1.0	ND
Dec	1.0	ND
*Average:		2.5

	Million Gallons	
Month	Process WW Flow	OWW Flow
Jan	29.698	21.162
Feb	27.944	22.572
Mar	30.721	22.273
Apr	30.27	19.485
May	32.643	21.657
Jun	31.47	21.109
Jul	32.209	21.527
Aug	33.17	21.561
Sep	30.96	20.278
Oct	32.457	20.909
Nov	33.03	20.227
Dec	32.333	21.343
Total	376.905	254.103

OWW = Organic Waste Water

Process WW = Process Waste Water Flow, Average, (from DMRs)
aka (Weak Acid Drain, or WAD + Concentrated Acid Drain, or CAD)
OWW flows from Facilities (L:\RODI\CCR\"totals".xls)

ppm = mg/l
ND = Not Detected
*Dropped the NDs and June 97.5 ppm (low and high) from average.

POTW Flow: (OWW system)
254103000 gallons for the year
21175250 per month, assuming flow is consistent

River Flow: (CE)
376905000 gallons for the year
31408750 per month, assuming flow is consistent

calculating yearly amount of IPA to POTW:						4207 lb IPA to waste water year
	2.5 gal IPA / 1000000 gal water		254103000 gal water / year		6.59 lb IPA / gal IPA	4207 lb IPA / year

::

Total lb VOC in waste water for 1999: 4207 or 2.1 tons

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CONSUMPTION TOTALS

Year 2000

SYSTEM	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC	
NATURAL GAS	MCF	MCF	MCF	MCF	MCF	MCF	MCF	MCF	MCF	MCF	MCF	MCF	
NATURAL GAS USE	17.45	17.72	16.95	14.01	14.72	13.24	13.16	13.35	13.13	15.20	18.39	20.67	188
Boiler 5	4.60	4.30	4.50	2.90	3.50	1.60	2.40	4.20	4.10	3.70	2.50	3.80	
Boiler 6	3.40	2.90	2.80	2.20	3.00	2.30	2.90	0.40	0.30	1.20	4.20	3.50	
Boiler 7	3.30	3.70	3.30	3.70	2.40	2.20	3.70	3.60	3.70	4.10	4.70	4.50	
WATER USE	1,000 GAL	1,000 GAL	1,000 GAL	1,000 GAL	1,000 GAL	1,000 GAL	1,000 GAL	1,000 GAL	1,000 GAL	1,000 GAL	1,000 GAL	1,000 GAL	
FAB 1 DEAERATOR #1 MAKEUP													
FAB 1 DEAERATOR #2 MAKEUP	20	24	23	18	10	39	16	16	26	17	30	55	
FAB 2 DEAERATOR #3 MAKEUP	67	55	52	39	65	63	49	56	60	54	81	49	
TOTAL BOILER MAKEUP	88	79	74	56	74	102	64	72	86	71	112	104	877
COOLING LOOPS:													
LOOP #1 MAKEUP			23			1							
LOOP #2 MAKEUP	134	77	68	73	89	149	89	142	137	206	116	166	
LOOP #3 MAKEUP	2,642	2,980	2,859	2,701	2,936	2,775	2,795	2,892	2,864	2,948	2,978	2,780	
LOOP #4 MAKEUP	11	6	32	43	27	24	33	36	20	36	7	16	
LOOP #5a MAKEUP	66	11	3	0	0	2	0	0	3	0		1	
LOOP #5b MAKEUP	0	0	1	6	1	1	0	0	0	0	0	0	
FAB 2 PCW MAKEUP		1	0	13	6	1	1	1	0	4	5	6	
FAB 2 CHILLER MAKEUP		0			2	0	0		3		0	1	
FAB 2 GLYCOL MAKEUP													
HEAT RECOVERY MAKEUP	32	390	28	27	30	31	25	21	18	18	17	13	
TOTAL LOOP MAKEUP	2,884	3,466	3,014	2,884	3,091	2,984	2,943	3,092	3,046	3,212	3,123	2,982	36,702
COOLING TOWERS:													
HVAC TOWER MAKEUP	23	24	21	15	20	23	11	10	7	7	8	9	
GROWING TOWER MAKEUP	195	224	249	271	217			9,577	414	299	205	185	
LOOP 3 TOWER	77	91	107	119	129	108	172	192	178	156	106	60	
FAB 1 TOWER # 16 MAKE UP	42	113	415	444	523	237	96	85		60	5	1	
FAB 1 TOWER # 10 MAKE UP	563	195	620	654	740	767	749	492	304	123	192	162	
FAB 1 TOWER # 11 MAKE UP	377	505	52	4	59	466	671	754	723	533	440	414	
FAB 2 TOWER #17	0	16	20	44	14	76	12	17	22	115	45	61	
FAB 2 TOWER #18						23	21	58	491	181	80	1	
FAB 2 TOWER #19	75	61	103	232	362	481	555	719	610	431	313	252	
FAB 2 TOWER #20						0	2	2		1			
FAB 2 TOWER #21						17		24	50	2			
TOTAL TOWER MAKEUP	1,328	1,206	1,565	1,768	2,045	2,174	2,279	11,918	2,792	1,899	1,386	1,136	31,496
FAB 1 RODI PRODUCTION:													
RO METER 1A	2,582	2,821	2,614	769	1	1			1		471	1,337	
RO METER 1B	2,290	2,233	2,483	2,391	3,199	2,962	3,220	2,618	1,514		0		
RO METER 1C	1,575	1,824	1,822	549	1	0			0				
RO METER 2A	529	563	510	3	322	543	41	288	13	802	598	388	
RO METER 2B	1,831	1,806	1,817	647	72	6	36		1,403	2,075	1,545	1,539	
RO METER 2C	1,571	2,114	2,017	1,967	3,161	3,064	3,024	2,651	2,716	2,068	1,789	1,375	
FAB 1 RO #1	6,447	6,878	6,919	3,710	3,201	2,963	3,220	2,618	1,515		471	1,337	
FAB 1 RO #2	3,930	4,483	4,344	2,617	3,555	3,613	3,101	2,939	4,132	4,945	3,932	3,303	
FAB 1 RO Output	10,377	11,361	11,263	6,326	6,756	6,577	6,321	5,557	5,647	4,945	4,403	4,640	84,172
EST Fab 1 RO Reject	3,113	3,408	3,379	1,898	2,027	1,973	1,896	1,667	1,694	1,483	1,321	1,392	
EST Fab 1 MM Backwash	92	92	92	92	92	92	92	92	92	92	92	92	
TOTAL FAB 1 RODI USE	13,581	14,861	14,733	8,316	8,874	8,641	8,308	7,315	7,432	6,520	5,815	6,123	110,521
Fab 1 RO Total Feed													
Fab 1 RO Total Product													
FAB 2 UPW PRODUCTION:													
FAB 2 RO TRAIN 1, BANK 1	1,753	1,872	2,174	2,398	2,718	2,532	2,841	3,086	3,851	4,249	3,410	3,434	
FAB 2 RO TRAIN 1, BANK 2	1,711	1,850	2,207	2,351	2,686	2,522	2,824	3,081	3,808	4,211	3,427	3,312	
FAB 2 RO TRAIN 2, BANK 1	1,773	1,905	2,067	2,700	2,675	2,583	2,809	3,303	3,157	3,632	3,486	3,326	
FAB 2 RO TRAIN 2, BANK 2	1,787	2,175	1,911	2,731	2,609	2,865	2,636	3,252	3,335	3,669	3,566	3,622	
FAB 2 RO TRAIN 3, BANK 1	1,823	2,115	2,120	2,683	2,918	2,950	2,864	3,112	7,075	8,569	3,354	3,437	
FAB 2 RO TRAIN 3, BANK 2	1,774	1,916	1,972	2,861	2,958	2,696	2,990	3,332	2,699	2,799	3,689	3,331	
FAB 2 RO TRAIN 4, BANK 1													
FAB 2 RO TRAIN 4, BANK 2													
FAB 2 RO Output	10,621	11,833	12,451	15,724	16,564	16,148	16,964	19,166	23,925	27,129	20,932	20,462	211,919
EST Fab 2 RO Reject	3,186	3,550	3,735	4,717	4,969	4,844	5,089	5,750	7,178	8,139	6,280	6,139	
EST Fab 2 MM Backwash	1,036	1,154	1,214	1,533	1,615	1,574	1,654	1,869	2,333	2,645	2,041	1,995	
TOTAL FAB 2 UPW USE	14,843	16,537	17,400	21,974	23,148	22,567	23,707	26,784	33,435	37,913	29,252	28,595	296,156
ESTIMATED DOMESTIC USE	788	774	780	757	1,001	964	892	918	1,345	774	639	735	
TOTAL WATER USE	33,512	36,822	37,567	35,736	38,233	37,431	38,195	50,100	48,137	50,388	40,328	39,675	

WASTE TREATMENT:

Forwarding Flows

Fab 1 To Fab 2 Flows													
OWW	10,500	11,700	11,300	10,500	11,400	11,100	11,200	11,000	10,300	11,200	10,700	10,800	
CAD	4,500	4,900	4,400	4,800	5,200	5,000	4,800	4,800	4,800	5,300	5,300	5,300	
WAD	9,600	10,600	10,400	10,200	11,300	10,600	11,000	11,000	10,800	11,300	11,100	11,100	
Fab 2 Flows (Not incl Fab 1)													
OWW													
CAD													
WAD													
WWTP Effluent													
FAB 1 CE	15	16											No discharge
FAB 2 CE	28,370	31,364	30,937	29,373	33,778	31,969	32,547	32,156	31,696	33,448	32,903	33,024	381,564
FAB 1 OWW	411	221											No discharge
FAB 2 OWW	20,755	22,351	22,273	19,485	21,657	21,109	21,527	21,561	20,278	20,909	20,227	21,343	253,474
MV-3	6,096	5,103	5,077	6,093	6,496	6,448	6,683	8,112	7,799	5,255	4,880	4,544	72,585
SANITARY/MV-2	788	774	780	757	1,001	964	892	918	1,345	774	639	735	10,368
TOTAL WASTE	56,434	59,830	59,066	55,708	62,932	60,490	61,649	62,748	61,119	60,384	58,649	59,646	718,654

CITY METER

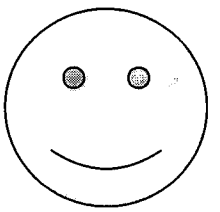
FAB 1 CITY WATER	32,093	34,281	31,023	23,255	26,700	26,262	27,429	24,755	22,691	22,709	20,933	22,062	
FAB 2 CITY WATER	26,707	29,340	29,819	34,101	37,673	36,977	37,628	42,707	42,946	39,509	38,937	37,321	
TOTAL CITY WATER	58,800	63,621	60,842	57,357	64,373	63,240	65,057	67,462	65,637	62,219	59,870	59,384	747,862
Loop #7 Makeup	25,289	26,699	23,275	21,821	26,140	25,809	26,863	17,362	17,500	11,830	19,542	19,709	
OVERALL WATER BALANCE	(2)	(4)	(0)	0	1	(1)	(2)	11	(3)	0	0	2	

SCOEPA00022824

Wacker WWTP OWW Monthly Grabs

2000

Month	IPA mg/L
Jan	< 1.0
Feb	1.5
Mar	3.0
Apr	4.3
May	4.0
1-Jun	97.5
30-Jun	2.2
Jul	3.3
Aug	3.0
Sep	1.0
Oct	< 1.0
Nov	< 1.0
Dec	<1.0



IPA.xlsIPA

All input data (yellow shaded areas) received from Petra Hoy in 2000 Waste Shipment Information for Annual ACDP Report.

Mixed Alcohols Waste (90% VOC)			
Date Shipped	lbs	Avg lb/day	Avg lb/month
			55.58
20-Jan	254	0.01	
2-Mar	413	9.83	
Total lbs:	667		

lbs VOC: 600 (Waste Profile Number: 321346)

Safety-Kleen Solvent Waste (100% VOC)			
Date Shipped	lbs	Avg lb/day	Avg lb/month
			242.92
18-Feb	114	0.00	
13-Mar	201	8.38	
10-Apr	114	4.07	
6-Jun	328	5.75	
9-Aug	429	6.70	
22-Sep	214	4.86	
26-Sep	208	0.56	
7-Oct	161	14.64	
16-Nov	409	10.23	
27-Dec	221	5.39	
31-Dec	516	129.00	
Total lbs:	2915		

lbs VOC: 2915 (Safety-Kleen Premium Gold Solvent)

Wax Waste (from Fab 2 - Enya) 20% / 60% VOC*			
Date Shipped	lbs	Avg lb/day	Avg lb/month
			757.83
20-Jan	372	0.01	
3-Feb	230	16.43	
2-Mar	634	22.64	
6-Apr	1221	34.89	
4-May	793	28.32	
8-Jun	1411	40.31	
6-Jul	676	24.14	
10-Aug	643	18.37	
7-Sep	672	24.00	
6-Oct	630	21.72	
6-Nov	816	26.32	
15-Dec	996	10.06	
Total lbs:	9094		

lbs VOC: 4962 (Waste Profile Number: 325054)

* As of March 2000 the Mixed Alcohol and Wax Waste profiles are combined There by increasing the % VOC in the Wax Waste to 60%

Total lbs VOC in waste shipments for 2000:	8477	or	4.2 tons	
	3515	or	1.8 tons	(not including Wax Waste)
	600	or	0.3 tons	(cleaning solvent VOCs only, not including Safety-Kleen)

SCOEPA00022826

NOx Scrubber Observations Logsheet		
Date	**Time**	**Observations (*i.e.*, plume color, intensity, & duration; screen display)**
Ex. 1/16/1998	9:30 a.m.	Thin yellow plume lasting about 1 min; screen trend showed 3-min spike of 125 ppm NOx

SCOEPA00022827

NOx Scrubber Emissions
Action Levels

Log any observations associated with visible emissions from the exhaust stack on the *NOx Scrubber Observations Logsheet* located in the operations/maintenance logbook.

Notify Environmental Department (x7132) if concentration spike of 40 ppm is sustained for 1 hour or longer.

Typically, NOx emissions from the NOx Scrubber range between 5 and 25 ppm. However, occassionally concentration spikes of greater than 100 ppm occur.

Spikes of high concentration, but short duration, are expected since the scrubber system needs time to adjust to a change in inlet concentration. Samples from the scrubber exhaust must be captured, analyzed, and downloaded prior to dispatching treatment chemicals from the appropriate chemical feed system.

SCOEPA00022828

NOx Scrubber Emissions
Action Levels

Log any observations associated with visible emissions from the exhaust stack on the *NOx Scrubber Observations Logsheet* located in the operations/maintenance logbook.

Notify Environmental Department (x7132) if concentration spike of 40 ppm is sustained for 1 hour or longer.

Background Information:

Discussion

Typically, NOx emissions from the NOx Scrubber range between 5 and 25 ppm. However, occassionally concentration spikes of greater than 100 ppm occur. Spikes of high concentration, but short duration, are expected since the scrubber system needs time to adjust to a change in inlet concentration. Samples from the scrubber exhaust must be captured, analyzed, and downloaded prior to dispatching treatment chemicals from the appropriate chemical feed system.

Quantitative Analysis of Action Levels

NOx Exhaust Temperature Range: 40 to 80 deg F

NOx Exhaust Maximum Flow Rate: 18000 SCFM (ft^3/min)

C_{mass} (ug/m^3) = (P/RT) x C_{ppm} x MW_{NOx} x 10^3; C_{mass} (lb/ft^3) = C_{mass} (ug/m^3) x 1 $m^3/(3.281)^3 ft^3$ x 1 $lb/(453*10^6)$ ug

*Equations derived from Air Pollution Control: A Design Appproach, pp. 20-21, Eq. (1.8) and Eq. (1.9).

P = 1 atm

R = 0.08206 l-atm/gmole-K

T = 277 to 300 K

MW_{NOx} = 46.01 g/gmole (MW_{NOx} = MW_{NO2} because C_{NO2} in scrubber exhaust dwarfs C_{NO} and NOx = NO2 + NO, in this case)

C_{ppm} = 40 (arrived at 40 through iteration resulting in *ACDP Short-Term PSEL* in *Worst-case* calculation below)

Worst-case (maximum flow, greatest C_{mass}, assuming 40 ppm peak of 24-hr duration)

C_{mass} = 74758 to 80966 ug/m^3 or 4.67E-06 to 5.06E-06 lb/ft^3

NOx Emissions = 0 lb/min or 5.5 lb/hr or **131 lb/day** *(ACDP Short-Term PSEL = 130 lb/day)*

Typically, C_{ppm} = 25 or less,

C_{mass} = 46724 to 50604 ug/m^3 or 2.92E-06 to 3.16E-06 lb/ft^3

NOx Emissions = 0 lb/min or 3.4 lb/hr or 29922 lb/yr or **15.0 ton/yr** *(ACDP Annual PSEL = 24 tons/yr)*

ACDP = Air Contaminant Discharge Permit

PSEL = Plant Site Emission Limit

SCOEPA00022829

AVG CFM

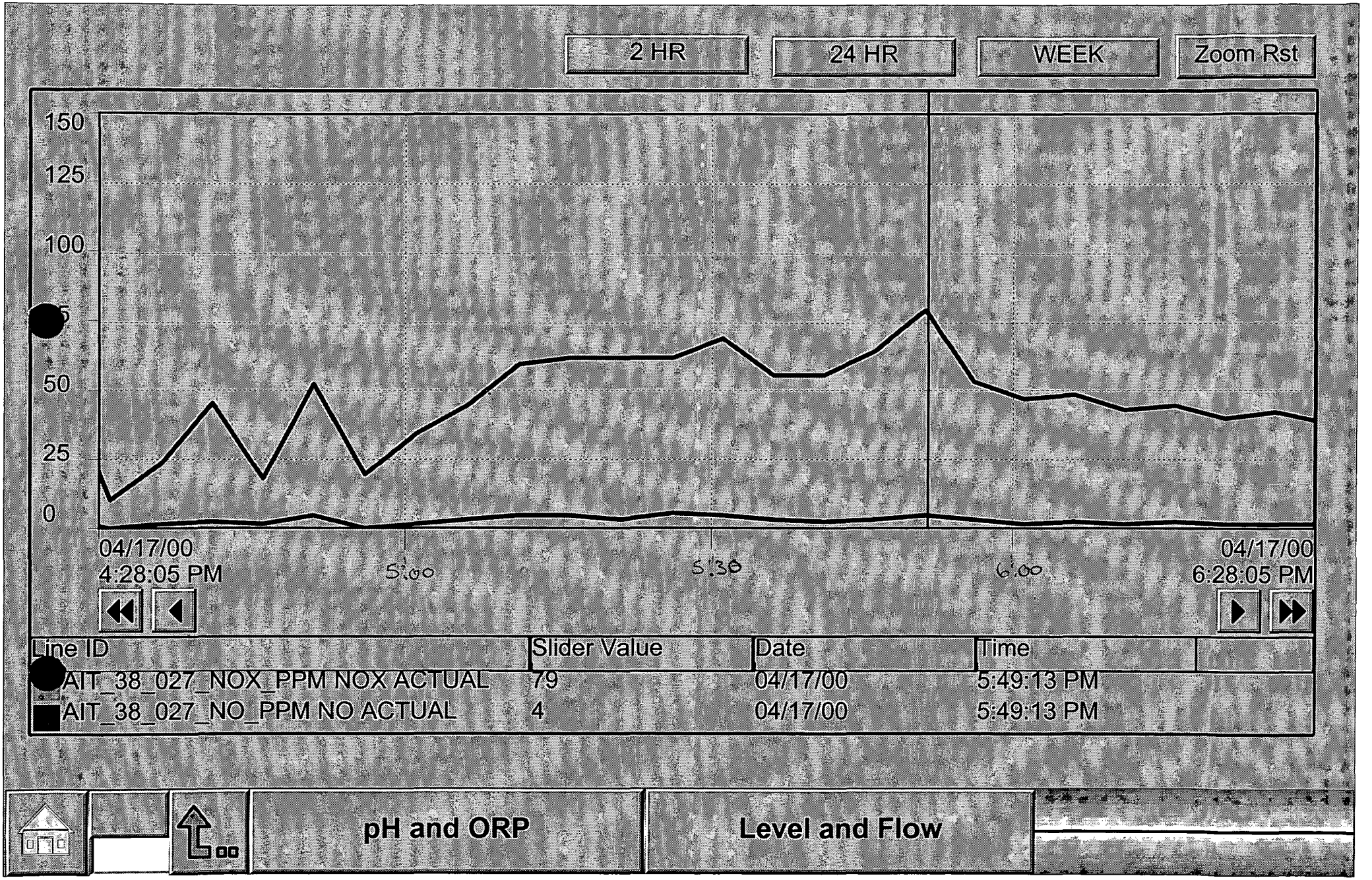
timestamp	NOX_AVG_VAL0	NOX_CUM_VAL0	NOX_LBS_VAL0	NO_AVG_VAL0	8_AVG_VAL0	NO_LBS_VAL0	TT_28_026_AVG_VAL0
22-Mar-00	26	5889	2.759	0	14127	0.003	51
22-Mar-00	22	5887	2.747	0	14210	0.012	41
22-Mar-00	21	5884	2.22	0	14277	0	41
22-Mar-00	9	5881	0.93	0	14309	0.001	41
22-Mar-00	28	5879	2.956	1	14292	0	41
22-Mar-00	29	5878	3.069	0	14309	0.052	41
22-Mar-00	25	5875	2.64	0	14310	0.008	41
22-Mar-00	24	5872	2.455	0	14337	0.001	42
22-Mar-00	29	5869	3.059	0	14344	0.002	41
22-Mar-00	24	5867	2.531	0	14348	0.008	41
22-Mar-00	14	5863	1.503	0	14362	0	41
21-Mar-00	19	5861	2	0	14337	0	41
21-Mar-00	22	5860	2.323	0	14326	0	41
21-Mar-00	10	5857	1.007	0	14321	0	41
21-Mar-00	21	5855	2.189	0	14315	0	41
21-Mar-00	31	5855	3.198	0	14361	0.002	41
21-Mar-00	59	5852	6.121	17	13865	0.002	41
21-Mar-00	36	5847	3.522	3	13479	1.037	41
21-Mar-00	31	5842	3.016	3	13440	0.139	41
21-Mar-00	17	5839	1.678	2	13448	0.116	41
21-Mar-00	36	5836	3.523	3	13488	0.079	41
21-Mar-00	34	5834	3.298	2	13468	0.148	41
21-Mar-00	31	5831	3.106	2	13609	0.099	41
21-Mar-00	30	5828	3.005	1	13685	0.077	41
21-Mar-00	37	5824	4.521	1	13766	0.037	41
21-Mar-00	12	5822	3.024	2	13784	0.27	41
21-Mar-00	21	5815	2.067	1	13796	0.003	41
21-Mar-00	30	5814	3.048	2	13736	0.063	41
21-Mar-00	35	5812	3.542	2	13729	0.088	41
21-Mar-00	29	5809	2.922	1	13727	0.085	41
21-Mar-00	24	5805	2.37	0	13741	0.028	41
21-Mar-00	20	5802	2.045	0	13724	0.002	41
21-Mar-00	26	5800	2.652	1	13772	0.029	41
21-Mar-00	17	5798	1.676	0	13802	0.036	41
21-Mar-00	8	5795	0.791	0	13799	0.017	41

Δ 66 lbs

66.644

3/21/00 total lbs.

PERMIT LIMIT = 130 lbs/day



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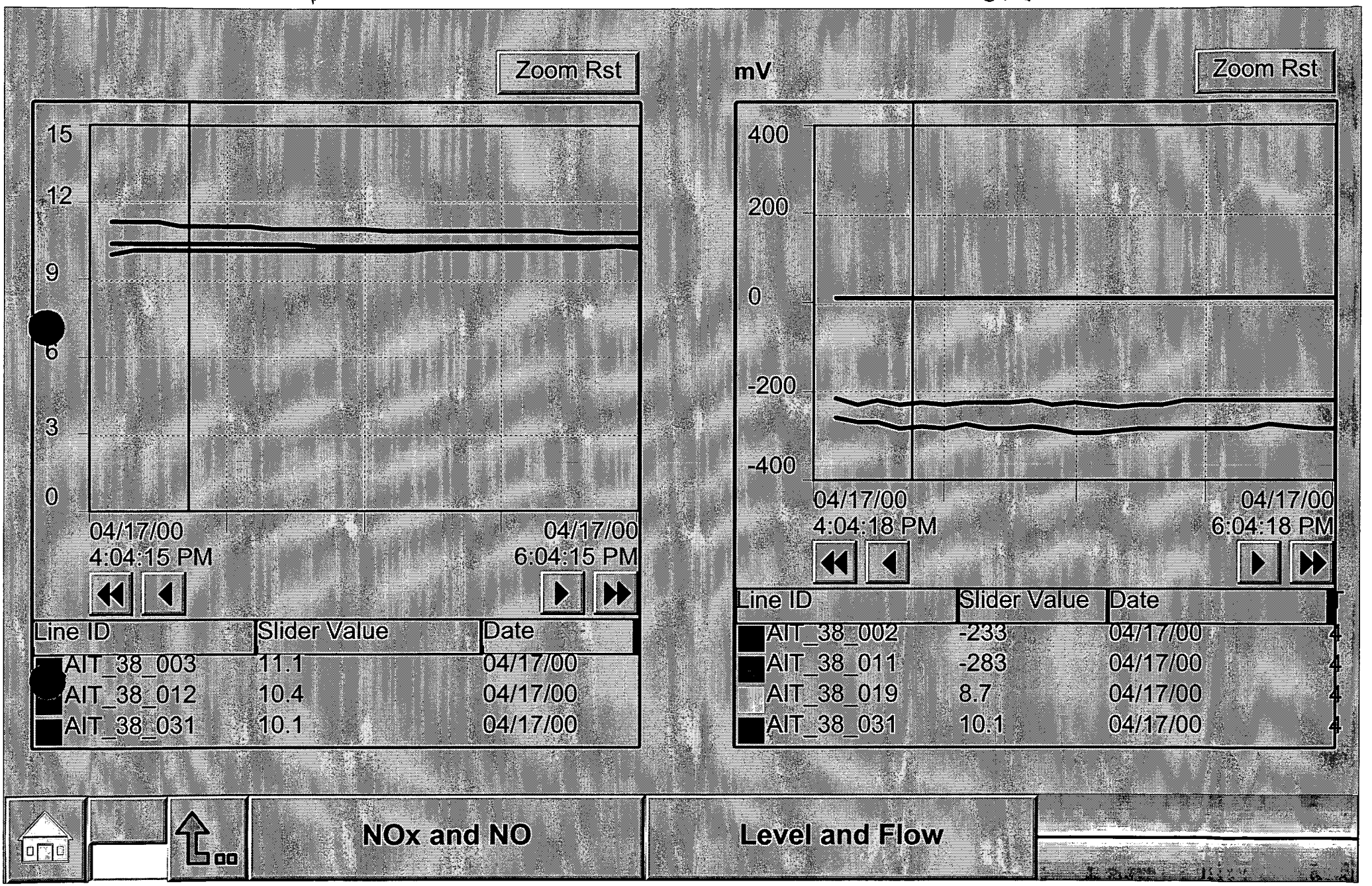
10:00:01 AM 4/18/00

pH

ORP



J:\data\NOX\screens\38TR-pH_ORP.cim
10:05:28 AM 4/18/00

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18-Apr-00	36	7416	2.23	2	10073	0.074
18-Apr-00	34	7414	2.131	3	10093	0.066
18-Apr-00	30	7412	1.88	2	10078	0.086
18-Apr-00	22	7410	1.353	1	10160	0.06
18-Apr-00	4	7408	0.28	0	10228	0.019
18-Apr-00	22	7407	1.377	1	10339	0
18-Apr-00	35	7407	2.214	2	10334	0.036
18-Apr-00	36	7405	2.294	2	10306	0.044
18-Apr-00	36	7402	2.279	2	10313	0.054
18-Apr-00	25	7400	1.577	1	10271	0.065
18-Apr-00	28	7398	1.757	1	10255	0.021
18-Apr-00	28	7396	1.751	1	10244	0.026
18-Apr-00	19	7395	1.208	0	10247	0.024
18-Apr-00	35	7393	2.23	1	10230	0
Total			**24.561**			**0.575**
17-Apr-00	37	7392	2.31	1	10214	0.051
17-Apr-00	32	7389	1.974	1	10166	0.036
17-Apr-00	35	7387	2.19	2	10140	0.028
17-Apr-00	35	7385	2.179	1	10105	0.041
17-Apr-00	56	7383	3.46	3	10037	0.035
17-Apr-00	34	7381	2.087	2	10034	0.101
17-Apr-00	26	7377	1.583	1	10040	0.039
17-Apr-00	26	7375	1.612	1	10050	0.03
17-Apr-00	21	7374	1.299	1	10117	0.028
17-Apr-00	26	7372	1.6	1	10151	0.029
17-Apr-00	24	7371	1.528	1	10257	0.016
17-Apr-00	27	7369	1.711	1	10217	0.017
17-Apr-00	39	7368	2.388	3	10067	0.048
17-Apr-00	33	7366	2.141	2	10222	0.087
17-Apr-00	26	7363	1.982	1	10292	0.054
17-Apr-00	20	7361	1.282	0	10341	0.028
17-Apr-00	11	7360	0.708	0	10350	0.001
17-Apr-00	36	7358	2.277	2	10330	0.003
17-Apr-00	34	7357	2.154	3	10300	0.062
17-Apr-00	37	7355	2.316	3	10291	0.101
17-Apr-00	27	7353	1.728	1	10280	0.085
17-Apr-00	15	7351	0.93	0	10274	0.02
17-Apr-00	23	7349	1.474	1	10303	0.005
17-Apr-00	38	7348	2.395	2	10251	0.038
Total			**45.308**			**0.983**
16-Apr-00	34	7346	2.114	2	10256	0.062
16-Apr-00	35	7344	2.207	3	10219	0.068
16-Apr-00	31	7342	1.909	1	10191	0.089
16-Apr-00	29	7340	1.804	1	10204	0.038
16-Apr-00	20	7338	1.226	0	10174	0.028
16-Apr-00	10	7336	0.647	0	10075	0.003

16-Apr-00	33	7335	2.021	1	10044	0.016
16-Apr-00	40	7334	2.468	2	10129	0.046
16-Apr-00	35	7332	2.173	2	10128	0.062
16-Apr-00	33	7330	2.049	2	10184	0.078
16-Apr-00	22	7327	1.389	0	10248	0.048
16-Apr-00	32	7326	2.018	2	10226	0.005
16-Apr-00	44	7324	2.79	3	10259	0.079
16-Apr-00	37	7322	2.376	3	10156	0.083
16-Apr-00	27	7319	1.989	2	10211	0.099
16-Apr-00	30	7317	1.918	1	10407	0.07
16-Apr-00	30	7315	1.941	1	10405	0.048
16-Apr-00	13	7313	0.842	0	10316	0.033
16-Apr-00	20	7311	1.243	1	10327	0.01
16-Apr-00	45	7310	2.834	4	10311	0.028
16-Apr-00	39	7309	2.448	3	10314	0.115
16-Apr-00	32	7306	2.024	1	10283	0.071
16-Apr-00	32	7304	2.018	1	10320	0.04
16-Apr-00	34	7302	2.124	2	10287	0.045
Total			**46.572**			**1.264**
15-Apr-00	19	7300	1.214	0	10302	0.065
15-Apr-00	14	7298	0.888	0	10286	0.006
15-Apr-00	33	7297	2.097	3	10273	0.004
15-Apr-00	32	7295	2.012	3	10266	0.099
15-Apr-00	31	7293	1.94	2	10201	0.088
15-Apr-00	33	7291	2.089	2	10155	0.06
15-Apr-00	36	7289	2.248	2	10136	0.065
15-Apr-00	25	7287	1.558	1	10098	0.047
15-Apr-00	29	7285	1.83	2	10112	0.031
15-Apr-00	43	7284	2.691	3	10139	0.064
15-Apr-00	39	7281	2.436	3	10171	0.081
15-Apr-00	38	7279	2.362	3	10230	0.082
15-Apr-00	32	7277	1.973	2	10178	0.101
15-Apr-00	21	7274	1.365	1	10203	0.055
15-Apr-00	15	7272	1.033	0	10237	0.011
15-Apr-00	29	7271	1.86	3	10291	0.013
15-Apr-00	31	7270	1.949	2	10295	0.119
15-Apr-00	29	7268	1.808	1	10292	0.037
15-Apr-00	33	7266	2.111	2	10383	0.053
15-Apr-00	29	7264	1.855	1	10450	0.063
15-Apr-00	34	7262	2.205	2	10508	0.042
15-Apr-00	40	7260	2.565	2	10536	0.057
15-Apr-00	26	7258	1.624	1	10281	0.048
15-Apr-00	15	7256	0.916	0	10142	0.012
Total			**44.629**			**1.303**

NOx pounds for 1999

Jan	803.51	
Feb	995.36	
Mar	1182.37	
Apr	1011.79	
May	1165.04	
Jun	1019.32	
Jul	1066.23	
Aug	869.70	
Sep	879.04	
Oct	1340.02	Beginning in October, NOx data was retrieved using new database
Nov	762.25	(L:\Environmental\PERMITS\AIR\NOX\NOx_Scrubber_Log.mdb)
Dec	1343.70	
Pounds NOx:	12438.33	

Data logger up time:

Total days up:	270	
Days up, but data unrecovered:	5	On March 4, April 19, and July 24-26 the data logger was up; however, the data files downloaded were corrupt.
% recovered data:	98%	

Estimating total NOx pounds:

12673.02

SCOEPA00022835

Example for 1st month using new system... NOx Hourly Report Q 1/13/00

timestamp	NOx Avg (ppmv)	NOx Pounds (lb)	Cumulative NOx (lb)	NO Avg (ppmv)	NO Pounds (lb)	Avg Flow Rate (cfm)	Avg Temperature (deg F)
10/1/99	28	2.34	2141	3	0.15	11589	67
10/1/99 1:00:00 AM	25	2.069	2141	3	0	11611	67
10/1/99 2:00:00 AM	1	0.072	2142	0	0.003	11608	66
10/1/99 3:00:00 AM	6	0.513	2144	0	0.029	11613	65
10/1/99 4:00:00 AM	22	1.847	2146	1	0.054	11622	64
10/1/99 5:00:00 AM	25	2.121	2148	1	0.071	11646	65
10/1/99 6:00:00 AM	25	2.137	2150	1	0.052	11660	64
10/1/99 7:00:00 AM	25	2.069	2152	1	0.097	11674	63
10/1/99 8:00:00 AM	27	2.281	2155	2	0.126	11663	63
10/1/99 9:00:00 AM	25	2.267	2157	2	0.107	11651	64
10/1/99 10:00:00 AM	25	2.283	2159	2	0.128	11565	65
10/1/99 11:00:00 AM	27	2.232	2160	3	0.056	11510	[redacted]
10/1/99 12:00:00 PM	11	0.893	2161	1	0.001	11465	71
10/1/99 1:00:00 PM	9	0.708	2162	0	0.014	11421	73
10/1/99 2:00:00 PM	23	1.832	2164	0	0.058	11382	74
10/1/99 3:00:00 PM	26	2.064	2167	1	0.08	11379	76
10/1/99 4:00:00 PM	27	2.084	2169	2	0.099	11340	78
10/1/99 5:00:00 PM	26	2.068	2171	2	0.112	11305	79
10/1/99 6:00:00 PM	27	2.095	2173	2	0.127	11308	79
10/1/99 7:00:00 PM	26	2.079	2175	3	0.105	11331	77
10/1/99 8:00:00 PM	20	1.595	2175	2	0	11426	73
10/1/99 9:00:00 PM	9	0.716	2177	0	0.004	11441	71
10/1/99 10:00:00 PM	21	1.746	2179	0	0.025	11451	69
10/1/99 11:00:00 PM	25	2.02	2181	1	0.055	11473	68
10/2/99	25	2.079	2183	1	0.09	11480	67
10/2/99 1:00:00 AM	27	2.228	2185	2	0.114	11506	67
10/2/99 2:00:00 AM	28	2.271	2188	2	0.129	11523	[redacted]
10/2/99 3:00:00 AM	27	2.241	2190	3	0.125	11551	67
10/2/99 4:00:00 AM	25	2.032	2190	2	0.004	11550	66
10/2/99 5:00:00 AM	3	0.236	2191	0	0.008	11549	65
10/2/99 6:00:00 AM	8	0.69	2192	0	0.006	11559	64
10/2/99 7:00:00 AM	19	1.546	2194	0	0.032	11561	64
10/2/99 8:00:00 AM	24	2.031	2196	1	0.012	11588	64
10/2/99 9:00:00 AM	22	1.952	2198	0	0.071	11563	64
10/2/99 10:00:00 AM	24	2.214	2201	1	0.107	11470	66
10/2/99 11:00:00 AM	28	2.242	2203	2	0.124	11425	69
10/2/99 12:00:00 PM	27	2.164	2205	3	0.148	11376	72
10/2/99 1:00:00 PM	27	2.138	2207	3	0.152	11330	75
10/2/99 2:00:00 PM	28	2.171	2208	3	0.009	11315	77

SCOEPA00022836

timestamp	NOx Avg (ppmv)	NOx Pounds (lb)	Cumulative NOx (lb)	NO Avg (ppmv)	NO Pounds (lb)	Avg Flow Rate (cfm)	Avg Temperature (deg F)
10/2/99 3:00:00 PM	4	0.286	2208	0	0.01	11285	78
10/2/99 4:00:00 PM	10	0.754	2210	0	0.035	11286	78
10/2/99 5:00:00 PM	23	1.776	2212	1	0.038	11286	78
10/2/99 6:00:00 PM	22	1.758	2214	1	0.053	11348	78
10/2/99 7:00:00 PM	25	1.963	2216	1	0.052	11477	76
10/2/99 8:00:00 PM	25	2.044	2217	1	0.04	11515	72
10/2/99 9:00:00 PM	23	1.85	2220	1	0.073	11534	70
10/2/99 10:00:00 PM	25	2.077	2222	2	0.112	11564	69
10/2/99 11:00:00 PM	27	2.195	2224	2	0.147	11577	68
10/3/99	29	2.382	2225	3	0.019	11571	68
10/3/99 1:00:00 AM	5	0.418	2225	0	0.005	11585	67
10/3/99 2:00:00 AM	4	0.353	2226	0	0.022	11614	[redacted]
10/3/99 3:00:00 AM	15	1.239	2228	0	0.045	11626	65
10/3/99 4:00:00 AM	23	1.901	2230	1	0.04	11662	65
10/3/99 5:00:00 AM	22	1.815	2232	1	0.064	11660	64
10/3/99 6:00:00 AM	26	2.162	2234	1	0.086	11664	63
10/3/99 7:00:00 AM	26	2.208	2236	2	0.076	11694	63
10/3/99 8:00:00 AM	23	1.937	2238	2	0.109	11697	63
10/3/99 9:00:00 AM	25	2.33	2241	2	0.118	11666	63
10/3/99 10:00:00 AM	26	2.464	2243	2	0.11	11552	66
10/3/99 11:00:00 AM	21	1.748	2243	2	0	11501	69
10/3/99 12:00:00 PM	4	0.299	2244	0	0.003	11477	72
10/3/99 1:00:00 PM	10	0.841	2245	0	0	11446	74
10/3/99 2:00:00 PM	11	0.843	2247	0	0.01	11397	76
10/3/99 3:00:00 PM	25	1.945	2249	0	0.046	11337	78
10/3/99 4:00:00 PM	28	2.169	2251	1	0.057	11336	79
10/3/99 5:00:00 PM	26	2.05	2253	1	0.051	11326	[redacted]
10/3/99 6:00:00 PM	26	1.992	2255	1	0.037	11335	80
10/3/99 7:00:00 PM	25	1.952	2257	1	0.038	11379	77
10/3/99 8:00:00 PM	24	1.921	2259	1	0.042	11487	73
10/3/99 9:00:00 PM	25	2.065	2261	1	0.083	11518	70
10/3/99 10:00:00 PM	26	2.147	2263	2	0.075	11549	69
10/3/99 11:00:00 PM	18	1.503	2263	1	0	11562	68
10/4/99	4	0.367	2264	0	0	11564	67
10/4/99 1:00:00 AM	17	1.38	2266	0	0.01	11578	66
10/4/99 2:00:00 AM	23	1.948	2268	0	0.021	11590	66
10/4/99 3:00:00 AM	24	1.963	2270	0	0.008	11614	66
10/4/99 4:00:00 AM	24	2.01	2272	0	0.037	11638	65
10/4/99 5:00:00 AM	26	2.142	2274	1	0.046	11643	64

timestamp	NOx Avg (ppmv)	NOx Pounds (lb)	Cumulative NOx (lb)	NO Avg (ppmv)	NO Pounds (lb)	Avg Flow Rate (cfm)	Avg Temperature (deg F)
10/4/99 6:00:00 AM	26	2.153	2276	1	0.018	11652	64
10/4/99 7:00:00 AM	23	1.921	2278	0	0.014	11655	64
10/4/99 8:00:00 AM	22	1.856	2280	0	0.069	11666	63
10/4/99 9:00:00 AM	25	2.23	2283	1	0.086	11671	63
10/4/99 10:00:00 AM	25	2.309	2284	2	0.048	11588	65
10/4/99 11:00:00 AM	16	1.277	2285	1	0.003	11500	68
10/4/99 12:00:00 PM	12	0.956	2287	0	0.014	11462	71
10/4/99 1:00:00 PM	22	1.79	2289	0	0.062	11432	74
10/4/99 2:00:00 PM	29	2.345	2291	1	0.076	11401	76
10/4/99 3:00:00 PM	27	2.159	2293	2	0.099	11399	77
10/4/99 4:00:00 PM	30	2.352	2296	2	0.13	11403	77
10/4/99 5:00:00 PM	30	2.375	2298	3	0.085	11395	[redacted]
10/4/99 6:00:00 PM	26	2.036	2300	2	0.061	11434	77
10/4/99 7:00:00 PM	26	2.094	2302	1	0.036	11471	74
10/4/99 8:00:00 PM	24	1.993	2304	1	0.033	11537	71
10/4/99 9:00:00 PM	25	2.058	2305	1	0.024	11568	69
10/4/99 10:00:00 PM	13	1.105	2306	0	0.001	11599	68
10/4/99 11:00:00 PM	12	0.969	2307	0	0.001	11625	66
10/5/99	15	1.238	2309	0	0.005	11620	66
10/5/99 1:00:00 AM	22	1.804	2311	0	0.046	11654	65
10/5/99 2:00:00 AM	27	2.225	2314	1	0.063	11681	66
10/5/99 3:00:00 AM	27	2.234	2316	1	0.041	11665	66
10/5/99 4:00:00 AM	27	2.228	2318	1	0.055	11657	66
10/5/99 5:00:00 AM	27	2.292	2320	1	0.099	11672	66
10/5/99 6:00:00 AM	28	2.305	2323	2	0.087	11670	66
10/5/99 7:00:00 AM	27	2.252	2325	2	0.119	11666	67
10/5/99 8:00:00 AM	29	2.457	2326	2	0.026	11674	[redacted]
10/5/99 9:00:00 AM	10	0.93	2327	0	0.005	11679	67
10/5/99 10:00:00 AM	16	1.473	2330	0	0.03	11684	67
10/5/99 11:00:00 AM	25	2.066	2332	1	0.057	11667	68
10/5/99 12:00:00 PM	28	2.337	2334	1	0.091	11634	70
10/5/99 1:00:00 PM	28	2.268	2336	2	0.107	11575	72
10/5/99 2:00:00 PM	28	2.298	2339	2	0.137	11584	73
10/5/99 3:00:00 PM	28	2.312	2341	3	0.119	11573	73
10/5/99 4:00:00 PM	28	2.262	2343	3	0.158	11585	72
10/5/99 5:00:00 PM	29	2.4	2345	3	0.121	11606	72
10/5/99 6:00:00 PM	23	1.889	2346	2	0.018	11610	72
10/5/99 7:00:00 PM	10	0.842	2348	0	0.042	11615	71
10/5/99 8:00:00 PM	21	1.732	2350	1	0.056	11612	70

timestamp	NOx Avg (ppmv)	NOx Pounds (lb)	Cumulative NOx (lb)	NO Avg (ppmv)	NO Pounds (lb)	Avg Flow Rate (cfm)	Avg Temperature (deg F)
10/5/99 9:00:00 PM	27	2.271	2353	1	0.071	11618	69
10/5/99 10:00:00 PM	28	2.354	2355	2	0.085	11663	69
10/5/99 11:00:00 PM	27	2.268	2357	2	0.08	11692	68
10/6/99	28	2.362	2360	2	0.12	11684	67
10/6/99 1:00:00 AM	30	2.483	2362	2	0.131	11705	67
10/6/99 2:00:00 AM	28	2.329	2364	3	0.095	11656	67
10/6/99 3:00:00 AM	28	2.321	2366	2	0.076	11658	67
10/6/99 4:00:00 AM	21	1.79	2367	1	0.001	11631	67
10/6/99 5:00:00 AM	5	0.434	2367	0	0	11743	66
10/6/99 6:00:00 AM	8	0.715	2368	0	0.001	11811	67
10/6/99 7:00:00 AM	8	0.658	2370	0	0.012	11809	67
10/6/99 8:00:00 AM	20	1.72	2372	0	0.033	11811	[illegible]7
10/6/99 9:00:00 AM	24	2.159	2374	1	0.051	11817	67
10/6/99 10:00:00 AM	24	2.25	2376	1	0.103	11814	68
10/6/99 11:00:00 AM	28	2.349	2379	2	0.142	11802	68
10/6/99 12:00:00 PM	30	2.471	2381	3	0.18	11766	71
10/6/99 1:00:00 PM	31	2.574	2384	4	0.196	11807	72
10/6/99 2:00:00 PM	31	2.601	2386	4	0.106	11802	74
10/6/99 3:00:00 PM	18	1.48	2387	2	0.043	11776	75
10/6/99 4:00:00 PM	21	1.699	2389	1	0.045	11785	74
10/6/99 5:00:00 PM	25	2.043	2391	1	0.076	11758	74
10/6/99 6:00:00 PM	27	2.183	2394	2	0.085	11745	75
10/6/99 7:00:00 PM	26	2.175	2396	2	0.052	11824	73
10/6/99 8:00:00 PM	26	2.186	2398	1	0.027	11857	71
10/6/99 9:00:00 PM	26	2.211	2400	1	0.067	11862	69
10/6/99 10:00:00 PM	26	2.225	2402	1	0.109	11859	70
10/6/99 11:00:00 PM	27	2.304	2405	2	0.117	11886	[illegible]9
10/7/99	26	2.164	2405	2	0	11887	69
10/7/99 1:00:00 AM	4	0.337	2405	0	0	11902	69
10/7/99 2:00:00 AM	3	0.256	2406	0	0	11913	68
10/7/99 3:00:00 AM	4	0.351	2407	0	0.007	11919	67
10/7/99 4:00:00 AM	23	1.913	2410	0	0.045	11889	67
10/7/99 5:00:00 AM	27	2.288	2412	1	0.055	11913	68
10/7/99 6:00:00 AM	25	2.091	2414	1	0.06	11939	68
10/7/99 7:00:00 AM	24	2.087	2416	1	0.022	11955	68
10/7/99 8:00:00 AM	20	1.733	2417	0	0.015	11936	68
10/7/99 9:00:00 AM	19	1.765	2420	0	0.047	11935	68
10/7/99 10:00:00 AM	25	2.398	2422	1	0.016	11924	68
10/7/99 11:00:00 AM	23	1.974	2423	0	0.021	11904	69

timestamp	NOx Avg (ppmv)	NOx Pounds (lb)	Cumulative NOx (lb)	NO Avg (ppmv)	NO Pounds (lb)	Avg Flow Rate (cfm)	Avg Temperature (deg F)
10/7/99 12:00:00 PM	14	1.163	2425	0	0.032	11894	69
10/7/99 1:00:00 PM	21	1.779	2427	1	0.07	11882	70
10/7/99 2:00:00 PM	25	2.059	2427	1	0	11852	71
10/7/99 3:00:00 PM	1	0.124	2427	0	0	11861	72
10/7/99 4:00:00 PM	1	0.087	2428	0	0.003	11842	72
10/7/99 5:00:00 PM	16	1.297	2430	0	0.009	11813	72
10/7/99 6:00:00 PM	24	2.014	2432	0	0.055	11834	72
10/7/99 7:00:00 PM	26	2.171	2434	1	0.064	11842	72
10/7/99 8:00:00 PM	25	2.095	2437	1	0.09	11842	72
10/7/99 9:00:00 PM	27	2.228	2439	2	0.116	11856	72
10/7/99 10:00:00 PM	26	2.201	2440	2	0.035	11858	71
10/7/99 11:00:00 PM	8	0.646	2440	1	0	11857	[redacted]1
10/8/99	2	0.169	2441	0	0.002	11854	70
10/8/99 1:00:00 AM	16	1.341	2442	0	0.002	11852	70
10/8/99 2:00:00 AM	24	2.049	2444	0	0.003	11879	70
10/8/99 3:00:00 AM	25	2.114	2446	1	0.005	11858	70
10/8/99 4:00:00 AM	26	2.223	2448	1	0.008	11854	70
10/8/99 5:00:00 AM	27	2.265	2451	2	0.01	11867	70
10/8/99 6:00:00 AM	27	2.244	2453	2	0.02	11873	70
10/8/99 7:00:00 AM	15	1.261	2454	1	0.03	11875	71
10/8/99 8:00:00 AM	6	0.498	2455	0	0.037	11887	70
10/8/99 9:00:00 AM	12	1.205	2456	0	0.037	11882	69
10/8/99 10:00:00 AM	20	1.933	2458	0	0.037	11887	69
10/8/99 11:00:00 AM	24	2.06	2461	0	0.037	11893	70
10/8/99 12:00:00 PM	25	2.083	2463	1	0.047	11901	70
10/8/99 1:00:00 PM	25	2.114	2463	1	0.002	11836	70
10/8/99 2:00:00 PM	2	0.199	2464	0	0	11785	[redacted]0
10/8/99 3:00:00 PM	6	0.505	2464	0	0	11830	70
10/8/99 4:00:00 PM	4	0.343	2465	0	0	11977	69
10/8/99 5:00:00 PM	5	0.419	2465	0	0	12148	70
10/8/99 6:00:00 PM	7	0.666	2466	0	0	12561	69
10/8/99 7:00:00 PM	13	1.155	2467	0	0	12378	68
10/8/99 8:00:00 PM	13	1.176	2469	0	0.005	12464	69
10/8/99 9:00:00 PM	23	2.118	2472	0	0.035	13106	68
10/8/99 10:00:00 PM	26	2.435	2474	1	0.034	13020	68
10/8/99 11:00:00 PM	24	2.213	2476	1	0.005	12944	68
10/9/99	23	2.138	2479	0	0.032	12906	68
10/9/99 1:00:00 AM	26	2.41	2481	1	0.04	12877	67
10/9/99 2:00:00 AM	20	1.82	2481	1	0	12879	67

timestamp	NOx Avg (ppmv)	NOx Pounds (lb)	Cumulative NOx (lb)	NO Avg (ppmv)	NO Pounds (lb)	Avg Flow Rate (cfm)	Avg Temperature (deg F)
10/9/99 3:00:00 AM	7	0.647	2483	0	0	12875	66
10/9/99 4:00:00 AM	14	1.272	2484	0	0	12843	65
10/9/99 5:00:00 AM	20	1.819	2487	0	0.007	12825	65
10/9/99 6:00:00 AM	25	2.288	2489	0	0.005	12831	65
10/9/99 7:00:00 AM	23	2.146	2491	0	0.012	12852	65
10/9/99 8:00:00 AM	26	2.388	2493	0	0.007	12810	65
10/9/99 9:00:00 AM	20	2.007	2496	0	0.033	12813	66
10/9/99 10:00:00 AM	23	2.321	2498	1	0.052	12817	66
10/9/99 11:00:00 AM	25	2.327	2500	1	0.08	12761	66
10/9/99 12:00:00 PM	26	2.336	2501	2	0.032	12508	66
10/9/99 1:00:00 PM	9	0.781	2502	1	0	12594	68
10/9/99 2:00:00 PM	4	0.377	2503	0	0.001	12427	[illegible]7
10/9/99 3:00:00 PM	18	1.566	2505	0	0.035	12413	70
10/9/99 4:00:00 PM	26	2.238	2507	1	0.059	12268	73
10/9/99 5:00:00 PM	25	2.098	2510	1	0.086	12004	74
10/9/99 6:00:00 PM	26	2.231	2512	2	0.131	12154	74
10/9/99 7:00:00 PM	29	2.46	2514	3	0.112	12221	72
10/9/99 8:00:00 PM	20	1.77	2514	2	0.003	12283	69
10/9/99 9:00:00 PM	4	0.311	2516	0	0	12300	67
10/9/99 10:00:00 PM	15	1.293	2517	0	0.013	12311	65
10/9/99 11:00:00 PM	22	1.997	2519	0	0.008	12394	65
10/10/99	20	1.771	2521	0	0.018	12372	65
10/10/99 1:00:00 AM	21	1.875	2523	0	0.055	12374	64
10/10/99 2:00:00 AM	25	2.192	2525	1	0.041	12391	64
10/10/99 3:00:00 AM	22	1.981	2527	1	0.039	12384	64
10/10/99 4:00:00 AM	23	2.096	2530	1	0.074	12385	64
10/10/99 5:00:00 AM	23	2.067	2531	1	0.009	12438	[illegible]4
10/10/99 6:00:00 AM	14	1.248	2533	0	0.049	12408	64
10/10/99 7:00:00 AM	25	2.234	2536	1	0.055	12475	64
10/10/99 8:00:00 AM	29	2.578	2538	1	0.064	12459	64
10/10/99 9:00:00 AM	25	2.399	2540	1	0.068	12377	63
10/10/99 10:00:00 AM	22	2.244	2543	1	0.124	12310	65
10/10/99 11:00:00 AM	29	2.515	2545	2	0.137	12254	68
10/10/99 12:00:00 PM	27	2.32	2546	3	0.074	12217	71
10/10/99 1:00:00 PM	15	1.262	2547	1	0.001	12176	73
10/10/99 2:00:00 PM	10	0.843	2549	0	0.003	12153	73
10/10/99 3:00:00 PM	19	1.661	2551	0	0.029	12182	74
10/10/99 4:00:00 PM	23	1.977	2553	1	0.061	12131	76
10/10/99 5:00:00 PM	25	2.155	2555	1	0.074	12135	76

timestamp	NOx Avg (ppmv)	NOx Pounds (lb)	Cumulative NOx (lb)	NO Avg (ppmv)	NO Pounds (lb)	Avg Flow Rate (cfm)	Avg Temperature (deg F)
10/10/99 6:00:00 PM	25	2.083	2557	2	0.079	12137	75
10/10/99 7:00:00 PM	26	2.263	2560	2	0.068	12204	72
10/10/99 8:00:00 PM	28	2.455	2562	1	0.069	12289	70
10/10/99 9:00:00 PM	26	2.262	2564	1	0.065	12268	69
10/10/99 10:00:00 PM	21	1.835	2565	1	0.006	12255	68
10/10/99 11:00:00 PM	12	1.014	2565	0	0.002	12308	67
10/11/99	7	0.584	2567	0	0.006	12296	66
10/11/99 1:00:00 AM	22	1.951	2570	0	0.046	12344	66
10/11/99 2:00:00 AM	26	2.281	2572	1	0.017	12255	65
10/11/99 3:00:00 AM	22	1.914	2574	0	0.003	12301	66
10/11/99 4:00:00 AM	22	1.944	2576	0	0.028	12303	65
10/11/99 5:00:00 AM	25	2.228	2578	1	0.057	12355	[redacted]
10/11/99 6:00:00 AM	25	2.187	2580	1	0.058	12323	65
10/11/99 7:00:00 AM	25	2.187	2582	1	0.08	12376	64
10/11/99 8:00:00 AM	25	2.266	2583	1	0.003	12388	64
10/11/99 9:00:00 AM	9	0.787	2585	0	0.008	12345	64
10/11/99 10:00:00 AM	16	1.451	2587	0	0.027	12289	64
10/11/99 11:00:00 AM	23	2.02	2589	1	0.059	12304	66
10/11/99 12:00:00 PM	26	2.3	2591	1	0.063	12260	68
10/11/99 1:00:00 PM	26	2.275	2594	1	0.09	12220	71
10/11/99 2:00:00 PM	27	2.323	2596	2	0.087	12122	74
10/11/99 3:00:00 PM	26	2.167	2598	2	0.108	12115	74
10/11/99 4:00:00 PM	22	1.882	2598	2	0	12060	75
10/11/99 5:00:00 PM	7	0.566	2600	0	0.014	12146	74
10/11/99 6:00:00 PM	22	1.879	2602	0	0.002	12185	71
10/11/99 7:00:00 PM	19	1.623	2603	0	0	12271	70
10/11/99 8:00:00 PM	14	1.258	2604	0	0.001	12295	[redacted]
10/11/99 9:00:00 PM	15	1.336	2606	0	0.023	12220	68
10/11/99 10:00:00 PM	24	2.099	2609	0	0.057	12228	68
10/11/99 11:00:00 PM	25	2.197	2611	1	0.084	12229	68
10/12/99	26	2.252	2613	2	0.116	12262	68
10/12/99 1:00:00 AM	27	2.342	2615	2	0.142	12296	68
10/12/99 2:00:00 AM	27	2.415	2616	3	0.034	12342	68
10/12/99 3:00:00 AM	9	0.786	2617	1	0	12360	67
10/12/99 4:00:00 AM	10	0.857	2619	0	0.005	12329	66
10/12/99 5:00:00 AM	18	1.579	2621	0	0.04	12359	65
10/12/99 6:00:00 AM	25	2.238	2623	1	0.059	12361	65
10/12/99 7:00:00 AM	24	2.099	2626	1	0.071	12383	65
10/12/99 8:00:00 AM	28	2.538	2628	1	0.068	12462	65

timestamp	NOx Avg (ppmv)	NOx Pounds (lb)	Cumulative NOx (lb)	NO Avg (ppmv)	NO Pounds (lb)	Avg Flow Rate (cfm)	Avg Temperature (deg F)
10/12/99 9:00:00 AM	23	2.229	2630	1	0.072	12424	65
10/12/99 10:00:00 AM	23	2.283	2633	1	0.128	12315	67
10/12/99 11:00:00 AM	27	2.389	2635	3	0.12	12292	69
10/12/99 12:00:00 PM	27	2.309	2636	2	0.021	12254	71
10/12/99 1:00:00 PM	13	1.087	2637	0	0.018	12251	74
10/12/99 2:00:00 PM	17	1.428	2639	0	0.017	12157	76
10/12/99 3:00:00 PM	24	1.994	2642	0	0.071	12139	77
10/12/99 4:00:00 PM	26	2.184	2644	1	0.046	12116	79
10/12/99 5:00:00 PM	26	2.155	2646	1	0.055	12144	80
10/12/99 6:00:00 PM	27	2.26	2648	1	0.079	12085	79
10/12/99 7:00:00 PM	29	2.444	2651	2	0.097	12227	76
10/12/99 8:00:00 PM	28	2.407	2653	2	0.064	12313	[illegible]3
10/12/99 9:00:00 PM	20	1.762	2653	1	0	12281	71
10/12/99 10:00:00 PM	9	0.812	2654	0	0.001	12268	70
10/12/99 11:00:00 PM	8	0.701	2656	0	0.011	12277	68
10/13/99	21	1.888	2658	0	0.05	12325	68
10/13/99 1:00:00 AM	26	2.269	2660	1	0.021	12356	68
10/13/99 2:00:00 AM	21	1.888	2662	0	0.048	12318	68
10/13/99 3:00:00 AM	25	2.168	2665	1	0.057	12311	67
10/13/99 4:00:00 AM	26	2.339	2667	1	0.045	12353	67
10/13/99 5:00:00 AM	28	2.505	2670	1	0.039	12412	67
10/13/99 6:00:00 AM	28	2.484	2672	1	0.067	12377	67
10/13/99 7:00:00 AM	27	2.366	2674	1	0.015	12420	67
10/13/99 8:00:00 AM	21	1.838	2676	0	0.053	12432	67
10/13/99 9:00:00 AM	25	2.426	2678	1	0.012	12358	66
10/13/99 10:00:00 AM	13	1.335	2679	0	0.002	12277	68
10/13/99 11:00:00 AM	20	1.728	2682	0	0.032	12183	[illegible]1
10/13/99 12:00:00 PM	25	2.118	2684	1	0.064	12181	72
10/13/99 1:00:00 PM	28	2.361	2686	1	0.059	12199	75
10/13/99 2:00:00 PM	24	2.056	2688	1	0.042	12136	76
10/13/99 3:00:00 PM	24	2.008	2690	1	0.024	12145	77
10/13/99 4:00:00 PM	20	1.709	2691	0	0.027	12184	75
10/13/99 5:00:00 PM	20	1.757	2693	1	0.038	12253	73
10/13/99 6:00:00 PM	22	1.905	2694	1	0.019	12276	72
10/13/99 7:00:00 PM	6	0.536	2694	0	0	12288	71
10/13/99 8:00:00 PM	2	0.188	2695	0	0	12363	70
10/13/99 9:00:00 PM	15	1.341	2697	0	0.009	12346	69
10/13/99 10:00:00 PM	23	2.018	2699	0	0.008	12325	68
10/13/99 11:00:00 PM	18	1.613	2701	0	0.026	12403	67

timestamp	NOx Avg (ppmv)	NOx Pounds (lb)	Cumulative NOx (lb)	NO Avg (ppmv)	NO Pounds (lb)	Avg Flow Rate (cfm)	Avg Temperature (deg F)
10/14/99	26	2.278	2704	1	0.066	12419	66
10/14/99 1:00:00 AM	27	2.449	2706	1	0.088	12466	65
10/14/99 2:00:00 AM	25	2.209	2708	2	0.036	12427	65
10/14/99 3:00:00 AM	22	2.014	2710	1	0.034	12439	64
10/14/99 4:00:00 AM	24	2.138	2712	1	0.09	12441	63
10/14/99 5:00:00 AM	28	2.488	2714	2	0.023	12485	62
10/14/99 6:00:00 AM	15	1.326	2715	0	0.001	12435	62
10/14/99 7:00:00 AM	7	0.629	2716	0	0.008	12428	62
10/14/99 8:00:00 AM	19	1.72	2718	0	0.017	12444	62
10/14/99 9:00:00 AM	22	2.173	2721	0	0.055	12421	62
10/14/99 10:00:00 AM	23	2.272	2723	1	0.085	12303	64
10/14/99 11:00:00 AM	27	2.34	2725	2	0.131	12225	[redacted]8
10/14/99 12:00:00 PM	28	2.444	2728	3	0.161	12170	71
10/14/99 1:00:00 PM	30	2.616	2730	3	0.091	12259	73
10/14/99 2:00:00 PM	25	2.156	2731	2	0	12260	74
10/14/99 3:00:00 PM	4	0.331	2731	0	0	12274	74
10/14/99 4:00:00 PM	9	0.814	2733	0	0.002	12227	74
10/14/99 5:00:00 PM	22	1.949	2735	0	0.024	12326	72
10/14/99 6:00:00 PM	24	2.038	2737	1	0.038	12264	72
10/14/99 7:00:00 PM	25	2.176	2740	1	0.061	12338	69
10/14/99 8:00:00 PM	29	2.561	2742	1	0.068	12458	67
10/14/99 9:00:00 PM	27	2.416	2744	1	0.004	12437	65
10/14/99 10:00:00 PM	13	1.13	2744	0	0	12467	64
10/14/99 11:00:00 PM	7	0.615	2746	0	0.004	12470	63
10/15/99	18	1.665	2748	0	0.025	12481	62
10/15/99 1:00:00 AM	27	2.494	2751	1	0.041	12552	61
10/15/99 2:00:00 AM	24	2.223	2753	1	0.035	12497	[redacted]1
10/15/99 3:00:00 AM	24	2.188	2755	1	0.018	12545	61
10/15/99 4:00:00 AM	26	2.365	2758	0	0.048	12563	61
10/15/99 5:00:00 AM	28	2.524	2760	1	0.059	12525	61
10/15/99 6:00:00 AM	26	2.381	2762	1	0.034	12475	60
10/15/99 7:00:00 AM	19	1.718	2762	1	0	12475	59
10/15/99 8:00:00 AM	5	0.451	2763	0	0	12501	59
10/15/99 9:00:00 AM	9	0.945	2765	0	0.047	12522	59
10/15/99 10:00:00 AM	24	2.293	2768	1	0.065	12426	61
10/15/99 11:00:00 AM	26	2.256	2770	1	0.084	12300	65
10/15/99 12:00:00 PM	27	2.348	2772	2	0.086	12322	68
10/15/99 1:00:00 PM	26	2.24	2775	2	0.075	12343	70
10/15/99 2:00:00 PM	28	2.395	2777	2	0.105	12315	71

timestamp	NOx Avg (ppmv)	NOx Pounds (lb)	Cumulative NOx (lb)	NO Avg (ppmv)	NO Pounds (lb)	Avg Flow Rate (cfm)	Avg Temperature (deg F)
10/15/99 3:00:00 PM	25	2.215	2779	2	0.071	12324	72
10/15/99 4:00:00 PM	25	2.132	2781	1	0.086	12299	72
10/15/99 5:00:00 PM	27	2.303	2782	2	0.035	12288	71
10/15/99 6:00:00 PM	11	0.958	2783	1	0.002	12248	71
10/15/99 7:00:00 PM	8	0.736	2784	0	0.008	12303	68
10/15/99 8:00:00 PM	13	1.113	2786	0	0.018	12360	66
10/15/99 9:00:00 PM	21	1.897	2788	0	0.046	12457	64
10/15/99 10:00:00 PM	25	2.271	2790	1	0.043	12440	63
10/15/99 11:00:00 PM	22	1.953	2792	1	0.022	12453	62
10/16/99	18	1.633	2793	0	0.014	12469	62
10/16/99 1:00:00 AM	16	1.469	2795	0	0.029	12502	62
10/16/99 2:00:00 AM	20	1.777	2797	1	0.077	12479	[redacted]1
10/16/99 3:00:00 AM	26	2.334	2800	1	0.095	12491	60
10/16/99 4:00:00 AM	21	1.937	2801	2	0.038	12511	60
10/16/99 5:00:00 AM	12	1.109	2802	1	0.027	12636	60
10/16/99 6:00:00 AM	12	1.097	2803	0	0.061	12588	60
10/16/99 7:00:00 AM	15	1.374	2804	1	0.025	12599	59
10/16/99 8:00:00 AM	16	1.478	2806	0	0.02	12627	59
10/16/99 9:00:00 AM	17	1.631	2807	0	0.008	12591	60
10/16/99 10:00:00 AM	14	1.426	2810	0	0.024	12447	61
10/16/99 11:00:00 AM	23	2.036	2811	0	0.005	12458	64
10/16/99 12:00:00 PM	12	1.048	2813	0	0.036	12358	66
10/16/99 1:00:00 PM	23	2.037	2815	1	0.032	12356	69
10/16/99 2:00:00 PM	22	1.893	2816	1	0.027	12314	72
10/16/99 3:00:00 PM	19	1.635	2817	1	0.025	12262	74
10/16/99 4:00:00 PM	11	0.961	2819	0	0.029	12241	74
10/16/99 5:00:00 PM	16	1.351	2820	1	0.023	12217	[redacted]4
10/16/99 6:00:00 PM	14	1.234	2821	1	0.05	12198	74
10/16/99 7:00:00 PM	19	1.656	2823	1	0.034	12264	71
10/16/99 8:00:00 PM	21	1.903	2825	1	0.02	12432	68
10/16/99 9:00:00 PM	16	1.43	2826	0	0.026	12339	66
10/16/99 10:00:00 PM	15	1.356	2827	0	0.004	12383	65
10/16/99 11:00:00 PM	13	1.127	2829	0	0.012	12431	64
10/17/99	16	1.471	2830	0	0.013	12411	63
10/17/99 1:00:00 AM	19	1.694	2833	0	0.05	12439	63
10/17/99 2:00:00 AM	25	2.264	2835	1	0.035	12457	63
10/17/99 3:00:00 AM	21	1.854	2836	1	0.047	12436	62
10/17/99 4:00:00 AM	20	1.775	2838	1	0.018	12441	62
10/17/99 5:00:00 AM	12	1.108	2839	0	0.025	12479	61

timestamp	NOx Avg (ppmv)	NOx Pounds (lb)	Cumulative NOx (lb)	NO Avg (ppmv)	NO Pounds (lb)	Avg Flow Rate (cfm)	Avg Temperature (deg F)
10/17/99 6:00:00 AM	18	1.617	2841	1	0.046	12423	61
10/17/99 7:00:00 AM	19	1.672	2843	1	0.013	12429	62
10/17/99 8:00:00 AM							
10/17/99 9:00:00 AM	15	1.355	2845	0	0.002	12425	61
10/17/99 10:00:00 AM	10	0.894	2846	0	0	12351	62
10/17/99 11:00:00 AM	10	0.859	2847	0	0.001	12397	64
10/17/99 12:00:00 PM	15	1.293	2848	0	0.003	12329	68
10/17/99 1:00:00 PM	17	1.53	2850	0	0.001	12361	71
10/17/99 2:00:00 PM	13	1.091	2850	0	0.001	12289	73
10/17/99 3:00:00 PM	12	1.05	2852	0	0.024	12301	74
10/17/99 4:00:00 PM	21	1.813	2854	0	0.024	12327	75
10/17/99 5:00:00 PM	15	1.328	2855	0	0.019	12304	[redacted]
10/17/99 6:00:00 PM	13	1.13	2856	0	0.019	12256	77
10/17/99 7:00:00 PM	11	0.974	2857	0	0	12343	74
10/17/99 8:00:00 PM	11	1.011	2858	0	0.003	12453	71
10/17/99 9:00:00 PM	12	1.084	2859	0	0.008	12421	69
10/17/99 10:00:00 PM	12	1.08	2860	0	0.019	12397	69
10/17/99 11:00:00 PM	15	1.312	2861	0	0.01	12463	68
10/18/99	12	1.083	2863	0	0.001	12417	67
10/18/99 1:00:00 AM	19	1.718	2865	0	0	12522	66
10/18/99 2:00:00 AM	15	1.346	2866	0	0	12467	66
10/18/99 3:00:00 AM	14	1.259	2867	0	0.013	12488	65
10/18/99 4:00:00 AM	14	1.263	2869	0	0.03	12480	65
10/18/99 5:00:00 AM	19	1.721	2871	1	0.042	12548	65
10/18/99 6:00:00 AM	19	1.695	2872	1	0.011	12495	64
10/18/99 7:00:00 AM	20	1.829	2874	0	0.018	12475	64
10/18/99 8:00:00 AM	19	1.717	2875	0	0.002	12587	[redacted]
10/18/99 9:00:00 AM	13	1.333	2877	0	0.015	12472	64
10/18/99 10:00:00 AM	14	1.42	2879	0	0.04	12444	65
10/18/99 11:00:00 AM	25	2.269	2881	1	0.019	12457	67
10/18/99 12:00:00 PM	17	1.494	2882	0	0.029	12361	70
10/18/99 1:00:00 PM	21	1.799	2884	1	0.041	12340	73
10/18/99 2:00:00 PM	22	1.874	2886	1	0.028	12235	76
10/18/99 3:00:00 PM	21	1.753	2888	1	0.016	12229	77
10/18/99 4:00:00 PM	19	1.634	2889	0	0.031	12257	77
10/18/99 5:00:00 PM	22	1.892	2891	1	0.029	12321	77
10/18/99 6:00:00 PM	23	1.932	2893	1	0.018	12310	76
10/18/99 7:00:00 PM	16	1.402	2895	0	0.041	12342	73
10/18/99 8:00:00 PM	26	2.298	2897	1	0.001	12414	71

timestamp	NOx Avg (ppmv)	NOx Pounds (lb)	Cumulative NOx (lb)	NO Avg (ppmv)	NO Pounds (lb)	Avg Flow Rate (cfm)	Avg Temperature (deg F)
10/18/99 9:00:00 PM	21	1.831	2899	0	0.001	12431	69
10/18/99 10:00:00 PM	21	1.875	2900	0	0.001	12398	68
10/18/99 11:00:00 PM	15	1.36	2902	0	0.005	12430	67
10/19/99	20	1.798	2904	0	0.033	12377	67
10/19/99 1:00:00 AM	22	1.985	2906	1	0.009	12407	67
10/19/99 2:00:00 AM	19	1.677	2907	0	0.01	12351	66
10/19/99 3:00:00 AM	19	1.7	2910	0	0.031	12420	66
10/19/99 4:00:00 AM	24	2.161	2912	1	0.041	12405	65
10/19/99 5:00:00 AM	26	2.332	2914	1	0.098	12443	65
10/19/99 6:00:00 AM	28	2.484	2917	2	0.1	12415	65
10/19/99 7:00:00 AM	27	2.45	2919	2	0.092	12452	65
10/19/99 8:00:00 AM	26	2.298	2920	2	0.012	12363	[redacted]
10/19/99 9:00:00 AM	8	0.884	2921	0	0.001	12451	64
10/19/99 10:00:00 AM	10	1.008	2923	0	0.014	12384	65
10/19/99 11:00:00 AM	20	1.783	2925	0	0.05	12336	68
10/19/99 12:00:00 PM	27	2.323	2927	1	0.077	12306	72
10/19/99 1:00:00 PM	27	2.279	2930	2	0.106	12246	75
10/19/99 2:00:00 PM	28	2.36	2932	2	0.144	12164	77
10/19/99 3:00:00 PM	29	2.459	2935	3	0.165	12178	79
10/19/99 4:00:00 PM	29	2.453	2936	3	0.107	12198	79
10/19/99 5:00:00 PM	19	1.595	2937	2	0.011	12120	79
10/19/99 6:00:00 PM	13	1.109	2940	0	0.05	12087	78
10/19/99 7:00:00 PM	26	2.221	2942	1	0.046	12225	74
10/19/99 8:00:00 PM	27	2.356	2944	1	0.068	12325	71
10/19/99 9:00:00 PM	27	2.366	2947	1	0.105	12340	69
10/19/99 10:00:00 PM	29	2.55	2949	2	0.133	12337	69
10/19/99 11:00:00 PM	29	2.588	2952	3	0.097	12383	[redacted]
10/20/99	26	2.313	2954	2	0.119	12360	67
10/20/99 1:00:00 AM	28	2.479	2956	2	0.034	12460	66
10/20/99 2:00:00 AM	20	1.756	2958	1	0.027	12400	66
10/20/99 3:00:00 AM	21	1.863	2960	1	0.023	12446	65
10/20/99 4:00:00 AM	20	1.835	2962	1	0.055	12449	64
10/20/99 5:00:00 AM	24	2.163	2963	1	0.007	12518	64
10/20/99 6:00:00 AM	10	0.892	2964	0	0.004	12470	64
10/20/99 7:00:00 AM	15	1.325	2966	0	0.043	12514	63
10/20/99 8:00:00 AM	25	2.278	2969	1	0.071	12521	63
10/20/99 9:00:00 AM	25	2.51	2972	1	0.084	12508	64
10/20/99 10:00:00 AM	26	2.567	2974	1	0.109	12392	65
10/20/99 11:00:00 AM	28	2.493	2976	2	0.148	12324	68

timestamp	NOx Avg (ppmv)	NOx Pounds (lb)	Cumulative NOx (lb)	NO Avg (ppmv)	NO Pounds (lb)	Avg Flow Rate (cfm)	Avg Temperature (deg F)
10/20/99 12:00:00 PM	29	2.499	2979	3	0.128	12265	71
10/20/99 1:00:00 PM	28	2.424	2981	3	0.089	12260	75
10/20/99 2:00:00 PM	20	1.671	2982	2	0.008	12286	76
10/20/99 3:00:00 PM	12	1.031	2983	0	0.01	12298	77
10/20/99 4:00:00 PM	19	1.598	2985	0	0.002	12315	77
10/20/99 5:00:00 PM	18	1.537	2986	0	0.001	12338	78
10/20/99 6:00:00 PM	15	1.289	2988	0	0.008	12277	77
10/20/99 7:00:00 PM	27	2.362	2990	0	0.006	12383	73
10/20/99 8:00:00 PM	17	1.505	2991	0	0.015	12418	70
10/20/99 9:00:00 PM	15	1.293	2992	0	0.009	12400	68
10/20/99 10:00:00 PM	12	1.035	2994	0	0.006	12372	67
10/20/99 11:00:00 PM	21	1.824	2996	0	0.023	12396	[redacted]
10/21/99	24	2.149	2999	1	0.072	12403	66
10/21/99 1:00:00 AM	26	2.332	2999	1	0.009	12443	66
10/21/99 2:00:00 AM	7	0.653	3000	0	0.001	12400	65
10/21/99 3:00:00 AM	6	0.495	3001	0	0.005	12418	64
10/21/99 4:00:00 AM	12	1.099	3003	0	0.03	12424	64
10/21/99 5:00:00 AM	20	1.817	3004	1	0.01	12501	64
10/21/99 6:00:00 AM	14	1.274	3006	0	0.019	12482	64
10/21/99 7:00:00 AM	19	1.735	3008	0	0.059	12490	63
10/21/99 8:00:00 AM	23	2.051	3010	1	0.026	12502	63
10/21/99 9:00:00 AM	17	1.591	3011	0	0.017	12494	63
10/21/99 10:00:00 AM	16	1.458	3013	0	0.029	12421	64
10/21/99 11:00:00 AM	24	2.179	3014	1	0.011	12421	67
10/21/99 12:00:00 PM	13	1.16	3015	0	0.004	12298	69
10/21/99 1:00:00 PM	11	0.919	3017	0	0.011	12297	72
10/21/99 2:00:00 PM	16	1.359	3019	0	0.046	12239	[redacted]
10/21/99 3:00:00 PM	24	2.037	3021	1	0.087	12238	77
10/21/99 4:00:00 PM	24	1.999	3022	2	0.033	12221	78
10/21/99 5:00:00 PM	20	1.672	3024	1	0.057	12262	78
10/21/99 6:00:00 PM	25	2.129	3027	1	0.092	12138	77
10/21/99 7:00:00 PM	27	2.328	3029	2	0.058	12308	73
10/21/99 8:00:00 PM	23	2.042	3031	1	0.088	12361	71
10/21/99 9:00:00 PM	26	2.269	3032	2	0.053	12338	69
10/21/99 10:00:00 PM	13	1.16	3033	1	0	12290	68
10/21/99 11:00:00 PM	8	0.705	3034	0	0.003	12362	67
10/22/99	14	1.245	3036	0	0.009	12316	66
10/22/99 1:00:00 AM	14	1.238	3037	0	0.003	12387	66
10/22/99 2:00:00 AM	13	1.161	3038	0	0.014	12429	65

timestamp	NOx Avg (ppmv)	NOx Pounds (lb)	Cumulative NOx (lb)	NO Avg (ppmv)	NO Pounds (lb)	Avg Flow Rate (cfm)	Avg Temperature (deg F)
10/22/99 3:00:00 AM	16	1.409	3039	0	0.004	12399	65
10/22/99 4:00:00 AM	16	1.475	3042	0	0.021	12437	64
10/22/99 5:00:00 AM	24	2.149	3044	0	0.035	12448	64
10/22/99 6:00:00 AM	24	2.119	3046	1	0.049	12481	64
10/22/99 7:00:00 AM	21	1.852	3047	1	0.013	12483	64
10/22/99 8:00:00 AM	10	0.874	3047	0	0	12515	64
10/22/99 9:00:00 AM	7	0.652	3048	0	0.011	12477	63
10/22/99 10:00:00 AM	12	1.064	3050	0	0.018	12421	63
10/22/99 11:00:00 AM	19	1.709	3052	0	0.029	12363	66
10/22/99 12:00:00 PM	20	1.749	3053	1	0.037	12259	69
10/22/99 1:00:00 PM	17	1.501	3055	1	0.04	12240	72
10/22/99 2:00:00 PM	16	1.384	3056	1	0.056	12137	[illegible]
10/22/99 3:00:00 PM	16	1.334	3057	1	0.022	12173	76
10/22/99 4:00:00 PM	12	1.03	3059	0	0.047	12108	77
10/22/99 5:00:00 PM	18	1.482	3060	1	0.04	12122	78
10/22/99 6:00:00 PM	15	1.23	3061	1	0.02	12090	77
10/22/99 7:00:00 PM	13	1.115	3062	1	0.032	12191	73
10/22/99 8:00:00 PM	16	1.398	3063	1	0	12340	71
10/22/99 9:00:00 PM	2	0.187	3063	0	0	12303	69
10/22/99 10:00:00 PM	3	0.264	3063	0	0	12242	67
10/22/99 11:00:00 PM	9	0.778	3064	0	0.006	12291	67
10/23/99	10	0.843	3066	0	0.027	12305	66
10/23/99 1:00:00 AM	22	1.946	3068	1	0.058	12393	66
10/23/99 2:00:00 AM	24	2.102	3071	1	0.093	12347	65
10/23/99 3:00:00 AM	25	2.265	3073	2	0.064	12378	65
10/23/99 4:00:00 AM	24	2.11	3075	1	0.086	12332	65
10/23/99 5:00:00 AM	26	2.348	3077	2	0.13	12403	[illegible]
10/23/99 6:00:00 AM	25	2.245	3079	3	0.114	12476	64
10/23/99 7:00:00 AM	19	1.765	3080	2	0.021	12617	64
10/23/99 8:00:00 AM	7	0.625	3081	0	0.01	12703	63
10/23/99 9:00:00 AM	15	1.556	3083	0	0	12762	63
10/23/99 10:00:00 AM	18	1.775	3085	0	0.004	12615	63
10/23/99 11:00:00 AM	21	1.902	3087	0	0.033	12449	63
10/23/99 12:00:00 PM	26	2.322	3090	1	0.093	12318	66
10/23/99 1:00:00 PM	32	2.775	3093	2	0.102	12381	69
10/23/99 2:00:00 PM	30	2.641	3095	2	0.145	12309	72
10/23/99 3:00:00 PM	32	2.784	3098	3	0.15	12391	72
10/23/99 4:00:00 PM	31	2.672	3101	3	0.156	12373	72
10/23/99 5:00:00 PM	28	2.44	3102	3	0.01	12460	71

timestamp	NOx Avg (ppmv)	NOx Pounds (lb)	Cumulative NOx (lb)	NO Avg (ppmv)	NO Pounds (lb)	Avg Flow Rate (cfm)	Avg Temperature (deg F)
10/23/99 6:00:00 PM	11	0.994	3103	0	0.005	12411	70
10/23/99 7:00:00 PM	19	1.725	3105	0	0.004	12430	68
10/23/99 8:00:00 PM	18	1.589	3107	0	0.005	12375	68
10/23/99 9:00:00 PM	23	2.005	3109	0	0.005	12372	68
10/23/99 10:00:00 PM	24	2.145	3111	0	0.008	12391	68
10/23/99 11:00:00 PM	24	2.128	3113	0	0.012	12382	68
10/24/99	23	2.066	3116	0	0.045	12342	67
10/24/99 1:00:00 AM	26	2.329	3118	1	0.098	12404	68
10/24/99 2:00:00 AM	27	2.389	3119	2	0.014	12366	68
10/24/99 3:00:00 AM	13	1.155	3121	0	0.001	12426	68
10/24/99 4:00:00 AM	14	1.226	3123	0	0.003	12413	67
10/24/99 5:00:00 AM	24	2.115	3125	0	0.03	12451	[illegible]6
10/24/99 6:00:00 AM	26	2.31	3128	1	0.078	12433	66
10/24/99 7:00:00 AM	30	2.675	3130	2	0.052	12452	66
10/24/99 8:00:00 AM	23	2.07	3132	1	0.03	12483	66
10/24/99 9:00:00 AM	22	2.241	3134	1	0.096	12456	64
10/24/99 10:00:00 AM	25	2.472	3137	2	0.086	12397	65
10/24/99 11:00:00 AM	26	2.303	3138	2	0.056	12342	67
10/24/99 12:00:00 PM	17	1.494	3139	1	0.001	12375	68
10/24/99 1:00:00 PM	13	1.147	3141	0	0.004	12364	69
10/24/99 2:00:00 PM	17	1.468	3143	0	0.005	12279	72
10/24/99 3:00:00 PM	20	1.758	3144	0	0.009	12364	73
10/24/99 4:00:00 PM	16	1.398	3146	0	0.015	12321	73
10/24/99 5:00:00 PM	24	2.051	3148	0	0.041	12343	73
10/24/99 6:00:00 PM	24	2.06	3150	1	0.064	12265	72
10/24/99 7:00:00 PM	26	2.332	3152	1	0.05	12372	69
10/24/99 8:00:00 PM	22	1.928	3154	1	0.06	12450	[illegible]7
10/24/99 9:00:00 PM	25	2.225	3157	1	0.049	12445	66
10/24/99 10:00:00 PM	25	2.191	3159	1	0.035	12415	65
10/24/99 11:00:00 PM	25	2.242	3161	1	0.008	12445	65
10/25/99	22	1.966	3163	0	0.012	12422	65
10/25/99 1:00:00 AM	16	1.469	3164	0	0.003	12455	64
10/25/99 2:00:00 AM	12	1.084	3166	0	0.003	12375	63
10/25/99 3:00:00 AM	22	1.971	3167	0	0.002	12419	63
10/25/99 4:00:00 AM	20	1.785	3169	0	0.02	12413	63
10/25/99 5:00:00 AM	25	2.239	3172	0	0.031	12490	63
10/25/99 6:00:00 AM	24	2.176	3174	1	0.088	12429	63
10/25/99 7:00:00 AM	26	2.37	3176	2	0.081	12462	64
10/25/99 8:00:00 AM	24	2.178	3178	1	0.026	12463	65

timestamp	NOx Avg (ppmv)	NOx Pounds (lb)	Cumulative NOx (lb)	NO Avg (ppmv)	NO Pounds (lb)	Avg Flow Rate (cfm)	Avg Temperature (deg F)
10/25/99 9:00:00 AM	19	1.914	3179	0	0.018	12403	65
10/25/99 10:00:00 AM	8	0.906	3180	0	0	12348	65
10/25/99 11:00:00 AM	15	1.364	3182	0	0.008	12392	65
10/25/99 12:00:00 PM	22	1.955	3185	0	0.046	12349	67
10/25/99 1:00:00 PM	24	2.182	3187	1	0.047	12490	67
10/25/99 2:00:00 PM	25	2.228	3189	1	0.073	12384	68
10/25/99 3:00:00 PM	26	2.275	3191	2	0.095	12293	68
10/25/99 4:00:00 PM	26	2.241	3194	2	0.118	12195	68
10/25/99 5:00:00 PM	27	2.354	3196	2	0.092	12272	68
10/25/99 6:00:00 PM	20	1.712	3196	2	0.017	12294	68
10/25/99 7:00:00 PM	8	0.664	3197	0	0	12369	68
10/25/99 8:00:00 PM	6	0.56	3198	0	0.005	12436	[redacted]
10/25/99 9:00:00 PM	16	1.469	3200	0	0.045	12596	67
10/25/99 10:00:00 PM	25	2.219	3203	1	0.075	12658	67
10/25/99 11:00:00 PM	27	2.447	3205	2	0.123	12816	67
10/26/99	27	2.481	3208	2	0.116	12886	66
10/26/99 1:00:00 AM	24	2.217	3210	2	0.074	12832	66
10/26/99 2:00:00 AM	22	2.036	3212	1	0.079	12860	66
10/26/99 3:00:00 AM	24	2.255	3214	2	0.128	12845	65
10/26/99 4:00:00 AM	25	2.301	3215	2	0.023	12856	65
10/26/99 5:00:00 AM	10	0.963	3216	0	0.011	12867	65
10/26/99 6:00:00 AM	14	1.295	3219	0	0.049	12850	64
10/26/99 7:00:00 AM	26	2.428	3221	1	0.077	12838	64
10/26/99 8:00:00 AM	28	2.557	3224	2	0.095	12851	64
10/26/99 9:00:00 AM	24	2.416	3226	2	0.093	12786	65
10/26/99 10:00:00 AM	25	2.485	3229	2	0.152	12738	64
10/26/99 11:00:00 AM	28	2.516	3231	3	0.199	12516	[redacted]
10/26/99 12:00:00 PM	28	2.462	3232	4	0.02	12383	66
10/26/99 1:00:00 PM	10	0.866	3233	0	0.01	12537	66
10/26/99 2:00:00 PM	11	1.042	3235	0	0.041	12608	66
10/26/99 3:00:00 PM	21	1.937	3238	1	0.075	12623	66
10/26/99 4:00:00 PM	27	2.416	3240	2	0.132	12538	69
10/26/99 5:00:00 PM	29	2.57	3243	3	0.14	12582	70
10/26/99 6:00:00 PM	28	2.491	3245	3	0.139	12544	70
10/26/99 7:00:00 PM	26	2.345	3247	3	0.07	12646	68
10/26/99 8:00:00 PM	20	1.867	3249	1	0.06	12714	65
10/26/99 9:00:00 PM	24	2.166	3251	1	0.111	12659	63
10/26/99 10:00:00 PM	27	2.492	3252	2	0.013	12644	62
10/26/99 11:00:00 PM	8	0.703	3253	0	0.009	12668	62

timestamp	NOx Avg (ppmv)	NOx Pounds (lb)	Cumulative NOx (lb)	NO Avg (ppmv)	NO Pounds (lb)	Avg Flow Rate (cfm)	Avg Temperature (deg F)
10/27/99	9	0.825	3255	0	0.043	12685	61
10/27/99 1:00:00 AM	22	2.066	3257	1	0.072	12722	61
10/27/99 2:00:00 AM	25	2.315	3260	1	0.11	12724	61
10/27/99 3:00:00 AM	27	2.505	3262	2	0.13	12693	61
10/27/99 4:00:00 AM	25	2.29	3264	2	0.076	12721	61
10/27/99 5:00:00 AM	24	2.214	3267	1	0.091	12643	61
10/27/99 6:00:00 AM	25	2.292	3268	2	0.052	12647	61
10/27/99 7:00:00 AM	14	1.244	3270	1	0.032	12638	62
10/27/99 8:00:00 AM	17	1.594	3271	1	0.019	12723	62
10/27/99 9:00:00 AM	14	1.399	3273	0	0.038	12619	62
10/27/99 10:00:00 AM	24	2.334	3276	1	0.055	12662	62
10/27/99 11:00:00 AM	27	2.487	3278	1	0.076	12679	[redacted]
10/27/99 12:00:00 PM	26	2.392	3281	1	0.11	12762	61
10/27/99 1:00:00 PM	29	2.717	3283	2	0.091	12721	61
10/27/99 2:00:00 PM	25	2.284	3285	2	0.055	12481	61
10/27/99 3:00:00 PM	24	2.18	3288	1	0.03	12598	60
10/27/99 4:00:00 PM	23	2.201	3289	1	0	13026	59
10/27/99 5:00:00 PM	11	1.056	3290	0	0	13088	60
10/27/99 6:00:00 PM	18	1.667	3292	0	0.001	13002	61
10/27/99 7:00:00 PM	21	2.006	3294	0	0	13021	61
10/27/99 8:00:00 PM	16	1.497	3295	0	0	12778	63
10/27/99 9:00:00 PM	17	1.533	3298	0	0.015	12740	63
10/27/99 10:00:00 PM	25	2.308	3300	0	0.028	12836	64
10/27/99 11:00:00 PM	23	2.165	3302	0	0.018	12988	65
10/28/99	23	2.094	3304	0	0.069	12877	66
10/28/99 1:00:00 AM	26	2.415	3307	1	0.12	12859	67
10/28/99 2:00:00 AM	28	2.571	3308	2	0.006	12855	[redacted]
10/28/99 3:00:00 AM	9	0.806	3309	0	0	12923	66
10/28/99 4:00:00 AM	8	0.755	3311	0	0.003	12820	65
10/28/99 5:00:00 AM	22	2.073	3313	0	0.015	12940	64
10/28/99 6:00:00 AM	23	2.078	3315	0	0.042	12766	65
10/28/99 7:00:00 AM	25	2.303	3317	1	0.049	12742	66
10/28/99 8:00:00 AM	25	2.294	3319	1	0.06	12902	65
10/28/99 9:00:00 AM	22	2.278	3322	1	0.113	13098	65
10/28/99 10:00:00 AM	25	2.58	3324	2	0.123	13213	65
10/28/99 11:00:00 AM	21	1.993	3325	2	0.002	13193	66
10/28/99 12:00:00 PM	11	1.044	3326	0	0.001	13125	66
10/28/99 1:00:00 PM	4	0.372	3327	0	0.007	13107	66
10/28/99 2:00:00 PM	12	1.133	3329	0	0.027	13005	67

timestamp	NOx Avg (ppmv)	NOx Pounds (lb)	Cumulative NOx (lb)	NO Avg (ppmv)	NO Pounds (lb)	Avg Flow Rate (cfm)	Avg Temperature (deg F)
10/28/99 3:00:00 PM	21	1.965	3331	1	0.059	13113	66
10/28/99 4:00:00 PM	23	2.173	3333	1	0.049	13063	67
10/28/99 5:00:00 PM	22	2.041	3335	1	0.061	13110	67
10/28/99 6:00:00 PM	23	2.127	3337	1	0.1	12955	68
10/28/99 7:00:00 PM	26	2.471	3340	2	0.147	13051	67
10/28/99 8:00:00 PM	29	2.783	3343	3	0.154	13200	66
10/28/99 9:00:00 PM	27	2.535	3344	3	0.006	13145	66
10/28/99 10:00:00 PM	10	0.964	3345	0	0.014	13100	65
10/28/99 11:00:00 PM	15	1.451	3347	0	0.015	13072	64
10/29/99	16	1.538	3349	0	0.026	13138	63
10/29/99 1:00:00 AM	22	2.077	3351	1	0.063	13206	64
10/29/99 2:00:00 AM	25	2.327	3353	1	0.058	13045	[redacted]
10/29/99 3:00:00 AM	22	2.066	3355	1	0.049	13010	64
10/29/99 4:00:00 AM	25	2.364	3358	1	0.091	13061	64
10/29/99 5:00:00 AM	25	2.408	3360	2	0.144	13117	64
10/29/99 6:00:00 AM	27	2.533	3363	3	0.121	13104	64
10/29/99 7:00:00 AM	23	2.188	3364	2	0.015	13079	64
10/29/99 8:00:00 AM	6	0.613	3364	0	0	13131	64
10/29/99 9:00:00 AM	6	0.753	3366	0	0.007	13161	64
10/29/99 10:00:00 AM	20	2.061	3368	0	0.043	13032	64
10/29/99 11:00:00 AM	26	2.38	3371	1	0.037	13000	66
10/29/99 12:00:00 PM	22	2.086	3373	1	0.021	12988	66
10/29/99 1:00:00 PM	22	2.026	3375	0	0.057	13042	68
10/29/99 2:00:00 PM	25	2.252	3377	1	0.091	12900	69
10/29/99 3:00:00 PM	27	2.442	3380	2	0.131	12912	69
10/29/99 4:00:00 PM	27	2.459	3382	3	0.098	12893	69
10/29/99 5:00:00 PM	18	1.681	3383	2	0.01	12963	[redacted]
10/29/99 6:00:00 PM	10	0.908	3383	0	0	13013	68
10/29/99 7:00:00 PM	9	0.805	3384	0	0	13101	67
10/29/99 8:00:00 PM	12	1.121	3386	0	0.011	13171	67
10/29/99 9:00:00 PM	21	1.98	3389	0	0.044	13209	66
10/29/99 10:00:00 PM	25	2.387	3391	1	0.068	13142	66
10/29/99 11:00:00 PM	25	2.326	3393	1	0.103	13134	66
10/30/99	25	2.333	3396	2	0.136	13136	65
10/30/99 1:00:00 AM	25	2.379	3396	3	0.019	13130	65
10/30/99 2:00:00 AM	5	0.497	3397	0	0	13157	64
10/30/99 3:00:00 AM	5	0.446	3398	0	0.003	13155	64
10/30/99 4:00:00 AM	16	1.508	3400	0	0.038	13116	63
10/30/99 5:00:00 AM	23	2.18	3402	1	0.054	13147	63

timestamp	NOx Avg (ppmv)	NOx Pounds (lb)	Cumulative NOx (lb)	NO Avg (ppmv)	NO Pounds (lb)	Avg Flow Rate (cfm)	Avg Temperature (deg F)
10/30/99 6:00:00 AM	23	2.165	3405	1	0.075	13146	63
10/30/99 7:00:00 AM	23	2.157	3406	1	0.035	13092	63
10/30/99 8:00:00 AM	17	1.6	3408	1	0.048	13055	63
10/30/99 9:00:00 AM	18	1.902	3410	1	0.057	13087	62
10/30/99 10:00:00 AM	18	1.911	3412	1	0.031	13008	63
10/30/99 11:00:00 AM	14	1.353	3413	1	0.006	12962	64
10/30/99 12:00:00 PM	12	1.134	3414	0	0.018	12879	66
10/30/99 1:00:00 PM	12	1.129	3414	0	0	12864	69
10/30/99 2:00:00 PM	8	0.74	3416	0	0.001	12813	72
10/30/99 3:00:00 PM	12	1.046	3416	0	0.015	12725	73
10/30/99 4:00:00 PM	5	0.4	3417	0	0	12540	73
10/30/99 5:00:00 PM	13	1.164	3419	0	0.01	12728	[illegible]4
10/30/99 6:00:00 PM	18	1.649	3421	0	0.043	12682	73
10/30/99 7:00:00 PM	23	2.088	3423	1	0.035	12827	70
10/30/99 8:00:00 PM	22	1.997	3425	1	0.04	12881	68
10/30/99 9:00:00 PM	23	2.149	3427	1	0.076	12879	67
10/30/99 10:00:00 PM	25	2.281	3430	2	0.117	12848	66
10/30/99 11:00:00 PM	28	2.597	3431	2	0.045	12898	66
10/31/99	11	0.971	3432	1	0.001	12870	67
10/31/99 1:00:00 AM	13	1.224	3434	0	0.014	12957	66
10/31/99 2:00:00 AM	20	1.901	3436	0	0.051	13012	65
10/31/99 3:00:00 AM	23	2.186	3439	1	0.089	12991	65
10/31/99 4:00:00 AM	25	2.392	3443	2	0.123	13501	66
10/31/99 5:00:00 AM	25	2.466	3446	2	0.124	13693	65
10/31/99 6:00:00 AM	22	2.2	3447	2	0.001	13630	64
10/31/99 7:00:00 AM	9	0.893	3449	0	0.003	13574	64
10/31/99 8:00:00 AM	17	1.844	3450	0	0.015	13779	[illegible]4
10/31/99 9:00:00 AM	18	1.878	3453	0	0.031	13664	63
10/31/99 10:00:00 AM	18	1.878	3455	0	0.11	13664	63
10/31/99 11:00:00 AM	25	4.59	3458	1	0.095	13535	65
10/31/99 12:00:00 PM	25	2.36	3460	2	0.139	13451	69
10/31/99 1:00:00 PM	26	2.49	3462	2	0.134	13501	70
10/31/99 2:00:00 PM	25	2.353	3464	2	0.06	13426	71
10/31/99 3:00:00 PM	13	1.226	3465	1	0.001	13453	70
10/31/99 4:00:00 PM	10	0.961	3466	0	0.014	13298	70
10/31/99 5:00:00 PM	20	1.948	3469	0	0.048	13403	69
10/31/99 6:00:00 PM	24	2.361	3471	1	0.071	13548	66
10/31/99 7:00:00 PM	25	2.471	3473	1	0.035	13668	64
10/31/99 8:00:00 PM	21	2.07	3475	1	0.041	13685	63

timestamp	NOx Avg (ppmv)	NOx Pounds (lb)	Cumulative NOx (lb)	NO Avg (ppmv)	NO Pounds (lb)	Avg Flow Rate (cfm)	Avg Temperature (deg F)
10/31/99 9:00:00 PM	21	2.032	3478	1	0.087	13634	62
10/31/99 10:00:00 PM	23	2.308	3480	1	0.145	13553	61
10/31/99 11:00:00 PM	26	2.596	3481	2	0.007	13627	61

HORIZON ENGINEERING LLC

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Phone (503)255-5050 • Fax (503)255-0505
horizone@teleport.com

December 15, 1999

Susan Mulholland
Wacker Siltronic Corporation
P.O. Box 83180
Portland, Oregon 97283-0180

Dear Susan Mulholland:

A Cylinder Gas Audit (CGA) of the NOx Continuous Emission Monitoring System (CEMS) was done on December 15, 1999. Attached are the results of the testing. The tests were performed to satisfy the Oregon Department of Environmental Quality Discharge permit requirements.

Summary of Results

Both the NO and NOx analyzers met the accuracy criteria to pass the Audit. The acceptable limits require the analyzers to deviate less than 15% of the audit gas value or ± 5 ppm, whichever is higher. The analyzers passed using either criteria. The NOx analyzer accuracy was calculated to be 12.8% and –0.8% from the two EPA protocol NOx gases.

Sampling and Analytical procedures.

The work was done in accordance with the guidelines of the ODEQ Continuous Monitoring Manual. This work references EPA CFR 40, Pt. 60, Appendix B, Performance Specification 2 for NOx and Appendix F. For the CGA, the analyzers were challenged three times with three (the two NOx concentrations and the zero air) independent audit standards. The audit gas was introduced to the analyzers at the connection between the stack probe and the heated sampling line going to the CEMS.

The accuracy was calculated from the average of the three measured values using the procedure in Appendix F.

Discussion

The data should be valid in all respects; documentation for quality assurance is in the Appendix.

If you have any questions, please feel free to give me a call.

Sincerely,

Duncan Roberts
HORIZON ENGINEERING
Attachments: Data Assessment Report
Cylinder Gas Certificates

Data Assessment Report

Client	Wacker Siltronics	Period Ending Date	
Plant name	Portland, Oregon		
Source Unit No.	NOx scrubbing system outlet	Date of Audit	15 December 19
Audited by	Duncan Roberts		

CEMS Information:

Manufacturer	Horiba	Type:	NDIR w/Cross Flow Modulation
Model No.	ENDA-1330		Trimer Corp.
Serial No.	0439	Location:	NOx Control Room
Applicable Regulations:			

Cylinder Gas Audit (CGA) for:

Pollutant NOx Units ppm

Span Value 100

		Zero	Audit Point 1	Audit Point 2	
Cylinder ID No.		CC15827	XC0061598	CC53877	
Date of Certification		09/03/99	11/08/99	2/26/98	
Type of Certification		NIST-SRM	EPA- Protocol	EPA-Protocol	
Certified Audit Value		0	23.35	69.10	
% of Range Value		0	23%	69%	
CEMS Response Time	50 seconds				
Sampled for 2x response time, +					
CEMS Response Value	NO Analyzer / Model # CFA-311A Mfg# 568833012				**Time**
Run 1		0.0	24.2	67.5	1025/1028/1031
Run 2		0.0	24.8	67.1	1033/1037/1041
Run 3			24.7	68.2	1054/1100/1109
Average			24.6	67.6	
Accuracy, % difference			5.2%	-2.2%	
Accuracy, difference, ppm			1.2	-1.5	

Criteria for excessive inaccuracy: the greater of these two values:

15% of audit value	ppm	4	**10**
or,	ppm	**+/- 5**	+/- 5

CEMS Response Value	NOx Analyzer / Model # CFA-311A Mfg# 568833011				**Time**
Run 1		0.0	26.5	68.7	1025/1028/1033
Run 2		0.0	26.3	68.3	1033/1037/1041
Run 3		0.4	26.2	68.7	1054/1100/1109
Average			26.33	68.57	
Accuracy, % difference			12.8%	-0.8%	
Accuracy, difference, ppm			3.0	-0.5	

Criteria for excessive inaccuracy: the greater of these two values:

15% of audit value	ppm	4	**10**
or,	ppm	**+/- 5**	+/- 5

Comments

Heated Line Temp - 196 degrees F

Confirm Logbook Entry _____

SCOEPA00022858

002021
#AV5
OK

SCOTT-MARRIN, INC.
6531 BOX SPRINGS BLVD. • RIVERSIDE, CA 92507
TELEPHONE (909) 653-6780 • FAX (909) 653-2430

03-09-98

REPORT OF ANALYSIS
EPA PROTOCOL GAS MIXTURES

HENGØ1
TO:

DATE : Ø2/27/98

DAVID ROSSMAN
HORIZON ENG'G-INFRARED NW
13585 NE WHITAKER WAY
PORTLAND, OR 97230-

CUSTOMER ORDER NUMBER: ØØ2Ø21

COMPONENT	CONCENTRATION(v/v) +/-EPA UNCERTAINTY	REFERENCE STANDARD	ANALYZER MAKE,MODEL,S/N,DETECTION	EXPIRATION DATE	REPLICATE ANALYSIS DATA	
CYLINDER NO.:	CC53877					
			Monitor Labs Model 8440		02/17/98	02/26/98
Nitric oxide	69.1 ±.4 ppm	GMIS	S/N 136	02/26/00	69.0 ppm	69.1 ppm
NOx	69.1 ppm	Cylinder #	Continuous		68.9 ppm	68.8 ppm
Nitrogen,O2-Free Balance		CC117928	Chemiluminescence		69.0 ppm	69.3 ppm
Cylinder Pressure: 2000 psig		@ 101.6 ppm	Last Cal Date: 02/10/98		Mean: 69.0 ppm	69.1 ppm

ppm = umole/mole % = mole-%

The above analyses were performed in accordance with Procedure G1 of the EPA Traceability Protocol, Report Number EPA-600/R93/224, dated September 1993.
This cylinder should not be used if the pressure is less than 150 psig.

Analyst: _____ Approved: _____

B.E. Gross J.T. Marrin

The only liability of this company for gas which fails to comply with this analysis shall be replacement or reanalysis thereof by the company without extra cost.

SCOEPA00022859

SCOTT-MARRIN, INC.
6531 BOX SPRINGS BLVD. • RIVERSIDE, CA 92507
TELEPHONE (909) 653-6780 • FAX (909) 653-2430

P02780
of 10/21/99
#N3

REPORT OF ANALYSIS
EPA PROTOCOL GAS MIXTURES

HENG01
TO: DAVID ROSSMAN
HORIZON ENGINEERING /
INFRARED NW
13585 NE WHITAKER WAY
PORTLAND, OR 97230-

DATE : 12/03/99

CUSTOMER ORDER NUMBER: 2780

COMPONENT	CONCENTRATION(v/v) +/-EPA UNCERTAINTY	REFERENCE STANDARD	ANALYZER MAKE,MODEL,S/N,DETECTION	EXPIRATION DATE	REPLICATE ANALYSIS DATA	
CYLINDER NO.:	XC006159B					
			Monitor Labs Model 8440		11/26/99	12/03/99
Nitric oxide	23.35 ± .24 ppm	GMIS	S/N 136	12/03/01	23.32 ppm	23.39 ppm
NOX	23.35 PPM	Cylinder #	Continuous		23.32 ppm	23.37 ppm
Nitrogen,O2-Free Balance		CC114770	Chemiluminescence		23.21 ppm	23.50 ppm
Cylinder Pressure: 2000 psig		@ 19.88 ppm	Last Cal Date: 11/08/99		Mean: 23.28 ppm	23.42 ppm

ppm = umole/mole % = mole-%

The above analyses were performed in accordance with Procedure G1 of the EPA Traceability Protocol, Report Number EPA-600/R97/121, dated September 1997.
This cylinder should not be used if the pressure is less than 150 psig.

Analyst: Steve Kozy
S.B. Kozy

Approved:
J.T. Marrin

The only liability of this company for gas which fails to comply with this analysis shall be replacement or reanalysis thereof by the company without extra cost.

STANDARD CALIBRATION GASES IN ALUMINUM CYLINDERS

SCOEPA00022860

A4
P02726
9/3/99

Polar

(503) 239-5252
2734 S.E. Raymond
Portland, OR 97202

#A4 P02726 9/3/99

PREPARED

CHEMIST Sd

CONTENTS PRODUCT air PURITY zero

CYLINDER NO. CC15827

APPROX. PRESSURE 2000 psig

LOT NUMBER CPJ1791303

ANALYSIS

HYDROGEN	
OXYGEN	21.1%
CO & CO2	
MOISTURE	1.5ppm
ARGON	
NITROGEN	
HELIUM	
OTHER THC	0.4ppm

HORIZON ENGINEERING LLC

13585 N.E. Whitaker Way • Portland, OR 97230
Phone (503)255-5050 • Fax (503)255-0505
horizone@teleport.com

1 September, 1999

Ms. Susan Mulholland
Wacker Siltronic Corporation
P.O. Box 83180
Portland, Oregon 97283-0180

Dear Ms. Mulholland:

A Cylinder Gas Audit (CGA) of the NOx Continuous Emission Monitoring System (CEMS) was done on 27 August 1999. Attached are the results of the testing. The tests were performed to satisfy the Oregon Department of Environmental Quality Discharge permit requirements.

Summary of Results

Both the NO and NOx analyzers met the accuracy criteria to pass the Audit. The acceptable limits require the analyzers to deviate less than 15% of the audit gas value or ± 5 ppm, whichever is higher. The analyzers passed using either criteria. The NOx analyzer accuracy was calculated to be 2.5% and +1.7% for the two NOx gases.

Sampling and Analytical procedures.

The work was done in accordance with the guidelines of the ODEQ Continuous Monitoring Manual. This work references EPA CFR 40, Pt. 60, Appendix B, Performance Specification 2 for NOx and Appendix F. For the CGA, the analyzers were challenged three times with three independent audit standards. The Audit gas was introduced to the analyzers at the connection between the stack probe and the heated sampling line going to the CEMS.

The accuracy was calculated from the average of the three measured values using the procedure in Appendix F.

SCOEPA00022862

Discussion

The data should be valid in all respects; documentation for quality assurance is in the Appendix.

If you have any questions, please feel free to give me a call.

Sincerely

HORIZON ENGINEERING

Kurt D. Torgerson.

Attachments: Data Assessment Report

Data Assessment Report

Client	Wacker Siltronics	Period Ending Date	
Plant name	Portland, Oregon		
Source Unit No.	NOx scrubbing system outlet	Date of Audit	27 August 1999
Audited by	Kurt Torgerson		

CEMS Information:

Manufacturer	Horiba	Type:	NDIR w/Cross Flow Modulation
Model No.	ENDA-1330		Trimer Corp.
Serial No.	0439	Location:	NOx Control Room
Applicable Regulations:			

Cylinder Gas Audit (CGA) for:

Pollutant NOx Units ppm

Span Value 100

		Zero	Audit Point 1	Audit Point 2	
Cylinder ID No.		CC53883	CAO3076	CC53877	
Date of Certification		8/18/98	8/13/98	2/26/98	
Type of Certification		NIST-SRM	NIST-SRM	EPA-PROT	
Certified Audit Value		0	25.73	69.1	
% of Span Value		0	26%	69%	
CEMS Response Time	50 seconds				
Sampled for 2x response time, +					
CEMS Response Value	NO Analyzer / Model # CFA-311A Mfg# 568833012				**Time**
Run 1		1.10	26.50	68.00	1128/1131/1134
Run 2		0.80	26.20	67.50	1142/1146/1152
Run 3		0.10	26.40	68.30	1156/1159/1202
Average			26.37	67.93	
Accuracy, % difference			2.5%	-1.7%	
Accuracy, difference, ppm			0.6	-1.2	

Criteria for excessive inaccuracy: the greater of these two values:

15% of audit value	ppm	4	**10**
or,	ppm	**+/- 5**	+/- 5

CEMS Response Value	NOx Analyzer / Model # CFA-311A Mfg# 568833011				**Time**
Run 1		0.90	25.90	69.10	1128/1131/1134
Run 2		2.50	27.60	69.10	1142/1146/1152
Run 3		2.30	27.40	69.60	1156/1159/1202
Average			26.97	69.27	
Accuracy, % difference			4.8%	0.2%	
Accuracy, difference, ppm			1.2	0.2	

Criteria for excessive inaccuracy: the greater of these two values:

15% of audit value	ppm	4	**10**
or,	ppm	**+/- 5**	+/- 5

Comments

Heated Line Temp - 199 degrees F

Confirm Logbook Entry x

SCOEPA00022864