Wakers Siltronics Corp

Division of State Lands
775 Summer Street NE
Salem, OR 97310

November 26, 1993

MEMORANDUM

RECEIVED
NOV 30 1993
WACKER SILTRONIC
Environmental Health & Safety

To: Reviewing Agencies

From: Waterway Permit Section

Subject: Permit Renewals

We have received requests to renew the following Removal or Fill permits. In each case, suitable applications and plans were included with the existing permit, and no changes are planned.

Number	Applicant	Location
RP 3567	Fred's Marina	Multnomah Ch., Multnomah Co. removal
RP 4424	James River Corporation	Columbia R., Clatsop Co. removal
RP 4427	Northwest Natural Gas Co.	Willamette R., Multnomah Co. removal
RP 4679	Oregon Department of Fish and Wildlife	Tanner Cr., Multnomah Co. dredging
RP 4702	City of St. Helens	Columbia R., Columbia Co. removal
RF 6583	Winmar Pacific, Inc.	Columbia Sl., Multnomah Co. wetland fill

Please review your file copies of these applications, and respond with your comments as soon as possible. If you need a copy of the earlier application, please call Melinda Manley at 378-3805, extension 275.

ODFW copies have been sent to Jim Turner and the following biologists:

DISTRICT:			REGIONS:
Jay Massey Bob Buckman	Gene Herb	Don Bennett	Ron Hassleman

871470

SCOEPA00054245

Oregon
DIVISION OF
STATE LANDS
775 Summer St. NE
Salem, Oregon 97310-1337

FORWARDING AND
ADDRESS CORRECTION REQUESTED

RECEIVED
NOV 30 1993
WACKER SILTRONIC
Environmental Health & Safety

PRESORTED
FIRST CLASS

SALEM
NOV 25'93
OR

U.S.POSTAGE
≈ 0.24 8

ME-40
Wakers Siltronics Corporation
7200 N.W. Front Ave.
Portland, OR ~~97229~~
97210

Jim McCue

SCOEPA00054246

PL № 230597

CITY OF PORTLAND- PLANNING BUREAU

PERMIT CENTER RECEIPT

DATE: 12/9/97
NAME: Advanced Amer. Diving
ADDRESS: 415 S McLoughlin
JOB ADDRESS: 7200 NW Front

PHONE #: 650-8207
CITY/STATE OREGON CITY, OR
ZIP 97045
PERMIT/CASE #:

HEARINGS OFFICER FEES REQUIRED (FOR CODES NOT LISTED, USE BLANK SPACES)			HEARINGS OFFICER FEES NOT REQUIRED (FOR CODES NOT LISTED, USE BLANK SPACES)		
Amount	Fee Code	Item description	Amount	Fee Code	Item description
	271	Central City Parking Review		201	Adjustment Review (Res)
	202	Comp Plan Map Amendment		242	Adjustment Review (Non- Res)
	203	Conditional Use (Major)		205	Design Review (Major)
	227	Conditional Use (Minor)		228	Design Review (Minor A)
	206	Environmental Conservation (Res)		238	Design Review (Minor B)
	288	Environmental Conservation (Non- Res)		290	E-zone Standards Review
	229	Environmental Protection (Type III)		210	Historic Landmark(Individual Property)
	249	Environmental Protection (Type II)		214	Land Division (Minor)
	250	Environmental Zone Violation Review		285	Nonconforming Standard Evidence
	208	Greenway Review (Res)		217	Pre Application Conference
	289	Greenway Review (Non- Res)		212	Property Line Adjustments
	213	Land Division (Major)		286	Supplemental Compatibility
	223	Master Plan Review (New)		257	Unassigned Reviews Type I
$124.00	284	Master Plan Review (Amended)		251	Zoning Confirmation (New)
	283	Impact Mitigation Plan (New/Amend)		287	Zoning Confirmation (Renewal)
	252	Impact Mitigation Plan (Amdmnt/Implmt)			
	215	Non-Conforming Situation (OS & R)			
	233	Non-Conforming Situation (C, E & I)		253	Document and Map Sales
	245	Non-Conforming Establishment		219	Final Plat Map (Major)
	216	Planned Unit Development (Major)		239	Final Plat Map (Minor)
	237	Planned Unit Development (Minor)		275	Renotification Fee
	255	Unassigned Reviews Type II			
$124.00	256	Unassigned Reviews Type III		**TOTAL FEES**	
	222	Zoning Map Amendment			
				Cash	
				X Check	# 2899
				TF	
				Bill To:	(CENTER CODE)
	254	**Hearings Officer Fees**	Bureau Staff:		
				Appeal	

PAID
DEC - 9 1997
CITY OF PORTLAND

FD:10/13/97

pcrecpt.wk4

SCOEPA00054247

US Army Corps of Engineers
Portland District

JOINT PERMIT APPLICATION FORM

THIS APPLICATION WILL MEET THE REQUIREMENTS OF BOTH AGENCIES

AGENCIES WILL ASSIGN NUMBERS

Corps Action ID Number 97-1056 Oregon Division of State Lands Number _____

SEND ONE SIGNED COPY OF YOUR APPLICATION TO EACH AGENCY

District Engineer
ATTN: CENPP-OP-GP
P O Box 2946
Portland, OR 97208-2946
503-326-7730

State of Oregon
Division of State Lands
775 Summer Street NE
Salem OR 97310
503-378-3805

① Applicant Name and Address: Wacker Siltronic Corporation
7200 NW Front Avenue
Portland, Oregon 97210
business phone # (503) 2432020
home phone #
FAX # TDD 241-7519

O Co-Applicant
X Authorized Agent Konrad L. Schweiger
X Contractor Advanced American Diving Service Inc.
Name and Address 415 So. McLoughlin Blvd., Oregon City, OR
business phone # (503) 650-8207
home phone # Same
FAX # (503) 650-8230

Property Owner (if different than applicant) Name and Address
business phone #
home phone #
FAX #

② PROJECT LOCATION

Street, Road or other descriptive location: 7200 NW Front Avenue Portland, Oregon 97210 Tax Lots 1 & 48

Legal Description: Quarter 2221-2/2321-2 Section 13, Township 1N Range 1W (Bk/Pg 1404/2180

In or Near (City or Town): Portland, Oregon

County: Washington

Tax Map #

Tax Lot # 1347/0936

Tax Lots 1 and 48

Waterway: Willimate River

River Mile: 6.8

Latitude

Longitude

Is consent to enter property granted to the Corps and the Division of State Lands? X Yes O No

③ PROPOSED PROJECT INFORMATION

Activity Type: O Fill O Excavation (removal) O In-Water Structure X Maintain/Repair an Existing Structure

Brief Description: Place Class 1000# Rip Rap below OHW & Class 500# above OHW

Fill will involve one time cubic yards annually and/or 7,715 cubic yards for the total project
2,300 cubic yards in a wetland or below the ordinary high water or high tide line

Fill will be X Riprap O Rock O Gravel O Sand O Silt O Clay O Organics O Other _____

Fill Impact Area is 1.7 Acres; 2500 ft length; 29 ft width; 4 ft. depth

Removal will involve 0 cubic yards annually and/or 0 cubic yards for the total project
0 cubic yards below the ordinary high water or high tide line

Removal will be O Riprap O Rock O Gravel O Sand O Silt O Clay O Organics O Other _____

Removal Impact Area is 0 Acres; _____ length; _____ width; _____ depth

Is the Disposal area: Upland? O Yes X No Wetland / Waterway? O Yes X No

Are you aware of any Endangered Species on the project site? O Yes X No

Are you aware of any Cultural Resources on the project site? O Yes X No

Is the project site near a Wild and Scenic River? O Yes X No

If Yes, please explain in the project description (on page 2, block 4).

Proposed Project Purpose & Description

oject Purpose and Need: Replace the original rip-rap bank that was damaged during the floods of 1996 and 1997. Continued flooding will cause undermining of the foundations of the existing structures and facilites

oject Description:

Repair the river bank with a barge mounted crane from the water. This crane will recieve all the rock materials from spoils barges. Class 1000# will be placed below the OHW in the amount of 2300 cubic yards with the remaning bank being covered with7,715 cu. yards of Class 500# rip rap.

Trees will be planted on 50' center in the area of rip-rap placement. These trees will meet the specs. set forth by Mr. Steve Gerber of the Greenway Review board.

ow many project drawing sheets are included with this application? 12

OTE: A complete application must include drawings and a location map submitted on separate $8^1/_2$ X 11 sheets.

ill any material, construction debris, runoff, etc. enter a wetland or waterway? ⊗ Yes ○ No

yes, describe the type of discharge (above) and show the discharge location on the site plan.

timated Start Date Jan. 15,1998 Estimated Completion Date 2/28/1999

Project Impacts and Alternatives

escribe alternative sites and project designs that were considered to avoid impacts to the waterway or wetland.

escribe what measures you will use (before and after construction) to minimize impacts to the waterway or wetland.

All bank repair will be performed from a floating derrick barge and clamshell bucket. Rip-rap repair will include the placement of class 1000 rip-rap up to the Ordinary High Waterline. Class 100 rip-rap will then be placed from the Ordinary High Waterline to the top of the bank. The heavier class 1000 rip-rap will insure the bank repair will provide a stable base for the replacement of the rip-rap lost during the floods of 1996. It should also be noted that the rip-rap material originally protecting the bank at Wacker Siltronics was approximately a class 150 rip-rap.

OTE: If necessary, use additional sheets.

Additional Information

joining Property Owners and Their Addresses and Phone Numbers

s the proposed activity or any related activity received the attention of the Corps of Engineers or the State of Oregon the past, e.g., wetland delineation, violation, permit, lease request, etc.? ⊗ YES ○ NO

If yes, what identification number(s) were assigned by the respective agencies:

Gateway Review File Number LUR 93-00446GW (Wacker)

Corps # _____

State of Oregon# _____

⑦

City / County Planning Department Affidavit

(to be completed by local planning official)

☑ This project is not regulated by the local comprehensive plan and zoning ordinance.

○ This project has been reviewed and is consistent with the local comprehensive plan and zoning ordinance.

○ This project has been reviewed and is **not** consistent with the local comprehensive plan and zoning ordinance.

○ Consistency of this project with the local planning ordinance cannot be determined until the following local approval(s) are obtained:

○ Conditional Use Approval ○ Development Permit
○ Plan Amendment ○ Zone Change
○ Other _____

An application ○ has ○ has not been made for local approvals checked above.

Signature (of local planning official)	Title	City / County	Date
[signature]	Smr. City Planner	Portland	12/9/97

See Attachment "A"

⑧

Coastal Zone Certification

If the proposed activity described in your permit application is within the Oregon coastal zone, the following certification is required before your application can be processed. A public notice will be issued with the certification statement which will be forwarded to the Oregon Department of Land Conservation and Development (DLCD) for its concurrence or objection. For additional information on the Oregon Coastal Zone Management Program, contact the department at 1175 Court Street NE, Salem, Oregon 97310 or call 503-373-0050.

Certification Statement

I certify that, to the best of my knowledge and belief, the proposed activity described in this application complies with the approved Oregon Coastal Zone Management Program and will be completed in a manner consistent with the program.

Print/Type Name _____ Title _____

Applicant Signature _____ Date _____

⑨

Signature for Joint Application

(REQUIRED)

Application is hereby made for the activities described herein. I certify that I am familiar with the information contained in the application, and, to the best of my knowledge and belief, this information is true, complete, and accurate. I further certify that I possess the authority including the necessary requisite property interests to undertake the proposed activities. I understand that the granting of other permits by local, county, state or federal agencies does not release me from the requirement of obtaining the permits requested before commencing the project. I understand that local permits may be required before the state removal-fill permit is issued. I understand that payment of the required state processing fee does not guarantee permit issuance.

Wacker Siltronics Corporation _____ _____
Print/Type Name (coapplicant) Title

Alan Heiman

_____ 1/23/1997
Applicant Signature (coapplicant) Date

I certify that I may act as the duly authorized agent of the applicant.

Advanced American Diving Service INC.

oKonrad L. Schweiger _____ Secretary
Print/Type Name Title

[signature] 1/23/97
Authorized Agent Signature Date

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Supplemental Wetland Impact Information*
(For Wetland Fills Only)

Site Conditions of impact area

Impact area is ○ Ocean ○ Estuary ◉ River ○ Lake ○ Stream ○ Freshwater Wetland

Note: Estuarian Resource Replacement is required by state law for projects involving intertidal or tidal marsh alterations. A separate Wetlands Resource Compensation Plan may be appended to the application.

Has a wetland delineation been completed for this site? ○ Yes ○ No
If yes, by whom:

Describe the existing Physical and biological character of the wetland/waterway site by area and type of resource (use separate sheets and photos, if necessary)

Resource Replacement Mitigation
Describe measures to be taken to replace unavoidably impacted wetland resources

* Because this information is not necessary for a complete application, you may submit this sheet and other environmental information after submitting your application.

Native Plant List

Attachment "A"

Scientific Name	Common Name	Indicator Status	Habitat Type: Wetland	Riparian	Forest	F. slope	Thicket	Grass	Rocky
Trees & Arborescent Shrubs									
Abies amabilis	Silver Fir	FACU			X	X			
Abies grandis	Grand Fir	FACU-	X	X	X	X			
Acer circinatum[AS]	Vine Maple	FAC-			X	X		X	
Acer macrophyllum	Big-leaf Maple	FACU			X	X			
Alnus rubra	Red Alder	FAC		X	X	X			
Arbutus menziesii	Madrone				X				
Cornus nuttallii	Western Flowering Dogwood				X	X			
Crataegus douglasii var. douglasii	Black Hawthorn (wetland form)	FAC	X	X					
Crataegus suksdorfii	Black Hawthorn (upland form)	FAC	X	X	X	X	X		
Fraxinus latifolia	Oregon Ash	FACW	X	X					
Malus fusca[AS]	Western Crabapple	FACW		X	X		X		
Pinus ponderosa	Ponderosa Pine	FACU-			X	X			
Populus balsamifera ssp. trichocarpa	Black Cottonwood	FAC	X	X					
Prunus emarginata	Bitter Cherry	FACU		X		X	X		
Prunus virginiana[AS]	Common Chokecherry	FACU		X	X		X		
Pseudotsuga menziesii	Douglas Fir	FACU			X	X			
Pyrus (see Malus)									
Quercus garryana	Garry Oak				X	X		X	
Rhamnus purshiana	Cascara	FAC-		X	X	X			
✓ Salix fluviatilis[AS]	Columbia River Willow	OBL	X	X					
✓ Salix hookeriana[AS]	Piper's Willow	FACW	X	X					
✓ Salix lucida ssp. lasiandra	Pacific Willow	FACW+	X	X					
Salix rigida var. macrogemma	Rigid Willow	OBL	X	X					
✓ Salix scouleriana	Scouler Willow	FAC	X	X	X				
Salix sessilifolia[AS]	Soft-leaved Willow	FACW	X	X					
Salix sitchensis[AS]	Sitka Willow	FACW	X	X					
Taxus brevifolia	Pacific Yew	NI		X	X	X			
Thuja plicata	Western Red Cedar	FAC	X	X	X	X			
Tsuga heterophylla	Western Hemlock	FACU-		X	X	X			

Plants with an AS superscript are arborescent (tree-like) shrubs. These shrubs may not be used to meet Title 33 or Title 34 standards, criteria or conditions of approval which require trees.

✓ Acceptable riverbank trees. SG

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Mulch (as a ground cover) must be confined to areas underneath plants and is not a substitute for ground cover plants.

B. **Trees.** Trees may be deciduous or evergreen. Deciduous trees at the time of planting must be fully branched, have a minimum diameter of 1 3/4 inches, measured 5 feet above the ground, and have a minimum height of 8 feet. Evergreen trees at the time of planting must be fully branched and a minimum of 6 feet in height.

C. **Plant material choices.**

1. Existing vegetation. Existing landscaping or natural vegetation may be used to meet the standards, if protected and maintained during the construction phase of the development and if the materials are not listed as prohibited on the Portland Plant List. When the existing trees are at least **12 inches** in diameter, measured 5 feet above the ground, they may count **triple** towards meeting the tree requirements of a landscaping standard.

2. Selection of materials. Landscape materials should be selected and sited to produce a hardy and drought-resistant landscape area. Selection should include consideration of soil type and depth, the amount of maintenance required, spacing, exposure to sun and wind, the slope and contours of the site, and compatibility with existing native vegetation preserved on the site.

3. Prohibited materials. Plants listed as prohibited in the Portland Plant List are prohibited in required landscaped areas. Prohibited plants include plants identified by the Planning Director or the City Forester as potentially damaging to sidewalks, roads, underground utilities, drainage improvements, foundations, etc.

D. **Exceeding standards.** Landscaping materials that exceed the standards may be substituted for the minimums so long as all fence or vegetation height limitations are met, including the vision clearance standards of Title 16, Vehicles and Traffic.

E. **Complying with the standards.** It is the applicant's responsibility to show that the landscaping materials proposed will comply with the regulations of this chapter.

33.248.040 Installation and Maintenance

A. **Installation.** Plant materials must be installed to current nursery industry standards. Plant materials must be properly supported to ensure survival. Support devices such as guy wires or stakes must not interfere with vehicular or pedestrian movement.

B. **Maintenance.** Maintenance of landscaped areas is the ongoing responsibility of the property owner. Required landscaping must be continuously maintained in a healthy manner. Plants that die must be replaced in kind. A fine may be levied if the landscaping has not been maintained, and new plants required to be planted.

C. **Irrigation.** The intent of this standard is to ensure that plants will survive the critical establishment period when they are most vulnerable due to lack of watering. All landscaped areas must provide an irrigation system, as stated in option 1, 2, or 3.

SCOEPA00054253

ADVANCED AMERICAN
DIVING SERVICE, INC.
MARINE CONSTRUCTION & CONSULTING
P.O. Box 1630
415 S. McLoughlin Blvd. • Oregon City, OR 97045 • 503/650-8207 • FAX 503/650-8230

December 9, 1997

City of Portland
Permit Application Center
1120 S.W. 5th Ave.
Portland, OR 97204

Re: Wacker Siltronic Bank Repair
Bldg. 97-05206

To Whom It May Concern:

Find enclosed a completed Joint Application for the Wacker Siltronic Corporation Bank Repair. Included in the permit application are the computer generated yardage requirements for the entire bank repair. It is our intent to place the bank at an angle of 1.5 to 1 with Class 1000 lbs. rip-rap material being placed below O.H.W. of 14'9" CRD and all materials above that elevation will be Class 500 lbs. rip-rap. This method of repair has been reviewed by the Army Corps of Engineers and we have received their approval.

Riparian action was requested to help improve bank stability by the Oregon Department of Fish and Game. Trees will be placed on 50' center as indicated by the topography map. These trees have been approved by Steve Gerber, Senior Chief Planner for the City of Portland on December 9, 1997. These trees will include an even mix of Salix Fluviatilis, Salix Jucida ssp. Iasiandra, Salix Scouleriana. These are on the approved Native Plant List and have been marked acceptable riverbank trees by Steve Gerber's notation which is included on Page 7. The trees will meet Title 33, Planning and Zoning dated 1/1/91 Section B Trees. All deciduous trees at the time of planting will be fully branched and have a minimum diameter of 1 3/4", measured 5' above the ground and will have a minimum height of 8'. Enclosed are photographs of the current bank conditions as of January 1996, along with topography maps on which the tree locations are indicated as well as the type of tree to be placed for your review.

Please process the permit as expediently as possible.

If you should have any questions or require further assistance, please do not hesitate to contact our office.

Sincerely,

Konrad Schweiger
Chief Executive Officer

KS/bs
Enclosures

DEPARTMENT OF THE ARMY PERMIT

Permittee: WACKER SILTRONIC CORPORATION

Permit No: 97-01056

Issuing Office: U.S. ARMY CORPS OF ENGINEERS, PORTLAND DISTRICT

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

Project Description: To place 5,415 cubic yards of class 500 rock riprap above the OHW and 2,300 cubic yards class 1000 rock riprap below the OHW along 2,500 linear feet of the left bankline (7,715 cubic yards total for the project). The riprap will be placed from a floating derrick barge and clamshell bucket. The barge and flat deck rock barge will be gravity anchored by two 18 inch diameter spuds. The banks will be sloped to 1.5:1 (h:v) and the maximum fill width is 29 feet. Existing vegetation will not be removed and additional woody vegetation, as designated by the City of Portland, shall be placed on 40 feet centers.

Purpose: To stabilize the bank which was heavily damaged in the February 1996 flood event. The continually eroding riverbank may adversely impact the structural integrity of the close by buildings and destroy a bike path along the greenway.

Project Location: Willamette River Mile 6.8, Portland, Multnomah County, Oregon (Section 13, T1N/R1W).

Drawing: Three drawings labeled, 97-1056 (Wacker Siltronic).

General Conditions:

1. The time limit for completing the work authorized ends on December 31, 2000. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.

2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.

3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

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5. A conditioned water quality certification has been issued for your project, and you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

Special Conditions a. through j.:

a. All construction debris shall be disposed of in such a manner that it cannot enter the waterway.

b. Care shall be taken to prevent any petroleum products, chemicals, or other deleterious materials from entering the water.

c. Slope of riprap, bank, or excavation shall be no steeper than 1.5 feet horizontal to One (1) foot vertical.

d. Only clean, durable riprap shall be used.

e. Work in the waterway shall be done so as to minimize turbidity increases in the water that tend to degrade water quality and damage aquatic life. Turbidity shall be monitored frequently while conducting in-water work. Monitoring points shall be at locations 100 feet upstream (background) and 100 feet downstream. Measurements shall be accomplished with either a turbidimeter or visually and turbidity shall not exceed either 10% above background or be visible (if measuring visually) at the downstream station. These limits can be exceeded for a maximum of two hours in a 24-hour period provided all practicable erosion control measures have been implemented.

The Willamette River from the mouth to Willamette Falls is a water quality limited river for biological criteria, fecal coliforms and temperature. As such turbidity reporting is required. The permittee shall conduct turbidity monitoring and mail the results to the Department of Environmental Quality, Executive Building, 811 S.W. 6th Ave., Portland, OR 97204 at the end of each week of operation.

f. When the District Engineer has been notified by a fishery agency that a filling activity is adversely affecting fish or wildlife resources or the harvest thereof, and when the District Engineer subsequently directs remedial measures, the permittee shall comply with such directions as may be received to suspend or modify the activity, to the extent required to mitigate or eliminate the adverse effect.

g. Your use of the permitted activity must not interfere with the public's right to free navigation on all navigable waters of the United States.

h. You must have a copy of this permit available on the vessel used for the authorized transportation and disposal of fill material.

i. You must install and maintain, at your expense, any safety lights and signals prescribed by the United States Coast Guard (USCG), through regulations or otherwise, on your authorized facilities. The USCG may be reached at the following address and telephone number: United States Coast Guard, Aids to Navigation Branch, 915 Second Avenue, Seattle, Washington 98174.

j. All in-water work, including temporary fills, shall occur within the Oregon Department of Fish and Wildlife preferred work period, which is between July 1 and October 31; and December 1 and January 31 in the Willamette River (from the mouth to Willamette Falls). If the permittee has justified need to perform work outside of the established window, he shall consult with the ODFW district biologist at (503) 657-2000 ext 232. Any deviation from the established preferred in-water period shall be documented and accepted by the ODFW district biologist and submitted to the Corps and DSL for final approval and inclusion into the permit file.

SCOEPA00054257

Further Information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:

(X) Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).
(X) Section 404 of the Clean Water Act (33 U.S.C. 1344).
( ) Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).

2. Limits of this authorization.

a. This permit does not obviate the need to obtain other Federal, state, or local authorizations required by law.

b. This permit does not grant any property rights or exclusive privileges.

c. This permit does not authorize any injury to the property or rights of others.

d. This permit does not authorize interference with any existing or proposed Federal project.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

d. Design or construction deficiencies associated with the permitted work.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision. This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

a. You fail to comply with the terms and conditions of this permit.

b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (See 4 above).

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill

SCOEPA00054258

you for the cost.

6. Extensions. General condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

X _____ 12/22/97

(PERMITTEE SIGNATURE) *(DATE)*

ALAN J HEIMAN FACILITIES ENGINEERING

(PRINTED NAME) *(TITLE)*

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

_____ December 29, 1997

(DISTRICT ENGINEER) *(DATE)*
FOR
Robert T. Slusar
Colonel, Corps of Engineers
District Engineer

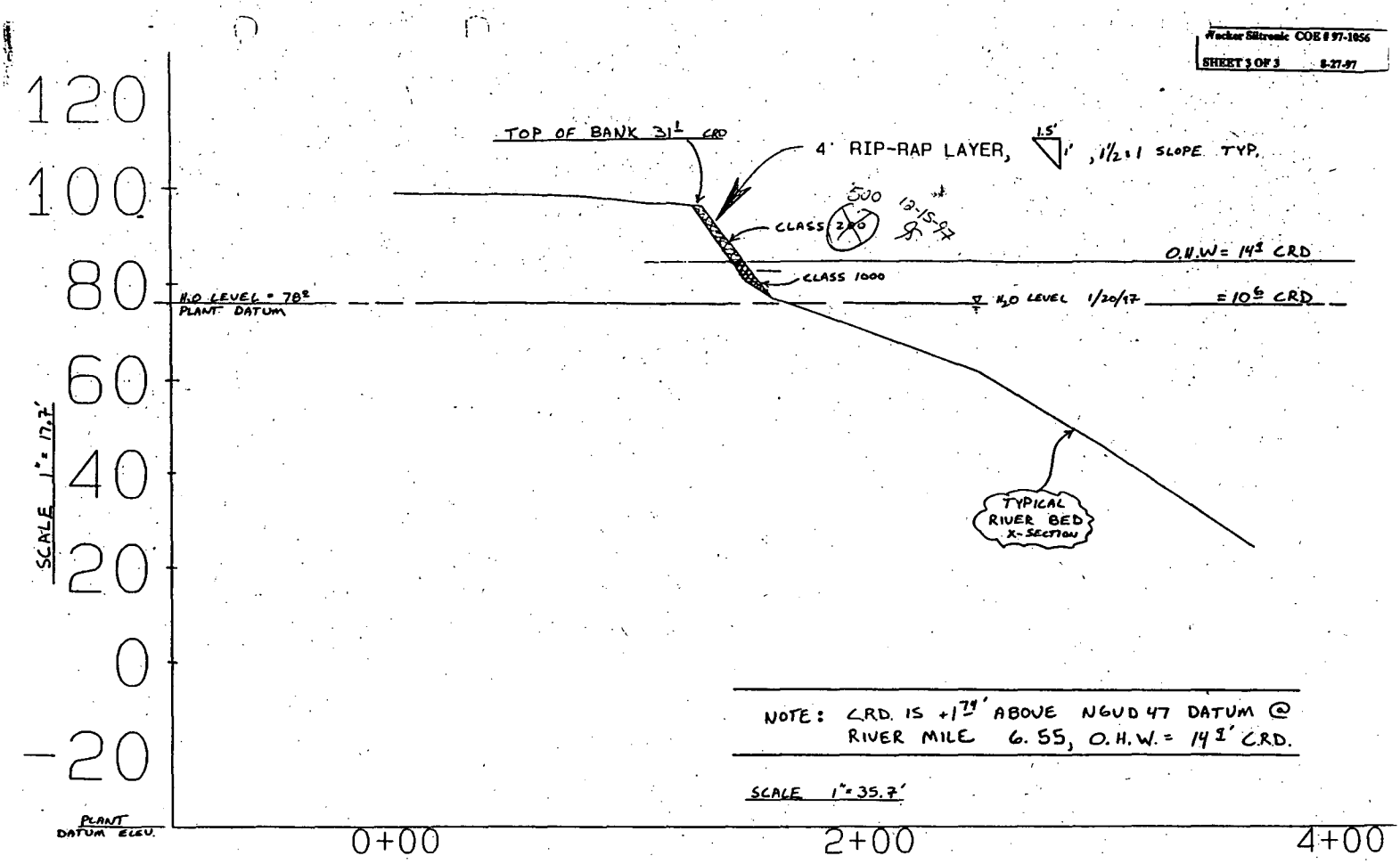
When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

_____ _____

(TRANSFEREE) *(DATE)*

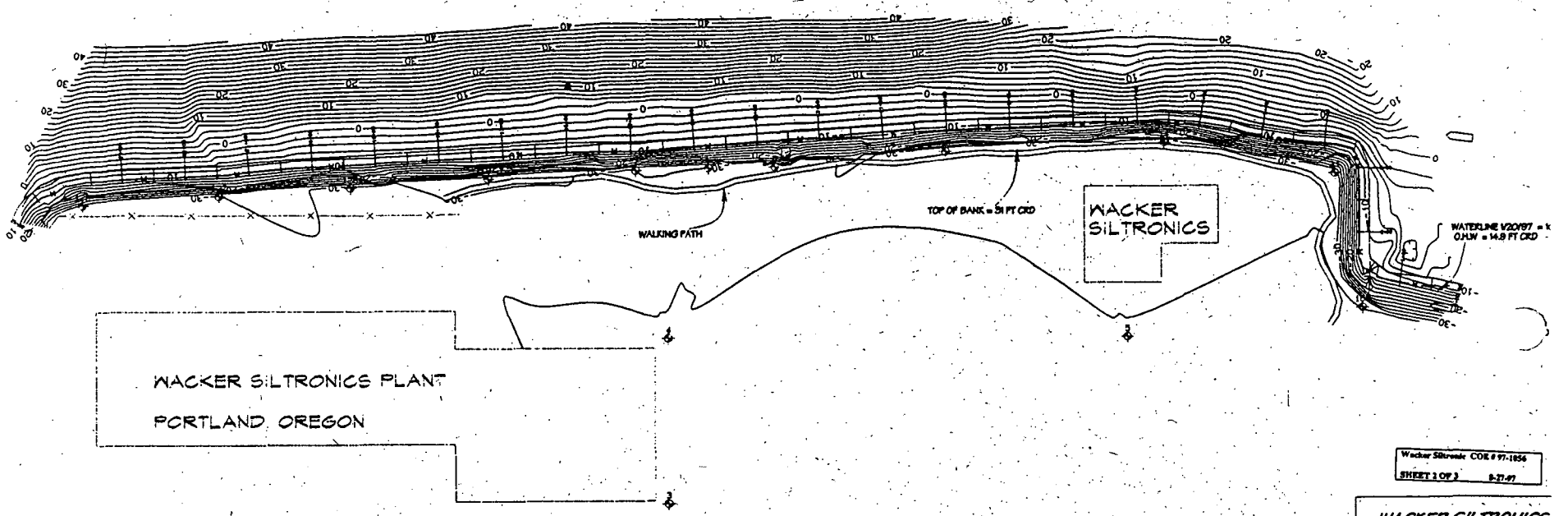
SCOEPA00054259

97-1056 (Willamette River - Riprap)



SCOEPA00054260

97-1056 (Wacker Siltronic)



WACKER SILTRONICS PLANT

PORTLAND, OREGON

Wacker Siltronic COE # 97-1056
SHEET 1 OF 3 9-27-97

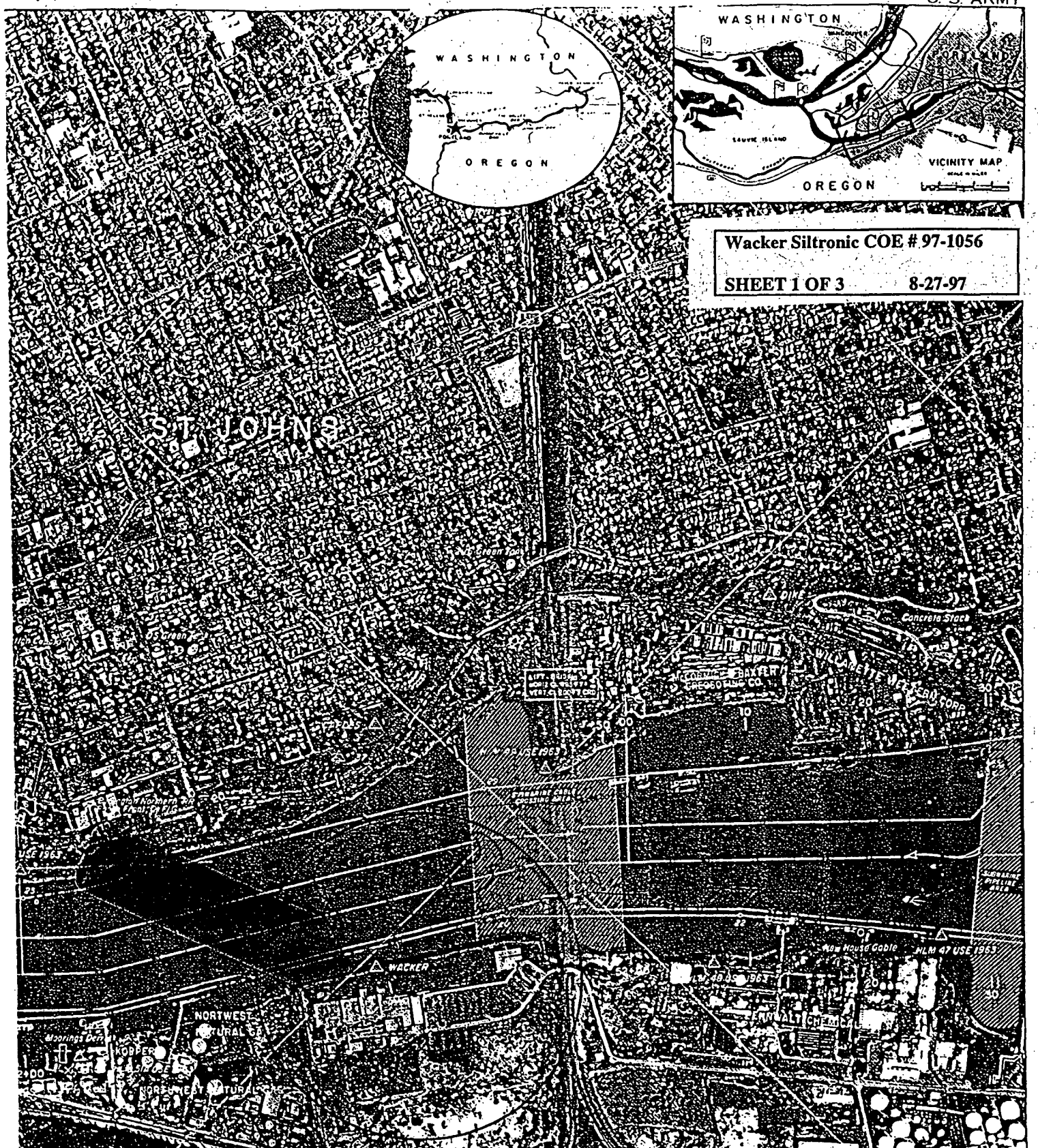
WACKER SILTRONICS

ADVANCED AMERICAN DIVING SERVICES
OREGON CITY, OREGON 97045
(503)650-0307

SCOEPA00054261

97-1056 (Wacker Siltronic)

U. S. ARMY



Wacker Siltronic COE # 97-1056

SHEET 1 OF 3 8-27-97

NOTES

...tography was taken on 18 February 1990 and is adjusted by three ... point rectification at river level.
...rol is by USACE, NOS-CBGS, OSHD and City of Portland.
...dinates are based on the Lambert Projection for Oregon, North Zone.
...m is Columbia River Datum. (CRD is 1.74 feet above National Geodetic ...rtical Datum of Willamette River Mile 6.0, 1947 adjustment.)
...dings are shown in feet and indicate depths below CRD.
...ations are shown thus: +2, indicating height in feet above CRD.
CRD plane is shown thus: ...
...project depth curve is shown thus: ...
...rence is Navigation Chart No. 18526.
...r mileage generally conforms to the River Mile Index of the Hydrology ...nd Hydraulics Committee, Pacific Northwest River Basins Commission, ...une 1963.

...he information depicted on this map represents the results of surveys ...e on the dates indicated and can only be considered as indicating the ...ral condition existing at that time.

...ONDITION ☐ PREDREDGE ☐ POSTDREDGE

LEGEND

Primary Control Points
Coordinated Survey Points
Uncoordinated Survey Points
Dredging Ranges — Front
River Mileage from Mouth
Flow Arrows — Straight
Harbor Lines
State Boundary

Benchmarks
Gages — Staff — Recording — Rear
123
Tidal — Cap — Floor

Aids to Navigation

Lighthouses
Lights — Fixed — Flashing — Occulting
Lighted Ranges — Front — Rear
Lighted Buoys — Port — Starboard — Mid Channel — Junction
Unlighted Buoys
Daybeacons — Port — Starboard
Seasonal Lights and Lighted Dredging Ranges

COLUMBIA AND LOWER WILLAMETTE RIVERS
BELOW VANCOUVER, WASH AND PORTLAND, OREG

WILLAMETTE RIVER
POST OFFICE RANGE - MILE 7.5

22 FEBRUARY 1995

SCALE IN FEET

U S ARMY ENGINEER DISTRICT, PORTLAND
OPERATIONS DIVISION

SUBMITTED — APPROVED
CHIEF, HYDROGRAPHIC SURVEYS — CHIEF, NAVIGATION BRANCH
RECOMMENDED

2

WR - 4 - 78

SCOEPA00054262

RECEIVED
NOV 06 1997
REGULATORY BRANCH
11/5/97

Oregon

DEPARTMENT OF
ENVIRONMENTAL
QUALITY

Judy Linton
U.S. Army Corps of Engineers
ATTN: CENWP-CO-GP
P.O. Box 2946
Portland, OR 97208-2946

The Department of Environmental Quality (DEQ) has reviewed Corps of Engineers permit application #97-1056 (SP-14646) for Wacker Siltronics Corporation. The project involves bank stabilization on the Willamette River (R.M. 6.8); with 5,415 cu yds of riprap. Based on the information provided by the applicant, DEQ does not anticipate any long term violations of State Water Quality standards, provided the following comments are incorporated into the permit.

The Willamette River is Water Quality Limited (WQL) under the Federal Clean Water Act for bacteria, fish deformities, and temperature.

1. **Fish protection/ODFW timing and oversight :**

   a) All in-water work shall occur within the Oregon Department of Fish and Wildlife's (ODFW) preferred time window, as specified in: *Oregon Guidelines for Timing of In-Water Work to Protect Fish and Wildlife Resources,* or as determined and specified by the responsible ODFW biologist.

   b) Provide for fish habitat; no obstruction or impediments to fish passage is to occur. No changes to stream gradient or negative impacts are to occur to the fishery.

2. **Turbidity/erosion controls:** The authorized work shall not cause the turbidity of the Willamette River to exceed 10% above the natural turbidity 100 feet downstream of the discharge point. Turbidity shall be monitored during in-water work. Monitoring points shall be 100 feet upstream (representative background), 100 feet downstream, and at the discharge point. A turbidimeter is recommended, however, visual gaging of turbidity is acceptable. Visible project-related turbidity at 100 feet below the discharge point is considered to be an exceedence of the standard. For information on turbidity monitoring, contact Larry Caton (229-5983).The turbidity standard can be exceeded for a maximum of 2 hours (limited duration) provided all practicable erosion control measures have been implemented as applicable, including, but not limited to:

   a) Place fill with equipment, do not dump, where practicable;

   b) Prevent all construction materials and debris from entering waterway;

   c) Use filter bags, sediment fences, silt curtains, leave strips or berms, or other measures sufficient to prevent movement of soil;

   d) Use impervious materials to cover stockpiles when unattended or during rain event;

811 SW Sixth Avenue
Portland, OR 97204-1
(503) 229-5696
TDD (503) 229-6993
DEQ-1

SCOEPA00054263

e) Erosion control measures shall be inspected and maintained periodically, as necessary to ensure their continued effectiveness;

f) Spoils or excavated materials shall be placed upland and protected from erosion back into wetlands and waterways. Spoils are not to be placed on unstable slopes or a known landslide. Spoils piles are to be seeded and protected from erosion;

g) No heavy machinery in waterway, where avoidable;

h) Gravel staging area and construction access, where practicable;

i) Fence off planted areas to protect from disturbance and/or erosion; and

j) Wetlands adjacent to the construction area are to be flagged or fenced off for protection.

3. Turbidity monitoring results shall be mailed to DEQ, Water Quality Division, 401 Certification Evaluator, Executive Building, 811 SW 6th Ave, Portland, OR, 97204.

4. **Deleterious waste materials:**

a) Petroleum products, chemicals, fresh cement, or other deleterious waste materials shall not be allowed to enter waters of the state, including wetlands; with special attention to sandblasted materials and paint chips;

b) Use only clean fill free of waste and polluted substances to maintain water quality;

c) Seasoned wood, only to contact waters of the state; no treated wood to be placed in the waterway; and

d) Machinery refueling and maintenance is to occur off site or in a confined designated area away from all waterways. BMPs shall be employed in order to prevent discharges of spills to surface or ground waters.

5. **Planting/re-vegetation:**

a) Plant new vegetation or replace any existing vegetation in areas which may be disturbed as a result of this project, in order to restore the function and stability of the landscape and habitat;

b) Plant disturbed areas with native plants and trees in all cases except where the use of non-native plant materials may be essential for erosion control; and

c) The standard for success is 80% cover for native plant species. Temporary fencing off of planted areas may be required to insure success.

6. Photo monitor the site (all disturbed/replanted areas, including mitigation areas, resulting from the specific project) for three years; insure 80% survival rate of planted vegetation. Provide monitoring results to DEQ (Water Quality Division: 401 evaluator).

SCOEPA00054264

7. Bioengineering is required as an alternative to homogeneous riprap. Native plantings, such as willow saplings, should be incorporated into stream bank stabilization structures in order to provide bank erosion protection, varible habitat for wildlife, and shade. [See the Division of State Lands *Guidelines On Riparian Restoration: Bioengineering*, included in their 1996 Erosion Control General Authorization.]

8. In order to provide variable habitat for fish, stream bank stabilization structures shall be constructed in an irregular pattern using large boulders or rock clusters, along with incorporated plantings.

9. If wire, cable, nails, or other metallic binding materials are used to secure logs or other structures, to the channel or bank, care shall be taken to eliminate sharp edges and/or points in order to protect fish and other aquatic organisms.

10. Existing channel materials shall not be excavated for use as bank fill or bank stabilization substrate, unless specifically authorized in the permit or water quality certification.

11. Spills into State waters, or onto land with a potential to enter State waters, shall be reported by contacting OERS directly at 1-800-452-0311.

12. DEQ reserves the option to modify, amend or revoke this WQC, as necessary, in the event new information indicates that the project activities are having a significant adverse impact on State water quality or critical fish resources.

13. A copy of this WQC letter shall be kept on the job site and readily available for reference by the Corps of Engineers, DEQ personnel, the contractor, and other appropriate state and local government inspectors.

14. This WQC is invalid if the project is operated in a manner not consistent with the project description contained in the permit application.

15. DEQ is to have site access upon the day of request.

The DEQ hereby certifies that this project complies with the Clean Water Act and state water quality standards, if the above conditions are made a part of the Federal permit.

The applicant shall notify the DEQ of any change in the ownership, scope, or construction methods of the project subsequent to certification. If you have any questions, please contact Tom Rosetta (229-5845).

Sincerely,

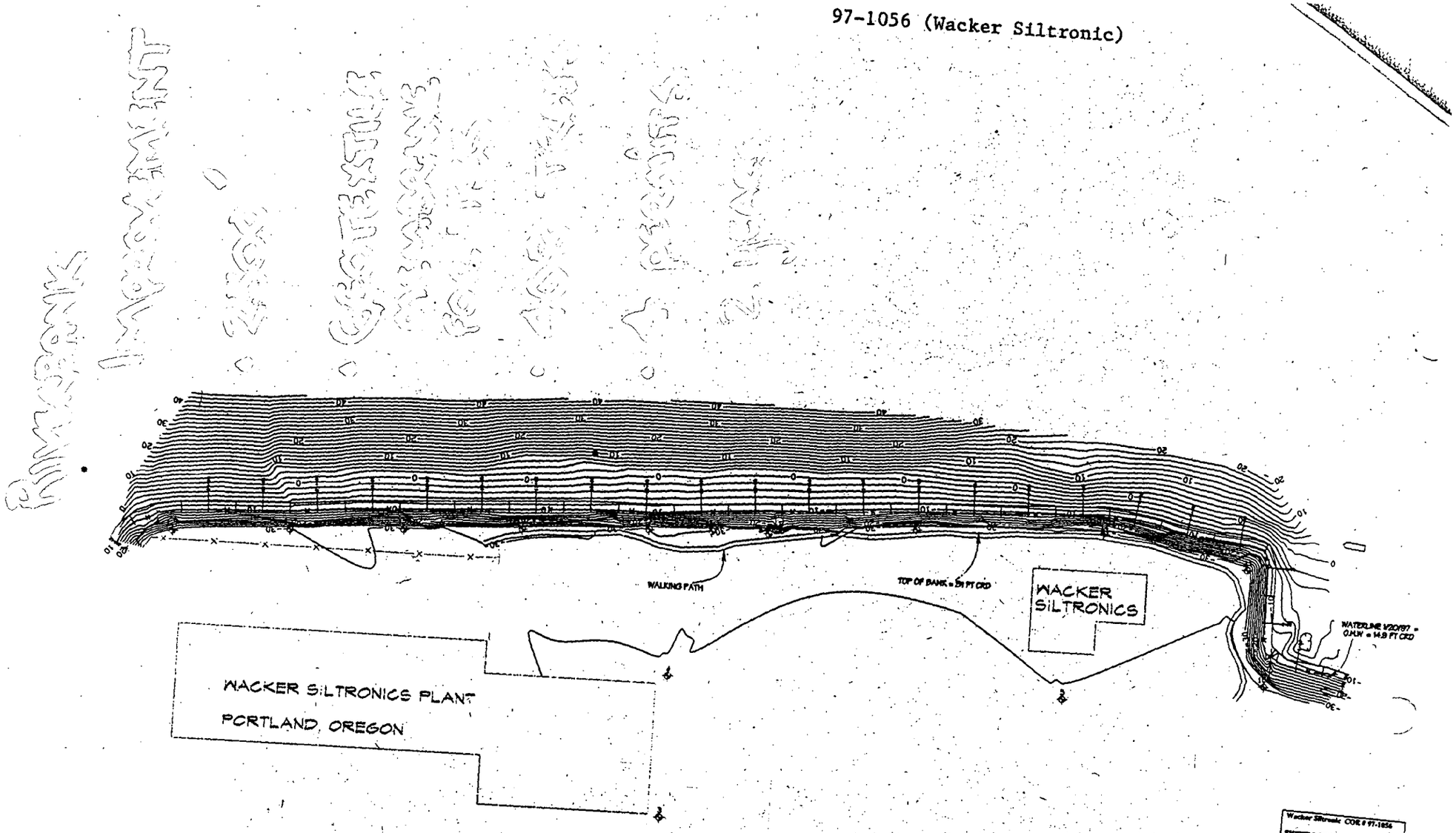
Michael T. Llewelyn
Administrator
Water Quality Division

T:TR.certlint.r27

cc: Jerry Hedrick, ODSL (Salem)
Bob Baumgartner (DEQ)
Applicant(s)_
Authorized Agent/Contractor(s)

SCOEPA00054265

97-1056 (Wacker Siltronic)



SCOEPA00054266

Oregon

9/11/97

DEPARTMENT OF
ENVIRONMENTAL
QUALITY

Judy Linton
U.S. Army Corps of Engineers
ATTN: CENWP-CO-GP
P.O. Box 2946
Portland, OR 97208-2946

The Department of Environmental Quality (DEQ) has reviewed Corps of Engineers permit applications #97-531 (FP-13921) and # 97-966 (FP-14404). Based on the information provided by the applicant, DEQ does not anticipate any long term violations of State Water Quality standards, provided the following comments are incorporated into the permit.

#97-531 (FP-13921) Wacker Siltronics Corp: Expand existing manufacturing complex: with 1.27 acres of wetland fill adjacent to the Willamette River.

The Willamette River is Water Quality Limited (WQL) under the Federal Clean Water Act for biological criteria, temperature, and bacteria.

1. **Fish protection/ODFW timing and oversight:**

   a) All in-water work shall occur within the Oregon Department of Fish and Wildlife's (ODFW) preferred time window, as specified in: *Oregon Guidelines for Timing of In-Water Work to Protect Fish and Wildlife Resources,* or as determined and specified by the responsible ODFW biologist.

   b) Provide for fish habitat; no obstruction or impediments to fish passage is to occur. No changes to stream gradient or negative impacts are to occur to the fishery.

2. **Turbidity/erosion controls:** The authorized work shall not cause the turbidity of the affected wetland drainage channel, the Willamette River, Doane Creek, and Doane Lake to exceed 10% above the natural turbidity 100 feet downstream of the discharge point. Turbidity shall be monitored during in-water work. Monitoring points shall be 100 feet upstream (representative background), 100 feet downstream, and at the discharge point. A turbidimeter is recommended, however, visual gaging of turbidity is acceptable. Visible project-related turbidity at 100 feet below the discharge point is considered to be an exceedence of the standard. For information on turbidity monitoring, contact Larry Caton (229-5983).The turbidity standard can be exceeded for a maximum of 2 hours (limited duration) provided all practicable erosion control measures have been implemented as applicable, including, but not limited to:

   a) Place fill with equipment, do not dump, where practicable;

   b) Prevent all construction materials and debris from entering waterway;

   c) Use filter bags, sediment fences, silt curtains, leave strips or berms, or other measures sufficient to prevent movement of soil;

   d) Use impervious materials to cover stockpiles when unattended or during rain event;

811 SW Sixth Avenue
Portland, OR 97204-1390
(503) 229-5696
TDD (503) 229-6993
DEQ-1

SCOEPA00054267

e) Erosion control measures shall be inspected and maintained periodically, as necessary to ensure their continued effectiveness;

f) Spoils, if excavated, shall be placed upland and protected from erosion back into wetlands and waterways. Spoils not to be placed on unstable slopes or a known landslide. Spoils pile to be seeded and protected from erosion;

g) No heavy machinery in waterway, where avoidable;

h) Gravel staging area and construction access, where practicable;

I) Fence off planted areas to protect from disturbance and/or erosion; and

j) Wetlands adjacent to the construction area are to be flagged or fenced off for protection.

3. Turbidity monitoring results shall be mailed to DEQ, Water Quality Division, 401 Certification Evaluator, Executive Building, 811 SW 6th Ave, Portland, OR, 97204.

4. **Deleterious waste materials:**

a) Petroleum products, chemicals, fresh cement, or other deleterious waste materials shall not be allowed to enter waters of the state, including wetlands; with special attention to sandblasted materials and paint chips;

b) Use only clean fill free of waste and polluted substances to maintain water quality;

c) Seasoned wood, only to contact waters of the state; no treated wood to be placed in the waterway; and

d) Machinery refueling is to occur off site or in a confined designated area away from all waterways.

5. **Planting/re-vegetation:**

a) Plant new vegetation or replace any existing vegetation in areas which may be disturbed as a result of this project, in order to restore the function and stability of the landscape and habitat;

b) Plant disturbed areas with native plants and trees in all cases except where the use of non-native plant materials may be essential for erosion control; and

c) The standard for success is 80% cover for native plant species. Temporary fencing off of planted areas may be required to insure success.

6. Photo monitor the site (all disturbed/replanted areas, including mitigation areas, resulting from the specific project) for three years; insure 80% survival rate of planted vegetation. Provide monitoring results to DEQ (Water Quality Division: 401 evaluator).

7. All storm drains shall be equipped with oil and grease traps; to be regularly maintained.

8. Storm water run off from impervious road surfaces, access lanes, and parking lots shall be first treated by a biofiltration swale, or other treatment facility specifically designed to remove

SCOEPA00054268

stormwater contaminants, before entering streams or wetlands (including mitigation wetlands), so as to minimize pollutants entering those water bodies.

9. Monitor storm water treatment system effectiveness for at least 5 years.

10. Provide a buffer zone, where practicable (minimum width of 20 feet recommended), in order to protect existing riparian areas, and existing and mitigation wetlands.

11. Projects impacting 5 or more acres require an NPDES 1200C storm water permit.

12. Spills into State waters, or onto land with a potential to enter State waters, shall be reported by contacting OERS directly at 1-800-452-0311.

13. DEQ reserves the option to modify, amend or revoke this WQC, as necessary, in the event new information indicates that the project activities are having a significant adverse impact on State water quality or critical fish resources.

14. A copy of this WQC letter shall be kept on the job site and readily available for reference by the Corps of Engineers, DEQ personnel, the contractor, and other appropriate state and local government inspectors.

15. This WQC is invalid if the project is operated in a manner not consistent with the project description contained in the Public Notice for certification.

16. Must comply with DSL wetland mitigation requirements.

17. DEQ is to have site access upon the day of request.

<u># 97-966 (FP-14404) Prudential Steel Ltd: Construct a tubular steel manufacturing and mill storage facility on 24.7 acres of the Mcnutty Creek Industrial Park; with 1.33 acres of wetland fill.</u>

1. **Fish protection/ODFW timing and oversight (if fishery is present on Mcnulty Creek):**

    a) All in-water work shall occur within the Oregon Department of Fish and Wildlife's (ODFW) preferred time window, as specified in: *Oregon Guidelines for Timing of In-Water Work to Protect Fish and Wildlife Resources,* or as determined and specified by the responsible ODFW biologist.

    b) Provide for fish habitat; no obstruction or impediments to fish passage is to occur. No changes to stream gradient or negative impacts are to occur to the fishery.

2. **Turbidity/erosion controls:** The authorized work shall not cause the turbidity of the affected wetland drainage channel or McNulty Creek to exceed 10% above the natural turbidity 100 feet downstream of the discharge point. Turbidity shall be monitored during in-water work. Monitoring points shall be 100 feet upstream (representative background), 100 feet downstream, and at the discharge point. A turbidimeter is recommended, however, visual gaging of turbidity is acceptable. Visible project-related turbidity at 100 feet below the discharge point is considered to be an exceedence of the standard. For information on turbidity monitoring, contact Larry Caton (229-5983).The turbidity standard can be exceeded for a maximum of 2 hours (limited duration) provided all practicable erosion control measures have been implemented as applicable, including, but not limited to:

    a) Place fill with equipment, do not dump, where practicable;

SCOEPA00054269

b) Prevent all construction materials and debris from entering waterway;

c) Use filter bags, sediment fences, silt curtains, leave strips or berms, or other measures sufficient to prevent movement of soil;

d) Use impervious materials to cover stockpiles when unattended or during rain event;

e) Erosion control measures shall be inspected and maintained periodically, as necessary to ensure their continued effectiveness;

f) Spoils, if excavated, shall be placed upland and protected from erosion back into wetlands and waterways. Spoils not to be placed on unstable slopes or a known landslide. Spoils pile to be seeded and protected from erosion;

g) No heavy machinery in waterway, where avoidable;

h) Gravel staging area and construction access, where practicable;

I) Fence off planted areas to protect from disturbance and/or erosion; and

j) Wetlands adjacent to the construction area are to be flagged or fenced off for protection.

3. **Deleterious waste materials:**

a) Petroleum products, chemicals, fresh cement, or other deleterious waste materials shall not be allowed to enter waters of the state, including wetlands; with special attention to sandblasted materials and paint chips;

b) Use only clean fill free of waste and polluted substances to maintain water quality;

c) Seasoned wood, only to contact waters of the state; no treated wood to be placed in the waterway; and

d) Machinery refueling is to occur off site or in a confined designated area away from all waterways.

4. **Planting/re-vegetation:**

a) Plant new vegetation or replace any existing vegetation in areas which may be disturbed as a result of this project, in order to restore the function and stability of the landscape and habitat;

b) Plant disturbed areas with native plants and trees in all cases except where the use of non-native plant materials may be essential for erosion control; and

c) The standard for success is 80% cover for native plant species. Temporary fencing off of planted areas may be required to insure success.

SCOEPA00054270

5. Photo monitor the site (all disturbed/replanted areas, including mitigation areas, resulting from the specific project) for three years; insure 80% survival rate of planted vegetation. Provide monitoring results to DEQ (Water Quality Division: 401 evaluator).

6. All storm drains shall be equipped with oil and grease traps; to be regularly maintained.

7. Storm water run off from impervious road surfaces, access lanes, and parking lots shall be first treated by a biofiltration swale, or other treatment facility specifically designed to remove stormwater contaminants, before entering streams or wetlands (including mitigation wetlands), so as to minimize pollutants entering those water bodies.

8. Monitor storm water treatment system effectiveness for at least 5 years.

9. Provide a buffer zone, where practicable (minimum width of 20 feet recommended), in order to protect existing riparian areas, and existing and mitigation wetlands.

10. Projects impacting 5 or more acres require an NPDES 1200C storm water permit.

11. Spills into State waters, or onto land with a potential to enter State waters, shall be reported by contacting OERS directly at 1-800-452-0311.

12. DEQ reserves the option to modify, amend or revoke this WQC, as necessary, in the event new information indicates that the project activities are having a significant adverse impact on State water quality or critical fish resources.

13. A copy of this WQC letter shall be kept on the job site and readily available for reference by the Corps of Engineers, DEQ personnel, the contractor, and other appropriate state and local government inspectors.

14. This WQC is invalid if the project is operated in a manner not consistent with the project description contained in the Public Notice for certification.

15. Must comply with DSL wetland mitigation requirements.

16. DEQ is to have site access upon the day of request.

The DEQ hereby certifies that this project complies with the Clean Water Act and state water quality standards, if the above conditions are made a part of the Federal permit.

The applicant shall notify the DEQ of any change in the ownership, scope, or construction methods of the project subsequent to certification. If you have any questions, please contact Tom Rosetta (229-5845).

Sincerely,

Michael T. Llewelyn
Administrator
Water Quality Division

SCOEPA00054271

T:TR.certlint.r24

cc: Jerry Hedrick, ODSL (Salem)
Larry Potter, ODSL (Salem)
Bob Baumgartner (DEQ)
Applicant(s)_
Authorized Agent/Contractor(s)

SCOEPA00054272

Please process the permit as expediently as possible.

If you should have any questions or require further assistance, please do not hesitate to contact our office.

Sincerely,

Konrad Schweiger
Chief Executive Officer

KS/bs
Enclosures

To: File

From: Petra Mattes

Date: July 31, 1998

RE: July 29, 1998 Riverbank incident

WSC Personnel involved: Kirk Benson, Alan Heiman, Petra Mattes, Tom McCue, Dennis Netsch, Nobel Powel, Jerry Schaeffer, Cathryn Young

At 9:30 AM, Wednesday July 29, 1998 Tom McCue and myself were notified that there was a "spill" during the riverbank repair project.

Advanced American Diving, the contractor for the riverbank repair, was dredging silt from the Willamette River to be backfilled into the rock material. Apparently, a deposit of oily material was disturbed, resulting in visible sheen and oil, of an unknown quantity, on the river. Booms were immediately put into place to contain the sheen, and pads used to absorb the oil. Booms and pads were bagged and added to drop box #1 for future disposal.

Oily soil/silt were put on the riverbank. This material is being loaded into 8 lined drop boxes with covers for further analysis, characterization and disposal. See attached spreadsheet of analysis.

I contacted DEQ EMD (OARS) at 9:40 to report the incident. I talked with Betty, who gave us a case number of 98-17-92. Betty then referred the case to Mike Greenburg (229-5153, pager #237-5242). Mike is with the DEQ spill section.

At 3:00 PM I confirmed with Mike Greenburg that he does not expect a submitted report. Mike stated that DEQ currently does not consider this event a "spill", but rather the discovery of an existing problem. He has referred the case to the site assessment, cleanup division. Mike also confirmed that the Fire Marshal or local emergency response community does not need to be notified.

DEQ contacted the Coast Guard. John Murphy of the Coast Guard called me, and then came to the site with two other men from the Guard. They inspected the cleanup, and said the situation was under control, and did not have any further suggestions. The Coast Guard is not requiring a follow up report.

At 11:30 I contact EPA NRC (800-424-8802) and spoke with Ms. Reddy to inform her of the occurrence. The case number is 448107. Ms. Reddy verified that the EPA does not require a follow up report.

It has been decided that dredging will be discontinued to avoid any further disturbances. All backfill material will be hauled in.

Corrective / Follow up Actions:

1. Update Contingency Plan
2. Create "cards" with contacts and phone numbers to notify

Date: 9/1/98
Sender: Petra Mattes
To: Tom McCue
Priority: Normal
Subject: Fwd:Dredged River sediment update

Tom, in addition I have pricing from:

MDC/USA Waste
River City (transportation and box rental only) and
Romic

To submit to purchasing for price comparison's.

Forward Header

Subject: Dredged River sediment update
Author: Petra Mattes
Date: 9/1/98 10:44 AM

Hi everyone,

Thought I would let you all know the current status of the dredged river sediment.

The analytical results are complete and the material is not a hazardous waste. I faxed the analytical information to AETS / Waste Management for profiling. It will take approximately 2 - 3 weeks for approval of the waste profile.

Special thanks to Dianne for all of her assistance with the sampling and analytical!

I will keep you all apprised on the progress of this project.

ANALYTICAL COSTS

Analysis	EPA Analytical Method	Sample Container	Preservative	Turn around time	Cost	Comments
TCLP Metals (8)		16 ounce glass	None	10 days for preliminary results	$ 199	includes extraction costs
TCLP Benzene	1311/8020 or 1311/8240	16 ounce glass	None	10 days for preliminary results	$ 166	
TCLP 2,4-D	1311/8150	16 ounce glass	None	10 days for preliminary results	$ 100	
Flash point	1010	16 ounce glass	None	10 days for preliminary results	$ 45	To be conducted on a composite sample (composite of all boxes)
pH	9040	16 ounce glass	None	10 days for preliminary results	$ 12	To be conducted on a composite sample (composite of all boxes)
TCLP, entire list[1]		16 ounce glass	None	10 days for preliminary results	$ 1,163	To be conducted on a composite sample (composite of all boxes)
TPH-G	Oregon TPH-gasoline	16 ounce glass	None	10 days for preliminary results	$ 72	To be conducted on each drop box
TPH-D	418.1 modified	16 ounce glass	None	10 days for preliminary results	$ 93	To be conducted on each drop box
TPH-D clean up fee		16 ounce glass	None	10 days for preliminary results	$ 10	To be conducted on each drop box (if necessary)

1. Includes TCLP Metals, TCLP Benzene and TCLP 2,4-D

Rec'd - 8/31/98 /[illegible]

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

BOTHELL ▪ (425) 420-9200 ▪ FAX 420-9210
SPOKANE ▪ (509) 924-9200 ▪ FAX 924-9290
PORTLAND ▪ (503) 906-9200 ▪ FAX 906-9210

Wacker Siltronics Corporation	Project:	None	Sampled:	8/11/98
7200 N.W. Front	Project Number:	na	Received:	8/11/98
Portland, OR 97210	Project Manager:	Dianne Mullan	Reported:	8/26/98 09:06

ANALYTICAL REPORT FOR SAMPLES:

Sample Description	Laboratory Sample Number	Sample Matrix	Date Sampled
98-99	P808197-01	Soil	8/11/98
98-100	P808197-02	Soil	8/11/98
98-101	P808197-03	Soil	8/11/98
98-102	P808197-04	Soil	8/11/98
98-103	P808197-05	Soil	8/11/98
98-104	P808197-06	Soil	8/11/98
98-105	P808197-07	Soil	8/11/98
98-106	P808197-08	Soil	8/11/98

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

BOTHELL ▪ (425) 420-9200 ▪ FAX 420-9210
SPOKANE ▪ (509) 924-9200 ▪ FAX 924-9290
PORTLAND ▪ (503) 906-9200 ▪ FAX 906-9210

Wacker Siltronics Corporation	Project:	None	Sampled:	8/11/98
7200 N.W. Front	Project Number:	na	Received:	8/11/98
Portland, OR 97210	Project Manager:	Dianne Mullan	Reported:	8/26/98 09:06

Gasoline Hydrocarbons per NW TPH-Gx Method
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
98-99			**P808197-01**				**Soil**	
Gasoline Range Hydrocarbons	0880270	8/12/98	8/14/98		16.0	**69.0**	mg/kg dry	
Surrogate: a,a,a-TFT	"	"	"	*50.0-150*		*86.4*	%	
98-100			**P808197-02**				**Soil**	
Gasoline Range Hydrocarbons	0880270	8/12/98	8/14/98		4.00	**8.67**	mg/kg dry	
Surrogate: a,a,a-TFT	"	"	"	*50.0-150*		*94.0*	%	
98-101			**P808197-03**				**Soil**	
Gasoline Range Hydrocarbons	0880270	8/12/98	8/14/98		4.00	**50.0**	mg/kg dry	
Surrogate: a,a,a-TFT	"	"	"	*50.0-150*		*85.9*	%	
98-102			**P808197-04**				**Soil**	
Gasoline Range Hydrocarbons	0880270	8/12/98	8/14/98		4.00	**44.4**	mg/kg dry	
Surrogate: a,a,a-TFT	"	"	"	*50.0-150*		*94.2*	%	
98-103			**P808197-05**				**Soil**	
Gasoline Range Hydrocarbons	0880270	8/12/98	8/14/98		4.00	**42.2**	mg/kg dry	
Surrogate: a,a,a-TFT	"	"	"	*50.0-150*		*90.4*	%	
98-104			**P808197-06**				**Soil**	
Gasoline Range Hydrocarbons	0880270	8/12/98	8/14/98		4.00	**15.6**	mg/kg dry	
Surrogate: a,a,a-TFT	"	"	"	*50.0-150*		*102*	%	
98-105			**P808197-07**				**Soil**	
Gasoline Range Hydrocarbons	0880270	8/12/98	8/14/98		4.00	**7.49**	mg/kg dry	
Surrogate: a,a,a-TFT	"	"	"	*50.0-150*		*99.4*	%	
98-106			**P808197-08**				**Soil**	
Gasoline Range Hydrocarbons	0880270	8/12/98	8/14/98		4.00	ND	mg/kg dry	
Surrogate: a,a,a-TFT	"	"	"	*50.0-150*		*99.2*	%	

**Refer to end of report for text of notes and definitions.*

MS

Mary A. Fritzmann Smith, Project Manager

18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508
East 11115 Montgomery, Suite B, Spokane, WA 99206-4776
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7122

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BOTHELL ▪ (425) 420-9200 ▪ FAX 420-9210
SPOKANE ▪ (509) 924-9200 ▪ FAX 924-9290
PORTLAND ▪ (503) 906-9200 ▪ FAX 906-9210

Wacker Siltronics Corporation	Project:	None	Sampled: 8/11/98
7200 N.W. Front	Project Number:	na	Received: 8/11/98
Portland, OR 97210	Project Manager:	Dianne Mullan	Reported: 8/26/98 09:06

Diesel and Heavy Range Hydrocarbons per NWTPH-Dx Method
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
98-99			**P808197-01**				**Soil**	
Diesel Range Organics	0880368	8/17/98	8/18/98		50.0	**5810**	mg/kg dry	1,2,3
Heavy Oil Range Hydrocarbons	"	"	"		100	**2970**	"	1,2,3
Surrogate: 1-Chlorooctadecane	"	"	"	*50.0-150*		*NR*	%	*4*
98-100			**P808197-02**				**Soil**	
Diesel Range Organics	0880368	8/17/98	8/18/98		50.0	**399**	mg/kg dry	1,2,3
Heavy Oil Range Hydrocarbons	"	"	"		100	**293**	"	1,2,3
Surrogate: 1-Chlorooctadecane	"	"	"	*50.0-150*		*NR*	%	
98-101			**P808197-03**				**Soil**	
Diesel Range Organics	0880368	8/17/98	8/18/98		50.0	**948**	mg/kg dry	1,2,3
Heavy Oil Range Hydrocarbons	"	"	"		100	**625**	"	1,2,3
Surrogate: 1-Chlorooctadecane	"	"	"	*50.0-150*		*NR*	%	*4*
98-102			**P808197-04**				**Soil**	
Diesel Range Organics	0880368	8/17/98	8/18/98		50.0	**1820**	mg/kg dry	1,2,3
Heavy Oil Range Hydrocarbons	"	"	"		100	**985**	"	1,2,3
Surrogate: 1-Chlorooctadecane	"	"	"	*50.0-150*		*NR*	%	*4*
98-103			**P808197-05**				**Soil**	
Diesel Range Organics	0880368	8/17/98	8/18/98		50.0	**1140**	mg/kg dry	1,2,3
Heavy Oil Range Hydrocarbons	"	"	"		100	**730**	"	1,2,3
Surrogate: 1-Chlorooctadecane	"	"	"	*50.0-150*		*NR*	%	*4*
98-104			**P808197-06**				**Soil**	
Diesel Range Organics	0880368	8/17/98	8/18/98		50.0	**1030**	mg/kg dry	1,2,3
Heavy Oil Range Hydrocarbons	"	"	"		100	**586**	"	1,2,3
Surrogate: 1-Chlorooctadecane	"	"	"	*50.0-150*		*NR*	%	*4*
98-105			**P808197-07**				**Soil**	
Diesel Range Organics	0880368	8/17/98	8/18/98		50.0	**864**	mg/kg dry	1,2,3
Heavy Oil Range Hydrocarbons	"	"	"		100	**558**	"	1,2,3
Surrogate: 1-Chlorooctadecane	"	"	"	*50.0-150*		*NR*	%	*4*
98-106			**P808197-08**				**Soil**	
Diesel Range Organics	0880368	8/17/98	8/18/98		50.0	**424**	mg/kg dry	1,2,3
Heavy Oil Range Hydrocarbons	"	"	"		100	**338**	"	1,2,3
Surrogate: 1-Chlorooctadecane	"	"	"	*50.0-150*		*NR*	%	*4*

North Creek Analytical, Inc.

**Refer to end of report for text of notes and definitions.*

MJS

Mary A. Fritzmann Smith, Project Manager

18939 120th Avenue N.E. Suite 101, Bothell, WA 98011-9508
East 11115 Montgomery, Suite B, Spokane, WA 99206-4776
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132

SCOEPA00054279

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Wacker Siltronics Corporation	Project:	None	Sampled:	8/11/98
7200 N.W. Front	Project Number:	na	Received:	8/11/98
Portland, OR 97210	Project Manager:	Dianne Mullan	Reported:	8/26/98 09:06

Dry Weight Determination
North Creek Analytical - Portland

Sample Name	Lab ID	Matrix	Result	Units
98-99	P808197-01	Soil	89.2	%
98-100	P808197-02	Soil	88.3	%
98-101	P808197-03	Soil	79.9	%
98-102	P808197-04	Soil	85.1	%
98-103	P808197-05	Soil	80.0	%
98-104	P808197-06	Soil	92.7	%
98-105	P808197-07	Soil	94.9	%
98-106	P808197-08	Soil	94.1	%

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Wacker Siltronics Corporation	Project:	None	Sampled: 8/11/98
7200 N.W. Front	Project Number:	na	Received: 8/11/98
Portland, OR 97210	Project Manager:	Dianne Mullan	Reported: 8/26/98 09:06

Gasoline Hydrocarbons per NW TPH-Gx Method/Quality Control
North Creek Analytical - Portland

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0880270	**Date Prepared: 8/12/98**					**Extraction Method: EPA 5030**				
Blank	**0880270-BLK1**									
Gasoline Range Hydrocarbons	8/13/98			**ND**	mg/kg dry	**4.00**				
Surrogate: a,a,a-TFT	"	*5.00*		*4.13*	"	*50.0-150*	*82.6*			
LCS	**0880270-BS1**									
Gasoline Range Hydrocarbons	8/13/98	62.5		44.5	mg/kg dry	50.0-150	71.2			
Surrogate: a,a,a-TFT	"	*5.00*		*4.33*	"	*50.0-150*	*86.6*			
Duplicate	**0880270-DUP1**		**P808197-01**							
Gasoline Range Hydrocarbons	8/14/98		69.0	56.3	mg/kg dry			50.0	**20.3**	
Surrogate: a,a,a-TFT	*8/13/98*	*5.60*		*6.57*	"	*50.0-150*	*117*			

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Wacker Siltronics Corporation	Project:	None	Sampled: 8/11/98
7200 N.W. Front	Project Number:	na	Received: 8/11/98
Portland, OR 97210	Project Manager:	Dianne Mullan	Reported: 8/26/98 09:06

Diesel and Heavy Range Hydrocarbons per NWTPH-Dx Method/Quality Control
North Creek Analytical - Portland

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0880368	**Date Prepared: 8/17/98**					**Extraction Method: TPH-D Extraction**				
Blank	**0880368-BLK1**									
Diesel Range Organics	8/17/98			**ND**	mg/kg dry	**25.0**				
Heavy Oil Range Hydrocarbons	"			**ND**	"	**50.0**				
Surrogate: 1-Chlorooctadecane	"	*5.00*		*5.10*	"	*50.0-150*	*102*			
LCS	**0880368-BS1**									
Diesel Range Organics	8/17/98	125		111	mg/kg dry	50.0-150	88.8			
Surrogate: 1-Chlorooctadecane	"	*5.00*		*4.81*	"	*50.0-150*	*96.2*			
Duplicate	**0880368-DUP1**		**P808197-01**							
Diesel Range Organics	8/18/98		5810	3000	mg/kg dry			50.0	**63.8**	5
Heavy Oil Range Hydrocarbons	"		2970	1390	"			50.0	**72.5**	5
Surrogate: 1-Chlorooctadecane	"	*5.60*		*ND*	"	*50.0-150*	*NR*			*4*
Duplicate	**0880368-DUP2**		**P808197-04**							
Diesel Range Organics	8/18/98		1820	1190	mg/kg dry			50.0	**41.9**	
Heavy Oil Range Hydrocarbons	"		985	676	"			50.0	**37.2**	
Surrogate: 1-Chlorooctadecane	"	*5.88*		*ND*	"	*50.0-150*	*NR*			*4*
Duplicate	**0880368-DUP3**		**P808197-08**							
Diesel Range Organics	8/18/98		424	210	mg/kg dry			50.0	**67.5**	5
Heavy Oil Range Hydrocarbons	"		338	156	"			50.0	**73.7**	5
Surrogate: 1-Chlorooctadecane	"	*5.31*		*ND*	"	*50.0-150*	*NR*			*4*

North Creek Analytical, Inc.

**Refer to end of report for text of notes and definitions.*

Mary A. Fritzmann Smith, Project Manager

18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508
East 11115 Montgomery, Suite B, Spokane, WA 99206-4776
9405 S.E. [illegible] Avenue, Beaverton, OR 97008-7132

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PORTLAND ▪ (503) 906-9200 ▪ FAX 906-9210

Wacker Siltronics Corporation	Project:	None	Sampled: 8/11/98
7200 N.W. Front	Project Number:	na	Received: 8/11/98
Portland, OR 97210	Project Manager:	Dianne Mullan	Reported: 8/26/98 09:06

Notes and Definitions

#	Note
1	Detected hydrocarbons do not have pattern and range consistent with petroleum hydrocarbons.
2	Sample extract was cleaned-up to remove suspect biogenic interference.
3	Reporting limits raised due to dilution necessary for analysis.
4	The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample.
5	The RPD is above the control limit due to a non-homogeneous sample matrix.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
Recov.	Recovery
RPD	Relative Percent Difference

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Environmental Laboratory Services

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

Work Order # 8081.97

REPORT TO: Wacker Siltronic
ATTENTION: Dianne Mullan
ADDRESS: 7200 N.W. Front Ave
Portland, OR
PHONE: 219-7274 FAX: 417-4144
PROJECT NAME:
PROJECT NUMBER:
SAMPLED BY: Dianne Mullan, Steve Bell

INVOICE TO: Wacker Siltronic
ATTENTION: Accts Payable
ADDRESS: same
P.O. NUMBER: * 1 & 2
NCA QUOTE #:

TURNAROUND REQUEST in Business Days *
Organic & Inorganic Analyses: 10 (Standard) | 7 | 5 | 4 | 3 | 2 | 1 | Same Day
Fuels & Hydrocarbon Analyses: X (Standard) | 3-4 | 2 | 1 | Same Day
OTHER Specify:
* Turnaround Requests less than standard may incur Rush Charges.

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	NCA SAMPLE ID (Laboratory Use Only)	Analysis Request: TPH-D NWTPH-Dx 418.1 mod.	TPH-G NWTPH-Gx	MATRIX (W, S, A, O)	# OF CONTAINERS	COMMENTS
1.	98-99	8/11/98 0800		X	X	S	1	
2	98-100			X	X	S	1	
3	98-101			X	X	S	1	
4	98-102			X	X	S	1	
5	98-103			X	X	S	1	
6	98-104			X	X	S	1	
7	98-105			X	X	S	1	
8.	98-106	↓		X	X	S	1	
9								
10.								

RELINQUISHED BY (Signature): Dianne Mullan DATE: 8/11/98
PRINT NAME: Dianne Mullan FIRM: Wacker TIME: 1500
RELINQUISHED BY (Signature): DATE: 8-11-98
PRINT NAME: Amy Stangler FIRM: NCA TIME: 1800

RECEIVED BY (Signature): DATE: 8-11-98
PRINT NAME: Amy Stangler FIRM: NCA TIME: 1500
RECEIVED BY (Signature): DATE:
PRINT NAME: FIRM: TIME:

ADDITIONAL REMARKS: * 1) Please use P.O. # 210162 with the extention of Cost Center - 59500-620-056

PAGE 1 OF 1

COC Rev 8, 1/99

SCOEPA00054284

Rec'd: Aug 21, 1998 DM

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Wacker Siltronics Corporation	Project:	98-93	Sampled:	8/4/98
7200 N.W. Front	Project Number:	na	Received:	8/4/98
Portland, OR 97210	Project Manager:	Dianne Mullan	Reported:	8/17/98 19:00

ANALYTICAL REPORT FOR SAMPLES:

Sample Description	Laboratory Sample Number	Sample Matrix	Date Sampled
98-93	P808046-01	Soil	8/4/98

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Wacker Siltronics Corporation	Project:	98-93	Sampled:	8/4/98
7200 N.W. Front	Project Number:	na	Received:	8/4/98
Portland, OR 97210	Project Manager:	Dianne Mullan	Reported:	8/17/98 19:00

TCLP Metals per EPA 1311/6000/7000 Series Methods
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
98-93			**P808046-01**				**Soil**	
Arsenic	0880109	8/4/98	8/8/98	EPA 6010A	0.500	ND	mg/l	
Barium	"	"	8/6/98	EPA 6010A	0.500	**0.562**	"	
Cadmium	"	"	8/8/98	EPA 6010A	0.0100	ND	"	
Chromium	"	"	"	EPA 6010A	0.0100	ND	"	
Lead	"	"	8/6/98	EPA 6010A	0.200	ND	"	
Selenium	"	"	"	EPA 6010A	0.250	ND	"	
Silver	"	"	8/8/98	EPA 6010A	0.0100	ND	"	
Mercury	0880166	8/10/98	8/10/98	EPA 7470A	0.00400	ND	"	

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Wacker Siltronics Corporation	Project:	98-93	Sampled:	8/4/98
7200 N.W. Front	Project Number:	na	Received:	8/4/98
Portland, OR 97210	Project Manager:	Dianne Mullan	Reported:	8/17/98 19:00

TCLP Pesticides per EPA Method 1311/8081
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
98-93			**P808046-01**				**Soil**	
gamma-BHC (Lindane)	0880105	8/6/98	8/6/98		0.000400	ND	mg/l	
Chlordane (tech)	"	"	"		0.00200	ND	"	
Endrin	"	"	"		0.000400	ND	"	
Heptachlor	"	"	"		0.000400	ND	"	
Heptachlor epoxide	"	"	"		0.000400	ND	"	
Methoxychlor	"	"	"		0.000400	ND	"	
Toxaphene	"	"	"		0.0200	ND	"	
Surrogate: 2,4,5,6-Tetrachloro-m-xylene	"	"	"	*40.0-130*		*101*	*%*	
Surrogate: Decachlorobiphenyl	"	"	"	*50.0-150*		*104*	"	

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Wacker Siltronics Corporation	Project:	98-93	Sampled: 8/4/98
7200 N.W. Front	Project Number:	na	Received: 8/4/98
Portland, OR 97210	Project Manager:	Dianne Mullan	Reported: 8/17/98 19:00

TCLP Volatile Organic Compounds per EPA Method 1311/8240
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
98-93			**P808046-01**				**Soil**	
Benzene	0880110	8/6/98	8/7/98		0.0200	ND	mg/l	
Carbon tetrachloride	"	"	"		0.0200	ND	"	
Chlorobenzene	"	"	"		0.0200	ND	"	
Chloroform	"	"	"		0.0200	ND	"	
1,4-Dichlorobenzene	"	"	"		0.0200	ND	"	
1,2-Dichloroethane	"	"	"		0.0200	ND	"	
1,1-Dichloroethene	"	"	"		0.0200	ND	"	
Methyl ethyl ketone	"	"	"		0.250	ND	"	
Tetrachloroethene	"	"	"		0.0200	ND	"	
Trichloroethene	"	"	"		0.0200	ND	"	
Vinyl chloride	"	"	"		0.0200	ND	"	
Surrogate: 4-BFB	"	"	"	*75.0-130*		*106*	*%*	
Surrogate: Dibromofluoromethane	"	"	"	*75.0-130*		*97.0*	"	
Surrogate: Toluene-d8	"	"	"	*75.0-130*		*97.5*	"	

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Wacker Siltronics Corporation	Project:	98-93	Sampled:	8/4/98
7200 N.W. Front	Project Number:	na	Received:	8/4/98
Portland, OR 97210	Project Manager:	Dianne Mullan	Reported:	8/17/98 19:00

TCLP Semivolatiles per EPA Method 1311/8270
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
98-93			**P808046-01**				**Soil**	
1,4-Dichlorobenzene	0880093	8/5/98	8/6/98		0.0500	ND	mg/l	
2,4-Dinitrotoluene	"	"	"		0.0500	ND	"	
Hexachlorobenzene	"	"	"		0.0500	ND	"	
Hexachlorobutadiene	"	"	"		0.0500	ND	"	
Hexachloroethane	"	"	"		0.0500	ND	"	
Nitrobenzene	"	"	"		0.0500	ND	"	
Pentachlorophenol	"	"	"		0.100	ND	"	
Pyridine	"	"	"		0.200	ND	"	
2,4,5-Trichlorophenol	"	"	"		0.0500	ND	"	
Total Cresols	"	"	"		0.0500	ND	"	
2,4,6-Trichlorophenol	"	"	"		0.0500	ND	"	
Surrogate: 2-Fluorophenol	"	"	"	*10.0-150*		*67.6*	*%*	
Surrogate: Phenol-d6	"	"	"	*10.0-150*		*59.7*	"	
Surrogate: 2,4,6-Tribromophenol	"	"	"	*10.0-150*		*64.5*	"	
Surrogate: Nitrobenzene-d5	"	"	"	*10.0-150*		*59.5*	"	
Surrogate: 2-Fluorobiphenyl	"	"	"	*10.0-150*		*77.2*	"	
Surrogate: p-Terphenyl-d14	"	"	"	*10.0-150*		*85.5*	"	

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Wacker Siltronics Corporation	Project:	98-93	Sampled: 8/4/98
7200 N.W. Front	Project Number:	na	Received: 8/4/98
Portland, OR 97210	Project Manager:	Dianne Mullan	Reported: 8/17/98 19:00

Conventional Chemistry Parameters per APHA/EPA Methods
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
98-93			**P808046-01**				**Soil**	
pH	0880134	8/7/98	8/7/98	EPA 9045B		**6.00**	pH units	

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Wacker Siltronics Corporation	Project:	98-93	Sampled: 8/4/98
7200 N.W. Front	Project Number:	na	Received: 8/4/98
Portland, OR 97210	Project Manager:	Dianne Mullan	Reported: 8/17/98 19:00

Physical Parameters per APHA/ASTM/EPA Methods
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
98-93			**P808046-01**				**Soil**	
Flashpoint	0880209	8/11/98	8/11/98	EPA 1010	150	ND	°F	

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Wacker Siltronics Corporation	Project:	98-93	Sampled: 8/4/98
7200 N.W. Front	Project Number:	na	Received: 8/4/98
Portland, OR 97210	Project Manager:	Dianne Mullan	Reported: 8/17/98 19:00

TCLP Herbicides by EPA Method 1311/8151A
North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
98-93			**P808046-01**				**Soil**	
2,4-D	0880106	8/5/98	8/11/98		0.0166	ND	mg/l	
2,4,5-TP (Silvex)	"	"	"		0.0177	ND	"	
Surrogate: 2,4-DCAA	"	"	"	*24.0-135*		*89.6*	*%*	

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Wacker Siltronics Corporation	Project:	98-93	Sampled: 8/4/98
7200 N.W. Front	Project Number:	na	Received: 8/4/98
Portland, OR 97210	Project Manager:	Dianne Mullan	Reported: 8/17/98 19:00

TCLP Metals per EPA 1311/6000/7000 Series Methods/Quality Control
North Creek Analytical - Portland

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0880109	**Date Prepared: 8/4/98**					**Extraction Method: EPA 1311/3010**				
Blank	**0880109-BLK1**									
Arsenic	8/5/98			**ND**	mg/l	**0.500**				
Barium	"			**ND**	"	**0.500**				
Cadmium	"			**ND**	"	**0.0100**				
Chromium	"			**ND**	"	**0.0100**				
Lead	"			**ND**	"	**0.200**				
Selenium	8/7/98			**ND**	"	**0.250**				
Silver	8/5/98			**ND**	"	**0.0100**				
LCS	**0880109-BS1**									
Arsenic	8/5/98	5.00		4.81	mg/l	75.0-125	96.2			
Barium	8/6/98	10.0		9.15	"	75.0-125	91.5			
Cadmium	8/5/98	1.00		0.955	"	75.0-125	95.5			
Chromium	"	5.00		4.63	"	75.0-125	92.6			
Lead	8/6/98	5.00		4.66	"	75.0-125	93.2			
Selenium	"	2.00		2.08	"	75.0-125	104			
Silver	8/5/98	1.00		0.882	"	75.0-125	88.2			
Matrix Spike	**0880109-MS1**		**P808046-01**							
Arsenic	8/5/98	5.00	ND	4.55	mg/l	50.0-150	**91.0**			
Barium	8/6/98	10.0	0.562	9.53	"	50.0-150	**89.7**			
Cadmium	8/5/98	1.00	ND	0.925	"	50.0-150	**92.5**			
Chromium	"	5.00	ND	4.62	"	50.0-150	**92.4**			
Lead	8/6/98	5.00	ND	4.77	"	50.0-150	**95.4**			
Selenium	"	2.00	ND	1.94	"	50.0-150	**97.0**			
Silver	8/5/98	1.00	ND	0.875	"	50.0-150	**87.5**			
Batch: 0880166	**Date Prepared: 8/10/98**					**Extraction Method: Metals**				
Blank	**0880166-BLK1**									
Mercury	8/10/98			**ND**	mg/l	**0.000200**				
LCS	**0880166-BS1**									
Mercury	8/10/98	0.00500		0.00540	mg/l	75.0-125	108			
Matrix Spike	**0880166-MS1**		**P808046-01**							
Mercury	8/10/98	0.100	ND	0.114	mg/l	50.0-150	**114**			

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**Refer to end of report for text of notes and definitions.*

Mary A. Fritzmann Smith, Project Manager

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Wacker Siltronics Corporation	Project:	98-93	Sampled: 8/4/98
7200 N.W. Front	Project Number:	na	Received: 8/4/98
Portland, OR 97210	Project Manager:	Dianne Mullan	Reported: 8/17/98 19:00

TCLP Pesticides per EPA Method 1311/8081/Quality Control
North Creek Analytical - Portland

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0880105	**Date Prepared: 8/6/98**					**Extraction Method: EPA 1311/3510**				
Blank	**0880105-BLK1**									
gamma-BHC (Lindane)	8/6/98			**ND**	mg/l	**0.000400**				
Chlordane (tech)	"			**ND**	"	**0.00200**				
Endrin	"			**ND**	"	**0.000400**				
Heptachlor	"			**ND**	"	**0.000400**				
Heptachlor epoxide	"			**ND**	"	**0.000400**				
Methoxychlor	"			**ND**	"	**0.000400**				
Toxaphene	"			**ND**	"	**0.0200**				
Surrogate: 2,4,5,6-Tetrachloro-m-xylene	"	*0.00200*		*0.00169*	"	*40.0-130*	*84.5*			
Surrogate: Decachlorobiphenyl	"	*0.00200*		*0.00214*	"	*50.0-150*	*107*			
LCS	**0880105-BS1**									
gamma-BHC (Lindane)	8/6/98	0.00200		0.00187	mg/l	50.0-150	93.5			
Endrin	"	0.00200		0.00185	"	50.0-150	92.5			
Heptachlor	"	0.00200		0.00187	"	50.0-150	93.5			
Heptachlor epoxide	"	0.00200		0.00190	"	50.0-150	95.0			
Methoxychlor	"	0.00200		0.00187	"	50.0-150	93.5			
Surrogate: 2,4,5,6-Tetrachloro-m-xylene	"	*0.00200*		*0.00174*	"	*40.0-130*	*87.0*			
Surrogate: Decachlorobiphenyl	"	*0.00200*		*0.00210*	"	*50.0-150*	*105*			
LCS	**0880105-BS2**									
Chlordane (tech)	8/6/98	0.0200		0.0199	mg/l	50.0-150	99.5			
Surrogate: 2,4,5,6-Tetrachloro-m-xylene	"	*0.00200*		*0.00161*	"	*40.0-130*	*80.5*			
Surrogate: Decachlorobiphenyl	"	*0.00200*		*0.00212*	"	*50.0-150*	*106*			
Matrix Spike	**0880105-MS1**		**P808046-01**							
gamma-BHC (Lindane)	8/6/98	0.00200	ND	0.00192	mg/l	50.0-150	**96.0**			
Endrin	"	0.00200	ND	0.00194	"	50.0-150	**97.0**			
Heptachlor	"	0.00200	ND	0.00180	"	50.0-150	**90.0**			
Heptachlor epoxide	"	0.00200	ND	0.00196	"	50.0-150	**98.0**			
Methoxychlor	"	0.00200	ND	0.00197	"	50.0-150	**98.5**			
Surrogate: 2,4,5,6-Tetrachloro-m-xylene	"	*0.00200*		*0.00190*	"	*40.0-130*	*95.0*			
Surrogate: Decachlorobiphenyl	"	*0.00200*		*0.00202*	"	*50.0-150*	*101*			

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Wacker Siltronics Corporation	Project:	98-93	Sampled: 8/4/98
7200 N.W. Front	Project Number:	na	Received: 8/4/98
Portland, OR 97210	Project Manager:	Dianne Mullan	Reported: 8/17/98 19:00

TCLP Volatile Organic Compounds per EPA Method 1311/8240/Quality Control
North Creek Analytical - Portland

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0880110	**Date Prepared: 8/6/98**					**Extraction Method: EPA 1311/5030**				
Blank	0880110-BLK1									
Benzene	8/7/98			ND	mg/l	0.0200				
Carbon tetrachloride	"			ND	"	0.0200				
Chlorobenzene	"			ND	"	0.0200				
Chloroform	"			ND	"	0.0200				
1,4-Dichlorobenzene	"			ND	"	0.0200				
1,2-Dichloroethane	"			ND	"	0.0200				
1,1-Dichloroethene	"			ND	"	0.0200				
Methyl ethyl ketone	"			ND	"	0.250				
Tetrachloroethene	"			ND	"	0.0200				
Trichloroethene	"			ND	"	0.0200				
Vinyl chloride	"			ND	"	0.0200				
Surrogate: 4-BFB	"	*0.0200*		*0.0214*	"	*75.0-130*	*107*			
Surrogate: Dibromofluoromethane	"	*0.0200*		*0.0195*	"	*75.0-130*	*97.5*			
Surrogate: Toluene-d8	"	*0.0200*		*0.0198*	"	*75.0-130*	*99.0*			
LCS	0880110-BS1									
Benzene	8/7/98	0.250		0.270	mg/l	66.0-142	108			
Carbon tetrachloride	"	0.250		0.196	"	50.0-150	78.4			
Chlorobenzene	"	0.250		0.264	"	60.0-133	106			
Chloroform	"	0.250		0.267	"	50.0-150	107			
1,4-Dichlorobenzene	"	0.250		0.298	"	50.0-150	119			
1,2-Dichloroethane	"	0.250		0.287	"	50.0-150	115			
1,1-Dichloroethene	"	0.250		0.264	"	59.0-172	106			
Methyl ethyl ketone	"	0.250		ND	"	40.0-180	NR			1
Tetrachloroethene	"	0.250		0.238	"	50.0-150	95.2			
Trichloroethene	"	0.250		0.262	"	62.0-137	105			
Vinyl chloride	"	0.250		0.191	"	40.0-180	76.4			
Surrogate: 4-BFB	"	*0.0200*		*0.0212*	"	*75.0-130*	*106*			
Surrogate: Dibromofluoromethane	"	*0.0200*		*0.0192*	"	*75.0-130*	*96.0*			
Surrogate: Toluene-d8	"	*0.0200*		*0.0194*	"	*75.0-130*	*97.0*			
Matrix Spike	0880110-MS1		P807620-01							
Benzene	8/7/98	0.250	ND	0.269	mg/l	66.0-142	**108**			
Carbon tetrachloride	"	0.250	ND	0.189	"	50.0-150	**75.6**			
Chlorobenzene	"	0.250	ND	0.262	"	60.0-133	**105**			
Chloroform	"	0.250	ND	0.268	"	50.0-150	**107**			
1,4-Dichlorobenzene	"	0.250	ND	0.287	"	50.0-150	**115**			

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Mary A. Fritzmann Smith, Project Manager

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Wacker Siltronics Corporation	Project:	98-93	Sampled: 8/4/98
7200 N.W. Front	Project Number:	na	Received: 8/4/98
Portland, OR 97210	Project Manager:	Dianne Mullan	Reported: 8/17/98 19:00

TCLP Volatile Organic Compounds per EPA Method 1311/8240/Quality Control
North Creek Analytical - Portland

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Matrix Spike (continued)	**0880110-MS1**		**P807620-01**							
1,2-Dichloroethane	8/7/98	0.250	ND	0.290	mg/l	50.0-150	**116**			
1,1-Dichloroethene	"	0.250	ND	0.264	"	59.0-172	**106**			
Methyl ethyl ketone	"	0.250	ND	ND	"	40.0-180	**NR**			1
Tetrachloroethene	"	0.250	ND	0.222	"	50.0-150	**88.8**			
Trichloroethene	"	0.250	ND	0.259	"	62.0-137	**104**			
Vinyl chloride	"	0.250	ND	0.194	"	40.0-180	**77.6**			
Surrogate: 4-BFB	"	*0.0200*		*0.0216*	"	*75.0-130*	*108*			
Surrogate: Dibromofluoromethane	"	*0.0200*		*0.0197*	"	*75.0-130*	*98.5*			
Surrogate: Toluene-d8	"	*0.0200*		*0.0194*	"	*75.0-130*	*97.0*			
Matrix Spike Dup	**0880110-MSD1**		**P807620-01**							
Benzene	8/7/98	0.250	ND	0.278	mg/l	66.0-142	**111**	21.0	**2.74**	
Carbon tetrachloride	"	0.250	ND	0.200	"	50.0-150	**80.0**	40.0	**5.66**	
Chlorobenzene	"	0.250	ND	0.273	"	60.0-133	**109**	21.0	**3.74**	
Chloroform	"	0.250	ND	0.281	"	50.0-150	**112**	40.0	**4.57**	
1,4-Dichlorobenzene	"	0.250	ND	0.309	"	50.0-150	**124**	40.0	**7.53**	
1,2-Dichloroethane	"	0.250	ND	0.297	"	50.0-150	**119**	40.0	**2.55**	
1,1-Dichloroethene	"	0.250	ND	0.270	"	59.0-172	**108**	22.0	**1.87**	
Methyl ethyl ketone	"	0.250	ND	ND	"	40.0-180	**NR**	50.0		1
Tetrachloroethene	"	0.250	ND	0.242	"	50.0-150	**96.8**	50.0	**8.62**	
Trichloroethene	"	0.250	ND	0.272	"	62.0-137	**109**	24.0	**4.69**	
Vinyl chloride	"	0.250	ND	0.195	"	40.0-180	**78.0**	50.0	**0.514**	
Surrogate: 4-BFB	"	*0.0200*		*0.0219*	"	*75.0-130*	*110*			
Surrogate: Dibromofluoromethane	"	*0.0200*		*0.0194*	"	*75.0-130*	*97.0*			
Surrogate: Toluene-d8	"	*0.0200*		*0.0197*	"	*75.0-130*	*98.5*			

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Wacker Siltronics Corporation	Project:	98-93	Sampled: 8/4/98
7200 N.W. Front	Project Number:	na	Received: 8/4/98
Portland, OR 97210	Project Manager:	Dianne Mullan	Reported: 8/17/98 19:00

TCLP Semivolatiles per EPA Method 1311/8270/Quality Control
North Creek Analytical - Portland

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0880093	**Date Prepared: 8/5/98**					**Extraction Method: EPA 1311/3510**				
Blank	**0880093-BLK1**									
1,4-Dichlorobenzene	8/6/98			**ND**	mg/l	**0.0500**				
2,4-Dinitrotoluene	"			**ND**	"	**0.0500**				
Hexachlorobenzene	"			**ND**	"	**0.0500**				
Hexachlorobutadiene	"			**ND**	"	**0.0500**				
Hexachloroethane	"			**ND**	"	**0.0500**				
Nitrobenzene	"			**ND**	"	**0.0500**				
Pentachlorophenol	"			**ND**	"	**0.100**				
Pyridine	"			**ND**	"	**0.200**				
2,4,5-Trichlorophenol	"			**ND**	"	**0.0500**				
Total Cresols	"			**ND**	"	**0.0500**				
2,4,6-Trichlorophenol	"			**ND**	"	**0.0500**				
Surrogate: 2-Fluorophenol	"	*0.800*		*0.525*	"	*10.0-150*	*65.6*			
Surrogate: Phenol-d6	"	*0.800*		*0.442*	"	*10.0-150*	*55.2*			
Surrogate: 2,4,6-Tribromophenol	"	*0.800*		*0.514*	"	*10.0-150*	*64.2*			
Surrogate: Nitrobenzene-d5	"	*0.400*		*0.234*	"	*10.0-150*	*58.5*			
Surrogate: 2-Fluorobiphenyl	"	*0.400*		*0.282*	"	*10.0-150*	*70.5*			
Surrogate: p-Terphenyl-d14	"	*0.400*		*0.398*	"	*10.0-150*	*99.5*			
LCS	**0880093-BS1**									
1,4-Dichlorobenzene	8/6/98	0.400		0.300	mg/l	10.0-150	75.0			
2,4-Dinitrotoluene	"	0.400		0.404	"	10.0-150	101			
Hexachlorobenzene	"	0.400		0.388	"	10.0-150	97.0			
Hexachlorobutadiene	"	0.400		0.333	"	10.0-150	83.2			
Hexachloroethane	"	0.400		0.258	"	10.0-150	64.5			
Nitrobenzene	"	0.400		0.301	"	10.0-150	75.2			
Pentachlorophenol	"	0.400		0.393	"	10.0-150	98.3			
Pyridine	"	0.400		0.444	"	10.0-150	111			
2,4,5-Trichlorophenol	"	0.400		0.437	"	10.0-150	109			
Total Cresols	"	1.20		1.07	"	10.0-150	89.2			
2,4,6-Trichlorophenol	"	0.400		0.411	"	10.0-150	103			
Surrogate: 2-Fluorophenol	"	*0.800*		*0.579*	"	*10.0-150*	*72.4*			
Surrogate: Phenol-d6	"	*0.800*		*0.493*	"	*10.0-150*	*61.6*			
Surrogate: 2,4,6-Tribromophenol	"	*0.800*		*0.555*	"	*10.0-150*	*69.4*			
Surrogate: Nitrobenzene-d5	"	*0.400*		*0.258*	"	*10.0-150*	*64.5*			
Surrogate: 2-Fluorobiphenyl	"	*0.400*		*0.284*	"	*10.0-150*	*71.0*			
Surrogate: p-Terphenyl-d14	"	*0.400*		*0.376*	"	*10.0-150*	*94.0*			

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Wacker Siltronics Corporation	Project:	98-93	Sampled: 8/4/98
7200 N.W. Front	Project Number:	na	Received: 8/4/98
Portland, OR 97210	Project Manager:	Dianne Mullan	Reported: 8/17/98 19:00

TCLP Semivolatiles per EPA Method 1311/8270/Quality Control
North Creek Analytical - Portland

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Matrix Spike	**0880093-MS1**		**P808046-01**							
1,4-Dichlorobenzene	8/6/98	0.400	ND	0.357	mg/l	10.0-150	**89.2**			
2,4-Dinitrotoluene	"	0.400	ND	0.426	"	10.0-150	**106**			
Hexachlorobenzene	"	0.400	ND	0.423	"	10.0-150	**106**			
Hexachlorobutadiene	"	0.400	ND	0.416	"	10.0-150	**104**			
Hexachloroethane	"	0.400	ND	0.319	"	10.0-150	**79.8**			
Nitrobenzene	"	0.400	ND	0.318	"	10.0-150	**79.5**			
Pentachlorophenol	"	0.400	ND	0.433	"	10.0-150	**108**			
Pyridine	"	0.400	ND	0.496	"	10.0-150	**124**			
2,4,5-Trichlorophenol	"	0.400	ND	0.443	"	10.0-150	**111**			
Total Cresols	"	1.20	ND	1.18	"	10.0-150	**98.3**			
2,4,6-Trichlorophenol	"	0.400	ND	0.484	"	10.0-150	**121**			
Surrogate: 2-Fluorophenol	"	*0.800*		*0.632*	"	*10.0-150*	*79.0*			
Surrogate: Phenol-d6	"	*0.800*		*0.554*	"	*10.0-150*	*69.3*			
Surrogate: 2,4,6-Tribromophenol	"	*0.800*		*0.573*	"	*10.0-150*	*71.6*			
Surrogate: Nitrobenzene-d5	"	*0.400*		*0.263*	"	*10.0-150*	*65.8*			
Surrogate: 2-Fluorobiphenyl	"	*0.400*		*0.332*	"	*10.0-150*	*83.0*			
Surrogate: p-Terphenyl-d14	"	*0.400*		*0.377*	"	*10.0-150*	*94.2*			

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Wacker Siltronics Corporation	Project:	98-93	Sampled: 8/4/98
7200 N.W. Front	Project Number:	na	Received: 8/4/98
Portland, OR 97210	Project Manager:	Dianne Mullan	Reported: 8/17/98 19:00

Conventional Chemistry Parameters per APHA/EPA Methods/Quality Control
North Creek Analytical - Portland

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0880134	**Date Prepared: 8/7/98**				**Extraction Method: Wet Chem**					
Duplicate	**0880134-DUP1**	**P808007-01**								
pH	8/7/98		5.86	5.61	pH units			20.0	**4.36**	

SCOEPA00054299

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

BOTHELL ▪ (425) 420-9200 ▪ FAX 420-9210
SPOKANE ▪ (509) 924-9200 ▪ FAX 924-9290
PORTLAND ▪ (503) 906-9200 ▪ FAX 906-9210

Wacker Siltronics Corporation	Project:	98-93	Sampled: 8/4/98
7200 N.W. Front	Project Number:	na	Received: 8/4/98
Portland, OR 97210	Project Manager:	Dianne Mullan	Reported: 8/17/98 19:00

Physical Parameters per APHA/ASTM/EPA Methods/Quality Control
North Creek Analytical - Portland

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0880209	**Date Prepared: 8/10/98**					**Extraction Method: EPA 1010**				
Duplicate	**0880209-DUP1**		**P807569-06**							
No Flash to	8/10/98		150	150	°F			50.0	0	

North Creek Analytical, Inc.

**Refer to end of report for text of notes and definitions.*

Mary A. Fritzmann Smith, Project Manager

18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508
East 11115 Montgomery, Suite B, Spokane, WA 99206-4776

SCOEPA00054300

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

BOTHELL ▪ (425) 420-9200 ▪ FAX 420-9210
SPOKANE ▪ (509) 924-9200 ▪ FAX 924-9290
PORTLAND ▪ (503) 906-9200 ▪ FAX 906-9210

Wacker Siltronics Corporation	Project:	98-93	Sampled: 8/4/98
7200 N.W. Front	Project Number:	na	Received: 8/4/98
Portland, OR 97210	Project Manager:	Dianne Mullan	Reported: 8/17/98 19:00

TCLP Herbicides by EPA Method 1311/8151A/Quality Control
North Creek Analytical - Bothell

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0880106	**Date Prepared: 8/5/98**					**Extraction Method: EPA 1658**				
Blank	**0880106-BLK1**									
2,4-D	8/11/98			**ND**	mg/l	**0.0166**				
2,4,5-TP (Silvex)	"			**ND**	"	**0.0177**				
Surrogate: 2,4-DCAA	"	*0.100*		*0.0811*	"	*24.0-135*	*81.1*			
LCS	**0880106-BS1**									
2,4-D	8/11/98	0.0300		0.0297	mg/l	34.0-136	99.0			
2,4,5-TP (Silvex)	"	0.0300		0.0211	"	34.0-123	70.3			
Surrogate: 2,4-DCAA	"	*0.100*		*0.0876*	"	*24.0-135*	*87.6*			
Matrix Spike	**0880106-MS1**		**P808046-01**							
2,4-D	8/11/98	0.0300	ND	0.0280	mg/l	34.0-136	**93.3**			
2,4,5-TP (Silvex)	"	0.0300	ND	0.0217	"	34.0-123	**72.3**			
Surrogate: 2,4-DCAA	"	*0.100*		*0.0895*	"	*24.0-135*	*89.5*			
Matrix Spike Dup	**0880106-MSD1**		**P808046-01**							
2,4-D	8/11/98	0.0300	ND	0.0303	mg/l	34.0-136	**101**	15.0	**7.93**	
2,4,5-TP (Silvex)	"	0.0300	ND	0.0217	"	34.0-123	**72.3**	13.0	**0**	
Surrogate: 2,4-DCAA	"	*0.100*		*0.0905*	"	*24.0-135*	*90.5*			

North Creek Analytical, Inc.

**Refer to end of report for text of notes and definitions.*

Mary A. Fritzmann Smith, Project Manager

SCOEPA00054301

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

BOTHELL ▪ (425) 420-9200 ▪ FAX 420-9210
SPOKANE ▪ (509) 924-9200 ▪ FAX 924-9290
PORTLAND ▪ (503) 906-9200 ▪ FAX 906-9210

Wacker Siltronics Corporation		Project:	98-93	Sampled:	8/4/98
7200 N.W. Front		Project Number:	na	Received:	8/4/98
Portland, OR 97210		Project Manager:	Dianne Mullan	Reported:	8/17/98 19:00

Notes and Definitions

#	Note
I	Analyte spiked at MRL. Percent recovery acceptable, but below 100%, therefore reported as ND.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
Recov.	Recovery
RPD	Relative Percent Difference

North Creek Analytical, Inc.

Mary A. Fritzmann Smith, Project Manager

SCOEPA00054302

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

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

COPY

CHAIN OF CUSTODY REPORT

Work Order # P808046

REPORT TO: Wacker Siltronic	INVOICE TO: Wacker Siltronic
ATTENTION: Dianne Mullan	ATTENTION: Accts Payable
ADDRESS: 7200 N.W. Front Ave Portland OR	ADDRESS: Same
PHONE: 219-7274 FAX: 417-4141	P.O. NUMBER: NCA QUOTE #:
PROJECT NAME:	
PROJECT NUMBER:	
SAMPLED BY:	

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: [X] Standard | 7 | 5 | 4 | 3 | 2 | 1 | Same Day

Fuels & Hydrocarbon Analyses: [X] Standard | 3-4 | 2 | 1 | Same Day

OTHER Specify:

* Turnaround Requests less than standard may incur Rush Charges.

CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	NCA SAMPLE ID (Laboratory Use Only)	Analysis Request: TCLP ENTIRE LIST	PH - 9040	Flash Point 1010	MATRIX (W, S, A, O)	# OF CONTAINERS	COMMENTS
1. 98-93	8/4/98 0740		X	X	X	S	2	
2.								
3.								
4.								
5.								
6.								
7.								
8.								
9.								
10.								

RELINQUISHED BY (Signature): Dianne Mullan	DATE: 8/4/98	RECEIVED BY (Signature): Amy C. Lang	DATE: 8-4-98
PRINT NAME: Dianne Mullan FIRM: Wacker	TIME: 0910	PRINT NAME: Amy Spangler FIRM: NCA	TIME: 0910
RELINQUISHED BY (Signature): Amy C. Lang	DATE: 8-4-98	RECEIVED BY (Signature): Sara McClung	DATE: 8-4-98
PRINT NAME: Amy Spangler FIRM: NCA	TIME: 1010	PRINT NAME: Sara McClung FIRM: NCA	TIME: 1010

ADDITIONAL REMARKS:

PAGE OF

SCOEPA00054303

OREGON WASTE SYSTEMS, INC.
COLUMBIA RIDGE LANDFILL & RECYCLING CENTER
18177 CEDAR SPRING LANE
ARLINGTON, OREGON 97812
PHONE: 541/454-2030

CUSTOMER INFORMATION:

Wacker Siltronics
P.O. Box 83180 M/S-30
Portland, Or. 97283
Attn: Ms. Petra Mattes

INVOICE #:	916-Wacker
DATE:	9/16/98
PROFILE #:	512265
LOCATION:	Portland, Ore.
WASTE TYPE:	Dredged River Sediments

SUMMARY OF CHARGES

TOTAL TONS	39.26	TOTAL LOADS	3

DISPOSAL	$17.50/TON	$687.05
TRANSPORTATION	$550.00/LOAD	$1,650.00
ODEQ FEE	$1.24/TON	$48.68
REGIONAL SYSTEM FEE	$14.00/TON	$549.64
METRO EXCISE TAX	8.5% DISP $'S	$55.90
TOTAL AMOUNT DUE		$2,991.27

SEND REMITTANCE TO:

OREGON WASTE SYSTEMS, INC.
P.O. BOX 55037
PORTLAND, OR 97238-5037

INVOICE #:	916-Wacker
AMOUNT DUE:	$2,991.27

WE THANK YOU FOR YOUR BUSINESS AND PROMPT PAYMENT!

OREGON WASTE SYSTEMS, INC.
COLUMBIA RIDGE LANDFILL & RECYCLING CENTER
18177 CEDAR SPRING LANE
ARLINGTON, OREGON 97812
PHONE: 541/454-2030

CUSTOMER INFORMATION:

Wacker Siltronics
P.O. Box 83180 M/S-30
Portland, Or. 97283
Attn: Ms. Petra Mattes

INVOICE #: 930-Wacker
DATE: 9/30/98
PROFILE #: 512265
LOCATION: Portland, Ore.
WASTE TYPE: Dredged River Sediments

SUMMARY OF CHARGES

TOTAL TONS 76.72 TOTAL LOADS 6

DISPOSAL	$17.50/TON	$1,325.10
TRANSPORTATION	$550.00/LOAD	$3,300.00
DELIVERY FEE - 8 Boxes Total	$125.00/BOX	$1,000.00
CONTAINER .RENTAL - 8 Boxes for 2 weeks @	$10.00/DAY	$1,120.00
STANDBY TIME - 8 Hours	$55.00/HOUR	$440.00
ODEQ FEE	$1.24/TON	$93.89
REGIONAL SYSTEM FEE	$14.00/TON	$1,060.08
METRO EXCISE TAX	8.5% DISP $'S	$107.81
TOTAL AMOUNT DUE		$8,446.88

SEND REMITTANCE TO:

OREGON WASTE SYSTEMS, INC.
P.O. BOX 55037
PORTLAND, OR 97238-5037

INVOICE #: 930-Wacker
AMOUNT DUE: $8,446.88

WE THANK YOU FOR YOUR BUSINESS AND PROMPT PAYMENT!

Fax

Date: 10/1/98

To: Wacker Siltronics
Petra Mattes
Phone: 503-219-4469
Fax: 503-219-7599

From: Waste Management, Inc. Northwest Region
Ken Irish
Phone: 503-331-2250
Fax: 503-331-2219

Pages: 2

Subject: Profile # 512265

If you have any questions please call me at 503-331-2250

Wacker Siltronic Corporation
Petra Mattes
PO Box 83180 M/S 30
Portland, OR 97283-0180
(503) 219-4469
Fax: 219-7599

facsimile transmittal

To:	Diana	**Fax:**	(360) 260-9018
From:	Petra Mattes	**Date:**	September 1, 1998
Re:	Sediment profile	**Pages:**	25
CC:			

☐ **Urgent** **For Review** ☐ **Please Comment** x **Please Reply** ☐ **Please Recycle**

Notes:

Hi Diana,

Following is the profile and analytical information for the Dredged River Sediment. We have 8, 20-yard boxes of this material. We would like to expedite this profile as quickly as possible. If you need anything else please contact me at 219-4469.

Thank you!

GENERATOR'S WASTE PROFILE SHEET

PLEASE PRINT IN INK OR TYPE

Service Agreement on File? ☑YES ☐NO

Profile Number: WMI 512265

Renewal Date: / /

A. Waste Generator Information

1. Generator Name: Wacker Siltronic Corp.
2. SIC Code: 3674
3. Facility Street Address: 7200 NW Front Avenue
4. Phone: (503) 219-4469
5. Facility City: Portland
6. State/Province: Oregon
7. Zip/Postal Code: 97283
8. Generator USEPA/Federal ID #: ORD091253737
9. County: Multnomah
10. State/Province ID #:
11. Customer Name: WSC
12. Customer Phone: (503) 219-4469
13. Customer Contact: Petra Mattes
14. Customer Fax: 219-7599

B. Waste Stream Information

1. Name of Waste: Dredged River Sediment
2. State Waste Code: na
3. Process Generating Waste: Riverbank repair
4. Estimated Annual Volume: 8 ☐Tons ☐Yards ☑Other (specify) 20yd Drop Boxes
5. Personal Protective Equipment Requirements:
6. Transport or/Transfer Station:
7. Is this a U.S. Department of Transportation (USDOT) Hazardous Material? (If no, skip 8, 9, & 10)..... ☐YES ☑NO
8. Reportable Quantity (lbs.; kgs.):
9. Hazard Class/ID #:
10. USDOT Shipping Name:

☐Check if additional information is attached. Indicate the number of attached pages:

C. Generator's Certification (Please check appropriate responses, sign, and date below.)

1. Is the waste represented by this waste profile sheet a "Hazardous Waste," as defined by USEPA, Canadian, Mexican and/or state/province regulation, in the location where generated or ultimately managed?..... ☐YES ☑NO
2. Does the waste represented by this waste profile sheet contain regulated radioactive material or regulated concentrations of Polychlorinated Biphenyls (PCBs)?..... ☐YES ☑NO
3. Does this waste profile sheet and all attachments contain true and accurate descriptions of the waste material?..... ☑YES ☐NO
4. Has all relevant information within the possession of the Generator regarding known or suspected hazards pertaining to the waste been disclosed to the Contractor?..... ☐YES ☑NO
5. Is the analytical data attached hereto derived from testing a representative sample in accordance with 40 CFR 261.20 (c) or equivalent rules?..... ☐NA ☑YES ☐NO
6. Will all changes that occur in the character of the waste be identified by the Generator and disclosed to the Contractor prior to providing the waste to the Contractor?..... ☑YES ☐NO

Certification Signature: Petra Mattes Title: Environmental Engineer

Name (Type or Print): Petra Mattes Company Name: WSC Date: 9/1/98

D. WMI Management's Decision — FOR WMI USE ONLY

1. Management Method: ☐Landfill ☐Solidify ☐Bioremediation ☐Other (Specify)
2. Proposed Ultimate Management Facility:
3. Hours of acceptance: ☐NA
4. Supplemental Information:
5. Precautions, Special Handling Procedures, or Limitations on Approval:

Special Waste Decision..... ☐Approved ☐Disapproved

Salesperson's Signature: Date:

Division Approval Signature (Optional): Date:

Special Waste Approvals Person Signature: Date:

Form WMI-4152

STATE OF OREGON
Department of State Lands

37182-EA

The STATE OF OREGON, by and through its Department of State Lands, GRANTOR, for and in consideration of $N/A, hereby grants to GRANTEE,

NAME of GRANTEE:	ADDRESS:
Siltronic Corporation	7200 NW Front Avenue Portland, OR 97210-3676

an easement and right to construct, maintain, operate and replace a stormwater and treated effluent over, upon, and across the following particularly described property situated in Multnomah County, City of Portland, Oregon, more particularly described as follows:

A strip of land 15.00 feet in width lying within the Southeast quarter of the Southwest quarter of Section 12, Township 1 North, Range 1 West, Willamette Meridian, City of Portland, Multnomah County, Oregon, said strip of land lying on the southwesterly bank of the Willamette River within submerged and submersible lands administered by the State of Oregon, Department of State Lands, said strip lying 7.50 feet on each side of the following described centerline, with sidelines lengthening or shortening as necessary to intersect the Ordinary Low Water line of the Willamette River and form a continuous strip:

Beginning at a point on the boundary line between the Milton Doane and the N. W. Baker Donation Land Claim that is North 33° 31' 25" East 507.67 feet from the intersection of said line with the centerline of the Northern Pacific Railroad main line;

thence North 33° 31' 25" East along said boundary for a distance of 1,152.88 feet to the established United States Harbor Line on the southwest bank of the Willamette River;

thence South 59° 04' 25" East for a distance of 56.25 feet along said harbor line to the projected centerline of the storm sewer outfall line;

thence South 35° 33' 55" West for a distance of 6.68 feet to the TRUE POINT OF BEGINNING OF THE CENTERLINE for the easement area;

thence South 35° 33' 55" West along said centerline for a distance of 65 feet, more or less, to the point of termination at the Mean Low Water line on the southwest bank of the Willamette River, containing 0.022 acres, more or less.

TO HAVE AND TO HOLD the same unto GRANTEE FOR 30 years, subject to the following conditions:

1. GRANTOR has the right to grant additional easements within the area authorized by this easement subject to the provisions of the administrative rules governing the granting of easements.

2. GRANTEE shall obtain prior written approval from GRANTOR prior to:
   a) Changing the type of use authorized by this easement;
   b) Expanding the number of authorized developments or uses;
   c) Changing the authorized area; and/or
   d) Permitting other persons to utilize the easement for uses and developments requiring separate written authorization by GRANTOR pursuant to the administrative rules governing the granting of easements or other GRANTOR requirements.

3. The easement area shall remain open to the public for recreational and other non-proprietary uses unless restricted or closed to public entry by the State Land Board or GRANTOR.

4. GRANTOR and/or its authorized representative(s) shall have the right to enter into and upon the easement area at any time for the purposes of inspection or management.

5. Except as expressly authorized in writing by the Department, GRANTEE shall not:
   a) Cut, destroy or remove, or permit to be cut, destroyed or removed any vegetation, or
   b) Remove any sand and gravel, or other mineral resources for commercial use or sale, that occur in the easement area except as expressly authorized in writing by GRANTOR.

   Routine right-of-way maintenance including vegetation trimming shall be allowed.

6. GRANTEE shall compensate GRANTOR for the fair market value of any commercially valuable timber or sand and gravel resources in the easement area that must be removed during or after placement of the authorized use, or which cannot be developed because of the authorized use.

7. GRANTEE shall conduct all operations within the easement area in a manner that conserves fish and wildlife habitat; protects water quality; and does not contribute to soil erosion, or the introduction or spread of noxious weeds or pests. Upon completion of construction, GRANTEE shall reclaim disturbed lands to a condition satisfactory to GRANTOR.

8. GRANTEE shall obtain a surety bond in the amount of $N/A to ensure compliance with the terms and conditions of this easement.

SCOEPA00054310

9. The right to use this easement shall automatically terminate if it, or the development authorized by GRANTOR, is not used within five (5) consecutive years of the date this easement was granted, pursuant to the provisions of the administrative rules governing the granting of easements.

10. Unless otherwise approved in writing by GRANTOR, GRANTEE shall remove all cables, pipes, conduits, roads, and other developments placed by GRANTEE on the easement, and shall restore the surface of the easement area to a condition satisfactory to GRANTOR within one (1) year following termination of use or expiration of this easement.

11. GRANTEE shall inspect the condition of the area authorized by this easement and the developments authorized by this easement on an annual frequency.

12. GRANTOR shall have the right to stop operation of the use authorized by this easement for noncompliance with the conditions of this easement, the provisions of the administrative rules governing the granting of easements, and/or any lawful requirement by a regulatory agency of this STATE.

13. If this easement authorizes the use of state-owned submerged and/or submersible land:
    a) Construction in navigable waters shall conform to the standards and specifications set by the U.S. Army Corps of Engineers and the U.S. Coast Guard for the use authorized by this easement.
    b) Any blasting which may be necessary, or in-water placement, maintenance, or repair of the authorized use shall be performed according to the laws of this STATE, including strict adherence to Oregon Department of Fish & Wildlife in-water work windows.

14. GRANTEE agrees to defend and hold GRANTOR harmless from any and all claims suffered or alleged to be suffered on the premises. Further, GRANTEE shall be responsible for the payment of any fines or penalties charged against the premises as a result of GRANTEE's action in not complying with laws or regulations affecting the premises.

15. GRANTEE shall pay to GRANTOR the current market value, as determined by GRANTOR, for any unnecessary and non-approved damages to state-owned lands caused by construction or maintenance of the easement.

16. GRANTEE shall pay all assessments that may be legally charged on public lands which are levied against the property subject to this easement, whether or not such assessments have been levied against the easement area or STATE by the assessing agency.

SCOEPA00054311

17. GRANTEE shall use the authorized easement area only in a manner or for such purposes that assure fair and non-discriminatory treatment of all persons without respect to race, creed, color, religion, handicap, disability, age, gender or national origin.

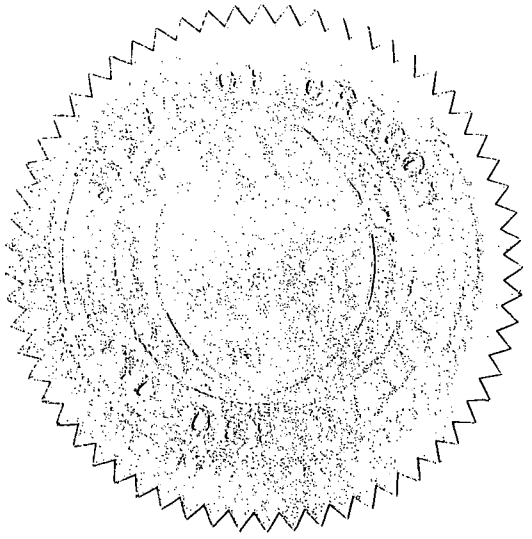
18. This easement is granted with the express understanding and provision that it may be subject to the future imposition by GRANTOR of a consideration payment (if not already subject to one under current law), and/or usage fee to be established by the Oregon State Land Board as authorized by law.

19. This easement is freely transferable. However, no transfer may increase the burden on the easement area or detract from the value of the underlying state-owned land. Prior to transferring this easement, GRANTEE shall submit to GRANTOR notice of proposed transfer of this easement on a form provided by GRANTOR, and a non-refundable transfer processing fee of $250 (two hundred and fifty dollars) payable to GRANTOR.

This easement does not convey an estate in fee simple of the lands used for a right-of-way. This grant is for an easement only, and title remains in the State of Oregon.

SCOEPA00054312

WITNESS the seal of the Department of State Lands affixed this 19th day of December 2006.



STATE OF OREGON, acting by and through its Department of State Lands

Stephen J. Purchase

STATE OF OREGON)
)ss
County of Marion)

This foregoing instrument was acknowledged before me this 19th day of December 2006, by Stephen J. Purchase, as Assistant Director of the Department of State Lands.

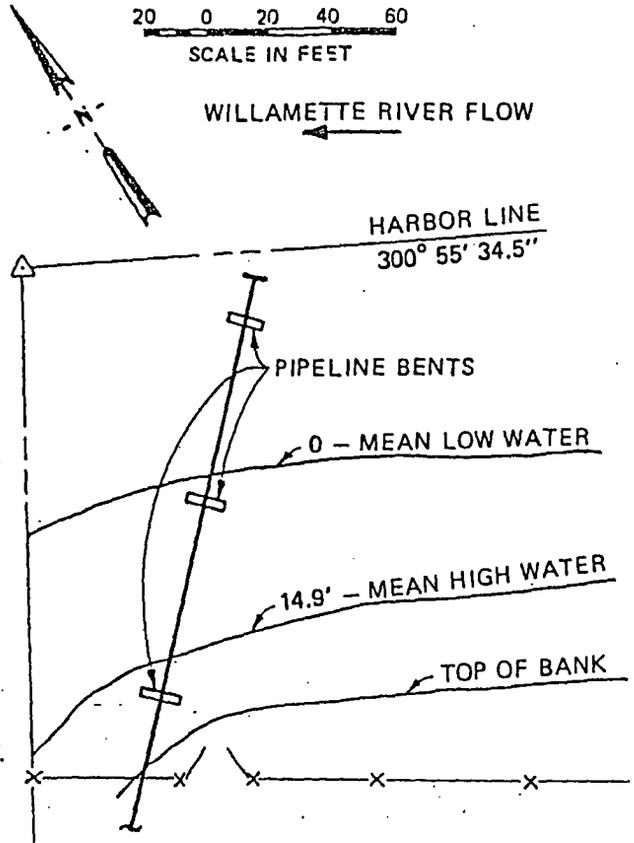
OFFICIAL SEAL
JENNIFER J VICKERS
NOTARY PUBLIC-OREGON
COMMISSION NO. 391660
MY COMMISSION EXPIRES JUNE 05, 2009

Signature
My commission Expires June 5, 2009

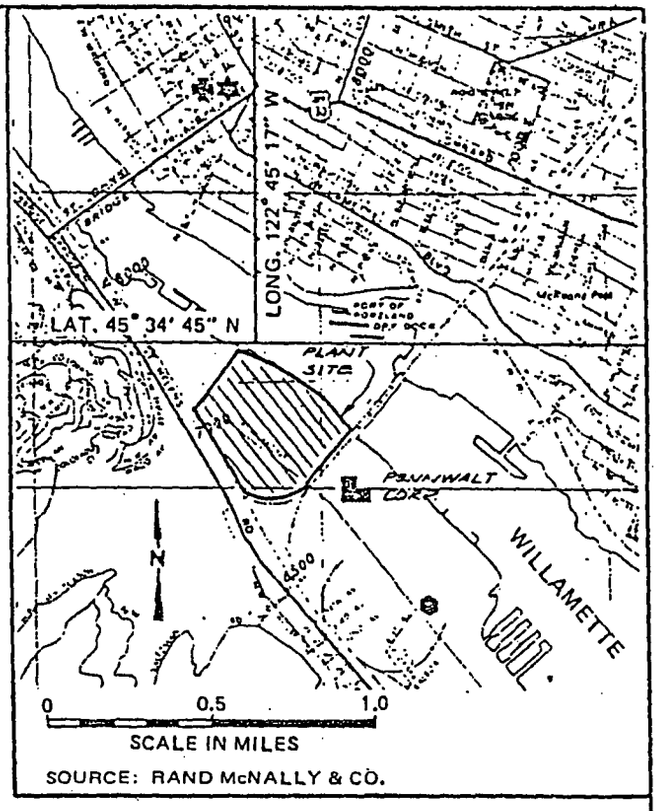
G:\LM\AttachmentAWestLAS\EA Easements\37182-EA.doc

SCOEPA00054313

003092(Willamette River - Outfall)

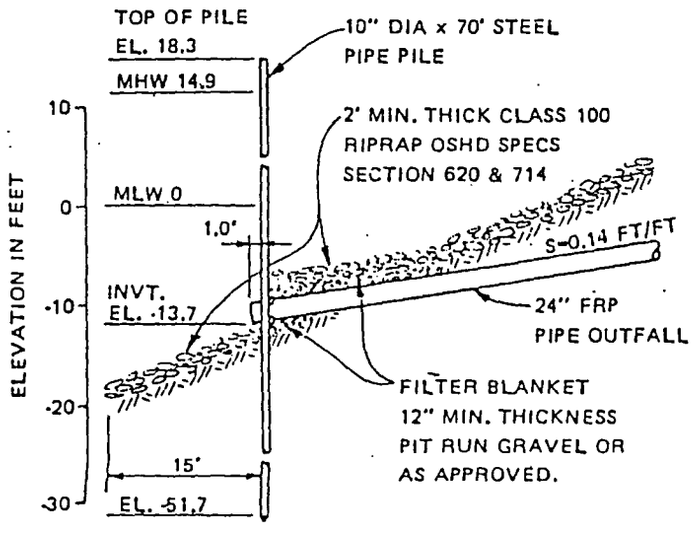


OUTFALL – PLAN



NOTE:

1. COLUMBIA RIVER DATUM
2. PURPOSE - PRIVATE INDUSTRIAL OUTFALL
3. ADJACENT PROPERTY OWNERS:
   NORTHWEST NATURAL GAS CO.
   PENNWALT CORP.
   BURLINGTON NORTHERN, INC.



OUTFALL – SECTION
SCALE: 1" = 20'

PROPOSED OUTFALL
IN WILLAMETTE RIVER (R.M.6.6)
PORTLAND MULTNOMAH CO. OREGON
APPL. BY WACKER SILTRONIC
SHEET 1 OF 1 DATE: 8/16/78

SCOEPA00054314

Siltronic Corporation
7200 NW Front Avenue, M/S 30
Portland OR 97210-3676, USA
Tel. 503-219-7313
Fax 503-219-7599
koreen.lail@siltronic.com

ER064:KL

Dr. Elliot Zais
Water Quality Source Control
Department of Environmental Quality Northwest Region
2020 SW Fourth Avenue, Suite 400
Portland, Oregon 97201-4987

2006-September-28

September 2006 Bioassay results

Dear Dr. Zais,

The Bioassay of Siltronic's effluent **passes the requirements** of our NPDES permit number 101128.

The Bioassay was performed on three species: *Ceriodaphnia dubia* (water flea), *Pimephales promelas* (fathead minnow) and *Raphidocelis subcapitata* (green algae). The analyses were performed at the following dilutions, which are based on the average of three mixing zone dilution studies[1], as percentage effluent: 1.90%, 3.75%, 7.5%, 15% and 30%. Samples were taken September 6 though September 13, 2006. The analytical methods used were *"Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Weber, C. et al. (1994); EPA/600/4-91/002"* and *"Whole Effluent Toxicity Testing Guidance Document, Oregon Department of Environmental Quality, January 1993".*

Ceriodaphnia dubia

Acute Toxicity test results indicated no statistically significant reduction in survival at any of the effluent concentrations tested when compared to the control. The no observed effect concentration (NOEC) and lowest observed effect concentration (LOEC) were 30% and greater than 30% effluent, respectively. Control survival was 100%. The LC_{50} value (concentration of sample causing a 50% reduction in survival) was calculated to be greater than 30% effluent. The effluent dilution concentration at the edge of Siltronic's zone of immediate dilution (ZID) is $\geq$ 13.4% effluent[1].

Chronic Toxicity test results indicated a statistically significant reduction in reproduction at the 30% effluent concentration when compared to the control. The NOEC and LOEC were 15% and 30% effluent, respectively. Control survival was 100%. The IC_{25} value (concentration of sample causing a 25% reduction in biological measurement) calculated on reproduction was 16.1% effluent concentration. The effluent dilution concentration at the edge of Siltronic's mixing zone is $\geq$ 1.8% effluent[1].

Pimephales promelas (dual endpoint)

Acute Toxicity test results indicated no statistically significant reduction in survival or growth at any of the effluent concentrations tested when compared to the control. The NOEC and LOEC were 30% and greater than 30% effluent, respectively. Control survival was 97.5%. The LC_{50} value for growth was calculated to be greater than 30% effluent. The effluent dilution concentration at the edge of Siltronic's ZID is $\geq$ 13.4% effluent[1].

Chronic Toxicity test results indicated no statistically significant reduction in survival or growth at any of the effluent concentrations tested when compared to the control. The NOEC and LOEC were 30% and greater than 30% effluent, respectively. Control survival was 97.5%. The IC_{25} value for growth was calculated to be greater than 30% effluent. The effluent dilution concentration at the edge of Siltronic's mixing zone is $\geq$ 1.8% effluent[1].

siltronic
perfect silicon solutions

Raphidocelis subcapitata

Chronic Toxicity test results indicated that there was no statistically significant reduction in growth at any effluent concentration tested when compared to the control. The NOEC and LOEC were 30% and greater than 30% percent effluent, respectively. The IC_{25} value was calculated to be greater than 30% effluent. The effluent dilution concentration at the edge of Siltronic's mixing zone is ≥ 1.8% effluent[1].

Summary of CH2MHill results for August 2005

Acute (48-hour) Results:	Ceriodaphnia dubia	Pimephales promelas
NOEC	30%	30% (% Effluent)
ZID Pass Criteria[1]	≥13.4%	≥13.4%

Chronic Results:	Ceriodaphnia dubia	Pimephales promelas	Raphidocelis subcapitata
NOEC	15%	30%	30% (% Effluent)
Mixing Zone Pass Criteria[1]	≥ 1.8%	≥ 1.8%	≥ 1.8%

If you have any questions, please contact Koreen Lail at (503) 219-7994.

Regards,
Siltronic Corporation

Thomas C. McCue

Thomas McCue
Environmental Manager

cc: Tom Rothschild
NPDES Bioassay File

[1] CH2MHILL Mixing Zone Effluent Dilution Evaluations prepared for Siltronic Corporation in 1994, 1995 and 1996. The NPDES discharge permit defines, for Siltronic's effluent discharge to the Willamette River, a zone of initial dilution (ZID) having a 5-foot radius from the point of discharge at Outfall 003, and a mixing zone having a 50-foot radius from the point of discharge at Outfall 003. The average of the three mixing zone dilution studies identified worst-case (0.1-feet/ second as current velocity) dilutions at distances of 5 and 50 feet from the discharge point of 7.5:1 and 55.5:1 ($Q_{Total}/Q_{Effluent}$), respectively. These dilutions are equivalent to 13.4% effluent at the edge of the ZID and 1.8% effluent at the edge of the mixing zone. According to the discharge permit, the effluent is considered to be acutely toxic if an acute test No-Observable-Effects-Concentration (NOEC) is less than 13.4% effluent, and is considered to be chronically toxic if a chronic test NOEC is less than 1.8% effluent. **Conversely, the effluent is in compliance for toxicity if the acute test NOEC is greater than or equal to (≥) 13.4% effluent and the chronic test NOEC is greater than or equal to (≥) 1.8% effluent.**

MEMORANDUM

CH2M HILL

TO: Don Daly
Greg Young

FROM: I. (Nick) Garcia-Bengochea

DATE: 29 May 1979

RE: Wacker Outfall-Oil Spill

PROJECT: P11054.B3.83

RECEIVED
MAY 30 1979
WACKER FLD

A heavy petroleum product (oil) was encountered in the outfall excavation 18 May 1979, forming an oil slick on the Willamette River. The same day the Coast Guard was informed of the problem, and Crowley Environmental Services placed a containment boom around the working area.

The Coast Guard has expressed concern about future oil leakage into the river in the vicinity of the outfall during the service life of project. Wacker would be responsible for the leakage. This memo addresses what measures Wacker should take to prevent such an occurrence.

The oil was present in a fine sand layer contining occassional wood debris. The oil appeared to be heavier than water because it would settle to the river bottom with time. The oil smelled like creosote.

The oil contaminated soils extended from approximately elevation 10 to -15, City of Portland datum, as shown on Figure 1. The borings performed beneath the Process and Headquarters buildings in 1977 and 1978 also encountered oil at similar elevations. Figure 1 shows a log of boring B-1-8, in the Crystal Growing area, and the elevations where oil was found.

Conclusions and Recommendations

Based on the 1977 and 1978 site investigations, the oil extends throughout the north end of the site and probably underlies a large portion of the Willamette River bank along the Wacker property. If the bank remains undisturbed, the oil should not find its way to the river surface.

SCOEPA00054317

We recommend that the oil(s) found in the outfall excavation and 1978 test borings be tested to determine the specific gravity and general character.

If the oil is found to be heavier than water, we recommend the outfall be backfilled with the native silty sands found at the site. Riprap, as called for in the design specifications, should be placed above the sand backfill.

If the oil is found to be significantly lighter than water, further consideration should be given to the problem. No backfill should be placed over the outfall until the oil testing has been completed.

NOT APPLICABLE!
THE SPECIFIC WEIGHT IS ABOUT 1,2!
(SEE TEST-REPORTS CHEM + NN NAT.GAS.) KO 5-31-79
H.C.C. PROCEEDS LIKE DESIGNED!

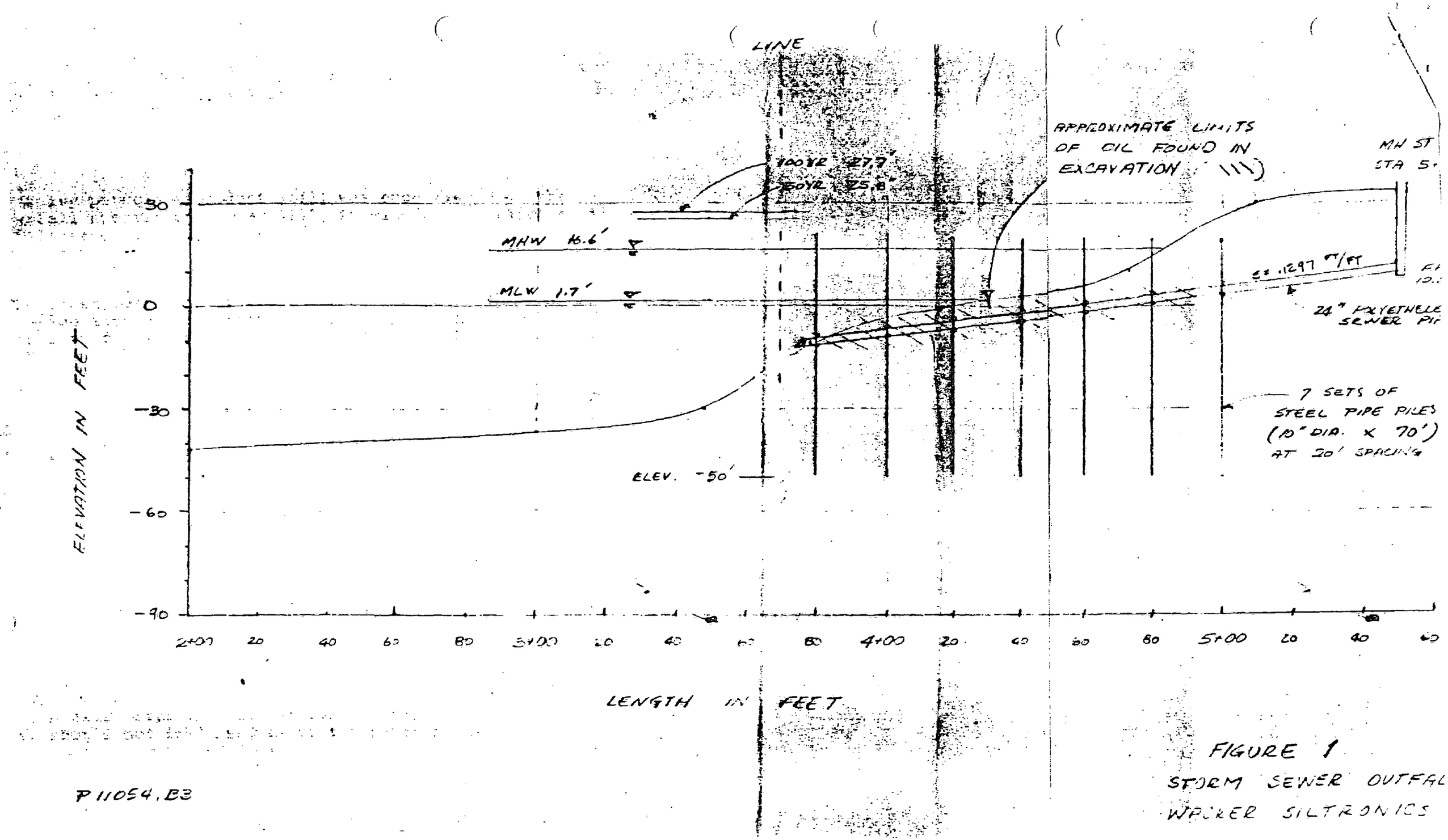


FIGURE 1
STORM SEWER OUTFALL
WALKER SILTRONICS

P11054.E3

SCOEPA00054319

PESTICIDES USED AT WACKER SILTRONIC SITE BY C&R PEST CONTROL

- Perflan® 80W, Spike® 80W } N-[5-(1,1-dimethylethyl)-1,3,4-thiadiazol-2yl]-N,N'-dimethyl urea.
- Round up® $HOOCCH_2NHCH_2P(O)(OH)_2$ Phosphonomethyl glycine
- Amitrol T® 3-amino-1,2,4-triazole $C_2H_4N_4$

Add to list. +
* Herbicides applied by contractor for weed control.

PESTICIDES WHICH WERE TESTED FOR

Groundwater
- alpha BHC
- β-BHC
- delta BHC
- gamma-BHC (Lindane)
- heptachlor
- aldrin
- heptachlor epoxide
- dieldrin
- 4,4'-DDE
- 4,4'-DDD
- endosulfan sulfate
- 4,4'-DDT
- Chlordane
- alpha endosulfan
- beta endosulfan
- endrin
- endrin
- toxaphene
- PCB 1016
  1221
  1232
  1242
  1248
  1254
  1260

Soil
- gamma-BHC
- Endrin
- Toxaphene
- methoxychlor
- 2,4-D
- 2,4,5-TP (Silvex)

Name & license. 1.2 2nd page CAS ? None found in ground water.

- NO MATCH BETWEEN "PESTICIDES USED" AND "PESTICIDES TESTED FOR"

Note: We have used "Commercial & Residential Pest Control" since 1981 for weed control. They continue to serve us today and we have used them exclusively since 1981.

JRE

SCOEPA00054320

C&R PC

COMMERCIAL & RESIDENTIAL PEST CONTROL

16611 S.E. HAIG DR. • PORTLAND, OREGON 97236 • 760-3530

672

June 15. 1981

Wacker Siltronic Corp.
7200 N W Front
Portland, Oregon

Prepared for: Mr. Steve Beiswenger

RE: Weed Control

Our proposal for weed control as per your specifications of Steve Beiswenger and areal photo plans sheet G-15F of 15F of 431 dated June 12, 1981.

We will apply a pre-emergence soil herbicide which will kill weeds from the root, system, and prevent weeds from growing through the growing season of 1981. At this time we will also apply a contact type herbicide for a quicker kill of existing weeds. We also provide regular inspections and touc-up spraying as needed to keep these areas free from weeds for the 1981 growing season. It is understood that C & R Pest Control will furnish all labor, materials, and equiptment necessary to perform this service. The total cost for the above service $672.00 for pink shaded areas, $260.00 green fence lines.

Thank you Steve for allowing me to submitt this proposal to you. Enclosed please find safta data information on the chemicals we perfer to use. Also I have listed below some industrial references of whom I have been servicing for a number of years.

Art Graebe
Ore. Lic. #000468

References;

Mr. C.L. Jenkins	Pennwalt Corp. N.W. Front, Portland.
Mr. Jim Fletcher	Shell Oil Co. Willbridge plant, Portland.
Mr. Don Letson	G.A.T.X. Tank Storage Co. Portland.
Mr. Wayne Ansul	Mobil Oil Corp. Portland.

SCOEPA00054321

FACSIMILE OF

U.S. DEPARTMENT OF LABOR
Workplace Standards Administration
Bureau of Labor Standards

MATERIAL SAFETY DATA SHEET

SECTION I

Manufacturer's Name: Elanco Products Company

Address: P. O. Box 1750, Indianapolis, Indiana 46206

Emergency Telephone No.: (317) 636-2211

Chemical Name and Synonyms: N-[5-(1,1-dimethylethyl)-1,3,4-thiadiazol-2-yl]-N,N'-dimethylurea

Chemical Family: Organic Compound

Trade Name and Synonyms: PERFLAN® 80W (tebuthiuron); SPIKE® 80W

Formula:

SECTION II

Hazardous Ingredients

Paints, Preservatives & Solvents	Percent	TLV (units)
Pigments		
Catalyst		
Vehicle	NOT APPLICABLE	
Solvents		
Additives		
Others		

Alloys and Metallic Coatings	Percent	TLV (units)
Base Metal		
Alloys		
Metallic Coatings	NOT APPLICABLE	
Filler Metal Plus Coating or Core Flux		
Others		

SCOEPA00054322

Hazardous Mixtures of Other Liquids, Solids, or Gases	Percent	TLV (units)

NOT APPLICABLE

SECTION III

Physical Data

Boiling Point (°F.):

Vapor Pressure (mm Hg.):

Vapor Density (Air = 1):

Solubility in Water: Disperses in water.

Specific Gravity (H_2O = 1):

% Volatile by Volume (%):

Evaporation Rate (= 1):

Appearance and Odor: A very-fine, off-white wettable powder with a mild odor.

SECTION IV

Fire and Explosion Hazard Data

Flash Point (Method Used): Not applicable.

Flammable Limits: Not applicable. Lel: Uel:

Extinguishing Media: Water, CO_2, or Dry Chemical

Special Fire Fighting Procedures: Wear protective clothing including self-contained breathing apparatus.

Unusual Fire and Exolosion Hazards: May emit toxic fumes when heated to decomposition.

SCOEPA00054323

SECTION V

Health Hazard Data

Threshold Limit Value: Not established.

Effects of Overexposure: No significant hazard

Emergency and First Aid Procedures:

Skin Contact: Wash with soap and running water.
Eyes: Flush eyes thoroughly with running water.
Ingestion: Induce vomiting and call a physician.

SECTION VI

Reactivity Data

Stability:	Unstable	Conditions to Avoid:
	Stable X	

Incompatability (Materials to Avoid):

Hazardous Polymerization:	May Occur	Conditions to Avoid:
	Will Not Occur X	

SECTION VII

Spill or Leak Procedures

Steps to be taken in case material is released or spilled: Sweeping or vacuuming is effective.

Waste Disposal Method: Dispose of as a solid waste material in compliance with governmental regulations.

SECTION VIII

Special Protection Information

Respiratory Protection (Specify type): Dust mask, if exposed to a dusting condition.

Ventilation:	Local Exhaust:	Special:
	Mechanical (General):	Other:

SCOEPA00054324

SECTION VIII

Continued

Protective Gloves: Protect hands to avoid skin contact when handling product.

Eye Protection: Protect eyes from contact when handling product.

Other Protective Equipment: Protective clothing.

SECTION IX

Special Precautions

Precautions to be taken in handling and storing: Avoid contact with skin and eyes. Avoid breathing dust.

Other Precautions:

SCOEPA00054325

NOTICE

We believe all information given is accurate. It is offered in good faith, but without guarantee. Since conditions of use are beyond our control, all risks of use are assumed by the users. Nothing herein shall be construed as a recommendation for use beyond those uses recommended in our current label pertaining to this product. Furthermore, nothing herein shall be construed as a recommendation for use which infringes valid patents or as extending a license under valid patents.

Form Approved
Budget Bureau No. 44-R1387
Approval Expires April 30, 1971

Form No. G-2489
May 1969

U.S. DEPARTMENT OF LABOR

WORKPLACE STANDARDS ADMINISTRATION

Bureau of Labor Standards

MATERIAL SAFETY DATA SHEET

SECTION I

MANUFACTUER'S NAME	EMERGENCY TELEPHONE NO.
MONSANTO COMPANY	(314) 694-1000

ADDRESS (Number, Street, City, State, and ZIP Code)
800 NORTH LINDBERGH BLVD., ST. LOUIS, MO. 63166

CHEMICAL NAME AND SYNONYMS	TRADE NAME AND SYNONYMS
FORMULATION OF PHOSPHONOMETHYL GLYCINE	ROUNDUP
CHEMICAL FAMILY	FORMULA $HOOCCH_2\overset{H}{N}CH_2P(O)(OH)_2$ (PHOSPHONOMETHYL) (GLYCINE)

SECTION II HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS WATER	44		FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	TLV (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	*	SPECIFIC GRAVITY (H_2O = 1)	1.18
VAPOR PRESSURE (mm Hg.)	*	PERCENT VOLATILE BY VOLUME (%) (Water)	Ca 40
VAPOR DENSITY (AIR = 1)	*	EVAPORATION RATE (_____ = 1)	*
SOLUBILITY IN WATER	MISCIBLE	*Volatile solvent is water	
APPEARANCE AND ODOR	VISCOUS AMBER LIQUID, SOAPY ODOR		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LEL	UEL
TAG CC > 200°F			

EXTINGUISHING MEDIA

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

PRODUCT NONFLAMMABLE - AQUEOUS FORMULATION

SCOEPA00054327

SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE
NONE ESTABLISHED

EFFECTS OF OVEREXPOSURE
ANIMAL DATA INDICATES LOW ORDER OF TOXIC HAZARD, HOWEVER, GOOD INDUSTRIAL HYGIENE PRACTICES SHOULD BE EMPLOYED IN HANDLING THE PRODUCT.

EMERGENCY AND FIRST AID PROCEDURES
FOR SKIN CONTACT - WASH WITH SOAP AND WATER;
FOR EYE CONTACT - FLUSH WITH WATER FOR 15 MINUTES.

SECTION VI REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID: DO NOT HEAT ABOVE 212°F - PRESSURE WILL
	STABLE		DEVELOP IN CONTAINER DUE TO STEAM.

INCOMPATABILITY (Materials to avoid): CONTACT WITH IRON OR GALVANIZED METAL WILL CAUSE THE EVOLUTION OF H_2 GAS.

HAZARDOUS DECOMPOSITION PRODUCTS

HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
SMALL AMOUNTS MAY BE REMOVED BY ABSORBANTS (SUCH AS ABSORBANT CLAYS). LARGE AMOUNTS SHOULD BE REMOVED BY SUCTION.

WASTE DISPOSAL METHOD
INCINERATE OR LAND-FILL DISPOSAL IN ACCORDANCE WITH ALL APPROPRIATE LAWS AND REGULATIONS.

SECTION VIII SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)
NOT NEEDED UNLESS AT ELEVATED TEMPERATURES.

VENTILATION	LOCAL EXHAUST: X	SPECIAL
	MECHANICAL (General)	OTHER

PROTECTIVE GLOVES: YES	EYE PROTECTION

OTHER PROTECTIVE EQUIPMENT
AS APPROPRIATE TO AVOID SKIN & EYE CONTACT.

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
AVOID EXTREMES OF TEMPERATURE (> 100F AND <-20F).

OTHER PRECAUTIONS
AVOID SKIN AND EYE CONTACT.

While the information and recommendations set forth herein are believed to be accurate as of the date hereof, MONSANTO COMPANY MAKES NO WARRANTY WITH RESPECT THERETO AND DISCLAIMS ALL LIABILITY FROM RELIANCE THEREON.

MATERIAL SAFETY DATA SHEET

(Approved by U.S. Department of Labor "Essentially Similar" to Form LSB-OOS-4)

PRODUCT NAME:	AMITROL T™ Liquid Herbicide		
CHEMICAL NAME:	3-amino-1,2,4-triazole	CHEMICAL FAMILY:	Triazole
FORMULA:	$C_2H_4N_4$	MOLECULAR WEIGHT:	84.08
SYNONYMS:	AMITROL™, aminotriazole		

I. PHYSICAL DATA

BOILING POINT, 760 mm. Hg	Not available	FREEZING POINT	Not available
SPECIFIC GRAVITY (H_2O = 1)	1.110	VAPOR PRESSURE AT 20°C.	Not available
VAPOR DENSITY (air = 1)	Not available	SOLUBILITY IN WATER, % by wt.	100%
PER CENT VOLATILES BY VOLUME	Nil	EVAPORATION RATE (Butyl Acetate = 1)	< 1
APPEARANCE AND ODOR	Light yellow to clear; characteristic odor.		

II. HAZARDOUS INGREDIENTS

MATERIAL	%	TLV (Units)
3-amino-1,2,4-triazole	21.6	None established by ACGIH or OSHA

III. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT [test method(s)]	None			AUTOIGNITION TEMPERATURE	None
FLAMMABLE LIMITS IN AIR, % by volume		LOWER	None	UPPER	None

EXTINGUISHING MEDIA	Water fog, carbon dioxide foam or dry chemical
SPECIAL FIRE FIGHTING PROCEDURES	None
UNUSUAL FIRE AND EXPLOSION HAZARDS	None

IV. [illegible]

304/744-3487

This number is available days, nights, weekends, and holidays.

SCOEPA00054329

IV. HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE	None established by ACGIH or OSHA
EFFECTS OF OVEREXPOSURE	None known or reported. May cause skin irritation. Has caused goiter in animals.
EMERGENCY AND FIRST AID PROCEDURES	If swallowed, seek medical attention and treat symptomatically. In case of eye contact, wash eyes with flowing water. Wash skin with soap and water. In case of inhalation, remove to fresh air.
NOTES TO PHYSICIAN	LD_{50} oral in rats is 24,600 mg/kg.

V. REACTIVITY DATA

STABILITY			
UNSTABLE	STABLE	CONDITIONS TO AVOID	--
--	√		

INCOMPATIBILITY (materials to avoid)	Consult manufacturer for specific cases.
HAZARDOUS DECOMPOSITION PRODUCTS	

HAZARDOUS POLYMERIZATION			
May Occur	Will not Occur	CONDITIONS TO AVOID	--
--	√		

VI. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED	Dike large spills. Absorb small spills on inert material such as sand or vermiculite.
WASTE DISPOSAL METHOD	Bury in an approved landfill following all applicable Federal, State and local regulations.

VII. SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (specify type)		NIOSH-approved respirator for pesticide mists.		
VENTILATION	LOCAL EXHAUST	--	SPECIAL	
	MECHANICAL (general)	To control mists	OTHER	
PROTECTIVE GLOVES		Rubber or plastic	EYE PROTECTION	Safety glasses with side shields
OTHER PROTECTIVE EQUIPMENT		Clean, body-covering clothing		

VIII. SPECIAL PRECAUTIONS

PRECAUTIONARY LABELING	Keep out of reach of children. Read the container label and follow directions. Avoid spray drift. Do not apply where water will be used for irrigating, drinking, fishing or other domestic purposes.
OTHER HANDLING AND STORAGE CONDITIONS	Do not store near insecticides, fungicides, fertilizers or seeds. Do not use in a greenhouse. Do not allow spray solution to remain in a sprayer any longer than necessary.

DEPARTMENT OF TRANSPORTATION	HAZARD CLASSIFICATION	None
	SHIPPING NAME	Tree or weed killing cpd. NOIBN
CAS # 61-82-5	CAS NAME	1 H-1,2,4-triazol-3-amine

While Union Carbide Agricultural Products Company, Inc. believes that the data contained herein are factual and the opinions expressed are those of qualified experts regarding the results of the tests conducted, the data are not to be taken as a warranty or representation for which Union Carbide Agricultural Products Company, Inc. assumes legal responsibility. They are offered solely for your consideration, investigation and verification. Any use of these data and information must be determined by the user to be in accordance with applicable Federal, State and local laws and regulations.

UNION CARBIDE AGRICULTURAL PRODUCTS COMPANY, INC. • P.O. Box 17610
7825 Baymeadows Way, Jacksonville, Florida 32216

AG-80026

Printed in U.S.A.

SCOEPA00054330

Herbicides #25

SCOEPA00054331

Siltronic Corporation

Purchase order

PO Number: 4500398435
Date: 03/03/2006

TERMINIX COMMERCIAL
10159 SW COMMERCIAL CIRCLE
WILSONVILLE OR 97070

Currency: USD
Terms del.: FOB SHIPPING POINT
Terms payt.: NET 30 DAYS

Delivery and Invoice Address:
7200 NW Front Ave.
Portland OR 97210-3676

Vendor record no.: 716943
FAX: 503-570-7513
TEL: 503-531-9790

Refer to Commercial Pest Control Agreement between Siltronic/Terminix dated 2/8/2006. Also reference detailed proposal from Terminix.

Item	Quantity UOM	Delivery	Material	Unit Price	Net Value
00010	6,000PC	03/03/2007		1.00	6,000.00
			Pest Control Contract Treat exterior perimeter of (1) building with regular inspection and treatment as necessary for box elder bugs, nuisance beetles and bees. Treat interiors as needed. Placement of cockroach pharamone monitoring devices in locker area and all (12) kitchen(ettes) with regular monitoring. Annual training (2) hr. to train the lead tech with (2) additional trained techs. Scan Master reports at no charge.		

Deborah Lee/503-219-4465
FAX:(503) 219-4112
EMAIL:Deborah.LEE@siltronic.com

Siltronic Corporation

Purchase order

PO Number: 4500398435 Page
Date: 03/03/2006 02

Item	Quantity	UOM	Delivery	Material	Unit Price	Net Value

Total net value excl. tax USD 6,000.00

PLEASE CONFIRM PRICE AND DELIVERY TO DEBORAH LEE BY FAX OR PHONE AT 503-219-4465 (FAX NO. 503-219-4112) OR BY E-MAIL AT deborah.lee@siltronic.com.

The invoice MUST have the correct purchase order number and amount for the invoice to be paid promptly.

Any invoices that are progressive billings, MUST clearly reflect as such.

FAILURE TO FOLLOW THE INSTRUCTIONS ON THIS PURCHASE ORDER WILL RESULT IN DELAY OF PAYMENT.

Insurance - Required Coverage. Contractor shall, throughout the term of this Agreement, carry and maintain at Contractor's expense the following insurance policies or coverage:
Automobile liability coverage providing bodily injury and property damage liability coverage with a combined single limit of $1 million on any one occurrence. Commercial general liability coverage extended to include contractual and completed operations, providing bodily injury and property damage liability coverage with a combined single limit of $5 million on any one occurrence. Statutory workers' compensation insurance or equivalent industrial accident insurance covering all employees as required by law. If applicable, such coverage will also provide Coverage B, employers' liability limits of at least $1 million/$1 million/$1 million.

Project Responsibility and Indemnity - Contractor is responsible to SCO for its own acts and omissions and for those of its subcontractors and suppliers and their employees, agents, and guests relating to the Project and its site. Contractor shall indemnify SCO and its affiliated companies and their respective officers, employees, agents, contractors, licensees, and insurance companies (in this section, collectively included in the term "SCO") from any and all Losses arising from:
Any claim asserted by any third party, including, but not limited to, Contractor's employees and subcontractors, in any manner connected with or resulting from the performance of the Work by Contractor or relating in any other manner to Contractor's obligations or duties set forth in this Agreement, whether the claim arises out of the acts or omissions of Contractor or out of those of its employees, independent contractors, or assigns. This indemnity obligation will not apply to Contractor to the extent that a claim is caused by SCO's own gross negligence. Contractor shall cooperate fully with Siltronic Corporation (SCO) with respect to the defense of any claim for which contractor is obligated to indemnify SCO. Any breach of Contractor's warranties.

Nondisclosure - Contractor will maintain any Confidential Information received from SCO in confidence, will take reasonable precautions (and at least the same precautions Contractor uses for its own confidential information) to prevent unauthorized disclosure of Confidential Information,

Deborah Lee/503-219-4465
FAX:(503) 219-4112
EMAIL:Deborah.LEE@siltronic.com

and will use Confidential Information only for the purposes contemplated by SCO in connection with this Agreement. Contractor will take reasonable steps to ensure that its personnel and those of any subcontractors comply with the obligations imposed on Contractor as to Confidential Information. Contractor will permit only those personnel with a need to know to have access to Confidential Information. Contractors and subcontractors' personnel who access SCO's facilities may be required to sign a separate non-disclosure agreement prior to admittance to SCO's

facilities.

Deborah Lee/503-219-4465
FAX:(503) 219-4112
EMAIL:Deborah.LEE@siltronic.com

SCOEPA00054334

TERMINIX COMMERCIAL

The Terminix International
Company L.P.
860 Ridge Lake Boulevard
Memphis, TN 38120
901/766-1100

Deborah Lee
Siltronic
7200 NW Front Ave., M/S 10
Portland, Oregon 97210-3676

Dear Deborah:

Attached please find a detailed proposal for Siltronic.

Since 1927, Terminix Commercial has become the company more businesses trust than any other for pest control. Experience in your industry providing excellent service is a necessity for any pest control provider - and Terminix Commercial has built a rock-solid reputation on providing service to your industry. But there's more to our story. We've forged long-term relationships with customers in your industry who look to us for effective, individualized solutions. They know that we understand their specialized regulations and paperwork down to the smallest detail. And most important, they know that they can rely on us for value, timeliness and reliability every time.

The fact is, these principles are so important that we've made them the foundation of a Guarantee that's the strongest in the industry: our No Wait, No Doubt, No Limit 3-Point Guarantee. Within this proposal, you'll find more information and details on our guarantee.

Please take a moment to review the recommendations and Service Agreement we've created especially for your business. If there are any questions we can answer for you- or if you would like to meet with us to discuss this program - please give me a call at (503) 570-0324. We're here to help.

Sincerely,

JENNIFER L. FREITAS
COMMERCIAL SALES REP
(503) 570-0324

SCOEPA00054335

TERMINIX COMMERCIAL

INTEGRATED PEST MANAGEMENT AND SCOPE OF SERVICE

The Integrated Pest Management Solution
At Terminix Commercial, we believe the best way to solve pest problems is to correct the conditions that contribute to them. Following the procedures of the Integrated Pest Management (IPM) program, we focus our approach to treatment on eliminating pests, their harborage areas and their entry points to your facility to provide maximum effectiveness with minimal treatment.

IPM is a low or non-chemical alternative of controlling pests through the cooperative teamwork of your business and Terminix Commercial through improving sanitation awareness, proper building exclusion, and low or non-chemical methods of treatment to eliminate a pest infestation to protect the health and safety of employees and the environment.

Components of the Terminix Commercial IPM program include:

- Inspection of your facility and its exterior surroundings
- Identification of the types of pests present
- Identification and investigation of conditions that contribute to infestations
- Analysis of current pest activity
- Recommendations for limiting and preventing future infestations
- Implementation of mechanical methods for controlling pests
- Application of highly targeted treatments
- Continuous evaluation and fine-tuning of service to meet future needs
- Education of your staff about actions that contribute to pest activity

Non-chemical Pest Control Methods. Terminix uses non-chemical pest control methods where these are feasible and efficacious. These include:

- Sanitation (removing food water sources)
- Exclusion
- Harborage Removal
- Harborage Denial
- Trapping Monitoring
- Vacuuming
- Lighting

1. Sanitation: Sanitation involves cleaning up and/or removing potential food and water sources for pests. The fewer food sources that are present, the fewer pests that can survive. Even something as simple as picking up a lemon that has rolled under a table can prevent a significant fruit fly infestation. A regular schedule of cleaning floors, equipment, floor drains, trash receptacles and dumpsters is the best approach to minimize food sources for pests. Water leaks should be repaired promptly, and wet mops should be hung up to dry properly.
2. Exclusion: Sealing up cracks and holes where pests can enter is the most effective non-chemical method to prevent pests from invading a building. It is impossible, for example, to keep a building free of mouse activity if the doors do not have proper weatherstrips. It is important to keep outer doors closed or install tight-fitting screen or storm doors.

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3. Harborage Removal: The less shelter that is available, the fewer number of pests that will be able to survive. Removing piles of debris, cutting tall weeds and eliminating cardboard boxes in storage rooms are examples of harborage removal.
4. Harborage Denial: If a harborage cannot be removed, e.g., cracks in interior walls where cockroaches could live, then steps should be taken to deny the pest use of that harborage. The most common procedure used to deny harborages is caulking cracks that may be present – both inside and outside.
5. Environmental Alteration: Changing the environmental conditions of a room or area so that pests cannot survive there can be an effective long-term strategy. For example, a wet crawlspace under a building can serve as a source of infestation for many different types of pests. Installing ventilators and vapor barriers to dry out the crawlspace prevents most pests from living under the building.
6. Interception: When building occupants or workers examine goods and items for pests as they are brought into the building, they often can prevent numerous introductions of pests, especially German cockroaches. This is especially important for food items, in particular bagged or boxed produce.
7. Trapping Monitoring: Rodents can be effectively controlled in many situations using traps alone. Flying insects can be controlled with properly placed insect light traps in conjunction with good sanitation and exclusion practices. For insect control, traps work best for monitoring activity of insects and other arthropod pests.
8. Vacuuming: Physical removal of pests by vacuuming is rapidly gaining wide acceptance. This technique is especially effective for cockroach and spider control.
9. Heat Freezing: Heat is currently being effectively used by Terminix in Florida and California to control termites and wood-boring beetles in structures in a process called CleanHeat. Terminix is also using heat in some situations to "flush" cockroaches out of their harborages. By combining vacuuming with flushing insects with hot air, pest control can effectively be accomplished in some situations without occupants having to vacate the area. Items (e.g., food) that are thought to be infested may be frozen at zero degrees Fahrenheit for at least 6 days – if the items can safely be frozen.
10. Lighting: Exterior lights often attract large numbers of nighttime flying insects to buildings where they can enter the building. These insects also serve as food for spiders, which promotes spider infestations. Exterior lighting should always be changed to sodium vapor lamps where feasible to attract as few insects as possible to a building.

Contributing Conditions. At the heart of an effort to minimize pesticide usage and still maintain a relatively pest-free environment is the correction or elimination of conditions that may be contributing to a pest infestation. All pests need food, water, and shelter to survive. The less of these available to pests, the fewer number of pests that can survive in a given area.

In most cases, it is impossible to remove all of the food, water and shelter sources available to pests. A certain number of pests from the pest population will typically be able to survive.

Cleaning up food debris, fixing leaks and removing potential harborages accomplishes lowering the population size so that it will be easier to control the infestation while using a minimum of insecticide applications.

Facility Cooperation – Achieving goals of an IPM concept are difficult unless the facility provides its full cooperation in correcting the contributing conditions pointed out by the pest management professional. The longer these contributing conditions are allowed to persist, the greater the need to use pesticides to produce the goal of a pest-free environment.

Non-residual Pesticide Applications. Many people believe that IPM means that pesticides will not be used; however, IPM does not preclude the use of pesticides. In some cases, pesticides will need to be implemented, while in other cases, pesticides may not be needed at all. Every situation is different and the Terminix service professional is the person who must analyze the situation and choose the appropriate control measure including when and where to use pesticides.

If a pesticide application is required, "low impact" products or non-residual pesticides with acceptable efficacy should be chosen for IPM programs. Low impact insecticides include baits, naturally occurring materials such as boric acid and silica aerogel dusts, and pyrethroids. These materials generally have very low mammalian toxicity and still remain very effective at controlling insects and other arthropod pests.

Cultural Recommendation

Terminix should provide a written sanitation report following each service outlining recommendations for addressing contributing conditions that may be present. To reduce the need for pesticide use, these recommendations should be corrected within a reasonable time frame. The following list details general recommendations the Terminix service professional may offer the staff of a facility.

- Keep stored food products refrigerated or in tightly sealed containers.
- Dispose of packing materials, such as grocery bags, cardboard boxes, pallets and shipping boxes that may harbor pests.
- Change food suppliers to avoid future infestations.
- Identify and isolate foods infrequently used that have been a source of pest infestations.
- Upgrade food storage, waste handling and cleaning programs to reduce foods available to pests.
- Store goods on shelves away from walls to allow for cleaning behind them.
- Clean exterior and interior of ovens and hoods before grease buildups occur.
- Avoid leaving food and soiled dishes exposed overnight.
- Keep indoor garbage in lined and covered containers. Empty daily.
- Inspect for and clean up spills in trash rooms and around dumpsters.
- Monitor trash containers frequently and keep clean with fresh trash liners.
- Keep dumpster lids closed and drain plugs in place.
- Empty and clean recycling bins frequently.
- Empty mop buckets and remove sour rags from janitorial closets.
- Clean and screen floor drains.
- Regularly vacuum carpets, curtains, and upholstery.
- Remove lint accumulations from the edges of carpets, crevices, between floorboards, air ducts and registers.
- Remove unnecessary charts and crevices in exterior walls.
- Mount sinks and other fixtures away from walls to facilitate cleaning.

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- Install tight exterior doors and loading dock doors fitted with anti-pest tension strips or sweeps and keep doors shut when not in use.
- Caulk crevices around doors, windows, vents, and other openings.
- Install insect proof screens on windows, vents, and other openings.
- Repair plumbing and roof leaks and reduce condensation problems.
- Drain puddles, including drip zones under air conditioners.
- Clean gutter and drains.
- Eliminate bird roosting sites and old nests in which pests can breed.
- Trim or remove foundation plantings, vines, and overhanging trees to reduce pest harborages and entry routes and to reduce moisture levels around the foundation.
- Keep grass short to remove cover for pests.
- Substitute trickle irrigation for overhead watering of trees and shrubs.
- Reduce the number of foundation plants, especially flowering perennials that attract pests.
- Avoid bringing insect-infested flowers indoors.
- Substitute crushed shells, stone, or gravel for bark or other organic mulches.
- Leave a bare strip of gravel or concrete around foundations to discourage invasion by outdoor pests.
- Use sodium vapor lamps outside to attract fewer flying insects.
- Move exterior lighting away from the building.
- Keep all exterior electrocuting-type light traps at least 50 feet from the building.
- Crumbs from lunches and snacks eaten outside of normal dining areas create feeding opportunities for pests in other sites.
- Insecticides used by occupants or maintenance personnel may scatter pests into new areas.
- Recently painted walls may cause pests to move to new areas because of temporary irritation from fumes.

The Terminix service professional may be able to do some minor physical exclusion control procedures, such as sealing some cracks and holes. Extensive cleaning, plumbing repair, improving ventilation, or extensive removal of vegetation is not the responsibility of Terminix.

Focus of an IPM Program

Successful IPM programs require a partnership. The success of an IPM program depends to a large degree on the level of cooperation the client staff provides. Terminix may perform training sessions for building maintenance personnel and workers, upon request. If desired, educational materials in the form of articles for in-house newsletters, notices for bulletin boards or flyers can be supplied for distribution.

The IPM Survey. Because each building and its conditions are unique, an initial IPM survey may need to be performed on the building to determine its pests control needs. The purpose of this survey is to:

- Identify which pests are present and where they are active,
- Identify contributing conditions,
- Determine which pest control strategies are needed,
- Determine the high risk areas for pest activity, and
- Determine where pesticide applications will be necessary.

A graph or a copy of the floor plans should be included with each IPM survey report noting the areas of pest activity and contributing conditions.

High Risk Low Risk Areas. It is important to an IPM program to pinpoint areas in a building that are at *high risk* for pest activity. These will be the rooms that will be most likely to have pests and that will need more frequent inspections and service. *Low Risk* areas require less frequent inspections and may even be able to be place on an "as needed" service basis. Monitoring traps will be very important to track pest activity in low risk areas. To make it easier to convey which areas are high risk, low risk, etc., a series of colors may be assigned to each as follows:

Red – High Risk
Yellow – Low Risk
Green – As–needed service only

Highlight pens in these colors may be used on floor plans of the facility to signal which areas are designated as assigned.

Inspections. Thorough inspections by trained personnel are a key part of an IPM program. Building exteriors should be inspected at least once each month. Periodic inspections on the roofs of some flat roof buildings should be necessary, especially for some pest ant species. The primary focus of interior inspections should be the high risk areas for pest activity, such as food preparation or snack areas, restrooms, and other water sources, the perimeter building walls, and areas of previous pest activity.

The proportion of actual service time spent inspecting should vary according to the building type and pest activity found. For example, a small building with lush landscaping or large food preparation areas may require more service time than a larger office building without these conditions. Generally for an IPM program, up to 90% of the actual service time may be expected to involve inspection versus actual time spent applying pesticides.

Pest Sighting Log. In larger facilities, especially those with many employees, a pest sighting log should be established within a facility. A pest sighting log is important to allow the facility's employees to have a central office to contact for reporting pest activity. In some cases, multiple sight logs may be established, such as individual nurse's stations in hospitals. This log is used by the service professional to target areas that need immediate attention.

Floor Plans. Floor plans of larger facilities are crucial for planning and evaluating pest control programs. Prior to the initial IPM survey, Terminix should request a copy of the floor plans for each building in order to note areas of pest activity and contributing conditions that are present. The floor plans should also be helpful in determining the high risk and low risk areas for pest activity with the facility manager and the IPM coordinator for the local Terminix branch office. Locations of rodent control devices should be recorded on similar diagrams and stored in the on–site pest sighting log.

Monitoring. Un–baited "sticky" monitoring traps may be placed in key situations for pest activity to capture pests as they crawl along walls, in cabinets and similar areas. The purpose of monitoring is to determine which pests, if any, are present, to determine the extent of activity, to pinpoint where pest harborages might be located, and to determine where pests may be entering.

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In general, monitoring traps should be placed under sinks and in some storage areas. Other areas where monitoring traps should be placed include motor compartments of coolers and kitchen equipment and in cabinets or on shelves where items cannot be easily removed on a frequent basis. Monitoring traps may be secured to both vertical as well as horizontal surfaces.

The primary focus of monitoring should be for cockroaches. A secondary use of these traps may be for monitoring occasional invaders, including silverfish, earwigs, crickets and spiders. Although these arthropods may not be specifically targeted pests for the IPM program, their capture may provide useful information.

If employees report seeing some unidentified crawling arthropod, e.g., spiders, monitoring traps should be placed in those areas to capture specimens for identification. Depending on the situation, long-term monitoring may then be initiated and maintained.

Additional monitoring traps may be placed in other areas as an aid in follow-up evaluation of treatments, especially for cockroaches. For follow-up evaluations, monitoring traps may be baited with a food attractant, such as a bit of banana or a spot of peanut butter.

Another type of monitoring for ants is known as "pre-baiting." When ants such as crazy ants, ghost ants, and Pharaoh ants are not present in sufficient numbers to readily observe ant trails back to the colony's location, peanut butter, jelly, Karo syrup etc., (without toxicant) may be placed along likely ant trails. After 15-60 minutes, a significant ant trail is often readily visible that can be followed to the source of the infestation - the colony's location.

Monitoring traps should be replaced when they become dusty, damaged, or capture a number of pests. The numbers of pest captured and where they are captured may be recorded. This information may be of future benefit to the overall IPM program.

Pheromone Traps. Traps, which use a sex attractant pheromone, may be used to monitor some species of food infesting beetles or moths. Areas where these traps should be used are large food storage rooms or warehouses.

Insect Light Traps. Insect light traps (ILTs) utilize ultraviolet UV light waves to attract flies and other flying insects to traps where they should be captured. Electrocuting traps use an electric grid to "zap" insects while other ILTs do not "zap" the insects, but rather use a glue trap behind or under the UV lights to passively capture insects. Whether ILTs will be beneficial and where they might be placed should be determined for each building during the initial IPM survey or in response to a specific flying insect situation.

Rodent Control Devices. Several types of traps and rodenticide bait stations are the two types of devices used to control rodent infestations. To eliminate a rodent infestation, every rat or mouse must find and interact with a device and then commit to that device. To achieve this goal, a variety of control devices need to be used in every rodent control situation. Using only one type of trap or relying on rodenticide baits alone usually results in failure to eliminate a rodent infestation.

Your Industry

The presence of cockroaches, rodents, ants and other pests can have a negative impact on the way your business is viewed. That's why it is important to implement quick and effective solutions.

Your establishment is unlike any other. That's why we take into consideration its construction, maintenance details, and nature of the pest infestation into account in customizing pest management service procedures for your facility.

In addition, we work with your management and staff to help identify potential problem areas and the best ways to address them. We will make certain that you have the appropriate documentation, sanitation reports and recommendations needed to satisfy inspectors and regulatory officials.

And because we respect your relationships with your employees and customers, we will perform all work at the hour most convenient for you to avoid any disruptions to customers or staff.

Basic Pest Management Guidelines
The pest management services will begin with an inspection.

When pest activity is detected, non-chemical control techniques will be considered first. Treatments will typically involve low-impact products and formulations (e.g., baits, inorganic dusts) applied primarily into cracks and voids or inside stations.

To minimize the need for retreatment, it will be your primary responsibility to remove or correct conditions that create or contribute to a particular pest problem.

Each location's staff will be provided copies of the labels and MSDS for the products that may be applied on the property.

Should the state have a pesticide treatment notification requirement, Terminix Commercial will assist your business in meeting those requirements in accordance with the state (or local) regulations.

Service Area Designation
During the survey of your facility, each room or area will receive one of the following designations: Red (high risk for pests); Yellow (moderate to low risk for pests); or Green (low risk for pests).

High Risk Areas (Red):
Any area where pest activity is most likely to occur needs to receive service on a more frequent basis . These areas are identified where safety and sanitation are top priorities.

Moderate to Low Risk Areas: (Yellow) Quarterly Service or (Green) As-Needed
Depending upon your facility's needs and requirements, moderate to low risk areas will be serviced and routinely inspected.

Exterior Service

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Most structure-invading pests, such as ants, rodents and occasional invaders, usually originate from outside the building. As part of the service, Terminix may include one or more of the following:

- Inspection and possible treatment outside around exterior doors and other entryways.
- Complete exterior inspection and treatment of exterior pest harborages.
- Application of a perimeter treatment to the building foundation and adjacent ground area.
- Establishment and maintenance of exterior rodent control devices in accordance with the facility's specific standards and requirements, if any.

Conditions potentially contributing to pest infestations will be noted on the service report and discussed with the facility manager or contact person.

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Ants

Argentine Ants, Odorous House Ants, Pavement Ants

Survey:
Conducted using visual inspection using a flashlight. Prebaiting with nontoxic food attractants may be employed in resolving an active infestation.

Contributing Conditions:
Where noted during service surveys, recommendations for correction of conditions possibly contributing to infestations will be made in writing and discussed with facility management, if available. Examples include sealing exterior cracks and other openings, minimizing heavy ground-covering vegetation next to foundations, removal of piles of items and other items that might provide nesting sites, reducing thick layers of landscape mulch, trimming tree and shrub branches from touching building, improving drainage and improving crawl space ventilation.

Non-chemical Techniques:
Pestproofing within the Terminix professional's ability to implement. Vacuuming can be employed to remove some exposed satellite colonies (e.g. carpenter ants) or to remove ant trails in sensitive situations (after colony has been controlled, e.g. fire ants indoors). Ant trails can be cleaned away using sponges and cleaning agents to remove trails from exposed areas (followed by bait placement at entry point used by the ants).

Insecticide Treatments:
Any active ant colony located by inspection should be treated by the best technique possible given the situation. Colonies found within soil may be drenched with a water-based residual product in sufficient quantity to penetrate entire colony. Colonies located within hollow voids may be treated by drilling and injecting a dust product. Insulated voids and voids in which ants have carried considerable amounts of soil (e.g., fire ants) may be treated by drilling and treatment with a residual aerosol product.

Those infestations for which the colony cannot be located may be treated using one or more ant baits (gels, granular, stations, or liquid). Prebaiting with a nontoxic food attractant may be used to generate trails and additional activity in order to improve ant bait update into the colony's food cycle. Follow-up visits are typically necessary to determine bait acceptance and administration of further baits.

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Occasional Invaders

Centipedes, Crickets, Earwigs, Ground Beetles, Millipedes, Sowbugs/Pillbugs

Survey:
Conducted using visual inspection with flashlight. Monitoring traps may be used.

Contributing Conditions:
Where noted during service surveys, recommendation for correction of conditions possibly contributing to infestations will be made in writing and discussed with facility management if person is available. Examples include sealing exterior cracks and other openings, minimizing heavy ground-covering vegetation next to foundations, removal of piles of items and other items that might provide harborage sites, reducing thick layers of landscape mulch, trimming and shrub branches from touching building, improving drainage, and improving crawlspace ventilation.

Non-chemical Techniques:
Pestproofing where such is within the pest management professional's ability to implement. Switching exterior lamp types to those that attract fewer flying insects, crickets and ground beetles (low-pressure sodium vapor or yellow lights). Vacuuming may be employed to remove arthopods concentrated in exposed areas indoors, such as earwigs and millipedes. Pitfall traps may be used along exterior foundations to monitor for crawling pests.

Insecticide Treatments:
Outdoors, as pests are exposed beneath items, within mulch, etc., they may be treated using spot treatment with a water-based residual product. Crickets outdoors may be treated using a granular insect bait.

Indoors, pests that crawl along baseboards, such as crickets, earwigs and millipedes, may be treated by use of monitoring traps and/or limited spot treatments applied to baseboards in darkened areas behind furniture where such pests are known to be active. Pests residing within voids may be treated by drilling and injection of a dust product. Pests found to be harboring in cracks may be treated using a dust product.

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Overwintering Pests

Box Elder Bugs, Elm Leaf Beetles, Lady Beetles

Survey:
Conducted using visual inspection with flashlight.

Contributing Conditions:
Where noted during service surveys, recommendation for correction of conditions possibly contributing to infestations will be made in writing and discussed with facility management if person is available. Examples include sealing exterior cracks and other openings and the sealing of cracks inside around door and window frames as well as cracks in walls above false ceilings.

Non-chemical Techniques:
Once overwintering pests have entered the walls and other structural voids during the fall, it is difficult to keep all of the flies from entering the interior rooms of the facility. In general, the south and west walls are most affected, and usually, the top few floors are involved.

The best course of action in minimizing problems with overwintering pests is preventative actions taken during the summer when the flies are not seeking to enter the building. The facility should seal cracks and other openings in the exterior walls, especially in the south and west walls. Exterior cracks should not be sealed while flies are still in the building.

Once these creatures have entered the walls, sealing cracks inside around door and window frames as well as cracks in walls above false ceiling can prevent most flies form entering the interior spaces of the building. Additionally, insect light traps can be placed above false ceilings or in attics to capture flies before they can enter the rooms below. Terminix can provide such traps, at additional charge, should the traps be needed.

Insecticide Treatments:
Ideally, application of a residual product to walls around windows outside on the south and west sides of the building can help minimize the numbers of flies that might enter. Such applications should be completed in late summer in most areas. Treatments may not be feasible for tall buildings unless lift equipment is rented.

Should overwintering pests be inside the walls and migrating periodically into interior rooms, treatment of cracks on the outside (where accessible) and around window and door frames inside can be helpful in keeping these pests inside the walls especially if the inside cracks are sealed by the facility following treatment.

In some cases, where feasible, a thin strip of residual product can be applied along the edge of the bottom window frame to control overwintering pests that fly to the windows.

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Spiders

Black Widow Spider

Survey:
Conducted using visual inspection with flashlight.

Contributing Conditions:
Where noted during service surveys, recommendation for correction of conditions possibly contributing to infestations will be made in writing and discussed with facility management if person is available. Examples include sealing exterior cracks and other openings, minimizing heavy ground-covering vegetation next to foundations, removal of piles of items and other items that might provide harborage sites, reducing thick layers of landscape mulch, trimming tree and shrub branches from touching the building, improving drainage, and improving crawlspace and attic ventilation. Switching exterior lamp types to those that attract fewer flying insects that serve as food for spiders (low-pressure sodium vapor or yellow lights) is recommended. Doors should remain closed or be screened to limit the entry of spiders and the flying insects on which they prey.

Non-chemical Techniques:
Black widow spiders, webbing and egg sacs may be removed by use of a vacuum.

Insecticide Treatments:
Direct treatment may be applied to black widow spiders where they are found using a nonresidual aerosol or a water-based residual product.

Spot treatments using a water-based residual product may also be applied into corners and along the inside of interior overhead doors where black widow spiders are active. Long term, such treatments may not totally prevent all black widow spiders inside, but combined with reduction of available harborages outside and installation of screening over vents and other exclusion efforts, the numbers of spiders found inside should be minimized. Regular inspections and treatments as needed outdoors are often necessary where black widow spider activity is recurrent outdoors.

Outdoors, reduction of potential harborages and regular inspections and possible spot treatments to corners and other sites where spiders build webs can be beneficial in minimizing this spider.

In large warehouses and similar situation where web-building spiders are found high above the floor, the spiders are best controlled through physical removal using a lift to gain access to the areas of activity. Where lifts are not possible or feasible, a volumetric (ULV) treatment of the entire interior space can kill many, if not most of the spiders. Such treatments are offered by Terminix at an additional charge according to the situation.

Brown Recluse Spider

Survey:

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Conducted using visual inspection with flashlight. Monitoring traps are typically used to determine if the brown recluse spider is actually present, and, if so, the extent of the infestation.

Contributing Conditions:
Where noted during service surveys, recommendation for correction of conditions possibly contributing to infestations will be made in writing and discussed with facility management if person is available. Examples include sealing exterior cracks and other openings, minimizing heavy ground-covering vegetation next to foundations, removal of piles of items and other items that might provide harborage sites, reducing thick layers of landscape mulch, trimming tree and shrub branches from touching the building, improving drainage, and improving crawlspace and attic ventilation.

Non-chemical Techniques:
A vacuum may be used to remove spiders as they are discovered during the inspection. Monitoring traps may be liberally placed to capture as many spiders as possible (where such traps can be securely placed).

Insecticide Treatments:
The brown recluse spider may be the most difficult spider to control and total elimination is often not possible, especially in older buildings. Brown recluse spiders can be minimized by implementing recommendations to address contributing conditions as outlined by the service professional and by treatments applied in areas of activity.

General steps that may be beneficial in limiting brown recluse spiders include the following:

- The facility should be advised to eliminate as much clutter as possible in storage areas.
- Accessible wall outlet plates may be removed and the voids behind them treated with a residual dust product.
- Cracks behind window and doorframes, under baseboards, and in walls above false ceiling may be treated with a residual dust product.
- Accessible voids where plumbing enters the walls may be treated with a residual dust treatment.
- If an attic is present and is accessible, it should be inspected for brown recluse spider activity. If spiders are found under insulation, many may be removed by vacuuming. Insulation may need to be lifted and dust applied underneath in those areas where spiders are found.
- Spot treatments with a water-based residual product may be applied to baseboards in darkened areas behind and under heavy furniture, appliances, etc.
- Application of a water-based residual product may also be applied to the exterior foundation.
- Accessible exterior cracks and openings should be treated with a residual dust product and sealed by the facility's maintenance staff.
- Weep holes may be plugged after treatment with pieces of wire mesh to exclude spiders.

Cellar Spiders, Cobweb Spiders, Funnelweb Spiders, Orb Weaver Spiders

Survey:
Conducted using visual inspection with flashlight.

Contributing Conditions:
Where noted during service surveys, recommendation for correction of conditions possibly contributing

to infestations will be made in writing and discussed with facility management if person is available. Examples include sealing exterior cracks and other openings, minimizing heavy ground-covering vegetation next to foundations, removal of piles of items and other items that might provide harborage sites, reducing thick layers of landscape mulch, trimming tree and shrub branches from touching the building, improving drainage, and improving crawlspace and attic ventilation. Switching exterior lamp types to those that attract fewer flying insects that serve as food for spiders (low-pressure sodium vapor or yellow lights) is recommended. Doors should remain closed or be screened to limit the entry of spiders and the flying insects on which they prey.

Non-chemical Techniques:
Spiders, webbing, and egg sacs may be used by use of a web duster or vacuum.

Insecticide Treatments:
Spot treatments using a water-based residual product may be applied into corners and along the inside of interior overhead doors where web-building spiders are active. Such treatments do not generally control all spiders, but combined with regular removal by sweeping or vacuuming, the numbers of web-building spiders can be markedly reduced.

Outdoors, spot treatments to corners and other sites where spiders build webs can be beneficial in spider reduction, especially when combined with regular removal by sweeping or vacuuming.

In large warehouses and similar situation where web-building spiders are found high above the floor, the spiders are best controlled through physical removal using a lift to gain access to the areas of activity. Where lifts are not possible or feasible, a volumetric (ULV) treatment of the entire interior space can kill many, if not most of the spiders. Such treatments are offered by Terminix at an additional charge according to the situation.

Ground Spiders, Wolf Spiders

Survey:
Conducted using visual inspection with flashlight. Monitoring traps may be used.

Contributing Conditions:
Where noted during service surveys, recommendation for correction of conditions possibly contributing to infestations will be made in writing and discussed with facility management if person is available. Examples include sealing exterior cracks and other openings, minimizing heavy ground-covering vegetation next to foundations, removal of piles of items and other items that might provide harborage sites, reducing thick layers of landscape mulch, trimming tree and shrub branches from touching the building, improving drainage, and improving crawlspace and attic ventilation. Switching exterior lamp types to those that attract fewer flying insects that serve as food for spiders (low-pressure sodium vapor or yellow lights) is recommended.

Non-chemical Techniques:
Pestproofing where such is within the pest management professional's ability to implement. Placement of monitoring traps behind and under furniture to potentially capture spiders as they crawl inside.

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Insecticide Treatments:
Outdoors, a perimeter treatment to the foundation may be applied in cases where wolf or ground spiders are regularly invading a particular facility.

In some cases indoors, these spiders may be treated by use of monitoring traps and/or limited spot treatments applied to baseboards in darkened areas behind furniture where such spiders are known to be active. Spiders found to be harboring in cracks may be treated using a dust product.

Hobo Spider

Survey:
Conducted using visual inspection with flashlight. Monitoring traps may be used to determine if hobo spiders are present.

Contributing Conditions:
Where noted during service surveys, recommendation for correction of conditions possibly contributing to infestations will be made in writing and discussed with facility management if person is available. Examples include sealing exterior cracks and other openings, minimizing heavy ground-covering vegetation next to foundations, removal of piles of items and other items that might provide harborage sites, reducing thick layers of landscape mulch, trimming tree and shrub branches from touching the building, improving drainage, and improving crawlspace and attic ventilation. Switching exterior lamp types to those that attract fewer flying insects that serve as food for spiders (low-pressure sodium vapor or yellow lights) is recommended. Doors should remain closed or be screened to limit the entry of spiders and the flying insects on which they prey.

Non-chemical Techniques:
A vacuum may be used to remove spiders as they are discovered during the inspection. Monitoring traps may be liberally placed to capture as many spiders as possible (where such traps can be securely placed).

Insecticide Treatments:
Cracks or holes where the hobo spider has fashioned a web may be treated using a residual dust product. Exterior cracks and openings may be treated using a dust product.

Spot treatments using a water-based residual product may be applied to the exterior foundation and to sites indoors where the hobo spider may be actively wandering.

Cellar Spiders, Cobweb Spiders, Funnelweb Spiders, Orb Weaver Spiders

Survey:
Conducted using visual inspection with flashlight.

Contributing Conditions:
Where noted during service surveys, recommendation for correction of conditions possibly contributing to infestations will be made in writing and discussed with facility management if person is available. Examples include sealing exterior cracks and other openings, minimizing heavy ground-covering

vegetation next to foundations, removal of piles of items and other items that might provide harborage sites, reducing thick layers of landscape mulch, trimming tree and shrub branches from touching the building, improving drainage, and improving crawlspace and attic ventilation. Switching exterior lamp types to those that attract fewer flying insects that serve as food for spiders (low-pressure sodium vapor or yellow lights) is recommended. Doors should remain closed or be screened to limit the entry of spiders and the flying insects on which they prey.

Non-chemical Techniques:
Spiders, webbing, and egg sacs may be used by use of a web duster or vacuum.

Insecticide Treatments:
Spot treatments using a water-based residual product may be applied into corners and along the inside of interior overhead doors where web-building spiders are active. Such treatments do not generally control all spiders, but combined with regular removal by sweeping or vacuuming, the numbers of web-building spiders can be markedly reduced.

Outdoors, spot treatments to corners and other sites where spiders build webs can be beneficial in spider reduction, especially when combined with regular removal by sweeping or vacuuming.

In large warehouses and similar situation where web-building spiders are found high above the floor, the spiders are best controlled through physical removal using a lift to gain access to the areas of activity. Where lifts are not possible or feasible, a volumetric (ULV) treatment of the entire interior space can kill many, if not most of the spiders. Such treatments are offered by Terminix at an additional charge according to the situation.

Ground Spiders, Wolf Spiders

Survey:
Conducted using visual inspection with flashlight. Monitoring traps may be used.

Contributing Conditions:
Where noted during service surveys, recommendation for correction of conditions possibly contributing to infestations will be made in writing and discussed with facility management if person is available. Examples include sealing exterior cracks and other openings, minimizing heavy ground-covering vegetation next to foundations, removal of piles of items and other items that might provide harborage sites, reducing thick layers of landscape mulch, trimming tree and shrub branches from touching the building, improving drainage, and improving crawlspace and attic ventilation. Switching exterior lamp types to those that attract fewer flying insects that serve as food for spiders (low-pressure sodium vapor or yellow lights) is recommended.

Non-chemical Techniques:
Pestproofing where such is within the pest management professional's ability to implement. Placement of monitoring traps behind and under furniture to potentially capture spiders as they crawl inside.

Insecticide Treatments:
Outdoors, a perimeter treatment to the foundation may be applied in cases where wolf or ground

spiders are regularly invading a particular facility.

In some cases indoors, these spiders may be treated by use of monitoring traps and/or limited spot treatments applied to baseboards in darkened areas behind furniture where such spiders are known to be active. Spiders found to be harboring in cracks may be treated using a dust product.

Yellow Sac Spider

Survey:
Conducted using visual inspection with flashlight. Monitoring traps may be used to determine if yellow sac spiders are present.

Contributing Conditions:
Where noted during service surveys, recommendation for correction of conditions possibly contributing to infestations will be made in writing and discussed with facility management if person is available. Examples include sealing exterior cracks and other openings, minimizing heavy ground-covering vegetation next to foundations, removal of piles of items and other items that might provide harborage sites, reducing thick layers of landscape mulch, trimming tree and shrub branches from touching the building, improving drainage, and improving crawlspace and attic ventilation.

Non-chemical Techniques:
Individual spiders in their silk retreats may be physically removed as they are discovered.

Insecticide Treatments:
Outdoors, a perimeter treatment to the foundation may be applied in cases where yellow sac spiders may be regularly invading a particular facility.

Indoors, a residual dust product may be applied into cracks where yellow sac spiders are suspected of harboring. Spot treatments to the underside of furniture and to corners where yellow sac spiders might locate their retreats may be applied using a water-based residual.

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Stinging & Biting Pests

Bumble Bees, Honey Bees, Hornets, Paper Wasps, Yellowjackets

Survey:
Conducted using visual inspection. A stethoscope or other listening device may be used to determine extend of wasp or bee nest if located inside a wall or walls. Often, it is best to implement control of social bee and wasp nests at night when activity is minimal and most insects are likely to be in the nest.

Contributing Conditions:
Where noted during service surveys, recommendation for correction of conditions possibly contributing to infestations will be made in writing and discussed with facility management if person is available. Examples include poor sanitary and trash handling practices; dumpster too close to the building; doors propped open, and sealing cracks or holes.

Non-chemical Techniques:
Vacuums can be used in some limited situations to remove social bees or wasps. Such work is best done at night when most of the worker insects are in or on the nest. Yellowjacket traps can be placed in perimeter areas in an attempt to reduce wasp numbers. Research has shown, however, such traps have limited effect on individual wasp colonies. Proper trash handling practices are often helpful in reducing the foraging of yellowjackets near buildings. Honey bees may possibly be removed by securing the services of a qualified beekeeper.

Insecticide Treatments:
Depending on the situation, when a wasp or bee nest is located it may be treated using a variety of methods, if it cannot be physically removed by vacuuming or other techniques.

- Exposed paper wasp nests can be treated with a nonresidual wasp aerosol product and the nest removed. If done during the daytime, application of small spot treatment using water-based residual may be necessary to control those foraging wasps that are not on the nest at time of treatment, otherwise nest construction may begin anew.
- Exposed hornet nests may be treated by injecting a residual dust product through the side of the nest and cutting down and removing the nest.
- Yellowjacket or bumble bee nests in the ground may be treated with a residual dust product.
- Nests within walls may be treated by drilling in to the wall from inside (where possible) and treatment using both nonresidual aerosol and a residual dust product. Honey bee nests require the facility to arrange for removal of the comb and honey once the bees are eliminated.

In some areas of the southwestern United States where Africanized honey bees (a.k.a., killer bees) are present, Terminix may not provide service to control honey bees. Specialized training, sometimes supervised and required by the state, is necessary before attempting to control Africanized honey bees. In such cases, Terminix may subcontract with a qualified bee control company in order to control honey bees.

SCOEPA00054353

Fleas

Survey:
Conducted using visual inspection with a flashlight. Determination of source (e.g., pets or feral animals)

Contributing Conditions:
Where noted during service surveys, recommendation for correction of conditions possibly contributing to infestations will be made in writing and discussed with facility management if person is available. Examples include treatments of pets by veterinarian, exclusion of wildlife or feral animals from building, vacuuming or steam cleaning of carpets or rugs.

Non-chemical Treatments:
Feral animals may require trapping and removal under current state/federal regulations.

Insecticide Treatments:
Active flea infestations indoors may be treated using an aerosol product designed for flea control (containing an adulticide and IGR) or by a water-based application to carpets and infested areas (containing an adulticide and IGR).

Outside, fleas are generally controlled using general treatment with labeled residual product.

Bumble Bees, Honey Bees, Hornets, Paper Wasps, Yellowjackets

Survey:
Conducted using visual inspection. A stethoscope or other listening device may be used to determine extend of wasp or bee nest if located inside a wall or walls. Often, it is best to implement control of social bee and wasp nests at night when activity is minimal and most insects are likely to be in the nest.

Contributing Conditions:
Where noted during service surveys, recommendation for correction of conditions possibly contributing to infestations will be made in writing and discussed with facility management if person is available. Examples include poor sanitary and trash handling practices; dumpster too close to the building; doors propped open, and sealing cracks or holes.

Non-chemical Techniques:
Vacuums can be used in some limited situations to remove social bees or wasps. Such work is best done at night when most of the worker insects are in or on the nest. Yellowjacket traps can be placed in perimeter areas in an attempt to reduce wasp numbers. Research has shown, however, such traps have limited effect on individual wasp colonies. Proper trash handling practices are often helpful in reducing the foraging of yellowjackets near buildings. Honey bees may possibly be removed by securing the services of a qualified beekeeper.

Insecticide Treatments:
Depending on the situation, when a wasp or bee nest is located it may be treated using a variety of methods, if it cannot be physically removed by vacuuming or other techniques.

- Exposed paper wasp nests can be treated with a nonresidual wasp aerosol product and the nest removed. If done during the daytime, application of small spot treatment using water-based residual may be necessary to control those foraging wasps that are not on the nest at time of treatment, otherwise nest construction may begin anew.
- Exposed hornet nests may be treated by injecting a residual dust product through the side of the nest and cutting down and removing the nest.
- Yellowjacket or bumble bee nests in the ground may be treated with a residual dust product.
- Nests within walls may be treated by drilling in to the wall from inside (where possible) and treatment using both nonresidual aerosol and a residual dust product. Honey bee nests require the facility to arrange for removal of the comb and honey once the bees are eliminated.

In some areas of the southwestern United States where Africanized honey bees (a.k.a., killer bees) are present, Terminix may not provide service to control honey bees. Specialized training, sometimes supervised and required by the state, is necessary before attempting to control Africanized honey bees. In such cases, Terminix may subcontract with a qualified bee control company in order to control honey bees.

Terminix Commercial
Siltronic

Terminix Service
Terminix will perform Pest Control for Siltronic for a period of 1 Year for the following pests at the locations, frequency and price as described in this Agreement.

- Argentine Ants
- Odorous House Ants
- Pavement Ants
- Centipedes
- Crickets
- Earwigs
- Ground Beetles
- Millipedes
- Sowbugs/Pillbugs
- Box Elder Bugs
- Elm Leaf Beetles
- Lady Beetles
- Black Widow Spider
- Brown Recluse Spider
- Cellar Spiders
- Cobweb Spiders
- Funnelweb Spiders
- Ground Spiders
- Hobo Spider
- Orb Weaver Spiders
- Wolf Spiders
- Yellow Sac Spider
- Bumble Bees
- Fleas
- Honey Bees
- Hornets
- Paper Wasps
- Yellowjackets

Terminix will retreat for the pests identified above at no charge between scheduled service visits.

Treatment Location

1	**Address**	7200 NW Front Ave., M/S 10 Portland, OR 97210-3676
	Special Service Instructions	Treat exterior perimeter of (1) Building with regular

	inspections and treatment as necessary, of property with special emphasis on existing known trouble spots. Placement of pharamone cockroach monitoring devices. Annual training of (1) train the trainer and a total of (3) site trained technicians. Scan Master Reports provided at no cost.
Service Frequency	Semi-Monthly (24 service visits)
Charges	Initial Visit: $1,100 Recurring Visits: $125 Additional Costs Optional Services: $0
Annual Location Total	$3,975

Total Annual Amount: $3,975 (Grand Total)

*Cost does not include any applicable sales tax.

This agreement is subject to the Terms and Conditions, including the Mandatory Arbitration provision.

This agreement is for an initial period of 1 Year from the date of the first service and, unless cancelled by the Purchaser, will automatically continue on a monthly basis until cancelled by either party upon thirty (30) days notice. This agreement is not valid unless accepted by customer within 30 days of submission.

In the event you have any questions or complaints, you may contact a Terminix representative by calling 1-800-TERMINIX (1-800-837-6464).

PAYMENT

TERMS: Applicable charges and sales tax will be paid within thirty (30) days of invoice. A charge of 1.5% per month will be added to any unpaid balance over 30 days.

Unless otherwise noted, Purchaser accepts centralized invoice to be provided each month. Summary invoices do not contain copies of service receipts.

Rodent control equipment may be installed during the term of the Agreement at an installation cost of [$12.00] for Tincats (multi-catch mouse station) and [$12.00] for tamperproof bait stations.

TERMS AND CONDITIONS

1. MATERIALS.
   A. The materials used in pest control service will comply with federal, state and local laws, and shall be acceptable to you.
   B. All pest control service shall be performed in accordance with the most effective scientific pest control procedures.
2. YOUR COOPERATION.
   A. Your cooperation is important to ensure the most effective results from Terminix service. Whenever conditions conducive to the breeding and harborage of pests covered by this contract are reported in writing by Terminix, and are not corrected by you, Terminix cannot assure satisfactory service.
   B. If the conditions noted by Terminix are not corrected as required, all guarantees in this agreement shall automatically terminate and be cancelled. Further, additional treatments in areas of such conditions that are not corrected as required shall be paid for by the customer as an extra charge.
3. INSURANCE. Terminix will furnish a Certificate of Insurance upon request.
4. TERMS OF AGREEMENT. If Terminix fails to comply with the specifications, they shall be given thirty (30) days notice to correct the problem. If, at the expiration of such thirty (30) days, the unsatisfactory conditions have not been corrected, you reserve the right to cancel the contract. In the event of persistent infestation, Terminix will provide special services at no extra cost until the condition is under control. Terminix is not responsible for insect or rodent damage to products or contents at the premises. This agreement does not provide for control of termites, other wood destroying organisms, or any other pests not specified.
5. NOTICE OF CLAIMS. Any claim under the terms of this agreement must be made immediately in writing to any Terminix Service Center.
6. DISCLAIMER.
   A. Terminix's liability under this agreement will be terminated if Terminix is prevented from fulfilling its responsibilities under the terms of this agreement by reason of delays in transportation, shortages of fuel and/or materials, strikes, embargoes, fire, floods, quarantine restrictions, earthquakes, hurricanes, or any other act of God or circumstances or cause beyond the control of Terminix.
   B. EXCEPT AS OTHERWISE PROHIBITED BY LAW, TERMINIX DISCLAIMS AND SHALL NOT BE RESPONSIBLE FOR ANY LIABILITY FOR DIRECT, INDIRECT,

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SPECIAL, INCIDENTAL, CONSEQUENTIAL, EXEMPLARY, PUNITIVE, STIGMA AND/OR LOSS OF ENJOYMENT DAMAGES. THE OBLIGATIONS OF TERMINIX SPECIFICALLY STATED IN THIS AGREEMENT ARE GIVEN IN LIEU OF ANY OTHER OBLIGATION OR RESPONSIBILITY, EXPRESS OR IMPLIED, INCLUDING ANY REPRESENTATION OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

7. CHANGE IN LAW. Terminix performs its services in accordance with the law. In the event of a change in existing law as it pertains to the services promised herein, Terminix reserves the right to revise the monthly service charge or terminate this agreement.
8. NON-PAYMENT, DEFAULT. In case of non-payment or default by the Purchaser, Terminix has the right to terminate this agreement and reasonable attorney's fees and costs of collection shall be paid by the Purchaser.
9. CHANGE IN TERMS. At the time of any renewal of this agreement, Terminix may change this agreement by adding, deleting or modifying any provision. Terminix will notify the Purchaser in advance of any such change, and Purchaser may decline to accept such a change by declining to renew this agreement. Renewal of this agreement will constitute acceptance of any such changes.
10. ENTIRE AGREEMENT. This agreement constitutes the entire agreement between the parties and no other representations or statements will be binding upon the parties.
11. MANDATORY ARBITRATION. Purchaser and Terminix agree that any claim, dispute or controversy ("Claim") between them or against the other or the employees, agents or assigns of the other, and any Claim arising from or relating to this agreement or the relationships which result from this agreement, including but not limited to any tort or statutory Claim, shall be resolved by neutral binding arbitration by the National Arbitration Forum ("NAF"), under the Code of Procedure ("Code") of the NAF in effect at the time the Claim is filed. Any arbitration hearing at which the parties appear personally will take place at a location within the United States federal judicial district in which Purchaser resides. Rules and forms of the NAF may be obtained and all claims shall be filed at any NAF office, www.arb-forum.com or by calling 1-800-474-2371. Each party shall be responsible for paying its own fees, costs and expenses and the arbitration fees as designated by the Code. However, for a Claim of $15,000 or less, if Purchaser so requests in writing, Terminix will pay Purchaser's arbitration fees due to the NAF to the extent they exceed any filing fees that the Purchaser would pay to a court with jurisdiction over the Claim. The arbitrator's power to conduct any arbitration proceeding under this arbitration agreement shall be limited as follows: any arbitration proceeding under this agreement will not be consolidated or joined with any arbitration proceeding under any other agreement, or involving any other property or premises, and will not proceed as a class action. The decision of the arbitrator shall be a final and binding resolution of the Claim. This arbitration agreement is made pursuant to a transaction involving interstate commerce and shall be governed by the Federal Arbitration Act, 9 U.S.C. Sections 1-16. Judgment upon the award may be entered in any court having jurisdiction. Neither party shall sue the other party with respect to any matter in dispute between the parties other than for enforcement of this arbitration agreement or of the arbitrator's award. THE PARTIES UNDERSTAND THAT THEY WOULD HAVE HAD A RIGHT OR OPPORTUNITY TO LITIGATE DISPUTES THROUGH A COURT AND TO HAVE A JUDGE OR JURY DECIDE THEIR CASE, BUT THEY CHOOSE TO HAVE ANY DISPUTES DECIDED THROUGH ARBITRATION.

12. SEVERABILITY. If any part of this agreement is held to be invalid or unenforceable for any reason, the remaining terms and conditions of this agreement shall remain in full force and effect.
13. GUARANTEE OF CUSTOMER SATISFACTION. We will answer your call anytime, day or night. We will perform your service or schedule an appointment within 24 hours after receiving your call. We will be on time. We will do the job right the first time, or we will do it over. We will show we care by our professional appearance and manner, and by the products and procedures we use. We will perform all services at your convenience to avoid any interruption to your normal operations.

By signing within thirty (30) days of the date below, Purchaser accepts our offer of Pest Control on the Terms and Conditions identified herein.

THE TERMINIX INTERNATIONAL COMPANY, L.P.	**Siltronic Deborah Lee**
By: Jennifer L Frick	By: Deborah Lee
Title: Acct Mgr	Title: Buyer
Date: 2/17/06	Date: 2/17/06

Training to Remain the Best

Ongoing training and professional development are a daily practice of Terminix Commercial. Our service professionals are kept abreast of the latest technical advances and service practices available through the following in-service training programs:

Advanced Study Program for Integrated Regionalized Education (ASPIRE) Commercial Training Program: This 20-day initial training program consists of two basic parts: (1) Field Training and (2) Classroom Workshop. The employee utilizes a Workbook designed to train him/her in the specific job classification and guides them. A Field Mentor works with the employee through the field training portion of training. In conjunction with the Workbook, the employee also receives an ASPIRE Commercial Service Manual which is a reference and training manual detailing the specifics of CORE Training, Principles of Pest Management, Commercial Service Guidelines and Basics of Termite Control. The employee also attends an ASPIRE 4-day training workshop that reinforces and expands on all phases of pest management and all facets of Terminix service offerings. The 16-day field training and 4-day workshop are also complimented with instructional and educational videos to assist in the training.

PACE Training Programs: These consist of written modules which contain learning material, pop quizzes for immediate reinforcement of material, and exercises. These exercises are throughout the training rather than at the conclusion so the attendee can work on the learning at the time it is introduced.

> **PACE Commercial Customer Service Training for Service Professionals**
> Designed to address the special needs of our commercial customers, this course covers understanding what commercial customers want; communicating for great customer service; being responsive to customers; and the elements of the Terminix Quality Assurance Program.
>
> **PACE Customer Service Training for Office Professionals**
> Designed specifically for Terminix office staff, the content includes the ideals of customer service, transforming the telephone and the elements of the Terminix Quality Assurance Program.

PACE programs also cover sales training for sales professionals as well.

TERMINIX "Technically Speaking" or "Tech Speak": Written training material with pre-test questions and post-test questions along with specific training materials are issued weekly from our Corporate Technical Department to be used in each branch location's weekly service meeting. Branch locations are required to hold weekly training sessions and forward an attendance sheet to the Region Training and Compliance Manager. The meetings are sometimes held on-site at customer locations for hands-on training.

Regional training meetings are held at different times of the year and incorporate various aspects of pest management strategies, equipment, and techniques.

Safety/Security of Terminix

Terminix is committed to conducting the operations of the business in a manner that protects both human health and the environment while complying with all applicable federal, state, and local laws and regulations. The commitment if reflected in Standard Operating Procedures from a Safety and Loss Manual kept in each branch location. It covers general guidelines for on the job safety to procedures for responding to emergencies involving chemicals. It provides the necessary guidance to help Branch Management personnel ensure the protection of their employees, customers, their neighbors, and the environment.

Terminix requires the cooperation of each employee to ensure a safe and healthy work areas which includes using the correct products for the job and following safe work practices; it is required they shared the corporate commitment to integrate safety and security control into all of their daily activities.

Terminix Branch Mangers are responsible for implementing and adhering to the Standard Operating Procedures and Guidelines outlined in the Safety and loss Manual. Supervisors receive training regarding all policies and employees are trained on the policies.

As part of the commitment, Terminix promotes a drug-free workplace and has an established Policy on the use or abuse of alcohol and drugs by their employees. To maintain the high professional standards of the Company's workforce, the company also obtains criminal background checks on applicants and employees.

Employees who hold Commercial Driver's Licenses or and operate vehicles that are subject to D.O.T. guidelines are also required to meet and adhere to those D.O.T. guidelines.

Branch safety meetings are held to train employees on safe working procedures. These are to last 10 to 15 minutes on a weekly basis and are incorporated in to the weekly service technician's training session.

Terminix requires employees to wear certain uniforms and use certain types of equipment based upon the job classification. They are instructed on the caring for uniforms and procedures for preventing personal injury and exposure through proper use of Personal Protective Equipment (PPE). These guidelines comply with the OSHA Hazard Communication Program and are part of the initial training and regular review process.

Guidelines and procedures for handling chemicals in the day-to-day operations are in strict compliance with Federal Government requirements for handling and storing chemicals used in the workplace and at application sites. All containers and mixes are required to have the appropriate label affixed. In addition, procedures are in place for responding to emergency chemical spills; this includes containment, notification, cleanup and disposal.

Disposal of wastes is consistent with all applicable federal, state and local laws and regulations to help ensure the protection of employees, customers and the environment.

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All service professional are operating clearly marked Terminix Commercial Service vehicles equipped with secure chemical and equipment areas.

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Commercial Pest Control Agreement

Purchaser / Billing Address

Company SILTRONIC CORPORATION
Address 7200 NW FRONT AVE, M/S 10
City PORTLAND
State OR Zip 97210-3676
Telephone (503)

Premises Deborah Lee - Buyer 503.319 44

Contact * BLUE LINDEN 503-219-4576 *
Telephone
Address SAME
City
State Zip

☐ Multiple Locations *Attach Location Listing*

Terminix Commercial Pest Control Service

Terminix will perform regularly scheduled service at the above service address for the control of the following pests:

		Service Frequency	
☒ Roaches	☐ Mice	☐ Monthly	☒ Semi-Monthly
☒ Silverfish	☒ Ants (excluding Carpenter, Pharaoh and Fire)	☒ Bi-[illegible]ly	☐ Weekly
☐ Rats	☒ Other – GPC	☐ Quarterly	☐ Other

Additional Service Information TREAT EXTERIOR PERIMETER OF (1) BUILDING W/ REGULAR INSPECTION & TREATMENT AS NECESSARY FOR BOXELDER BUGS, NUISANCE BEETLES, & BEES. TREAT INTERIORS AS NEEDED. PLACEMENT OF COCKROACH PHEROMONE MONITORING DEVICES IN LOCKER AREA & ALL (12) KITCHEN(ETTES) WITH REGULAR MONITORING. ANNUAL TRAINING (2) HR TRAIN THE TRAINER LEAD TECH WITH (2) ADDITIONAL TRAINED TECHS.

Addendums *Indicated forms are Part of this Agreement.* SCAN MASTER REPORTS AT NO CHARGE.

☐ Customer Preparation Checklist Part 1	☐ Sighting Log	☐ Equipment Sales
☐ Customer Preparation Checklist Part 2	☐ Customer Prep. Checklist for Apartments	☐
☐ Service Schedule Checklist	☐ Optional	☐

Payment Schedule PO #

Initial Service Charge	$	1,100.00
Regular Service Charge	$	125.00
Annual Total	$	3975.00
Less 03% Year Advance Payment *	$	119.25
Total Due	$	3855.75

Down Payment	Amount	Sequence Number
Received At Completion	Amount	Deposit Number
Account Number		

You may recognize a 3% discount for pre-paying one years service charge in advance.*

This is to certify that Tax Exemption Certificate Number has been furnished with this Agreement to Terminix.

Deborah Lee *
Customer/Agent signature

This agreement is subject to the Terms and Conditions on the front and back, including the Mandatory Arbitration provision.

This agreement is for an initial period of twelve months from the date of the first service and, unless canceled by the Purchaser, will automatically continue on a monthly basis until canceled by either party upon thirty (30) days notice. This agreement is not valid unless accepted by customer within 30 days of submission.

Terminix Authorization

In the event you have any questions or complaints, you may contact a Terminix representative by calling 1-800-TERMINIX (1-800-837-6464)

Terminix Office 2034 Telephone 5035319790 By Deborah Lee *
Address 10159 SW Commerce Circle Wilsonville OR Title Buyer *
JENNIE FREITAS 2/8/06 9070 Date 2/8/06 *
TERMINIX REPRESENTATIVE (print name) DATE
TERMINIX REPRESENTATIVE SIGNATURE

FAX 503-531-9790

TERMINIX® * INSURANCE CERT ON ORDER.

*Not available in California
www.terminix.com
Key # 33231 Rev. 1/05 R/P 1/05

SCOEPA00054365

PO	Type	Vendor	Name	PGp	Order Date
Item	Material		Short Text		Mat. Group
D I A	Plnt	SLoc	Order Qty	Un	Net Price	Curr.	per Un
4500317749	NB	706636	PARAMOUNT PEST CONTROL, INC.	A13	01/31/2005
00010			Quarterly Extermination Services		989598U
F	4401		450	AU	1.00	USD	1 AU
Still to be delivered			0	AU	0.00	USD	0.00 %
Still to be invoiced			0	AU	0.00	USD	0.00 %

Siltronic Corporation

Purchase order

PO Number: 4500317749
Date: 01/31/2005

PARAMOUNT PEST CONTROL, INC.
5207 NE PORTLAND HIGHWAY
PORTLAND OR 97213

Your quote: RHONDA
Quote date: 12/13/2005

Currency: USD
Terms del.: FOB PORTLAND
Terms payt.: NET 45 DAYS

Delivery and Invoice Address:
7200 NW Front Ave.
Portland OR 97210-3676

Vendor record no.: 706636
FAX: 503-288-7379
TEL: 503-288-7375

Item	Quantity UOM	Delivery	Material	Unit Price	Net Value
00010	450AU	12/31/2005	Quarterly Extermination Services This purchase order is a service agreement for the year of 2005. The amount agreed upon is $225 per quarter to perform labor and furnish materials and equipment for the control or eradication of rats, mice, non-wood ants, spiders and crawling insects. Problem areas include: exterior S.E. front, lobby and S.E. offices of Executive Building ($100/quarter) & Fab 1 ($125/quarter). **All work is to be coordinated and approved by Blue Linden only (503) 219-4576!!** Additional work other than work performed on this monthly service	1.00	450.00

Deborah Lee/503-219-4465
FAX:(503) 219-4112
EMAIL:Deborah.LEE@siltronic.com

Siltronic Corporation

Purchase order

PO Number: 4500317749 Page
Date: 01/31/2005 02

Item	Quantity UOM	Delivery	Material	Unit Price	Net Value
			contract requires a seperate purchase order.		

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Total net value excl. tax USD	450.00

The invoice MUST have the correct purchase order number and amount for the invoice to be paid promptly.

Any invoices that are progressive billings, MUST clearly reflect as such.

FAILURE TO FOLLOW THE INSTRUCTIONS ON THIS PURCHASE ORDER WILL RESULT IN DELAY OF PAYMENT.

Deborah Lee/503-219-4465
FAX:(503) 219-4112
EMAIL:Deborah.LEE@siltronic.com

Siltronic Corporation

Purchase order

PO Number: 4500297354
Date: 09/27/2004

TRUGREEN-LANDCARE/NORTHWEST RE
PO Box 100186
PASADENA CA 91189-0786

Currency: USD
Terms del.: FOB PORTLAND
Terms payt.: NET 45 DAYS

Delivery and Invoice Address:
7200 NW Front Ave.
Portland OR 97210-3676

Vendor record no.: 705078
FAX: 503-669-0250
TEL: 503-667-7741

Item	Quantity UOM	Delivery	Material	Unit Price	Net Value
00010	2,460AU	01/30/2005		1.00	2,460.00

TrueGreen landcare to do work per bid
TrueGreen to apply flight control goose repellant to
to designated areas on site. The areas will consist of all of the fine
turf around the Admin Building and visitor parking area, a section
just north of the Admin building in the field area that will extend
from the covered walk way to the asphalt walking path and north
from the planter bed about 75ft. This bid will include materials
equipment for spraying and labor for spraying.
The total of this bid will support 3ea spraying.
any questions call blue linden at 4576
copy of bid will be faxed to ext 7596

Total net value excl. tax USD 2,460.00

ATTN. D. MCGAVRAN

Dieter Balzat/503-219-7170
FAX:(503) 219-7596

Siltronic Corporation

Purchase order

PO Number: 4500297354 Page
Date: 09/27/2004 02

RE: YR. QUOTE DT. 9/23/04
PLS. COORDINATE JOB WITH BLUE LINDEN, FIRST APPLICATION TO BE MADE ASAP. THANKS!

Dieter Balzat/503-219-7170
FAX:(503) 219-7596

SCOEPA00054370

Siltronic Corporation

Purchase order

PO Number: 4500405473
Date: 03/31/2006

AQUATECHNEX LLC
PO Box 118
CENTRALIA WA 98531

Currency: USD
Terms del.: FOB SHIPPING POINT
Terms payt.: NET 45 DAYS

Delivery and Invoice Address:
7200 NW Front Ave.
Portland OR 97210-3676

Vendor record no.: 717039
FAX: 360-330-0174
TEL: 360-330-0152

Item	Quantity	UOM	Delivery	Material	Unit Price	Net Value
00010	10	GAL	03/31/2006	FLIGHT CONTROL PLUS To spray for geese.	210.00	2,100.00
				Total net value excl. tax USD		2,100.00

Attn: Order Desk

Ship UPS (account #891-424), or best method, to reach Siltronic on or before the stated delivery date.

PLEASE CONFIRM PRICE AND DELIVERY TO DEBORAH LEE BY FAX OR PHONE AT 503-219-4465 (FAX NO. 503-219-4112) OR BY E-MAIL AT deborah.lee@siltronic.com.

Make sure that the part number on the item(s) match the part number(s) on the packing slip. Also include the Siltronic part number if applicable.

Always put the purchase order number on the invoice and the packing slip.

Deborah Lee/503-219-4465
FAX:(503) 219-4112
EMAIL:Deborah.LEE@siltronic.com

Siltronic Corporation

Purchase order

SCOEPA00054371

FAILURE TO FOLLOW PURCHASE ORDER INSTRUCTIONS WILL RESULT IN DELAY OF PAYMENT OF AN INVOICE.

Deborah Lee/503-219-4465
FAX:(503) 219-4112
EMAIL:Deborah.LEE@siltronic.com

PO / Item / D I A	Type	Material	Plnt	SLoc	Vendor / Name / Short Text	Order Qty	Un	Net Price	Curr.	PGp	Order Date / Mat. Group / per Un
4500309753	NB				715586 DENNIS' SEVEN DEES LANDSCAPING, INC					A11	12/08/2004
00010					Standard Annual Maintenance Program						989598U
F	4401		0001			36,234	AU	1.00	USD		1 AU
Still to be delivered						0	AU	0.00	USD		0.00 %
Still to be invoiced						0	AU	0.00	USD		0.00 %
4500309758	NB				715586 DENNIS' SEVEN DEES LANDSCAPING, INC					A11	12/08/2004
00010					Annual Special Services						989598U
F	4401		0001			11,022	AU	1.00	USD		1 AU
Still to be delivered						0	AU	0.00	USD		0.00 %
Still to be invoiced						0	AU	0.00	USD		0.00 %
00020					Annual Goose Control						989598U
F	4401		0001			6,320	AU	1.00	USD		1 AU
Still to be delivered						0	AU	0.00	USD		0.00 %
Still to be invoiced						0	AU	0.00	USD		0.00 %
4500485602	NB				715586 DENNIS' SEVEN DEES LANDSCAPING, INC					A13	01/26/2007
00010					Landscaping Maintenance						989598U
S	F	4401	0001			12	MON	1,525.00	USD		1 MON
Still to be delivered						0	MON	0.00	USD		0.00 %
Still to be invoiced						0	MON	0.00	USD		0.00 %
00020					Special Services (upon request)						989598U
F	4401		0001			6,737.410	AU	1.00	USD		1 AU
Still to be delivered						0	AU	0.00	USD		0.00 %
Still to be invoiced						0	AU	0.00	USD		0.00 %
4500549664	NB				715586 DENNIS' SEVEN DEES LANDSCAPING, INC					A13	10/15/2007
00010					7 Dee's to remove tree and rocks						989598U
F	4401		0001			3,000	AU	1.00	USD		1 AU
Still to be delivered						0	AU	0.00	USD		0.00 %
Still to be invoiced						3,000	AU	3,000.00	USD		100.00 %
4500565144	NB				715586 DENNIS' SEVEN DEES LANDSCAPING, INC					A13	12/11/2007
00010					Trees						989597U
F	4401		0001			14,237	AU	1.00	USD		1 AU
Still to be delivered						0	AU	0.00	USD		0.00 %
Still to be invoiced						0	AU	0.00	USD		0.00 %
4500587010	NB				715586 DENNIS' SEVEN DEES LANDSCAPING, INC					A13	03/12/2008
00010					VALVES						989598U
F	4401		0001			2	PC	369.00	USD		1 PC
Still to be delivered						2	PC	738.00	USD		100.00 %
Still to be invoiced						2	PC	738.00	USD		100.00 %
00020					Landscape Staples						989598U
F	4401		0001			200	PC	36.00	USD		200 PC
Still to be delivered						200	PC	36.00	USD		100.00 %
Still to be invoiced						200	PC	36.00	USD		100.00 %

2005
2006
2005
2007

2005 - Present

Dennis' Seven Dees

SCOEPA00054373

Siltronic Corporation

Purchase order

PO Number: 4500309758
Date: 12/08/2004

DENNIS' SEVEN DEES LANDSCAPING, I
7355 SOUTHEAST JOHNSON CREEK BLV
PORTLAND OR 97206-9329

Currency: USD

Terms payt.: NET 30 DAYS

Delivery and Invoice Address:
7200 NW Front Ave.
Portland OR 97210-3676

Vendor record no.: 715586
FAX: 503-777-2399
TEL: 503-777-7777

Attn: Robin Mann

Item	Quantity UOM	Delivery	Material	Unit Price	Net Value
00010	11,022AU	12/31/2006		1.00	11,022.00
			Annual Special Services Billing shall be as services are rendered.		
00020	6,320AU	12/31/2006		1.00	6,320.00
			Annual Goose Control Billing shall be as services are rendered.		
			Total net value excl. tax USD		17,342.00

This purchase order is placed with reference to
Siltronic bid proposal dated October 13, 2004 and
Dennis' Seven Dees Landscaping, Inc. contract dated Dec-01-2004
extended for 2006 dcm

Tjito Harianto/503-219-7545
FAX:(503) 219-7546
EMAIL:Tiito.Harianto@siltronic.com

Siltronic Corporation

Purchase order

PO Number: 4500485602
Date: 01/26/2007

DENNIS' SEVEN DEES LANDSCAPING, I
7355 SOUTHEAST JOHNSON CREEK BLV
PORTLAND OR 97206-9329

Currency: USD

Terms payt.: NET 30 DAYS

Delivery and Invoice Address:
7200 NW Front Ave.
Portland OR 97210-3676

Vendor record no.: 715586
FAX: 503-777-2399
TEL: 503-777-7777

We await your order acknowledgment for the following items:

Item	Quantity UOM	Delivery	Material	Unit Price	Net Value
00020	6,737AU	12/31/2007		1.00	6,737.41
			Special Services (upon request) Services only upon Blue Linden's request. Contract may be cancelled by Siltronic with 30 days notice.		
			Total net value excl. tax USD		6,737.41

PLEASE CONFIRM PRICE AND DELIVERY TO DEBORAH LEE BY FAX OR PHONE AT 503-219-4465 (FAX NO. 503-219-4112) OR BY E-MAIL AT deborah.lee@siltronic.com.

The invoice MUST have the correct purchase order number and correct line number for the invoice to be paid promptly.

Any invoices that are progressive billings, MUST clearly reflect as such.

FAILURE TO FOLLOW THE INSTRUCTIONS ON THIS PURCHASE ORDER WILL RESULT IN DELAY OF PAYMENT.

Deborah Lee/503-219-4465
FAX:(503) 219-4112
EMAIL:Deborah.LEE@siltronic.com

DENNIS' SEVEN DEES
landscaping & garden centers

To: STEVE McMAHEN Date: 1/3/08

Company: SILTRONIC CORP. Fax number: 503-219-4125

From: STEVE ATKINSON Total pages: 5

Re: MAINTENANCE CONTRACT.

STEVE,

HERE IS THE NEW MAINTENANCE FIGURE WITH A SCHEDULE. THE CONTRACT WILL START FEB. 1 ALL THE SERVICES WILL REMAIN THE SAME.

THANK YOU.
STEVE ATKINSON

7355 SE Johnson Creek Blvd.
Portland, OR 97206 USA
dennis7dees.com

503.777.7777
360.737.3755 tel, WA
503.777.2399 fax

Commercial Landscape Budget for 2008

January 3, 2008

Sitronic Corporation
Steve McMahon
7200 NW Front Street
Portland, OR 97210-3676

1. Scope of Work: Contractor shall provide the following services to owner at the property, subject to the terms and conditions of this contract:

x	**Maintenance Program** One year maintenance as per the attached schedule and specifications will be as follows:	per month:	$1,606.00
x	**Bark mulch** Install medium fir to an approximate depth of 1 1/2 inches in the planting beds. Cut bed edges where needed to prevent bark overflow onto the sidewalks and parking areas.	per unit installed:	$262.00
x	**Aeration** Core aerate turf to encourage air circulation and moisture penetration in the root zone.		$625.00
x	**Blackberry Spray** Spray fields for blackberry control in early spring.		$810.00
x	**Irrigation Repairs - Spring Pressurization** Perform needed repairs when the system is pressurized in the spring		$300.00 budget
x	**Irrigation Repairs - Watering Season** Perform necessary repairs during the watering season		$1,000.00 budget
x	**Pest Control - Turf** Insecticide application for the treatment of Cranefly		$648.00

(Excludes sales tax)

Fees: A service charge of 1.5% per month or 18% per annum applies to unpaid past due balance, plus reasonable attorneys fees and costs to the prevailing party if collection is necessary.

This proposal is valid only if counter signed and returned to Dennis' Seven Dees Landscaping, Inc., within thirty (30) days.

ACCEPTED AND APPROVED:

By _____

Title _____

Date _____

SUBMITTED:
DENNIS' SEVEN DEES LANDSCAPING, INC.

Steve Atkinson, CLT
Account Manager
Commercial Division Grounds Management

Budget for Maintenance Services and Enhancements 2008

Siltronic Corporation

	Maintenance Program	Barkmulch	Aeration	Blackberry Spray	Irrigation Repairs	Pest Control	Total
January	$1,525						$1,525
February	$1,606						$1,606
March	$1,606				$300		$1,906
April	$1,606			$810			$2,416
May	$1,606		$625		$250	$648	$3,129
June	$1,606				$250		$1,856
July	$1,606				$250		$1,856
August	$1,606				$250		$1,856
September	$1,606						$1,606
October	$1,606		$625				$2,231
November	$1,606						$1,606
December	$1,606						$1,606
	$19,191						***$23,199***

SCOEPA00054378

Service Program

Maintenance Schedule of Services

Silhouette Corporation

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total Visits
FINE TURF													
Mow		x	x	x	x	x	x	x	x	x	x	x	38
Edge		x	x	x	x	x	x	x	x	x	x		19
Fertilization			x		x		x		x		x		5
Weed Control					x				x				2
Pest and Disease Monitoring	monitor monthly												12
Blow Walkways	x	x	x	x	x	x	x	x	x	x	x	x	40
TREES, SHRUBS AND GROUNDCOVER BEDS													
Weed Control and Police Beds	x	x	x	x	x	x	x	x	x	x	x	x	40
Pre-emergent Application		x							x				2
Herbicide Spray Perimeters			x	x	x	x	x	x	x	x			8
Fertilize Trees			x										1
Fertilize Shrubs and Groundcovers			x			x							2
Pest and Disease Monitoring	monitor monthly												12
Leaf Removal										x	x	x	5
Prune Trees	x												1
Prune Shrubs				x	x	x	x	x	x	x			30
Prune Groundcovers				x		x			x				3
Mow hypericum	x												1
Blow Walkways	x	x	x	x	x	x	x	x	x	x	x	x	40
Prune Roses		x				x				x			3
IRRIGATION													
Spring Start-up			x										1
Winterization											x		1
Monitor and Adjust					x	x	x	x	x				8
COMMUNICATION													
Submit Service Reports	x	x	x	x	x	x	x	x	x	x	x	x	40
Quality Control Walk Through	date to be determined												1
Budget Planning	date to be determined												1

DENNIS' SEVEN DEES LANDSCAPING, INC.

Commercial Landscape Management Contract

DENNIS' SEVEN DEES LANDSCAPING, INC.

7365 SOUTHEAST
JOHNSON CREEK BLVD.
PORTLAND, OR 97206-9329

PHONE 503/777-7777 FAX 503/777-2399

LICENSE #5009
by the State Landscape Contractors Board
Salem, OR 97310 PHONE: 503/378-4621

Customer Name: Sitronic Corporation
Address: 7700 NW Front Avenue
City/State: Portland, OR
Site location: Sitronic Corporation
Portland, OR 97210-3676

Date: 1/4/08
Phone: (503) 219-4576
Zip Code: 97210-3676

I. Scope of Work: Contractor shall provide the following maintenance services to owner at the property, subject to the terms and conditions of this contract:

II. Terms of Payment: Owner shall pay contractor $1,606.00 monthly for maintenance services under this contract, payable as listed below. Billings are to be made on the first day of each month commencing with the inception of this contract and will be due in 30 days.

Maintenance Program	Monthly billing	$1,606.00
Special Services	Billed as completed	$6,940.00

Owner shall pay contractor for special services rendered according to attached schedule, owner may modify special services to be performed.

III. Term of contract: Performance of the work under this contract shall commence on 01/01/07 and shall renew annually thereafter on 12/31 for an additional 12 month period each subsequent year. Client shall receive notification of any change in the contract amount approximately thirty days prior to the implementation of the change.

IV. Cancellation: Contract may be terminated by either party with 30 days written notification. In the event of contract cancellation, contractor will be paid for services rendered to date as follows:

The number of times each service was provided during the first or subsequent twelve (12) month contract period(s), multiplied by the unit price for that service. Total all services and subtract the amount paid during this twelve month contract period. The difference is then due the contractor, in full, within 30 days of invoice date.

V. Fees: A service charge of 1.5% per month or 18% per annum applies to unpaid past due balance, plus reasonable attorneys fees and costs to the prevailing party if collection is necessary.

This proposal is valid only if counter signed and returned to Dennis' Seven Dees Landscaping, Inc., within thirty (30) days.

ACCEPTED AND APPROVED:

By _____

Title: _____

Date: _____

SUBMITTED:
DENNIS' SEVEN DEES LANDSCAPING, INC.

Steve Atkinson
Account Manager
Commercial Division Grounds Management

JAN-02-2007 09:54 From: To:5032194112 Page:1/4

DENNIS' SEVEN DEES
landscaping & garden centers

To:	Deborah Lee	Date:	January 2, 2007
Company:	Siltronic Corp	Fax number:	503-219-4112
From:	Craig Broberg	Total pages:	4
Re:	2007 contract		

Deborah,
Here is the new revised 2007 Landscape Maintenance and special services contract as discussed on the phone.

Thank you,
Craig Broberg
503-201-9290

SAP ORDER 2261902
PR. 75906854
PO. 4500485602

7355 SE Johnson Creek Blvd.
Portland, OR 97206
dennis7dees.com

503.777.7777
360.737.3755 tel, WA
503.777.2399 fax

Commercial Landscape Management Contract

DENNIS' SEVEN DEES LANDSCAPING, INC.

7355 SOUTHEAST
JOHNSON CREEK BLVD.
PORTLAND, OR 97206-9329

PHONE: 503/777-7777 FAX 503/777-2399

LICEN$E #5009
by the State Landscape Contractors Board
Salem, OR 97310 PHONE: 503/378-4621

Customer Name: Siltronic Corporation
Address: 7200 NW Front Ave
City/State: Portland, Or
Site Location: Siltronic Corporation
Portland, Or 97210-3676

Date: ######
Phone:
Zip Code: 97210-3676

I. Scope of Work: Contractor shall provide the following maintenance services to owner at the property, subject to the terms and conditions of this contract:

II. Terms of Payment: Owner shall pay contractor $1,525.00 monthly for maintenance services under this contract, payable as listed below. Billings are to be made on the first day of each month commencing with the inception of this contract and will be due in 30 days.

Maintenance Program	Monthly billing	$1,525.00	= $18,300
Special Services	Billed as completed	$6,940.00	6940

$25,240 TOTAL

Owner shall pay contractor for special services rendered according to attached schedule, owner may modify special services to be performed.

III. Term of contract: Performance of the work under this contract shall commence on 01/01/07 and shall renew annually thereafter on 12/31 for an additional 12 month period each subsequent year. Client shall receive notification of any change in the contract amount approximately thirty days prior to the implementation of the change.

IV. Cancellation: Contract may be terminated by either party with 30 days written notification. In the event of contract cancellation, contractor will be paid for services rendered to date as follows:

The number of times each service was provided during the first or subsequent twelve (12) month contract period(s), muliplied by the unit price for that service. Total all services and subtract the amount paid during this twelve month contract period. The difference is then due the contractor, in full, within 30 days of invoice date.

V. Fees: A service charge of 1.5% per month or 18% per annum applies to unpaid past due balance, plus reasonable attorneys fees and costs to the prevailing party if collection is necessary.

This proposal is valid only if counter signed and returned to Dennis' Seven Dees Landscaping, Inc., within thirty (30) days.

ACCEPTED AND APPROVED:

By: _____

Title: _____

Date: _____

SUBMITTED:
DENNIS' SEVEN DEES LANDSCAPING, INC.

Craig Broberg
Account Manager
Commercial Division Grounds Management

Service Program

Maintenance Schedule of Services

Siltronic Corporation

	FINE TURF	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total Visits
	Mow		x	x	x	x	x	x	x	x	x	x	x	38
	Edge		x	x	x	x	x	x	x	x	x	x		19
	Fertilization			x		x		x		x		x		5
	Weed Control					x				x				2
	Post and Disease Monitoring	monitor monthly												12
	Blow Walkways	x	x	x	x	x	x	x	x	x	x	x	x	40
	TREES, SHRUBS AND GROUNDCOVER BEDS													
	Weed Control and Police Beds	x	x	x	x	x	x	x	x	x	x	x	x	40
	Pre-emergent Application		x							x				2
	Herbicide Spray Perimeters			x	x	x	x	x	x	x	x			8
	Fertilize Trees			x										1
	Fertilize Shrubs and Groundcovers			x			x							2
	Post and Disease Monitoring	monitor monthly												12
	Leaf Removal	x									x	x	x	6
	Prune Trees	x												1
	Prune Shrubs				x	x	x			x	x			5
	Prune Groundcovers				x		x			x				3
	Trim Hedges				x		x			x				3
	Blow Walkways	x	x	x	x	x	x	x	x	x	x	x	x	40
	prune roses	x			x			x						3
	IRRIGATION													
	Spring Start-up			x										1
	Winterization											x		1
	Monitor and Adjust					x	x	x	x	x				8
	COMMUNICATION													
	Submit Service Reports	x	x	x	x	x	x	x	x	x	x	x	x	40
	Quality Control Walk Through	Quarterly with account Manager & customer												1
	Budget Planning	Date to be determined												1

DENNIS' SEVEN DEES LANDSCAPING, INC.

Service Program

Maintenance Schedule of Services

Siltronic Special Services P.O. #

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total Visits
FIELD MOWING													
$1075 for 3 mowings				X			X				X		3
PERIMETER MOW 10' w/40x40area													
$330 for 2 mowings				X							X		2
FIELD SPRAY													
$420 for 1 spray				X									1
PERIMETER SPRAY 10'													
$695 for 2 sprays				X					X				2
SEASONAL COLOR													
$860 for 2 color changes					X					X			2
Aeration/lime of fine turf													
$1,320 for one time						X							1
Herbicide spray of SW field													
$1385 for 2 sprays				X					X				2

Irrigation services-repairs as needed

$1,100 as needed throughout the year *X* *X* *A/N*

The owner may modify these services with 30 day notice

Monthly Invoices

February services

March Services

April Services	field mow and spray, perimeter mow and spray , spray of SW field	$ 1,625.00
	irrigation repairs	$ 550.00
May Services	annual color monument sign	$ 430.00
	aeration/lime	$ 1,320.00
July Services	field mow /	$360
	irrigation repairs	$ 660.00
September Services	Perimeter spray/SW field	$ 1,040.00
October Services	Annual color/	$ 430.00
November Services	field and,perimeter mow	$ 525.00
	Total	**$ 6,940.00**

12/21/2006

Service Program

Maintenance Schedule of Services

Siltronic Corporation

	FINE TURF	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total Visits
	Mow		x	x	x	x	x	x	x	x	x	x	x	38
	Edge		x	x	x	x	x	x	x	x	x	x		19
	Fertilization			x		x		x		x		x		5
	Weed Control					x				x				2
	Pest and Disease Monitoring	monitor monthly												12
	Blow Walkways	x	x	x	x	x	x	x	x	x	x	x	x	40
	TREES, SHRUBS AND GROUNDCOVER BEDS													
	Weed Control and Police Beds	x	x	x	x	x	x	x	x	x	x	x	x	40
	Pre-emergent Application		x							x				2
	Herbicide Spray Perimeters			x	x	x	x	x	x	x	x			8
	Fertilize Trees			x										1
	Fertilize Shrubs and Groundcovers			x			x							2
	Pest and Disease Monitoring	monitor monthly												12
	Leaf Removal	x									x	x	x	6
	Prune Trees	x												1
	Prune Shrubs				x	x	x			x	x			5
	Prune Groundcovers				x		x			x				3
	Trim Hedges				x		x			x				3
	Blow Walkways	x	x	x	x	x	x	x	x	x	x	x	x	40
	prune roses	x			x			x						3
	IRRIGATION													
	Spring Start-up			x										1
	Winterization											x		1
	Monitor and Adjust					x	x	x	x	x				8
	COMMUNICATION													
	Submit Service Reports	x	x	x	x	x	x	x	x	x	x	x	x	40
	Quality Control Walk Through	Quarterly with account Manager & customer												1
	Budget Planning	Date to be determined												1

DENNIS' SEVEN DEES LANDSCAPING, INC.

Service Program

Maintenance Schedule of Services

Siltronic Special Services P.O. #

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total Visits
FIELD MOWING													
$1075 for 3 mowings				X			X				X		3
PERIMETER MOW 10' w/40x40area													
$330 for 2 mowings				X							X		2
FIELD SPRAY													
$420 for 1 spray				X									1
PERIMETER SPRAY 10'													
$695 for 2 sprays				X					X				2
SEASONAL COLOR													
$860 for 2 color changes					X					X			2
Aeration/lime of fine turf													
$1,320 for one time						X							1
Herbicide spray of SW field													
$1385 for 2 sprays				X					X				2

Irrigation services-repairs as needed

$1,100 as needed throughout the year ***X*** ***X*** ***A/N***

The owner may modify these services with 30 day notice

Monthly Invoices

February services

March Services

April Services	field mow and spray, perimeter mow and spray , spray of SW field	$ 1,625.00
	irrigation repairs	$ 550.00
May Services	annual color monument sign	$ 430.00
	aeration/lime	$ 1,320.00
July Services	field mow /	$360
	irrigation repairs	$ 660.00
September Services	Perimeter spray/SW field	$ 1,040.00
October Services	Annual color/	$ 430.00
November Services	field and,perimeter mow	$ 525.00
	Total	**$ 6,940.00**

12/21/2006

DENNIS' SEVEN DEES
landscaping & garden centers

Commercial Landscape Budget for 2006

December 19, 2005

Siltronic Corporation
Blue Linden
7200 NW Front Ave
Portland, Or 97210

I. Scope of Work: Contractor shall provide the following services to owner at the property, subject to the terms and conditions of this contract:

x	**Maintenance Program** One year maintenance as per the attached schedule and specifications will be as follows: please note: same specifications as last year.	per month: $1,478.00
x	**Floralscapes Program** Install color planting as per attached schedule and specifications. two color changes at $390.00	$780.00
x	**Field mowing** recommend 3 mowings at $325.00 per mow	$975.00
	Perimeter mow: 10' w/ 40x40 area recommend 2 mowings at $150.00 ea.	$300.00
x	**Aeration and lime** Core aerate turf to encourage air circulation and moisture penetration in the root zone. Lime to decrease natural acidity of Pacific NW soils, encouraging healthier turf.	$1,200.00
x	**Field broadleaf spray** recommend 1 sprays at $380.00	$380.00
x	**Perimeter spray; 10' along fence** recommend 2 applications at $315.00 ea.	$630.00
x	**Herbicide spray of SW field** recommend two spray applications at $630.00 ea.	$1,260.00

7355 SE Johnson Creek Blvd.
Portland, OR 97206 LCD#5009
dennis7dees.com

503.777.7777
360.737.3755 tel WA
503.777.2399 fax

NEW for 2006

0002/0005

Budget for Maintenance Services and Enhancements 2006

Siltronic Corp.

	Maintenance Program	Floralscape Program	Field mowing/spray	Aeration	Irrigation Repairs	Goose spray	Perimeter mow	Spray perimwter/SW field	Total
January	$1,478								$1,478
February	$1,478					$1,250			$2,728
March	$1,478					$1,250			$2,728
April	$1,478		$380		$500				$2,358
May	$1,478	$390	$325				$150	$945	$3,288
June	$1,478			$1,200					$2,678
July	$1,478		$325		$300	$1,250			$3,353
August	$1,478				$300				$1,778
September	$1,478								$1,478
October	$1,478	$390	$325			$1,250	$150	$945	$4,538
November	$1,478								$1,478
December	$1,478					$1,250			$2,728

$30,611

03/27/2008 13:06 FAX

SCOEPA00054388

Service Program

Maintenance Schedule of Services

Siltronic Corporation

	FINE TURF	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total Visits
	Mow		x	x	x	x	x	x	x	x	x	x	x	38
	Edge		x	x	x	x	x	x	x	x	x	x		19
	Fertilization			x		x		x		x		x		5
	Weed Control					x				x				2
	Lime Application													
	Pest and Disease Monitoring	monitor monthly												12
	Blow Walkways	x	x	x	x	x	x	x	x	x	x	x	x	40
	Aeration													
	ROUGH TURF, WILDFLOWERS AND BIOSWALE													
	Field Mow													
	Bioswale													
	String Trim Edges													
	Fertilization													
	Weed Control													
	Trash Pick-up													
	Other:													
	TREES, SHRUBS AND GROUNDCOVER BEDS													
	Weed Control and Police Beds	x	x	x	x	x	x	x	x	x	x	x	x	40
	Pre-emergent Application		x							x				2
	Herbicide Spray Perimeters			x	x	x	x	x	x	x	x			8
	Fertilize Trees			x										1
	Fertilize Shrubs and Groundcovers			x			x							2
	Pest and Disease Monitoring	monitor monthly												12
	Leaf Removal	x									x	x	x	6
	Prune Trees	x												1
	Prune Shrubs				x	x	x			x	x			5
	Prune Groundcovers				x		x			x				3
	Trim Hedges				x		x			x				3
	Blow Walkways	x	x	x	x	x	x	x	x	x	x	x	x	40
	prune roses													
	IRRIGATION													
	Spring Start-up			x										1
	Winterization											x		1
	Monitor and Adjust					x	x	x	x	x				8
	SUBCONTRACTORS													

DENNIS' SEVEN DEES LANDSCAPING, INC.

	COMMUNICATION													
	Submit Service Reports	x	x	x	x	x	x	x	x	x	x	x	x	40
	Quality Control Walk Through	date to be determined												1
	Budget Planning	date to be determined												1

x	**Goose spray** 5 spray applications based on last years history at $1,250.00 ea.	$6,250.00
x	**Irrigation Repairs - Spring Pressurization** Perform needed repairs when the system is pressurized in the spring	$500.00
x	**Irrigation Repairs - Watering Season** Perform necessary repairs during the watering season	$600.00
x		

(Excludes sales tax)

Fees: A service charge of 1.5% per month or 18% per annum applies to unpaid past due balance, plus reasonable attorneys fees and costs to the prevailing party if collection is necessary.

This proposal is valid only if counter signed and returned to Dennis' Seven Dees Landscaping, Inc., within thirty (30) days.

ACCEPTED AND APPROVED:

By: _____

Title: _____

Date: _____

SUBMITTED:
DENNIS' SEVEN DEES LANDSCAPING, INC.

Craig Bookey

Account Manager
Commercial Division Grounds Management

Siltronic Corporation

Purchase order

PO Number: 4500309753
Date: 12/08/2004

DENNIS' SEVEN DEES LANDSCAPING, I
7355 SOUTHEAST JOHNSON CREEK BLV
PORTLAND OR 97206-9329

Currency: USD

Terms payt.: NET 30 DAYS

Delivery and Invoice Address:
7200 NW Front Ave.
Portland OR 97210-3676

Vendor record no.: 715586
FAX: 503-777-2399
TEL: 503-777-7777

Attn: Robin Mann

Item	Quantity UOM	Delivery	Material	Unit Price	Net Value
00010	36,234AU	12/31/2006		1.00	36,234.00
			Standard Annual Maintenance Program Billing shall be $1404.00 per month month for 2005 Billing shall be $1478.00 per month month for 2006		
				Total net value excl. tax USD	36,234.00

This purchase order is placed with reference to
Siltronic bid proposal dated October 13, 2004 and
Dennis' Seven Dees Landscaping, Inc. contract dated Dec-01-2004
extended for 2006 dcm

Tjito Harianto/503-219-7545
FAX:(503) 219-7546
EMAIL:Tjito.Harianto@siltronic.com

Siltronic Corporation

Purchase order

PO Number: 4500309753
Date: 12/08/2004

DENNIS' SEVEN DEES LANDSCAPING, I
7355 SOUTHEAST JOHNSON CREEK BLV
OR 97206-9329

Currency: USD

Terms payt.: NET 30 DAYS

Delivery and Invoice Address:
7200 NW Front Ave.
Portland OR 97210-3676

Vendor record no.: 715586
FAX: 503-777-2399
TEL: 503-777-7777

Attn: Robin Mann

Item	Quantity	UOM	Delivery	Material	Unit Price	Net Value
00010	16,848	DOL	12/31/2005		1.00	16,848.00
				Standard Annual Maintenance Program Billing shall be $1404.00 per month month		
				Total net value excl. tax USD		16,848.00

This purchase order is placed with reference to
Siltronic bid proposal dated October 13, 2004 and
Dennis' Seven Dees Landscaping, Inc. contract dated Dec-01-2004

Douglas Miller/503-417-4101
FAX:(503) 219-7596
EMAIL:Doug.MILLER@siltronic.com

03/27/2008 13:01 FAX
0001/0009
SCOEPA00054393

Commercial Landscape Management Contract

DENNIS' SEVEN DEES
LANDSCAPING, INC.
7355 SOUTHEAST
JOHNSON CREEK BLVD.
PORTLAND, OR 97206-9329

PHONE: 503/777-7777 FAX 503/777-2399

LICENSE #5009
by the State Landscape Contractors Board
Salem, OR 97310 PHONE: 503/378 4621

Customer Name:	Siltronic Corporation	Date:	
Address:	7200 NW Front Ave	Phone:	503.219.4101
City/State:	Portland Or	Zip Code:	97210
Site Location:	7200 NW Front Ave		
	Portland Or 97210		

I. Scope of Work: Contractor shall provide the following maintenance services to owner at the property, subject to the terms and conditions of this contract, and Siltronic Corporation : **RFQ dated Oct.13,2004 and attached Services Schedules**

Standard Annual Maintenance Schedule
Special Services Schedule

II. Terms of Payment: Owner shall pay contractor **$1,404.00** monthly for maintenance services under this contract, payable as listed below. Billings are to be made on the first day of each month commencing with the inception of this contract and will be due in 30 days.

Standard Maintenance Program	**Monthly billing**	$1,404.00	450030975
Annual Special Services	**Billed as services rendered**	$5,395.00	450030975

Owner shall pay contractor for special services rendered according to attached schedule, owner may modify special services to be preformed. Planthed upgrades are not [redacted] Scheduled and will require separate proposal of services.

III. Term of contract: Performance of the work under this contract shall commence on 01/01/05 and shall renew annually thereafter on 12/31 for an additional 12 month period each subsequent year. owner shall receive notification of any change in the contract amount thirty days prior to the implementation of the change.

IV. Cancellation: Contract may be terminated by either party with 30 days written notification. In the event of contract cancellation, contractor will be paid for services rendered to date as follows:

The number of times each service was provided during the first or subsequent twelve (12) month contract period(s), multiplied by the unit price for that service. Total all services and subtract the amount paid during this twelve month contract period. The difference is then due the contractor, in full, within 30 days of invoice date.

V. Fees: A service charge of 1.5% per month or 18% per annum applies to unpaid past due balance, plus reasonable attorneys fees and costs to the prevailing party if collection is necessary.

This proposal is valid only if counter signed and returned to Dennis' Seven Dees Landscaping, Inc., within thirty (30) days.

ACCEPTED AND APPROVED:

By: Douglas Miller
Title: SR. MATERIALS MANAGER
Date: 12/08/04

DOUGLAS MILLER

SUBMITTED:
DENNIS' SEVEN DEES LANDSCAPING, INC.

Robin Mann
Robin Mann
Account Manager
Commercial Division Grounds Management

Service Program

Maintenance Schedule of Services

Siltronic

STANDARD SERVICE VISITS

A & B PLUS IRRIGATION ON/OFF

FINE TURF	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total Visits
Mow		x	x	x	x	x	x	x	x	x	x	x	38
Edge		x	x	x	x	x	x	x	x	x	x		19
Fertilization			x		x		x		x		x		5
Weed Control					x				x				2
Pest and Disease Monitoring	monitor monthly												12
Blow Walkways	x	x	x	x	x	x	x	x	x	x	x	x	40
TREES, SHRUBS AND GROUNDCOVER BEDS													
Weed Control and Police Beds	x	x	x	x	x	x	x	x	x	x	x	x	40
Pre-emergent Application		x							x				2
Herbicide Spray Perimeters			x	x	x	x	x	x	x	x			8
Fertilize Trees			x										1
Fertilize Shrubs and Groundcovers			x			x							2
Pest and Disease Monitoring	monitor monthly												12
Leaf Removal	x									x	x	x	6
Prune Trees	x												1
Prune Shrubs				x	x	x			x	x			5
Prune Groundcovers				x		x			x				3
Trim Hedges				x		x			x				3
Blow Walkways	x	x	x	x	x	x	x	x	x	x	x	x	40
Prune Roses		x				x				x			3
IRRIGATION													
Spring Start-up			x										1
Winterization											x		1
COMMUNICATION													
Submit Service Reports	x	x	x	x	x	x	x	x	x	x	x	x	40
Quality Control Walk Through	date to be determined												1
Budget Planning	date to be determined												1

12/1/2004

Service Program

Maintenance Schedule of Services

Siltronic Special Services

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total Visits
FIELD MOWING													
$900.00 for 3 MOWINGS				X			X				X		3
PERIMETER MOW 10' w/40x40area													
$240.00 for 2 MOWINGS				X							X		2
FIELD SPRAY													
$750.00 for 2 applications				X					X				2
PERIMETER SPRAY 10'													
200.00 for 2 applications				X					X				2
SEASONAL COLOR													
$760.00 for 2 changes					X					X			2
BACKFLOW CERTIFICATION													
$45.00			X										1
PLANT BED UPGRADES													
$2500.00 for 3 bed areas	NOT SCHEDULED												

The owner may modify these services with 30 day notice

Monthly Invoices

March Services	Backflow Certification	$ 45.00
April Services	field mow and spray, perimeter mow and spray	$ 895.00
May Services	annual color monument sign	$ 380.00
July Services	field mow	$ 300.00
September Services	field and perimeter spray	$ 475.00
October Services	annual color monument sign	$ 380.00
November Services	field and perimeter mow	$ 420.00
Unscheduled Plant bed upgrades	*3 bed areas*	$ 2,500.00
	Total	**$ 5,395.00**

12/1/2004

Landscape Requirements

I. GENERAL CONDITIONS

A. All tools, equipment, and materials necessary to perform the specified work for the Owner or designated Owner's Representative (hereinafter referred to as 'Owner') will be provided by the contractor. Owner is responsible for all costs associated with watering.

B. Contractor will provide trained staff and be responsible for the appearance and conduct of all employees while performing work on site(s).

C. Contractor provides all payment of wages, workers' compensation insurance, social security tax, employment compensation tax, employer's liability insurance, and all other requirements of federal, state, and local government.

Contractor will carry the following types and amount of insurance, at a minimum:

- Comprehensive General Liability $ 1,000,000
- Workers' Compensation $ 1,000,000

Licenses and proof of insurance, listing owner as additionally insured, will need to be available upon request.

D. Inspection of site(s) will be made regularly and problems, if found, will be discussed by contractor with the Owner. A written, comprehensive inspection report will be provided by the owner to the contractor quarterly. A written response to any item deemed unacceptable will be required by the contractor.

E. All employees will need to be supervised by fully trained personnel. Maximum response time to non- emergency communications will be 24 hours. An emergency number will need to be provided.

F. Debris generated by landscape activities and litter will be removed from the site unless prior arrangements have been made.

II. TURF MANAGEMENT (see landscape schedule for frequencies)

A. Fine Lawn Mowing.

1. For all turf areas, Contractor will inspect and police the grounds for litter and debris prior to each mowing and dispose of it.

2. All turf is to be mowed according to the attached landscape schedule. Provide the cost of an additional mowing and edging if desired by owner.

3. Mowing height for all irrigated lawn areas will be no less than *11/2"* and no more than *2 1/2* for a finished cut height. Turf will be cut at a uniform height. Mowing equipment is to be kept sufficiently sharp and properly adjusted to provide a cleanly cut grass blade. Grass blade bruising, tearing, and shredding is to be prevented. Mowing pattern will be varied where possible to reduce rutting and compaction of grade.

Any excess clippings will be dispersed and/or collected to prevent damage and unsightly appearance of lawns.

4. At no time will employees operating mowers, damage landscape trees with equipment.

B. Edging.

All sidewalks, curb lines, concrete slabs, tree circles, and bed edges will be mechanically edged as needed to maintain a neat, clean appearance per the landscape schedule.

C. String Trimming.

Trimming will be performed around all road signs, guard posts. trees, shrubs, utility poles, and other obstacles. The grass will be trimmed to no less than the desired height of cut determined by the mowing operation. Trimming will be completed with each mowing.

D. Turf Fertilization.

1. Fertilizers will be applied by contractor to maintain proper nutrient levels and provide a consistent, healthy appearance throughout the year. Turf will be fertilized with a well-balanced, slow-release fertilizer per the landscape schedule. The proper amount of nitrogen per 1,000 square feet will be applied to maintain a consistent, lush, green appearance. Fertility level will be consistent.

2. Soil pH will be monitored periodically and corrective measures will be proposed if needed.

3. Deficiencies of sulfur, magnesium, and other micronutrients will be corrected as needed. Timing of these applications may vary according to need.

E. Sweep/Blow Walks.

At the conclusion of each visit, walks adjacent to work areas will be swept or blown.

III. SHRUB BED MAINTENANCE (see landscape schedule for frequencies)

A. Landscaped areas will be policed each time a turf mowing occurs. Particular attention will be paid to entry ways, focal points, and high traffic areas.

B. Planter beds will be groomed especially in high traffic areas to remove debris and promote an attractive, fresh appearance.

C. Fertilizing of all trees (3" caliper and less) and shrubs will be completed per the landscape schedule. All fertilizers to be uniformly applied at the dripline of the plant. Groundcover will be fertilized with materials broadcast. All fertilizers will be slow-release and balanced.

D. Pruning will be done to enhance natural growth. Contractor will remove dead, damaged, and diseased portions of the plant. Cuts will be flush and clean, leaving no stubs or tearing of bark. Major pruning will be done following flowering or during plant's dormant season. Pruning of all tree branches to maintain a 7' visual line across the site/s is required. Tree's and branches less than 15' in height will be maintained as part of normal

SCOEPA00054398

maintenance. Tree or limb pruning above 15' will be suggested by the contractor as needed but not performed unless prior approval in writing from the owner has occurred. Emergency or minor pruning will be performed when needed.

1. Pruning to be performed by Contractor staff who have been trained and demonstrate competency in proper pruning techniques.

2. Shearing of plants will occur only where previous practice has been to shear, or as directed by Owner.

3. Provide remedial attention and repair to shrubs and trees as appropriate to season or in response to incidental damage.

4. Prune shrubbery to maintain proper size in relationship to adjacent plantings and intended function. Examples of specific practices include: pruning photinia and pyracantha appropriately, pruning spring-blooming shrubs in spring/summer, pruning deciduous shrubs in the winter, etc.

5. Prune trees *(ot* less than 15' total height) as required to remove weak branching patterns and corrective pruning for proper development. Maintain a clear visual line of sight across the site of 7' by removing and/or pruning branches as needed. Remove lower limbs when obstructing vehicular or pedestrian clearances. Remove lower branches of conifer trees when in conflict with growth of plantings beneath.

6. Prune groundcover as required to contain perimeter growth to within bed areas where adjacent to walks, curbs, and structures. Established groundcover will be trimmed 4" to 6" off hard surfaces with a beveled or rolled edge. Mature groundcover will be maintained at a consistent, level height to provide a smooth and even appearance.

E. Moles, field mice, gophers, and other rodent activity will be monitored. Notification of problems and recommendations for timely, appropriate control measures will be made.

F. Removal of leaves from lawns, planter beds, and walkways will be completed throughout the year as needed to maintain a clean appearance throughout the project. At landscaped areas, major leaf removal will be performed monthly.

G. Monitor trees that are staked or guyed. Loosen and/or remove supports when appropriate to prevent girdling of the trunk and encourage root development for support.

H. Maintain a 10' mowed and sprayed buffer along the inside perimeter of the fence surrounding the property.

IV. ENVIRONMENTAL WEED AND PEST CONTROL PROGRAM (see landscape schedule for frequencies)

A. All applications of herbicides or pesticides will be performed by an Oregon or Washington State licensed commercial applicator. All safety precautions will be taken in the handling and application of chemicals as stated on manufacturer's labels and in the *Oregon Weed and Pest Control* handbooks.

SCOEPA00054399

B. Contractor will provide surveillance of all turf and shrub bed areas for weeds, and will take timely measures to treat same with appropriate chemical.

C. Turf Weeds: post emergent herbicide spraying of all mowed lawn areas will be done with applicable materials. Applications with follow-up applications, as required, will attain a kill of 98% of broadleaf weeds.

D. Shrub Bed Weeds: all planter beds, tree circles, and sidewalk cracks adjacent to landscaped areas are to be sprayed to control unwanted grasses and broadleaf weeds. Chemical practices will not be a substitute for hand weeding where the latter is required for complete removal.

All planter beds are to have two applications of pre-emergent herbicide per year. Pre-emergent herbicides will be of the non-leaching type. Specified product to be rotated to prevent soil contaminating levels.

E. Pest Monitoring: inspection for insect and disease infestations will occur on a monthly basis. Appropriate, timely control measures will be recommended, if required.

F. Material Safety Data Sheets (MSDS} for all chemicals used on site(s} are available from contractor to clients in accordance with OSHA regulations.

G. Contractor will at all times be in compliance with requirements for hazardous communications programs. All employees are trained and supervised in the safe application, storage, and disposal of chemicals in accordance with EPA, OSHA, DEQ, and ODOT regulations.

V. IRRIGATION EQUIPMENT AND OPERATION (see landscape schedule for frequencies)

A. Activate irrigation system in spring. Charge mainline in February or March to check for leaks or malfunctioning valves. Clean and adjust system during March through May. This includes: turning on each zone, monitoring for leaks or malfunctioning parts, cutting grass away from all turf heads, and adjustment for proper spray arc and maximum system efficiency.

B. Establish time settings and intervals of irrigation water application for each valve of all irrigation zones. Make changes when necessary to correspond to variable watering requirements.

c. Correct conditions of over/under watering and readjustment of heads as problems arise during the irrigation season. Irrigation product failure and vandalism will be corrected by the contractor after owner notification and approval. Irrigation product failure and vandalism parts and repair fees from contractor will be paid by the owner.

d. Shut of and drain system(s) at the end of the irrigation season. Turn off all main supply valves, open all manual drain valves and bleed valves on backflow prevention devices. Perform winterization prior to any severe freezing weather.

VI. Exclusions

The parties agree that the following work will not be performed by the contractor unless contracted for on a separate basis.

a. Trimming of trees over 15' in height.

b. Cleaning and/or repairing from acts of God, natural disorders or acts of vandalism.

c. Barkdust will be applied at a per unit cost to include bark and labor when ordered.

d. Any additional work to be billed to the owner will need prior permission from the owner.

~~2,000~~
~~1999~~ - ~~2004~~

1999-2004

1999

T.RUGREEN

PO / Item / D I A	Type	Material	Plnt	SLoc	Vendor	Name / Short Text	Order Qty	Un	Net Price	Curr.	PGp	Order Date / Mat. Group	per Un
210228	NB				705078	TRUGREEN-LANDCARE/NORTHWEST REGION					A04	12/18/1999	
00010						Landscape Maintenance April 99-March 00						Y15	
L	K	4401					6,942	AU	1.00	USD			1 AU
	Still to be delivered						0	AU	0.00	USD			0.00 %
	Still to be invoiced						0	AU	0.00	USD			0.00 %
00020						Unplanned landscape maintenance						Y15	
L	K	4401					1,000	AU	1.00	USD			1 AU
	Still to be delivered						0	AU	0.00	USD			0.00 %
	Still to be invoiced						0	AU	0.00	USD			0.00 %
4500087344	NB				705078	TRUGREEN-LANDCARE/NORTHWEST REGION					A04	04/20/2000	
00010						LANDSCAPING - SPECIAL PROJECTS / JOBS						989598U	
L	F	4401					20,020.350	AU	1.00	USD			1 AU
	Still to be delivered						0	AU	0.00	USD			0.00 %
	Still to be invoiced						0	AU	0.00	USD			0.00 %
00020						LANDSCAPING - SPECIAL PROJECTS / JOBS						989598U	
	F	4401	0001				18,866.100	AU	1.00	USD			1 AU
	Still to be delivered						0	AU	0.00	USD			0.00 %
	Still to be invoiced						0	AU	0.00	USD			0.00 %
4500087359	NB				705078	TRUGREEN-LANDCARE/NORTHWEST REGION					A04	04/20/2000	
00010						LANDSCAPING - BASIC MAINTENANCE CONTRACT						989598U	
L	F	4401					54,872	AU	1.00	USD			1 AU
	Still to be delivered						0	AU	0.00	USD			0.00 %
	Still to be invoiced						0	AU	0.00	USD			0.00 %
00020						LANDSCAPING - BASIC MAINTENANCE CONTRACT						989598U	
	F	4401	0001				91,677	AU	1.00	USD			1 AU
	Still to be delivered						0	AU	0.00	USD			0.00 %
	Still to be invoiced						0	AU	0.00	USD			0.00 %
4500216820	NB				705078	TRUGREEN-LANDCARE/NORTHWEST REGION					A13	05/13/2003	
00010						REPLACE SOD IN AREA OF RUTS						220000U4	
	F	4401					1,245	AU	1.00	USD			1 AU
	Still to be delivered						0	AU	0.00	USD			0.00 %
	Still to be invoiced						0	AU	0.00	USD			0.00 %
4500218045	NB				705078	TRUGREEN-LANDCARE/NORTHWEST REGION					A13	05/20/2003	
00010						CUT BRUSH TO ACCESS						989598U	
L	F	4401					420	AU	1.00	USD			1 AU
	Still to be delivered						0	AU	0.00	USD			0.00 %
	Still to be invoiced						0	AU	0.00	USD			0.00 %
4500254941	NB				705078	TRUGREEN-LANDCARE/NORTHWEST REGION					A04	01/22/2004	
00010						CLEAN 10' SWATH INSIDE THE OUTER						280000U1	
L	K	4401	0001				10,500	AU	1.00	USD			1 AU
	Still to be delivered						0	AU	0.00	USD			0.00 %
	Still to be invoiced						0	AU	0.00	USD			0.00 %
4500297354	NB				705078	TRUGREEN-LANDCARE/NORTHWEST REGION					A10	09/27/2004	
00010						TrueGreen landcare to do work per bid						Y15	
	K	4401	0001				2,460	AU	1.00	USD			1 AU
	Still to be delivered						0	AU	0.00	USD			0.00 %
	Still to be invoiced						0	AU	0.00	USD			0.00 %

2000-2004

Siltronic Corporation

Purchase order

PO Number: 4500087359
Date: 04/20/2000

TRUGREEN-LANDCARE/NORTHWEST RE
PO Box 100186
PASADENA CA 91189-0786

Currency: USD

Terms payt.: NET 30 DAYS

Delivery and Invoice Address:
7200 NW Front Ave.
Portland OR 97210-3676

Vendor record no.: 705078
FAX: 503-669-0250
TEL: 503-667-7741

Item	Quantity UOM	Delivery	Material	Unit Price	Net Value
00020	91,677AU	12/31/2004	LANDSCAPING - BASIC MAINTENANCE CONTRACT	1.00	91,677.00
			Total net value excl. tax USD		91,677.00

Per quote dated April 18, 2000,
Landscape Management Agreement,
Annual Schedule, and Specifications
Renewed January, 2002 (see links)
.
Monthly fee $2389.00
.
Any "special" projects or jobs must
be invoiced against PO 4500087344

Douglas Miller/503-417-4101
FAX:(503) 219-7596

SCOEPA00054403

TRUGREEN LandCare℠
Northwest Landscape Industries

TruGreen LandCare
Portland East Branch
22901 NE Sandy Blvd.
Fairview, OR 97024
503-667-7741
503-669-0250 Fax

October 31, 2000

Ken Kemper
Wacker Siltronic
P.O. Box 83180
Portland, OR 97283

RE: Year 2001 Landscape Maintenance Budget Items for Wacker Siltronic.

Dear Ken,

The following information is provided for your year 2001 budget process.

Extra Work Projects	Cost	Budget Date
Irrigation Repairs		
- At Turn On	$ 800	April
- On Going	$ 200/mo.	May - October
- Valve Replacement (if required)	$ 400 ea.	As Needed
Plant Replacement (Winter die back, Natural decline)	$ 800	T.B.A.
Tree Pruning	$ 3,500	Jan/Feb
Barkdusting	$ 6900	Feb. - May
Pansy Replacement	$ 800	February
Insect & Disease Control on Cherries (3x)	$ 100	Mar., Apr., May
Dormant Oil on Cherries	$ 100	February
Insect Spray on Lindens	$ 300	April-May
Deep Root Fertilization of Maples & Horse Chestnuts	$ 500	November
Field Mow along entry drive	$ 300	T.B.A.

Please feel free to call me if you have any questions.

Sincerely,

TruGreen LandCare

Gregory B. Hirth
Branch Manager

WE SERVE®

NORTHWEST LANDSCAPE INDUSTRIES
A TruGreen-Chemlawn Company℠

March 12, 1999

Ken Kemper
Wacker Siltronics
P.O. Box 83180, MS 30
Portland, OR 97283-0180

RE: Landscape Maintenance Contracts for Wacker Siltronics

Dear Ken,

Enclosed please find a set of agreements for landscape maintenance services at Wacker Siltronics. Contract dates are from April 1, 1999 to March 31, 2000.

Please review these contracts and, if satisfactory, return one fully endorsed copy to us for our records.

Thank you for this continued opportunity to serve you.

Sincerely,

NORTHWEST LANDSCAPE INDUSTRIES

Scott DeSelle
Area Manager

16075 S.W. UPPER BOONES FERRY RD., TIGARD, OR 97224
(503) 684-1450 FAX (503) 620-7592

Printed on Recycled Paper

LANDSCAPE MANAGEMENT AGREEMENT

THIS AGREEMENT is entered into this 11th day of March 1999, by and between **TruGreen, I.P, dba Northwest Landscape Industries,** hereafter referred to as the "Contractor", and ***Wacker Siltronic,*** hereafter referred to as the "Owner".

The parties wish to enter into an agreement to define the terms and conditions under which Contractor will provide landscape maintenance services to Owner.

The parties hereby agree as follows:

1) **Services.** The Contractor agrees to perform the landscape management services noted on the "Landscape Management Annual Schedule" attached to and incorporated into this document, for the property of the Owner, located at **Wacker Siltronics, Portland, OR** (hereafter referred to as the "Property").

2) **Term.** This Agreement shall commence on the 1st day of April 1999, and shall end on the 31st day of March 2000.

3) **Consideration/Payment.** In consideration for the Contractor's performance described herein, Owner agrees to pay Contractor the total sum of **$ 27,768.00** payable in 12 equal monthly payments as detailed below:

Basic Maintenance		**$ 1,785.00**
Irrigation Services		
• turn-on/turn off		**$ 50.00**
• mid season tune ups		**$ 45.00**
Turf Core Aeration		**$ 34.00**
Field Mowing		**$ 400.00**
	Total	$ 2,314.00/Month

A) **Payments.** Invoices will be sent on or about the 10th day of each month for current month's services and payment shall be due upon issue. **A LATE CHARGE OF 1.5% PER MONTH SHALL BE CHARGED ON ALL AMOUNTS 30 DAYS PAST DUE.**

4) **Additional Services.** Services performed and/or materials delivered, which are not specifically mentioned herein, will be deemed 'additional services'. Additional services will be billed separately and all payments are due upon receipt. **A LATE CHARGE OF 1.5 % PER MONTH WILL BE CHARGED ON ALL AMOUNTS 30 DAYS PAST DUE.** The performance of, and the payment for additional services are subject to all the terms and conditions of this Agreement.

5) **Materials, Supplies, and Equipment.** Contractor will furnish all materials, labor, supplies, and equipment necessary to perform the services specified.

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6) Law. This Agreement shall be governed by the laws of the State of Oregon.

7) Attorney's Fees. In the event of suit or action commenced to enforce the terms of the Agreement, the prevailing party shall be entitled to attorney's fees and costs, including any appeal.

8) Automatic Extension. If the Owner has not notified the Contractor, in writing, of intent not to renew, the Agreement will automatically extend on a month-to-month basis and all terms and conditions of this Agreement remain in force.

9) Liability. Contractor is an independent contractor and the Owner assumes no liability for injury to the Contractor or the Contractor's agents or employees, unless such injury is caused by the Owner, the Owner's agents, servants, or employees by negligence or intentional acts. It is further understood that the Contractor is not liable for any damage of any kind whatsoever that is not caused by the negligence of the Contractor, its agents, or employees.

10) Insurance. Contractor agrees to carry the required insurance and name Owner and their agents as additionally insured.

11) Notification of Deficient Work. If Owner believes Contractor is providing deficient work, Owner agrees to notify Contractor of deficiencies, in writing, within 30 days of said occurrence. If written notice is not received by Contractor within 30 days Owner knew or should have known of the deficiencies, Owner agrees to have waived any and all claims to recover past payments and/or rights to withhold present or future payments due under this Agreement. Upon such notification, Contractor agrees to rectify deficiencies within 14 days. If the Contractor corrects the deficiencies in accordance with the schedule, it shall not forfeit any amounts due under this Agreement.

12) Termination. It is agreed that either party may terminate this Agreement by giving written notice 30 days in advance. It is further agreed that Contractor may immediately cease performance without termination notice if Owner refuses or fails to pay Contractor according to the terms of this Agreement.

13) This Agreement incorporates all the terms and conditions which the parties intended to be included herein, and is hereby mutually agreed to be a fully integrated Agreement. Both parties have read this Agreement and fully understand the contents.

CONTRACTOR:	OWNER: (or Authorized Agent):
By:_____	By:_____
Robert J. Grover	Name:_____
Operations Manager	Title:_____

SCOEPA00054407

LANDSCAPE MANAGEMENT ANNUAL SCHEDULE

WACKER SILTRONICS
April 1, 1999 - March 31, 2000

TURF MANAGEMENT	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TTL
Mowing		*	*	*	*	*	*	*	*	*	*		38
Edging	*	*	*	*	*	*	*	*	*	*	*	*	19
String Trimming	*	*	*	*	*	*	*	*	*	*	*	*	38
Fertilize	*				*		*		*		*		5
Post Emergent Herb					*				*				2
Core Aeration					*								1
Sweep / Blow Walks	*	*	*	*	*	*	*	*	*	*	*	*	42

PLANT BED MAINTENANCE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TTL
Police / Hand Weed	*	*	*	*	*	*	*	*	*	*	*	*	46
Spray Weeds			*	*	*	*	*	*	*	*			12
Pre Emergent Herb		*				*				*			3
Trim Groundcover		*			*			*					3
Fertilize Groundcover			*			*				*			3
Fertilize Shrubs			*			*					*		3
Pruning	As required for correct growth and development												
Leaf Control										*	*	*	3

SPECIAL SERVICES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TTL
Irrigation on/off			----- on -----								off		
Irrigation tune-ups					*	*	*	*	*				5
Seasonal Color			*		*					*			3
Inspection Reports	Quarterly - Months May Vary												4
Issues Newsletter	*	*	*	*	*	*	*	*	*	*	*	*	12
Field Mowing				*		*	*	*	*				5
Insect / Disease Monitor	*	*	*	*	*	*	*	*	*	*	*	*	12

* Actual frequencies may vary based on weather and site related conditions. See specifications for details.

NORTHWEST
LANDSCAPE
INDUSTRIES

LANDSCAPE MANAGEMENT SPECIFICATIONS (cont'd)

I. GENERAL CONDITIONS

A. All tools, equipment, and materials necessary to perform the specified work for the Owner or designated Owner's Representative (hereinafter referred to as 'Owner') will be provided by the contractor (hereinafter referred to as Northwest Landscape Industries or NLI). Owner is responsible for all costs associated to water.

B. NLI will provide uniformed, trained staff and be responsible for the appearance and conduct of all employees while performing work on site(s).

C. NLI provides all payment of wages, workers' compensation insurance, social security tax, employment compensation tax, employer's liability insurance, and all other requirements of federal, state, and local government.

NLI will carry the following types and amount of insurance, at a minimum:

• Comprehensive General Liability	$ 500,000
• Bodily Injury/Property Damage Liability	500,000
• Workers' Compensation	100,000
• Umbrella Excess	5,000,000

Licenses and proof of insurance, listing client as additionally insured, are available on request.

D. Inspection of site(s) will be made regularly and problems, if found, will be discussed by NLI with the Owner. Written, comprehensive inspection reports will be provided at a minimum of four times yearly. General landscape issue updates regarding seasonal considerations will be provided monthly via newsletters.

E. All employees are supervised by fully trained, Forepersons and Supervisors. Radio and cellular phone communications are in use during regular business hours and emergency after-hours communication is available. Maximum response time to non-emergency communications is 24 hours.

F. Debris generated by landscape activities and litter will be removed from the site unless prior arrangements are made. All organic debris collected by NLI is recycled and/or composted.

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II. TURF MANAGEMENT

A. Fine Lawn Mowing.

1. For all turf areas, NLI will inspect and police the grounds for litter and debris prior to each mowing and dispose of it.

2. All turf is to be mowed every seven days beginning in March through October, with an additional two mowings each in November and February; mowing in December and January will be completed on an as-needed basis with weather permitting, for an average of 38 mowings per year. No extra charge will be made for mowings required due to unseasonably early spring or late fall turf growth.

3. Mowing height for all irrigated lawn areas will be no less than 1½" and no more than 2½" for a finished cut height. Turf will be cut at a uniform height with reel and/or rotary mowers in open areas and rotary mowers in closed areas. Mowing equipment is to be kept sufficiently sharp and properly adjusted through daily servicing to provide a cleanly cut grass blade. Grass blade bruising, tearing, and shredding is to be prevented. Mowing pattern will be varied where possible to reduce rutting and compaction of grade.

   Any excess clippings will be dispersed and/or collected to prevent damage and unsightly appearance of lawns.

4. At no time will employees operating mowers, damage landscape trees with equipment.

B. Edging.

All sidewalks, curb lines, concrete slabs, tree circles, and bed edges will be mechanically edged as needed to maintain a neat, clean appearance approximately twice per month during the mowing season.

C. String Trimming.

Trimming will be performed around all road signs, guard posts, trees, shrubs, utility poles, and other obstacles. The grass will be trimmed to no less than the desired height of cut determined by the mowing operation. Trimming will be completed with each mowing.

D. Turf Fertilization.

1. Fertilizers will be applied by NLI to maintain proper nutrient levels and provide a consistent, healthy appearance throughout the year.

   Turf will be fertilized with a well-balanced, slow-release fertilizer customized seasonally by NLI approximately five times per year. Eight pounds of nitrogen per 1,000 square feet will be applied per year to maintain a consistent, lush, green appearance. Fertility level will be consistent.

2. Soil pH will be monitored periodically and corrective measures will be proposed if needed.

3. Deficiencies of sulfur, magnesium, and other micronutrients will be corrected as needed. Timing of these applications may vary according to need.

E. Sweep/Blow Walks.

At the conclusion of each visit, walks adjacent to work areas will be swept or blown.

F. Turf Core Aeration

1. Core aerate all lawn areas with a piston type aerator once yearly at the beginning of the irrigation season to improve irrigation infiltration. Cores will be cleaned from sidewalks and parking lots. Cores on lawn areas will be left and mulched with subsequent mowing.

III. SHRUB BED MAINTENANCE

A. Landscaped areas will be policed weekly throughout the growing season and twice monthly during the dormant season for weeds, litter, and debris. Particular attention will be paid to entry ways, focal points, and high traffic areas.

B. Planter beds will be groomed an average of four times per year and more frequently in high traffic areas to remove debris and promote an attractive, fresh appearance.

C. Fertilizing of all trees (3" caliper and less) and shrubs will be completed a minimum of twice per year. All fertilizers to be uniformly applied at the dripline of the plant. Groundcover will be fertilized three times per year with materials broadcast. All fertilizers will be slow-release and balanced.

D. Pruning will be done to enhance natural growth. Trimming of trees under 15' total height is included. NLI will remove dead, damaged, and diseased portions of the plant. Cuts will be flush and clean, leaving no stubs or tearing of bark. Major pruning will be done following flowering or during plant's dormant season. Emergency or minor pruning will be performed when needed.

1. Pruning to be performed by NLI staff who have been trained and demonstrate competency in proper pruning techniques.

2. Shearing of plants will occur only where previous practice has been to shear, or as directed by Owner.

3. Provide remedial attention and repair to shrubs and trees as appropriate to season or in response to incidental damage.

4. Prune shrubbery to maintain proper size in relationship to adjacent plantings and intended function. Examples of specific practices include: pruning photinia and pyracantha twice per year, pruning spring-blooming shrubs in June, pruning deciduous shrubs in the winter, etc.

SCOEPA00054411

5. Prune trees (of less than 15' total height) as required to remove weak branching patterns and corrective pruning for proper development. Remove lower limbs when obstructing vehicular or pedestrian clearances. Remove lower branches of conifer trees when in conflict with growth of plantings beneath.

6. Prune groundcover as required to contain perimeter growth to within bed areas where adjacent to walks, curbs, and structures. Established groundcover will be trimmed 4" to 6" off hard surfaces with a beveled or rolled edge. Mature groundcover will be maintained at a consistent, level height to provide a smooth and even appearance.

E. Moles, field mice, gophers, and other rodent activity will be monitored. Notification of problems and recommendations for timely, appropriate control measures will be made.

F. Removal of leaves from lawns, planter beds, and walkways will be completed throughout the year as needed to maintain a clean appearance throughout the project. At landscaped areas, major leaf removal will be performed monthly.

G. Monitor trees that are staked or guyed. Loosen and/or remove supports when appropriate to prevent girdling of the trunk and encourage root development for support.

IV. ENVIRONMENTAL WEED AND PEST CONTROL PROGRAM

A. All applications of herbicides or pesticides will be performed by an Oregon or Washington State licensed commercial applicator. All safety precautions will be taken in the handling and application of chemicals as stated on manufacturer's labels and in the *Oregon Weed and Pest Control* handbooks.

B. NLI will provide surveillance of all turf and shrub bed areas for weeds, and will take timely measures to treat same with appropriate chemical.

C. Turf Weeds: postemergent herbicide spraying of all mowed lawn areas will be done in the spring and fall with applicable materials. Applications with follow-up applications, as required, will attain a kill of 98% of broadleaf weeds.

D. Shrub Bed Weeds: all planter beds, tree circles, and sidewalk cracks adjacent to landscaped areas are to be sprayed up to twice per month from March through October to control unwanted grasses and broadleaf weeds. Chemical practices will not be a substitute for hand weeding where the latter is required for complete removal.

All planter beds are to have two applications of preemergent herbicide per year. Preemergent herbicides will be of the non-leaching type. Specified product to be rotated to prevent soil contaminating levels.

E. Pest Monitoring: inspection for insect and disease infestations will occur on a monthly basis. Appropriate, timely control measures will be recommended, if required.

F. Material Safety Data Sheets (MSDS) for all chemicals used on site(s) are available from NLI to clients in accordance with OSHA regulations.

G. NLI will at all times be in compliance with requirements for hazardous communications programs. All employees are trained and supervised in the safe application, storage, and disposal of chemicals in accordance with EPA, OSHA, DEQ, and ODOT regulations.

V. IRRIGATION EQUIPMENT AND OPERATION

A. Activate irrigation system in spring. Charge mainline in February or March to check for leaks or malfunctioning valves. Clean and adjust system during March through May. This includes: turning on each zone, monitoring for leaks or malfunctioning parts, cutting grass away from all turf heads, and adjustment for proper spray arc and maximum system efficiency.

B. Establish time settings and intervals of irrigation water application for each valve of all irrigation zones. Make changes when necessary to correspond to variable watering requirements

C. Correct conditions of over/under-watering, product failure, and readjustment of heads as problems arise during the irrigation season. Owner understands that due to system weaknesses and age, vandalism, extreme weather conditions, and other conditions outside NLI's control, irrigation efficiency and effectiveness may be impaired.

D. Perform monthly system tune-ups during irrigation season. Turn all valves from controller and observe operation; ensure valves turn on and off properly; adjust spray pattern of arc; prune plants or cut grass away that is blocking coverage; determine any system repair or simple modifications needed to improve system effectiveness

D. Shut off and drain system(s) at the end of the irrigation season. Turn off all main supply valves, open all manual drain valves and bleed valves on backflow prevention devices. Perform winterization prior to any severe freezing weather. Owner understands that irrigation operation is determined by plant need, and may occur occasionally with overnight frost.

E. Repair and/or replacement of any damaged or malfunctioning components beyond NLI's control is the responsibility of the Owner. Any damage caused by NLI will be repaired by NLI at no charge. Simple head and lateral line repairs are made without notice to ensure rapid repair, unless otherwise notified by Owner. Major repairs to mainlines, valves, and timeclocks will require pre-approval from the Owner.

SCOEPA00054413

LANDSCAPE MANAGEMENT SPECIFICATIONS (cont'd)

VI. EXCLUSIONS

The parties expressly agree that the following work will not be performed by NLI unless contracted for on a separate basis.

A. Trimming of trees over 15' total height.

B. Cleaning and/or repairing from acts of vandalism, natural disorders, or acts of God (example: freeze, wind, fire, etc.).

C. Treatment for diseases or pests on lawns, trees and shrubs, except as specified.

D. Moss control due to insufficient mulch layer.

E. Barkdust will be applied at a cost per unit when ordered. This includes bark and labor.

F. Parking lot maintenance (sweeping, leaf pickup, litter pickup, and moss control).

G. Rodent control.

VII. EXTRA WORK BILLING

Extra work will need prior permission from the Owner. All extra work will be billed at NLI's standard hourly rate.

SCOEPA00054414

NORTHWEST LANDSCAPE INDUSTRIES

16075 S.W. Upper Boones Ferry Rd., Tigard, OR 97224
(503) 684-1450

INVOICE NO.

PAGE

B
i WACKER SILTRONICS
l P. O. BOX 03180
l PORTLAND, OR 97203

T
o

INVOICE DATE	INVOICE NO.	CUSTOMER NO.	PAYMENT TERMS	CONTRACT NO.
06/01/1998	1166R	WACKER	NET 30 DAYS	WACKER

Description	Salesman Code	Contract Number	Order Number	Price
from 05/01/1998 to 05/31/1998 5th monthly billing of 12 WACKER SILTRONICS	TS	WACKER	PO #12106	2,842.00

NORTHWEST LANDSCAPE INDUSTRIES

TERMS: Net 30 days from date of invoice. Past due amounts subject to service charge of **1½%** per month (minimum $1.00) which is an annual percentage rate of **18%.** Please note your customer and invoice number on your remittance.

GROSS		TAX	NET AMOUNT
2,842.00		.00	2,842.00

SCOEPA00054415

TRUGREEN LandCare℠
Northwest Landscape Industries

TruGreen LandCare
Portland East Branch
22901 NE Sandy Blvd.
Fairview, OR 97024
503-667-7741
503-669-0250 Fax

October 31, 2000

Ken Kemper
Wacker Siltronic
P.O. Box 83180
Portland, OR 97283

RE: Year 2001 Landscape Maintenance Budget Items for Wacker Siltronic.

Dear Ken,

The following information is provided for your year 2001 budget process.

Extra Work Projects	Cost	Budget Date
Irrigation Repairs		
- At Turn On	$ 800	April
- On Going	$ 200/mo.	May - October
- Valve Replacement (if required)	$ 400 ea.	As Needed
Plant Replacement (Winter die back, Natural decline)	$ 800	T.B.A.
Tree Pruning	$ 3,500	Jan/Feb
Barkdusting	$ 6900	Feb. - May
Pansy Replacement	$ 800	February
Insect & Disease Control on Cherries (3x)	$ 100	Mar., Apr., May
Dormant Oil on Cherries	$ 100	February
Insect Spray on Lindens	$ 300	April-May
Deep Root Fertilization of Maples & Horse Chestnuts	$ 500	November
Field Mow along entry drive	$ 300	T.B.A.

Please feel free to call me if you have any questions.

Sincerely,

TruGreen LandCare

Gregory B. Hirth
Branch Manager

WE SERVE®

NORTHWEST LANDSCAPE INDUSTRIES

January 19, 1999

Ken Kemper
Wacker Siltronic
P.O. Box 83180, MS 30
Portland, OR 97283-0180

RE: Wacker Siltronic

Dear Ken,

I would like to first thank you for your business over the past several years. We have always striven to provide you with service to your level of expectation, and we hope you are satisfied with the service we have provided over this past year.

Contract renewal time is here once again and because we work hard to control costs of our service to our clients, it gives us great pleasure to be able to offer a renewed Agreement at no increase over the current monthly rate of $2842.00. As we discussed at our January 14th meeting, I have reduced the contract services, realizing a savings of over 17% for Wacker Siltronic. Listed below is the breakdown of our existing services and the proposed services:

	Existing	Proposed
Basic Maintenance	$1768.00	$1815.00
Irrigation Services		
• turn-on/turn-off	$50.00	$50.00
• mid-season tune-ups	$45.00	$45.00
Seasonal Color	$304.00	
Turf Core Aeration	$34.00	$34.00
Field Mowing	$400.00	$400.00
Blackberry Spray	$33.00	
Sterilant Spray	$83.00	
Sterilant Clean-Up	$125.00	
Total:	$2842.00/ Month	$2344.00/ Month

I will be contacting you soon to discuss this proposal. If you have any questions in the mean time, call me at (503) 667-7741.

Thank you for this continued opportunity to serve you.

Sincerely,

NORTHWEST LANDSCAPE INDUSTRIES

Scott B DeSelle

Scott B. DeSelle, CLT
Area Manager

16075 S.W. UPPER BOONES FERRY RD., TIGARD, OR 97224
(503) 684-1450 FAX (503) 620-7592

Printed on Recycled Paper

PO	Type	Vendor	Name	PGp	Order date
Item	Material		Short text		Mat. group
D I A	Plnt SLoc		Order qty. Un	Net Price	Curr. per Un
	SL del. date		Sched. qty. Un		

210228		BLK	744529	TRUGREEN-LANDCARE/NORTHWEST REGION		305	03/24/1999	
00001				Landscape Maintenance April 99-March 00		870		
K	4401 0001			27,768 DOL	1.00	USD		1 DOL
	D 03/31/2000			27,768 DOL				
Total goods receipts				6,942 DO	6,942.00	USD	25.00	%
Total invoices				6,942 DO	6,942.00	USD	25.00	%
Still to be delivered				20,826 DOL	20,826.00	USD	75.00	%
Still to be invoiced				20,826 DOL	20,826.00	USD	75.00	%

Cat.	Doc. no.	Itm	MvT	Pstg.dt.	Qty.in OUn		Value in local curr	
GR	5000053325	0001	101	05/20/99	2,314	DOL	2,314.00	USD
GR	5000054490	0001	101	06/16/99	2,314	DOL	2,314.00	USD
GR	5000055669	0001	101	07/14/99	2,314	DOL	2,314.00	USD
Total goods receipts					6,942	DOL	6,942.00	USD
IR	5100053400	0002		05/20/99	2,314	DOL	2,314.00	USD
IR	5100054459	0002		06/16/99	2,314	DOL	2,314.00	USD
IR	5100055713	0002		07/14/99	2,314	DOL	2,314.00	USD
Total invoices					6,942	DOL	6,942.00	USD

00002				Unplanned landscape maintenance		870		
K	4401 0001			5,000 DOL	1.00	USD		1 DOL
	D 03/31/2000			5,000 DOL				
Total invoices				1,352 DO	1,352.00	USD	27.04	%
Still to be delivered				0 DOL	0.00	USD	0.00	%
Still to be invoiced				3,648 DOL	3,648.00	USD	72.96	%

Cat.	Doc. no.	Itm	MvT	Pstg.dt.	Qty.in OUn		Value in local curr	
IR	5100056159	0002		07/27/99	1,032	DOL	1,032.00	USD
IR	5100056160	0002		07/27/99	320	DOL	320.00	USD
Total invoices					1,352	DOL	1,352.00	USD

310026		CAP	744529	TRUGREEN-LANDCARE/NORTHWEST REGION		307	07/25/1996	
00001				Landscape at transformer wall per 6/28		~820100		
F	4401 0001			3,265 DOL	1.00	USD		1 DOL
	D 07/30/1996			3,265 DOL PReq 600265		00001		
Total invoices				3,265 DO	3,265.00	USD	100.00	%
Still to be delivered				0 DOL	0.00	USD	0.00	%
Still to be invoiced				0 DOL	0.00	USD	0.00	%

Cat.	Doc. no.	Itm	MvT	Pstg.dt.	Qty.in OUn		Value in local curr	
IR	5100001785	0002		08/19/96	3,265	DOL	3,265.00	USD
Total invoices					3,265	DOL	3,265.00	USD

404184		NB	744529	TRUGREEN-LANDCARE/NORTHWEST REGION		307	01/07/1997	
00001				repair tire ruts in terf by the		185		
K	4401 0001			1 JOB	217.20	USD		1 JOB
	D 12/25/1996			1 JOB PReq 604288		00001		
Total invoices				1 JO	217.20	USD	100.00	%
Still to be delivered				0 JOB	0.00	USD	0.00	%
Still to be invoiced				0 JOB	0.00	USD	0.00	%

Cat.	Doc. no.	Itm	MvT	Pstg.dt.	Qty.in OUn		Value in local curr	
IR	5100009227	0002		01/31/97	1	JOB	217.20	USD
Total invoices					1	JOB	217.20	USD

~~1996-1997~~
1996-1999

TRUGREEN /

NORTHWEST LANDSCAPE

PO / Item / D I A	Type	Vendor / Material / Plnt SLoc	Name / Short text / Order qty. / Sched. qty.	Un / Un	Net Price	PGp / Curr.	Order date / Mat. group / per Un
404657	NB	744529	TRUGREEN-LANDCARE/NORTHWEST REGION			307	01/20/1997
00001			winter sanding			185	
K	4401	0001	496.500	DOL	1.00	USD	1 DOL
D	02/12/1997		496.500	DOL PReq 604866		00001	
Total invoices			496.500	DO	496.50	USD	100.00 %
Still to be delivered			0	DOL	0.00	USD	0.00 %
Still to be invoiced			0	DOL	0.00	USD	0.00 %

Cat.	Doc. no.	Itm	MvT	Pstg.dt.	Qty.in OUn		Value in local curr	
IR	5100009228	0002		01/31/97	496.500	DOL	496.50	USD
Total invoices					496.500	DOL	496.50	USD

406582	NB	744529	TRUGREEN-LANDCARE/NORTHWEST REGION			307	03/13/1997	
00001			Spray Cherry trees to control insects			185		
L	K	4401 0001	255	DOL	1.00	USD	1 DOL	
	D	03/28/1997	255	DOL PReq 606333		00001		
Still to be delivered			0	DOL	0.00	USD	0.00 %	
Still to be invoiced			0	DOL	0.00	USD	0.00 %	
409495	NB	744529	TRUGREEN-LANDCARE/NORTHWEST REGION			307	06/13/1997	
00001			CLEAR A 12' PERIMETER BUFFER AROUND THE			185		
K	4401	0001	1,540	DOL	1.00	USD	1 DOL	
D	06/20/1997		1,540	DOL PReq 608909		00001		
Total invoices			1,540	DO	1,540.00	USD	100.00 %	
Still to be delivered			0	DOL	0.00	USD	0.00 %	
Still to be invoiced			0	DOL	0.00	USD	0.00 %	

Cat.	Doc. no.	Itm	MvT	Pstg.dt.	Qty.in OUn		Value in local curr	
IR	5100021389	0002		08/29/97	1,540	DOL	1,540.00	USD
Total invoices					1,540	DOL	1,540.00	USD

409679	NB	744529	TRUGREEN-LANDCARE/NORTHWEST REGION			307	06/18/1997	
00001			STERILIZE N.W. PLANT AREA INSIDE THE			185		
K	4401	0001	1,960	DOL	1.00	USD	1 DOL	
D	06/30/1997		1,960	DOL PReq 609004		00001		
Total invoices			1,960	DO	1,960.00	USD	100.00 %	
Still to be delivered			0	DOL	0.00	USD	0.00 %	
Still to be invoiced			0	DOL	0.00	USD	0.00 %	

Cat.	Doc. no.	Itm	MvT	Pstg.dt.	Qty.in OUn		Value in local curr	
IR	5100024150	0002		10/15/97	1,960	DOL	1,960.00	USD
Total invoices					1,960	DOL	1,960.00	USD

411998	NB	744529	TRUGREEN-LANDCARE/NORTHWEST REGION			311	08/27/1997	
00001			REPAIR LEAKY 3" PRESSURE LINE			185		
L	K	4401 0001	339.450	DOL	1.00	USD	1 DOL	
	D	08/25/1997	339.450	DOL PReq 610714		00001		
Still to be delivered			0	DOL	0.00	USD	0.00 %	
Still to be invoiced			0	DOL	0.00	USD	0.00 %	
413511	NB	744529	TRUGREEN-LANDCARE/NORTHWEST REGION			307	10/15/1997	
00001			place three yards of potting soil in the			185		
L	K	4401 0001	195	DOL	1.00	USD	1 DOL	
	D	11/30/1997	195	DOL PReq 611772		00001		
Still to be delivered			0	DOL	0.00	USD	0.00 %	
Still to be invoiced			0	DOL	0.00	USD	0.00 %	
413512	NB	744529	TRUGREEN-LANDCARE/NORTHWEST REGION			307	10/15/1997	
00001			repair sprinkler head and one fall			185		

PO	Type	Vendor	Name	PGp	Order date
Item	Material		Short text		Mat. group
D I A	Plnt SLoc		Order qty.	Un	Net Price	Curr.	per Un
	SL del. date		Sched. qty.	Un			

K 4401 0001			1,012	DOL	1.00	USD	1 DOL
D 10/10/1997			1,012	DOL PReq 611771		00001	
Total invoices			1,012	DO	1,012.00	USD	100.00 %
Still to be delivered			0	DOL	0.00	USD	0.00 %
Still to be invoiced			0	DOL	0.00	USD	0.00 %

Cat.	Doc. no.	Itm	MvT	Pstg.dt.	Qty.in OUn		Value in local curr	
IR	5100024151	0002		10/15/97	932	DOL	932.00	USD
IR	5100024152	0002		10/15/97	80	DOL	80.00	USD
Total invoices					1,012	DOL	1,012.00	USD

415780 NB 744529 TRUGREEN-LANDCARE/NORTHWEST REGION 311 01/21/1998
00001 Time and Materials PO for Winter Snow 185

K 4401 0001			2,468.250	DOL	1.00	USD	1 DOL
D 04/01/1998			2,468.250	DOL PReq 613598		00001	
Total goods receipts			2,468.250	DO	2,468.25	USD	100.00 %
Total invoices			2,468.250	DO	2,468.25	USD	100.00 %
Still to be delivered			0	DOL	0.00	USD	0.00 %
Still to be invoiced			0	DOL	0.00	USD	0.00 %

Cat.	Doc. no.	Itm	MvT	Pstg.dt.	Qty.in OUn		Value in local curr	
GR	5000029973	0001	101	01/28/98	4,000	DOL	4,000.00	USD
GR	5000048522	0001	102	02/03/99	1,531.750-	DOL	1,531.75-	USD
Total goods receipts					2,468.250	DOL	2,468.25	USD
IR	5100029989	0002		01/28/98	2,468.250	DOL	2,468.25	USD
Total invoices					2,468.250	DOL	2,468.25	USD

417837 NB 744529 TRUGREEN-LANDCARE/NORTHWEST REGION 311 04/08/1998
00001 remove vegitation form around the trees 185

L K 4401 0001			3,000	DOL	1.00	USD	1 DOL
D 04/15/1998			3,000	DOL PReq 615145		00001	
Still to be delivered			0	DOL	0.00	USD	0.00 %
Still to be invoiced			0	DOL	0.00	USD	0.00 %

418211 NB 744529 TRUGREEN-LANDCARE/NORTHWEST REGION 311 04/21/1998
00001 Purchase and install 3 trees. Norwegen 185

F 4401 0001			605.500	DOL	1.00	USD	1 DOL
D 04/20/1998			605.500	DOL PReq 615511		00001	
Total goods receipts			605.500	DO	605.50	USD	100.00 %
Total invoices			605.500	DO	605.50	USD	100.00 %
Still to be delivered			0	DOL	0.00	USD	0.00 %
Still to be invoiced			0	DOL	0.00	USD	0.00 %

Cat.	Doc. no.	Itm	MvT	Pstg.dt.	Qty.in OUn		Value in local curr	
GR	5000035426	0001	101	04/29/98	800	DOL	800.00	USD
GR	5000048519	0001	102	02/03/99	194.500-	DOL	194.50-	USD
Total goods receipts					605.500	DOL	605.50	USD
IR	5100035592	0002		04/29/98	605.500	DOL	605.50	USD
Total invoices					605.500	DOL	605.50	USD

420670 NB 744529 TRUGREEN-LANDCARE/NORTHWEST REGION 311 07/30/1998
00001 Repair sprinkler system (Spring turn on) 185

F 4401 0001			758.220	EA	1.00	USD	1 EA
D 07/15/1998			758.220	EA PReq 617027		00001	
Total goods receipts			758.220	EA	758.22	USD	100.00 %
Total invoices			758.220	EA	758.22	USD	100.00 %
Still to be delivered			0	EA	0.00	USD	0.00 %

PO	Type	Vendor	Name			PGp	Order date
Item	Material		Short text				Mat. group
D I A	Plnt	SLoc	Order qty.	Un	Net Price	Curr.	per Un
	SL del. date		Sched. qty.	Un			
Still to be invoiced			0	EA	0.00	USD	0.00 %

Cat.	Doc. no.	Itm	MvT	Pstg.dt.	Qty.in OUn		Value in local curr	
GR	5000040359	0001	101	07/30/98	758.220	EA	758.22	USD
Total goods receipts					758.220	EA	758.22	USD
IR	5100040639	0002		07/30/98	758.220	EA	758.22	USD
Total invoices					758.220	EA	758.22	USD

420844 NB 744529 TRUGREEN-LANDCARE/NORTHWEST REGION 311 08/06/1998

00001	Dig up and replant vegitaton to accommod 185				
F 4401 0001	750	DOL	1.00	USD	1 DOL
D 08/03/1998	750	DOL	PReq 617348	00001	
Total goods receipts	750	DO	750.00	USD	100.00 %
Total invoices	750	DO	750.00	USD	100.00 %
Still to be delivered	0	DOL	0.00	USD	0.00 %
Still to be invoiced	0	DOL	0.00	USD	0.00 %

Cat.	Doc. no.	Itm	MvT	Pstg.dt.	Qty.in OUn		Value in local curr	
GR	5000040796	0001	101	08/07/98	750	DOL	750.00	USD
Total goods receipts					750	DOL	750.00	USD
IR	5100042337	0002		09/14/98	550	DOL	550.00	USD
IR	5100055423	0002		07/07/99	200	DOL	200.00	USD
Total invoices					750	DOL	750.00	USD

00002	Repair broken sprinkler line in two plac 185				
F 4401	1,635.540	EA	1.00	USD	1 EA
D 08/03/1998	1,635.540	EA	PReq 617354	00001	
Total goods receipts	1,635.540	EA	1,635.54	USD	100.00 %
Total invoices	1,635.540	EA	1,635.54	USD	100.00 %
Still to be delivered	0	EA	0.00	USD	0.00 %
Still to be invoiced	0	EA	0.00	USD	0.00 %

Cat.	Doc. no.	Itm	MvT	Pstg.dt.	Qty.in OUn		Value in local curr	
GR	5000040796	0002	101	08/07/98	1,635.540	EA	1,635.54	USD
Total goods receipts					1,635.540	EA	1,635.54	USD
IR	5100041081	0002		08/07/98	1,635.540	EA	1,635.54	USD
Total invoices					1,635.540	EA	1,635.54	USD

421207 NB 744529 TRUGREEN-LANDCARE/NORTHWEST REGION 311 08/20/1998

00001	NORTHWEST WEST LANDSCAPE				185
F 4401 0001	570	DOL	1.00	USD	1 DOL
D 08/17/1998	570	DOL	PReq 617630	00001	
Total goods receipts	570	DO	570.00	USD	100.00 %
Total invoices	570	DO	570.00	USD	100.00 %
Still to be delivered	0	DOL	0.00	USD	0.00 %
Still to be invoiced	0	DOL	0.00	USD	0.00 %

Cat.	Doc. no.	Itm	MvT	Pstg.dt.	Qty.in OUn		Value in local curr	
GR	5000042142	0001	101	09/14/98	570	DOL	570.00	USD
Total goods receipts					570	DOL	570.00	USD
IR	5100042336	0002		09/14/98	567.880	DOL	567.88	USD
IR	5100055424	0002		07/07/99	2.120	DOL	2.12	USD
Total invoices					570	DOL	570.00	USD

A012158 NB 744529 TRUGREEN-LANDCARE/NORTHWEST REGION 307 03/22/1996

PO	Type	Vendor	Name	PGp	Order date
Item	Material		Short text		Mat. group
D I A	Plnt	SLoc	Order qty. / Sched. qty.	Un / Un	Net Price / Curr. / per Un
	SL del. date				

00001			BARKDUST AREAS A, B AND C PER 03/15			185	
K 4401 0001			4,000	DOL	1.00	USD	1 DOL
D 03/23/1996			4,000	DOL			
Total invoices			4,000	DO	4,000.00	USD	100.00 %
Still to be delivered			0	DOL	0.00	USD	0.00 %
Still to be invoiced			0	DOL	0.00	USD	0.00 %

Cat.	Doc. no.	Itm	MvT	Pstg.dt.	Qty.in OUn		Value in local curr	
IR	5100000508	0004		07/19/96	4,000	DOL	4,000.00	USD
Total invoices					4,000	DOL	4,000.00	USD

A080059	NB	744529	TRUGREEN-LANDCARE/NORTHWEST REGION			310	06/19/1996
00001			WEED CONTROL FAB 1 INSIDE FENCE ARE			400	
K 4401 0001			585	DOL	1.00	USD	1 DOL
D 07/15/1996			585	DOL			
Total invoices			585	DO	585.00	USD	100.00 %
Still to be delivered			0	DOL	0.00	USD	0.00 %
Still to be invoiced			0	DOL	0.00	USD	0.00 %

Cat.	Doc. no.	Itm	MvT	Pstg.dt.	Qty.in OUn		Value in local curr	
IR	5100001140	0002		08/05/96	585	DOL	585.00	USD
Total invoices					585	DOL	585.00	USD

B012106	NB	744529	TRUGREEN-LANDCARE/NORTHWEST REGION			305	02/12/1996
00001			SCHEDULED LANDSCAPE MAINTENANCE SE			865	
K 4401 0001			64,314.380	DOL	1.00	USD	1 DOL
D 12/30/1997			64,314.380	DOL			
Total invoices			64,314.380	DO	64,314.38	USD	100.00 %
Still to be delivered			0	DOL	0.00	USD	0.00 %
Still to be invoiced			0	DOL	0.00	USD	0.00 %

Cat.	Doc. no.	Itm	MvT	Pstg.dt.	Qty.in OUn		Value in local curr	
IR	5100000169	0002		07/11/96	300	DOL	300.00	USD
IR	5100001406	0002		08/09/96	1,946	DOL	1,946.00	USD
IR	5100002743	0002		09/09/96	1,946	DOL	1,946.00	USD
IR	5100003216	0002		09/19/96	583.260	DOL	583.26	USD
IR	5100004063	0002		10/07/96	1,946	DOL	1,946.00	USD
IR	5100004413	0002		10/16/96	550	DOL	550.00	USD
IR	5100005387	0002		11/06/96	1,946	DOL	1,946.00	USD
IR	5100006498	0002		12/05/96	1,946	DOL	1,946.00	USD
IR	5100007956	0002		01/06/97	1,946	DOL	1,946.00	USD
IR	5100009597	0002		02/06/97	1,946	DOL	1,946.00	USD
IR	5100011657	0002		03/14/97	2,328	DOL	2,328.00	USD
IR	5100012778	0002		04/04/97	2,328	DOL	2,328.00	USD
IR	5100014381	0002		05/05/97	2,328	DOL	2,328.00	USD
IR	5100016341	0002		06/06/97	2,328	DOL	2,328.00	USD
IR	5100017977	0002		07/03/97	2,328	DOL	2,328.00	USD
IR	5100020106	0002		08/06/97	2,328	DOL	2,328.00	USD
IR	5100021753	0002		09/08/97	2,328	DOL	2,328.00	USD
IR	5100023349	0002		10/02/97	2,328	DOL	2,328.00	USD
IR	5100025396	0002		11/04/97	2,328	DOL	2,328.00	USD
IR	5100026904	0002		12/03/97	2,328	DOL	2,328.00	USD
IR	5100029472	0002		01/16/98	2,328	DOL	2,328.00	USD
IR	5100030896	0002		02/10/98	2,328	DOL	2,328.00	USD
IR	5100032485	0002		03/09/98	2,842	DOL	2,842.00	USD
IR	5100032625	0002		03/11/98	1,028	DOL	1,028.00	USD

PO / Item / D	Type	Vendor / Material / I	Name / Short text / A	Plnt	SLoc / SL	Order date / del. date / Sched. qty.	Order qty. / Un	Un	Net Price	PGp / Curr.	Mat. group / per Un
IR		5100034482		0002		04/10/98	2,842	DOL	2,842.00	USD	
IR		5100035979		0002		05/06/98	2,842	DOL	2,842.00	USD	
IR		5100037726		0002		06/05/98	2,842	DOL	2,842.00	USD	
IR		5100039548		0002		07/09/98	2,842	DOL	2,842.00	USD	
IR		5100041023		0002		08/06/98	2,842	DOL	2,842.00	USD	
IR		5100042325		0002		09/14/98	2,842	DOL	2,842.00	USD	
IR		5100042530		0002		09/16/98	290	DOL	290.00	USD	
IR		5100042531		0002		09/16/98	111.120	DOL	111.12	USD	
Total invoices							64,314.380	DOL	64,314.38	USD	
00002			NON-SCHEDULED LANDSCAPE SERVICES F								865
K 4401 0001							12,045.320	DOL	1.00	USD	1 DOL
D 12/30/1997							12,045.320	DOL			
Total invoices							12,045.320	DO	12,045.32	USD	100.00 %
Still to be delivered							0	DOL	0.00	USD	0.00 %
Still to be invoiced							0	DOL	0.00	USD	0.00 %

Cat.	Doc. no.	Itm	MvT	Pstg.dt.	Qty.in OUn		Value in local curr	
IR	5100000169	0004		07/11/96	560	DOL	560.00	USD
IR	5100000182	0002		07/11/96	1.946	DOL	1,946.00	USD
IR	5100000508	0002		07/19/96	6,118.460	DOL	6,118.46	USD
IR	5100001141	0002		08/05/96	1,568.720	DOL	1,568.72	USD
IR	5100001290	0002		08/07/96	220	DOL	220.00	USD
IR	5100001296	0002		08/07/96	1.020	DOL	1,020.00	USD
IR	5100001786	0002		08/19/96	385	DOL	385.00	USD
IR	5100002386	0002		08/30/96	227.140	DOL	227.14	USD
Total invoices					12,045.320	DOL	12,045.32	USD

00003			FAB2 scheduled landscape services for						185
K 4401 0001					15	MO	382.00	USD	1 MO
D 12/31/1997					15	MO	PReq 600981	00001	
Still to be delivered					0	MO	0.00	USD	0.00 %
Still to be invoiced					0	MO	0.00	USD	0.00 %
00004			FAB2 non-scheduled landscape repair,						185
K 4401 0001					1,667.080	DOL	1.00	USD	1 DOL
D 12/31/1997					1,667.080	DOL	PReq 600981	00002	
Total invoices					1,667.080	DO	1,667.08	USD	100.00 %
Still to be delivered					0	DOL	0.00	USD	0.00 %
Still to be invoiced					0	DOL	0.00	USD	0.00 %

Cat.	Doc. no.	Itm	MvT	Pstg.dt.	Qty.in OUn		Value in local curr	
IR	5100004329	0002		10/14/96	250	DOL	250.00	USD
IR	5100004413	0004		10/16/96	756.280	DOL	756.28	USD
IR	5100005393	0002		11/06/96	250	DOL	250.00	USD
IR	5100009924	0002		02/12/97	200	DOL	200.00	USD
IR	5100019363	0002		07/25/97	150	DOL	150.00	USD
IR	5100023900	0002		10/10/97	60.800	DOL	60.80	USD
Total invoices					1,667.080	DOL	1,667.08	USD

00005			SCHEDULED LANDSCAPE MAINTENANCE						185
F 4401					13.682	EA	1.00	USD	1 EA
D 03/31/1999					13.682	EA	PReq 618282	00001	
Total goods receipts					13.682	EA	13,682.00	USD	100.00 %
Total invoices					13.682	EA	13,682.00	USD	100.00 %
Still to be delivered					0	EA	0.00	USD	0.00 %
Still to be invoiced					0	EA	0.00	USD	0.00 %

PO	Type	Vendor	Name			PGp	Order date
Item	Material		Short text				Mat. group
D I A	Plnt	SLoc	Order qty.	Un	Net Price	Curr.	per Un
	SL	del. date	Sched. qty.	Un			

Cat.	Doc. no.	Itm	MvT	Pstg.dt.	Qty.in OUn		Value in local curr	
GR	5000043107	0001	101	10/07/98	2,842	EA	2,842.00	USD
GR	5000044517	0001	101	11/06/98	2,842	EA	2,842.00	USD
GR	5000045849	0001	101	12/07/98	2,842	EA	2,842.00	USD
GR	5000047237	0001	101	01/07/99	2,842	EA	2,842.00	USD
GR	5000051752	0001	101	04/16/99	2,314	EA	2,314.00	USD
Total goods receipts					13,682	EA	13,682.00	USD
IR	5100043306	0002		10/07/98	2,842	EA	2,842.00	USD
IR	5100044596	0002		11/06/98	2,842	EA	2,842.00	USD
IR	5100045890	0002		12/07/98	2,842	EA	2,842.00	USD
IR	5100047254	0002		01/07/99	2,842	EA	2,842.00	USD
IR	5100051813	0002		04/16/99	2,314	EA	2,314.00	USD
Total invoices					13,682	EA	13,682.00	USD

Purchase order	406582	Order type	NB	Order date	03/13/1997
Vendor	744529	TRUGREEN-LANDCARE/NORTHWES		Currency	USD

PO items

Item	I	A	Material	Short text	PO quantity	O...		Deliv. date	Net price	Per	O...	Matl group	Plnt	SLoc	D	R
1		K		Spray Cherry trees to	255	DOL	D	03/28/1997	1.001		DOL	185	4401	0001	L	

Purchase order	409679	Order type	NB	Order date	06/18/1997
Vendor	744529	TRUGREEN-LANDCARE/NORTHWES		Currency	USD

PO items

Item	I	A	Material	Short text	PO quantity	O..		Deliv. date	Net price	Per	O	Matl group	Plnt	SLoc	D	R
1		K		STERILIZE N.W. PLANT	1,960	DOL	D	06/30/1997	1.001		DOL	185	4401	0001		

Wacker Siltronic Portland

Deliver to:
7200 NW Front Ave.
Portland OR 97210

Invoice to:
PO Box 83180
Portland OR 97283-0180

Blanket Purchase Order

PO Number: 210228
Date: 03/24/1999

NORTHWEST LANDSCAPE INDUSTRIES
16075 SW UPPER BOONES FERRY RD
TIGARD OR. 97224

Currency: USD

Terms payt.: Within 30 days Due net

Vendor record no.: 744529
FAX: 503-620-7592
TEL: 503-255-8857

We await your order acknowledgment for the following items:

Item	Quantity	UOM	Delivery	Material	Unit Price	Net Value
00001	27,768	DOL	03/31/2000		1.00	27,768.00
				Landscape Maintenance April 99-March 00		
				Total net value excl. tax USD		27,768.00

Attn: Scott DeSelle
Per agreement and conditions dated March 12, 1999

Payment will be monthly at $2314.00 per month
starting 04/01/99 ending 03/31/2000

Douglas Miller/503-417-4101
FAX:(503) 241-7596

NORTHWEST LANDSCAPE INDUSTRIES
A TruGreen-Chemlawn Company℠

March 12, 1999

Ken Kemper
Wacker Siltronics
P.O. Box 83180, MS 30
Portland, OR 97283-0180

RE: Landscape Maintenance Contracts for Wacker Siltronics

Dear Ken,

Enclosed please find a set of agreements for landscape maintenance services at Wacker Siltronics. Contract dates are from April 1, 1999 to March 31, 2000.

Please review these contracts and, if satisfactory, return one fully endorsed copy to us for our records.

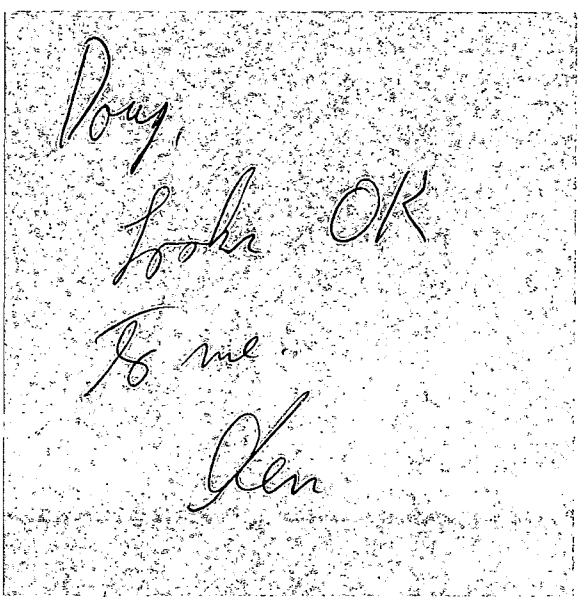
Thank you for this continued opportunity to serve you.

Sincerely,

NORTHWEST LANDSCAPE INDUSTRIES

Scott DeSelle

Scott DeSelle
Area Manager



16075 S.W. UPPER BOONES FERRY RD., TIGARD, OR 97224
(503) 684-1450 FAX (503) 620-7592

Printed on Recycled Paper

LANDSCAPE MANAGEMENT AGREEMENT

THIS AGREEMENT is entered into this 11th day of March 1999, by and between **TruGreen, LP, dba Northwest Landscape Industries**, hereafter referred to as the "Contractor", and ***Wacker Siltronic,*** hereafter referred to as the "Owner".

The parties wish to enter into an agreement to define the terms and conditions under which Contractor will provide landscape maintenance services to Owner.

The parties hereby agree as follows:

1) **Services.** The Contractor agrees to perform the landscape management services noted on the "Landscape Management Annual Schedule" attached to and incorporated into this document, for the property of the Owner, located at **Wacker Siltronics, Portland, OR** (hereafter referred to as the "Property").

2) **Term.** This Agreement shall commence on the 1st day of April 1999, and shall end on the 31st day of March 2000.

3) **Consideration/Payment.** In consideration for the Contractor's performance described herein, Owner agrees to pay Contractor the total sum of **$ 27,768.00** payable in 12 equal monthly payments as detailed below:

Basic Maintenance	$ 1,785.00
Irrigation Services	
• turn-on/turn off	$ 50.00
• mid season tune ups	$ 45.00
Turf Core Aeration	$ 34.00
Field Mowing	$ 400.00
Total	$ 2,314.00/Month

1830

A) **Payments**. Invoices will be sent on or about the 10th day of each month for current month's services and payment shall be due upon issue. **A LATE CHARGE OF 1.5% PER MONTH SHALL BE CHARGED ON ALL AMOUNTS 30 DAYS PAST DUE.**

4) **Additional Services.** Services performed and/or materials delivered, which are not specifically mentioned herein, will be deemed `additional services'. Additional services will be billed separately and all payments are due upon receipt. **A LATE CHARGE OF 1.5 % PER MONTH WILL BE CHARGED ON ALL AMOUNTS 30 DAYS PAST DUE.** The performance of, and the payment for additional services are subject to all the terms and conditions of this Agreement.

5) **Materials, Supplies, and Equipment.** Contractor will furnish all materials, labor, supplies, and equipment necessary to perform the services specified.

SCOEPA00054429

6) **Law.** This Agreement shall be governed by the laws of the State of Oregon.

7) **Attorney's Fees.** In the event of suit or action commenced to enforce the terms of the Agreement, the prevailing party shall be entitled to attorney's fees and costs, including any appeal.

8) **Automatic Extension.** If the Owner has not notified the Contractor, in writing, of intent not to renew, the Agreement will automatically extend on a month-to-month basis and all terms and conditions of this Agreement remain in force.

9) **Liability.** Contractor is an independent contractor and the Owner assumes no liability for injury to the Contractor or the Contractor's agents or employees, unless such injury is caused by the Owner, the Owner's agents, servants, or employees by negligence or intentional acts. It is further understood that the Contractor is not liable for any damage of any kind whatsoever that is not caused by the negligence of the Contractor, its agents, or employees.

10) **Insurance.** Contractor agrees to carry the required insurance and name Owner and their agents as additionally insured.

11) **Notification of Deficient Work.** If Owner believes Contractor is providing deficient work, Owner agrees to notify Contractor of deficiencies, in writing, within 30 days of said occurrence. If written notice is not received by Contractor within 30 days Owner knew or should have known of the deficiencies, Owner agrees to have waived any and all claims to recover past payments and/or rights to withhold present or future payments due under this Agreement. Upon such notification, Contractor agrees to rectify deficiencies within 14 days. If the Contractor corrects the deficiencies in accordance with the schedule, it shall not forfeit any amounts due under this Agreement.

12) **Termination.** It is agreed that either party may terminate this Agreement by giving written notice 30 days in advance. It is further agreed that Contractor may immediately cease performance without termination notice if Owner refuses or fails to pay Contractor according to the terms of this Agreement.

13) This Agreement incorporates all the terms and conditions which the parties intended to be included herein, and is hereby mutually agreed to be a fully integrated Agreement. Both parties have read this Agreement and fully understand the contents.

CONTRACTOR:

By: _____

Robert J. Grover

Operations Manager

OWNER: (or Authorized Agent):

By: _____

Name: DOUGLAS MILLER

Title: HGR CONTRACT ADMIN.

SCOEPA00054430

LANDSCAPE MANAGEMENT ANNUAL SCHEDULE

WACKER SILTRONICS
April 1, 1999 - March 31, 2000

URF MANAGEMENT	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TTL
ng		*	*	*	*	*	*	*	*	*	*		38
g	*	*	*	*	*	*	*	*	*	*	*	*	19
Trimming	*	*	*	*	*	*	*	*	*	*	*	*	38
ize	*				*		*		*		*		5
Emergent Herb					*				*				2
Aeration					*								1
Blow Walks	*	*	*	*	*	*	*	*	*	*	*	*	42

PLANT BED MAINTENANCE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TTL
Police / Hand Weed	*	*	*	*	*	*	*	*	*	*	*	*	46
Spray Weeds			*	*	*	*	*	*	*	*			12
Pre Emergent Herb		*				*				*			3
Trim Groundcover		*			*			*					3
Fertilize Groundcover			*			*				*			3
Fertilize Shrubs			*			*					*		3
Pruning	As required for correct growth and development												
Leaf Control										*	*	*	3

SPECIAL SERVICES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TTL
Irrigation on/off			----- on -----								off		
Irrigation tune-ups					*	*	*	*	*				5
Seasonal Color			*		*					*			3
Inspection Reports	Quarterly - Months May Vary												4
Issues Newsletter	*	*	*	*	*	*	*	*	*	*	*	*	12
Field Mowing				*		*	*	*	*				5
Insect / Disease Monitor	*	*	*	*	*	*	*	*	*	*	*	*	12

* Actual frequencies may vary based on weather and site related conditions. See specifications for details.

NORTHWEST
LANDSCAPE
INDUSTRIES

I. GENERAL CONDITIONS

A. All tools, equipment, and materials necessary to perform the specified work for the Owner or designated Owner's Representative (hereinafter referred to as 'Owner') will be provided by the contractor (hereinafter referred to as Northwest Landscape Industries or NLI). Owner is responsible for all costs associated to water.

B. NLI will provide uniformed, trained staff and be responsible for the appearance and conduct of all employees while performing work on site(s).

C. NLI provides all payment of wages, workers' compensation insurance, social security tax, employment compensation tax, employer's liability insurance, and all other requirements of federal, state, and local government.

NLI will carry the following types and amount of insurance, at a minimum:

• Comprehensive General Liability	$	500,000
• Bodily Injury/Property Damage Liability		500,000
• Workers' Compensation		100,000
• Umbrella Excess		5,000,000

Licenses and proof of insurance, listing client as additionally insured, are available on request.

D. Inspection of site(s) will be made regularly and problems, if found, will be discussed by NLI with the Owner. Written, comprehensive inspection reports will be provided at a minimum of four times yearly. General landscape issue updates regarding seasonal considerations will be provided monthly via newsletters.

E. All employees are supervised by fully trained, Forepersons and Supervisors. Radio and cellular phone communications are in use during regular business hours and emergency after-hours communication is available. Maximum response time to non-emergency communications is 24 hours.

F. Debris generated by landscape activities and litter will be removed from the site unless prior arrangements are made. All organic debris collected by NLI is recycled and/or composted.

SCOEPA00054432

II. TURF MANAGEMENT

A. Fine Lawn Mowing.

1. For all turf areas, NLI will inspect and police the grounds for litter and debris prior to each mowing and dispose of it.

2. All turf is to be mowed every seven days beginning in March through October, with an additional two mowings each in November and February; mowing in December and January will be completed on an as-needed basis with weather permitting, for an average of 38 mowings per year. No extra charge will be made for mowings required due to unseasonably early spring or late fall turf growth.

3. Mowing height for all irrigated lawn areas will be no less than 1½" and no more than 2½" for a finished cut height. Turf will be cut at a uniform height with reel and/or rotary mowers in open areas and rotary mowers in closed areas. Mowing equipment is to be kept sufficiently sharp and properly adjusted through daily servicing to provide a cleanly cut grass blade. Grass blade bruising, tearing, and shredding is to be prevented. Mowing pattern will be varied where possible to reduce rutting and compaction of grade.

   Any excess clippings will be dispersed and/or collected to prevent damage and unsightly appearance of lawns.

4. At no time will employees operating mowers, damage landscape trees with equipment.

B. Edging.

All sidewalks, curb lines, concrete slabs, tree circles, and bed edges will be mechanically edged as needed to maintain a neat, clean appearance approximately twice per month during the mowing season.

C. String Trimming.

Trimming will be performed around all road signs, guard posts, trees, shrubs, utility poles, and other obstacles. The grass will be trimmed to no less than the desired height of cut determined by the mowing operation. Trimming will be completed with each mowing.

D. Turf Fertilization.

1. Fertilizers will be applied by NLI to maintain proper nutrient levels and provide a consistent, healthy appearance throughout the year.

   Turf will be fertilized with a well-balanced, slow-release fertilizer customized seasonally by NLI approximately five times per year. Eight pounds of nitrogen per 1,000 square feet will be applied per year to maintain a consistent, lush, green appearance. Fertility level will be consistent.

SCOEPA00054433

2. Soil pH will be monitored periodically and corrective measures will be proposed if needed.

3. Deficiencies of sulfur, magnesium, and other micronutrients will be corrected as needed. Timing of these applications may vary according to need.

E. Sweep/Blow Walks.

At the conclusion of each visit, walks adjacent to work areas will be swept or blown.

F. Turf Core Aeration

1. Core aerate all lawn areas with a piston type aerator once yearly at the beginning of the irrigation season to improve irrigation infiltration. Cores will be cleaned from sidewalks and parking lots. Cores on lawn areas will be left and mulched with subsequent mowing.

III. SHRUB BED MAINTENANCE

A. Landscaped areas will be policed weekly throughout the growing season and twice monthly during the dormant season for weeds, litter, and debris. Particular attention will be paid to entry ways, focal points, and high traffic areas.

B. Planter beds will be groomed an average of four times per year and more frequently in high traffic areas to remove debris and promote an attractive, fresh appearance.

C. Fertilizing of all trees (3" caliper and less) and shrubs will be completed a minimum of twice per year. All fertilizers to be uniformly applied at the dripline of the plant. Groundcover will be fertilized three times per year with materials broadcast. All fertilizers will be slow-release and balanced.

D. Pruning will be done to enhance natural growth. Trimming of trees under 15' total height is included. NLI will remove dead, damaged, and diseased portions of the plant. Cuts will be flush and clean, leaving no stubs or tearing of bark. Major pruning will be done following flowering or during plant's dormant season. Emergency or minor pruning will be performed when needed.

1. Pruning to be performed by NLI staff who have been trained and demonstrate competency in proper pruning techniques.

2. Shearing of plants will occur only where previous practice has been to shear, or as directed by Owner.

3. Provide remedial attention and repair to shrubs and trees as appropriate to season or in response to incidental damage.

4. Prune shrubbery to maintain proper size in relationship to adjacent plantings and intended function. Examples of specific practices include: pruning photinia and pyracantha twice per year, pruning spring-blooming shrubs in June, pruning deciduous shrubs in the winter, etc.

SCOEPA00054434

5. Prune trees (of less than 15' total height) as required to remove weak branching patterns and corrective pruning for proper development. Remove lower limbs when obstructing vehicular or pedestrian clearances. Remove lower branches of conifer trees when in conflict with growth of plantings beneath.

6. Prune groundcover as required to contain perimeter growth to within bed areas where adjacent to walks, curbs, and structures. Established groundcover will be trimmed 4" to 6" off hard surfaces with a beveled or rolled edge. Mature groundcover will be maintained at a consistent, level height to provide a smooth and even appearance.

E. Moles, field mice, gophers, and other rodent activity will be monitored. Notification of problems and recommendations for timely, appropriate control measures will be made.

F. Removal of leaves from lawns, planter beds, and walkways will be completed throughout the year as needed to maintain a clean appearance throughout the project. At landscaped areas, major leaf removal will be performed monthly.

G. Monitor trees that are staked or guyed. Loosen and/or remove supports when appropriate to prevent girdling of the trunk and encourage root development for support.

IV. ENVIRONMENTAL WEED AND PEST CONTROL PROGRAM

A. All applications of herbicides or pesticides will be performed by an Oregon or Washington State licensed commercial applicator. All safety precautions will be taken in the handling and application of chemicals as stated on manufacturer's labels and in the *Oregon Weed and Pest Control* handbooks.

B. NLI will provide surveillance of all turf and shrub bed areas for weeds, and will take timely measures to treat same with appropriate chemical.

C. Turf Weeds: postemergent herbicide spraying of all mowed lawn areas will be done in the spring and fall with applicable materials. Applications with follow-up applications, as required, will attain a kill of 98% of broadleaf weeds.

D. Shrub Bed Weeds: all planter beds, tree circles, and sidewalk cracks adjacent to landscaped areas are to be sprayed up to twice per month from March through October to control unwanted grasses and broadleaf weeds. Chemical practices will not be a substitute for hand weeding where the latter is required for complete removal.

All planter beds are to have two applications of preemergent herbicide per year. Preemergent herbicides will be of the non-leaching type. Specified product to be rotated to prevent soil contaminating levels.

E. Pest Monitoring: inspection for insect and disease infestations will occur on a monthly basis. Appropriate, timely control measures will be recommended, if required.

F. Material Safety Data Sheets (MSDS) for all chemicals used on site(s) are available from NLI to clients in accordance with OSHA regulations.

SCOEPA00054435

G. NLI will at all times be in compliance with requirements for hazardous communications programs. All employees are trained and supervised in the safe application, storage, and disposal of chemicals in accordance with EPA, OSHA, DEQ, and ODOT regulations.

V. IRRIGATION EQUIPMENT AND OPERATION

A. Activate irrigation system in spring. Charge mainline in February or March to check for leaks or malfunctioning valves. Clean and adjust system during March through May. This includes: turning on each zone, monitoring for leaks or malfunctioning parts, cutting grass away from all turf heads, and adjustment for proper spray arc and maximum system efficiency.

B. Establish time settings and intervals of irrigation water application for each valve of all irrigation zones. Make changes when necessary to correspond to variable watering requirements

C. Correct conditions of over/under-watering, product failure, and readjustment of heads as problems arise during the irrigation season. Owner understands that due to system weaknesses and age, vandalism, extreme weather conditions, and other conditions outside NLI's control, irrigation efficiency and effectiveness may be impaired.

D. Perform monthly system tune-ups during irrigation season. Turn all valves from controller and observe operation; ensure valves turn on and off properly; adjust spray pattern of arc; prune plants or cut grass away that is blocking coverage; determine any system repair or simple modifications needed to improve system effectiveness

D. Shut off and drain system(s) at the end of the irrigation season. Turn off all main supply valves, open all manual drain valves and bleed valves on backflow prevention devices. Perform winterization prior to any severe freezing weather. Owner understands that irrigation operation is determined by plant need, and may occur occasionally with overnight frost.

E. Repair and/or replacement of any damaged or malfunctioning components beyond NLI's control is the responsibility of the Owner. Any damage caused by NLI will be repaired by NLI at no charge. Simple head and lateral line repairs are made without notice to ensure rapid repair, unless otherwise notified by Owner. Major repairs to mainlines, valves, and timeclocks will require pre-approval from the Owner.

SCOEPA00054436

EXCLUSIONS

The parties expressly agree that the following work will not be performed by NLI unless contracted for on a separate basis.

A. Trimming of trees over 15' total height.

B. Cleaning and/or repairing from acts of vandalism, natural disorders, or acts of God (example: freeze, wind, fire, etc.).

C. Treatment for diseases or pests on lawns, trees and shrubs, except as specified.

D. Moss control due to insufficient mulch layer.

E. Barkdust will be applied at a cost per unit when ordered. This includes bark and labor.

F. Parking lot maintenance (sweeping, leaf pickup, litter pickup, and moss control).

G. Rodent control.

VII. EXTRA WORK BILLING

Extra work will need prior permission from the Owner. All extra work will be billed at NLI's standard hourly rate.

SCOEPA00054437

Date: 3/24/99
Sender: Doug Miller
To: Kenneth Kemper
Priority: Normal
Subject: Re[5]:Landscape services

Our new contract / blanket order is 210228

_____Reply Separator_____
Subject: Re[4]:Landscape services
Author: Kenneth Kemper
Date: 3/24/99 12:48 PM

Yes

_____Reply Separator_____
Subject: Re[3]:Landscape services
Author: Doug Miller
Date: 3/24/99 10:38 AM

Okay, what GL account?? 658018

Doug

_____Reply Separator_____
Subject: Re[2]:Landscape services
Author: Kenneth Kemper
Date: 3/24/99 10:30 AM

The correct cost center is Admin bldg, 59800 at 100%. Thanks for all of your effort on this.

Ken

_____Reply Separator_____
Subject: Re:Landscape services
Author: Doug Miller
Date: 3/23/99 4:34 PM

Ken,
The original po was set up charging:
GL 658018
CC 59800

The last several months have been charged as follows:
GL 648084
CC 59702

Let me know how you want to set this up.

Doug

_____Reply Separator_____
Subject: Landscape services
Author: Doug Miller
Date: 3/17/99 9:48 PM

I am ready to create a "new" contract po to NW Landscape.

How do you want to have this charged?

To a Cost Center and GL account? If so, what are the numbers? There is no need to create an SAP req as I can take care of it all.

OR

To a PM work order? If so, someone needs to create and SAP req and advise me of the number.

Please advise soonest.

Doug Miller

NORTHWEST LANDSCAPE INDUSTRIES

16075 S.W. Upper Boones Ferry Rd., Tigard, OR 97224
(503) 684-1450

INVOICE NO.

PAGE

B
i WACKER SILTRONICS
l P. O. BOX 03180
l PORTLAND, OR 97203

T
o

INVOICE DATE	INVOICE NO.	CUSTOMER NO.	PAYMENT TERMS	CONTRACT NO.
05/01/1998	11668	WACKER	NET 30 DAYS	WACKER

Description	Salesman Code	Contract Number	Order Number	Price
From 05/01/1998 to 05/31/1998 5th monthly billing of 12 WACKER SILTRONICS	TS	WACKER	PO #12106	2,842.00

NORTHWEST LANDSCAPE INDUSTRIES

ERMS: Net 30 days from date of invoice. Past due amounts ubject to service charge of 1½% per month (minimum $1.00) which ; an annual percentage rate of 18%. Please note your customer nd invoice number on your remittance.

GROSS		TAX	NET AMOUNT
2,842.00		.00	2,842

SCOEPA00054440

1994 RECEIVED FEB 1 6 1994

Northwest Landscape

LANDSCAPE MAINTENANCE AGREEMENT

THIS AGREEMENT is entered into this 21st day of January, 1994, by and between AKERMAN & WATHEY, INC., doing business as NORTHWEST LANDSCAPE INDUSTRIES, hereinafter referred to as the "Contractor", and WACKER SILTRONIC, hereinafter referred to as the "Owner".

WHEREAS, the parties wish to enter into an agreement so as to provide the terms and conditions under which Contractor will provide landscape maintenance to Owner as set forth herein below.

NOW, THEREFORE, in consideration of the mutual promises and covenants contained herein, the parties hereto agree as follows:

1) Services. The Contractor agrees to perform the landscape maintenance services, as set forth on the Landscape Management Annual Schedule which is attached hereto and incorporated herein by this reference, for the property of the Owner, located at **WACKER SILTRONIC**, Portland, OR, (hereinafter referred to as the "Property").

2) Term. This Agreement shall commence on the 1st day of January, 1994, and shall end on the 31st day of December, 1995, unless terminated sooner as provided herein.

3) Materials and Supplies. Contractor will furnish all materials and supplies necessary to perform the services specified, with the exception of the following items, which the Owner agrees to furnish:

* Contract does not include irrigation maintenance, field mowing, or new turf area at south parking lot.

4) Contractor's Equipment. The Contractor shall furnish all labor and equipment necessary to perform its duties as specified in Paragraph 1, hereinabove.

5) Consideration/Payment. In consideration for the Contractor's performance described herein, Owner agrees to pay Contractor the total sum of Twenty Eight Thousand Six Hundred Eighty Dollars ($28,680.00) payable as follows:

24 equal monthly payments of $1,195.00

a) Payments. Invoices will be sent on or about the 10th day of each month in which services are performed and payment thereon shall be due on the 10th day of the following month. A LATE CHARGE OF 1.5% PER MONTH SHALL BE CHARGED ON ALL AMOUNTS PAST DUE.

6) Additional Services. Services performed and/or materials delivered, which are not specifically mentioned herein, will be deemed Additional Services. Additional Services shall be billed separately upon completion and all payments are due on or before 30 days from the invoice date. A LATE CHARGE OF 1.5% PER MONTH WILL BE CHARGED ON ALL AMOUNTS PAST DUE. Except as otherwise provided in this paragraph, the performance of, and the payment for, Additional Services are subject to all the terms and conditions of this Agreement.

7) Liability. It is understood that the Contractor is an independent contractor and the Owner assumes no liability for injury to the Contractor or the Contractor's agents, servants, or employees, unless such injury is caused by the Owner or the Owner's agents, servants or employees negligence or intentional acts. It is further understood that the Contractor is not liable for any damage of any kind whatsoever that is not caused by the negligence of the Contractor, its agents or employees.

Contractor shall carry the following types and amounts of insurance at a minimum:

Comprehensive General Liability, $500,000
Bodily Injury/Property Damage Liability, $500,000
Workers' Compensation, $100,000
Umbrella Excess, $1,000,000

8) Notification of Deficient Work. If Owner believes Contractor is providing deficient work, Owner agrees to notify Contractor of the deficiencies, in writing, within 15 days of such occurrence. If said written notice is not received by Contractor within 15 days Owner knew or should have known of the deficiencies, Owner agrees to have waived any and all claims to recover past payments and/or rights to withhold present or future payments due under this Agreement. Upon such notification, Contractor agrees to rectify the deficien-cies, within a reasonable period of time, in accordance with the schedules established with the Owner. If the Contractor corrects the deficiencies in accordance with the schedule, it shall not forfeit any amounts due under this Agreement.

9) Termination. It is agreed that either party may terminate this Agreement by giving written notice not less than 30 days in advance. However, it is further agreed that Contractor may immediately cease performance and not give any termination notice, if Owner refuses or fails to pay Contractor according to the terms herein.

a. Liquidated Damages. Because the parties recognize and anticipate that Contractor will incur damages if Owner terminates this Agreement prior to the expiration of its terms and, furthermore, because the amount of such damages are uncertain and difficult to ascertain, the parties agree that the sum of 0 percent of the remaining unpaid amounts due, or to become due under paragraph 5 and 6 of this Agreement is reasonable and just compensation for such termination and therefore, Owner hereby agrees to pay, and Contractor hereby agrees to accept such sum as liquidated damages. It is understood and agreed that this liquidated damage provision is not a penalty and it shall in no way be construed as such.

10) Automatic Extension. If the Owner has not notified the Contractor in writing by the last day of this Agreement, of Owner's intent not to renew the Agreement, the Agreement shall be automatically extended on a month to month basis and, in that event, all terms and conditions of this Agreement will remain in force.

11) Law. This Agreement shall be governed by the laws of the State of Oregon.

12) Attorney's Fees. In the event of suit or action commenced to enforce the terms of this Agreement, the prevailing party shall be entitled to attorneys' fees and costs, including any appeal therefrom.

13) This Agreement incorporates all the terms and conditions which the parties intended to be included herein, and is hereby mutually agreed to be a fully integrated Agreement. Both parties have read this Agreement and fully understand the contents herein.

CONTRACTOR:

By: _____
James E. Wathey
Vice President/General Manager

OWNER:

By: _____
Authorized Agent or Owner

By: _____
Owner, Individually

WACKER

Portland, Oregon
June 5, 1980

RICH GASTON
TOM D'SILVA
BOB SHAW
DOUG MILLER
DIRK DUNNING

EMPTY CHROMIC ACID CONTAINERS

We are planning to dispose of the chromic acid containers through Widing Transportation consolidation program. This method of disposal is available to us provided that the volume does not exceed 2000 lbs./year.

The current accumulation of waste containers should be delivered to our shipping department in the following condition:

1. Plastic liners pulled and placed in one larger plastic bag.

2. Cardboard drums crushed as flat as possible and secured in bundles.

Please use discretion in the future when delivering containers to shipping. Please deliver them in bundles, not one at a time.

Shipping should secure the bags and bundles to pallets with strapping and deliver to Widing. Call Jim Dineen at 286-3661 for directions to their facility.

Marty

MARTY BORREVIK

SCOEPA00054444

TO: John Pittman

FROM: Greg Carr

SUB: Conversation with Renee Dulay Jan 28,1985

DATE: January 28, 1985

Renee called me this am to check up on the progress of our clean up. I told him the following:

1) We have excavated to 1' on the South side of the walkway.
2) We have excavated to 3 1/2' on the North side, around the equipment.
3) All the dirt is now in Arlington, the last loads went out this am (1/28).
4) Further work was on hold waiting the results of soil analysis under the excavated areas. I told him I did not have the analysis - I did not tell him John Pittman has a copy of the analysis, or that there is definite TCE contamination.
5) The soil analysis should be done by Wednesday 1/30.

I also asked him what would happen to us if we discovered soil or groundwater contamination from other materials not deposited by Wacker - ie materials that are here because this is an old dumpsite. I mentioned oil (like from the Olympic Pipeline Leak) and Creasote (from Koppers) or Phenols (from Rhone-Poulenc). He said that his group had not discussed this matter.

He asked about the progress on the Hazardous Waste Spill Plan. I told him that we had a rough draft of all required training and spill procedures done, and we have only to discuss internally the "Emergency Coordinator" job.

GC/md Greg Carr

cc:File

TO: John Pittman

FROM: Murray Tilson

SUBJ: TCE WASTE WATER TRANSFER OPERATION

DATE: March 22, 1985

At apprximately 12:40 p.m. today, Matlock Trucking was in the process of pumping TCE waste from our SOD-H tank into their truck when their transfer hose ruptured. Approximately 1/2 to 1 gallon of TCE waste drained to the pavement area before the driver could turn off the pump.

The following actions were taken:

1. Mike Pilkington and Jeff Jones contained the spill on the pavement with "Floor Dry".

2. This material was then shoveled into a 55 gallon drum and later marked as hazardous waste.

3. Since rains were heavy at that time, about 250 gallons of storm water collected in the street catch basin and roadway. After the "Floor Dry" was removed, I directed the operators to pump this rain water (slightly contaminated with TCE) into the truck tanker.

4. I contacted Helen Knight of VW & R to inform them that I did not want to have Matlack here again. She informed me that she would only use them <u>if</u> neither of the two (2) other certified haulers were available.

<u>Comments & Recommendations</u>

1. No followup with DEQ is required since the spill occurred on impervious material (A.C. pavement) and was completely cleaned up.

2. I would strongly recommend that we not allow Matlack to take our business due to their poor performance record. They have caused us problems two out of the last three times they have picked up TCE waste.

3. I also recommend that we have a concrete catch basin constructed where the hosebib ends next to the concrete curb. The permanent pipe extension out to the street should be shortened by about 4 feet and a small concrete containment area built at the location.

MMT:ll

Murray M. Tilson

cc: Greg Carr

SCOEPA00054446

VWR

Mailing Address:
P.O. Box 10287
Portland, Oregon 97210

Van Waters & Rogers
division of **Univar**
3950 N.W. YEON AVENUE
PORTLAND, OREGON 97210

No. 3168

62630LB 113454 03:08PM MA 21 95

GROSS

TARE 29,180

NET 33,450

CUSTOMER Wacker

FRT. BILL NO. 0172091

DESTINATION

SHIPPER'S NO. 3436

COMMODITY Waste Tri

TRUCK AND TRAILER NO. 34-41 61-38

WEIGHER

SCOEPA00054447

Manifest

TPS Technologies Soil Recycling
Non-Hazardous Soils

⬇ Manifest # ⬇

Date of Shipment:		Transporter Truck #:			Load #
- -	GENERATOR		09	01691	001

Generator and/or Consultant

WACKER SILTRONIC
7200 NW FRONT AVENUE
PORTLAND, OR 97209

(503) 243-2020
ERIC SPIERING
( ) - 1002525

( ) -

( ) -

WACKER SILTRONIC
7200 NW FRONT AVENUE
PORTLAND, OR

( ) - ppb
20000F50 ppm
( ) - ppb ppm

TPST SOIL RECYCLERS OF OREGON
9333 NORTH HARBORGATE STREET
PORTLAND, OR 97203

(503) 735-9525
GLENNA MULLAN
(503) 240-1712

( ) -

( ) -

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 ☐					
Sand ☐ Organic ☐ Clay ☐ Other ☐	0 - 10% ☐ 10 - 20% ☐ 20% - over ☐	Gas ☐ Diesel ☐ Other ☐					

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: ERIC SPIERING Generator ☒ Consultant ☐ Signature and date: [signature] Month 07 Day 01 Year 96

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: Signature and date: Month Day Year

Recycling Facility

Discrepancies:

FLAME TEST _____

Recycling Facility certifies the receipt of the soil covered by this manifest except as noted above:

Print or Type Name: Signature and date:

Please print or type.

TPS FACILITY COPY

JUL 01 '96 08:31AM TPS TECH/OREGON P.2/7

SCOEPA00054448

Manifest

TPS Technologies Soil Recycling
Non-Hazardous Soils

⬇ Manifest # ⬇

Date of Shipment:		Transporter Truck #:			Load #
– –	GENERATOR		09	01691	004

Generator and/or Consultant

WACKER SILTRONIC
7200 NW FRONT AVENUE
PORTLAND, OR 97209

(503) 243-2020
ERIC SPIERING
( ) – 1002525

( ) –

( ) –

WACKER SILTRONIC
7200 NW FRONT AVENUE
PORTLAND, OR

( ) – ppb
20000F50 ppm
( ) – ppb ppm

Transporter

TPST SOIL RECYCLERS OF OREGON
9333 NORTH HARBORGATE STREET
PORTLAND, OR 97203

(503) 735-9525
GLENNA MULLAN
(503) 240-1712

( ) –

( ) –

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 ☐					
Sand ☐ Organic ☐ Clay ☐ Other ☐	0 - 10% ☐ 10 - 20% ☐ 20% - over ☐	Gas ☐ Diesel ☐ Other ☐					

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: 07 | Day: 01 | Year: 96

ERIC SPIERING

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: | Signature and date: | Month | Day | Year

Recycling Facility

Discrepancies:

FLAME TEST _____

Recycling Facility certifies the receipt of the soil covered by this manifest except as noted above:

Print or Type Name: | Signature and date:

Please print or type.

TPS FACILITY COPY

JUL 01 '96 08:32AM TPS TECH/OREGON

Manifest

TPS Technologies Soil Recycling
Non-Hazardous Soils

↓ Manifest # ↓

Date of Shipment: — —	GENERATOR	Transporter Truck #:	09	01691	Load # 005

Generator and/or consultant

WACKER SILTRONIC
7200 NW FRONT AVENUE
PORTLAND, OR 97209

(503) 243-2020
ERIC SPIERING
( ) – 1002525

( ) –

( ) –

WACKER SILTRONIC
7200 NW FRONT AVENUE
PORTLAND, OR

( ) – ppb
20000F50 ppm
( ) – ppb ppm

Designated Facility

TPST SOIL RECYCLERS OF OREGON
9333 NORTH HARBORGATE STREET
PORTLAND, OR 97203

(503) 735-9525
GLENNA MULLAN
(503) 240-1712

( ) –

( ) –

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 ☐					
Sand ☐ Organic ☐ Clay ☐ Other ☐	0-10% ☐ 10-20% ☐ 20%-over ☐	Gas ☐ Diesel ☐ Other ☐					

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: ERIC SPIERING Generator ☒ Consultant ☐ Signature and date: [signature] Month 07 Day 01 Year 96

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: | Signature and date: | Month | Day | Year

Recycling Facility

Discrepancies:

FLAME TEST _____

Recycling Facility certifies the receipt of the soil covered by this manifest except as noted above:

Print or Type Name: | Signature and date:

Please print or type. | TPS FACILITY COPY

JUL 01 '96 08:33AM TPS TECH/OREGON

Manifest

TPS Technologies Soil Recycling
Non-Hazardous Soils

⬇ Manifest # ⬇

Date of Shipment: – –	GENERATOR	Transporter Truck #:	09	01691	Load # 006

Generator and/or Consultant

WACKER SILTRONIC
7200 NW FRONT AVENUE
PORTLAND, OR 97209

(503) 243-2020
ERIC SPIERING
( ) – 1002525

( ) –

( ) –

WACKER SILTRONIC
7200 NW FRONT AVENUE
PORTLAND, OR

( ) – ppb
20000F50 ppm
( ) – ppb ppm

Designated Facility

TPST SOIL RECYCLERS OF OREGON
9333 NORTH HARBORGATE STREET
PORTLAND, OR 97203

(503) 735-9525
GLENNA MULLAN
(503) 240-1712

( ) –

( ) –

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 ☐					
Sand ☐ Organic ☐ Clay ☐ Other ☐	0-10% ☐ 10-20% ☐ 20%-over ☐	Gas ☐ Diesel ☐ Other ☐					

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
ERIC SPIERING | 07 01 96

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: | Signature and date: | Month Day Year

Recycling Facility

Discrepancies:

FLAME TEST ———

Recycling Facility certifies the receipt of the soil covered by this manifest except as noted above:

Print or Type Name: | Signature and date:

Please print or type. | TPS FACILITY COPY

JUL 01 '96 08:33AM TPS TECH/OREGON

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

BOTHELL ■ (206) 481-9200 ■ FAX 485-2992
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

May 13, 1996

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

Attention: Dianne Mullan

RE: JOB # BOX 55-60
P.O.# 51085
PROJECT - SOIL

Enclosed are test results for your samples received in this lab on Apr. 24, 1996. For your reference, these analyses have been assigned our NCA # P604358.

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,

Joy Chang
Project Manager

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

BOTHELL ■ (206) 481-9200 ■ FAX 485-2992
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

SURROGATE RECOVERIES (%)

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Number: P604358
Received: 04/24/1996

Sample Name	Analyte	Result	Control Limits
TPH-G per Oregon DEQ (C6-C10)			
96-581	4-Bromofluorobenzene	103	63-126
	Trifluorotoluene	82	50-150
96-582	4-Bromofluorobenzene	80	63-126
	Trifluorotoluene	56	50-150
96-583	4-Bromofluorobenzene	102	63-126
	Trifluorotoluene	74	50-150
96-584	4-Bromofluorobenzene	80	63-126
	Trifluorotoluene	62	50-150
96-585	4-Bromofluorobenzene	101	63-126
	Trifluorotoluene	81	50-150
96-586	4-Bromofluorobenzene	87	63-126
	Trifluorotoluene	85	50-150
96-587	4-Bromofluorobenzene	94	63-126
	Trifluorotoluene	78	50-150
96-588	4-Bromofluorobenzene	80	63-126
	Trifluorotoluene	59	50-150

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00054453

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

BOTHELL ■ (206) 481-9200 ■ FAX 485-2992
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

SURROGATE RECOVERIES (%)

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Number: P604358
Received: 04/24/1996

Sample Name	Analyte	Result	Control Limits
TPH-D per Oregon DEQ (C10-C28)			
96-581	1-Chlorooctadecane	– *[2]	50-150
96-582	1-Chlorooctadecane	– *[2]	50-150
96-583	1-Chlorooctadecane	– *[2]	50-150
96-584	1-Chlorooctadecane	– *[2]	50-150
96-585	1-Chlorooctadecane	– *[3]	50-150
96-586	1-Chlorooctadecane	– *[3]	50-150
96-587	1-Chlorooctadecane	– *[3]	50-150
96-588	1-Chlorooctadecane	– *[3]	50-150

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00054454

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

BOTHELL ■ (206) 481-9200 ■ FAX 485-2992
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

SURROGATE RECOVERIES (%)

Client: Wacker Siltronic Corporation
Project: SOIL

NCA Number: P604358
Received: 04/24/1996

Sample Name	Analyte	Result	Control Limits
TCLP VOC's per EPA 1311, 8240			
96-581	4-Bromofluorobenzene	102	74-121
	Dibromofluoromethane	101	80-120
	Toluene-d8	101	81-117
96-582	4-Bromofluorobenzene	105	74-121
	Dibromofluoromethane	100	80-120
	Toluene-d8	101	81-117
96-583	4-Bromofluorobenzene	104	74-121
	Dibromofluoromethane	100	80-120
	Toluene-d8	102	81-117
96-584	4-Bromofluorobenzene	104	74-121
	Dibromofluoromethane	101	80-120
	Toluene-d8	101	81-117
96-585	4-Bromofluorobenzene	103	74-121
	Dibromofluoromethane	101	80-120
	Toluene-d8	102	81-117
96-586	4-Bromofluorobenzene	103	74-121
	Dibromofluoromethane	105	80-120
	Toluene-d8	101	81-117
96-587	4-Bromofluorobenzene	106	74-121
	Dibromofluoromethane	104	80-120
	Toluene-d8	101	81-117
96-588	4-Bromofluorobenzene	104	74-121
	Dibromofluoromethane	103	80-120
	Toluene-d8	102	81-117

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

SCOEPA00054455

Wacker Siltronic Corporation

WACKER

P.O. Box 83180
Portland, Oregon 97283-0180
Phone: (503) 243-2020

Fax: (503) 241-7599 Process Building

FACSIMILE TRANSMITTAL SHEET

FAX No: 257-8699

DATE: May 1, 1997

FROM: Eric Spiering, 219-7132

TO: OPF

ATTN: Sandy

NUMBER OF PAGES (including this page): 2

MESSAGE/SPECIAL INSTRUCTIONS:
Hi,

Here is the special waste permit for the landfill. The driver must have a copy of this on hand to go through the gate.

Call if you have any questions.

eric

USA WASTE SERVICES, INC....NON HAZARDOUS WASTE DISPOSAL SOLUTIONS FOR THE PACIFIC NORTHWEST

Hillsboro Landfill, Inc.

3205 SE MINTER BRIDGE ROAD HILLSBORO, OR 97123

PERMIT # 3580

PERMIT TO DISPOSE OF NON-HAZARDOUS MATERIALS

EXPIRES: 7/29/97

GENERATOR: WACKER SILTRONIC	
DESCRIPTION: *CONTAMINATED SOIL*	**TONS:** *15*
☒ **SPECIAL WASTE** ☐ **PCS**	
LOCATION: *PORTLAND*	**COUNTY:** *Multnomah*
CONTACT: *ERIC SPIERING*	**PHONE:** *219-7132*

BILLING: *Landfill account* ***ORE005***	**PO#:** *N/A*	**JOB#:** *N/A*

We accept business checks, cash, VISA / Mastercard or charge(with prior approval)

SPECIAL HANDLING : ***CONTACT LANDFILL 24 HOURS PRIOR TO DELIVERY***

APPROVED: CT ***CHRIS THOMAS*** **DATE:** ***04/29/97 2:42:00 PM***

A COPY OF THIS PERMIT MUST BE SHOWN BY EACH DRIVER

THERE IS A MINIMUM CHARGE OF $50-$60 FOR EACH LOAD OF SPECIAL WASTE

USA WASTE SERVICES, INC.

HAZARDOUS WASTE IS STRICTLY PROHIBITED

Special Waste Division
Cascade Division - Northwest Region
3205 S.E. Minter Bridge Road
Hillsboro, OR 97123
Phone: 503-844-9597 Fax: 503-648-2490

FAX COVER PAGE

THIS MESSAGE IS INTENDED ONLY FOR THE USE OF THE INDIVIDUAL OR ENTITY TO WHICH IT IS ADDRESSED AND MAY CONTAIN INFORMATION THAT IS PRIVILEGED, CONFIDENTIAL AND EXEMPT FROM DISCLOSURE UNDER APPLICABLE LAW. IF THE READER OF THIS MESSAGE IS NOT THE INTENDED RECIPIENT, OR THE EMPLOYEE OR AGENT RESPONSIBLE FOR DELIVERING THIS MESSAGE TO THE INTENDED RECIPIENT, YOU ARE HEREBY NOTIFIED THAT ANY DISSEMINATION, DISTRIBUTION OR COPYING OF THIS COMMUNICATION IS STRICTLY PROHIBITED. IF YOU HAVE RECEIVED THIS COMMUNICATION IN ERROR, PLEASE NOTIFY US IMMEDIATELY BY TELEPHONE AND RETURN THE ORIGINAL MESSAGE TO US AT THE ABOVE ADDRESS VIA U.S. POSTAL SERVICE. WE APPRECIATE YOUR COOPERATION.

Date: _____

Attention: Eric Spiering

Company: _____

FAX No: 2

From: Chris Thomas - Special Waste Technician

No. of Pages: 241-5599 (including this cover sheet)

Comments: _____

If you do not receive all of this Facsimile or it is illegible, please call 844-9597 or 648-0817.

USA WASTE SERVICES, INC. – CASCADE DIVISION

NON-HAZARDOUS WASTE DISPOSAL SOLUTIONS FOR THE PACIFIC NORTHWEST

REQUEST FOR DISPOSAL V3T

✓ WHAT IS THE WASTE CALLED?
Soil - pH > 7, < 11.5 by EPA Method 9045, SW-846

✓ HOW WAS THE WASTE CREATED?
EXCAVATION OF SOIL AT THE LOCATION OF A CAUSTIC CHEMICAL SPILL

✓ WHO CREATED THE WASTE? (generator)
WACKER SILTRONIC CORP

✓ WHERE WAS THE WASTE CREATED? (site name / address / city / state / **county**)
WACKER SILTRONIC CORP
7200 NW FRONT AVE
PORTLAND OR 97210

✓ HOW MUCH WASTE IS THERE? (tons or yards or drums) 10 yds

✓ WHAT COLOR IS THE WASTE? brown / grey - dirt + gravel

✓ WHAT DOES IT SMELL LIKE? dirt + gravel

✓ WHO CAN WE CONTACT ABOUT THE WASTE? (name / company / voice / fax):
ERIC SPIERING P - 219-7132
WACKER SILTRONIC CORP F - 241-7599

✓ HOW OFTEN WILL THE WASTE BE DISPOSED OF?
OR IS THIS A ONE TIME DISPOSAL? ONE TIME

✓ IS THIS A HAZARDOUS/DANGEROUS/TOXIC WASTE AS DEFINED BY FEDERAL OR STATE OR OTHER REGULATIONS? NO

✓ THIS WASTE IS NOT CONSIDERED A LIQUID AS DEFINED BY ***SW-846 (US EPA) METHOD 9095*** ? EQ *initial*

✓ CERTIFICATION

The certification must be signed by the generator, or the generator's authorized representative, and indicates that a first hand knowledge of the wastes' characteristics is known.

I hereby certify that all information is truly representative of the above described waste. I agree to notify USA if there is a change in the waste stream information as submitted for permit. I also authorize USA 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 qualified/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 by Federal or state regulations.

DATE: 4-18-97 COMPANY: WACKER SILTRONIC CORP

PRINTED NAME: ERIC SPIERING SIGNATURE: Eric Spiering

✓ **PLEASE SEE THE NEXT PAGE FOR BILLING AND APPROVAL INFORMATION.**

BILLING INFORMATION

✓WHICH DISPOSAL SITE WILL THE WASTE GO TO?

✓ **HILLSBORO LANDFILL** 3205 SE MINTER BRIDGE ROAD, HILLSBORO, OR 97123 (503) 640-9427

____ **N. WASCO COUNTY LANDFILL** 2550 STEEL ROAD, THE DALLES, OR 97058 (503) 296 4082

____ **RIVERBEND LANDFILL** 13469 SW HIGHWAY 18, McMINNVILLE, OR 97128 (503) 472-8788

____ **GRAHAM ROAD LANDFILL** S. 1820 GRAHAM ROAD, MEDICAL LAKE, WA 99022 (509) 244-0151

✓WHO WILL TRANSPORT THE WASTE TO THE LANDFILL? *(name / company / phone / fax)*:

OREGON PAPER FIBER

X roll-off box ____ belly dump ____ end dump ____ drums ____ pickup/trailer ____ other

✓PAYMENT INFORMATION: HANDLED BY OPF

↓ ____ LANDFILL ACCOUNT ____ CASH ____ BUSINESS CHECK ____ VISA/MASTERCARD

*LANDFILL ACCOUNT #*_____ *P.O.# (for accounts only)*_____

FOR INFORMATION ABOUT YOUR LANDFILL ACCOUNT PLEASE CONTACT THE LANDFILL

APPROVAL INFORMATION

FAX

FAX COMPLETED FORM AND LABORATORY RESULTS TO **CHRIS THOMAS** AT

OREGON (503) 648-2490 WASHINGTON (800) 583-5263

A PERMIT WILL BE FAXED TO YOU

FOR INFORMATION ON CHARACTERIZING YOUR WASTE AND DETERMINING WHETHER OR NOT THE WASTE IS ACCEPTABLE, CONTACT **CHRIS THOMAS** at:
Oregon - (503) 648-0817 (Portland) Washington -(800) 685-8001
e-mail: cthomas@apiretech.com

****this form is also available on microsoft word****

USA WASTE

THIS WORKSHEET RECORDS THE HAZARDOUS WASTE SHIPMENTS OF THE
WAFER PLANT FROM 1980 ON.

	TCE		CHROMIUM		FREON	TOTAL	
	GALLONS	POUNDS	GALLONS	GALLONS	POUNDS	GALLONS	
1 Q. 1980	23778		0			23778	1 Q. 1980
2 Q.	26186	99985 Gal	5886			32072	2 Q.
3 Q.	14300		31097			45397	3 Q.
4 Q.	35721		21463			57184	4 Q.
1 Q. 1981	14010		21804			35814	1 Q. 1981
2 Q. 11 lbs/Gal	36300	397420	8300			44600	2 Q.
3 Q. 11 lbs/Gal	25900	283620	12310			38210	3 Q.
4 Q.	29920		7100	220		37240	4 Q.
1 Q. 1982	39359		9793	550		49702	1 Q. 1982
2 Q.	55901		10549	1100		67550	2 Q.
3 Q.	31711		11922	825		44458	3 Q.
4 Q.	14729		13396	3135		31260	4 Q.
1 Q. 1983	9115		10024	2475		21614	1 Q. 1983
2 Q.	6376		5881	1210		13467	2 Q.
3 Q.	12197		10518	2530		25245	3 Q.
4 Q.	9872		11757	1265		22894	4 Q.
1 Q. 1984	19861		8011	0		27872	1 Q. 1984
2 Q.	14976	164140	7714	3859	50300	26549	2 Q.
3 Q.	16081		5319	2638		24038	3 Q.
4 Q.	20482		7082	1540		29104	4 Q.
1 Q. 1985	34200	342260	~~7480~~ 7613	1450	18900	43130	1 Q. 1985
2 Q.			5655			0	2 Q.
3 Q.			5220			0	3 Q.
4 Q.			7784			0	4 Q.
			8955				

1984 Avg + 1985 Avg

TCE (1984 only) 17,850 gal/Q = 5950 Gal/mo @ 72,650 $/mo

Cr 6164 gal/Q = 2055 gal/mo @ 1.05 = 18,000 $/mo

Freon 2372 gal/Q = 790 gal/mo = 10,300 $/mo

FP002 = Freon + TCE = 6740 gal/mo

THIS WORKSHEET RECORDS THE HAZARDOUS WASTE SHIPMENTS OF THE WAFER PLANT FROM 1980 ON.

FRESH TCE SHIPMENTS		GALLONS	TCE POUNDS	CHROMIUM GALLONS	GALLONS	FREON POUNDS	TOTAL GALLONS	
	1 Q. 1980	23778		0			23778	1 Q. 1980
	2 Q.	26186		5886			32072	2 Q.
	3 Q.	14300		31097			45397	3 Q.
	4 Q.	35721		21463			57184	4 Q.
	1 Q. 1981	14010		21804			35814	1 Q. 1981
	2 Q.	36300	397420	8300			44600	2 Q.
	3 Q.	25900	283620	12310			38210	3 Q.
	4 Q.	29920		7100	220		37240	4 Q.
	1 Q. 1982	39359		9793	550		49702	1 Q. 1982
	2 Q.	55901		10549	1100		67550	2 Q.
	3 Q.	31711		11922	825		44458	3 Q.
96000	4 Q.	14729	179346	13396	3135		31260	4 Q.
144000	1 Q. 1983	9115	110988	10024	2475		21614	1 Q. 1983
192000	2 Q.	6376	77637	5881	1210		13467	2 Q.
240000	3 Q.	12197	148516	10518	2530		25245	3 Q.
192000	4 Q.	9872	120205	11757	1265		22894	4 Q.
144000	1 Q. 1984	19861	241835	8011	0		27872	1 Q. 1984
192000	2 Q.	14976	164140	7714	3859	50300	26549	2 Q.
192000	3 Q.	16081	195809	5319	2638		24038	3 Q.
192000	4 Q.	20482	249397	7082	1540		29104	4 Q.
240000	1 Q. 1985	25623	342260	7613	1450	18900	34686	1 Q. 1985
174306	2 Q.	18802	229730	5655	2970		27427.43	2 Q.
233262	3 Q.	19114	233538	5220	1760		26094.10	3 Q.
201300	4 Q.	14721	179860	7784	715		23219.78	4 Q.
191160	1 Q. 1986	15480	189140	8955	1925		26360.31	1 Q. 1986
192200	2 Q.	18560	226767		1760		20319.95	2 Q.
	3 Q.							3 Q.
	4 Q.							4 Q.

768,000 #

729,000 #

848,868

1986 projection
(5 month basis)
920,000 # TCE
up 28% from 1984

- 457,400

1984 - 851,180

1985 - 985,400

998,200

WACKER SILTRONIC CORPORATION

SUMMARY OF HAZARDOUS WASTE SHIPMENTS

Qtr/Yr:	TCE:(lb)	Freon:(gal)	Chromic:(gal)
1985 Total:	970,000	10,180	25,500
1/86	191,500	1,925	9,047
2/86	273,900	2,860	5,412
3/86	235,280	1,870	4,800
4/86	93,440	1,870	1,575
1986 Total:	794,120	8,525	20,844
1/87	138,950	1,155	1,500
2/87	139,480	2,420	2,500
3/87	126,140	825	---
4/87	77,740	880	165
1987 Total:	362,810	5,280	4,165
1/88	144,260	495	---
2/88	40,600	605	165
3/88	63,000	495	---
4/88			
1988 Total:			

1988 MANIFEST LOG

Date: _____

MANIFEST NO.	DATE SHIPPED	HAZARDOUS WASTE(S)	PROFILE SHT. NO.	#	SIZE	WEIGHT	DESTINATION
88001	1/6	TCE		1	Cargo Tank	47,930 lbs	Van Water & Rogers
88002	2/22	TCE		1	Cargo Tank	51,480 lbs	Van Water & Rogers
88003	2/25	Freon - TMC Freon - TE		5 4	55 gal DM 55 gal DM	3,256 lbs 2,770 lbs	
88004	3/28	TCE		1	Cargo Tank	44,830 lbs	Van Water & Rogers
88005	4/14	Chromic Waste		2	55 gal DM	1,100 lbs	Chem Security Systems
88006	5/10	TCE		1	Cargo Tank	40,060 lbs	Van Water & Rogers
88007	6/6	Chromic Waste		3	55 gal DM	1,650 lbs	Chem Security Systems
88008	6/17	Freon - TMC Freon - TE/TF		3 8	55 gal DM 55 gal DM	1,954 lbs 5,540 lbs	
88009	8/8	TCE		1	Cargo Tank	43,630 lbs	Van Water & Rogers
88010	9/1	Freon - TE Freon - TMC		2 5	55 gal DM 55 gal DM	1,382 lbs 3,256 lbs	McClary Columbia
88011	9/7	Freon - TE Freon - TMC		1 1	55 gal DM 55 gal DM	692 lbs 651 lbs	McClary Columbia
88012	9/7	TCE		1	Cargo Tank	45,586 lbs est	Van Water & Rogers
88013	10/12	Chrome Sludge		2	55 gal DM	1,100 lbs	Chem. Security Systems
88014	10/25	oil - w/Freon		2	55 gal DM	1,100 lbs	
88015	12/21	Freon - TMC		9 1	55 gal DM 30 gal DM	6,216 Tot. lbs	McClary Columbia

(NH) = Non-regulated material.

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1988 MANIFEST LOG

MANIFEST No.	DATE	HAZARDOUS WASTE	COMMENTS
88001	1/6/88	TCE.	4,000 gal to VW4R
88002	2/22/88	TCE	4,000 gal to VW4R
88003	2/25	Freon	5 Drums TMC 4 Drums TE
88004	3/28	TCE	4,000 gal to VW4R
88005	4/14	Chromic waste	2 Drums to CSSI Chem. Security Sys
88006	5/10	TCE	4,000 gal to VW4R
88007	6/6	Chrome waste	3 Drums to CSSI.
88008	6/17	Freon	3 Drums TMC / 9 Drums TE/~~TF~~
88009	8/8	TCE	4000 gal to VW4R
88010	9/1/88	Freon	2 3-TE, 5 4-TMC To McClary Col
88011	9/7	Freon	1-TE, 1-TMC To McClary Col
88012	9/1	TCE	4000 gal. to VW4R
88013	10/12	Chrome sludge	2 Drums Cr6003 to CSSI
88014	10/25	Oil - w/Freon	WESTcamp - 2 Drums.
88015	12/21	Freon-TMC	McClary-Columbia 7-55gal / 1-30gal

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1989 MANIFEST LOG

Date: _____

MANIFEST NO.	DATE SHIPPED	HAZARDOUS WASTE(S)	PROFILE SHT. NO.	#	SIZE	WEIGHT	DESTINATION
89011	3/15	Freon TMC Freon TF, TP Floor Coating Waste Floor Coating Waste	7904 7903 16915 16918	3 3 5 1	55 gal DM 55 gal DM 55 gal DM 5 gal pail	1,954 lbs 2,077 lbs 2,352 Tot 11 lbs	McClary Columbia
89002	3/20	TCE - SOD W	000364	1	Cargo Tank	42,554 lbs	Romic
89003	3/23	TCE- SOD W	000364	1	Cargo Tank	34,622 lbs	Romic
89004	3/16	Chrome Sludge Antimony Dust (NH)	H10143PDX H58893	2 1	55 gal DM 55 gal DM	750 lbs 250 lbs	CSSI Arlington
89005	3/30	Chrome Solids Chrome Sludge	D43767 H10143PDX	2 1	55 gal DM 55 gal DM	191 lbs 471 lobs	CSSI Arlington
89006	6/13	Freon TF, TP, TE Freon TMC SOD-W Solvent Mix Oil/Freon TF TCE	07903 07904 56258 56256 56257	8 5 9 2 1	55 gal ST DM 55 gal ST DM 55 gal ST DM 55 gal ST DM 55 gal ST DM	5,540 lbs 3,256 lbs 5,861 lbs 1,100 lbs 692 lbs	McClary Columbia
89007	7/24	Chrome Sludge Antimony dust (NH)	H10143PDX H58893	2 1	55 gal ST DM 55 gal ST DM	750 lbs 350 lbs	CSSI Arlington
89008	9/8	Freon TMC Freon Still Bottoms TCE - from abandoned pipe	07904 07903 56257	6 2 3	55 gal ST DM 55 gal ST DM 55 gal ST DM	3,907 lbs 1,382 lbs 2,077 lbs	McClary Columbia
89009	9/27	Chrome Sludge	H10143PDX	1	55 gal ST DM	640 lbs	Arlington
89010	11-28	Chrome Sludge Soil cont. w/TCE Solids cont. w/TCE (NH)	H10143PDX J81269 V71799	2 1 1	55 gal ST DM 55 gal ST DM 55 gal ST DM	975 lbs 388 lbs 692 lbs	Arlington
89011	12/8	Freon TMC Freon Still Bottome TCE	07904 07903 56257	5 15 1	55 gal ST DM 55 gal ST DM 55 gal ST DM	3,256 lbs 10,387 lbs 692 lbs	McClary Columbia

(NH) = Non-regulated material.

KM:md
7'91

1989 MANIFEST LOG
(LAST REVISED 12-29-89)

MANIFEST NO.	DATE	HAZARDOUS WASTE	PROFILE SHT. NO.	CONTENT	DESTINATION	MANIFEST* RETURN DATE
89001	3-15-89	FREON TMC	7904	3 - 55 GAL DRUMS	McClary Columbia	---
		FREON TF, TP	7903	3 - 55 GAL DRUMS		
		FLOOR COATING WASTE	16915	5 - 55 GAL DRUMS		
		FLOOR COATING WASTE	16918	1 - 5 GAL PAIL		
89002	3-20-89	TCE - SOD W	000364	BULK - 3380 GAL	ROMIC	---
89003	3-23-89	TCE - SOD W	000364	BULK - 2750 GAL	ROMIC	---
89004	3-16-89	CHROME SLUDGE 750#	H10143PDX	2 - 55 GAL DRUMS	CSSI ARLINGTON	---
		ANTIMONY DUST (NH)	H58893	1 - 55 GAL DRUM		
89005	3-30-89	CHROME SOLIDS 191#	D43767	2 - 55 GAL DRUMS	CSSI ARLINGTON	---
		CHROME SLUDGE 471#	H10143PDX	1 - 55 GAL DRUM		
89006	6-13-89	Freon TF, TP, TE	07903	8 - 55 GAL ST DM	McClary Columbia	---
		Freon TMC	07904	5 - 55 GAL ST DM		
		SOD-W Solvent Mix	56258	9 - 55 GAL ST DM		
		Oil/Freon TF	56256	2 - 55 GAL ST DM		
		TCE	56257	1 - 55 GAL ST DM		
89007	7-24-89	CHROME SLUDGE 750#	H10143PDX	2 - 55 GAL ST DM	CSSI ARLINGTON	8-4-89
		ANTIMONY DUST (NH)	H58893	1 - 55 GAL ST DM		
89008	9-8-89	Freon TMC	07904	6 - 55 GAL ST DM	McClary Columbia	9-22-89
		Freon Still Bottoms	07903	2 - 55 GAL ST DM		
		TCE - from abandoned pipe	56257	3 - 55 GAL ST DM		
89009	9-27-89	CHROME SLUDGE 640#	H10143PDX	1 - 55 GAL ST DM	CSSI	10-11-89
89010	11-28-89	CHROME SLUDGE 915#	H10143PDX	2 - 55 GAL ST DM	CSSI ARLINGTON	12-7-89
		SOIL CONT. W/ TCE 388#	J81269	1 - 55 GAL ST DM		
		SOLIDS CONT. W/ TCE(NH)	V71799	1 - 55 GAL ST DM		
89011	12-8-89	Freon TMC	07904	5 - 55 GAL ST DM	McClary Columbia	12-18-89
		Freon Still Bottoms	07903	15 - 55 GAL ST DM		
		TCE	56257	1 - 55 GAL ST DM		

* - NOTE: Original return date tracking documentation initiated with manifest number 89007
(NH) - Non-regulated material per 40 CFR 172.101

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Chrome Sludge Totals: 8 Drums, 3,586#

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1990 MANIFEST LOG

Date: _____

MANIFEST NO.	DATE SHIPPED	HAZARDOUS WASTE(S)	PROFILE SHT. NO.	#	SIZE	WEIGHT	DESTINATION
90001	2/26	Freon TMC (2 from 1989) Freon TF, TP (5 from 1989) Oil/Freon TF (from 1989)	07904 07913 56256	4 14 1	55 gal ST DM 55 gal ST DM 55 gal ST DM	2,605 lbs 9,695 lbs 550 lbs	Chempro Washougal
90002	4/24	Solids Cont. w/TCE (NH)	V71799	11 23.5 act.	CY - Dump Truck	388 - TCE	CSSI Arlington
90003	4/27	Chrome sludge Antimony (NH) Chrome Solids NH SOD-W Sludge (to TWI)	H10143PDX H58893 D43767 J81365	3 1 2 1	55 gal ST DM 55 gal ST DM 55 gal ST DM 55 gal ST DM	1,718 lbs 336 lbs 279 lbs 470 lbs	CSSI Arlington
90004	5/23	Freon Still Bottoms Freon TP from Sec 7 Freon TMC	017067 017067 017069	12 8 11	55 gal ST DM 55 gal ST DM 55 gal ST DM	8,310 lbs 5,540 lbs 7,163 lbs	Romic Chemical
90005	7/24	Freon Still Bottoms Steam Stripper Bottoms Oil/Freon TF Freon TMC	07903 07903 56256 07904	1 2 2 1	55 gal ST DM 55 gal ST DM 55 gal ST DM 55 gal ST DM	692 lbs 1,430 lbs 1,100 lbs 651 lbs	Chempro Washougal
50409	8/3	Waste Mercury	56469	1	lab pack	28 lbs	Chempro Washougal
90006	8/8	Freon TP from Sec 7 Freon Still Bottoms Freon TMC	017067 017067 017069	3 ½ 10 7	55 gal DM 55 gal ST DM 55 gal ST DM	2,424 lbs 6,925 lbs 4,558 lbs	Romic Chemical
90007	9/12	Chrome Sludge Fab 2 Drilling Muds (NH)	J81268 J82851	4 17	55 gal ST DM 55 gal ST DM	2,388 lbs 11,700 lbs	CSSI Arlington
90008	9/27	Freon Still Bottoms Freon TMC Freon TP from Sec 7	017067 017069 017067	8 4 2	55 gal ST DM 55 gal ST DM 55 gal ST DM	5,540 lbs 2,605 lbs 1,385 lbs	Romic Chemical
90009	10/30	Oil/Freon TF Steam Stripper Bottoms	56256 07903	1 1	55 gal ST DM 55 gal ST DM	550 lbs 715 lbs	Chempro Washougal
90010	12/3	Freon TMC Freon Still Bottoms Freon TP from Sec 7	07904 07903 07903	6 3 3	55 gal ST DM 55 gal ST DM 55 gal ST DM	3,907 lbs 2,077 lbs 2,077 lbs	Chempro Washougal
90011	12/5	Chrome Sludge	H81268	3	55 gal ST DM	1,741 lbs	CSSI Arlington

(NH) = Non-regulated material.

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FINAL 1990 MANIFEST LOG
(LAST REVISED 1-16-91)

MANIFEST NO.	DATE	HAZARDOUS WASTE	PROFILE SHT. NO.	CONTENT	DESTINATION	MANIFEST RETURN DATE
90001	2-26-90	FREON TMC (2 from 1989)	07904	4 - 55 GAL ST DM	CHEMPRO WASHOUGAL	3-7-90
		FREON TF,TP(5 from 1989	07903	14 - 55 GAL ST DM		
		OIL/FREON TF (from 1989	56256	1 - 55 GAL ST DM		
90002	4-24-90	SOLIDS CONTAMINATED WITH TCE (NH)	V71799	11 CY -DUMP TRUCK (actual 23.5 CY)	CSSI ARLINGTON	5-2-90
90003	4-27-90	CHROME SLUDGE	H10143PDX	3 - 55 GAL ST DM	CSSI ARLINGTON	5-7-90
		ANTIMONY (NH)	H58893	1 - 55 GAL ST DM		
		CHROME SOLIDS	D43767	2 - 55 GAL ST DM		
		NH SOD-W SLUDGE(TO TWI)	J81365	1 - 55 GAL ST DM		
90004	5-23-90	FREON STILL BOTTOMS	017067	12 - 55 GAL ST DM	ROMIC CHEMICAL	6-12-90
		FREON TP FROM SEC 7	017067	8 - 55 GAL ST DM		
		FREON TMC	017069	11 - 55 GAL ST DM		
90005	7-24-90	FREON STILL BOTTOMS	07903	1 - 55 GAL ST DM	CHEMPRO WASHOUGAL	8-14-90
		STEAM STRIPPER BOTTOMS	07903	2 - 55 GAL ST DM		
		OIL\FREON TF	56256	2 - 55 GAL ST DM		
		FREON TMC	07904	1 - 55 GAL ST DM		
50409	8-3-90	WASTE MERCURY	56469	1 LAB PACK	CHEMPRO WASHOUGAL	8-16-90
90006	8-8-90	FREON TP FROM SEC 7	017067	3 1/2-55 GAL DM	ROMIC CHEMICAL	8-31-90
		FREON STILL BOTTOMS	017067	10 - 55 GAL ST DM		
		FREON TMC	017069	7 - 55 GAL ST DM		
90007	9-12-90	CHROME SLUDGE	J81268	4 - 55 GAL ST DM	CSSI ARLINGTON	10-5-90
		FAB 2 DRILLING MUDS(NH)	J82851	17 - 55 GAL ST DM		
90008	9-27-90	FREON STILL BOTTOMS	017067	8 - 55 GAL ST DM	ROMIC CHEMICAL	10-25-90
		FREON TMC	017069	4 - 55 GAL ST DM		
		FREON TP FROM SEC 7	017067	2 - 55 GAL ST DM		
90009	10-30-90	OIL/FREON TF	56256	1 - 55 GAL ST DM	CHEMPRO WASHOUGAL	11-9-90
		STEAM STRIPPER BOTTOMS	07903	1 - 55 GAL ST DM		
90010	12-3-90	FREON TMC	07904	6 - 55 GAL ST DM	CHEMPRO WASHOUGAL	12-7-90
		FREON STILL BOTTOMS	07903	3 - 55 GAL ST DM		
		FREON TP FROM SEC 7	07903	3 - 55 GAL ST DM		
90011	12-5-90	CHROME SLUDGE	J81268	3 - 55 GAL ST DM	CSSI ARLINGTON	12-21-90

(NH) - Non-regulated material per 40 CFR 172.101

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CHEMICAL DISTRIBUTION

(By Weight)

CHEMICAL	1990 LBS USED	= % OF USE	SPECIFIC USE	DEPARTMENT
FREON TE	173,000	60%	PACKAGE CLEANING	FINAL CLEANING
SULFURIC ACID	170,300	99%	WATER TREATMENT	FACILITIES
FREON TP	75,730	26%	SLICE DRYING	BATCH CLEANING
NITRIC ACID	109,889	52%	ACID ETCH	ETCHING
	64,869	31%	INGOT ETCH	ETCHING
HCL ACID	61,200	97%	REACTION GAS	EPI
FREON TMC	24,024	8%	DEWAX	FINAL CLEANING
DICHLOROMETHANE	24,024	8%	DEWAX	FINAL CLEANING
BUTYL ALCOHOL	22,440	100%	POLISHING SLURRY	POLISHING
HF ACID	16,391	24%	ACID ETCH	ETCHING
	12,826	19%	AUTO. PRECLEANER	FINAL CLEANING
AMMONIA	11,268	41%	PRE & POST CLEAN	EPI
	10,046	36%	HYDROPHILLIC BATH	FINAL CLEANING
ETHYLENE GLYCOL	9,072	90%	PLATE LAPPING	POLISHING
ACETONE	4,284	43%	GLUE SOLVENT	POLISHING
	3,168	32%	GENERAL CLEANING	PLANTWIDE

KCM/LE

TOTAL HW DISPOSAL COSTS IN 1990 DOLLARS

	TCE	FREON	w/o RECYCLE	CHROME	EST TOTAL
1985	$ 709,100	$ 89,177		$ 274,890	1,072,167
1986	579,707	75,679		224,698	880,084
1987	352,181	46,252	29,258	34,736	433,16[illegible]
1988	199,667	18,773	67,189	1,925	220,36[illegible]
1989	59,148	23,184	120,625	1,793	84,125
1990	283	48,292	128,377	2,924	51,50[illegible]
1991	~~0~~				

1991 MANIFEST LOG

Date: 10/10/91

MANIFEST NO.	DATE SHIPPED	HAZARDOUS WASTE(S)	PROFILE SHT. NO.	#	SIZE	WEIGHT	DESTINATION
91001	1-15-91	Freon TP from Sec 7 Freon Still Bottoms Freon TMC	017067 017067 017069	4 8 4	55 gal DM 55 gal DM 55 gal DM	2,770 lbs 5,540 lbs 2,605 lbs	Romic Chemical
91002	3-12-91	Freon TE, TF, TP - Sec 7 Freon TMC - Sec 7 Oil Contaminated w/Freon Solvent/oil mixture	017067 017069 017070 017071	7 6 12 1	55 gal DM 55 gal DM 55 gal DM 55 gal DM	4,847 lbs 3,907 lbs 6,600 lbs 550 lbs	Romic Chemical
91003	3-18-91	Chrome Sludge	J81268	3	55 gal DM	1,659 lbs	Chem. Waste Management
91004	6-4-91	Oil contaminated w/Freon Freon TMC Freon TE, TF, TP- Sec 7	017070 017069 017067	7 7 13	55 gal DM 55 gal DM 55 gal DM	3,850 lbs 4,558 lbs 9,002 lbs	Romic Chemical
91005	7-12-91	Chrome Sludge Antimony (Non Haz.)	J81268 H58893	5 4	55 gal DM 55 gal DM	2,732 lbs 400 lbs	Chemical Waste Management
91006	8-21-91	Freon TE, TF, TP Freon TMC Oil contaminated w/Freon Freon Still Bottoms	017067 017069 017070 017068	6 3 2 1	55 gal DM 55 gal DM 55 gal DM 55 gal DM	4,152 lbs 1,954 lbs 1,100 lbs 692 lbs	Romic Chemical
91007	9-11-91	Steam Stripper Bottoms Mixed alcohols Freon Still Bottoms	200339 200337 3 017068	1 1 1	55 gal DM 55 gal DM 55 gal DM	458 lbs 412 lbs 692 lbs	Romic Chemical
91008	10-10-91	Contaminated Soil	H82851	1	10 yd/rolloff	18,300 lbs	Chemical Waste Management
91009	10-24-91	Chrome Sludge	J81268	1	55 gal DM	598 lbs	Chemical Waste Management +295
91010	10-25-91	Freon TMC Freon Still Bottoms Oil contaminated w/Freon	017069 017068 200332	2 2 2	55 gal DM 55 gal DM 55 gal DM	1,303 lbs 1,384 lbs 1,100 lbs	Romic Chemical
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(NH) = Non-regulated material.

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SCOEPA00054472

Wacker Siltronic Corporation

April 21, 1986

RECEIVED
ENGINEERING
APR 21 1986

John L. Pittman
Wacker Siltronic

U.S.E.P.A. Region 10, MS533
1200 Sixth Avenue
Seattle, Washington 98101

Attn: Waste Management Branch

Subject: Biennial Report for Calendar 1985 - Waste Minimization

Generator ID Number: ORD 096253737

I. Programs for Reduction of Volume and Toxicity of Wastes

A. TCE/Solvents

During 1984 and 1985, Wacker Chemitronic, the German sister company of Wacker Siltronic, began a research program to eliminate the use of Trichloroethylene (TCE) from two (2) separate, major processing steps for the manufacture of silicon wafers.

The first of these projects has been approved for equipment installation at Wacker Siltronic during the third quarter of 1986 with start-up scheduled for the first quarter of 1987. Once this start-up is completed, use of TCE in this production section will be systematically reduced to a minimum consumption. This should occur by July, 1987.

The second development project is also close to being approved for production and should be initiated during the third quarter of 1986. No major equipment installations are anticipated for this change.

These projects will reduce the volume of TCE/Solvent for recovery by more than 75%.

B. Chromic Acid

During 1985 a project was initiated to modify the waste chromic acid storage to prevent rainwater from entering the tank containment basin. Currently this rainwater becomes contaminated with Chromic Acid and must be pumped to the storage tank, thus increasing the waste volume. Elimination of this rainwater will reduce the Chromic Acid waste volume by 20%. The project will be completed by the third quarter of 1986.

Also during 1985, a project was initiated to separate chromic rinse water from the concentrated waste. The concentrated acid waste will continue to be shipped to a hazardous waste disposal site but the rinse will be run through ion exchange resin. The stream being discharged from the ion exchange resin will be cleaned up sufficiently so that it can be pumped to the Wastewater Treatment Plant for disposal. This project will be operational by December, 1986.

C. Freon
Wacker Siltronic has recycled Freon with no liquid waste since mid-1981. This system meets all waste minimization guidelines and no major system modifications are planned in the near future.

II. Actual Changes in Volume and Toxicity during 1984, 1985

A. TCE/Solvents to Approved Hazardous Waste Disposal Site/Approved Incineration Site

- Previous Year's Average (1981, 1982, 1983)	88,463 gallons per year
- 1984	12,717 gallons
- 1985	29,626 gallons

B. Chromic Acid Waste to Approved Hazardous Waste Disposal Site

- Previous Year's Average (1981, 1982, 1983)	49,950 gallons per year
- 1984	28,126 gallons
- 1985	25,500 gallons

This report is submitted in compliance with the Solid Waste Disposal Act of 1984, Section 3002 (a) 6, c and d.

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information submitted herewith, is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Please call me at (503) 243-2020, x216 if you have questions or comments.

Very truly yours,

WACKER SILTRONIC CORPORATION

James R. Ellis

JRE:ll

cc: Greg Carr
John Pittman
Jerry Schaeffer
Murray Tilson
File

SUMMARY OF HAZARDOUS WASTE TRANSPORTATION/DISPOSAL

WASTE STREAM # TRICHLOROETHYLENE

	TRANSPORTER	DISPOSAL SITE	TIME PERIOD
1.	WIDING TRANSPORTATION 10145 N. PORTLAND RD. PORTLAND, OREGON # HWT-13	CHEM NUCLEAR STAR RT. ARLINGTON, OR 97812 #94-251833O	5-20-80 ↓
2.	DRUM RECOVERY 11104 HELMAN ST. PORTLAND, OR 97220 #HWT-47	SPE-DE-WAY PRODUCTS CO., INC. 8000 NE 14th PL. PORTLAND, OR 97217 ORD009024829, TS (Recycled)	7-15-80 ↓
3.	VAN WATERS & ROGERS 3950 NW YEON AVE PORTLAND, OREGON ORD009227398	SPE-DE-WAY 〃 〃	11-6-80 ↓
4.	DRUM RECOVERY	SPE-DE-WAY	11-11-80 ↓
5.	WIDING TRANSPORTATION ORD004872404	SPE-DE-WAY ORD009024829	12-2-80 ↓
6.	WIDING TRANSPORTATION ORD004872404	VAN WATERS & ROGERS ORD009227398	12-15-80 ↓

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	TRANSPORTER	DISPOSAL SITE	TIME PERIOD
7.	MATLACK TRANS., INC. 8101 NE 11th PORTLAND, OR 97203 ORD 000773960	VAN WATERS & ROGERS ORD 009227398	3-8-82
8.	WIDING TRANSPORTATION ORD 004872404	VAN WATERS & ROGERS ORD 009227398	6-17-82
9.	MATLACK TRANS., INC. ORD 000773960	" " "	7-6-82
10.	WIDING TRANSPORTATION ORD 004872404	" " "	7-20-82
11.	MATLACK TRANS., INC ORD 000773960	" " "	8-11-82
12.	WIDING TRANSPORTATION ORD 004872404	" " "	8-13-82
13.	MATLACK TRANS., INC. ORD 000773960	" " "	10-21-82
14.	WIDING TRANSPORTATION ORD 004872404	" " "	2-24-83
15.	MATLACK TRANS., INC. ORD 000773960	" " "	3-30-83

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	TRANSPORTER	DISPOSAL SITE	TIME PERIOD
16.	WILDING TRANSPORTATION ORD 004872404	VAN WATERS & ROGERS ORD 009227398	8-5-83
17.	MATLACK TRANS., INC. ORD 000773960	" "	1-18-84
18.	WILDING TRANSPORTATION ORD 004872404	" "	4-20-84
19.	MATLACK TRANS., INC. ORD 000773960	" "	5-17-84
20.	VAN WATERS & ROGERS ORD 009227398	" "	8-17-84
21.	MATLACK TRANS., INC. ORD 000773960	" "	10-15-84
22.	CSSI STAR RT ARLINGTON, OR 97812 ORD 089452353	CSSI ORD 089452353	10-16-84
23.	MATLACK TRANS., INC. ORD 000773960	VAN WATERS & ROGERS ORD 009227398	12-13-84
24.	RIEDEL INTERNATIONAL, INC ORD 008934473 (SOIL)	CSSI " ORD 089452353	1-23-85

	TRANSPORTER	DISPOSAL SITE	TIME PERIOD
	WIDING TRANSPORTATION ORD 004872404	VAN WATERS & ROGERS ORD 009227398	2-20-85
	MATLACK TRANS., INC. ORD 000773960	" "	2-25-85
	WIDING TRANSPORTATION ORD 004872404	" "	4-8-85
	RIEDEL INTERNATIONAL, INC. ORD 008934473 (SOIL)	CSSI ORD 089452353	4-12-85
30.	" " (SOIL + CLOTHING)	" "	6-12-85
31.	VAN WATERS & ROGERS ORD 009227398	VAN WATERS & ROGERS ORD 009227398	6-26-85
32.	WIDING TRANSPORTATION ORD 008934473	V W & R ORD 009227398	7-16-85
33.	V. W. & R. ORD 009227398	" "	8-13-85
34.	CSSI ORD 089452353	CSSI ORD 089452353	8-23-85
35.	WIDING TRANS.	V W & R	8-23-85
36.	V W & R	" "	6-3-86

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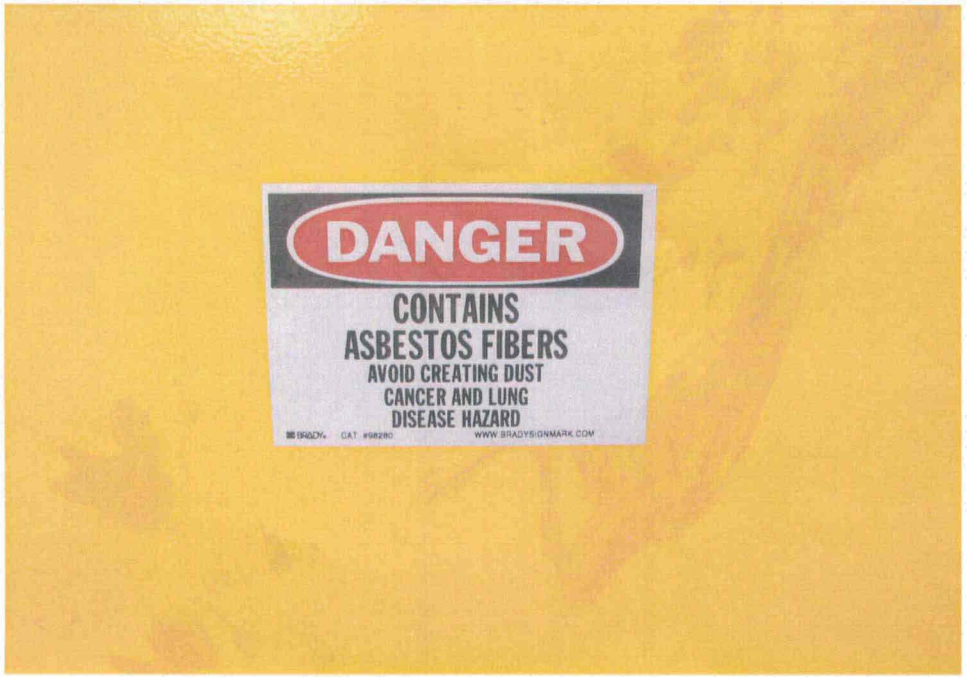
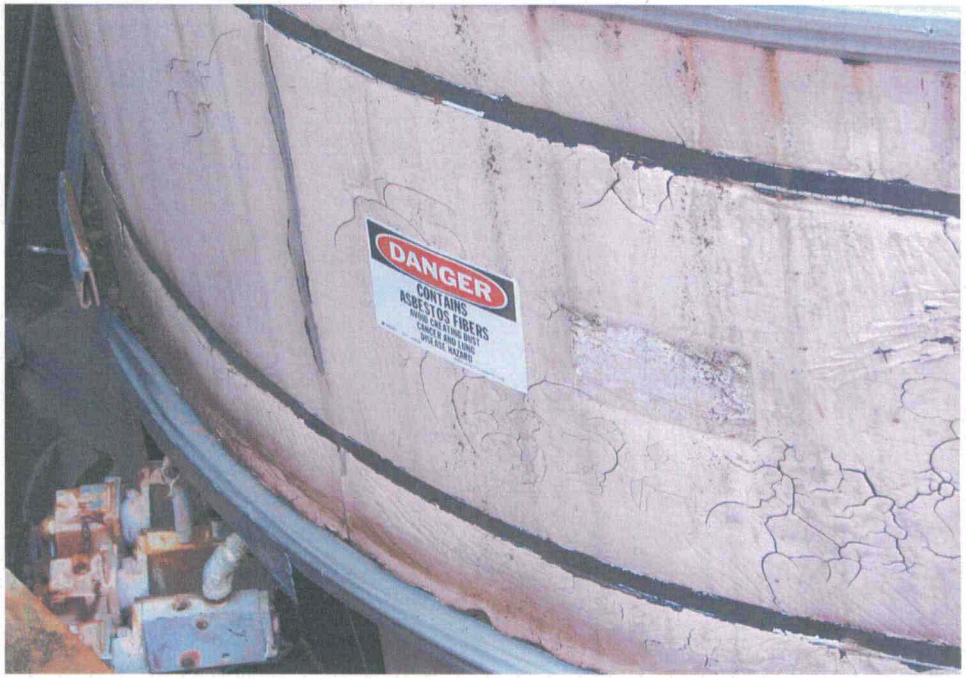

DANGER
CONTAINS
ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG
DISEASE HAZARD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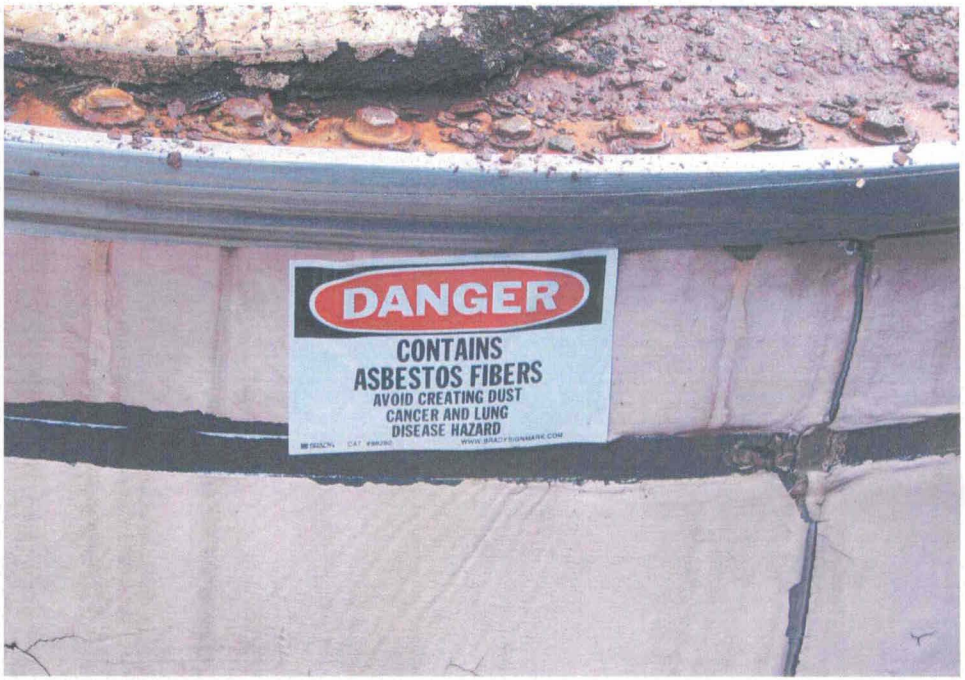
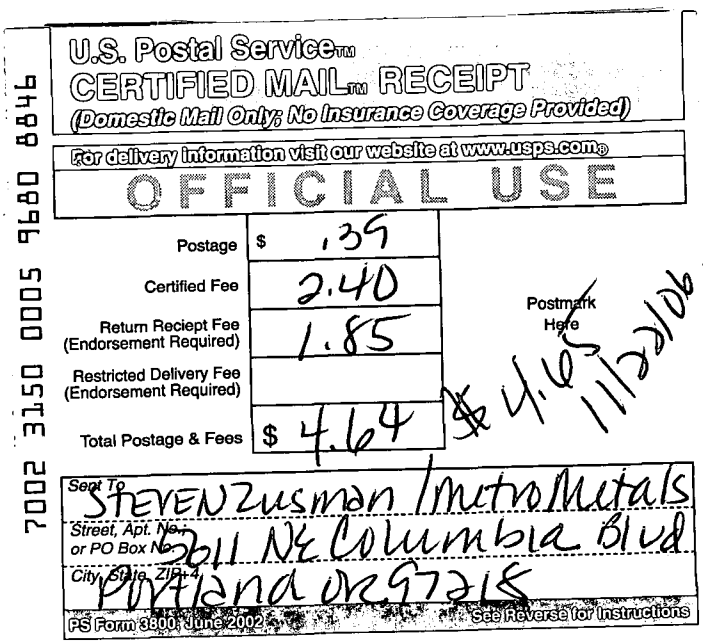
ASBESTOS FIBERS


DANGER
CONTAINS
ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG
DISEASE HAZARD

DANGER
CONTAINS
ASBESTOS FIBERS



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$4.64 11/23/06

Sent To: STEVEN Zusman / Metro Metals
Street, Apt. No., or PO Box No.: 2611 NE Columbia Blvd
City, State, ZIP+4: Portland OR 97211

PS Form 3800, June 2002 — See Reverse for Instructions

Certified Mail Provides:

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PS Form 3800, June 2002 (Reverse)

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- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
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- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

STEVEN Zusman
Metro Metals
5611 NE Columbia Bl
Portland, OR 97218

COMPLETE THIS SECTION ON DELIVERY

A. Signature

X _____ ☐ Agent ☐ Addressee

B. Received by (*Printed Name*) Abel Ali'a C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (*Extra Fee*) ☐ Yes

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PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

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Tom McCue
7200 NW Front Ave
Portland, OR 97210-3676

043676 C024

SCOEPA00054483

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Tom McCue
Environmental Affairs

Siltronic Corporation
7200 NW Front Avenue, MS 30
Portland OR 97210-3676, USA
Tel. 503-219-7532
Fax 503-219-7599
Tom.mccue@siltronic.com

November 22, 2006
ENV:076

Metro Metals
5611 NE Columbia Blvd.
Portland OR 97218

Attention: Steven Zusman, Executive Vice President

Re: **Notice of Possible Asbestos Exposure**

Dear Mr. Zusman:

This letter confirms our conversations during the week of November 6, 2006. I contacted Metro Metals to ensure that you had been informed that a piece of equipment Siltronic sold to be recycled for scrap may contain asbestos containing material (ACM). My call was to verify that your company had received appropriate notification of this fact and that you had taken proper precautions. Based on our conversations, this confirms my prior verbal notice to you that Metro Metals may not have taken the precautions needed to ensure the safety of its workers. Please accept this letter as confirming Siltronic's prior notice to you and request that you take whatever measures you deem appropriate to notify those who may have been exposed to ACM, so that such precautionary measures are as reasonable may be implemented.

For your information, the scrap equipment was sold to Demolition Metals and was probably transported to you by Van's Towing on November 2, 2006. Siltronic had previously notified Demolition Metals on October 31, 2006 in writing that the gaskets within the equipment contained asbestos and that Siltronic required as a condition of sale that the equipment be handled 'in accord with Asbestos abatement regulations.' Demotion Metals acknowledged this requirement, also in writing. In addition, the subject scrap equipment you received from Van's Towing bore labels warning that the equipment contained asbestos when it left Siltronic's facility.

When we first spoke on November 6, 2006, you were unable to confirm that Metro Metals had been informed of these concerns and requirements, and subsequently you were not able to determine whether appropriate precautions and abatement regulations had been followed. My interviews of your staff did not clear this up. Therefore, Siltronic prefers caution in this arena and I informed you of that when we next spoke.

Please also be aware that Siltronic has reported these events and its concerns to the Oregon Department of Environmental Quality. The DEQ is the appropriate regulatory authority, and Siltronic is obligated by permit and by law to report such concerns. I expect that DEQ will followup with you on this matter. Siltronic encourages your cooperation.

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Siltronic will respond to any reasonable request for additional information on this matter. Please contact me directly if you have any questions or need additional information

Sincerely,

Siltronic Corporation

Tom McCue

Tom McCue,
Manager, Environmental Affairs

cc: Kevin McCrann, Oregon DEQ
Christopher L. Reive, Esq.

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Tom McCue
Environmental Affairs

Siltronic Corporation
7200 NW Front Avenue, MS 30
Portland OR 97210-3676, USA
Tel. 503-219-7532
Fax 503-219-7599
Tom.mccue@siltronic.com

November 22, 2006
ENV:076

Metro Metals
5611 NE Columbia Blvd.
Portland OR 97218

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Re: **Notice of Possible Asbestos Exposure**

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When we first spoke on November 6, 2006, you were unable to confirm that Metro Metals had been informed of these concerns and requirements, and subsequently you were not able to determine whether appropriate precautions and abatement regulations had been followed. My interviews of your staff did not clear this up. Therefore, Siltronic prefers caution in this arena and I informed you of that when we next spoke.

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Tom McCue
Environmental Affairs

Siltronic Corporation
7200 NW Front Avenue, MS 30
Portland OR 97210-3676, USA
Tel. 503-219-7532
Fax 503-219-7599
Tom.mccue@siltronic.com

November 20, 2006
ENV:075

Mr. Jay Collins
Northwest Regional Hazardous Waste Office
Oregon Department of Environmental Quality
2020 SW 4th Avenue, Suite 400
Portland, OR 97201

Deliver via: Email

Dear Mr. Colins

As I verbally reported to you on Nov 13, 2006, Siltronic recently discovered that certain used equipment it had arranged to be recycled as scrap metal through the services of a scrap metal broker and local scrap hauler may have been mishandled. The used equipment consisted of miscellaneous piping, and two carbon adsorption filters that were used to treat storage tank vent emissions that were part of a wastewater treatment system designed to remove trace amounts of chlorinated and volatile organic solvents.

It is the potential disposal of the carbon in one of the two carbon units that is the subject of this report. The carbon filters also contained asbestos gasket material tha also may have been mishandled. At your request Siltronic notified Mr. Kevin McCrann, Oregon DEQ at the Gresham Office of the potential mismanagement of the asbestos gasket materials and filed a brief report by email to Mr. McCrann on November 17, 2006 that details all the steps Siltronic took to assure that the asbestos materials would be managed properly.

We began planning for the removal of this equipment in 2004 and had worked with the DEQ to identify concerns and addressed them prior to taking action. To my surprise the project was restarted unexpectedly and I took steps to investigate the matter to assure that all of the previous recommendations had been followed. As I reported to you on November 13, however, we became aware of and now have reason to believe that not all the recommendations were followed. The basic facts are described below as you requested. In addition, I have included our waste determination based on my understanding the historical uses of the equipment and an analysis of the carbon materials that we discussed on the phone.

History of the Equipment

The carbon units and the wastewater stripper equipment were installed in 1979 and started up in early 1980. Production processes that used TCE were phased out beginning in 1984 and were completely gone by 1989. Starting in approximately 1985, an epoxy tab-removal process that used TCE solvent was re-engineered to use a different epoxy which allowed the process to be converted to potassium hydroxide, surfactant, and hot water that eliminated a significant use of TCE. In 1987 a water-based wax consisting primarily of IPA and a natural resin was introduced that eliminated the major use of TCE. By 1989 TCE was removed from Plate Preparation and the last process using TCE was eliminated.

After the TCE was removed the TCE delivery and return piping systems were flushed and processed through the stripper column. The recovered TCE was recycled off-site. The stripper and carbon adsorption units continued to operate for other materials until the early 1990s until all manufacturing uses of chlorinated solvents and CFCs were eliminated. CFCs were used until 1991 in the last step of a water-based wafer cleaning operation. CFCs were eliminated by re-engineering the wafer cleaning process to dewater wafers using spin dryers in place of CFCs to prevent water spotting of the product. After all the chlorinated solvents were removed form the process. The wastewater stripper equipment was then decommissioned and opened to the atmosphere until it was recently disassembled and prepared for recycle.

Waste Determination

Several waste streams were created from the use of TCE during the 1980s. An extensive list is provided here to assist in the waste determination of the carbon in the carbon adsorption filters. None of these wastes went through the carbon adsorption units, however, it is critical to understand what is known about the wastes to conclude that the carbon material is a solid waste and potentially a hazardous waste due the characteristic of toxicity due to the presence or absence of TCE (D-040).

Waste Wax

The wafer making process required the use of a solvent based wax to mount the wafers onto plates for the polishing process (Wax Mounting). TCE was used as an ingredient in the wax. Waste wax did not go through the steam stripper. Waste wax was sent offsite for recycle. No residual waste wax remained in the system after TCE use was discontinued and the piping system was flushed from the process tool through the steam stripper in the late 1980s. Equipment disassembly occurred inside a secondary containment system and no free liquids were observed. Storm water from the secondary containment system was analyzed and found to be non-detect for TCE and all other VOC compounds found on the EPA 8260 list.

TCE Waste

TCE was also used to dissolve the wax off the polishing plates to return them back to the process (Plate Preparation). TCE from plate preparation was recycled and returned to the process for reuse. TCE was also used to dissolve an epoxy in a tab removal step after slicing and before the polishing step (Tab Removal). The TCE from the tab removal process was recycled and returned back to the process.

Wastewater

Wastewater was created in an intermediate plate cleaning step after wax mounting where residual excess wax needed to be removed before the polishing step could begin. The process of the residual wax removal is no longer known. A Steam Stripper was used to treat the wastewater created from the plate cleaning step. The stripper equipment treated wastewater containing trace amounts organic solvents that remained in the wax that was removed during the cleaning step (typically >100mg/L) of Trichloroethene (TCE). Recovered TCE and was residue was collected in a waste TCE tank and sent off site for recycle or as a hazardous

waste still bottom. Treated wastewater was release to a POTW in compliance with a NPDES pre-treatment permit.

VOC Emission Control by Carbon Adsorption

All of the above wastes were collected in tanks prior to recycle or treatment. Carbon adsorption units were used to capture VOC emissions from vents from the collection and storage tanks including the Fresh TCE storage tank, TCE recovery tank, TCE contaminated wastewater tank, and the vent from a two phase liquid separation vessel after the steam stripper. The carbon units were only used to capture volatile organic emissions in the vapor phase above a liquid storage tank. No liquids were processed through the carbon adsorption units. It is the waste characterization of the carbon units that is the reason for this report.

The carbon adsorption units were designed to capture vent emissions only; one was always in use, while the other would be in standby mode. Periodically, the on-line carbon unit would be switched off-line for regeneration by steam. During that time, the 'backup' unit would be in use. Condensate from the steam regeneration was drained to a separator where a two phase liquid was created and separated into recovered TCE and treated wastewater.

Incident description and Investigation

At the beginning of the month we started a wall-to-wall audit of all facilities in preparation for an ISO 14001 re-certification audit. Monday November 6, I became aware of the restart of the project to remove the old stripper equipment. Because I was not personally aware at that time that arrangements for the recycle had been implemented, I inquired about the arrangements. Specifically, I wanted to make certain that the proper precautions had been taken by all concerned. I found one of the two carbon units was picked up for recycle on or about November 2, 2006. The other carbon unit had not been picked up, and remains on-site with all carbon and gasket material intact. That remaining unit has been cut with a gas torch to reduce its size and is currently secured inside a drop box lined with plastic sheeting awaiting disposition. All carbon in the remaining unit has been removed and placed in steel drums and labeled Hazardous Waste awaiting analysis. All gasket edges on that unit have been taped and other appropriate precautions have been implemented. See pictures below. As a result of this normal follow-up, I determined the following:

- The carbon unit that had already been picked up by the hauler contained carbon and was appropriately labeled as containing asbestos.

- Siltronic's Health and Safety Department had required that the hauler, Van's Towing, be specifically notified that the used equipment contained asbestos and that the hauler assure Siltronic by letter that the asbestos would be managed according to all rules and regulations. An email providing notification of the asbestos, the management requirements and the request for a letter had been sent to the contact identified by the hauler prior to commencing work (Demolition Metals). The same email was returned to Siltronic with a signature (see attached file).

- Carbon remained in the unit that was removed for scrap.

- The scrap metal was delivered to Metro Metals for recycling.

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- Siltronic Facilities Department Metro Metals on the afternoon of Nov. 6 to ask them to locate for me the carbon unit that had been transported to its facility. In light of a reply that was not satisfactory, I sent a Siltronic team to the scrap yard in an attempt to find the carbon unit and recover it.

- The Siltronic team of John Johnsen and Justin Darr arrived at Metro Metals and interviewed the yard foreman. He remembered receiving the carbon unit for processing, but could not locate it in the yard or declare its status. The assumption was that it had been processed into scrap.

- I subsequently sent a second team over to Metro Metals to ask about how the asbestos containing material (gaskets) had been managed during the recycling process and to determine what happened to the carbon contained on the unit.

- Yard personnel reported that they saw no asbestos labels on the scrap material and did not recall seeing any carbon material in the unit. The yard foreman stated that if asbestos labels had been observed the load would not have been accepted or it would have been segregated for special handling.

- I subsequently called and spoke to Steve Zusman, VP Operations of Metro Metals, and Mister Zusman interviewed the Ferrous Scrap Foreman and the Shear Operator who would have unloaded the scrap when it came in.

- All persons interviewed remembered seeing the carbon units.

- All persons verified that there were no asbestos labels visible on the unit when it arrived at the yard.

- The Shear Operator remembered seeing a black material fall out of the carbon unit when it was sheared.

- I found no reason to not believe the responses provided by Metro Metals ' personnel. They process 1,000-2,000 Tons of scrap metal per day and were very helpful during my investigation answering all my questions. They took extra steps to identify and interview other employees who may have had additional information.

We sampled the carbon and a stormwater sample form the secondary containment unit where the equipment was disassemble and removed on Monday Nov. 6. We sampled gasket and insulation materials from the remaining carbon unit on Tuesday or Wednesday, Nov. 7 or Nov. 8, after we completed the interviews, above, and determined that the subject unit could not be located or its fate conclusively established.

Results

Carbon tested 0.04 mg/L TCE by TCLP compared to a D040 limit of 0.5 mg/L. Total TCE contained in the carbon was 10 mg/kg TCE. The insulation consisted of three types: black closed cell foam rubber; fiberglass pipe lagging; and asbestos gasket material containing 50-55% cryotile. Analysis attached.

Conclusions

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I conducted additional interviews and attempted to talk to anyone at the scrap yard that may have seen the equipment in question. At least two people, the shear operator and the Ferrous Scrap Foreman at the scrap yard, remember seeing the carbon unit. They recall that when the carbon adsorption unit was taken off the truck it was immediately sheared into smaller pieces and sent to the ferrous area to be dispositioned. The shear operator did see some black material come out of the equipment when it was sheared, likely the carbon. At this point, they could not declare with certainty whether the sheared scrap was used to directly fill an order or it was sent to a shredder for further size reduction. In any case, it appears from my interviews that the scrap was processed immediately and is no longer in the yard.

The carbon is NOT a Hazardous Waste based on the process waste determination and the TCLP analysis. The carbon adsorption unit was used to treat vent emissions from collection and storage tanks containing TCE or TCE containing wastes. Since none of the wastes were processed through the carbon absorption units my conclusion is that the carbon units did not process or come into contact with a listed waste. Since the associated piping and tanks units were completely flushed before decommissioning, the last two years of operation of the carbon units did not see any vent emissions containing TCE. Since decommissioning the system has been open to atmosphere for 15 years and analysis of storm water within the secondary containment area where the equipment was disassembled was no-detect for TCE and all other method 8260 analytes.

Attached is all the analysis and contact information.

If you have questions please do not hesitate to contact me at 503 219-7532. The remaining carbon absorption unit remains on site and contained.

Respectfully,

Siltronic Corporation

Thomas C. McCue
Manager, Environmental Affairs

McCue, Tom

From: McCue, Tom
Sent: Friday, November 17, 2006 6:35 PM
To: Kevin McCrann (mccrann.kevin@deq.state.or.us)
Cc: chris.reive@jordanschrader.com
Subject: Asbestos Incident

Attachments: TCE reclaim demo 001.tif; TCE reclaim demo.tif; PPK0499Asb.pdf; McCue, Tom.vcf

Mr. McCrann,

As I verbally reported to you on Nov 14, 2006, Siltronic recently discovered that certain used equipment it had arranged to be recycled as scrap metal through the services of a scrap metal broker and local scrap hauler may have been mishandled. The used equipment contained asbestos gasket material. Siltronic had properly labeled it while on site and when offered for recycle. Siltronic also notified the hauler of the likelihood of asbestos material within the equipment before accepting its agreement to perform the work. The hauler was informed that Siltronic required that the asbestos materials be managed according to all rules and regulations.

We began planning for the removal of this equipment in 2004 and had worked with the DEQ to identify concerns and addressed them prior to taking action. To my surprise the project was restarted unexpectedly and I was informed that all recommendations had been followed. As I reported to you on November 14, however, we became aware of and now have reason to believe that this did not occur. The basic facts are described below in the order that you requested. In addition, I have included our analysis of the insulating materials that we discussed on the phone and some photos of the remaining unit showing the labeling.

History of the Equipment

The asbestos containing equipment consisted of carbon adsorption units that were part of an emission control component of a wastewater treatment system used for the treatment of wastewater containing trace amounts (typically >100mg/L) of Trichloroethene (TCE).

The wastewater treatment system consisted of steam stripper tower that was used to remove the trace amounts of TCE from the wastewater. Carbon adsorption units were used to capture TCE emissions from vents within the system including the TCE contaminated wastewater tank, the vent from a liquid separation vessel, and a TCE recovery tank. No liquids were processed through the carbon adsorption units.

There were two carbon adsorption units. The units were designed to capture vent emissions only; one was always in use, while the other would be in standby mode. Periodically, the on-line carbon unit would be switched off-line for regeneration by steam. During that time, the 'backup' unit would be in use. The regeneration process created condensate which was drained to a separator where a two phase liquid was created and separated into recovered TCE and treated wastewater.

The carbon adsorption units contained High Temperature gaskets that Siltronic assumed contained asbestos. As a result, the equipment was labeled as Asbestos Containing. The gasket material was contained between two steel flanges and bolted approximately every two inches.

The carbon units and the wastewater stripper equipment were installed in 1979 and started up in early 1980. Production processes that used TCE were phased out beginning in 1984 and were completely gone by 1989. The stripper and carbon adsorption units continued to operate for other materials until the early 1990s when all manufacturing uses of chlorinated solvents were eliminated. The system was then decommissioned and opened to the atmosphere until it was recently disassembled and prepared for recycle.

Incident description and Investigation

At the beginning of the month we started a wall-to-wall audit of all facilities in preparation for an ISO 14001 re-certification audit. Monday November 6, I became aware of the restart of the project to remove the old stripper equipment. Because I was not personally aware at that time that arrangements for the recycle had been implemented, I inquired about the arrangements. Specifically, I wanted to make certain that the proper precautions had been taken by all concerned. I found one of the two carbon units was picked up for recycle on or about November 2, 2006. The other carbon unit had not been picked up, and remains on-site with all gasket material intact and undisturbed. That remaining unit has been cut with a gas torch to reduce its size and is currently secured inside a drop box lined with plastic sheeting awaiting disposition. All gasket edges on that unit have been taped and other appropriate precautions have been implemented. See pictures below. As a result of this normal follow-up, I determined the following:

- The carbon unit that had already been picked up by the hauler was appropriately labeled as containing asbestos.
- Siltronic's Health and Safety Department had required that the hauler, Van's Towing, be specifically notified that the used equipment contained asbestos and that the hauler assure Siltronic by letter that the asbestos would be managed according to all rules and regulations. An email providing notification of the asbestos, the management requirements and the request for a letter had been sent to the contact identified by the hauler prior to commencing work (Demolition Metals). The same email was returned to Siltronic with a signature (see attached file).
- Carbon remained in the unit that was removed for scrap.
- The scrap metal was delivered to Metro Metals for recycling.
- I contacted Metro Metals on the afternoon of Nov. 6 to ask them to locate for me the carbon unit that had been transported to its facility. In light of a reply that was not satisfactory, I sent a Siltronic team to the scrap yard in an attempt to find the carbon unit and recover it.
- The Siltronic team of John Johnsen and Justin Darr arrived at Metro Metals and interviewed the yard foreman. He remembered receiving the carbon unit for processing, but could not locate it in the yard or declare its status. The assumption was that it had been processed into scrap.
- I subsequently sent a second team over to Metro Metals to ask about how the asbestos containing material (gaskets) had been managed during the recycling process and to determine what happened to the carbon contained on the unit.
- Yard personnel reported that they saw no asbestos labels on the scrap material. The yard foreman stated that if asbestos labels had been observed the load would not have been accepted or it would have been segregated for special handling.
- I subsequently called and spoke to Steve Zusman, VP Operations of Metro Metals, and I also interviewed the Ferrous Scrap Foreman and the Shear Operator who would have unloaded the scrap when it came in.
- All persons interviewed remembered seeing the carbon units.
- All persons verified that there were no asbestos labels visible on the unit when it arrived at the yard.

- I found no reason to not believe the responses provided by Metro Metals ' personnel . They process 1,000-2,000 Tons of scrap metal per day and were very helpful during my investigation answering all my questions.

We sampled the gasket and insulation material from the remaining carbon unit on Tuesday or Wednesday, Nov. 7 or Nov. 8, after we completed the interviews, above, and determined that the subject unit could not be located or its fate conclusively established. Insulation consisted of three types: black closed cell foam rubber; fiberglass pipe lagging; and asbestos gasket material containing 50-55% cryotile. Analysis attached.

I conducted additional interviews and attempted to talk to anyone at the scrap yard that may have seen the equipment in question. At least two people, the shear operator and the Ferrous Scrap Foreman at the scrap yard, remember seeing the carbon unit. They recall that when the carbon adsorption unit was taken off the truck it was immediately sheared into smaller pieces and sent to the ferrous area to be dispositioned. The shear operator did see some black material come out of the equipment when it was sheared, likely the carbon. At this point, they could not declare with certainty whether the sheared scrap was used to directly fill an order or it was sent to a shredder for further size reduction. In any case, it appears from my interviews that the scrap was processed immediately and is no longer in the yard.

Transporter Information

Van's Towing and Demolition Metals

Van's Towing represents Demolition Metals and is the hauler. A copy of the business card for the hauler and a copy of the signed letter request are attached.

TCE reclaim demo 001.tif (215 ...

TCE reclaim demo.tif (70 KB)

Scrap Dealer Information

Metro Metals

Analysis

PPK0499Asb.pdf (48 KB)

Photos

If you have questions please do not hesitate to contact me at 503 219-7532. The remaining carbon absorption unit remains on site and contained.

TOM MCCUE
MANAGER, ENVIRONMENTAL AFFAIRS

Siltronic Corporation
7200 NW Front Avenue, M/S 20
Portland, Oregon 97210-3676
Tel. (503) 219-7532
Fax (503) 219-7599
mailto:tom.mccue@siltronic.com

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TOM MCCUE
MANAGER, ENVIRONMENTAL AFFAIRS

Siltronic Corporation
7200 NW Front Avenue, M/S 20
Portland, Oregon 97210-3676
Tel. (503) 219-7532
Fax (503) 219-7599
mailto:tom.mccue@siltronic.com

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McCue, Tom.vcf (4 KB)

TestAmerica
ANALYTICAL TESTING CORPORATION

PORTLAND, OR 9405 S.W. NIMBUS AVENUE
BEAVERTON, OR 97008-7132
ph: (503) 906.9200 fax: (503) 906.9210

November 13, 2006

Thomas Rothschild
Siltronic
7200 N.W. Front Ave
Portland, OR 97210

RE: Waste Characterization

Enclosed are the results of analyses for samples received by the laboratory on 11/06/06 15:11. The following list is a summary of the Work Orders contained in this report, generated on 11/13/06 09:03.

If you have any questions concerning this report, please feel free to contact me.

Work Order	Project	ProjectNumber
PPK0238	Waste Characterization	PO# 4500186654

The results provided in this report have not been approved for final release by the Laboratory, and are provided in DRAFT format at the request of the client. Reported results may not have been fully reviewed, and are subject to change.

SCOEPA00054496

TestAmerica
ANALYTICAL TESTING CORPORATION

PORTLAND, OR 9405 S.W. NIMBUS AVENUE
BEAVERTON, OR 97008-7132
ph: (503) 906.9200 fax: (503) 906.9210

Draft Report

Partial Report

Siltronic	Project Name:	**Waste Characterization**	
7200 N.W. Front Ave	Project Number:	PO# 4500186654	Report Created:
Portland, OR 97210	Project Manager:	Thomas Rothschild	11/13/06 09:03

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
06-99	PPK0238-01	Soil	11/06/06 11:00	11/06/06 15:11

The results provided in this report have not been approved for final release by the Laboratory, and are provided in DRAFT format at the request of the client. Reported results may not have been fully reviewed, and are subject to change.

SCOEPA00054497

TestAmerica
ANALYTICAL TESTING CORPORATION

PORTLAND, OR 9405 S.W. NIMBUS AVENUE
BEAVERTON, OR 97008-7132
ph: (503) 906.9200 fax: (503) 906.9210

Draft Report

Partial Report

Siltronic	Project Name:	**Waste Characterization**	
7200 N.W. Front Ave	Project Number:	PO# 4500186654	Report Created:
Portland, OR 97210	Project Manager:	Thomas Rothschild	11/13/06 09:03

DRAFT: TCLP Volatile Organic Compounds per EPA Method 1311/8260B

TestAmerica - Portland, OR

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PPK0238-01 (06-99)		**Soil**				**Sampled: 11/06/06 11:00**				
Acetone	1311/8260B	ND	-----	0.500	mg/l	1x	6110489	11/11/06 08:20	11/11/06 14:28	
Benzene	"	ND	-----	0.0200	"	"	"	"	"	
Bromobenzene	"	ND	-----	0.0200	"	"	"	"	"	
Bromochloromethane	"	ND	-----	0.0200	"	"	"	"	"	
Bromodichloromethane	"	ND	-----	0.0200	"	"	"	"	"	
Bromoform	"	ND	-----	0.0200	"	"	"	"	"	
Bromomethane	"	ND	-----	0.100	"	"	"	"	"	
n-Butylbenzene	"	ND	-----	0.0200	"	"	"	"	"	
sec-Butylbenzene	"	ND	-----	0.0200	"	"	"	"	"	
tert-Butylbenzene	"	ND	-----	0.0200	"	"	"	"	"	
Carbon Tetrachloride	"	ND	-----	0.0200	"	"	"	"	"	
Chlorobenzene	"	ND	-----	0.0200	"	"	"	"	"	
Chloroethane	"	ND	-----	0.0500	"	"	"	"	"	
Chloroform	"	ND	-----	0.0200	"	"	"	"	"	
Chloromethane	"	ND	-----	0.100	"	"	"	"	"	
2-Chlorotoluene	"	ND	-----	0.0200	"	"	"	"	"	
4-Chlorotoluene	"	ND	-----	0.0200	"	"	"	"	"	
1,2-Dibromo-3-chloropropane	"	ND	-----	0.0500	"	"	"	"	"	
Dibromochloromethane	"	ND	-----	0.0200	"	"	"	"	"	
1,2-Dibromoethane	"	ND	-----	0.0200	"	"	"	"	"	
Dibromomethane	"	ND	-----	0.0200	"	"	"	"	"	
1,2-Dichlorobenzene	"	ND	-----	0.0200	"	"	"	"	"	
1,3-Dichlorobenzene	"	ND	-----	0.0200	"	"	"	"	"	
1,4-Dichlorobenzene	"	ND	-----	0.0200	"	"	"	"	"	
Dichlorodifluoromethane	"	ND	-----	0.100	"	"	"	"	"	
1,1-Dichloroethane	"	ND	-----	0.0200	"	"	"	"	"	
1,2-Dichloroethane	"	ND	-----	0.0200	"	"	"	"	"	
1,1-Dichloroethene	"	ND	-----	0.0200	"	"	"	"	"	
cis-1,2-Dichloroethene	"	ND	-----	0.0200	"	"	"	"	"	
trans-1,2-Dichloroethene	"	ND	-----	0.0200	"	"	"	"	"	
1,2-Dichloropropane	"	ND	-----	0.0200	"	"	"	"	"	
1,3-Dichloropropane	"	ND	-----	0.0200	"	"	"	"	"	
2,2-Dichloropropane	"	ND	-----	0.0200	"	"	"	"	"	
1,1-Dichloropropene	"	ND	-----	0.0200	"	"	"	"	"	
cis-1,3-Dichloropropene	"	ND	-----	0.0200	"	"	"	"	"	
trans-1,3-Dichloropropene	"	ND	-----	0.0200	"	"	"	"	"	
Ethylbenzene	"	ND	-----	0.0200	"	"	"	"	"	
Hexachlorobutadiene	"	ND	-----	0.0500	"	"	"	"	"	
2-Hexanone	"	ND	-----	0.100	"	"	"	"	"	
Isopropylbenzene	"	ND	-----	0.0200	"	"	"	"	"	
p-Isopropyltoluene	"	ND	-----	0.0200	"	"	"	"	"	
4-Methyl-2-pentanone	"	ND	-----	0.200	"	"	"	"	"	
2-Butanone (MEK)	"	ND	-----	0.500	"	"	"	"	"	

DRAFT REPORT

The results provided in this report have not been approved for final release by the Laboratory, and are provided in DRAFT format at the request of the client. Reported results may not have been fully reviewed, and are subject to change.

SCOEPA00054498

TestAmerica
ANALYTICAL TESTING CORPORATION

PORTLAND, OR 9405 S.W. NIMBUS AVENUE
BEAVERTON, OR 97008-7132
ph: (503) 906.9200 fax: (503) 906.9210

Draft Report

Partial Report

Siltronic	Project Name:	**Waste Characterization**	
7200 N.W. Front Ave	Project Number:	PO# 4500186654	Report Created:
Portland, OR 97210	Project Manager:	Thomas Rothschild	11/13/06 09:03

DRAFT: TCLP Volatile Organic Compounds per EPA Method 1311/8260B

TestAmerica - Portland, OR

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PPK0238-01 (06-99)		**Soil**			**Sampled: 11/06/06 11:00**					
Methylene chloride	1311/8260B	ND	-----	0.500	mg/l	1x	6110489	11/11/06 08:20	11/11/06 14:28	
Methyl tert-butyl ether	"	ND	-----	10.0	"	"	"	"	"	
Naphthalene	"	ND	-----	0.0200	"	"	"	"	"	
n-Propylbenzene	"	ND	-----	0.0200	"	"	"	"	"	
Styrene	"	ND	-----	0.0200	"	"	"	"	"	
1,1,1,2-Tetrachloroethane	"	ND	-----	0.0200	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	"	ND	-----	0.0200	"	"	"	"	"	
Tetrachloroethene	"	ND	-----	0.0200	"	"	"	"	"	
Toluene	"	ND	-----	0.0200	"	"	"	"	"	
1,2,3-Trichlorobenzene	"	ND	-----	0.0200	"	"	"	"	"	
1,2,4-Trichlorobenzene	"	ND	-----	0.0200	"	"	"	"	"	
1,1,1-Trichloroethane	"	ND	-----	0.0200	"	"	"	"	"	
1,1,2-Trichloroethane	"	ND	-----	0.0200	"	"	"	"	"	
Trichloroethene	"	**0.0473**	-----	0.0200	"	"	"	"	"	
Trichlorofluoromethane	"	ND	-----	0.0500	"	"	"	"	"	
1,2,3-Trichloropropane	"	ND	-----	0.0200	"	"	"	"	"	
1,2,4-Trimethylbenzene	"	ND	-----	0.0200	"	"	"	"	"	
1,3,5-Trimethylbenzene	"	ND	-----	0.0200	"	"	"	"	"	
Vinyl chloride	"	ND	-----	0.0200	"	"	"	"	"	
o-Xylene	"	ND	-----	0.0200	"	"	"	"	"	
m,p-Xylene	"	ND	-----	0.0200	"	"	"	"	"	
Surrogate(s): 4-BFB		*96.0%*			*75 - 130 %*	*0.1x*			"	
Dibromofluoromethane		*98.5%*			*75 - 130 %*	"			"	
Toluene-d8		*104%*			*75 - 130 %*	"			"	
1,2-DCA-d4		*100%*			*77.7 - 144 %*	"			"	

The results provided in this report have not been approved for final release by the Laboratory, and are provided in DRAFT format at the request of the client. Reported results may not have been fully reviewed, and are subject to change.

SCOEPA00054499

TestAmerica
ANALYTICAL TESTING CORPORATION

PORTLAND, OR 9405 S.W. NIMBUS AVENUE
BEAVERTON, OR 97008-7132
ph: (503) 906.9200 fax: (503) 906.9210

Draft Report

Partial Report

Siltronic	Project Name:	**Waste Characterization**	
7200 N.W. Front Ave	Project Number:	PO# 4500186654	Report Created:
Portland, OR 97210	Project Manager:	Thomas Rothschild	11/13/06 09:03

Notes and Definitions

Report Specific Notes:

Q-27 - Analyte recovery outside of specified criteria. Individual analyte criteria exceedences allowed for multi-component analyses without disqualification of data per USACE EM200-1-3.

Laboratory Reporting Conventions:

DET - Analyte DETECTED at or above the Reporting Limit. Qualitative Analyses only.

ND - Analyte NOT DETECTED at or above the reporting limit (MDL or MRL, as appropriate).

NR/NA - Not Reported / Not Available

dry - Sample results reported on a Dry Weight Basis. Results and Reporting Limits have been corrected for Percent Dry Weight.

wet - Sample results and reporting limits reported on a Wet Weight Basis (as received). Results with neither 'wet' nor 'dry' are reported on a Wet Weight Basis.

RPD - RELATIVE PERCENT DIFFERENCE (RPDs calculated using Results, not Percent Recoveries).

MRL - METHOD REPORTING LIMIT. Reporting Level at, or above, the lowest level standard of the Calibration Table.

MDL* - METHOD DETECTION LIMIT. Reporting Level at, or above, the statistically derived limit based on 40CFR, Part 136, Appendix B. *MDLs are listed on the report only if the data has been evaluated below the MRL. Results between the MDL and MRL are reported as Estimated Results.

Dil - Dilutions are calculated based on deviations from the standard dilution performed for an analysis, and may not represent the dilution found on the analytical raw data.

Reporting Limits - Reporting limits (MDLs and MRLs) are adjusted based on variations in sample preparation amounts, analytical dilutions and percent solids, where applicable.

The results provided in this report have not been approved for final release by the Laboratory, and are provided in DRAFT format at the request of the client. Reported results may not have been fully reviewed, and are subject to change.

SCOEPA00054500

Chromic Acid Waste Containment

Scope of Work

The existing chromic acid waste system consists of a 55-gallon waste tank and diaphragm pump located in A131 pumping the chromic waste to a chromic acid waste treatment area in the south yard.

This project will tie-in to the chromic acid waste line in the south yard and install a new collection system. The new collection system will consist of two 330-gallon totes. When one tote fills, it will be prepared for shipment and replaced with an empty tote. Purchase of the totes is not part of this project.

The totes will be housed in a FM approved safe storage manufactured building. The building will include area heating, lighting, load center, secondary containment (1000 gal.), general exhaust, secondary containment alarm, safety shower, three doors and Oregon State Approval and Seal.

The new building will be placed on a new concrete slab and anchored to the slab. A new ground rod will be driven and attached to the building.

The chromic acid waste piping will be PVDF (RCW) with secondary containment in clear PVC (OAH). The secondary containment pipe will be fitted for leak detection. Included with the piping will be three pneumatic operated control valves, PFA flexible tubing w/ PVC hose containment, and polypropylene dry disconnects plumbed to the tote lid.

The acid exhaust will be plumbed into the tote lid using PVC pipe, PVC hose and PVC cam lock disconnects. The exhaust will be routed to an existing acid exhaust scrubber duct located above the new storage building. Acid scrubber located at the west end of the south yard (SC-45-01) services the existing acid exhaust duct. The exhaust line will include isolation valves near the totes and balancing valve at the tie-in to the existing scrubber duct. The outside PVC pipe will be painted.

A new CDA line will be tied into the existing CDA in the south yard above the natural gas meter. The new CDA line will provide control power for valve operations. Loss of air pressure or control power will cause the control valves to fail closed.

SCOEPA00054501

A tie-in to domestic hot water and cold water in room D102 and D104 will be routed to new tempered water mixing valve in D104 and then to the new emergency shower located inside the new storage building. The piping will be copper (IDC). The new shower will be equipped with flow alarm.

The new building will be equipped with two deck scales to control the filling of the totes. The tanks will have a lead/lag control scheme based on weight of the totes. The lead tank will shutoff when it reaches 80% full. The lag tank will then take over. A supervisory alarm will notify of full tote. If the tote continues to fill to (90%) the second alarm will close all three-control valves isolating both totes and shutdown the pump in A131 with supervisory alarm.

WACKER
Wacker Siltronic Corporation

June 24, 1999

ER133: TM

Ms. Susan Shewczyk
Department of Environmental Quality
Hazardous Waste Section
2020 SW Fourth Avenue, Suite 400
Portland, Oregon 97201-4987

Re: Pre-Compliance Conference June 24, 1999
Wacker Siltronic Corporation

Dear Ms. Shewczyk,

We are here today to present additional evidence supporting the "Wastewater Treatment Unit" exclusion to assist in the discussion of two alleged violations cited in the Notice of Violation letter NWR-HW-99-034 dated May 24, 1999.

The NON violations pertain to the onsite management of a wastewater treatment facility that treats hazardous waste water containing chromic acid. In particular the issues are:

1. What equipment and processes are part of the wastewater treatment unit, and;
2. What wastewaters and sludges are exempt from RCRA.

The two NONs are failure to label four (4) hazardous waste containers that held wastewater and sludge and failure to note the amount of wastewater and sludge from the chrome treatment process prior to evaporation on hazardous waste reports.

Both DEQ and Wacker Siltronic agree that:

1. Wastewater treated in this wastewater treatment unit is hazardous wastewater containing chromium which is a characteristic waste.
2. The wastewater treatment unit is exempt from RCRA regulation.
3. The volume of hazardous wastewater sent to the wastewater treatment unit is reported each year to DEQ as exempt hazardous wastewater.
4. The amount of dried sludge resulting from the treatment of hazardous wastewaters is report each year to DEQ as hazardous waste.

You sent to me a copy of the Policy Clarification document titled "Requirements for Owners or Operators of Wastewater Treatment Units" in effect in Oregon which was an internal DEQ document signed Nov. 21. 1997. This document, OAR 340, 40 CFR, and letters of rule interpretation from the EPA Office of Solid Waste and Emergency Response and the Office of General Council were used to support our position.

Oregon OAR 340 adopted 40 CFR parts 260-266, 268, 270, 273 by reference. OAR 340.100 does not modify or add additional definitions relevant to the wastewater treatment unit exemption or other treatment exemptions. OAR 340.101 does not list

An ISO 9001 Certified Corporation

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180
Phone (503) 243-2020
TDD (503) 241-7519

WWTU wastewaters or sludges as hazardous wastes or special wastes. Nor are there additional treatment requirements in OAR 340.104 or permit requirements in OAR 340-105.

We conclude that the governing regulations are the 40 CFR 260-266, and 270. Below for reference are listed relevant sections of these rules which were submitted to you May 17,1999. More importantly, attached are thirteen (13) EPA-OSWER letters, summaries and rule interpretations of the wastewater treatment unit exemption and its application.

§260.10 Definitions.

Wastewater treatment unit means a device which:

(1) Is part of a wastewater treatment facility that is subject to regulation under either section 402 or 307(b) of the Clean Water Act; and
(2) Receives and treats or stores an influent wastewater that is a hazardous waste as defined in §261.3 of this chapter, or that generates and accumulates a wastewater treatment sludge that is a hazardous waste as defined in §261.3 of this chapter, or treats or stores a wastewater treatment sludge which is a hazardous waste as defined in §261.3 of this Chapter; and
(3) Meets the definition of tank or tank system in §260.10 of this chapter.

Tank means a stationary device, designed to contain an accumulation of hazardous waste which is constructed primarily of non-earthen materials (e.g., wood, concrete, steel, plastic) which provide structural support.

It is Wacker's position that all hazardous chromic wastewater and sludges are effectively managed within a set of equipment which meets the definition of a wastewater treatment unit and is exempt from all RCRA regulation. All sludges are properly managed and reported as hazardous waste after completion of the treatment. The attached EPA guidance is beneficial to the application of wastewater treatment unit exclusion and extends the RCRA exemptions to all wastewater treatment steps conducted onsite. EPA guidance specifically includes sludge drying by evaporation and the storage of sludges prior to drying in the exemption from regulation.

Please refer to the attachments for greater detail. Please let me know if the DEQ does not agree with the EPA guidance since it will effect the outcome of the two violations cited in the pending NON.

Sincerely,

Wacker Siltronic Corporation

Thomas C. McCue

Thomas C. McCue

attachments

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180
Phone (503) 243-2020
TDD (503) 241-7519

(1)

Oregon

John A. Kitzhaber M.D., Governor

Department of Environmental Quality
Northwest Region
2020 SW Fourth Avenue
Suite 400
Portland, OR 97201-4987
(503) 229-5263 Voice
TTY (503) 229-5471

FAX COVER LETTER

DATE: 6/23/99 TIME: 9:30

COVER PAGE PLUS 3 PAGES

TO: Tom McCUE, WACKER

FAX NUMBER: 219-7599 PH:

FROM: Susan Shewczyk

FAX: (503)229-6945 PH: 229-5563

MESSAGE: Tom, 94-003 + 94-004 are not valid - these were draft & were never signed. This is the most Recent version of 97-003.

SS

(2)

Hazardous Waste Toxics Use Reduction

Policy Clarification

POLICY TITLE: Requirements for Owners or Operators of Wastewater Treatment Units

POLICY NUMBER: 97-003

EFFECTIVE DATE: Upon approval

PURPOSE: This policy clarifies the regulatory requirements which apply to owners and operators who manage hazardous waste in Wastewater Treatment Units (WWTUs).

Wastewater Treatment Units (WWTUs) are often used for managing hazardous wastewater. Such facilities must comply with certain RCRA hazardous waste generator regulations. This policy is intended to clarify the applicability of those regulations. To determine the application of this policy, the extent of the WWTU in question must be defined. The decision about whether or not a management unit is a WWTU is made on a case by case basis.

If wastewaters that have been determined to be hazardous are introduced immediately upon generation (i.e., flow through an engineered conveyance device) into a permitted,[1] defined WWTU, then the owner/operator is a generator of hazardous wastewater, but no further hazardous waste generator regulations apply to those wastewaters. Thus, the wastewaters would not have to be counted for the purpose of determining the generator category of the facility (i.e., conditionally exempt, small quantity, or large quantity generator), or for paying hazardous waste generator fees.[2] Note, however, that any hazardous sludge that is removed from the WWTU would have to be managed in accordance with applicable regulatory requirements, as would any other hazardous waste that is generated at the facility or managed in non-exempt units.

If hazardous wastewaters are "accumulated" (i.e., stored and/or treated in tanks that are not defined as the WWTU, stored in containers, or stored on drip pads) at the facility without immediate introduction through an engineered conveyance device into a defined WWTU, then the wastewaters must be counted to determine generator status of the facility, and the facility must pay generator fees, if applicable.[3] As always, all other hazardous waste must be assessed to determine the facility's generator status. If the facility is also a small quantity generator (SQG)

1 "Permitted" means permitted by a Department Water Quality permit.

2 Currently, generator fees are zero for immediately managing any volume of hazardous wastewater in a permitted, defined WWTU because the fee factor for RCRA exempt units, in this case a WWTU, is "0".

3 Hazardous wastewater that is managed in a unit outside of a defined WWTU is regulated and hazardous waste generation fees apply. Generator fees are calculated based on a ".5" fee factor under the "other recovery" management method in OAR 340-102-065(4).

SCOEPA00054506

(3)

or large quantity generator (LQG) for wastes other than those managed in the defined WWTU, then the owner/operator of the facility must:

- maintain records (40 CFR 262.40(c) and (d));
- submit additional reports as required (40 CFR 262.43);
- comply with 40 CFR 262.34 hazardous waste generator requirements, including contingency planning and emergency procedures, and preparedness and prevention requirements for the hazardous wastewater for LQGs;
- complete and maintain a one-time notification for restricted wastes (40 CFR 268.7(a)(6)) and keep it in the generator files;[4]
- submit an annual report, including the volume of hazardous wastewater generated (OAR 340-104-075(3)); and
- pay an annual hazardous waste activity verification fee (OAR 340-102-065(6)) and hazardous waste generation fees for all hazardous wastes, including paying fees on wastewater or sludge that had been held in a management unit without immediate introduction into a defined WWTU.

Any hazardous waste removed from WWTUs (i.e., instead of being discharged from the unit) and stored in other tanks or containers must be managed in compliance with 40 CFR 262.34 generator regulations.[5]

DEQ Water Quality and the Hazardous Waste programs continue to evaluate the cross-media wastewater treatment unit exemption on waters of the state and will modify this policy should state or federal laws or regulations change.

This policy statement is intended solely as guidance for employees of the Department of Environmental Quality (DEQ). It does not constitute rulemaking by the Environmental Quality Commission and may not be relied upon to create a right or benefit, substantive or procedural, enforceable by law or in equity, by any person. DEQ may take action at variance with this policy statement.

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4 RCRA Hotline July 1992, one-time Notification Requirement under 40 CFR 268.7(a)(6).

5 If the discharge is to be disposed of in batch loads in accordance with permit requirements, then minimal storage would be approved under the NPDES permitting authority or under emergency conditions where NPDES authorities require generators to hold the wastewater until the emergency condition ceases.

SCOEPA00054507

SIGNATURE PAGE for Requirements for Owners or Operators of Wastewater Treatment Units.

Eastern Region Hazardous Waste Manager — Date 11/21/97

Northwest Region Hazardous Waste Manager — Date 11-21-97

Northwest Region Hazardous Waste Manager — Date 11/21/97

Western Region Hazardous Waste Manager — Date 11/27/97

Hazardous Waste Policy and Program Development Manager — Date 11/21/97

Waste Management and Cleanup Division Administrator — Date 11/21/97

gc/gjc
11/21/97

SCOEPA00054508

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

(5)

JUL 31 1981

OFFICE OF
SOLID WASTE AND EMERGENCY RESPONSE

Richard C. Boynton, Chief
Permits Development Section
U.S. Environmental Protection Agency
John F. Kennedy Building
Boston, Massachusetts 02203

Re: Suspension of Regulations for Wastewater Treatment Units

Dear Mr. Boynton:

This letter responds to your recent request for an interpretation of the regulations of November 17, 1980 (45 FR 76074) which suspended certain requirements of the hazardous waste regulations for owners and operators of wastewater treatment units where such facilities are subject to regulation under Section 402 or 307(b) of the Clean Water Act.

Your letter is correct in stating that there is nothing in the definitions, preamble, or regulations which precludes an off-site hazardous waste management facility from qualifying for a suspension of the hazardous waste requirements in 40 CFR Parts 122, 264 and 265. The Agency considered limiting the suspension and proposed amendments to on-site facilities but was unable to justify that this type of facility was inherently less hazardous than an off-site facility so as to necessitate different standards. Accordingly, EPA does not intend to distinguish between on-site and off-site facilities in this regulation.

Even under the terms of the suspension, hazardous waste shipped to an off-site facility will, of course, be subject to the manifest requirements. In addition, the treatment facility must be subject to regulation under either Section 402 or 307(b) of the Clean Water Act.

To be completely exempted for now (and ultimately subjected to the permit by rule) all units in a facility must meet the definition of "tank" in §260.10. Lagoons, incinerators, and other types of facilities are not eligible. It is, however, true that the definition of "tank" is rather broad, covering unit operations which are not obviously tanks such as presses, filters, sumps, and many other types of processing equipment.

The Agency also intends that the phrase "subject to regulation under either Section 402 or 307(b) of the Clean Water Act" should be given a broad interpretation. This phrase includes all facilities that are subject to NPDES permits and encompasses facilities subject to either categorical pretreatment standards or general pretreatment standards. It is not necessary that the permits actually be issued or that pretreatment standards actually be in force. It is sufficient that the facility be subject to the requirements of the Clean Water Act.

SCOEPA00054509

It should be noted that eligible facilities must in fact be treating "wastewaters" and not concentrated chemicals or non aqueous wastes. While we have not promulgated a formal definition, we are interpreting the term to refer to wastes which are substantially water with contaminants amounting to a few percent at most. It has been suggested that a formal definition would be helpful. We are considering adding such a definition to the final promulgation.

Public comments on the November 17, 1980 proposal also noted that some wastewater treatment units do not discharge a liquid stream and thus are not subject to the Clean Water Act. EPA is considering changing this "subject to" language to include such zero discharge facilities. We expect to finalize the proposed regulations for wastewater treatment units and elementary neutralization units within the next few months.

If you have any further questions, please do not hesitate to call me or Fred Lindsey, the Deputy Division Director at FTS 755-9185.

Sincerely yours,

John P. Lehman, Director
Hazardous & Industrial Waste Division

cc:

Dennis Heubner EPA, Region I	R. Stan Jorgensen EPA Region VI
Ernest Regna EPA Region II	Robert L. Morby EPA Region VII
Robert L. Allen EPA Region III	Lawrence P. Gazda EPA Region VIII
James Scarbrough EPA Region IV	Arnold R. Den EPA Region IX
Karl J. Klepitsch EPA Region V	Kenneth D. Feigner EPA Region X

SCOEPA00054510

PART 260 SUBPART B - DEFINITIONS DOC: 9432.02(84) (7)

Key Words: Wastewater Treatment, Tank, Mixture Rule, Aqueous Waste

Regulations: 40 CFR 265.1(c)(10), 260.10

Subject: Regulation of Hazardous Aqueous Waste at Wastewater Treatment Facilities

Addressee: Marion Thompson, Program Analyst

Originator: Francine S. Jacoff, Manager, Listing Program

Source Doc: #9432.02(84)

Date: 2-2-84

Summary:

If a wastewater treatment facility receives regulated aqueous hazardous waste either alone or mixed with non-hazardous aqueous wastes, the entire influent is considered hazardous (by the mixture rule) and the facility must be permitted. If the wastewater is treated only in tank or tank-like equipment, subject to regulation under Section 402 or 307(b) of the Clean Water Act, the wastewaters are exempt from regulation under RCRA [§265.1(c)(10)]. Hazardous wastewaters are regulated only when they are managed in surface impoundments or by some other means (e.g., deep well injection).

SCOEPA00054511

9432.02 (84)

(8)

WH-562/Francine Jacoff/njh/S-242/382-4761/2-1-84/Disk PS/01/46

FEB 2 1984

RE: WIBPS0146

MEMORANDUM

SUBJECT: Facilities Generating Regulated Hazardous Aqueous Waste

FROM: Francine S. Jacoff, Manager
Listing Program

TO: Marian Thompson, Program Analyst

In our recent meeting to discuss the Office of Water's (OW) concerns regarding the listing of aqueous wastes as part of the proposed TDI listing, we agreed to provide OW with a list of facilities which are currently sending hazardous (listed) wastewaters to wastewater treatment units.

Often a facility which generates a regulated aqueous hazardous waste will send it to a wastewater treatment facility, either alone or with other hazardous or non-hazardous aqueous wastes. As a consequence of the mixture rule, the entire influent is considered to be hazardous, and the wastewater treatment facility may be subject to RCRA regulation as a hazardous waste treatment facility and, if so, must be permitted. However, if the wastewater is treated only in tank or tank-like equipment,1/ these wastewasters are currently exempt from regulation under RCRA. As a practical matter, this means that we only regulate these hazardous wastewaters that are managed in surface impoundments or by some other means (i.e., deep well injection).

Our available data indicated that a number of facilities are generating regulated aqueous hazardous waste. My staff has telephoned the Regional Offices to determine if any of these plant's wastewater treatment units are currently regulated, either with Interim Status or fully permitted. There is a wide diversity between the Regions with regard to the availability of the information; therefore, the results (presented in the attachment) are, in most cases, not definitive. The results of

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1/ Tanks or tank-like equipment means a stationary device, designed to contain an accumulation of hazardous waste which is constructed primarily of non-earthen materials (i.e., wood, concrete, steel, plastic) which provide structural support.

SCOEPA00054512

the telephone survey are presented in Attachment 1. The facilities are divided into four categories, as follows.

1) Definitely Wastewater Treatment - This category includes those that have Interim Status or Part B applications called in and under review, specifying for wastewater treatment, or for treatment in a lagoon with NPDES permit.

2) Possibly Wastewater Treatment - This category includes those that have Interim Status or Part B applications called in and under review by the Regional Office, specifically for treatment methods (such as tank treatment, surface impoundment, other (unspecified) treatment) which indicated wastewater treatment without actually specifying it.

3) No Indication Either Way - This category includes those that the Regional Office has insufficient information to determine if the facility, in fact, has Interim Status, or in one case, the facility has Interim Status, and the Region has no other information available.

4) Definitely Not Wastewater Treatment - This category includes those which either don't have Interim Status, or have Interim Status for a purpose which the region definitely knows does not include wastewater treatment.

I would also like to call to your attention a survey by CMA (Attachment 2) which provides details of their members' waste management practices.

After you have had a chance to review this material, please call me at 382-4761 so that we may set up a meeting to finalize on these issues.

SCOEPA00054513

RDB No. 6742

(10)

UNIT. STATES ENVIRONMENTAL PROTECTION AGENCY

MAY 22 1984

MEMORANDUM

SUBJECT: Definition of "Wastewater Treatment Unit"

FROM: Donald C. White, P.E.,
Program Manager, Treatment Alternatives Program
Waste Treatment Branch (WH-565A)

TO: Jonathan Josephs, Chemical Engineer
New York Hazardous Waste Section, RD (2AWM-SW)

This memo is written in response to our telephone conversations, and your subsequent memo dated March 20, 1984, about the tank that is used to store a wastewater treatment sludge from leachate at the Love Canal site. I regret the delay in responding to your request for clarification of the eligibility of this tank for the "wastewater treatment exemption" under RCRA. As you must realize, it was essential to formulate a definitive answer and to obtain concurrence within OSWER and OGC on this matter.

According to Sections 264.1(g)(6) and 265.1(c)(10) of Title 40 of the CFR, the RCRA requirements of Parts 264 and 265 "do not apply to the owner or operator of an elementary neutralization unit or a wastewater treatment unit as defined in Section 260.10 of this Chapter." The unit in question would have to meet the definition of a wastewater treatment unit as specified in Section 260.10. According to this definition, a device is a wastewater treatment unit if it meets three requirements. For the tank in question, the relevent parts of these requirements are:

(1) It must be part of a wastewater treatment facility that is subject to regulation under Section 402 or Section 307(b) of the Clean Water Act;

(2) It must...generate and accumulate....or treat or store a wastewater treatment sludge that is a hazardous waste; and

(3) It must meet the definition of a tank.

FaxBack# 11036

11031

The definition of "wastewater treatment unit" has been interpreted to cover wastewater treatment systems which (1) produce a treated wastewater effluent that is discharged into surface waters or into a POTW sewer system, and that is therefore subject to the NPDES or pretreatment requirements of the Clean Water Act, or (2) produce no effluent as a direct result of such requirements. Therefore, a tank that is a wastewater treatment unit that does not discharge an effluent is eligible for the wastewater treatment exemption since if an effluent were discharged, it would be subject to regulation under the Clean Water Act.

It is my conclusion, therefore, that the tank in question --as described in our telephone conversations and in your memo of March 20, 1984 --is indeed a wastewater treatment unit according to the definition in Section 260.10, and that it qualifies for the "wastewater treatment exemption" of Sections 264.1(g)(6) and 265.1(c)(10). This conclusion has been supported by discussions within OSWER and with OGC.

cc: Alfred Lindsey (WH-562A)
Mark Greenwood (LE-132S)
Kenneth Gray (LE-132A)
John Thompson (RCRA Hotline)

11036

SCOEPA00054515

No. 12

(12)

United States Environmental Protection Agency

Office of Solid Waste and Emergency Response

EPA

DIRECTIVE NUMBER: 9432.07(84)

TITLE: Guidance on Implementation of Wastewater Treatment Unit Exemption

APPROVAL DATE: 12-24-84

EFFECTIVE DATE: 12-24-84

ORIGINATING OFFICE: OSW

☑ **FINAL**

☐ **DRAFT**

LEVEL OF DRAFT

- ☐ A — Signed by AA or DAA
- ☐ B — Signed by Office Director
- ☐ C — Review & Comment

REFERENCE (other documents):

NER OSWER OSWER
DIRECTIVE DIRECTIVE DI

SCOEPA00054516

PART 260 SUBPART B - DEFINITIONS DOC: 9432.07(84) (13)

Key Words: Wastewater Treatment

Regulations: 40 CFR 260.10, 264.1(g)(6)

Subject: Guidance on Implementation of Wastewater Treatment Unit Exemption

Addressee: James H. Scarbrough, Chief, Residuals Management Branch, Waste Management Division, Region IV

Originator: John H. Skinner, Director, Office of Solid Waste

Source Doc: #9432.07(84)

Date: 12-24-84

Summary:

40 CFR 260.10 defines a wastewater treatment unit eligible for exemption as:

1) a tank;

2) which is part of a wastewater treatment facility subject to regulation under Section 402 or 307(b) of the Clean Water Act; and

3) which receives and treats or stores an influent wastewater that is a hazardous waste or which generates, accumulates, treats, or stores a wastewater treatment sludge that is a hazardous waste.

Since there is no requirement that components of the wastewater units in the facility be connected, wastewater could be piped, trucked, or otherwise conveyed from one wastewater unit to another. Therefore, wastewater tanks that are trucked across a DOE facility which has an NPDES permit are part of a wastewater treatment unit, exempt under 40 CFR §264.1(g)(6). A tank is also exempt under these regulations if wastewater is stored and treated in a tank at one facility prior to shipment to a POTW.

DEC 24 1984

DEC 24 1984

MEMORANDUM

SUBJECT: Request for Guidance/Clarification of Wastewater Treatment Unit Definition

FROM: John H. Skinner, Director
Office of Solid Waste (WH-562)

TO: James H. Scarbrough, Chief
Residuals Management Branch
Waste Management Division
E.P.A. Region IV

Your memo of December 11, 1984 is one of several requests for guidance that OSW has received from the Regions since the wastewater treatment unit exemption was promulgated on November 17, 1980.

The case on which you requested guidance involves tanks storing hazardous wastewaters that are then trucked across the Department of Energy Oak Ridge reservation to a treatment facility that has an NPDES permit. You asked whether a direct mechanical connection between the components of the treatment facility were necessary for the tanks to be part of the wastewater treatment facility.

For the purposes of this exemption, a wastewater treatment unit is defined in 40 CFR §260.10 as:

(1) a tank,

(2) which is part of a wastewater treatment facility subject to regulation under either Section 402 or Section 307(b) of the Clean Water Act, and

(3) which receives and treats or stores an influent wastewater that is a hazardous waste or which generates, accumulates, treats, or stores a wastewater treatment sludge that is a hazardous waste.

In providing guidance on implementation of this rule, we have been basing our interpretations on the intent of the exemption as well as on the wording of the regulation.

SCOEPA00054518

(15)

You acknowledge that the DOE reservation is a "facility," and we have followed this interpretation in accepting their Part A RCRA application. Because there is no requirement that components of the wastewater units in a facility be connected, there is no reason why waterwater could not be piped, trucked, or otherwise conveyed from one waterwater unit to another. Therefore, the wastewater tanks in question are part of a wastewater treatment unit, exempt under 40 CFR §264.1(g)(6).

Further, this office has acknowledged that if wastewater is stored and treated in a tank at one facility prior to shipment to a POTW, the tank is exempt under 40 CFR §264.1(g)(6) (see the attached memorandum).

If you have any questions, please call Donald White (382-7917) of my staff.

Attachment

(16)

United States Environmental Protection Agency
Washington, DC 20460

EPA OSWER Directive Initiation Request

Interim Directive Number: 9503.51-1A(85)

Originator Information

Name of Contact Person	Mail Code	Telephone Number
Nancy Pomerleau	WH-563	382-4500

Lead Office: ☐ OERR ☒ OSW ☐ OUST ☐ OWPE ☐ AA-OSWER

Approved for Review

Signature of Office Director: Joan Warren for Marcia Williams

Date: 12/27/85

Title

RD&D Permit for a Sludge Drying Process in a Wastewater System

Summary of Directive

Sludge drying units at facilities with wastewater treatment units do not need a RCRA permit.

Type of Directive *(Manual, Policy Directive, Announcement, etc.)*

Policy memo

Status: ☐ Draft ☐ Final ☐ New ☐ Revision

Does this Directive Supersede Previous Directive(s)? ☐ Yes ☒ No Does It Supplement Previous Directive(s)? ☐ Yes ☐ No

If "Yes" to Either Question, What Directive *(number, title)*

-0-

Review Plan

☐ AA-OSWER ☐ OERR ☐ OSW ☐ OUST ☐ OWPE ☐ Regions ☐ OECM ☐ OGC ☐ OPPE ☐ Other *(Specify)*

Request Meets OSWER Directives System Format

Signature of Lead Office Directives Officer: Joan Warren

Date: 12/27/85

Signature of OSWER Directives Officer

Date

SCOEPA00054520

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

(17)

OFFICE OF SOLID WASTE AND EMERGENCY RESPONSE

OSWER Directive # 9503.51-1A(85)

MEMORANDUM

SUBJECT: RD&D Permit for a Sludge Drying Process in a Wastewater System

FROM: Marcia E. Williams, Director
Office of Solid Waste (WH-562)

TO: Allyn M. Davis, Director
Hazardous Waste Management Division (6H)
Region VI

In your letter of November 15, 1985, you requested written confirmation that the use of a sludge drying unit, manufactured by Water Management, Inc., at facilities with a wastewater treatment unit, would not jeopardize their exemption from RCRA permitting. The sludge dryer is intended to further reduce the volume of sludge requiring disposal.

If the sludge drying unit is a tank, as stated in your letter, then persons who are currently exempt from RCRA permit requirements under 40 CFR §270.1(c)(2)(v) because they have a wastewater treatment unit, will continue to be exempt from RCRA permitting if they use this sludge dryer. The Agency has clarified the definition of "tank", for the purposes of the wastewater treatment unit definition in §260.10, to cover unit operations which are not obviously tanks such as presses, filters, sumps, and many other types of processing equipment. (See attached memorandum dated July 31, 1981 from John Lehman to Richard Boynton, "Suspension of Regulations for Wastewater Treatment Units.")

I understand that the intent of the sludge dryer is to assist metal finishing industries, who have wastewater treatment units, to meet the waste minimization requirements of the new RCRA §3002(b). You should advise Water Management, Inc. that although their potential clients will continue to be exempt from RCRA permit requirements, their clients must comply with the RCRA manifest requirements of 40 CFR Part 262 for generators. Also, they must comply with 40 CFR Parts 261-263, as appropriate. The clients will need to sign the RCRA manifest for off-site shipments of the residue resulting from the use of the sludge dryer, including the waste-minimization certification statement on the revised Uniform Hazardous Waste Manifest Form (see 50 FR 28744-46, July 15, 1985).

SCOEPA00054521

(18)

The client must also submit a biennial report to the Regional Administrator which includes a description of the efforts undertaken to reduce the volume and toxicity, as well as a description of the changes in volume and toxicity of the wastewater actually achieved during the year, by comparing it to previous years (§262.41, 50 FR 28746, July 15, 1985).

Since the sludge drying unit is intended for use by persons with wastewater treatment units, and the facilities with these units are exempt from RCRA permitting, it is unclear why Water Management, Inc. wants a research, development, and demonstration permit to test the unit. You should discuss this issue with Water Management, Inc. to determine if you should spend the resources on processing their permit application.

If your staff has any further questions on this matter, please have them contact Nancy Pomerleau at (FTS) 382-4500.

Attachment

cc: Bruce Weddle
Jack Lehman (WH-565)
Irene Horner (WH-565A)
Ken Gray (LE-132S)
Peter Guerrero
Art Glazer
Nancy Pomerleau
Tina Parker (WH-562)
William Rhea, Region 6
Hazardous Waste Division Directors, Regions I-X

No. 1060

(19)

United States Environmental Protection Agency

Office of Solid Waste and Emergency Response

EPA

DIRECTIVE NUMBER: 9503.52-1A

TITLE: Permit-Exempt Status of Sludge Dryers Added to Wastewater Treatment Units

APPROVAL DATE: January 2, 1986

EFFECTIVE DATE:

ORIGINATING OFFICE: Office of Solid Waste

☑ **FINAL**

☐ **DRAFT**

STATUS:

REFERENCE (other documents):

9503.51-1A(85) written to Region VI Dec. 24, 1985

OSWER OSWER OSWER
E DIRECTIVE DIRECTIVE D

SCOEPA00054523

(20)

Washington, DC 20460

EPA OSWER Directive Initiation Request

Directive Number: 9503.52-1A

Originator Information

Name of Contact Person	Mail Code	Telephone Number
Irene Horner	WH-565A	382-2550

Lead Office: ☐ OERR ☐ OSW ☐ OUST ☐ OWPE ☐ AA-OSWER

Approved for Review

Signature of Office Director: Joan Warren for Marcia Williams

Date: 1-7-86

Title

Permit-Exempt Status of Sludge Dryers Added to Wastewater Treatment Units

Summary of Directive

Sludge dryers added to wastewater treatment units exempted from permitting under RCRA are also exempt from permitting even though they have no discharge subject to regulation under 402 or 307(b) of the Clean Water Act.

Type of Directive *(Manual, Policy Directive, Announcement, etc.)*

Regulatory Interpretive Letter

Status: ☐ Draft ☐ New ☒ Final ☐ Revision

Does this Directive Supersede Previous Directive(s)? ☐ Yes ☒ No Does It Supplement Previous Directive(s)? ☒ Yes ☐ No

If "Yes" to Either Question, What Directive *(number, title)*

9503.51-1A(85)
RD&D Permit for a Sludge Drying Process in a Wastewater System

Review Plan

☐ AA-OSWER ☐ OERR ☐ OSW ☐ OUST ☐ OWPE ☐ Regions ☐ OECM ☐ OGC ☐ OPPE ☐ Other *(Specify)*

This Request Meets OSWER Directives System Format

Signature of Lead Office Directives Officer — Date

Signature of OSWER Directives Officer — Date

EPA Form 1315-17 (10-86)

SCOEPA00054524

(21)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

JAN 2 1986

OFFICE OF
SOLID WASTE AND EMERGENCY RESPONSE

C. T. Philipp, P.E.
President
Water Management, Incorporated
2300 Highway 70 East
Hot Springs, Arkansas 71901

Dear Mr. Philipp:

In your letter of December 5, 1985 you requested that the Agency identify the Resource Conservation and Recovery Act (RCRA) status of sludge dryers that are part of a "conventional treatment system" not regulated by RCRA. You questioned whether adding a sludge dryer to a wastewater treatment unit exempted from RCRA permitting will jeopardize the exemption. The RCRA-Superfund Hotline correctly identified sludge drying for you as a treatment process according to the definition of treatment in 40 CFR §260.10. However, when sludge dryers meet the definition of wastewater treatment units, they qualify for the wastewater treatment exemption of §§264.1(g)(6), 265.1(c)(10), and 270.1(c)(2)(v). In your case, adding a sludge dryer to treat sludge generated by a treatment system operating under a wastewater treatment exemption does not subject the treatment system to RCRA permitting.

As you know, sludge dryers must meet the three criteria in the definition of wastewater treatment unit in order to be part of a wastewater treatment exclusion. First, the information you sent shows that your sludge dryer qualifies as a tank as defined in §260.10; that is, it is designed to contain hazardous waste and is constructed primarily of nonearthen materials that provide structural support. Furthermore, the Agency has clarified the definition of tank--for this exemption--to include unit operations such as presses, filters, sumps, and many other types of processing equipment. (See the attached memorandum dated July 31, 1981, from John Lehman to Region I.) In addition, the preamble of the November 17, 1980, proposed rule (45 FR 76077-76078) clarified the definition of a wastewater treatment unit as follows:

> This definition...covers...the sludge digesters, thickeners, dryers and other sludge processing tanks... in which hazardous wastewater treatment sludge is treated; and any...tanks used for the storage of such sludge.

SCOEPA00054525

(22)

Second, the sludge dryer treats or stores a wastewater treatment sludge which is a hazardous waste as defined in §261.3 (i.e., the sludge itself is a listed waste, derived from treatment of a listed waste, or is hazardous on the basis of characteristics identified in §261 Subpart C). This means that the treatment of sludges generated from wastewater treatment units is also exempt from regulation under the RCRA treatment standards.

Tanks (here a sludge dryer) that do not themselves have any discharge subject to regulation under Sections 402 or 307(b) of the Clean Water Act, but that are part of the wastewater treatment system, qualify for the exemption if other tanks in the treatment train have discharges that are subject to these Clean Water Act provisions. So the third condition, being part of a wastewater treatment unit subject to regulation under Section 402 or 307(b) of the Clean Water Act, can be met by sludge dryers in certain circumstances. However, as the November 17, 1980 preamble stated (45 FR 76077), even the proposed regulations...."may not provide adequate environmental protection where treatment of the hazardous wastewater tends to result in the escape of hazardous waste constituents into the atmosphere (e.g., the treatment of highly toxic volatile wastes in open tanks)." Unless the Administrator promulgates regulations covering wastewater treatment units, wastewater treatment tanks that qualify for exemption under current RCRA standards may volatilize their contents and retain the exemption.

Sludge dryers may be used as part of a program to meet the waste minimization requirements of Section 3002(b) of RCRA without requiring permitting if the above conditions are met. Of course, although exempted from permitting requirements in the wastewater treatment units, any hazardous waste sludge that is removed from the tanks is subject to applicable regulations under §§260-266, such as manifesting off site, permitted storage after 90 days, and so on. If you have any additional questions regarding this exemption for wastewater treatment units, please do not hesitate to call Irene Horner at 202-382-7917.

Sincerely yours,

[illegible] W. McGraw

J. Winston Porter
Assistant Administrator

Enclosure

SCOEPA00054526

(23)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

9432.1987(06)

AUG 3 1987

Mr. Dic Olsen, Sales Manager
Fenton Company, Inc.
1608 N. Beckley
Lancaster, Texas 75134

Dear Mr. Olsen:

Thank you for your letter of June 30, 1987, in which you requested information on the regulatory status of sludge dehydration equipment which is part of a wastewater treatment facility.

Your understanding of the requirements contained in 40 CFR 270.1(c)(2)(v) is correct. Sludge dehydration equipment that is part of a wastewater treatment system is excluded from the need to obtain a RCRA permit provided the equipment meets the definition of wastewater treatment unit as defined in 40 CFR 260.10, and actually is used to evaporate water from the sludge.

It is important to note that the exclusion provided by §270.1(c)(2)(v) does not apply to conventional incinerators. Such devices are subject to Subpart O of Parts 264 or 265 even when part of a wastewater system.

I must caution you that various States have requirements that are different from the Federal standards. Under their own authorities, States can establish requirements that are more stringent than the Federal requirements. In this instance, the owner or operator is required to comply with the more restrictive requirements. Thus, I encourage you to contact an appropriate State official to determine what the requirements will be for a specific unit.

SCOEPA00054527

If you have any further questions regarding the Federal requirements, please contact Mary Cunningham of my staff at (202) 382-7935.

Sincerely,

Marcia E. Williams
Director
Office of Solid Waste

cc: Mary Cunningham
Steven Silverman, Esq.

cc: R. Holloway
B. Weddle
S. Rudzinski
R. Dellinger
M. Hale
G. Garland
D. Perla

SCOEPA00054528

(25)

DEC 21 '87

MEMORANDUM

SUBJECT: RCRA Subtitle C Exemption for Wastewater Treatment and Elementary Neutralization Units

FROM: Marcia E. Williams
Director, Office of Solid Waste (WH-562)

TO: William A. Whittington
Director, Office of Water Regulations and Standards
(WH-551)

James R. Elder
Director, Office of Water Enforcement and Permits
(EN-335)

On November 17, 1980, EPA promulgated amendments to Subtitle C of RCRA that suspended the applicability of the hazardous waste regulations to owners and operators of wastewater treatment and elementary neutralization units (45 FR 76074) (see 40 C.F.R. sections 264.1(g)(6) and 265.1(c)(10)). Since then, EPA has been asked to respond to numerous inquiries regarding the intended scope of these exemptions. Because the overwhelming majority of inquiries are with regard to the exemption for wastewater treatment units, this memo will focus on these units. Several attempts have been made to address the ambiguities of this exemption. On more than one occasion, the EPA responses have offered conflicting guidance.

The Office of Solid Waste is again receiving a flurry of inquiries on the scope of this exemption, apparently prompted by the July 14, 1986, promulgation of more stringent revised standards for hazardous waste storage/treatment tank systems (including sumps). Obviously, numerous individuals are hoping to qualify for the wastewater treatment unit exemption as a means of avoiding being covered by the revised tank system standards. Thus, I feel that it is important that we review and clarify the scope of this exemption. The purpose of this memorandum is to obtain your concurrence with our reading of

SCOEPA00054529

the current exemption so that we could send a Policy Directive to the Regions regarding this matter and/or prepare a Federal Register notice of clarification.

In order for the exemption to be applicable to a wastewater treatment unit, these conditions, as listed in the definition of wastewater treatment unit under 40 C.F.R. Section 260.10, must be met:

1) The unit must be part of a wastewater treatment facility which is subject to regulation under either section 402 or 307(b) of the Clean Water Act; and

2) The unit receives and treats or stores an influent wastewater which is a hazardous waste as defined in section 261.3, or generates and accumulates a wastewater treatment sludge which is a hazardous waste as defined in section 261.3, or treats or stores a wastewater treatment sludge which is a hazardous waste as defined in section 261.3; and

3) The unit meets the definition of tank in section 260.10.

Most of the inquiries regarding the wastewater treatment unit exemption are directed towards interpretation of condition 1) above. Thus, our clarification of the intended meaning of the term "wastewater treatment facility" is the primary factor regarding the applicability of the exemption to a specific wastewater treatment unit.

It is our position that in order for a wastewater treatment unit to be covered by the exemption, it must be part of an on-site wastewater treatment facility. In this scenario, any hazardous waste tank system that is used to store or treat the wastewater that will be, or has been, managed at the on-site wastewater treatment facility with an NPDES permit (or one that discharges to a POTW), is exempt from the regulations. Also, the means of conveyance of the waste between storage/treatment units does not affect the applicability of this exemption. Assuming the conditions discussed above are met, no distinction will be drawn whether the wastewater is piped, trucked, or otherwise conveyed to the wastewater treatment facility within the on-site boundaries of the facility generating the wastewater. Likewise, any tank system at a facility with an NPDES permitted wastewater treatment facility (or one that discharges to a POTW) that is used to store/treat wastewater that is brought on-site from another facility, is covered by the exemption.

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However, any tank system that is employed in managing wastewater at a facility prior to its off-site transfer to another location, whether or not the off-site location is an NPDES permitted wastewater treatment facility (or one that discharges to a POTW), is not covered by this exemption.

Another scenario that needs to be clarified is that situation where a facility with an on-site wastewater treatment facility has no discharge, direct or indirect, to surface water. The wastewater treatment unit exemption is intended to cover only systems that 1) produce a treated wastewater effluent which is discharged into surface waters or into a POTW sewer system and, therefore, is subject to the NPDES or pretreatment requirements of the Clean Water Act, or 2) produce no treated wastewater effluent as a direct result of such requirements. This exemption is not intended to apply to wastewater treatment units that are not required to obtain an NPDES permit because they do not discharge a treated effluent (45 FR 76078; November 17, 1980). As a result, we anticipate that some facilities will apply for a zero-discharge NPDES permit in an attempt to qualify for this exemption and thus avoid RCRA regulation.

Please note that the above reading is based on our assumption that all storage/treatment tank systems covered by this exemption will be subject to regulation by NPDES authorities.

If you agree with this general approach, please designate someone to serve as a contact person for the Office of Water's review of our draft policy statement. We have been working with staff from the Office of General Counsel and the Office of Water Enforcement and Permits in developing the rationale to support our preferred reading of the current regulations. We have their tentative concurrence on this approach. I look forward to hearing from you regarding our efforts to clarify the wastewater treatment unit exemption. If you have any questions, please contact me at 382-4627 or have your staff contact Bill Kline or Bob Dellinger of my staff at 382-7917.

cc: Gene Lucero, WH-527
Ron Brand, WH-562A
Bruce Weddle, WH-563

SCOEPA00054531

:DB No. 6468

(78)

9522.1992(01)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

1 6 1992

OFFICE OF
SOLID WASTE AND EMERGENCY RESPONSE

Mr. Thomas W. Cervino, P.E.
Colonial Pipeline Company
Lenox Towers
3390 Peachtree Road, N.E.
Atlanta, GA 30326

Dear Mr. Cervino:

This letter is in response to your August 9, 1991 correspondence requesting a clarification of the conditions under which waste water treatment units qualify for an exemption from RCRA permitting requirements. In your letter you explained that Colonial Pipeline Company has several locations that generate waste waters that are hazardous under the toxicity characteristic, and you asked whether a RCRA permit would be required for a new treatment unit that you are considering.

The primary reason for the waste water treatment exemption is to avoid imposing duplicative requirements pursuant to both a NPDES permit and a RCRA permit for the same unit. As you are aware, in order for a unit to qualify for this exemption contained in 40 CFR §264.1(g)(6), it must:

(1) Be part of a waste water treatment facility that is subject to regulation under either Section 402 or 307(b) of the Clean Water Act;

(2) Receive, treat, or store influent wastewater; or generate, accumulate, treat, or store a wastewater treatment sludge; and,

(3) Meet the definition of tank or tank system in 40 CFR §260.10.

The main question that you raised concerns the first criteria; i.e., which units are considered subject to the Clean Water Act. As you are aware, the Agency provided some discussion of this requirement in 53 FR 34080 (September 2, 1988) which states that:

> "the wastewater treatment unit exemption is intended to cover only tank systems that are part of a wastewater treatment facility that

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SCOEPA00054532

(1) produces a treated wastewater effluent which is discharged into surface waters or into a POTW sewer system and therefore is subject to the NPDES or pretreatment requirements of the Clean Water Act, or (2) produces no treated wastewater effluent as a direct result of such requirements".

It is important to note that it is not necessary that the Clean Water Act permits actually be issued for the units to be eligible for the RCRA exemption; it is sufficient that the facility be subject to the requirements of the Clean Water Act.

Based on a review of the information provided, EPA has determined that any of the treatment systems (including the proposed treatment unit) at the Colonial Pipeline facilities which are currently permitted, were ever permitted, or should have been permitted under NPDES, all meet the first test of the Section 264.1(g)(6) exemption. The key issue is whether the treatment system ever had a discharge to surface water, and thus was ever permitted (or should have been permitted) under NPDES. If there was never a discharge to surface waters, then the exemption criteria are not satisfied. You also mentioned that some of your facilities employ waste water treatment systems which are regulated in accordance with other applicable state laws, rules, and regulations. Without more specific information regarding these state requirements and permits, EPA cannot address whether these facilities would qualify for the exemption. However, as discussed above, the exemption in the federal regulations would only be available if the state requirements stem from the identified sections of the Clean Water Act.

With regard to the question of a "zero discharge" facility, EPA would like to clarify the difference between a facility that produces no treated wastewater as a direct result of Clean Water Act requirements and units that are not required to obtain an NPDES permit because they do not discharge treated effluent. In the first case, the facility would have had a surface water discharge at one time, but has since eliminated the discharge as a result of, or by exceeding, NPDES or pretreatment requirements. Such facility would qualify for the waste water treatment unit exemption under RCRA. In the second case, the facility never had a surface water discharge, and therefore was never subject to NPDES permitting or Clean Water Act requirements (53 FR 34080). The RCRA exemption is not available in these cases. (We should point out that the language you referred to on Page 2 of the May 22, 1984 memo on zero discharge has been further refined and clarified by recent program policies and interpretations.)

There is another management option that my staff has discussed with you on the phone. That approach would be to treat your waste water in tank units pursuant to the generator accumulation exemption of 40 CFR §262.34. This provision allows generators of hazardous wastes to treat or store such wastes in tanks or

SCOEPA00054533

(30)

containers for short periods of time (i.e., 90 days) without obtaining a RCRA permit, provided that all the conditions of §262.34 are met, including compliance with specified tank or container standards in 40 CFR Part 265. In many cases air strippers may be considered tank units under RCRA and might be eligible for this exemption. Of course, as long as the treated waste water meets a hazardous waste listing description or exhibits a hazardous waste characteristic it must continue to be managed as a hazardous waste.

If you have facility-specific questions, please contact individuals in the appropriate EPA Regional Offices. For Region III (Philadelphia), contact Ms. Susan Sciarratia at (215) 597-7259 and for Region IV (Atlanta), contact Ms. Beth Antley at (404) 347-3433. Should you have further questions about this letter, please contact Glenn Strahs of my staff at (202) 260-4782.

Sincerely,

Sylvia K. Lowrance, Director
Office of Solid Waste

cc: Kathy Nam, OGC
EPA RCRA Branch Chiefs, Regions I-X
Barbara Simcoe, ABTSWMO

55-

SCOEPA00054534

Wacker Siltronic Corporation

P.O. Box 83180
Portland, Oregon 97283-0180
Phone: (503) 243-2020
Please call for fax numbers of other departments.
☐ Fax: (503) 241-4000 Fab 1 – Appl. Engineering
☒ Fax: (503) 241-7599 Fab 1 - 2nd Floor
☐ Fax: (503) 241-4474 Fab 1 - North Buildout/SW Engr./I.S.
☐ Fax: (503) 241-4121 Fab 2 – 1st Floor/Engineering
☐ Fax: (503) 241-4120 Fab 2 – 2nd Floor/Operations
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FACSIMILE TRANSMITTAL SHEET

FAX No: (503)229-6945

DATE: May 17. 1999

FROM: Tom McCue

TO: Oregon Department of Environmental Quality

ATTN: Susan Shewczyk

NUMBER OF PAGES (including this page): 11

MESSAGE/SPECIAL INSTRUCTIONS:

Hello Susan,

Here is the regulatory analysis I have used to operate the Chromic Acid treatment system. There are also RCRA Hotlline responces to support this but they are copyrighted, so if you have access that would work better. If not, please allow me to show you other supporting information.

Documentation of RCRA Exclusion of Chromic Acid Treatment System

Summary

Chromic Acid wastewater is treated onsite in a RCRA exempt wastewater treatment system that is listed as a wastewater treatment facility under NPDES permit number 101128. Treatment of the chrome containing wastewater follows typical wastewater treatment methods for metals which include chemical reduction, precipitation, solids settling, decanting and solids drying. Control of the treatment process is provided by waste analysis, standard operating procedures, effluent analysis, and discharge limitations set out in the NPDES permit. Equipment used for the treatment process consists of tank systems and tanks excluded from regulation under RCRA. Secondary containment systems are provided for all equipment used for treatment of RCRA exempt wastewater. Wastewater entering the excluded system are counted as RCRA exempt wastewater and reported annually to the State and dry solids from the treatment process are counted as solid waste and managed as regulated hazardous waste D007.

Pretreatment Process Description

Wacker Siltronic operates a wastewater pretreatment system that treats chromic acid wastewater from an etching process. The chromic acid pretreatment system is a component of the wastewater treatment facilities required to meet National Pollutant Discharge Elimination System (NPDES) waste discharge permit limitations specified in Permit Number 101128 issued by Oregon Department of Environmental Quality. Effluent from the chromic acid pretreatment system is a point source discharge listed as Outfall Number 004 in the NPDES permit. The chromic acid pretreatment outfall discharges to an additional wastewater treatment system for the chemical precipatation of fluoride followed by neutralization and then to Outfall 001 which discharges to the Willamette River. The purpose of the chromic acid pretreatment system is to remove both hexavalent and trivalent chromium from the wastewater before mixing with other process wastewater.

The chromic acid pretreatment consists of the following steps:

1. Collection
2. Chemical Reduction (conversion of Cr+6 to Cr+3)
3. Chemical Precipitation
4. Solids Settling
5. Decant
6. Sludge Dewatering by heat induced evaporative drying

The entire chromic acid pretreatment system is housed inside a separate building and which is provided with a secondary containment system (see drawing). Chromic acid wastewaters are accumulated in the Batch Accumulation Tank, the first tank of the chromic pretreatment system, to a volume of 300 gallons.

The 300 gallon batch of chromic wastewater is transferred to a treatment tank in step 2 and analyzed prior to treatment to determine the amount of Cr+6 present (see analytical

benchsheet). Sodium Bisulfate is added to the treatment tank in step 2 to chemically reduce all available Cr+6 to Cr+3 after which the resulting solution is analyzed a second time.

The second analysis is to determine if the partially treated wastewater will meet the Cr+6 waste discharge limitation specified in Schedule A of the NPDES Permit. If the permit limitation is met, step 3 adds Sodium Hydroxide to the treatment tank to raise the pH to form a Chromium Hydroxide precipitate. Step four of the treatment process allows time for the precipitate to settle to the bottom of the treatment tank by gravity. The supernatant liquid is analyzed a third time to verify that both Cr+6 and Cr+3 are below waste discharge limitations specified in the NPDES permit. If discharge limitations are not met at this point, additional bisulfite can be added (see benchsheet note).

Step 5 of the chromic acid pretreatment system decants the treated wastewater into a third tank, which is discharged, to the Fluoride Treatment System for further treatment. Finally, in step 6 of the pretreatment process the precipitated solids are pumped into four smaller steel tanks or containers (55 gallon drums) that are individually placed into a sludge dryer consisting of an electric drum heater to evaporate the remaining water. Steel tanks are selected for this step to keep for structural integrity during the heating phase. The dry chromium hydroxide sludge is transferred into a single 55 gallon drum, labeled, dated and transferred to a RCRA Hazardous Waste Storage area. Wacker has made a waste determination on the dry chromium hydroxide sludge at the end of the pretreatment process and has characterized the dry sludge as a RCRA Hazardous Waste (D007).

Regulatory Analysis
The following regulatory citations and guidance were used to evaluate the regulatory status of the chromic acid pretreatment system and to determine the management method for all wastewater and sludge contained in the pretreatment system and removed from the pretreatment system.

The Chromic Acid Wastewater is not a Solid Waste
Wastewater from the chromic etch process contains spent acids including chromium trioxide and hydrofluoric acid. Based on the following citations from the definition of solid waste the treated wastewater from the chromic acid pretreatment system is not a solid waste and therefore, excluded from regulation as a hazardous waste if it is an industrial wastewater discharge that is a point source discharge. The chromic acid treatment systems is identified in the National Pollutant Discharge Elimination System (NPDES) Waste Discharge Permit as outfall 004 and is a point source. Waste limitations are included in the NPDES permit Schedule A and the treatment systems on site are operated in compliance with these limits.

§261.2 Definition of solid waste.
(a)(1) A *solid waste* is any discarded material that is not excluded by §261.4(a)

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180
Phone (503) 243-2020
TDD (503) 241-7519

§261.4 Exclusions.

(a) *Materials which are not solid wastes.* The following materials are not solid wastes for the purpose of this part:

(2) Industrial wastewater discharges that are point source discharges subject to regulation under section 402 of the Clean Water Act, as amended.
[*Comment:* This exclusion applies only to the actual point source discharge. It does not exclude industrial wastewaters while they are being collected, stored or treated before discharge, nor does it exclude sludges that are generated by industrial wastewater treatment.]

§260.10 Definitions

Point source means any discernible, confined, and discrete conveyance, including, but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture.

Since the exclusion applies only to the point source discharge, wastewater collected and treated before discharge is counted as hazardous wastewater (RCRA Exempt Wastewater under Oregon definitions) and is reported annually in the Hazardous Waste Activity Report submitted to the Oregon Department of Environmental Quality.

Sludge that is generated from the wastewater treatment system is characterized as a hazardous solid waste, managed, stored and disposed in accordance with 40 CFR 260-270 hazardous waste regulations. All quantities of chromium hydroxide sludge are reported annually in the Hazardous Waste Activity Report.

The Chromic Acid Pretreatment System is a Wastewater Treatment Unit and Not a Hazardous Waste Treatment System

Hazardous Waste Treatment System standards do not apply to the pretreatment system for wastewater containing chromic acid since it is a wastewater treatment unit as described in 40 CFR 264.1 and defined in 40 CFR 260.10 and is therefore exempt from all RCRA treatment requirements. Since the pretreatment system does not treat or dilute other wastes such as D001 or D003 in this system it meets the definitional limitations of a wastewater treatment unit defined in 40 CFR 260.10 and therefore is not subject to 40 CFR 264.17(b).

§264.1 Purpose, scope and applicability.

(g) The requirements of this part do not apply to:

(6) The owner or operator of an elementary neutralization unit or a **wastewater treatment unit as defined in §260.10** of this chapter...

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P.O. Box 83180
Portland, OR 97283-0180
Phone (503) 243-2020
TDD (503) 241-7519

...provided that *if* the owner or operator is diluting hazardous ignitable (D001) wastes (other than the D001 High TOC Subcategory defined in §268.40 of this chapter, Table Treatment Standards for Hazardous Wastes), or reactive (D003) waste, to remove the characteristic before land disposal, the owner/operator must comply with the requirements set out in §264.17(b).

§260.10 Definitions.

Wastewater treatment unit means a device which:

(1) Is part of a wastewater treatment facility that is subject to regulation under either section 402 or 307(b) of the Clean Water Act; and

(2) Receives and treats or stores an influent wastewater that is a hazardous waste as defined in §261.3 of this chapter, or that generates and accumulates a wastewater treatment sludge that is a hazardous waste as defined in §261.3 of this chapter, or treats or stores a wastewater treatment sludge which is a hazardous waste as defined in §261.3 of this Chapter; and

(3) Meets the definition of tank or tank system in §260.10 of this chapter.

Description of the Wastewater Treatment Unit

The wastewater treatment unit (WWTU) is:

(1) Part of a wastewater treatment facility that is subject to regulation under either section 402 or 307(b) of the Clean Water Act and is listed as a defined outfall with sample location and waste limitations in schedule A of the NPDES Permit Number 101128.
(2) Receives and treats or stores an influent wastewater that otherwise would be a characteristic hazardous waste as defined in §261.3 and is hazardous as a D002 and D007 waste. The WWTU generates and accumulates a wastewater treatment sludge that otherwise would a hazardous waste as defined in §261.3. The WWTU treats or stores a wastewater treatment sludge which is a hazardous waste as defined in §261.3.
(3) Contains both a tank system and tanks defined in §260.10.

The tank system includes the batch accumulation tank, treatment tank, and the treated water discharge tank. These tanks are connected together by ancillary equipment including piping, fittings, valves and pumps and are used to control the flow of hazardous wastewater.

The tanks are 55 gallon containers used as stationary devices within the WWTU, designed to contain an accumulation of hazardous waste and are constructed of steel which provides structural support. Secondly, the tanks meet the definition of container and therefore supports the point source exclusion in §261.4(2).

The entire Chromic Acid WWTU is defined by a containment building and provided with secondary containment to prevent any release to the environment. Although this is not required for CWA WWTUs secondary containment is provided as a best management

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180
Phone (503) 243-2020
TDD (503) 241-7519

practice. Finally, the WWTU is included in the site Contingency Plan and training for incidents which involve the WWTU are included in Emergency Response Team training.

§260.10 Definitions

Tank means a stationary device, designed to contain an accumulation of hazardous waste which is constructed primarily of non-earthen materials (e.g., wood, concrete, steel, plastic) which provide structural support.

Tank system means a hazardous waste storage or treatment tank and its associated ancillary equipment and containment system.

Ancillary equipment means any device including, but not limited to, such devices as piping, fittings, flanges, valves, and pumps, that is used to distribute, meter, or control the flow of hazardous waste from its point of generation to a storage or treatment tank(s), between hazardous waste storage and treatment tanks to a point of disposal onsite, or to a point of shipment for disposal off-site.

Point source means any discernible, confined, and discrete conveyance, including, but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture.

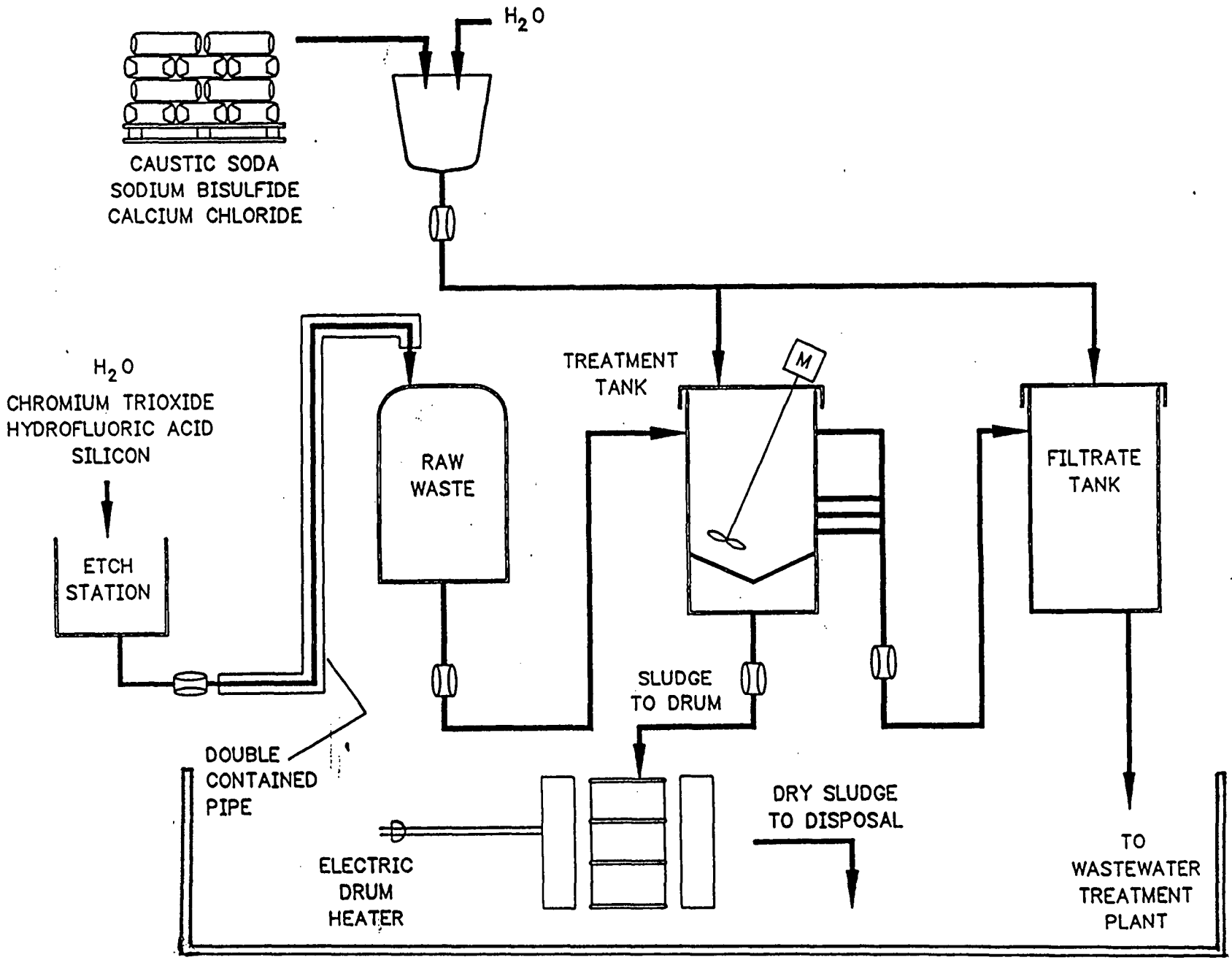
Container means any portable device in which a material is stored, transported, treated, disposed of, or otherwise handled.

Containment building means a hazardous waste management unit that is used to store or treat hazardous waste under the provisions of subpart DD of parts 264 or 265 of this chapter.

Contingency plan means a document setting out an organized, planned, and coordinated course of action to be followed in case of a fire, explosion, or release of hazardous waste or hazardous waste constituents which could threaten human health or the environment.

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180
Phone (503) 243-2020
TDD (503) 241-7519

CHROMIC TREATMENT PROCESS WACKER SILTRONIC CORP.



SCOEPA0005454l

BENCHSHEET

CHROMIC WASTE TREATMENT

Date: 4-12-99 Batch #: ~~300~~ DM Gallons: 300 (1) Analyst: DM

I. Na2S2O5 / Cr+6 / Titration and Calculations:

A. ml of 0.5M Na2S2O5 = 6.4 (Endpoint is disappearance of starch blue color.) (+ 10% = _____)

B. M of CrO3 = (ml of 0.5M Na2S2O5)(0.5M Na2S2O5) / 25 ml sample aliquot

= 0.128

C. g/L CrO3 = (M of CrO3)(100g/mole)(4/3)*
* 4/3 is the formula molar ratio

= 17.06

ST 1 D. lbs CrO3 = (g/L CrO3)(3.8L/gallon)(batch size in gallons)(lb/454g)

= 42.85

E. lbs of Na2S2O5 = (lbs of CrO3)(1.47)

= 62.99

F. lbs, 38% Na2S2O5 = lbs of Na2S2O5 /0.38

= 165.7 (+10% = 182.27) (2)

alysis
TEST 2 F. mg/L Cr+6 = 0.015 (Permit Maximum = 0.05 mg/L)

G. Standard Check on methodology and reagents:
Add 0.10 ml 5.0 mg/L stock standard to 25 ml of RODI water. Run normal Cr+6 on the Hach DR/3000 Procedure C.7: Cr+6 should read 0.02 mg/L:

Standard = 0.021 mg/L

II. NaOH to pH 8.5 - 9.0:

A. Take a second 25ml aliquot of the waste Chrome.

B. Add the same amount of Na2S2O5 as in step IA above plus an additional 10%.

C. ml of 3M NaOH = 39.9 (to pH 8.5 - 9.0) (Add 3M NaOH to the beaker until the green Cr+3 solution turns turbid. Then put the pH electrodes in) (Actual pH = 8.66)

(Actual NaOH N = 2.69 N)

D. M of HF = $\frac{\text{(ml of 3M NaOH)(3M NaOH)}}{\text{25 ml sample aliquot}}$

= ~~109.05~~ 4.29

E. g/L HF = (M of HF)(20g/mole)

= 85.86

F. lbs of HF = (g/L HF)(3.8L/gallon)(batch size in gallons)(lb/454g)

= 215.6

G. lbs of NaOH = (lbs of HF)(2)

= 431.22

ULTRATE

H. lbs of 50% NaOH = (lbs of NaOH) / 0.5

= 862.43

III. Laboratory Analyses After NaOH is Added To Reaction Tank:

A. Laboratory aliquot: Clear: (Y) N Colorless: (Y) N

B. mg/L Cr+6 = 0.036 (Permit Maximum = 0.05mg/L)

C. mg/L Cr Total = 0.074 (Permit Maximum = 1.0mg/L)

IV. Concentration/Loading at the Combined Effluent (for NPDES Permit Reporting):

A. Filtrate Volume: _____ Gallons

B. Date Filtrate Dumped To CAD: _____

C. CE Flow, Gallons, on Day Filtrate Dumped: _____ gallons

D. mg Cr+6 (in Filtrate) = (Filtrate Volume)(3.8L/gallon) (mg/L Cr+6 in Filtrate from III. A.)

= (_____) (3.8) (_____)

= _____ mg Cr+6

E. mg/L Cr+6 (at CE) = (mg Cr+6)/(CE Flow, gallons, on day Filtrate Dumped)/(3.8L/gallon)

= (_____) / (_____) / (3.8)

= _____ mg/L Cr+6

Comments: (1) Batch consists of 130 gal chromic waste and 170 gal water

(2) forgot to calculate @ 13% instead of 10% addition ops added 2 lbs more of dry Bisulfite. changing bench sheet to reflect this

TJR 7 Aug 1987
DEM 21 Apr 1998 Revised

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adding 2 more lbs of dry Bisulfite due to high Cr^{+6} results.

CHROMIC WASTE, CHROME SHED
(from Acid Etch)

130 CR6+ > 300
170 H2O

1. Batch Date: 4/12/99 Batch Size: 300 gallons

2. Laboratory Analyses Results:

   a. Add:

      1) Sodium Metabisulfite: 182 lbs

      b. Time/Date/Initials: 1010 / 4/12/99 / Dm

3. Added Sodium Metabisulfite 182 lbs by SB (Operator)

4. Reaction Tank Hexavalent Chromium Check;
   (Permit Max. at CE = 0.05 mg/L) Chrome +6 #'s high - please add 2 more lbs of DRY metabisulfite Dm 4/13/99 0820 DONE CHB

   a. 0.015 mg/L by

   b. Time/Date/Initials: 1345 / 4/13/99 / Dm

5. Laboratory Analyses Results:

   a. Add:

      1) Sodium Hydroxide: 862 lbs

      b. Time/Date/Initials: 1345 / 4/13/99 / Dm

6. Added Sodium Hydroxide 650 lbs by THB (Operator)

7. Filtrate Total/Hexavalent Chromium Check:
   (Tot Cr Max at CE = 1.0mg/L)

   a. Total Cr: 0.074 mg/L

   b. Hexavalent Cr: 0.036 mg/L

   c. Time/Date/Initials: 1430 / 4/14/99 / Dm

8. Filtrate Volume in Filtrate Tank: 365 Gallons

9. Filtrate Dumped To CAD (required for NPDES Permit):

   Date/Initials (Operator): 4/15/99 / JWS/99

TJR 09 May 88
DEM 29 Mar 99 Revised

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		LISTED WASTES				CHARACTERISTIC WASTES						
Waste Stream	Process Generating Waste	Is this waste excluded as a RCRA solid or hazardous waste?[2]	Is this a listed waste from a Non-specific source?[3]	Is this a listed waste from a specific source?[4]	Is this a discarded commercial chemical product...?[5]	Is this an Ignitable waste?[6]	Is this a Corrosive waste?[7]	Is this a Reactive waste?[8]	Is this a Toxic waste?[9]	Hazardous?	Waste Code(s)	Knowledge or Analysis?10
Mercury - Elemental	From EPI measurement equipment.	Yes, >99% pure								If greater than 99% pure, mercury remains a "material", not a waste.	NA	Knowledge
Antimony Dust		No	No	No	No	No	No	No	No	No	None	Both
Medical Waste[11]	Nurse											Knowledge
Glycol	Slicing	Yes, discharged to POTW								No	NA	Knowledge
Rags with IPA	Cleaning	No	No	No	No	No	No	No	No	No	NA	Both
Lab Pack	Miscellaneous	(Each Lab Pack is considered individually)	(Each Lab Pack is considered individually)	(Each Lab Pack is considered individually)	(Each Lab Pack is considered individually)	(Each Lab Pack is considered individually)	(Each Lab Pack is considered individually)	(Each Lab Pack is considered individually)	(Each Lab Pack is considered individually)	(Each Lab Pack is considered individually)	(Each Lab Pack is considered individually)	Both
Recyclable / Returnable / Scrap Metal Drums	Process	Yes, RCRA defined "empty" container								No	NA	Knowledge
Recyclable / Returnable Plastic Drums	Process	Yes, RCRA defined "empty" container								No	NA	Knowledge
Safety Kleen "Solvent"	Cleaning	No	No	No	No	No	No	No	No	No	None	Both
Solid Waste	Process	Yes								No	NA	Knowledge
Used Oil		Yes, used oil not mixed with hazardous waste that is sent for energy recovery or recycling								No	None	Both
Waste Water to POTW	Production	Yes, discharged to POTW								No	NA	Both
Waste Water to Willamette River	Production	Yes, discharged to Willamette River								No	NA	Both
Silicon carbide and silicon filter cake (thru Western Filtration)	Slicing	No	No	No	No	No	No	No	No	No - Sludge	None	Both
Silicon Solids (North Sump Sludge)	Slicing, wafer shaping and grinding.	No	No	No	No	No	No	No	No	No - Sludge	None	Both
WWTP filter press cake / sludge. CAFl2 sludge	WWTP	No	No	No	No	No	No	No	No	No - Sludge	None	Both
Storm Drain Cleanout	Cleaning	No	No	No	No	No	No	No	No	No-Sludge	None	Both
Aluminum Cans		Yes								Recycled[1]	NA	Knowledge
Cardboard		Yes								Recycled[1]	NA	Knowledge
Circuit Boards		Yes								Recycled[1]	NA	Knowledge
Glass Bottles		Yes								Recycled[1]	NA	Knowledge
Mixed Metals		Yes								Recycled[1]	NA	Knowledge
Nitrile Gloves		Yes								Recycled[1]	NA	Knowledge
Office Paper		Yes								Recycled[1]	NA	Knowledge
Plastic Bags		Yes								Recycled[1]	NA	Knowledge
Plastic Bottles		Yes								Recycled[1]	NA	Knowledge
Scrap Aluminum		Yes								Recycled[1]	NA	Knowledge
Scrap Graphite		Yes								Recycled[1]	NA	Knowledge

		LISTED WASTES			CHARACTERISTIC WASTES							
Waste Stream	Process Generating Waste	Is this waste excluded as a RCRA solid or hazardous waste?[2]	Is this a listed waste from a Non-specific source?[3]	Is this a listed waste from a specific source?[4]	Is this a discarded commercial chemical product...?[5]	Is this an Ignitable waste?[6]	Is this a Corrosive waste?[7]	Is this a Reactive waste?[8]	Is this a Toxic waste?[9]	Hazardous?	Waste Code(s)	Knowledge or Analysis?[10]
Scrap Poly Rods		Yes								Recycled[1]	NA	Knowledge
Three Ring Binders		Yes								Recycled[1]	NA	Knowledge
Tin Cans		Yes								Recycled[1]	NA	Knowledge
Toner Cartridges		Yes								Recycled[1]	NA	Knowledge
Wood		Yes								Recycled[1]	NA	Knowledge
Batteries - Alkaline	Spent Batteries	Yes, batteries destined for off-site recycling.								Universal Waste	NA	Knowledge
Batteries - Lead Acid	Spent Batteries	Yes, batteries destined for off-site recycling.								Universal Waste	NA	Knowledge
Batteries - NiCad	Spent Batteries	Yes, batteries destined for off-site recycling.								Universal Waste	NA	Knowledge
Mercury Containing, fluorescent light tubes	Maintenance	Yes, sent off-site for recycling								Universal Waste	NA	Knowledge
Alcohol mixture	IPA drum bottoms, wax waste, spent cleaning and off-spec material	No	No	No	No	Yes	No	No	No	Yes	D001	Both
Chrome Debris	Wipes, clean up, etc.	No	No	No	No	No	No	No	Yes	Yes	D007	Both
Chrome Sludge	WW treatment. Quality etching of wafers and ingots.	No	No	No	No	No	No	No	Yes	Yes	D007	Both
Mercury and DI Water	Cleaning	No	No	No	No	No	No	No	Yes	Yes	D009	Both
Mercury Contaminated D	From EPI measurement equipment	No	No	No	No	No	No	No	Yes	Yes	D009	Both
Partially full spray cans	Aerosol containers with paint, cleaners, adhesives, etc.	No	No	No	No	Yes	No	No	No	Yes	D001	Both
Wax from Enya	Polishing. Waste rags, wipes, debris and unused product (in plastic bottles).	No	Yes	No	No	Yes	No	No	Yes	Yes	D001 F005	Both

1. See "Recycling Locations and Instructions" for further information
2. Per 40 CFR 261.2, 261.3, 261.4 and 261.6. If "yes", then not a hazardous waste.
3. Per 40 CFR 261.31 Non-specific sources. F codes
4. Per 40 CFR 261.32 Specific Sources. K codes
5. Per 40 CFR 261.33 Discarded commercial chemical products, container residues and spill residues thereof. U and P codes
6. Per 40 CFR 261.21 Ignitability Hazardous waste code D001, if flashpoint is less than 140 degrees Fahrenheit.
7. Per 40 CFR 261.22 Corrosively Hazardous waste code D002, if pH is less than or equal to 2.0 or greater than or equal to 12.5
8. Per 40 CFR 261.23 Reactivity Hazardous waste code D003
9. Per 40 CFR 261.24 Toxicity Characteristic Hazardous waste codes D004 through D043
10. How was it determined that this was or was not a hazardous waste? Knowledge of process or analysis?
11. As defined in 40 CFR 259.30

Wacker Siltronic Corporation

P.O. Box 83180
Portland, Oregon 97283-0180
Phone: (503) 243-2020
Please call for fax numbers of other departments.
☐ Fax: (503) 241-4000 Fab 1 – Appl. Engineering
☒ Fax: (503) 241-7599 Fab 1 - 2nd Floor
☐ Fax: (503) 241-4474 Fab 1 - North Buildout/SW Engr./I.S.
☐ Fax: (503) 241-4121 Fab 2 – 1st Floor/Engineering
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FACSIMILE TRANSMITTAL SHEET

FAX No: (503) 229-6945

DATE: May 20, 1999

FROM: Tom McCue

TO: Oregon Department of Environmental Quality

ATTN: Susan Shewczyk

NUMBER OF PAGES (including this page): 4

MESSAGE/SPECIAL INSTRUCTIONS:

Hello Susan,

A hard copy will be sent to your in the mail. I thought you would want an early copy by FAX.

Tom McCue

May 19, 1999

WACKER
Wacker Siltronic Corporation

Ms. Susan Shewczyk
Hazardous Waste Inspector
Northwest Region
Oregon Department of Environmental Quality
2020 SW Fourth Ave., Suite 400
Portland, OR 97201-4987

RE: Item 7, Hazardous Waste Inspection Information Request

Dear Ms. Shewczyk,

In your letter dated May 14, 1999 you requested documentation from EPA in reference to the chrome treatment unit or the evaporation unit. This is in addition to the regulatory analysis submitted to you May 17, 1999.

No additional information about the regulatory status of the chromic acid treatment unit or evaporation unit was provided by EPA during the Chemical Safety Audit conducted in 1993. The review EPA conducted of the chrome treatment system was to determine if it had a potential for release to the environment. The details of the audit are explained below. Additional information in support of the regulatory analysis from the Office of Solid Waste and Emergency Response RCRA Hotline is also cited below.

Chemical Safety Audit
The Environmental Protection Agency, Region X conducted a Chemical Safety Audit at Wacker Siltronic Corporation, Portland Oregon January 25, 26, 27, 28 ,29, 1993. The Chemical Safety Audit is a component of the Chemical Accident Prevention program designed to identify the causes of accidental releases of hazardous substances and the means to prevent releases from occurring. The audit included under authority of CERCLA Section 104 (b) and (e) and SARA Title III and specifically addressed:

- Process Characteristics,
- Hazard evaluation and release detection techniques,
- Training of operators and emergency response personnel,
- Management structure (Corporate and Facility),
- Preventive maintenance and inspection programs, and
- Community notification mechanisms and techniques.

The EPA audit team required that we identify the three most hazardous operations conducted on-site and submit full details of these operations prior to the start of the audit. The audit team was free to access all areas of the plant-site. The systems identified as the most hazardous operations by Wacker Siltronic Corporation were:

- Acid Etching Activities

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- Bulk Acid Delivery and Storage
- Epitaxial Deposition

Acid etching activities include:

- Nitric Acid/ Hydrofluoric Acid Etching - 500 gallons per day spent acid contained in 150,000 gallons rinse water per day, and
- Chromium Trioxide/ Potassium Dichromate/ Hydrofluoric Acid – Average 10 gallons per day including rinse water.

Bulk Acid Delivery and Storage included:

- Two 2,900 gallon Bulk 70% Nitric Acid tanks
- Two 3,000 gallon Bulk Hydrofluoric Acid tanks
- Acid delivery and transfer systems
- Leak Detection systems

Epitaxial Operations included:

- Trichlorosilane and Liquid Silane Storage and Delivery systems
- 18,000 gallon Hydrogen tank
- HCl cylinder
- Toxic Dopant gases

The area of concern for this response is the chromic acid etch operation and the chromic acid treatment system. The EPA Audit team reviewed all acid etch activities including chromic etch and determined that the volume of chromic acid waste and the method of treating, containment and management did not represent a significant hazard as it related to the purpose of this audit. No findings were given or deficiencies identified with the containment, storage, treatment process, transfer operations, drying operation, or storage of dried chromium hydroxide sludge. No regulatory deficiencies were noted.

The EPA audit was not an enforcement audit, however, if a regulatory issue or question was identified at any point in the audit, it was brought to our attention as a finding, recommendation, or concern. Mr. Patrick Lowery, head of the audit team, was also the head of enforcement for CERCLA, Title III. Any regulatory violation uncovered during the audit would identify. Any serious violation would stop the audit and be referred to an enforcement team for follow-up action. No regulatory violations were found during the five-day audit.

OSWER RCRA Hotline

The RCRA Hotline operated under the Office of Solid Waste and Emergency Response has commented several times on the application of the Wastewater Treatment Unit Exemption under various situations. This often is a primary guidance tool used by RCRA generators to help us understand EPA's intent in the application of the regulations.

SCOEPA00054550

Most the RCRA regulations related to WWTU exemptions are from the early 1980's so the preamble language is not generally available. Online sources used primarily today do not often go back that far, so we often rely on local agencies and inspector opinions for the application of regulations where there is not clear guidance readily available. One comment which seems to be on-point about the issue of WWTU exemptions is quoted below. It is taken from the October 1988 monthly summary of RCRA hotline responses found at http://www.epa.gov/epaoswer/hotines/indices/index_5.txt.

September 2, 1988 (53 FR 34079), EPA published a clarification concerning the scope of the wastewater treatment unit exclusion.

> EPA stated that the wastewater treatment unit exemption applies to "any tank system that manages hazardous wastewater and is dedication for use with an onsite wastewater treatment facility" (53 FR 34080). The removal of wastewater treatment sludges or tank bottoms from tanks for offsite disposal should not disqualify these tanks from the exemption, provided that this occurs as part of normal wastewater treatment activities. The removal and offsite disposal of treatment sludges and tank bottoms are not necessarily indications that the tanks I question are being used in a manner other than for onsite wastewater treatment; on the contrary, the generation of tank bottoms and filter cakes is a common process in wastewater treatment operations.

This clarification helped us resolve the issues around the design and operation of the chromic acid treatment system and the evaporation units. All equipment is dedicated to the chromic acid treatment containment building. A new barrel is used for the final accumulation of the dried sludge. This barrel is labeled, closed and moved to a hazardous waste storage area prior to shipment off-site.

I hope this helps to clarify how we operate the chromic acid treatment unit and what regulations were applied and the types of guidance we have received from DEQ inspectors, EPA audit teams, and RCRA hotline guidance. Should you have further questions please contact myself at 219-7532 or Petra Hoy at 219-4469.

Sincerely,

Tom McCue

SCOEPA00054551

Oregon

October 11, 1996

MICHAEL SUTTON M/S-30
ENVIRONMENTAL ENGINEER
WACKER SILTRONIC
CORPORATION
PO BOX 83180
PORTLAND OR 97283 0180

DEPARTMENT OF
ENVIRONMENTAL
QUALITY

NORTHWEST REGION

RE: WQ-Multnomah County
Wacker Siltronic Corp.
Facility ID 93450
Portland OR

Dear Mr. Sutton:

The Department has reviewed the materials which you provided in your 11 September 1996 letter regarding changes in the wastewater discharge at your Portland facility relating to wafer cutting operations. We concur with your analysis that none of the scenarios discussed, including your worst case scenario, would require any changes to your current NPDES permit No. 101128.

We have discussed these discharge scenarios with the City of Portland's Bureau of Environmental Services (BES). BES prefers that such discharges go to the sanitary sewer whenever practicable and encourages Wacker to recycle as much as possible.

Your 11 September 1996 letter and attachments are enclosed. The Department has not retained a copy of these materials. If you have any questions, please call Elliot Zais at 229-5292.

Sincerely,

James R Sheets

for Neil J. Mullane, Manager
Water Quality Source Control

EJZ:ejz
Cc: Renato Dulay, DEQ HQ
Kelly Hendryx, Portland BES
Enclosures: 1

John A. Kitzhaber
Governor

2020 SW Fourth Avenue
Suite 400
Portland, OR 97201-4987
(503) 229-5263 Voice
TTY (503) 229-5471
DEQ-1

SCOEPA00054552

August 6, 1990

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180
7200 N.W. Front Ave.
Portland, OR 97210-3676
Phone (503) 243-2020
FAX 503-226-0052
TWX 910-464-4777
TLX 4970339

Chem-Security Systems , Inc.
Star Route
Arlington, Oregon 97812

ATTN: Becky Roper

RE: Generator's Waste Material Profile Sheet No. J82851

Dear Ms. Roper:

This letter and the attached profile sheet accompany a sample of waste that was generated at our facility. I have spoke to both Joyce Johnson and Toni Santos concerning disposal of this material.

At this time, we have 17 drums of this waste which was generated from a drilling operation conducted on our site in June. Several of the drums contain protective clothing and visqeen used during the operation. Most of the drums contain drilling mud. One or two of the drums will contain a mixture of both. The sample I have sent you is of the drill mud only. This sample is a composite of drilling muds from the 17 drums. In most cases, the mud is very wet, and free liquid can be found in the top of at least two or three drums. Since the material was somewhat unknown to us, we conducted a number of analysis on the waste to determine its makeup and characteristics. These analysis results are attached.

Our 90 day storage limit expires September 15, so I would appreciate any help you can give me to expedite this disposal request. If you have any questions, please call me at 243-2020, ext. 132.

Very truly yours,

WACKER SILTRONIC CORPORATION

Richard G. Gariepy
Environmental Engineer

Enclosures

cc: Jerry Schaeffer
Steve Beiswenger
Toni Santos - Chemical Waste Management, Kent, WA

Chemical Waste Management, Inc.

GENERATOR'S WASTE MATERIAL PROFILE SHEET

PLEASE PRINT IN INK OR TYPE (Elite, 12-pitch).

J82851

PDX J 82851

Waste Profile Sheet Code

CWM Location of Original: _____ (SHADED AREAS FOR CWM USE ONLY) CWM Sales Rep. #: 042

A. GENERAL INFORMATION

1. Generator Name: Wacker Siltronic Corporation 2. Generator USEPA ID: ORD096253737
3. Facility Address: 7200 N.W. Front Ave. 4. Generator State ID: _____
Portland, Oregon 97208
5. Zip Code: _____
6. Technical Contact: Richard G. Gariepy 7. Title: Environmental Eng. 8. Phone: (503) 243-2020 x132

B. MAIL CHEMICAL WASTE MANAGEMENT, INC. INVOICES TO

1. ☐ Generating Facility (A, above), or
2. Company Name: Wacker Siltronic Corporation 3. Phone: (503) 243-2020 x132
4. Address: P.O. Box 83180
Portland, Oregon 97283-0180
5. Zip Code: _____

C.

1. NAME OF WASTE: Drilling Mud
2. PROCESS GENERATING WASTE: Soil core testing
3. Is this waste a Dioxin listed waste as defined in 40 CFR 261.31 (e.g., F020, F021, F022, F023, F026, F027, or F028)?
☐ Yes ☒ No If yes, **DO NOT COMPLETE** this form. Contact your Chemical Waste Management, Inc. sales representative for assistance.

D. PHYSICAL CHARACTERISTICS OF WASTE

1. Color:	2. Does the waste have a strong incidental odor?	3. Physical State @ 70°F:	4. Layers:	5. Specific Gravity:	6. Free Liquids:
Sandy to ~~Black~~	☐ No ☒ Yes If known, describe: Coal Tar	☐ Solid ☐ Semi-Solid ☐ Liquid ☐ Powder Other: MUD	☐ Multilayered ☒ Bi-layered ☒ Single Phased	Range: 1.2 - 1.4	☒ Yes ☐ No Volume: 0 - 5 %

7. pH: ☐ ≤ 2 ☐ > 2-4 ☐ 4-7 ☐ 7 ☐ 7-10 ☐ 10- < 12.5 ☐ ≥ 12.5 ☐ Range _____ - _____ ☐ NA

8. Liquid Flash Point: ☐ < 73°F ☐ 73-99°F ☐ 100-139°F ☐ 140-199°F ☒ ≥ 200°F ☐ None ☒ Closed Cup ☐ Open Cup

E. CHEMICAL COMPOSITION

1.	RANGE MIN. - MAX.	
Sand/Soil contaminated with tar-like	-	%
substance. See attached analysis	-	%
results. Most of the drums contain drilling mud		%
with some protective clothing in them.	-	%
	-	%
Visqueen, protective clothing: 2-3 drums contain		%
50%-100% of this material. Most of the other		%
drums would have 0-5% of this material.	-	%
	-	%
NOTE: The sample only contains drilling mud	-	%
	-	%
	-	%

Please note: The chemical composition total in the maximum column must be greater than or equal to 100%. **TOTAL:** 100 %

2. Indicate if this waste contains any of the following:

	NONE	or LESS THAN	or ACTUAL
PCB's	☐	☒ < 50 ppm	_____ ppm
Cyanides	☐	☒ < 50 ppm	_____ ppm
Phenolics	☐	☒ < 50 ppm	_____ ppm
Sulfides	☐	☒ < 50 ppm	_____ ppm

F. METALS

Indicate if this waste contains any of the following:
1. ☒ EP TOX/TCLP or 2. ☐ Total

METAL	LESS THAN	or	ACTUAL (Parts Per Million)
Arsenic	☐ < 5	☐ < 500	0.002
Barium	☐ < 100		0.50
Cadmium	☐ < 1	☐ < 100	0.02
Chromium	☐ < 5		0.01
Lead	☐ < 5	☐ < 500	ND
Mercury	☐ < 0.2	☐ < 20	ND
Selenium	☐ < 1	☐ < 100	ND
Silver	☐ < 5		ND
Chromium-Hex	☐ < 5	☐ < 500	
Copper	☐ < 5		15 total
Nickel	☐ < 5	☐ < 134	14 total
Thallium	☐ < 5	☐ < 130	14 total
Zinc	☐ < 5	Total	46
See analysis	☐ <		
results	☐ <		
	☐ <		

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SCOEPA00054554

GENERATOR'S WASTE MATERIAL PROFILE SHEET (Continued)

[ ] J 82851
Waste Profile Sheet Code

G. OTHER HAZARDOUS CHARACTERISTICS

1. Is this waste a listed solvent waste as defined by 40 CFR 261.31 (F001, F002, F003, F004, or F005)? ☐ Yes ☒ No
2. Does this waste contain greater than 1000 ppm total halogenated organic compounds? See analysis results. ☐ Yes ☐ No
3. Indicate if this waste is any of the following:

☐ RCRA Reactive ☐ Radioactive
☐ Water Reactive ☐ Etiological
☐ Explosive ☐ Pesticide Manufacturing Waste
☐ Shock Sensitive ☐ Other _____
☐ Pyrophoric ☒ None of the above

H. COMPLETE **ONLY** FOR WASTES INTENDED FOR FUELS or INCINERATION

	LESS THAN	or	ACTUAL
Beryllium	☐ < 5000 ppm		_____ ppm
Potassium	☐ < 5000 ppm		_____ ppm
Sodium	☐ < 5000 ppm		_____ ppm
Total Bromine	☐ < 2 %		_____ %
Total Chlorine	☐ < 35 %		_____ %
Total Fluorine	☐ < 1 %		_____ %
Total Sulfur			_____ %

I. **OPTIONAL** — RECLAMATION, FUELS, OR INCINERATION PARAMETERS Provide if information is available.

Range

1. Heat Value (BTU/lb): _____ - _____ 2. Water: _____ %
3. Viscosity (cps): _____ @ ☐ _____ °F ☐ 100°F ☐ 150°F
4. Ash: _____ % 5. Settleable solids: _____ %
6. Vapor Pressure @ STP (mm/Hg): _____
7. Is this waste a pumpable liquid? ☐ Yes ☐ No
   Type of pump? _____
8. Can this waste be heated to improve flow? ☐ Yes ☐ No
9. Is this waste soluble in water? ☐ Yes ☐ No
10. Particle size: Will the solid portion of this waste pass through a 1/8 inch screen? ☐ Yes ☐ No

J. TRANSPORTATION INFORMATION

1. Is this a DOT Hazardous Material? ☒ Yes ☐ No 2. Anticipated Annual Volume/Units: 17 - 55 gal drums
3. Proper Shipping Name: Hazardous waste, solid, n.o.s.
4. Hazard Class: ORM-E 5. I.D. #: NA9189
6. Additional Description: (D018)
7. Method of Shipment: ☐ Bulk Liquid ☐ Bulk Solid ☒ Drum (Type/Size): 17H / 55 gal Other: _____
8. CERCLA Reportable Quantity (RQ): 10 9. RQ Units (lb/kg): lb (Benzene)
10. USEPA Hazardous Waste? ☒ Yes ☐ No 11. USEPA Hazardous Waste Number(s): D018
12. State Hazardous Waste? ☒ Yes ☐ No 13. State Hazardous Waste Number(s): D018

K. SPECIAL HANDLING INFORMATION Wear gloves, goggles and protective clothing.

☐ Additional Page(s) Attached

L. GENERATOR CERTIFICATION

I hereby certify that all information submitted in this and all attached documents contains true and accurate descriptions of this waste material, and all relevant information regarding known or suspected hazards in the possession of the generator has been disclosed.

1. Richard G. Gariepy
   Signature
2. Environmental Engineer
   Title
3. Wacker Siltronic/Richard G. Gariepy
   Name (Type or Print)
4. 8-3-90
   Date

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SCOEPA00054555

Chemical Waste Management, Inc.

ADDENDUM TO GENERATOR'S WASTE MATERIAL PROFILE SHEET FOR LAND DISPOSAL RESTRICTIONS

CWM Location of Original _____ (shaded area for CWM use only)

A. GENERATOR INFORMATION—INSTRUCTIONS FOR COMPLETING THIS FORM ARE FOUND ON THE OPPOSITE SIDE OF THIS PAGE.

1. Generator Name: Wacker Siltronic Corporation
2. USEPA ID Number: O R D 0 9 6 2 5 3 7 3 7
3. Waste Profile Sheet Code: J 8 2 8 5 1

B. WASTE STREAM INFORMATION

1. Is this a USEPA hazardous waste? ☒ Yes ☐ No
2. If yes, is this waste: ☒ Characteristic ☐ Listed ☐ Both
   a. Is this waste a nonwastewater or a wastewater? Check ONE: ☒ Nonwastewater ☐ Wastewater
   b. Identify ALL Characteristic and Listed USEPA hazardous waste numbers that apply (as defined by 40 CFR 261). For each waste number, identify the subcategory (as applicable, check none, or write in the description from 40 CFR 268.41, 268.42, and 268.43). The following waste numbers have subcategories: D001, D002, D003, D006, D008, D009, F001, F002, F003, F004, F005, F025, K006, K046, K061, K069, K071, K106, and U151.

USEPA HAZARDOUS WASTE NO.	SUBCATEGORY	
	NONE	DESCRIPTION
D018	X	

USEPA HAZARDOUS WASTE NO.	SUBCATEGORY	
	NONE	DESCRIPTION

To list additional USEPA waste number(s), and subcategories, use the supplemental sheet provided (CWM-6000-B). If an additional page (CWM-6000-B) is used, please check here: ☐

3. If the waste is identified as USEPA Waste No. D008, identify the total concentration of lead: _____
4. Is this waste a soil and/or debris? ☐ Yes, Soil; ☐ Yes, Debris; ☒ Yes, Both; ☐ No, Neither

C. GENERATOR CERTIFICATION—I hereby certify that all information submitted in this and all attached documents contains true and accurate descriptions of this waste material and all relevant information regarding known or suspected hazards in the posession of the generator has been disclosed.

1. Richard G. Gariepy
   Signature
2. Environmental Engineer
   Title
3. Wacker Siltronic/Richard G. Gariepy
   Name (Type or Print)
4. 5-3-90
   Date

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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

SCOEPA00054557

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

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:

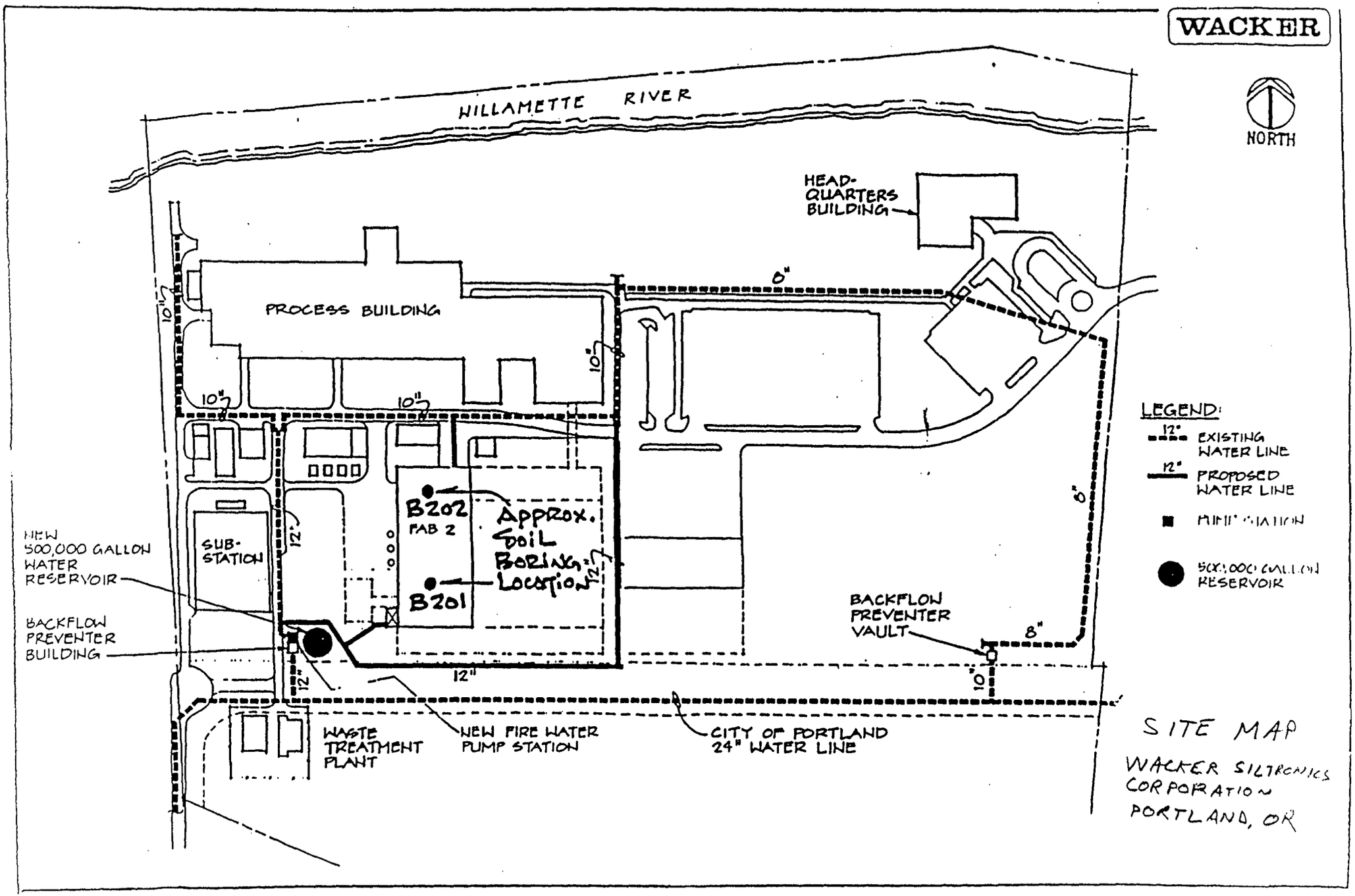
Background

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.

SCOEPA00054560



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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

SCOEPA00054562

- 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.

SCOEPA00054563

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.

SCOEPA00054564

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.

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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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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 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

SCOEPA00054569

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

SCOEPA00054573

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 **Phone:** 503/229-7260
Address:

Route To Hospital: (Refer to Contingency plan.)

9.1 GOVERNMENT AGENCIES INVOLVED IN PROJECT

Federal: NA

State: NA

Local: NA

SCOEPA00054574

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

SCOEPA00054575

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

SCOEPA00054576

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

SCOEPA00054577

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

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

SCOEPA00054580

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.

24. The permittee is prohibited from processing soils which contain materials that define the soils as hazardous in their State of origin.

25. 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".

26. 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.

27. 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.

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

Portland, OR Soil Recycling Facility (9/98)	**TPS TECHNOLOGIES INC.** A ThermoRetec Company SOIL DATA AND CERTIFICATION SHEET	DATE: April 23, 1999

Generator/Property Owner:
Mailing Address: WACKer Siltronic Corporation
PO Box 83180 Portland, OR 97210-3676
Contact: Petra Beissmann
Phone: 503-219-4469
Fax: 503-219-7599

Consultant/Engineering Firm: NA
Address:
Contact:
Phone:
Fax:

Testing Laboratory (include contact person and phone number):
North Creek Analytical - Crystal
503-906-9200

Sampling Procedures and Location (attach additional sheets and map):
Attached Sections of WSC "Excavated Soil Management Guidance"

Site History: (Attach additional sheet if necessary) Type of contamination (gas, diesel, used oil, etc.) Will provide analysis
Past activities at site: History of the site suggests that Bunker C, used oil, leaks from pipeline all contributed to the petroleum contamination. Estimated quantity in tons: Max 600 TONS
How did soil contamination occur? Pipeline leakage + fill activities
Site Address 7200 NW Front Ave. Portland, OR

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 tanks(s).
Attach analysis for the following:
1. Total Petroleum Hydrocarbons ID Test (Method TPH-HCID) (may be omitted if Residential LUST)
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 is present, perform Total Petroleum Hydrocarbons test for fuel oils (EPA Method 418.1 Modified or Method NWTPH-DX)
4. If Method TPH-HCID shows that both gasoline and diesel or heating oils are present, both types of TPH must be performed

☑* I 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 or hydrocarbon product from something other than a leaking underground storage tank.
Attach analysis for the following:
1. If gasoline is present, perform Method TPH-G or EPA Method 8020**
2. If diesel, heating oil or other heavy hydrocarbons are present, perform EPA Method 418.1 Modified or Method NWTPH-DX.
3. Volatile Organic Compounds (EPA Methods 9020 or 9253). If TOX levels are >100 ppm, additional testing using EPA Methods 8010 or 8260 as well as Method 8080, 8081 or 8082 for PCBs shall be utilized to assist in the hazardous waste determination.
4. Total metals concentration for eight (8) RCRA metals***
   a) arsenic c) cadmium e) lead g) selenium
   b) barium d) chromium f) mercury h) silver
5. Additional analytical data as required.

** If elevated benzene levels are detected, an additional TCLP benzene test may be required in an above-ground soil or leak situation.
*** If elevated metal levels are detected, an additional TCLP test may be required.

No soils referenced herein may be delivered until this certificate is received and approved by TPST, and TPST issues manifest(s) and assigns a delivery date. If any soils delivered to TPST are found to be "hazardous waste" pursuant to federal or state regulations, Client shall be solely responsible for their removal. If Client fails to remove such soils, TPST, 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 certify that the soil is not "hazardous" as defined by the U.S. Department of Transportation (DOT), US Environmental Protection Agency (EPA), State of Oregon, or local regulations. I/We further certify that the soils referenced herein contain no free liquids. All required analytical reports are attached.

Generator/Owner Authorized Signatory: Thomas C. McCune Date: 4/23/99
Print Name: Thomas C. McCune Title: Envir. Manager
Engineer/Environmental Firm Authorized Signatory: _____ Date: _____
Print Name: _____ Title: _____

SCOEPA00054589

Portland, OR Soil Recycling Facility (9/98)	**TPS TECHNOLOGIES INC.** A ThermoRetec Company SOIL DATA AND CERTIFICATION SHEET	DATE: April 23, 1999

Generator/Property Owner:
Mailing Address: WACKer Siltronic Corporation
PO Box 83180 Portland, OR 97210-3676
Contact: Petra Beissmann
Phone: 503-219-4469
Fax: 503-219-7599

Consultant/Engineering Firm: NA
Address:
Contact:
Phone:
Fax:

Testing Laboratory (include contact person and phone number):
North Creek Analytical - Crystal
503-906-9200

Sampling Procedures and Location (attach additional sheets and map):
Attached Sections of WSC "Excavated Soil Management Guidance"

Site History: (Attach additional sheet if necessary) Type of contamination (gas, diesel, used oil, etc.) will provide analysis
Past activities at site: history of the site suggests that Bunker C, used oil, leaks from pipeline all contributed to the petroleum contamination Estimated quantity in tons: max 600 TONS
How did soil contamination occur? Pipeline Leakage + fill activities
Site Address 7200 NW Front Ave. Portland, OR

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 tanks(s).
Attach analysis for the following:
1. Total Petroleum Hydrocarbons ID Test (Method TPH-HCID) (may be omitted if Residential LUST)
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 is present, perform Total Petroleum Hydrocarbons test for fuel oils (EPA Method 418.1 Modified or Method NWTPH-DX)
4. If Method TPH-HCID shows that both gasoline and diesel or heating oils are present, both types of TPH must be performed

☑* I 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 or hydrocarbon product from something other than a leaking underground storage tank.
Attach analysis for the following:
1. If gasoline is present, perform Method TPH-G or EPA Method 8020**
2. If diesel, heating oil or other heavy hydrocarbons are present, perform EPA Method 418.1 Modified or Method NWTPH-DX.
3. Volatile Organic Compounds (EPA Methods 9020 or 9253). If TOX levels are >100 ppm, additional testing using EPA Methods 8010 or 8260 as well as Method 8080, 8081 or 8082 for PCBs shall be utilized to assist in the hazardous waste determination.
4. Total metals concentration for eight (8) RCRA metals***
   a) arsenic c) cadmium e) lead g) selenium
   b) barium d) chromium f) mercury h) silver
5. Additional analytical data as required.

** If elevated benzene levels are detected, an additional TCLP benzene test may be required in an above-ground soil or leak situation.
*** If elevated metal levels are detected, an additional TCLP test may be required.

No soils referenced herein may be delivered until this certificate is received and approved by TPST, and TPST issues manifest(s) and assigns a delivery date. If any soils delivered to TPST are found to be "hazardous waste" pursuant to federal or state regulations, Client shall be solely responsible for their removal. If Client fails to remove such soils, TPST, 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 certify that the soil is not "hazardous" as defined by the U.S. Department of Transportation (DOT), US Environmental Protection Agency (EPA), State of Oregon, or local regulations. I/We further certify that the soils referenced herein contain no free liquids. All required analytical reports are attached.

Generator/Owner Authorized Signatory: Thomas C. McCue Date: 4/23/99
Print Name: THOMAS C. McCUE Title: ENVIR. MANAGER
Engineer/Environmental Firm Authorized Signatory: _____ Date: _____
Print Name: _____ Title: _____

SCOEPA00054590

TO: Facilities Laboratory Personnel
Environmental Engineering Personnel

FROM: Corporate Environmental Department

DATE: April 15, 1999

RE: Excavated Soil Management Guidance

This guidance pertains to the management of excavated site soil that has been identified as potentially contaminated per the Soil Excavation Guidance. All persons, who may be involved in the excavation or disturbance of site soil, must follow the Soil Excavation Guidance.

Soil Management

Soil which has been excavated and identified as potentially contaminated by Wacker employees or contractors per the Soil Excavation Guidance must be segregated from other soil and placed in suitably sized containers. Small volumes of soil may be placed in drums. Larger volumes of soil may be placed in plastic lined drop boxes. Drop boxes must remain covered with a tarp or removable lid to meet closure requirements. The following requirements apply to all containers:

- good condition, free of rust and structural defects
- leak proof and infiltration proof
- closed during storage except to add or remove waste
- no free liquids
- placement in an area that will drain and remove precipitation, or otherwise protect from contact with accumulated liquid
- cleaned of all waste and decontaminated prior to reuse or return (except when used to transport waste for disposal)

Containers used to store potentially contaminated soil during excavations shall be labeled with a number to correspond with the sampling procedure and the words "Waste Pending Analysis" 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.*

Waste Characterization

Sampling Procedure

Each container 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 container.

Each container will be numbered consecutively and divided into six grids. 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 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. Spoons can be reused if they are cleaned with acetone and rinsed with RODI water. Samples from the grid system are to be mixed in a stainless steel bowl to achieve a good homogenized sample. 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-Container #
01/01/00
00:00
Sampled by:

Where,

WSC =	Wacker Siltronic Corporation
Container # =	Roll-off box, or other container number (1,2,3...)
0/01/00 =	Date of Sample Collection
00:00 =	Time of Sample Collection
Sampled by =	Person collecting sample

Each representative sample must be packed as tightly as possible into the labeled sample jar, to reduce any headspace. The lid of the jar is to be taped and sealed. The jar is then placed in a Ziploc bag and secured. Each sample will be placed in a metal or plastic cooler, or refrigerator, and cooled to 4 degrees Celsius. Samples will be delivered to the analytical laboratory using chain-of-custody procedures.

Analytical Methods

Analytical Methods and procedures will be verified with the Environmental Engineer prior to any project. Analysis of each sample will be conducted in a phased approach. Phase 1 of characterization will determine if the soil is a hazardous waste. Phase 2 will determine if the soil can be accepted to the approved Landfill. A summary of analytical methods, sample containers, and holding times is shown in Table 1. One 9-ounce glass sample container is sufficient to perform the analysis 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. If the waste meets any of the

because of the historical presence of 2,4-D on adjacent sites. If the waste meets any of the following standards, it must be handled and disposed of as a RCRA hazardous waste in accordance with 40 CFR 268.

TABLE 1 ANALYTICAL SUMMARY – Phase 1

Analysis	Analytical Method (EPA)	Sample Container	Preservative & Turn Around Time	Holding Time	North Creek Analytical Pricing*	Standards
TCLP Benzene	1311/8260 TCLP Volatile Organic Compounds in Soil	9 oz wide mouth jar	None 10 days	14 days	$166 Extraction $94	> 0.5 mg/kg
Total Benzene	8020 BTEX	9 oz wide mouth jar	None 10 days	14 days	$72	10 mg/kg (Treatment Standard)
TCLP 2,4-D	1311/8151 TCLP Herbicides	9 oz wide mouth jar	None 10 days	14 days	$180 (includes Trichlorophenol's) Extraction $79	> 10 mg/kg
TCLP metals (8) Arsenic, barium, cadmium, chromium, lead, selenium, silver and mercury	1311/6020	9 oz wide mouth jar	None 10 days	6 months	$120 Extraction $79	Arsenic >5.0 mg/kg Barium >100 mg/kg Cadmium >1.0 mg/kg Chromium >5.0 mg/kg Lead>5.0 mg/kg Selenium >1.0mg/kg Silver >5.0 mg/kg Mercury >0.2 mg/kg
TCLP 2,4,5-Trichlorophenol	1311/8270 TCLP Semivolatile Organic Compounds in Soil		None 10 days	14 days	Included with TCLP 2,4,-D	>400 mg/kg
TCLP 2,4,6-Trichlorophenol	1311/8270 TCLP Semivolatile Organic Compounds in Soil		None 10 days	14 days	Included with TCLP 2,4,-D	>2.0 mg/kg

Phase 2 analysis will include testing required for acceptance as a solid waste landfill in Oregon. Phase 2 consists of HCID analysis, which is conducted to detect "hits" of hydrocarbons. If

hydrocarbons are detected the TPH-G will be conducted to quantify TPH-gasoline, and/or the TPH-D will be conducted to quantify diesel and heavy oil.

Laboratory results from each characterization sample will indicate the disposal method for the material contained in the respective roll-off box, or group of containers containing similar materials.

TABLE 1 ANALYTICAL SUMMARY – Phase 2

Analysis	Analytical Method (EPA)	Sample Container	Preservative & Turn Around Time	Holding Time	North Creek Analytical Pricing*	Standards
NWTPH-HCID (hydrocarbon identification)	NWTPH-HCID	9 oz wide mouth jar	None 5 days	14 days	$57	Non-detect
NWTPH-Gx (TPH-gasoline)	NWTPH-Gx	9 oz wide mouth jar	None 5 days	14 days	$72	< than 50,000 mg/kg
NWTPH-Dx (TPH – diesel/heavy oil)	NWTPH-Dx	9 oz wide mouth jar	None 5 days	14 days	$93 $10 – cleanup fee	< 7,500 mg/kg

Waste Disposal

Waste disposal methods and procedures will be verified with the Environmental Engineer prior to any project. If analytical results indicate that the waste is hazardous, or exceeds the criteria for the solid waste landfill, the soil is to be disposed of to a RCRA permitted landfill, or via another hazardous waste option, in accordance with 40 CFR 268. Wacker Siltronic Corporation has approved the Chemical Waste Management (CWM) hazardous waste landfill located in Arlington, Oregon. The Environmental Engineer must submit a profile application as early as possible.

Solid Waste

If the Phase 2 analysis meet the listed standards, the soils may be sent to a solid waste landfill.

In addition to the analytical criteria /standards listed above, the solid waste 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 Siltronic Corporation may choose to investigate costs for disposal of petroleum contaminated soil at a low temperature thermal desorption unit.

Disposal Costs

Estimated disposal and transportation costs for solid, non-hazardous waste are noted below. These prices were generated in March and would need to be reviewed for current rates.

Solid Waste (no codes) – 20 yard boxes with 17-20 ton weight limit

Disposal cost (per ton) includes fees and taxes

Landfill / Recycling Site	Waste Disposal Per Ton	Site Specifications
CWM of the NW Subtitle C Facility (Arlington)	$155.00 Direct Landfill	Hazardous Waste Facility RCRA material
CWM of the NW Subtitle C Facility (Arlington)	$205.00 Stabilization	Hazardous Waste Facility Listed or characteristic materials
Columbia Ridge Subtitle D Landfill	$42.30	No RCRA codes Direct Landfill Non-hazardous material only
United Soil Recycling Woodburn, OR	$30.00	Thermally treat soil
TPS Technology OR	$34.00	Thermally treat soil

Transportation - to have box delivered / Dropped off and hauled to landfill (Round Trip, all inclusive fee per 20 cubic yard box)

Disposal Site / Transportation Company	Unit Rate
Hillsboro – Waste Management	$275.00
CWM of the NW – Waste Management	$685.00
CWM of the NW, Columbia Ridge – Waste Management	$685.00
United Soil Recycling – Bob Noble Company	</= $250
TPS Technology – Bob Noble Company	$95.00

Other charges

Box rental – Waste Management	$15.00 per day, after 48 hours
Box rental – Bob Noble Company	$10.00 per day
Liners (if necessary)	$45.00 each – we can use our own visquine
Profile fee	None

If loading / unloading requires more than one hour:

Waste Management	$70.00 demurrage will be charged
Bob Noble Company	$45.00 demurrage will be charged

If you have any questions, please contact the Environmental Department at x4469 or x7132.

Figure 1 Schematic -Random Number Sampling Schematic

Roll-Off	2	1	**Roll-Off**	4	3
Box No. 1	5	6	**Box No. 6**	1	2
	3	4		6	5
Roll-Off	3	1	**Roll-Off**	5	1
Box No. 2	4	5	**Box No. 7**	4	6
	2	6		2	3
Roll-Off	1	4	**Roll-Off**	5	1
Box No. 3	2	6	**Box No. 8**	6	4
	5	3		2	3
Roll-Off	6	1	**Roll-Off**	6	4
Box No. 4	5	3	**Box No. 9**	3	2
	2	4		5	1
Roll-Off	6	3	**Roll-Off**	5	3
Box No. 5	1	5	**Box No. 10**	6	1
	4	2		2	4

OREGON WASTE SYSTEMS, INC.
COLUMBIA RIDGE LANDFILL & RECYCLING CENTER
18177 CEDAR SPRING LANE
ARLINGTON, OREGON 97812
PHONE: 541/454-2030

CUSTOMER INFORMATION:
Wacker Siltronic
P.O. Box 83180 M/S-30
Portland Ore. 97283
Attn: Petra Mattes

INVOICE #:	1116-Wacker
DATE:	11/16/98
PROFILE #:	445163
LOCATION:	Portland Ore.
WASTE TYPE:	Silicon Carbide & Silicon Filtercake

SUMMARY OF CHARGES

TOTAL TONS	15.82	# OF CONTAINERS	1
BILLED TONS (14.29 Ton Min/Cont)	15.82		

DISPOSAL COST	$17.50/TON	$276.85
TRANSPORTATION	$550.00/LOAD	$550.00
ODEQ FEE	$1.24/TON	$19.62
REGIONAL SYSTEMS FEE	$14.00/TON	$221.48
METRO EXCISE TAX	8.5%/DISP. $'S	$22.52

TOTAL WST Disposal Per Ton: $ 32.74/TON

TOTAL AMOUNT DUE $1,090.47

SEND REMITTANCE TO:

OREGON WASTE SYSTEMS, INC.
P.O. BOX 55037
PORTLAND, OR 97238-5037

INVOICE #: 1116-Wacker
AMOUNT DUE: $1,090.47

WE THANK YOU FOR YOUR BUSINESS AND PROMPT PAYMENT!

Oregon Waste Systems
4020 Lake Washington Blvd. NE
Suite 310
Kirkland, Washington 98033
206/822-3770 • FAX: 206/828-2433

A Waste Management Company

January 12, 1995

Mr. Chip Bloomer
Wacker Siltronic Corporation
P.O. Box 83280
Portland, OR 97283-0180

Dear Mr. Bloomer:

Enclosed please find two original Service Agreements for the disposal of petroleum contaminated soil at the Columbia Ridge Landfill. Please review, sign, and return both Agreements to me in the enclosed envelope. Once the Agreements have been signed by OWS, we will return one original to you for your records.

Thank you for allowing us the opportunity to accommodate your disposal requirements. Please call Joyce Johnson at (503) 331-2202 or me at (800) 421-9673 if you have any questions.

Sincerely,

S. Andrea Christman
Inside Sales/Customer Service

Enclosures

011295.2

Printed on recycled paper

SCOEPA00054599

Oregon Waste Systems, Inc.
Columbia Ridge Landfill & Recycling Center
Star Rt. Box 6
Arlington, Oregon 97812
503/454-2030 • FAX: 503/454-2133

A Waste Management Company

SERVICE AGREEMENT
NON-HAZARDOUS WASTE DISPOSAL

Contract # 122294-1
Profile# 279893

The above named landfill and corporation are referred to herein as "Facility" and "Contractor," respectively.

Customer Billing Name:	Wacker Siltronic Corporation
Customer's Billing Address:	P.O. Box 83280
City, State/Province, Zip/Postal Code:	Portland, OR 97283-0180
Customer Contact: Tom McCue	Phone Number: (503) 243-2020
Bank Reference: n/a	Bank Contact: n/a

This is a legally binding contract, and Contractor agrees to provide and Customer agrees to accept the waste disposal services subject to the terms and conditions specified in this contract.

ESTIMATED MONTHLY AMOUNT AND TYPE OF WASTE FOR LAND DISPOSAL:

200 yd^3
(Include units e.g. cubic yards, pounds, kilograms)

Special instructions: Please see attached contract.

CUSTOMER

Chip Blair
Authorized Signature

Engr 1/30/95
Title *Date*

OREGON WASTE SYSTEMS

Representative (Authorized Signature)

Title *Date*

DISPOSAL AND TRANSPORTATION FEES

Columbia Ridge Disposal Fee - $17.50 with a minimum disposal fee of $250.00 per load.

Transportation: $ 5.00 per day container rental
$ 40.00 to deliver initial container
$ 60.00 plastic liner per container
$400.00 per 20-22 ton maximum shipment

This price is subject to change by Oregon Waste Systems, Inc. upon thirty (30) days written notice to you.

TAXES, FEES AND SURCHARGES

Any taxes, fees and surcharges imposed by a government body, except for Gilliam County host fee, are the responsibility of Wacker Siltronic Corporation and they are the following:

$17.50 per ton Metro Fee

$1.31 per ton Metro Excise Tax

$1.24 per ton Oregon DEQ fee for waste disposed (includes $.13 per ton orphan site fee effective 01/01/93).

TERMS OF PAYMENT

30 days net (with approved credit). Without prior credit approval, all charges must be paid upon delivery to landfill.

SPECIAL INSTRUCTIONS

Material must be absent of free liquids.

If you have any questions, please contact the Environmental Department at x7132 or x4469.

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:

SCOEPA00054603

- 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

SCOEPA00054604

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

SCOEPA00054605

* TCLP extraction costs?

* Whole list $1,163.-

Table 1 Analytical Summary					
Analysis	Analytical Method (EPA)	Sample Container	Preservative	Holding Time	
TCLP - metals (8)		Phase 1			$199 w/*
TCLP benzene	1311/8020 or 1311/8240	16-ounce glass	None	14 days to extraction and 14 days to analysis	$94.- + $72
TCLP 2,4-D	1311/8150	16-ounce glass	None	14 days to extraction, 7 days to solvent extraction, and 40 days to analysis	$100.-
Flash point	1010	16-ounce glass	None	14 days	$45
pH	9040	16-ounce glass	None	Analyze immediately	$12
		Phase 2			$522
TPH-G	Oregon TPH-gasoline	16-ounce glass	None	14 days	$72
TPH-D	418.1 modified	16-ounce glass	None	14 days	$93

TPH-D Cleanup would be $10.-

pile plus boxes

*

per Box - turn @? - normal, OK

$165

$687.-

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.

HCID - Says "yes" for "gas" + or yes for Diesel then Quantify hits...

3/26 Crystal (NCA) - price?

Waste Disposal

50,000 ppm Diesel
7500 ppm Gasoline

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:

Denise - Drop Boxes
Glands 493-7843 3/26
John, assistant Mgr

SCOEPA00054606

- 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

profile fee:
Box rental:

* Could both be haz

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.

* $147.- /ton - Solid wst Arlington, "C" plus fees + taxes
  $245 - /ton - Stabiliz Arlington
  $55.- /ton Columbia Ridge, NO Codes

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.

SCOEPA00054607

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

Engineers
Planners
Economists
Scientists

Portland Office

May 22, 1990

PDX225.C0

Michael J. Downs
Administrator
Environmental Cleanup Division
Department of Environmental Quality
811 S.W. Sixth Avenue
Portland, Oregon 97204

Subject: Summary of Wacker Siltronics Meeting on May 16, 1990

Dear Mr. Downs:

This letter summarizes the meeting held in your offices on May 16, 1990, with you, Tom Miller, John Pittman of Wacker Siltronics, and Bill Matsukado and Christy Shoen of CH2M HILL. The meeting focused on potential environmental issues related to Wacker's planned construction of the Fab 2 production building. The proposed facility is currently envisioned as a 65,000-square-foot building located southeast of the current production building. Figure 1 illustrates the conceptual layout of the building and major site features.

OVERVIEW OF SCOPE OF WORK

Wacker and the Department of Environmental Quality (DEQ) concurred during the meeting that a letter agreement appeared to be the best mechanism for addressing issues related to potential soil contamination that may be encountered in constructing the Fab 2 building. It was also agreed that only soil issues will be addressed since construction of the building would not affect other potential environmental concerns.

Wacker is proposing that the environmental work related to constructing the Fab 2 building be completed in two phases to meet project milestones. Phase 1 involves collecting soil samples for chemical analysis from two geotechnical survey borings. The borings will be drilled at locations critical to proper geotechnical evaluation of the site. Phase 2 involves collecting environmental soil borings for chemical analysis only.

Phase 1 is anticipated to be completed within 4 weeks of this letter, pending the availability of a qualified drilling subcontractor. Phase 2 is anticipated to be completed within 8 to 12 weeks. Wacker intends to begin Phase 1 based on the scope outlined in this letter. The scope

SCOEPA00054609

of work for the second phase will be described in a subsequent letter to be submitted to DEQ at the completion of Phase 1.

PHASE 1-SCOPE OF WORK

Two soil boring samples will be drilled at locations to be identified by the structural engineer, underlying structural footings or load bearing features as presently envisioned. Soil samples will be collected for chemical analysis from the 15- to 25-foot interval. The 25-foot depth chosen as the limit for chemical sampling was determined by the maximum depth of excavation anticipated for basement construction. Samples for geotechnical testing will be collected by pushing a 3-inch diameter thin-walled tube approximately 2 feet into the bottom of the boring, as defined in ASTM D1587. Environmental samples for chemical analysis will be collected using a split tube sampler between geotechnical samples.

Samples will be screened in the field by observations for oil, staining, sheen, odor and organic vapor analyzer readings to select the interval to be submitted for analysis. At least one sample will be analyzed from each boring. Wacker may choose to reserve samples after laboratory extraction for future analysis.

If field observations indicate no suspect materials are present, composite samples will be collected from the 15- to 25-foot interval. Collection of adequate sample volume for both geotechnical testing and chemical analysis for the same borehole requires using a 10- foot sample composite interval for chemical analysis.

Wacker will notify DEQ at least 24 hours in advance of beginning geotechnical borings samples to provide the DEQ an opportunity to observe sample collection.

Procedures and methodologies outlined in EPA guidance documents will be used as applicable during site work, including the Compendium of Superfund Field Operation Methods and the Interim Final Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA. This includes quality assurance procedures, sample collection and handling methodology, and health and safety measures. Health and safety considerations include the use of an OSHA certified contractor to perform drilling and onsite air monitoring as specified in the site health and safety plan.

Soil cuttings generated as a result of drilling will be containerized onsite, pending soil boring analytical results, before disposal. Fluids generated as a result of steam cleaning drilling equipment between boreholes will be contained in a temporary area, containerized, and appropriately disposed of pending sampling results.

SCOEPA00054610

The following analyses are proposed based on sampling results from wells and soils samples collected southeast of the proposed construction site:

- Phenols--SW 8040
- Volatiles--SW 8010/8020
- Polynuclear Aromatic Hydrocarbons--SW 8100

- Will results of these analysis give quantities of each constituent or total?
- who will set up lab - CH2M will send COC
- who will transport samples - CH2M

REPORTING RESULTS

who will write? Christy from CH2M

Wacker will submit to DEQ a letter reporting the results of the Phase 1 work along with a proposal of the Phase 2 scope. It is anticipated that Phase 2 will be undertaken regardless of the results of Phase 1, i.e, even if no suspect materials are detected in the two Phase 1 soil borings.

Please let me know your comments on the proposed Phase 1 work. Wacker anticipates beginning the required geotechnical investigation and soil sampling as described within the next two to four weeks.

Best wishes,

CH2M HILL

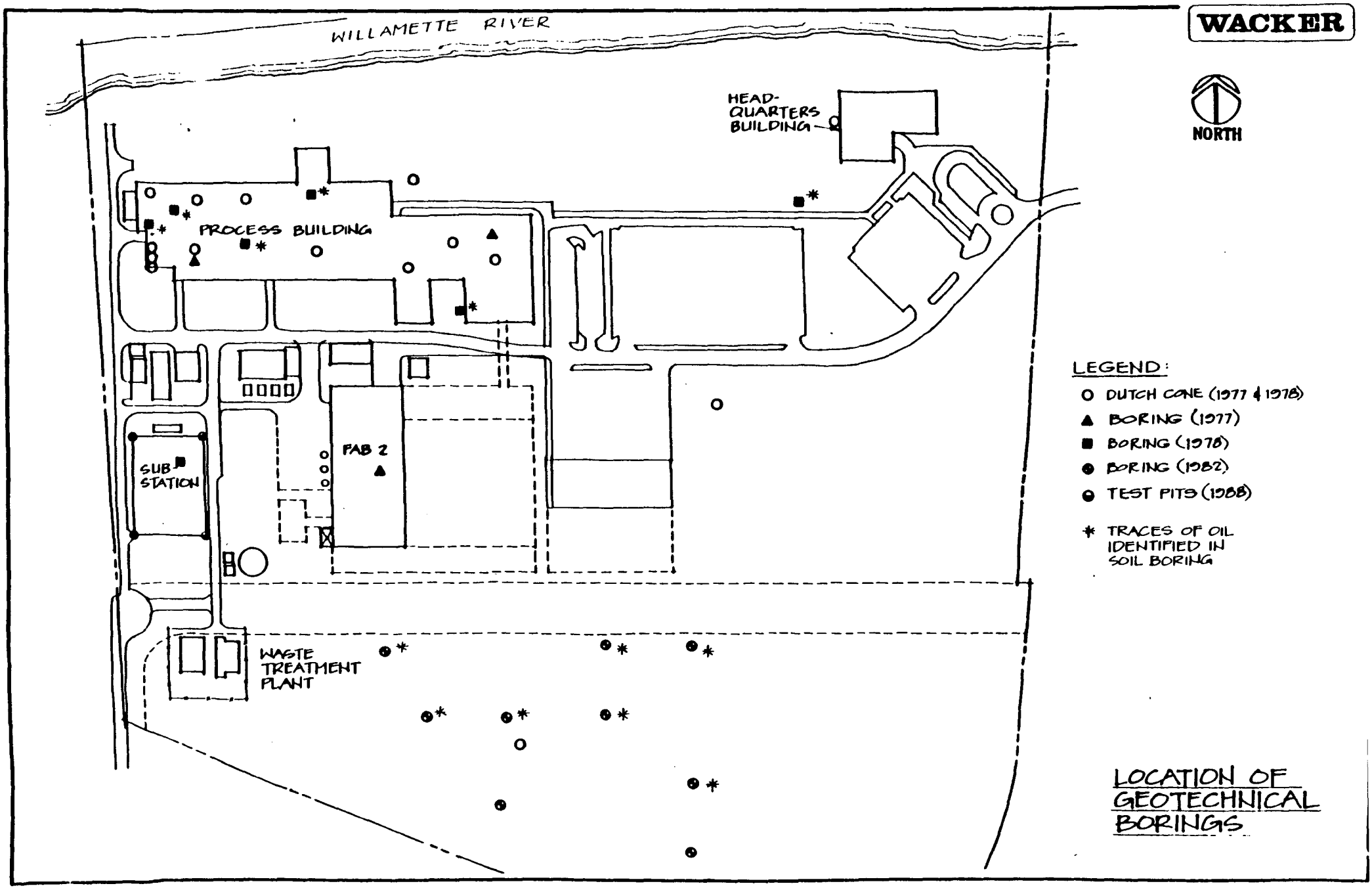
Christy Shoen

Christy Shoen

cc: John Pittman/Wacker Siltronic Corp.
Bill Matsukado/IDC
Bill Cobb/CH2M HILL
Jill Bensen/CH2M HILL

- what is the difference between Phase I and Phase II?
- why only chemical analysis in Phase II that is the purpose of the phase

SCOEPA00054611


WACKER
WILLAMETTE RIVER
HEAD-
QUARTERS
BUILDING
NORTH
PROCESS BUILDING
FAB 2
SUB
STATION
WASTE
TREATMENT
PLANT
LEGEND:
DUTCH CONE (1977 & 1978)
BORING (1977)
BORING (1978)
BORING (1982)
TEST PITS (1988)
TRACES OF OIL
IDENTIFIED IN
SOIL BORING
LOCATION OF
GEOTECHNICAL
BORINGS

IDC

MEETING NOTES

SUBJECT: Wacker Environmental Permitting

MEETING DATE: May 16, 1990

PROJECT: Wacker Siltronic, Fab 2 (16741)

LOCATION: Wacker Siltronic, Portland, Oregon

ATTENDEES: Mike Downs/Department of Environmental Quality
Tom Miller/DEQ
John Pittman/WSC
Christy Shoen/CH2M Hill
Bill Matsukado/IDC

DISTRIBUTION: J. Pittman C. Shoen
B. Matsukado O. Sweep
S. Beiswenger

NOTES BY: C. Shoen/ CH2M Hill
B. Matsukado/IDC

1) To expand WSC's operations, the following tasks must be done:

   a) Geotechnical Borings

   b) Construction Excavation

   - WSC needs agreement with DEQ on scope of "environmental" work required with each activity and a covenant not to increase scope later.

   - WSC will focus studies on "south site" initially.

INDUSTRIAL DESIGN CORPORATION (IDC)
2020 S.W. Fourth Avenue, 3rd Floor, Portland, Oregon 97201 Phone: (503) 224-6040 Fax: (503) 223-1494
A Subsidiary of CH2M HILL COMPANIES, LTD.

SCOEPA00054613

2) DEQ has standard letter agreement to be signed by WSC before proceeding with work. It can be used in place of a standard Remedial Investigation Study if excavation is defined as "removal" (not remedial action), and if WSC focuses on soil problems only (not ground water).

- Covenant with "not to sue" statement will require "court order" input, requiring additional time for DEQ approval.

3) WSC agreed that a letter of agreement will be best. It allows geotechnical borings to begin as soon as possible. The letter shall:

- Define area of project
- Define boring and the screening of borings
- Define analytical analysis
- Require DEQ presence during boring (24 hour pre-notice)

The work shall be presented in two phases:

a) Phase 1:

- Propose 3 borings - One at water tank; Two at Fab 2.

- CH2M Hill to propose sample layer(s) and sample analysis (no pesticides required).

b) Phase 2:

- CH2M Hill to define environmental soil sampling program.

c) Workplan to include:

- Scope of Investigation
- Analysis
- Coordination with DEQ
- Number of Borings;
  - -- Observations to select for analysis
  - -- HNU screening
  - -- Limit depth to area to be excavated
  - -- Add environmental sampling analysis to geotechnical borings.

4) Timeline: Phase 1 - 4 weeks
Phase 2 - 6 weeks to 8 weeks

5) Dewatering - Need permit to discharge ~~dewatering~~ dewatering coming water during construction from State Water Quality Department.

SCOEPA00054614

6) Send letter summarizing May 15 meeting oulining scope of work to Mike Downs.

7) Coordinate all DEQ correspondence/interface through Mike Downs.

END OF MEETING NOTES

SCOEPA00054615

cc: D Matsuzaki
J Benson
R Gariepy
J Pittman

CH2M HILL TELEPHONE CONVERSATION RECORD

CALL TO Christy Shoen / CH2M HILL PHONE NO. _____

DATE 6/12/90

CALL FROM Mike Downs / DEQ TIME _____ ☐ AM ☒ PM

MESSAGE TAKEN BY _____ PROJECT NO. PDX225.CP

SUBJECT Wacker - Decon fluid discharge

DEQ's practice is to allow direct discharge of decon fluids during activities like the Phase 1 environmental sampling where small amount of fluid is produced. OK for Wacker to directly discharge waters w/out containerizing and testing.

REV 1/88 FORM 4

SCOEPA00054616

Engineers
Planners
Economists
Scientists

Portland Office

June 14, 1990

PDX30113.A5

Mr. Michael J. Downs
Administrator
Environmental Cleanup Division
Department of Environmental Quality
811 S.W. Sixth Avenue
Portland, Oregon 97204

Dear Mr. Downs:

This letter is to inform you of the upcoming soil boring program to be performed at the Wacker Siltronics Corporation (Wacker) Portland facility. The drilling program is scheduled to begin on Monday, June 18, 1990. A brief summary of the soil drilling and borehole abandonment plan is presented below.

Three soil borings are to be drilled for the purpose of collecting soil samples for both geotechnical and environmental testing. The borings are to be drilled to a maximum total depth of 75 feet each. The upper 30 feet of the borehole will be drilled with large diameter hollow-stem augers. The augers will then be extracted approximately 2 to 3 feet, bentonite chips will be set in the bottom 2 feet of the boring, and the augers will again be advanced to the full 30-foot depth. The bentonite will be allowed to hydrate for approximately 1 hour before the borehole is advanced beyond the 30-foot depth. The borehole will then be advanced beyond the 30-foot depth using smaller diameter hollow-stem augers inside the large diameter hollow stem augers. If required, water will be injected into the borehole to prevent heave from occurring. If the injection of water into the hollow-stem augers does not prevent the soils from heaving, the drilling method will be converted to mud rotary. If used, the mud rotary drilling method would be performed from within the large diameter hollow-stem augers. Upon drilling completion, a cement grout will be pumped into each borehole using a tremmie pipe. The cement grout will displace the drilling mud and serve as the method for borehole abandonment.

The drill crew will cover and secure the borehole whenever it is left unattended to eliminate the risk of tampering or vandalism. Preventive measures will be taken to

divert precipitation and runoff away from open boreholes. All drill cuttings generated during hollow-stem auger drilling will be placed on polyethylene sheeting (6 mil or thicker). Additionally, all drill cuttings, drilling mud, and polyethylene sheeting will be placed and sealed in 55-gallon drums upon completion of the drilling process.

All downhole drilling equipment shall be decontaminated with a steam cleaner or high temperature, high pressure spray washer before the initiation of work at the site, before use in each boring, and before leaving the project area. Soil, debris, and other decontaminating and drilling byproducts will be placed in drums for future disposal by Wacker.

I would also like to acknowledge your telephone conversations with Christy Shoen on June 12 and 13, 1990, in which you discussed the disposal of decontamination fluids generated during drilling activities. You indicated that, given the small volume of fluids generated, DEQ's policy is to allow discharge of the water without further testing or containment. Given DEQ's approval for discharge, Wacker intents to dispose of the water by discharging it into the onsite storm drain.

If you have any questions or comments pertaining to the drilling program, please call me.

Sincerely,

CH2M HILL

Jill K. Bensen
Project Manager

cc: John Pittman/Wacker Siltronics Corp.
Rick Gariepy/Wacker Siltronics Corp.
Bill Matsukato/IDC
Christy Shoen/CH2M HILL
Bill Cobb/CH2M HILL
Stu Brown/CH2M HILL

SCOEPA00054618

NEIL GOLDSCHMIDT
GOVERNOR

Department of Environmental Quality

811 SW SIXTH AVENUE, PORTLAND, OREGON 97204-1390 PHONE (503) 229-5696

June 7, 1990

Christy Shoen
CH2M Hill
2020 S.W. Fourth Avenue
Portland, OR 97201

Re: Phase 1 environmental work

Dear Ms. Shoen:

Your letter of May 22, 1990 summarizing the May 16th meeting in our offices regarding Wacker's planned construction of the Fab 2 production building accurately reflects the discussions and agreements made that day. We have reviewed the proposed Phase 1 scope of work contained in your May 22nd letter and have the following comments and suggestions:

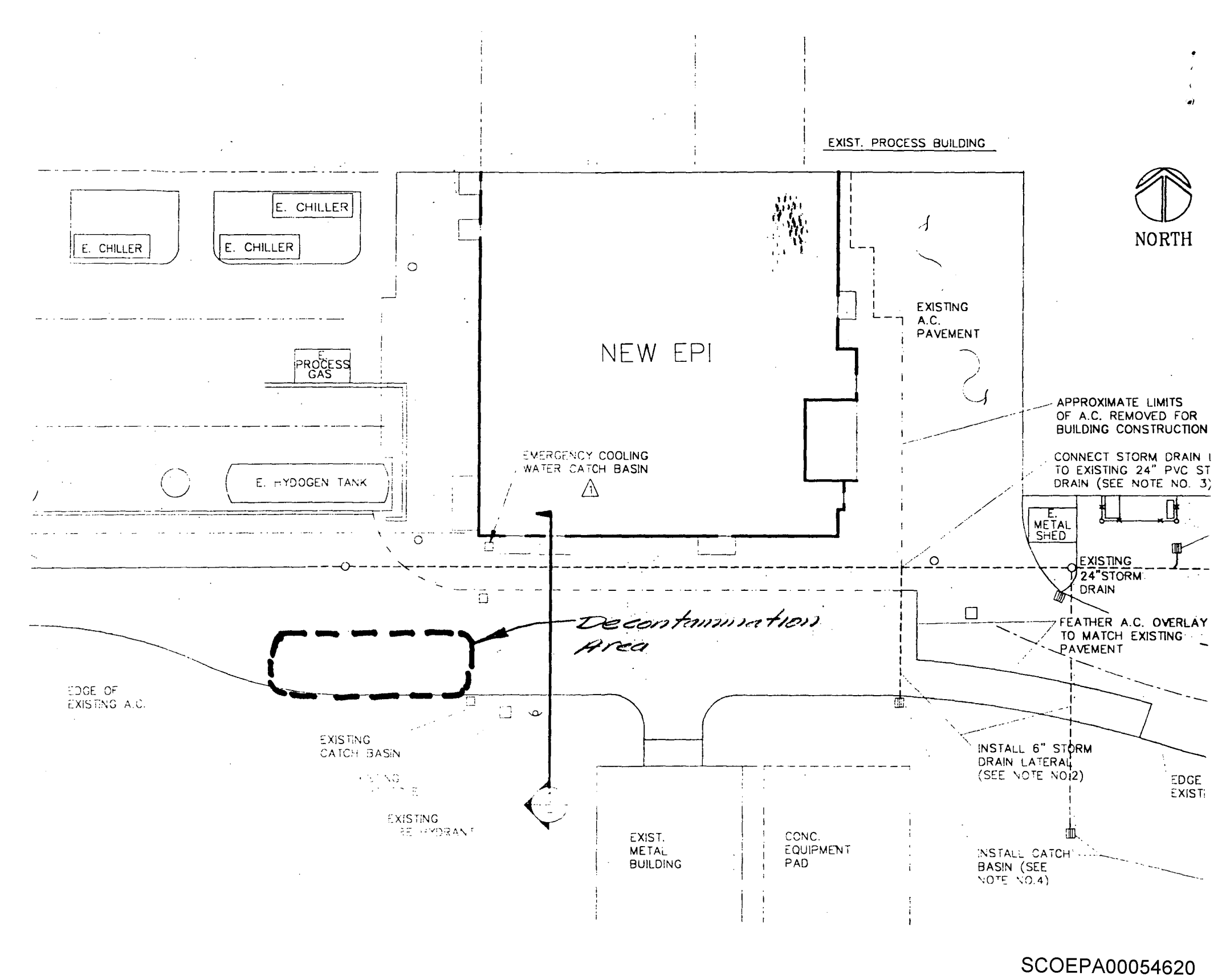
1. We recommend at least one sample from the 15 foot and one from the 25 foot boring depths be collected for each geotechnical boring (i.e. two samples per boring). This, of course, will only indicate the presence or absence of contamination at the 15 and 25 foot soil depths and not give any indication of contamination at shallower soil depths.

2. All drilling, sampling and samples should be thoroughly photographed and original prints submitted with a report to DEQ.

3. A specific plan should be prepared prior to beginning environmental field work detailing the goals for Phase 1, and specifics of sampling methods and quality control/quality assurance procedures to be followed (e.g. chain of custody procedures, sample containers, preservatives, handling procedures, holding times and transportation plans, lab protocols, lab of choice and their QA and recordkeeping procedures, and details on lab and field blanks, matrix spikes and duplicates to be run). Without this detailed information on your proposed work, DEQ cannot be certain of the quality of the work to be performed and, therefore, the reliability of the results.

4. Wacker should also perform chemical analysis for priority pollutant metals to get some information on this class of potential contaminants.

SCOEPA00054619



SCOEPA00054620

Chemical Waste Management, Inc.

GENERATOR'S CERTIFICATION OF REPRESENTATIVE SAMPLE

PLEASE PRINT IN INK OR TYPE (Elite, 12-pitch).

J82851

PDX J 82851
Waste Profile Sheet Code

CWM Location of Original: _____ (SHADED AREAS FOR CWM USE ONLY) **CWM Sales Rep. #:** 042

This completed form must be returned, with the representative sample, to:

_____
_____
_____
_____

INSTRUCTIONS FOR COMPLETING THIS FORM ARE FOUND ON THE OPPOSITE SIDE. In order to determine whether Chemical Waste Management, Inc. can accept the special waste described in the Generator's Waste Material Profile Sheet referenced above, you must obtain and supply us with a representative sample of the waste. We may analyze the sample to verify the information that you have provided to us. A representative sample is defined as a sample obtained using any of the applicable sampling methods specified in 40 CFR 261-Appendix I or an equivalent method. Collect a representative sample of your waste and complete the form below. Apply the peel off label and ship your sample along with this form to the address noted above. If you have any questions regarding obtaining a representative sample of your waste, please refer to the instructions for this form, or contact your Chemical Waste Management, Inc. sales representative.

A. SAMPLING METHOD (Indicate which method was employed)

If sampling requirement has been waived by Chemical Waste Management, Inc., do not complete this Generator's Certification of Representative Sample form.

1. ☐ I have obtained a representative sample of the waste material described in the Generator's Waste Material Profile Sheet referenced above according to the sampling methods specified in 40 CFR 261-Appendix I.
2. ☒ I have obtained a representative sample of the waste material described in the Generator's Waste Material Profile Sheet referenced above using a method equivalent to the sampling methods described in 40 CFR 261-Appendix I.

B. SAMPLE SOURCE (e.g., drum, lagoon, pit, pond, tank, vat)

Composit from drums

C. SAMPLE LABEL — COMPLETE LABEL BEFORE REMOVING

J82851

1. Waste Profile Sheet Code:		1. Waste Profile Sheet Code:
2. [redacted] Generator's Name:	Wacker Siltronic Corporation	2. Generator's Name:
3. [redacted] Name of Waste:	Drilling Mud	3. Name of Waste:
4. [redacted] Sample Hour/Date:	July 30, 1990/ 2:00 pm	4. Sample Hour/Date.
5. [redacted] Sampler's Signature:	Richard G. Gariepy	5. Sampler's Signature:

6. Print Sampler's Name: Richard G. Gariepy
7. Sampler's Title: Environmental Engineer
8. Sampler's Employer (if CWM, see D. below): Wacker Siltronic Corporation

D. WITNESS VERIFICATION (if required) In most circumstances you will be obtaining the sample. However, in those cases in which Chemical Waste Management, Inc. obtains the sample, one of your employees must be present to direct the particular source to be sampled, to witness the sampling, and to complete this Part D.

I was personally present during the sampling described. I directed the waste source to be sampled, and I verify the information noted above.

1. Witness' Signature: _____
2. Witness' Name: _____ 3. Witness' Title: _____
4. Witness' Employer: _____ 5. Date: _____

Form CWM-51 © 1987 Chemical Waste Management, Inc.

Chemical Waste Management, Inc.

GENERATOR'S WASTE MATERIAL PROFILE SHEET

This information is required for a waste to be considered for transportation, treatment, storage or disposal. It is used to determine if the waste may be transported, treated, stored or disposed in a legal, safe, and environmentally sound manner. This information will be maintained in strict confidence. **ANSWERS MUST BE MADE TO ALL QUESTIONS** and must be printed in ink or typed (elite, 12-pitch). A response of "NONE," or "NA" can be made if appropriate.

Shaded areas are for CWM use only.

PART A. GENERAL INFORMATION

1. GENERATOR NAME - Enter the name of the generating facility.
2. GENERATOR USEPA ID - Enter the twelve character alpha-numeric descriptor issued by the USEPA to the facility generating the waste.
3. FACILITY ADDRESS - Enter the street address (not P.O. Box) of the generating facility.
4. GENERATOR STATE ID - Enter the descriptor issued by the state to the facility generating the waste (if applicable).
5. ZIP CODE - Enter the generating facility's five or nine digit zip code.
6. TECHNICAL CONTACT - Enter the name of a person who will answer technical questions about the waste.
7. TITLE - Enter technical contact's title.
8. PHONE - Enter technical contact's telephone number.

PART B. MAIL CHEMICAL WASTE MANAGEMENT INC. INVOICES TO:

1. If you want the invoice mailed to the same address as in PART A, check "Generating Facility." If you want the invoices mailed elsewhere, then indicate the name, phone, and address, as shown in numbers 2 through 5.
2. COMPANY NAME - Enter the name of the company to which you want the invoices sent.
3. PHONE - Enter the telephone number of the company to which you want the invoices sent.
4. ADDRESS - Enter the address of the company to which you want the invoices sent.
5. ZIP CODE - Enter the five or nine digit zip code of the company to which you want the invoices sent.

PART C.

1. NAME OF WASTE - Enter a name that is generally descriptive of this waste (e.g., cyanide plating waste, paint sludge, PCB contaminated dirt, still bottoms, wastewater treatment sludge).
2. PROCESS GENERATING WASTE - List the specific process/operation or source that generates the waste (e.g., metal plating operation, paint spray booth, PCB spill, solvent recovery, wastewater treatment plant).
3. DIOXIN WASTE - Treatment, storage or disposal of Dioxin wastes requires special attention. If this waste is a USEPA listed Dioxin waste, indicate "YES" and contact your Chemical Waste Management Sales Representative. If "YES", **DO NOT COMPLETE THE REMAINDER OF THIS FORM.**

PART D. PHYSICAL CHARACTERISTICS OF WASTE

1. COLOR - Describe the color of the waste (e.g., blue, clear, varies).
2. ODOR - **DO NOT SMELL THE WASTE!** If the waste has a known incidental odor, then describe it (e.g., acrid, pungent, solvent, sweet).
3. PHYSICAL STATE - If the four boxes provided do not apply, a descriptive phrase may be entered after "Other" (e.g., gas).
4. LAYERS - Check all applicable boxes. Multi-layered means more than two layers (e.g., oil/water/sludge). Bi-layered means the waste is comprised of two layers which may or may not be of the same phase (e.g., oil/water, solvent/sludge). Single phased means the waste is homogeneous.
5. SPECIFIC GRAVITY - Indicate the range. The specific gravity of water is 1.0. Most organics are less than 1.0. Chlorinated solvents, most inorganics and paint sludge are greater than 1.0.
6. FREE LIQUIDS - Check "YES" if liquid is usually present when packaging for shipment and estimate the percent of liquid volume. Check "NO" if there are no free liquids as defined by the Paint Filter Test (SW 846 Method 9095).
7. pH - Indicate for liquid or liquid portions of the waste. Check the appropriate boxes which cover the pH of the waste. Use the "Range" space if appropriate. For solid or organic liquid wastes, indicate the pH of a 10% aqueous solution of the waste if applicable. Check "NA" for non-water soluble materials (e.g., bricks, dismantled tanks, empty drums, gases, rocks).
8. LIQUID FLASH POINT - Indicate the liquid flash point obtained using the appropriate testing method (40CFR261.21).The liquid flash point is important from a transportation standpoint (49CFR173.115).Solids with flammable potential should be identified in PART G.3 (e.g., Pyrophoric, RCRA Reactive, Other).

PART E. CHEMICAL COMPOSITION

1. List all organic and/or inorganic components of the waste using **specific chemical names.** If trade names are used, attach Material Safety Data Sheets or other documents which adequately describe the composition of the waste. For each component, estimate the range (in percents) in which the component is present. In case of extreme pH (2 or less or 12.5 or greater) indicate specific acid or caustic species present. This list must include any hazardous components listed in PARTs F, G, and/or H which exceed 10,000 ppm (1%). The total of the maximum values of the components must be greater than or equal to 100% including water, earth, etc.
2. If this waste contains PCBs, cyanides, phenolics or sulfides, indicate the concentration(s). If this waste does not contain these constituents, indicate by checking the "NONE" box(es) which apply. If the concentration of these constituents is unknown, please indicate "UNK" under "ACTUAL."

PART F. METALS

Indicate whether metals content was determined by EP Tox (extraction procedure toxicity)/TCLP (Toxicity Characteristics Leaching Procedure) from 40CFR261-Appendix II or represents the total metals. For each metal, check only one box indicating that the metal content will not exceed the stated amount or enter the actual metal content indicated by your test results in the "ACTUAL" column in parts per million. If you know a metal is **NOT** present, indicate by writing "NA" under "ACTUAL." An actual concentration of zero is not appropriate. If metal concentrations are unknown, please indicate "UNK" under "ACTUAL."

PART G. OTHER HAZARDOUS CHARACTERISTICS

1. Indicate by checking the appropriate box.
2. Indicate by checking the appropriate box. If "YES," indicate the concentration in PART E.
3. Indicate if this waste is any of the following:
   RCRA REACTIVE - As defined by 40CFR261.
   WATER REACTIVE - Reacts violently with water to form toxic gases, vapors, or fumes in a quantity sufficient to present a danger to human health or the environment.

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SCOEPA00054622

EXPLOSIVE - Capable of detonation or explosive reaction if subjected to a strong initiating source or if heated under confinement, a Class A explosive (49CFR173.53), or a Class B explosive (49CFR173.88).
SHOCK SENSITIVE - Normally unstable and readily undergoes violent change without detonating.
PYROPHORIC - Will ignite spontaneously in air at or below 130°F (54.4°C) (49CFR173.115).
RADIOACTIVE - Any material, or combination of materials, that has a specific activity greater than 0.002 microcuries per gram (49CFR173.403).
ETIOLOGICAL - A viable microorganism or its toxin which causes or may cause human disease (49CFR173.386).
PESTICIDE MANUFACTURING WASTE - Waste resulting from the manufacture of pesticides or the potential precursors of pesticides.
OTHER - Indications of other hazardous characteristics must be included (e.g., autopolymerization, peroxide-forming).
NONE OF THE ABOVE - Check this box if it is applicable for this waste.

PART H

Complete **ONLY** for wastes intended for fuels or incineration. If present, indicate the concentration as appropriate. If the concentrations of these constituents are unknown, please indicate "UNK" under "ACTUAL."

The following section lists parameters and suggested analytical methods that may be used in obtaining these values:

Parameter	Source
Beryllium, Potassium, Sodium	SW846-6010, 7090, 7610, 7770
Total Bromine, Chlorine, Fluorine	ASTM D2361-85, D4327-84, D808-81
Total Sulfur	ASTM D 2361-85, D516-82

PART I. OPTIONAL - RECLAMATION, FUELS OR INCINERATION PARAMETERS

Please provide this optional information where known. The following parameters and suggested analytical methods may be used in obtaining these values:

Parameters	Source
1. Heat Value (BTU/lb)	ASTM D 240-85, D2015-85
2. Percent Water	ASTM D 4006-81, E203-75
3. Viscosity	Any method
4. Percent Ash	ASTM D 482-80
5. Settleable Solids	Any method
6. Vapor Pressure	Any method

7. Indicate if this waste can be transferred by pumping at an ambient temperature of 50°F. If "YES," list the type of pump required (centrifugal, gear, peristaltic, etc.).
8. Indicate if an external source of heat can be safely used to improve the flow of this waste.
9. Indicate if this waste is soluble in water.
10. PARTICLE SIZE - If the waste contains any solids, indicate if they can pass through a 1/8" screen.

PART J. TRANSPORTATION INFORMATION

1. Indicate if this waste is a USDOT Hazardous material (49CFR172.101).
2. Anticipated Annual Volume/Units - Enter the amount of this waste which will be generated and transported annually. Use appropriate units to describe this volume (e.g., cubic yards, gallons, kilograms, pounds).
3. Proper Shipping Name - Enter the proper USDOT shipping name for this waste (49CFR172.101).
4. Hazard Class - Enter the proper USDOT hazard class (49CFR172.101).
5. I.D. # - Enter the proper USDOT Identification Number (49CFR172.101).
6. Additional Description - Enter any additional shipping information required (49CFR172.203) (e.g., "RQ", the names of Hazardous Substance Constituents as they would appear on the Uniform Hazardous Waste Manifest and the packaging).
7. Method of Shipment - Indicate the anticipated method(s) of shipment by checking the appropriate box(es). If drums are to be used, see 49CFR173 for DOT drum specifications.
8. CERCLA Reportable Quantity (RQ) - Enter the Reportable Quantity for this waste from 49CFR172.101 or 40CFR302.
9. RQ Units (lb/kg) - Indicate the appropriate units for the RQ listed in #8.
10. USEPA Hazardous Waste - Indicate if this waste is a USEPA Hazardous Waste (40CFR261).
11. USEPA Hazardous Waste Number(s) - If the answer to question #10 was "YES," then enter the appropriate USEPA Hazardous Waste Number(s) (e.g., D002, F002, K028, P006, U220) (40CFR261).
12. State Hazardous Waste - Indicate if this waste is a hazardous waste as defined by the state in which it is now located.
13. State Hazardous Waste Number(s) - If the answer to question #12 was "YES," then enter the appropriate State Hazardous Waste Number(s) (e.g., for a waste now in California: 212, 213).

PART K. SPECIAL HANDLING INFORMATION

Describe those hazards which you know or reasonably believe are or may be associated with short term or prolonged human exposure to this waste (29CFR1910.1200). If known, please identify any carcinogens present in this waste in excess of 0.1% (29CFR1910.1200 (d)(4)). Attach relevant documents as a part of your response if appropriate. If documents are attached, identify those attachments. If you have a current Material Safety Data Sheet, it may be attached. Failure to make an entry in PART K is considered to be a representation that you neither know nor believe that there are any adverse human health effects associated with exposure to this waste.

Also include in PART K any additional information that will aid in the management of the waste (e.g., protective clothing, transportation, treatment, storage, disposal).

PART L. GENERATOR CERTIFICATION

An authorized employee of the generator must sign and date this certification on the completed Generator's Waste Material Profile Sheet.

MAKE A COPY OF THIS GENERATOR'S WASTE MATERIAL PROFILE SHEET FOR YOUR RECORDS. SEND THE ORIGINAL AND ATTACHMENTS TO THE ADDRESS SHOWN ON THE FRONT OF THIS WORK SET OR TO THE ADDRESS PROVIDED BY YOUR CHEMICAL WASTE MANAGEMENT, INC. SALES REPRESENTATIVE.

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TO: Pacific Environmental Laboratory Inc.

FROM: WACKER SILTRONIC CORP
P.O. Box 83180
Portland, OR 97283-0180

COC # 71790-1

RUSH YES ☐ NO ☒

9405 S.W. Nimbus Ave. Beaverton, OR 97005 (503) 644-0860

CHAIN OF CUSTODY RECORD

Proj No.	Project Name																						
N/A	Drilling Waste Analysis																						
P.O. Number 26045	Sampler Rick Gariepy 243-2020 X132																						
Sta. No.	Date	Time	Comp.	Grab	Station Location	No. of Containers	BTEX 602/8020	BTEX, VPH 3810 Modified	Gasoline 8015	TPH (IR) 418.1	Oil & Grease 413.1	EP TOX Cd,Cr,Pb only	EP TOX Metals(8)	PCB's 608/8080	Chlor. Solv. 601/8010	Flashpoint 1010	8010 (2HE)	MISC TCLP					
6B	7/17		X		Drilling Waste Drums	3												X					
↳ # 71790DW-1, 71790DW-2, 71790DW-3																							

ALL SAMPLES WILL BE DISPOSED OF 30 DAYS AFTER REPORT

Relinquished by: (Signature)	Date Time	Received by: (Signature)	Relinquished by: (Signature)	Date Time	Received by: (Signature)
[signature]	7/17/90 5:25pm				
Relinquished by: (Signature)	Date Time	Received by: (Signature)	Relinquished by: (Signature)	Date Time	Received by: (Signature)
Relinquished by: (Signature)	Date Time	Received for Laboratory by: (Signature)			
	7/17/90 5:25	Kim Richards			

Remarks: See Attached letter for list of Analysis.
P.E.L 90-1984

SCOEPA00054624

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180
7200 N.W. Front Ave.
Portland, OR 97210-3676
Phone (503) 243-2020
FAX 503-226-0052
TWX 910-464-4777
TLX 4970339

August 21, 1990

Becky Roper
Chemical Waste Management, Inc.
Star Route
Box 9
Arlington, Oregon 97812

RE: Generator's Waste Material Profile Sheet No. J82851

Dear Ms. Roper:

You contacted me last week concerning the EPA hazardous waste numbers for the disposal of drilling muds, profile sheet number J82851. I contacted Don Peters of the DEQ for his recommendation on what waste numbers should be assigned to this waste. Don contacted Paul Christiansen, also of the DEQ, for his recommendation. Their comments are as follows:

1. Until September 25, 1990, this waste does not have to be handled as a hazardous waste, but it should be handled as a state waste, code X004 (because it is a soil with a hazardous waste constituent). If you could accept these drums for disposal before September 25, they will be labeled with a blue "NON-REGULATED WASTE" sticker. This label will state that it is a "non-regulated material per 49 CFR 172.101" and that the drum contains "State Waste X004".

2. If you can not accept this material until after September 25, they would have to be handled as a hazardous waste with EPA waste number D018. Paul mentioned that because Wacker has no knowledge of how the waste originated or if it came from an "F" listed waste, we do not have to designate the material as an "F" waste. In this case, the drums would be labeled with a hazardous waste sticker. The proper shipping name would be "Hazardous waste, solid, n.o.s., ORM-E, NA9189 (D018)".

Obviously, we would like to dispose of this material before September 25, 1990. The original date was September 15, as stated in my letter to you dated August 6.

I hope this clarifies your question on the EPA waste code for this material. If you have any further questions or comments, please contact me at 243-2020, extension 132.

Very truly yours,

WACKER SILTRONIC CORPORATION

Richard G. Gariepy
Environmental Engineer

cc: John Pittman
Steve Beiswenger
Toni Santos - Chemical Waste Management, Kent, WA

drilmud1.ltr

SCOEPA00054626

PACIFIC ENVIRONMENTAL LABORATORY, INC.
9405 SW Nimbus Avenue
BEAVERTON, OREGON 97005

(503) 644-0660

INVOICE

5142

PEL #90-1984

TO

Wacker Siltronic
P.O. Box 03180
Portland, OR 97203

DATE: 8/23/90
CUSTOMER ORDER NO.: P.O. #26045
SALESPERSON:
VIA:

TERMS: Net 30, 1.5% late charge

QUANTITY	DESCRIPTION	PRICE	AMOUNT
1	T.C.L.P. Prep		70.00
1	T.C.L.P. Metals (As, Ba, Cd, Cr, Pb, Hg)		80.00
1	T.C.L.P. Pesticides		180.00
1	T.C.L.P. Herbicides		250.00
1	T.C.L.P. Zero Headspace Extraction		100.00
1	T.C.L.P. Volatiles		225.00
	TOTAL		$905.00

OK to Pay
Richard Gantz
8/27/90

Thank You!

ORIGINAL

Thank You!

SCOEPA00054627

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180
7200 N.W. Front Ave.
Portland, OR 97210-3676
Phone (503) 243-2020
FAX 503-226-0052
TWX 910-464-4777
TLX 4970339

July 17, 1990

Pacific Environmental Laboratory
9405 S.W. Nimbus Avenue
Beaverton, Oregon 97005

Re: Chain of Custody Number 71790-1

The letter is an attachment to the Chain of Custody referenced above. TCLP analysis is required on this sample for the following constituents (from 40 CFR 261.24 Table 1):

Arsenic	Benzene
Barium	Chlorobenzene
Cadmium	1,1-Dichloroethylene
Chromium	Methyl Ethyl Ketone
Lead	Pyridine
Mercury	Tetrachloroethylene
	Trichloroethylene
Chlordane	
2,4-D	
Endrin	
Heptachlor	
Lindane Gamma BHC	
Methoxychlor	
Toxaphene	
2,4,5-TP (Silvex)	

left off - will do

The purpose of this analysis is to test the sample for EPA Toxicity Characteristic as outlined in 40 CFR 261.24 (attached). Therefore, the detection levels should be equal to or lower than the regulatory level shown in Table 1.

If you have any questions or comments, please contact me at 243-2020, extension 132.

Very truly yours,

WACKER SILTRONIC CORPORATION

Richard G. Gariepy
Environmental Engineer

Attachment

TO: Pacific Environmental Laboratory Inc

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

FROM: WACKER SILTRONIC CORP
P.O. Box 83180
Portland, OR 97283-0180

COC # 71790-1

RUSH YES ☐ NO ☒

CHAIN OF CUSTODY RECORD

Proj No. N/A

Project Name: Drilling Waste Analysis

P.O. Number 26045

Sampler: Rick Gariepy 243-2020 X132

Sa. No.	Date	Time	Comp.	Grab	Station Location	No. of Containers	BTEX 602/8020	BTEX, VPH 3810 Modified	Gasoline 8015	TPH (IR) 418.1	Oil & Grease 413.1	EP TOX Cd, Cr, Pb only	EP TOX Metals (8)	PCB's 608/8080	Chlor. Solv. 601/8010	Flashpoint 1010	8010 (2 HE)	MISC TCLP
GB	7/17		X		Drilling Waste Drums	3												X
Seq # 71790DW-1, 71790DW-2, 71790DW-3																		

Relinquished by: (Signature)	Date Time	Received by: (Signature)	Relinquished by: (Signature)	Date Time	Received by: (Signature)
Relinquished by: (Signature)	Date Time	Received by: (Signature)	Relinquished by: (Signature)	Date Time	Received by: (Signature)
Relinquished by: (Signature)	Date Time	Received for Laboratory by: (Signature)			

Remarks: See Attached letter for list of Analysis.

SCOEPA00054629

Wacker Siltronic Corporation WACKER

P.O. BOX 83180 PORTLAND, OREGON 97283-0180

TO: Pacific Environmental Lab

Sample Name: Drilling Waste Composite

Sample No.: 71790 DW-1

Contact: Rick Gerigy 243-2020 x132

Sample Date: 7-17-90

Chain of Custody No.: 71790-1

Wacker Siltronic Corporation WACKER

P.O. BOX 83180 PORTLAND, OREGON 97283-0180

TO: Pacific Environmental Lab

Sample Name: Drilling Waste Composite

Sample No.: 71790 DW-2

Contact: Rick Gerigy 243-2020 x132

Sample Date: 7-17-90

Chain of Custody NO.: 71790-1

Wacker Siltronic Corporation WACKER

P.O. BOX 83180 PORTLAND, OREGON 97283-0180

TO: Pacific Environmental Lab

Sample Name: Drilling Waste Composite

Sample NO.: 71790 DW-3

Contact: Rick Gerigy 243-2020 x132

Sample Date: 7-17-90

Chain of Custody No.: 71790-1

EXHIBIT A
ACCEPTANCE LETTER

CUSTOMER NAME & MAILING ADDRESS
Wacker Siltronic
Post Office Box 83180
Portland, OR 97203

CUSTOMER BILLING ADDRESS
Wacker Siltronic
Post Office Box 83180
Portland, OR 97203

Dear Mr. Murry Telson:

Your Waste Profile No.PDX-J82851-042 (Wacker Siltronic) has been approved for acceptance at Chemical Waste Management, Inc.'s Chem-Security Systems, Inc. Facility located in Arlington, OR subject to the terms of the Waste Transportation and Disposal Agreement between the Companies. Based on the sample or description of the waste provided to Chemical Waste Management, Inc., the compensation for services provided is described below. The price is, however, subject to change by Chemical Waste Management, Inc. upon thirty (30) days prior written notice to you. Payment terms: Net thirty (30) days upon approved credit.

This Exhibit shall commence on 09/10/1990, and shall remain in effect until terminated by either party with or without cause by thirty (30) days advance written notice to the other party. Note: Changes may have been made to some sections of the above referenced profile sheet, by signing this Exhibit you are affirming that you agree with these changes.

DISPOSAL METHOD: Secure Landfill at the above facility and/or other EPA and CWM approved facility(ies). This disposal approval will expire 08/23/1992.

LOADING AND TRANSPORTATION: The Waste Products are to be loaded on vehicles by Customer for Flatbed or End Dump Trucks and by Disposer for Flatbeds with lift gates, Vacuum or Roll Off Trucks. Please call our dispatch department to schedule transportation at 503 454-2620 .

COMPENSATION: See the attached quote(s). Priced as profiled, invoiced as received. Transportation and Disposal pricing for other methods of shipment and/or pickup locations are quoted on request. All applicable taxes will be invoiced as imposed and are not included in the prices quoted. Disposer is authorized to reclaim, recover and sell, distribute or use the Waste Products, their components or residues.

If you have any questions please feel free to call our office.

Thank you for your continuing business.

Sincerely,

Chemical Waste Management, Inc.

Terry Pleasant
District Sales Manager

55B Accpt Ltr (Revised 2-5-88) TDCSDR

ACCEPTED

Wacker Siltronic

Signature M Bonevik

Title Purchasing Mgr.

Date Sept. 11, 1990

4504001543 W09-105-01-90 J82851CSSI 042

CLIENT'S COPY

Printed on recycled paper

SCOEPA00054631

ADDITIONAL INFORMATION

- Hourly Rates for After-Hour Services

The following "overtime" rates apply to services which extend beyond the normal operation hours on week days, and for Saturday service. A four(4) hour miniumum if applied to all Saturday work. Rates for Sundays and holidays will be quoted on request.

Landfill and impoundment disposal	$225.00/hour
Chemical Stabilization required	$275.00/hour

TRANSPORTATION:

Rate includes loading time as follows:

1-9 drums = 1/2 hour 10 + drums = 1 hour

Loading time beyond those indicated will be charged at $67.50 per hour.

Transportation cost for one pallet, 4 x 4 feet or smaller, is equivalent to four(4) drums.

Maximum weight= 48,000 per flatbed.

Demurrage: $67.50 for time beyond one hour.

HAZARDOUS WASTE FEE

Prices quoted do not include federal or state fees. Fees will be invoiced as imposed. The State of Oregon levies a $20.00 per ton hazardous waste fee on all wastes accepted at the Arlington Facility.

- Minimum Disposal Fees $200.00/Truckload
- Overpacking Containers $185.00/overpack plus $50.00 (labor)
- Van Truck Fee $200.00/van
- F-Listed Wastes/Solvent Pre-Screen $150.00/waste stream
- Terms

All prices quoted are net 30 days and FOB Arlington, Oregon. Prices are contingent on submittal and approval of a Generator's Waste Material Profile Sheet and execution of a contract with Chemical Waste Management, Inc.

The prices contained in this list are based on treatment/disposal practices in effect at Arlington at the time the list is prepared. Your charges will be based on the required treatment of disposal at the time your waste arrive at the facility. Changes in treatment and disposal practices required by law or regulation can cause an immediate change in prices in prices that does not allow time for notification.

(Rev. 6-7-90)

Printed on recycled paper

OPERATING RECORD

1. Written notice from receiver of hazardous waste informing generator that he has appropriate permits and will accept waste. Owner/Operator must keep copy of written notice as part of OR — 264.12 (b)

2. Detailed chemical & physical analysis of a representative sample of the waste. (keep 3 years) — 264.13 (a)
   a. Analysis must be repeated as necessary — (b)
   b. Develop and follow a written waste analysis plan
      1) Parameters for testing waste. — 262.40 (c)
      2) Rationale for choosing parameters.
      3) Test methods
      4) Sampling method
      5) Frequency of testing to insure accuracy

3. Written schedule for inspecting monitoring equipment, security devices, operating and structural equipment (dikes, sump pumps) that are important to preventing, detecting, or responding to environmental or human health hazards. — 264.15 (b) (Must be submitted with Part B of permit applic.)
   a. Must identify types of problems which are to be looked for (leaks, malfunctions, eroding dike)
   b. Frequency of inspection may vary based on rate of deterioration. Areas subject to spills such as loading & unloading area, must be inspected daily when in use.
   c. Record inspections in log or summary. Keep records 3 years.
      1) Date & time of inspection
      2) Name of inspector
      3) Notation of observations
      4) Date and nature of repairs or remedial action.
   e. Inspect tanks & discharge control equipment daily. — 265.194 (a)
   d. Inspect areas where containers are stored, at least weekly, looking for leaks or deterioration. — 265.174

4. Owner/Operator must note in OR the time, date and details of any incident that requires implementing the contingency plan — 264.56 (j)

5. Generator must keep copy of each manifest and copy from designated facility which received waste. (3 years) — 262.40 (a)

6. Copy of Annual Report (Submit to Regional Admin. by March 1 each year) — 262.41, 264.75

7. Exception Report — 262.42
   a) Must receive copy of manifest within 35 days of shipping
   b) Submit ER to EPA Regional Admin. after 45 days

SCOEPA00054633

SECURITY

1. Owner/Operator must prevent unknowing entry and minimize possibility for unauthorized entry of persons/livestock onto active portion of facility	264.14 (a)
2. Owner/Operator must post sign "Danger - Unauthorized Personnel Keep Out." a. Each entrance to active portion of facility b. Other locations - sufficient numbers to be seen from any approach	264.14 (c)

PERSONNEL TRAINING

1. Facility personnel must complete training program within 6 months after Nov. 19 or 6 months after date of employment. 264.16

2. Facility personnel must take part in an annual review of initial training.

3. Maintain following documents/records:

   a) Job title for each position related to hazardous waste; name of employee
   b) A written job description for each position. Include requisite skill, education or qualifications, duties assigned to each position.
   c) Written description of type & amount of training
   d) Document training, job experience has been completed by facility personnel.

4. Training records on current personnel must be kept until closure of the facility.

   Training records on former employees must be kept for 3 years from date employee last worked at facility.

SCOEPA00054635

CONTINGENCY PLAN

1. Amend SPCC PLAN to incorporate hazardous waste management. 264.52
2. Describe arrangements with local police, fire dept. etc
3. List names, addresses, phone numbers of all persons qualified to act as emergency coordinator.
4. List of emergency equipment at facility
   a) Location
   b) Physical description / capability
5. Copies 264.53
   a) Maintained at facility
   b) All emergency response teams, police, fire dept. etc
6. Keep updated whenever
   a) Facility permit is revised
   b) Plan fails in practice
   c) Facility changes design
   d) List of emergency coordinators changes
   e) List of emergency equipment changes

EMERGENCY PROCEDURES

1. Emergency Coordinator determines character, source, extent of any release. 264.56
2. Notification
   a) Immediate: • Government official designated on-scene coordinator?
      • National Response Center 800/424-8802
   b) Within 15 days of incident a written report to Regional Administrator
      1) Name, address, phone no. of owner/operator
      2) Name, address, phone no. of facility
      3) Date, time, type of incident
      4) Name & quantity of material
      5) Injuries
      6) Assessment of hazards
      7) Estimated recovery of material

SCOEPA00054636

CLOSURE

1. On effective date Owner/Operator must have a written closure plan.	265.112
a) Description of how & when facility will be closed.	
b) How requirements of 265.111; 197; 228; 280; 310; 351; 381; 404 will be met.	
c) Estimate maximum inventory of waste in storage or treatment at any given time.	
d) Schedule for final closure	
2. Owner/Operator may amend closure plan at any time.	
3. Owner/Operator must submit closure plan to Regional Administrator at least 180 days prior to closure.	
4. Owner/Operator has 6 mo. for closure.	
5. When closure is completed, Owner/Operator must submit to Regional Administrator certification both by Owner/Operator and by independent PE that facility has been closed in accordance with approved closure plan.	265.115
6. On effective date Owner/Operator must have written estimate of cost of closing the facility.	265.142
a) On each anniversary of effective date Owner/Operator must adjust latest closure cost using inflation factor	265.142 (c)

TANKS

1. Uncovered tanks must be operated to ensure 2 ft. of free board, unless tank is equipped with containment (dike), drainage control system, or diversion structure (standby tank).	265.192 (c)
2. Inspect tanks and discharge control equipment	265.194 (a)

SCOEPA00054638

9.0 Underground Storage Tanks

9.1 Removal of Underground Solvent Recovery Tanks

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9.1.2 Chronology of Solvent Recovery Tank Excavation and Removal

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   SOD Tank Removal Procedure
2. Job Estimate and Purchase Order
   Slurry Sand Removal - Crosby and Overton
3. Photos - Slurry Sand Removal
   Placement in lined trenches
4. Laboratory Results, Slurry Sand Contamination,
   Coffey Laboratories
5. Proposal from Hoffman Construction
   Tank Removal and Yard Restoration
   Purchase Order for Project
6. Photos - Tank Removal Process
7. Laboratory Results, Rinsing of SOD Headers
8. Notes to File - Conservations with DEQ
9. Tank Inspection Reports with Photos
10. Drain and Vent Plugging Details
11. Table 1 - SOD Tank Removal Cost Summary

9.1.3 Location of Former Underground Storage Tanks

Prepared By: James R. Ellis
September, 1985

SCOEPA00054639

REMOVAL OF UNDERGROUND SOLVENT RECOVERY TANKS

- HISTORY OF OPERATION
- TANK EXCAVATION AND REMOVAL

Prepared by: James R. Ellis
September, 1985

SCOEPA00054640

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ATTACHMENTS

1. SOD Tank Removal Plan - Drawing 2M261
   SOD Tank Removal Procedure
2. Job Estimate and Purchase Order
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   Placement in lined trenches
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7. Laboratory Results, Rinsing of SOD
   Headers
8. Notes to File - Conversations with DEQ
9. Tank Inspection Reports with Photos
10. Drain and Vent Plugging Details
11. Table 1 - SOD Tank Removal Cost Summary

SCOEPA00054641

WACKER SILTRONIC CORP.

1. CHRONOLOGY OF SOLVENT RECOVERY TANK OPERATIONS

The original plant design included drain and collection systems for three (3) types of waste solvent streams. All three (3) of these systems utilized underground gravity-drain piping from the generation point to buried tanks located in the South Yard Area of the plant. These systems included:

a.) SOD-T System, (Solvent-Organic Drain-Trace) - designed to collect all water wastes with a trace of solvent contamination.

b.) SOD-R System, (Solvent-Organic Drain-Recycle) - designed to collect all organic solvent wastes which are suitable for recycling back to the process after distillation.

c.) SOD-W System, (Solvent-Organic Drain-Waste) - designed to collect all organic solvent wastes which are contaminated to such a degree that the stream must be distilled and recovered for sale by an outside recycler.

The SOD-T system was designed on the premise that trace contaminants of solvent in water would not exceed the water solubility, allowing the liquid to remain in a single phase. Similarly, the SOD-W system was designed on the premise that insufficient water would be available to form more than one phase. Actual operation indicated that two phases were formed in both cases. Expecially in the SOD-W, the system became difficult to operate because, with the tank being underground, the location of the two-phase interface was unknown. (Also, with a high water content in the SOD-W, vapor phase corrosion became a concern.)

Because this operation was different than designs, the underground tanks were emptied, cleaned and inspected during April 2 and 3, 1983. This inspection, conducted by CH2M Hill, indicated that extensive scaling had occurred in the vapor phase section of the tanks. In the liquid phase areas of the tanks, the metal surfaces were in good condition.

Due to the aforementioned problems, the decision was made to design a new recovered solvent collection system which included corrosion-resistant above-ground tanks equipped with sight glasses. It was agreed that after such a system was installed, the underground drain lines and tanks would be removed from service.

The new above-ground recovered solvent collection system was designed during the third quarter of 1983 and installed during the fourth quarter of 1983. The new system was started up in sections during February and March of 1984. During the third quarter of 1984 the underground tanks were cleaned and filled with slurry sand.

2. CHRONOLOGY OF TANK REMOVAL PROCEDURE

During July, 1985 Wacker Siltronic management decided to physically remove all three (3) of the aforementioned buried Solvent Recovery Tanks. This action was prompted by concern generated from publications describing the proposed underground tank legislation.

The following is a chronological summary of the project activity for removal of the subject tanks:

Date	Day	Comments
8-2-85	Friday	Hoffman was supplied with drawings, photos and engineering information necessary for them to prepare a time and material, not-to-exceed (NTE) proposal for the tank removal project, (See Attachment 1).
8-5-85	Monday	Hoffman provided a verbal proposal for the project. Advised us to use 30' adjacent auger cast piling for shoring the TCE storage tank containment basin. Hoffman concerned about difficulty of job and extent of damage to adjacent structures. NTE price $70,000. We agreed that Siltronic would be responsible for removing slurry sand from tanks. Asked Crosby & Overton for NTE cost for sand removal by vacuum truck. Siltronic decided to go with auger cast piling for shoring, even though it was very expensive. Other engineering discussions took place so that Hoffman could submit a formal proposal.
8-9-85	Friday	Siltronic agreed to an NTE proposal of $67,000. and told Hoffman that job could proceed. Crosby & Overton submitted $4996 cost for sand removal, (See Attachment 2). Hoffman cleaned out 4' dia. concrete manholes positioned above each tank. These manholes had been filled with gravel and slurry sand.

By end of day, access was gained to each tank through concrete manholes. Hoffman started manual excavation to locate 12.5 KV power lines to transformer No. 3.

Crosby & Overton was scheduled to start Monday on slurry sand removal.
Weather - no ppt, high in mid 80's.

8-12-85 Monday

Hoffman continued to manually excavate to locate power lines and natural gas line.

Crosby & Overton began operation to remove slurry sand from the SOD-T tank using a vacuum truck from Leo's Industrial Cleaning, Longview, Wash. Hoffman constructed 16 ft. x 40 ft. trenches using backhoe. These trenches were lined with 6 mil continuous Visqueen sheeting for placement of the slurry sand and to facilitate transfer of water to be pumped back to solvent recovery system, (See photos in Attachment 3). This action was taken to provide containment of any TCE which could have been left in slurry sand.

Crosby and Overton found that sand removal was progressing much slower than expected by end of day.
Weather - no ppt, high in mid 80's.

8-13-85 Tuesday

Crosby & Overton's work continues to be slower than expected, as sand is highly compacted in tanks. Considerable manual labor necessary to feed sand to vacuum hose. Siltronic Facilities Operators have now pumped a total of 1800 gallons of water out of the slurry sand from all three (3) tanks. This water has been recycled back through TCE Stripper to ensure containment of any residual TCE in the tanks. A 'Bobcat' was used to spread out the sand in the trenches.
Weather - no ppt, high in mid 80's.

8-14-85	Wednesday	Crosby & Overton has now added one (1) additional laborer to speed up the removal of the sand from the tanks. Sand gets drier as removal progresses toward bottom of tanks. Composite sample of the sand was collected from various levels in the tank and sent to Coffey Labs for Analysis, (see Attachment 4). As indicated, the TCE content of the sand was below 1 ppm and considered "not detectable" by Coffey Labs. Weather no ppt, high in the low 90's.
8-15-85	Thursday	Crosby & Overton completed sand removal from the SOD-T tank and began work on the SOD-R tank. The extra laborer and different techniques for feeding the hose are accelerating the sand removal process. Two (2) composite sand samples were removed from various levels in the SOD-R tank and sent to Coffey Labs, (see Attachment 4). Received formal proposal from Hoffman Construction for their part of tank removal process, (see Attachment 5).
8-16-85	Friday	Crosby & Overton completed the sand removal from SOD-R tank and also completed the SOD-W tank which they had worked previously on an intermittent basis. Again, a composite sample was taken from various levels of the SOD-W tank. This sample was taken to Coffey Labs on 8-19-85. Crosby & Overton pulled equipment off of plant site. Weather - no ppt., high in high 80's
8-19-85	Monday	DeWitt Construction moved onto plant site to set up drilling equipment for installation of auger cast piling adjacent to TCE tank containment. DeWitt completed two (2) holes in the afternoon, as grout sub-contractor arrived in the p.m. Weather - no ppt. over weekend, overcast Monday w/highs in mid 70's.

8-20-85	Tuesday	DeWitt Construction and the grouting sub-contractor completed the auger cast piling installation. The 1" rebar was installed in each piling after the grout was poured. Piling needs seven (7) days of cure time before excavation adjacent to them can begin. Hoffman laborers have dug down and located some of the SOD inlet and outlet piping. Some of this piping was cut and partially removed. Weather - no ppt, high in low 70's.
8-21-85	Wednesday	Hoffman began excavation with backhoe near the SOD-R and SOD-W tanks. They uncovered the CAD, WAD and OWW headers so that these pipes can be suspended from above to prevent slumping and breakage during excavation, (see photo in Attachment 6). Weather - no ppt. high in mid 70's.
8-22-85	Thursday	Eudaly Bros. Construction moved trackhoe into the plant to perform major portion of the excavation. Started in the area of the SOD-W and SOD-R tanks. 30T crane was brought in from Gray's Crane Service in attempt to remove SOD-R tank, but with moist soil below tank, crane could not break vacuum caused by water. A 130T crane was scheduled for 8-23-85 from Gray's. Weather - no ppt. high in high 70's.
8-23-85	Friday	Hoffman brought in a 130T crane from Gray's. This crane successfully pulled the SOD-R and SOD-W tanks from the ground, (see photos in Attachment 6). Both tanks came out with difficulty using pea gravel to 'float' them by breaking seal with soil. Soil removal was kept at a minimum to prevent cave-in on the steep walls of the excavation. Both tanks were gouged and bent during the process of removal. The SOD-T tank's removal schedule was delayed until Wednesday, 8/28/85 to allow sufficient time for curing of the auger cast piling. Weather - no ppt., cloudy, high in low 90's.

8-24-85	Saturday	Entire plant was shut down for one (1) week due to slow market for silicon wafers.
8-26-85	Monday	Hoffman worked to finish exposing the CAD, WAD and OWW headers using hand laborers only. These pipes were supported from above using some surplus structural beams and cable as discussed previously. No excavation was done today with trackhoe. Weather - no ppt., high in mid 80's.
8-27-85	Tuesday	Backhoe operator worked to remove concrete manhole from above the SOD-T tank. No excavation was done today with trackhoe. Weather - no ppt., cloudy, high in 80's
8-28-85	Wednesday	Hoffman brought in a 130T crane from Gray's once again. At 2:30 p.m., the SOD-T tank was removed using pea gravel to 'float' the tank and prevent a cave-in of the steep walls of the excavation, (see photo in Attachment 6). Weather - no ppt., high in 80's
8-29-85	Thursday	Hoffman began backfilling area where tanks were removed. Laborers were involved in compacting of the back fill. The SOD-W drain line from the floor of the Solvent Storage Shed was capped at the excavation perimeter as was the SOD-W header coming from the Customer Service Lab. Neither of these lines had ever been used. Weather - no ppt., high in 80's.
8-30-85	Friday	Hoffman installed 55 gallon drums in preparation for rinsing of the SOD-T, SOD-R and SOD-W headers which were removed from service in the first quarter of 1984, (see photo in Attachment 6). Weather - light occasional showers

9-2-85	Monday	Holiday - no activity
9-3-85	Tuesday	Hoffman began removal of sidewalk to west of excavation as it had become badly undermined. Siltronic held meeting at 11:00 a.m. to review plan for rinsing of underground drain lines and headers which served as inlets for buried tanks. Weather- no ppt., cloudy, high in low 70's.
9-4-85	Wednesday	Siltronic started flushing SOD-T and SOD-R drain lines from Hega Cleaning machines at Positions 7.13 and 7.18 (see photo in Attachment 6) in the Process Building. Also, the SOD-R and SOD-W header flushing was started in the p.m. All rinse water was captured in the previously mentioned 55 gal. drums and pumped back to the Solvent Recovery System.
9-5-85	Thursday	Finished flushing that was begun on Wednesday and started flushing all other known drains in the Process Building. At the end of the day rinse water samples from each header were taken and submitted to Coffey Labs for analysis, (see Attachment 7). Review of this data indicated that the SOD-W header system required additional flushing.
9-6-85	Friday	Siltronic felt that the SOD-W line had not flushed properly because of debris in the drain lines which had caused "pooling". Accordingly, Roto-Rooter was brought in to ream out this drain line from one side of the building to the other. Siltronic rinsed this line for two (2) hours after Roto-Rooter was finished. After rinsing, an additional sample was taken and submitted to Coffey Labs, (see Attachment 7). Results indicated that the line had been flushed as clean as was possible.

9-9-85	Monday	Hoffman capped off all three (3) headers at the excavation for those drain systems which had been flushed; and resumed with backfill and compaction activities. Hoffman also cut holes in all three (3) of the tanks and positioned them so that they could be easily inspected, (see photo in Attachment 6). All three (3) of the tanks were inspected by Jim Ellis using a flashlight and a peen. Results of this inspection are shown in Attachment 9.
9-10-85 through 9-23-85	Tuesday Monday	This period of time was used for rerouting electrical conduit, replacing damaged sidewalk and curbing, and reasphalting the damaged street.
9-23-85	Monday	Jim Ellis called Renee Dulay to schedule a DEQ inspection of the three tanks which were removed. This inspection was felt to be necessary to document the fact that the tanks were not leaking solvent into the ground water.
9-25-85	Wednesday	As Renee Dulay suggested earlier, Jim Ellis contacted Charles Gray of DEQ to further discuss schedule for inspection of the subject tanks. The details of this discussion are outlined in the attached 'Note to File', (See Attachment 8).
10-1-85	Tuesday	Jim Ellis discussed tank inspection and closure procedure with Rich Reiter of DEQ. The details of this discussion are outlined in the attached 'Note to File' (See Attachment 8). Basically, the conversation with Mr. Reiter indicated that tanks could be removed from property and sold for scrap.

10-7-85 Monday through 10-25-85 Friday	Scrap dealer used acetylene torch to cut tanks up so that they could be removed from premises. Tanks were off of property by 10-25-85.
10-21-85 Monday through 11/4/85 Monday	Hoffman crew plugged forty (40) plus solvent organic drains throughout the Process Building and yard area. All gravity drain piping which fed the underground tanks has now been plugged at both ends with a pipe plug and in most cases, grout also, (See Attachment 10 for plugging details).

Please refer to Table 1 (Attachment 11) for the project cost summary.

(1)

REVISED: TANK REMOVAL PROCEDURE
THREE UNDERGROUND SOLVENT RECOVERY TANKS

NOTE: The three (3) subject tanks were taken out of service, along with the connected underground piping in the fourth quarter of 1983/

1. Hoffman will manually remove gravel from concrete manholes. Dig until reach pure sand or manhole nozzle on tank, whichever is first.

2. Hoffman will manually excavate area to locate 12.5 KV power lines on east side of buried tanks and other critical utilities and piping.

3. Hoffman will dig three (3) trenches which will be two (2) feet deep X twelve (12) feet wide X eighty (80) feet long lined with continuous Visqueen plastic sheets.

4. Crosby and Overton will move in with 21 cubic yard vacuum truck to remove slurry sand from all three (3) buried tanks. The sand will be spread on Visqueen plastic sheet in the nearby field area by Crosby and Overton. Samples will be taken by owner and analysis will be completed by outside laboratory to determine disposition of slurry sand. If sand is clean, it can be used as part of fill soil.

5. DeWitt Construction will install 18" diameter auger cast piling near and in parallel with west wall of TCE tank containment basin. These pilings will be tied to the foundation of the containment basin.

6. Owner will confirm that all power and control wiring is disconnected from the hot panels before excavation begins.

7. Hoffman will begin excavating in the 40' x 25' area designated to be above the three (3) buried tanks. During excavation, must be aware of general location of buried piping and electrical conduit/wiring (see photographs and drawings attached). Excavated soil must be removed to a designated location on the plant site for stock piling.

8. Piping which is connected to any of the three (3) tanks must be cut away at the perimeter of the excavation (for underground piping details, see attached photos and drawings).

9. Wiring which serviced the buried tanks should be removed totally, if it is necessary to cut conduit.

10. Underground piping will not be removed from yard area or from beneath the building, but will be flushed and tested to make sure it is free of contamination. Flush water will be caught in 55 gallon drum(s) and pumped back in Solvent Recovery System. The flushing will be performed by Wacker Siltronic personnel at a point in the excavation convenient to Hoffman. Hoffman must cap the underground pipelines at the perimeter of the excavation after flushing.

11. As the excavation proceeds, Siltronic safety personnel will test the atmosphere for TCE fumes. If these fume concentrations exceed acceptable values, respirators will be provided by Siltronic. This condition is not expected to occur, but will be ready if fumes become a problem.

12. The two (2) outside tanks are 10,000 gallons each and the middle tank is 5,000 gallon capacity. The tanks vary slightly as to the depth of burial. As the attached drawings indicate, the SOD-W tank is approximately 20.5 feet deep, SOD-R is 16.5 feet deep, and SOD-T is approximately 17.5 feet deep. All the tanks are filled with slurry sand. Their filled weights are approximately as follows:

SOD-W	85 tons
SOD-R	45 tons
SOD-5	85 tons

Directly above the manhole nozzle on each tank, there is a 10 foot long piece of concrete manhole pipe which remains. This must be removed.

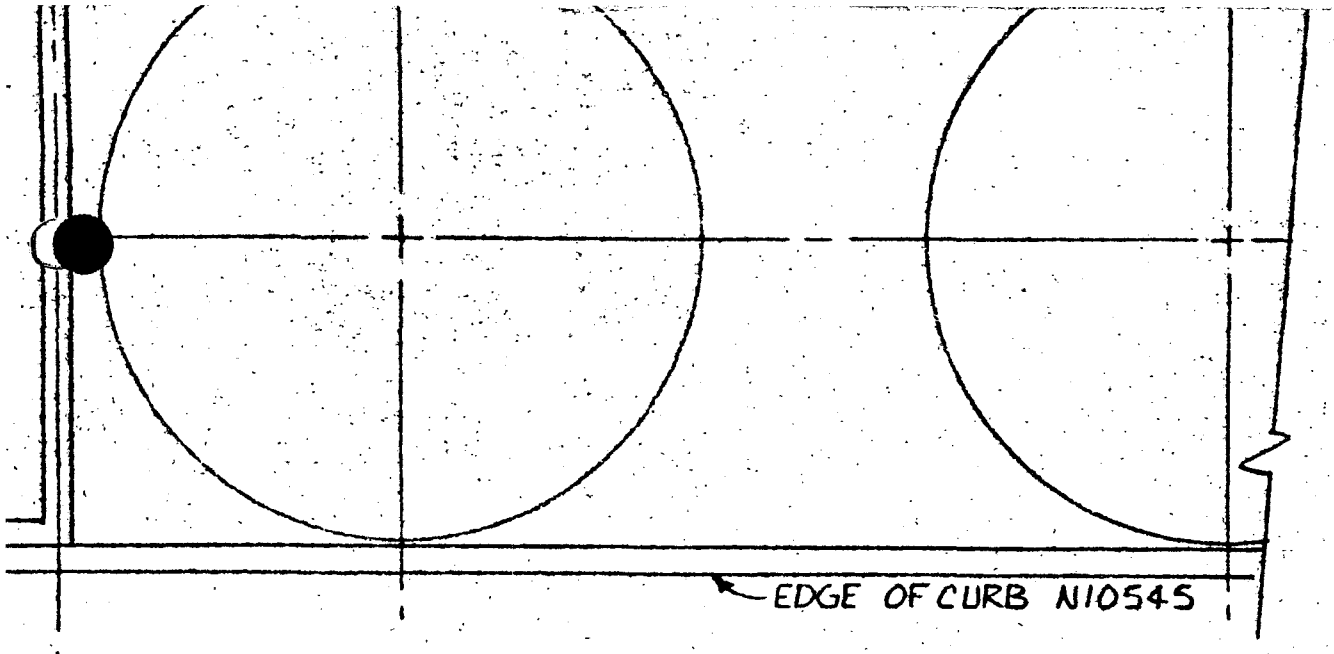
13. The slurry sand inside the tanks could be contaminated with TCE. For this reason, do not want to spill any residual sand from the tanks onto the soil.

The excavation should be made as shallow as possible. Ground-water levels will be higher than the bottom of the tanks.

14. The finished excavation will be lined with plastic sheeting and refilled with previously-excavated and imported fill soil which has been tested to verify that it is free of contamination. Fill soil will be compacted in lifts with intermediate testing.

15. Any damage to the street or the concrete structures adjacent to excavation must be restored to original condition after project is completed.

16. Wacker Siltronic will make arrangements for alternative routes to accommodate contractors and vendors who normally use street for plant access.



REFERENCE DOCUMENTS
DWG # 2C1, 2M62, 2M148, 4M4
HOFFMAN SK # 173, 221, 291
HOFFMAN SUBMITTAL # 353 FOR TANKS
T-37-13
T-37-14
T-37-30

BID

REQUEST FOR QUOTATION

JUL 29 1985

REV.	DESCRIPTION	BY	DATE	APP'D

WACKER

WACKER SILTRONIC CORPORATION

P.O. BOX 03180 PORTLAND, OREGON 97203

	BY	DATE
DRAWN	MSC	7-29-85
DESIGN	SET	7-29-85
APP'D		7-29-85
SCALE	1/4" = 1'-0"	

TITLE: SOD TANK REMOVAL PLAN

SIZE: D | DRAWING No.: 2M261 | SHEET:

STN No.:

SCOEPA00054655

(2)

CROSBY & OVERTON, INC.

5420 N. LAGOON
PORTLAND, OREGON 97217
283-1150 or 289-5749

HEAVY DUTY CLEANING

24 HOUR SERVICE

3406 13TH AVENUE SOUTHWEST
SEATTLE, WASHINGTON 98134
MA2-3400

RECEIVED
AUG 12 1985
WACKER SILTRONIC
ENGINEERING

DATE 8-9-85

FROM: John Mobley

TO: Jim Ellis
Wacker Siltronics Corporation
P.O. Box 03180
Portland, Oregon 97203

RE: Solicitation to bid Removal of 135 yards of sand from three underground tanks at your facility 7200 N.W. Front Ave. Portland Oregon.

Thank you for the opportunity to bid the above project. We intend to provide the following:

a) (x) Labor
b) (x) Materials
c) (x) Equipment
d) (x) Disposal on site

THE BID FOR THE ABOVE: ---------- $4,996.00

NOTES: Bid is based on straight time bases.
Bid is based on material in tanks being non-hazardous and tanks being safe for men to work in!
If liquid in tanks is hazardous Crosby & Overton will provide a storage tank for an additional fee.
If sand is contaminated Crosby & Overton will provide visqueen liners for cover included in bid.

John Mobley
John Mobley

Went over this NTE bid due to highly-compacted sand in the tanks and an unusual quantity of water setting on top of the sand.
Δ = #1543 for labor only.
Total #6539

per telephone call from John Mobley on 8-21-85.
JRE 8-21-85

WACKER

WACKER SILTRONIC CORPORATION

P.O. BOX 03180 • PORTLAND, OREGON 97203 • 503/243-2020 • TWX 910-464-4777

ISITIONER **PURCHASE ORDER**

DATE	P.O. NUMBER
08/12/85	53226

CROSBY AND OVERTON, INC
5420 N. LAGOON
PORTLAND, OR 97217

ATTN:

SHIP TO: WACKER SILTRONIC CORP. - 7200 N.W. FRONT AVE. - PORTLAND, OREGON 97229
SHIP VIA: JOB
F.O.B.: SP PPD ADD
TERMS: NET 30
BUYER: MR

JOB ORDER

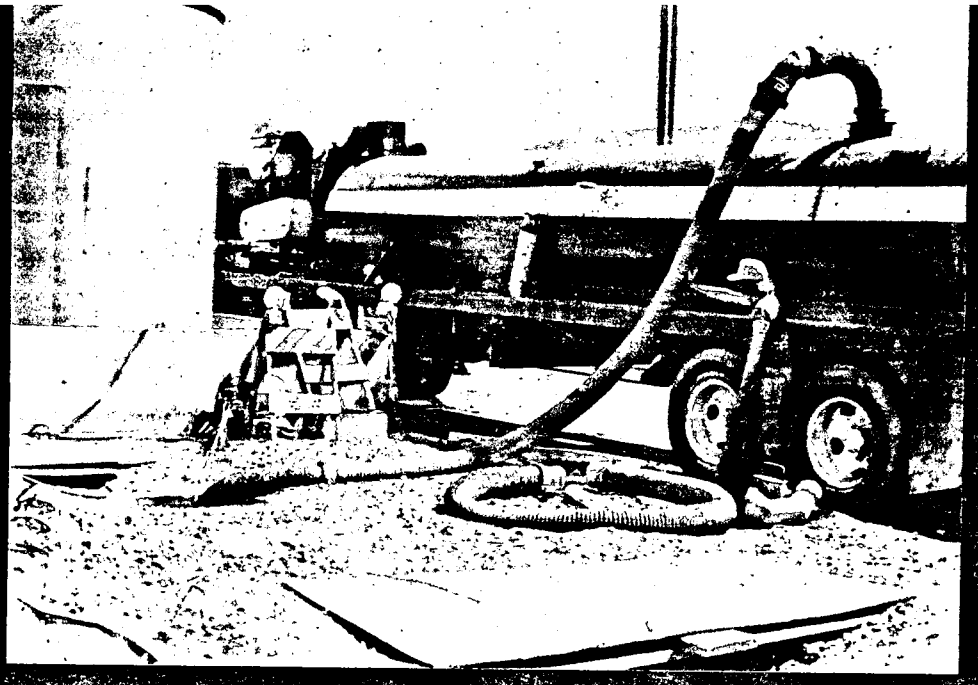
ITEM	QUANTITY	UNIT	DESCRIPTION	ACCOUNT/ STOCK NO.	DELIVER BY	UNIT PRICE	EXTENSION
001	1	JOB	REMOVE SLURRY SAND FROM THREE (3) BURIED TANKS WITH USE OF 14 CU. YD. VACCUM TRUCK. SPREAD SLURRY SAND ON CONTINUOUS, IMPERVIOUS LAYER OF VISQUEEN PLASTIC SHEET BORDERED BY SAND BAGS AT A LOCATION DESIGNATED BY OWNER: PLASTIC SHEET AND SAND BAGS SUPPLIED BY CONTRACTOR ALONG THREE (3) LABORERS AND VACUUM TRUCK. TIME AND MATERIALS NOT TO EXCEED $5,000.00 . . . CONFIRMATION ONLY M. RUDOLPH TO JIM 8/9/85	640020 1410	08/18/85	0.0000	0.000
						ORDER TOTAL	0.00

ITEMS	SUPERVISOR/ENGINEER	EXT.	END USE
ALL	J. R. ELLIS		SAME

INSTRUCTIONS ON FACE AND REVERSE SIDE ARE MADE PART OF THIS ORDER TO WHICH SELLER AGREES BY ACCEPTANCE OF SAME.

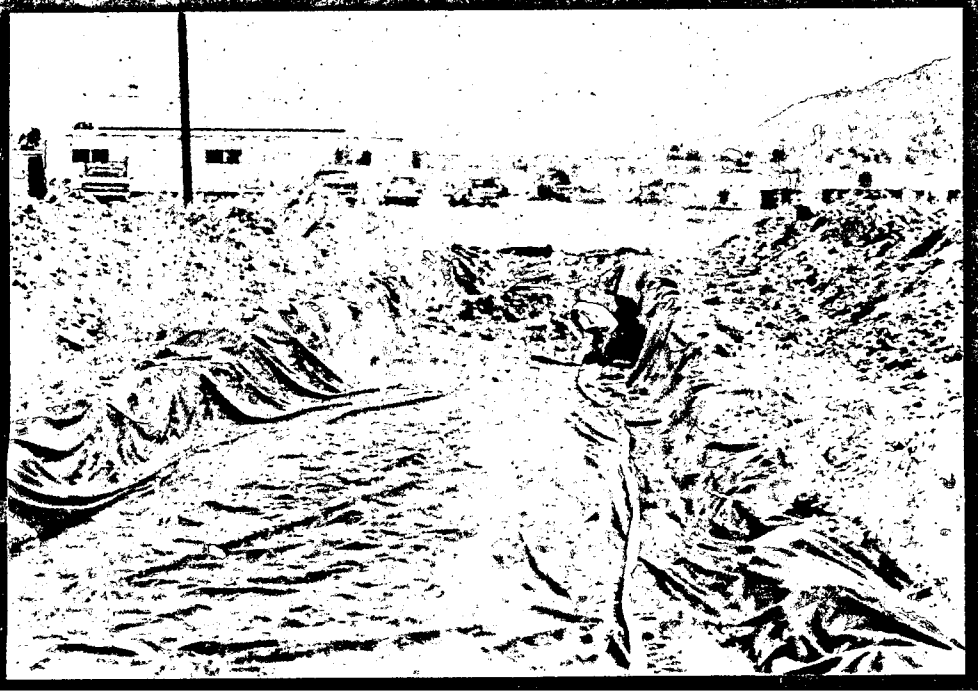
Maurice M. Rudolph
PURCHASING AGENT

SCOEPA00054657



Slurry sand removal by vacuum truck

Placement of slurry sand in lined trenches



Pumping water off of slurry sand for recovery

SCOEPA00054658

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

August 21, 1985
Log #A850815-D

Wacker Siltronic
P.O. Box 03180
Portland, Oregon 97203

Analysis Requested: Trichloroethylene

Sample ID: Sand

CLIENT ID	RESULTS
Sample No. 1 8-14-85 11:00 a.m. 3 samples SOD-T	< 1.0
Sample No. 2 8-15-85 11:30 a.m. SOD-R Tank	< 1.0
Sample No. 3 8-15-85 1:40 p.m. SOD-R Tank	< 1.0

< denotes "less than"

Results in mg/kg.

Sincerely,

Susan M. Coffey

Susan M. Coffey,
President

SMC/gs

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

August 22, 1985
Log #A850820-E

Wacker Siltronic
P.O. Box 03180
Portland, Oregon 97203

Analysis Requested: Trichloroethylene

Sample ID: Sand

CLIENT ID	RESULTS
Sample No. 4	
8-19-85 8:45 a.m.	
Sand from SOD-W	
TCE ~~Conkut~~ Content JRE	< 1.0 JRE

Results in mg/kg.

NOTE:
This result was reported to me by telephone as being < 1.0 mg/l and actions were taken in accordance with this result. As indicated, this report showed the result as 1.0 ppm. A telephone call to Susan Coffey on August 26 confirmed that result was < 1.0 ppm.
Jeneath Ellis

Sincerely,
Susan M. Coffey
Susan M. Coffey,
President

SMC/gs

SCOEPA00054660

WACKER

WACKER SILTRONIC CORPORATION

P.O. BOX 03180 • PORTLAND, OREGON 97203 • 503/243-2020 • TWX 910-464-4777

F[illegible]ISITIONER

PURCHASE ORDER

DATE	P.O. NUMBER
08/19/85	53247

254-1[illegible]4

COFFEY LABS
4914 NE 122ND AVENUE
PORTLAND, OR 97230

SHIP TO: WACKER SILTRONIC CORP. - 7200 N.W. FRONT AVE. - PORTLAND, OREGON 97229
SHIP VIA: BESTWAY
F.O.B.: DEST
TERMS: NET 30
BUYER: MR

ATTN:

JOB ORDER

ITEM	QUANTITY	UNIT	DESCRIPTION	ACCOUNT/ STOCK NO.	DELIVER BY	UNIT PRICE	EXTENSION
001	1	JOB	ANALYZE FOR TCE CONTENT IN SLURRY SAND USING EXTRACTION METHOD AND FID-GAS CHROMATOGRAPHY. RESULTS TO PHONED IN BEFORE NOON ON MODAY, AUGUST 19. . . . CONFIRMATION ONLY M. RUDOLPH 8/16/85	648071 1410	08/20/85	100.0000	100.000[illegible]
						ORDER TOTAL	100.00[illegible]

ITEMS	SUPERVISOR/ENGINEER	EXT.	END USE
ALL	J. ELLIS		SAME

INSTRUCTIONS ON FACE AND REVERSE SIDE ARE MADE PART OF THIS ORDER TO WHICH SELLER AGREES BY ACCEPTANCE OF SAME.

Maurice A Rudolph
PURCHASING AGENT

SCOEPA00054661

RECEIVED
AUG 15 1985
WACKER SILTRONIC
ENGINEERING

HOFFMAN CONSTRUCTION COMPANY
OF OREGON

August 14, 1985

Wacker Siltronic Corporation
P.O. Box 03180
Portland, Oregon 97203

ATTN: Mr. Jim Ellis

RE: SOD Tank Removal
Wacker Siltronic
Portland, Oregon
Our Job No. 8539

Gentlemen:

This confirms our proposal to remove three (3) existing undergound solvent recovery tanks at the service yard area in accordance with tank removal procedures and specifications furnished by Wacker Siltronic and as discussed on August 7, 1985.

We propose to do this work on a Time and Material (T&M) basis. Our "not to exceed" (NTE) estimate for this work is $67,000.00 and is based on the following conditions:

1. All sand slurry material is to be removed, spread and disposed of by others.
2. The solvent recovery tanks will be left on site, disposal will be by others.
3. Existing backfill material is suitable for reuse.
4. TCE monitoring and line flushing is by Wacker.
5. The east side of the excavation will be "shored" by approximately 22 lineal feet of auger cast pile that will be left in place upon completion of the work.

In accordance with direction received on August 9, 1985, we are proceeding with this work. Please call if there are questions. Thank you.

Sincerely,

T. A. Stein

Thomas A. Stein
Operations Manager

TAS:an
cc: Wacker Jobsite Office, Bill Watson

1300 S.W. SIXTH AVENUE P.O. BOX 1300 PORTLAND, OREGON 97207 503·221·8811

SCOEPA00054662

WACKER

WACKER SILTRONIC CORPORATION

P.O. BOX 03180 • PORTLAND, OREGON 97203 • 503/243-2020 • TWX 910-464-4777

P[illegible]ISITIONER **PURCHASE ORDER**

DATE	P.O. NUMBER
08/19/85	53262

HOFFMAN CONSTRUCTION COMPANY
P.O. BOX 1300
1300 S.W. 6TH AVENUE
PORTLAND OR 97207

ATTN:

SHIP TO: WACKER SILTRONIC CORP. - 7200 N.W. FRONT AVE. - PORTLAND, OREGON 97229
SHIP VIA: BESTWAY
F.O.B.: DEST
TERMS: NET 30
BUYER: MR

JOB ORDER

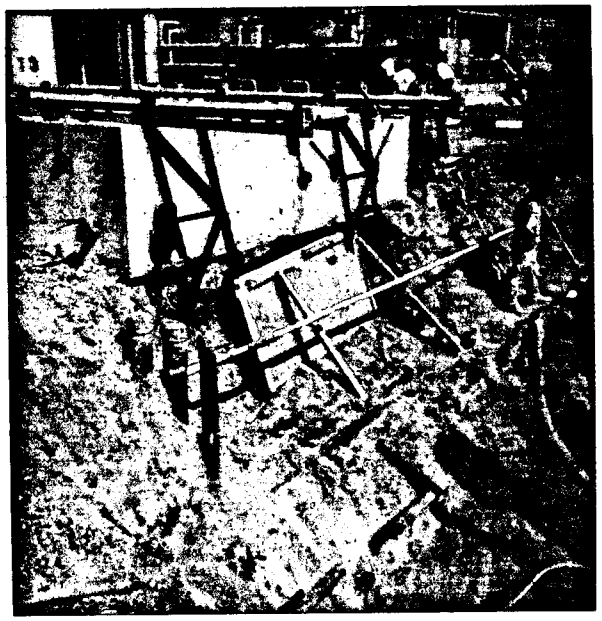
ITEM	QUANTITY	UNIT	DESCRIPTION	ACCOUNT/ STOCK NO.	DELIVER BY	UNIT PRICE	EXTENSION
001	1	JOB	REMOVE THREE (3) BURIED TANKS WHICH HAVE BEEN OUT-OF-SERVICE FOR SEVERAL YEARS. TANKS ARE TO BE REMOVED ACCORDING TO TANK REMOVAL PROCEDURES PREVIOUSLY DISCUSSED AND PER SPECITICATIONS PROVIDED BY OWNER. JOB IS TO BE BILLED ON TIME AND MATERIAL BASIS. A "NOT TO EXCEED" ESTIMATE FOR THIS WORK IS $67,000 BASED ON CONDITIONS LISTED IN LETTER OF AUGUST 14, 1985 FROM TOM STEIN OF HOFFMAN CONST. CO. . . M. RUDOLPH TO TOM 8/16/85	640020 1410	09/15/85	0.0000	0.0000
						ORDER TOTAL	0.00

ITEMS	SUPERVISOR/ENGINEER	EXT.	END USE
ALL	J. ELLIS		SAME

INSTRUCTIONS ON FACE AND REVERSE SIDE ARE MADE PART OF THIS ORDER TO WHICH SELLER AGREES BY ACCEPTANCE OF SAME.

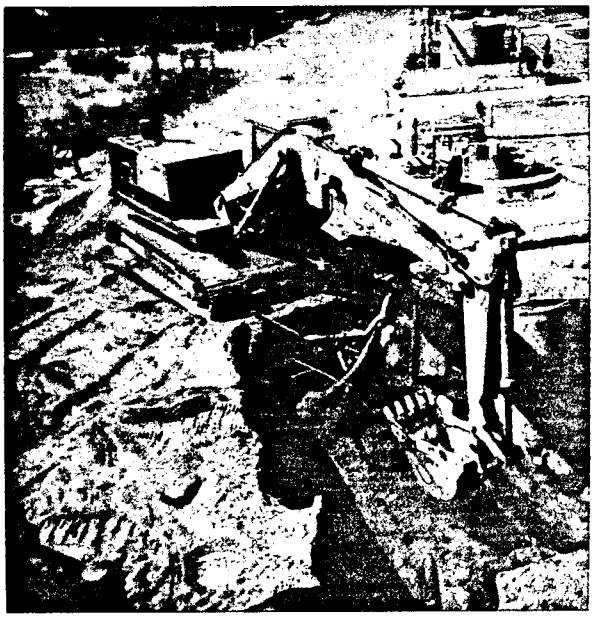
Maureen Rudolph
PURCHASING AGENT

SCOEPA00054663



1

Shoring containment basin -
Suspension of CAD, WAD, OWW headers



2

Trackhoe excavation of street
preparatory to tank removal

3

SOD-R Tank Removal

4

SOD-W Tank Removal

SCOEPA00054664

5

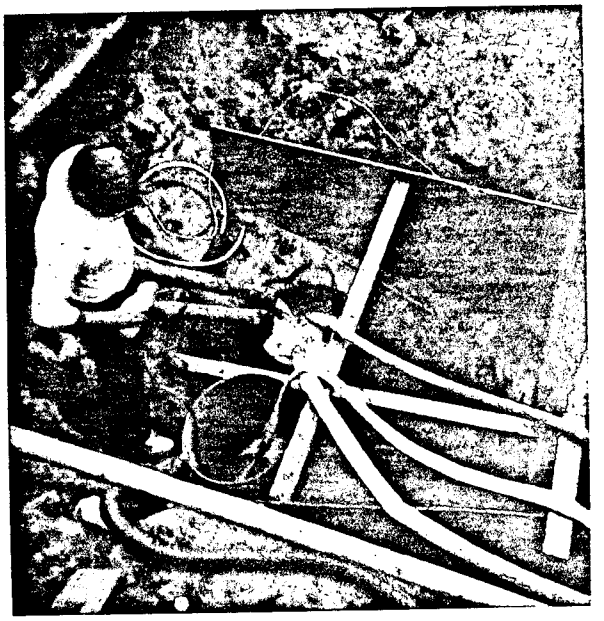
SOD-W Tank

6

SOD-T Tank

7

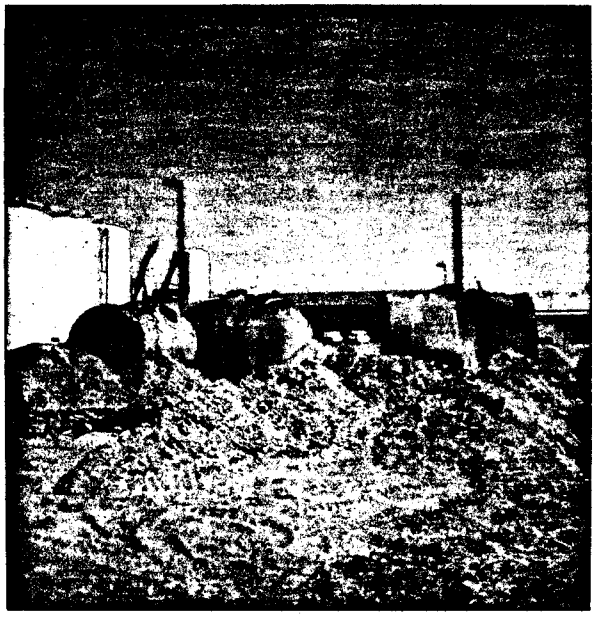
Preparation for
rinsing of headers and drain lines



8

Water rinsing of
SOD headers and drain lines

SCOEPA00054665



9

SOD-R Tank, SOD-T Tank and SOD-W Tank (left to right).

SCOEPA00054666

(7)

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

September 11, 1985

Log #A850906-D

Wacker Siltronic
P.O. Box 03180
7200 N.W. Front
Portland, OR 97203

Attention: Jim Ellis

Analysis Requested: Trichloroethylene

SAMPLE ID	TCE RESULTS (mg/l)
Sample R 9-5-85 4:00 pm Pipe Flush Water	3.5
Sample T 9-5-85 4:00 pm Pipe Flush Water	26
Sample W 9-5-85 4:oo pm Pipe Flush Water	47.5

Sincerely,

Susan M. Coffey

Susan M. Coffey,
President

SMC/db

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

September 11, 1985

Log #A850909-F

Wacker Siltronic
P.O. Box 03180
7200 N.W. Front
Portland, OR 97203

Attention: Jim Ellis

Analysis Requested: Trichloroethylene

SAMPLE ID	TCE RESULTS (mg/l)
SOD-W 9-6-85 1900 hrs	2.6

Sincerely,

Susan M. Coffey

Susan M. Coffey,
President

SMC/db

SCOEPA00054668

Note to File:
Wednesday, 2:00 p.m.
September 25, 1985

Conversation with Charlie Grey, DEQ, regarding procedure to prove that the three (3) buried Solvent Recovery Tanks were found to be leak-free and structurally sound after removal from ground.

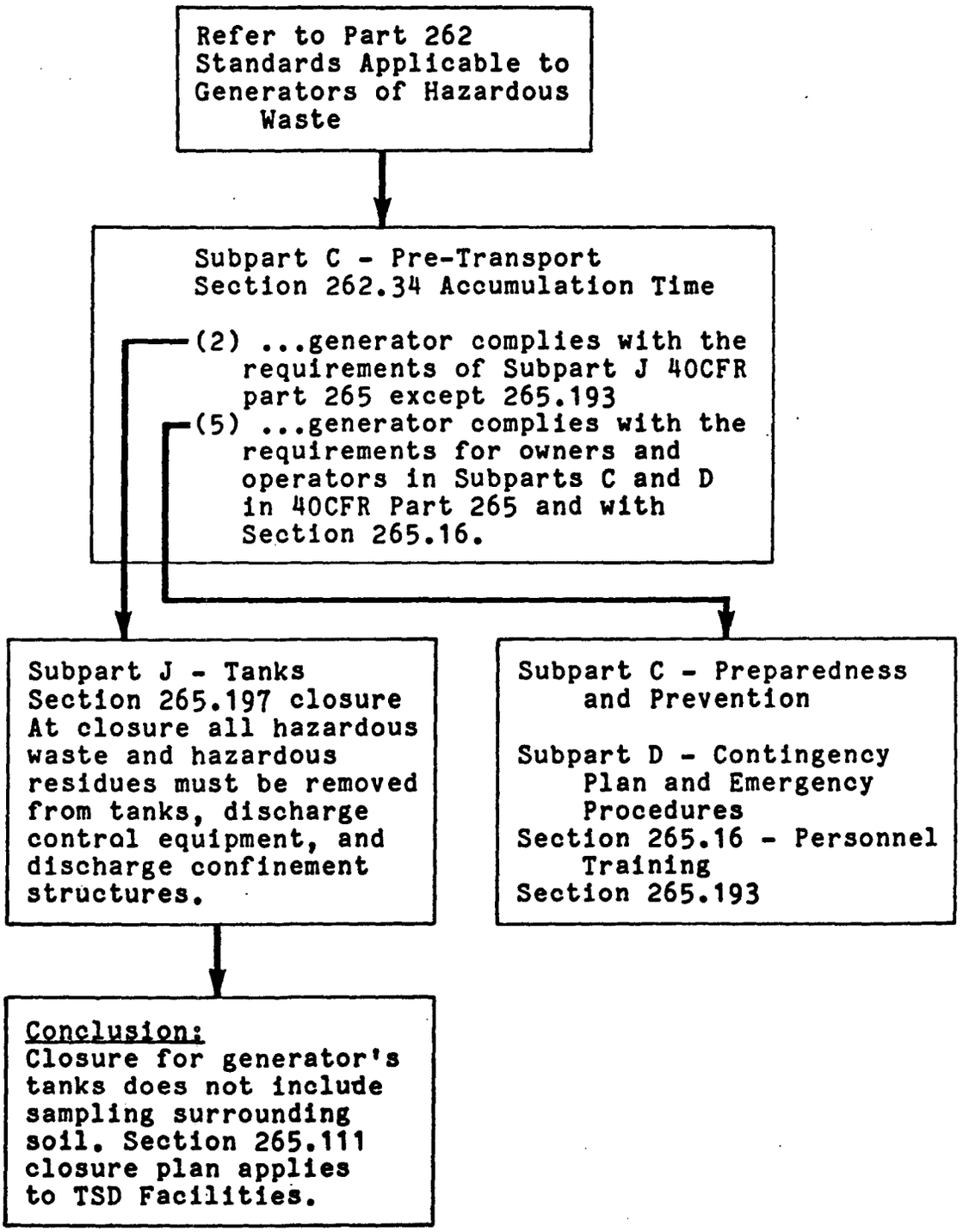
Because Charlie has been unaware of our efforts to eliminate the subject tanks, I provided the background to him. I informed him of Gary Pendleton's earlier report to the DEQ, (after Gary's termination), saying that the tanks were leaking. I told him that we were assuming that this report was in the public record. Because we removed the tanks and found them to be in good shape except for some vapor-phase scaling, we want to rebut Gary's statement in the public record. We feel that one way to refute Gary's testimony would be to have a DEQ representative visually inspect all three (3) tanks. Charlie indicated that the only way to prove to DEQ that the tanks were not leaking, would be to sample the soil which surrounded the buried tanks. In fact, Charlie indicated that this was part of the federal closure procedure, along with rinsing the tanks, etc. I told Charlie that I had reviewed the regulations and found that, because Wacker Siltronic is only a generator, a closure procedure of this type is not required, (see attached). Charlie indicated that he did not know the Hazardous Waste Regulations that well and he referred me to Rich Reiter. Called Rich Reiter's office but he was out of town with his return scheduled for Monday afternoon, September 30.

JRE:ll

James R. Ellis
10/3/85

attachment

Reference to the Regulations Regarding the Removal of Solvent Storage Tanks



Note to File:
Tuesday, 2:15 p.m.
October 1, 1985

Conversation with Rich Reiter, DEQ, regarding disposition of three (3) buried Solvent Recovery Tanks which were removed from the ground during August, 1985.

Rich indicated that because Wacker Siltronic is only a generator and has not stored waste in these tanks for more than 90 days, the tanks do not need to go through a closure process. Since TCE and the other solvents are not very soluble in water, triple rinsing the tanks with water is not very effective and use of another solvent only compounds the problem. The slurry sand inside the tanks was also free of TCE.

I talked to Rich about rebutting the earlier statement made by Gary Pendleton saying that the tanks were leaking into the soil. Rich indicated that the best way to rebut this statement, would be to sample the soil around the tanks, but we did not do that at the time the tanks were excavated. A simple inspection of the tanks would not rule out a leaking nozzle or fitting on the tank, so a visual inspection would not necessarily be a testimony that the tanks were not leaking, according to Rich. Rich suggested that we may want to write a memo to Janet Gillaspie stating that the tanks were pulled and inspected but found to be leak free and in generally good shape except for scaling.

Conclusion: Tanks can be cut up and sold for scrap w/no closure process necessary.

James R. Ellis

James R. Ellis

TANK INSPECTION REPORT

SOD-T, SOD-R AND SOD-W TANK INPSECTIONS

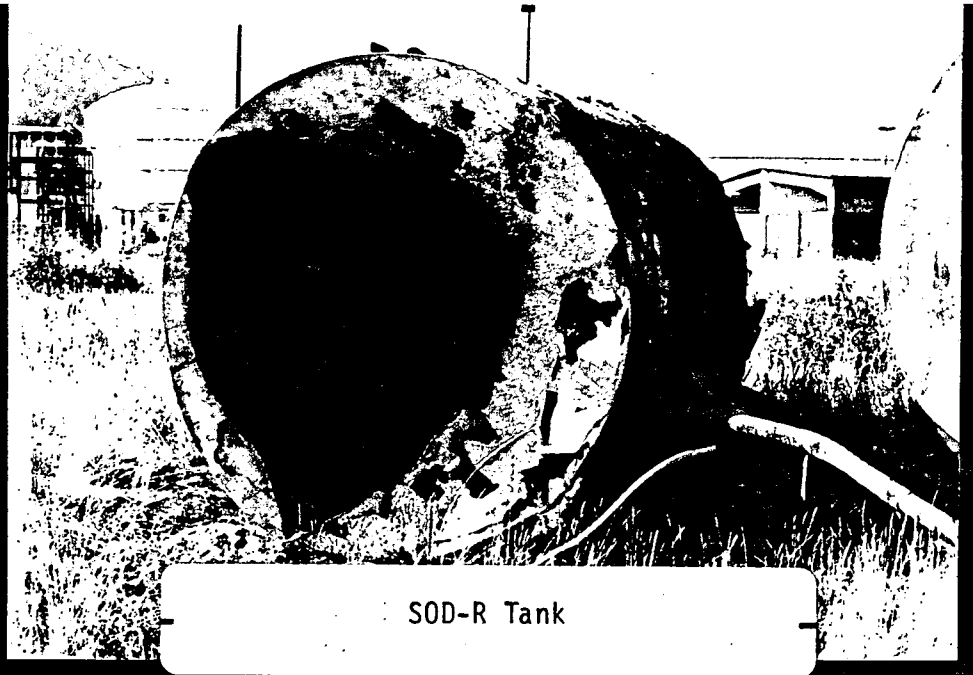
Exterior of Tanks - The Visqueen coating on the exterior of the tanks had been broken loose in places on all three (3) with some mild blistering where the bare metal had been exposed to ground water.

Interior of Tanks - All three (3) tanks looked approximately the same on the inside. In the lower 30-40% of the tank surfaces, where only liquid contacted the walls, very little evidence of corrosion was noted, (see photos on following pages). In the upper or vapor phase portion of the tank, the metal surfaces were scaled. When struck with the peen, the scale fell off in 3" to 6" pieces. In no case was the metal loss more than 1/16". There were no cracks in the welds and the corrosion was general in nature with no electrolysis cells or stress corrosion evident. The minimum tank wall thickness found was 3/16" in the vapor phase sections and the tank wall in liquid phase sections remained at 1/4".

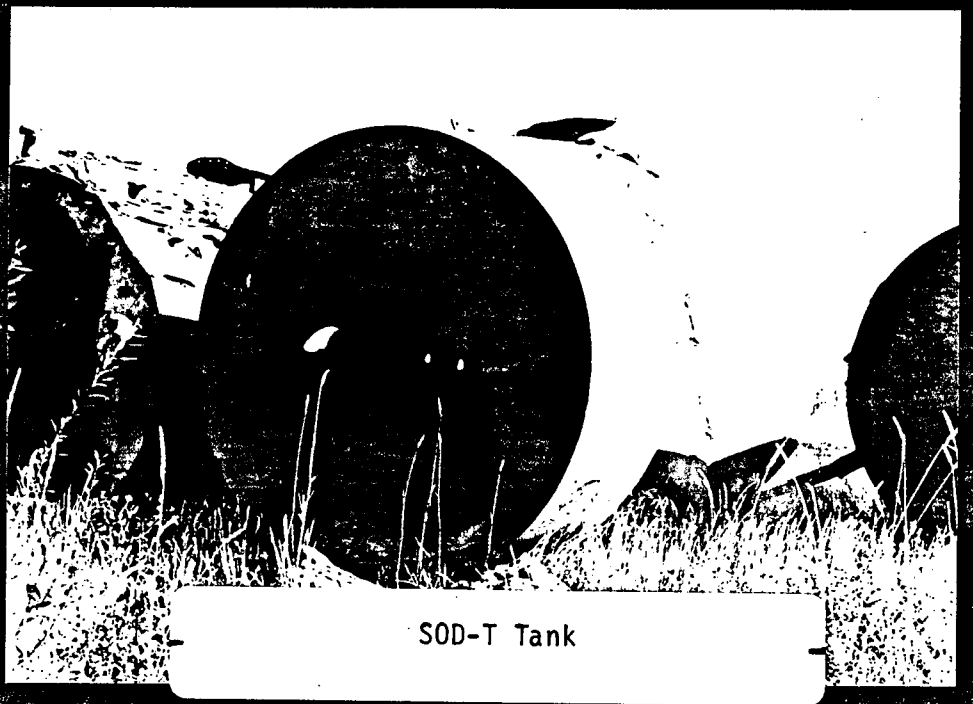
Conclusion - It was evident that none of the tanks had leaked during their service period due to corrosion or corrosion-cracking.

James R. Ellis

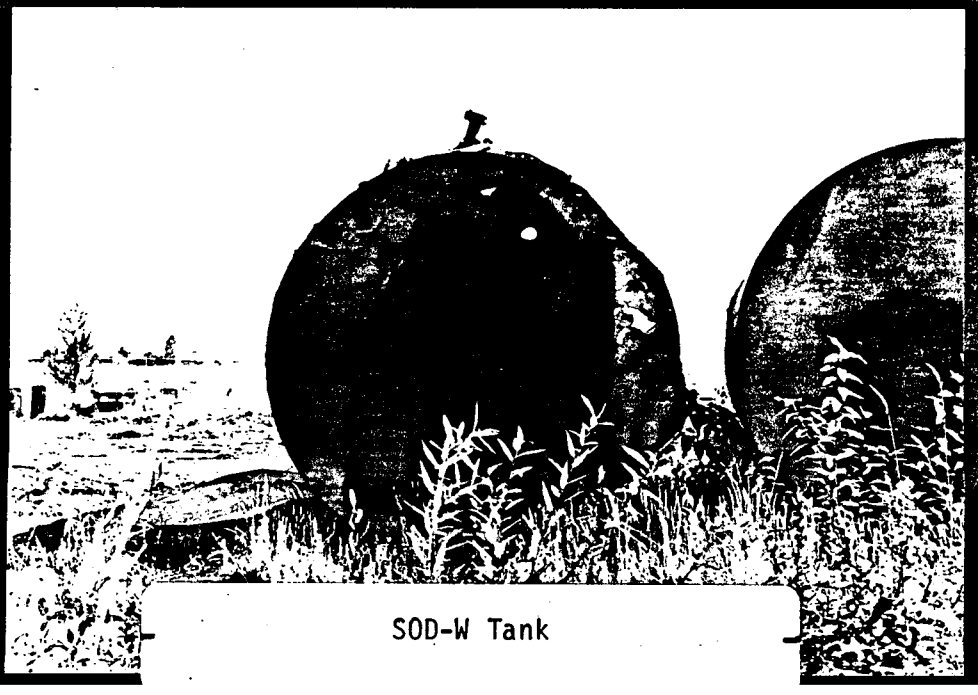
James R. Ellis



SOD-R Tank

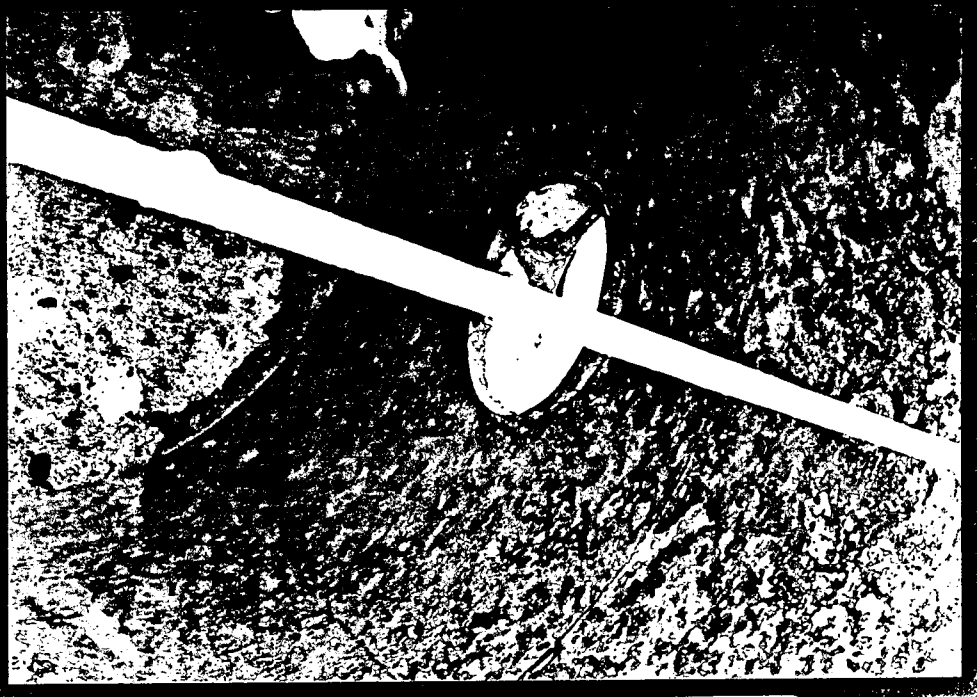


SOD-T Tank

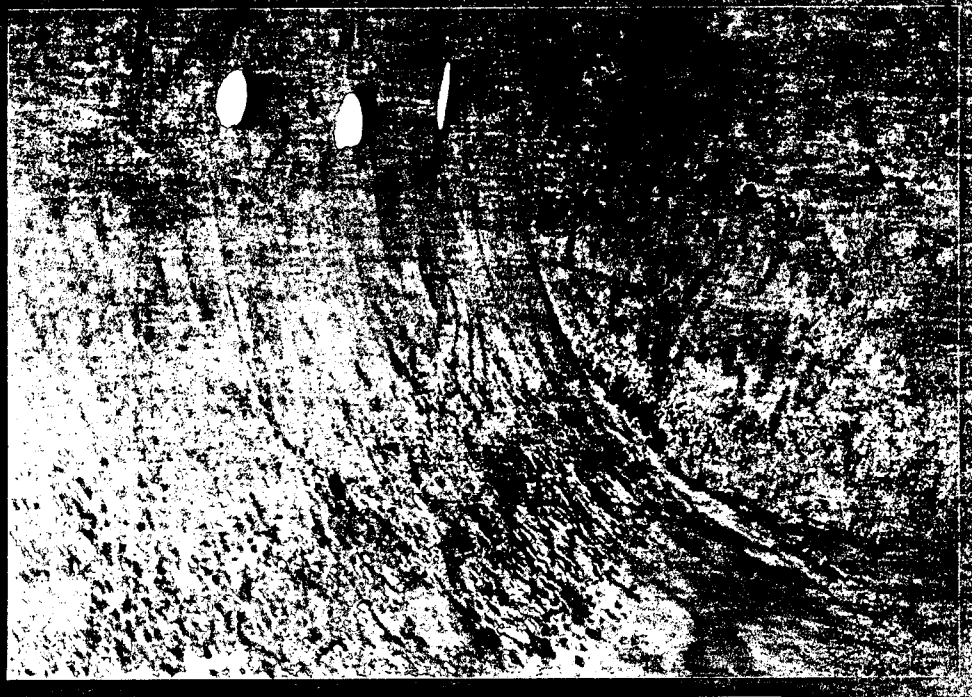


SOD-W Tank

SCOEPA00054673

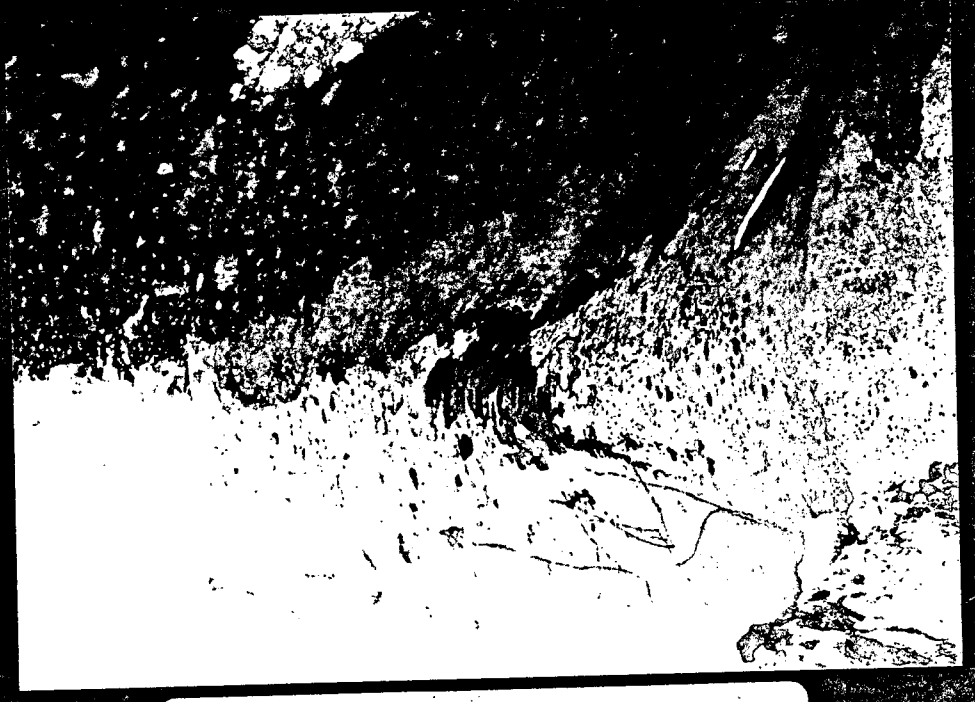


Vapor phase portion
of tank, (SOD-R)

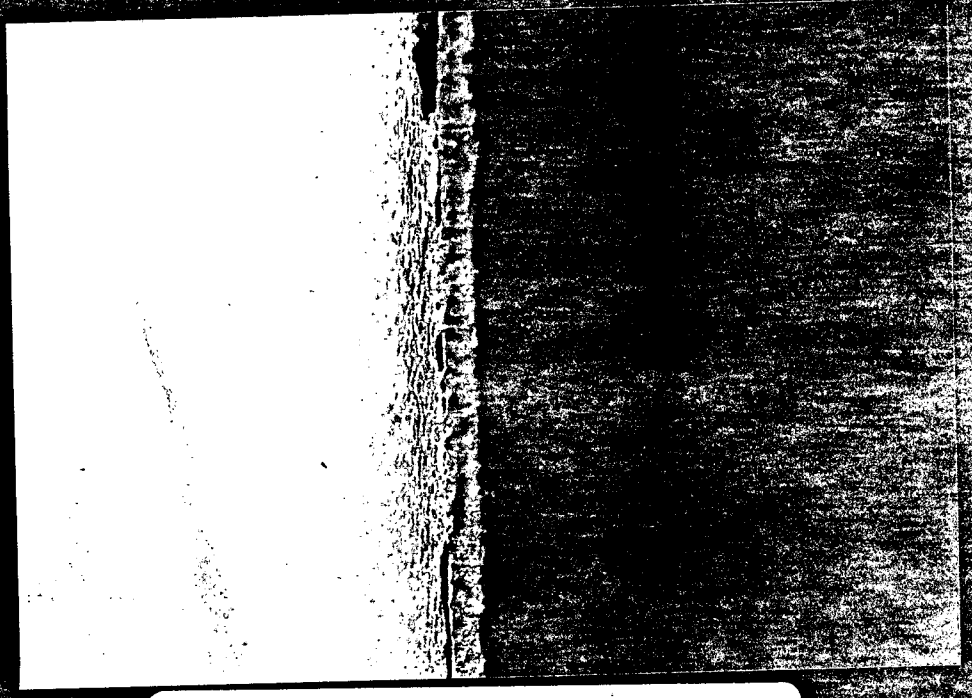


Liquid phase portion
of tank, (SOD-R)

SCOEPA00054674

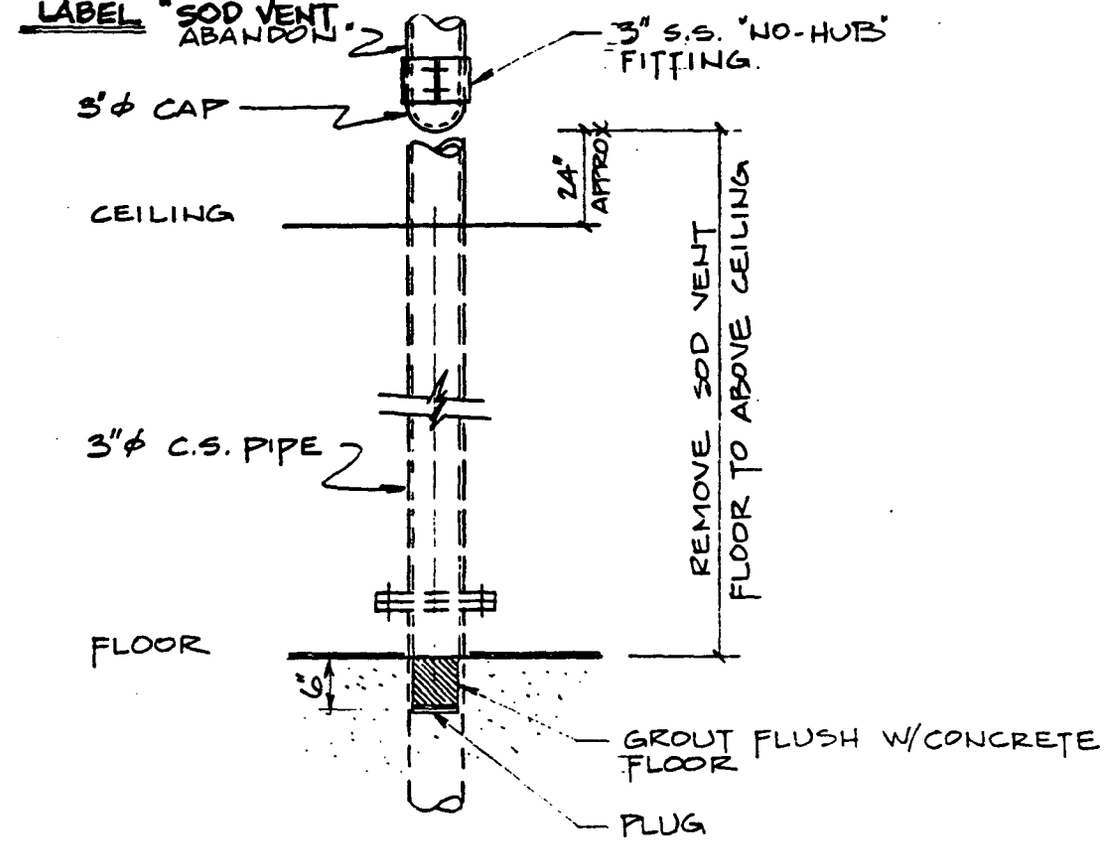


Corrosion indicates interface between vapor and liquid phases.

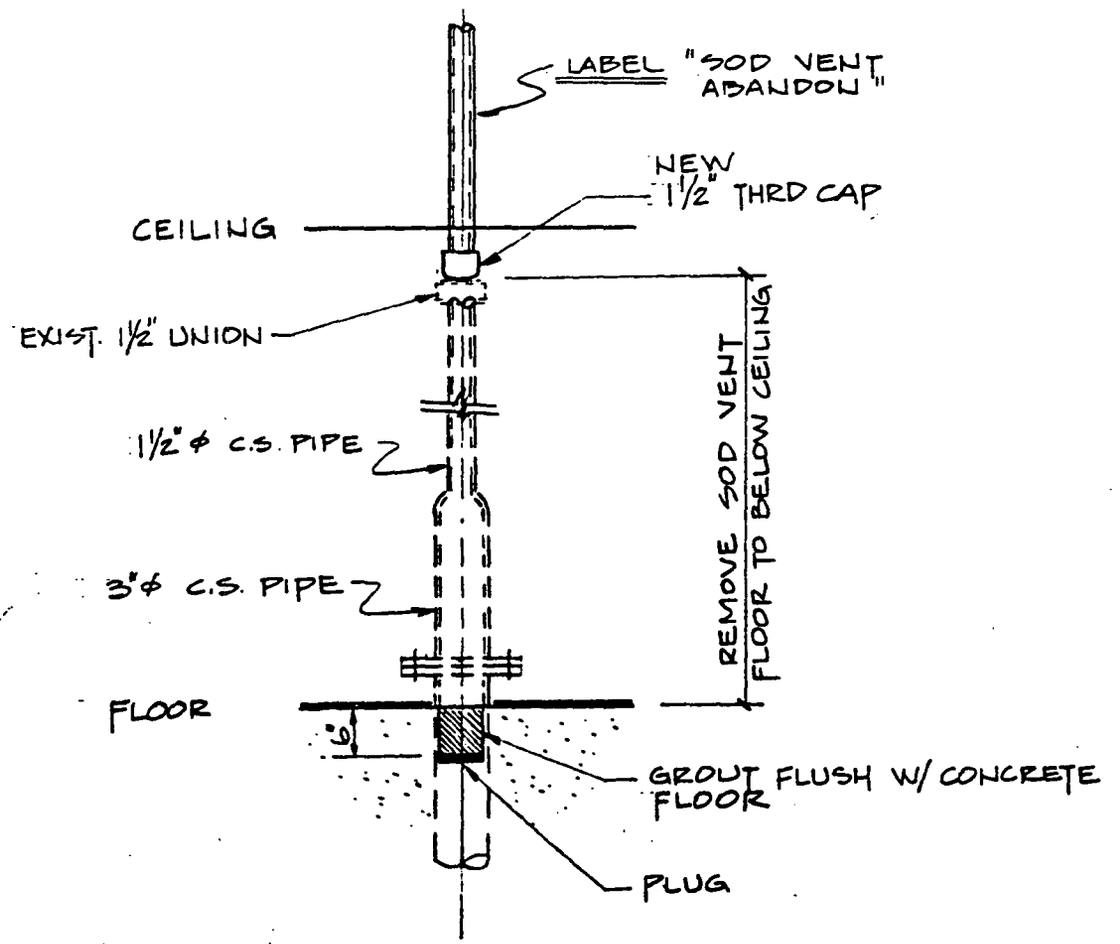


Metal thickness at liquid phase portion of tanks.

DRAIN AND VENT PLUGGING DETAILS

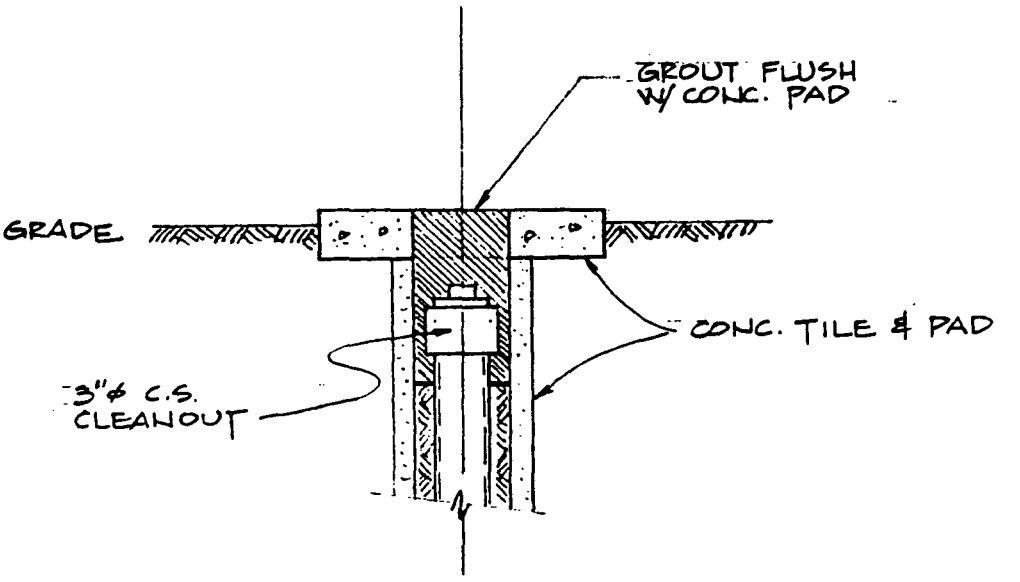


DETAIL 1

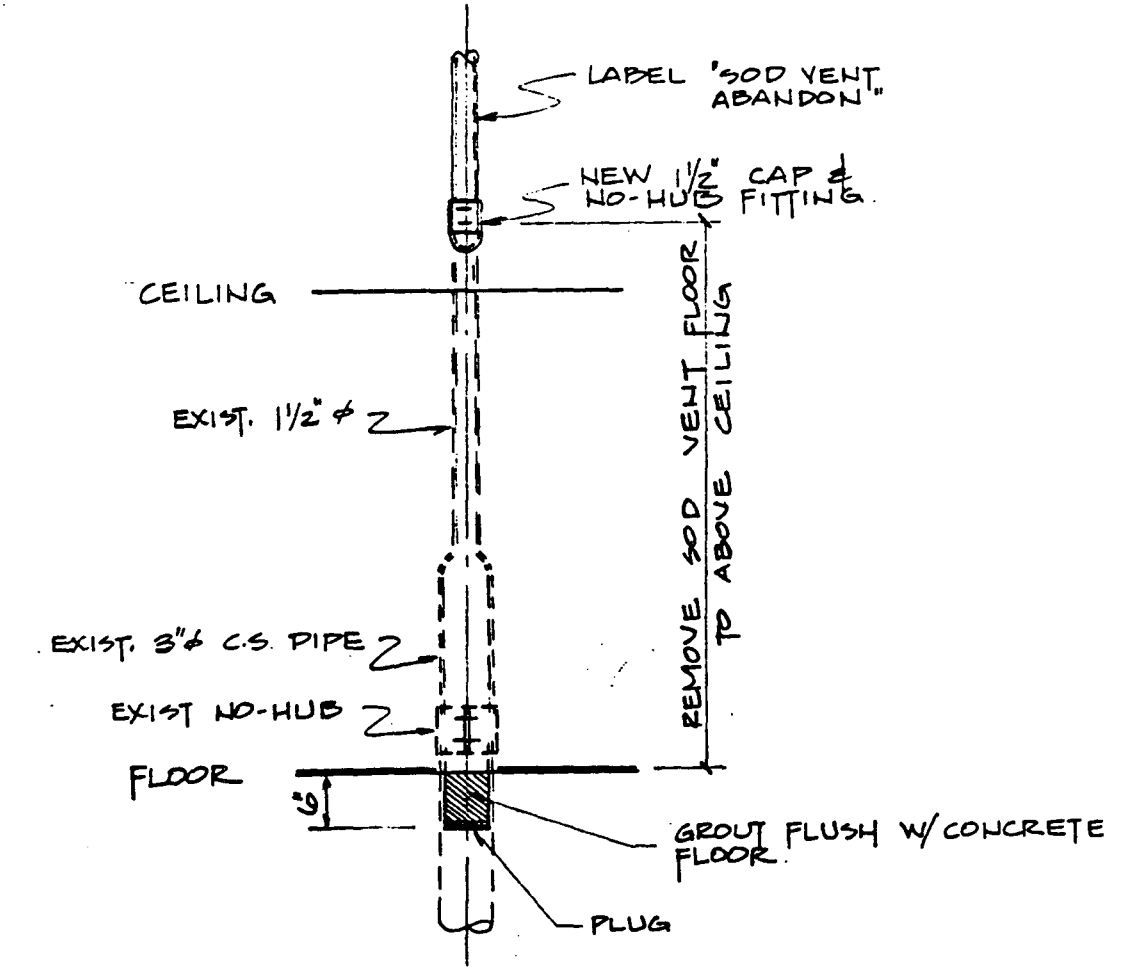


DETAIL 2

SCOEPA00054676

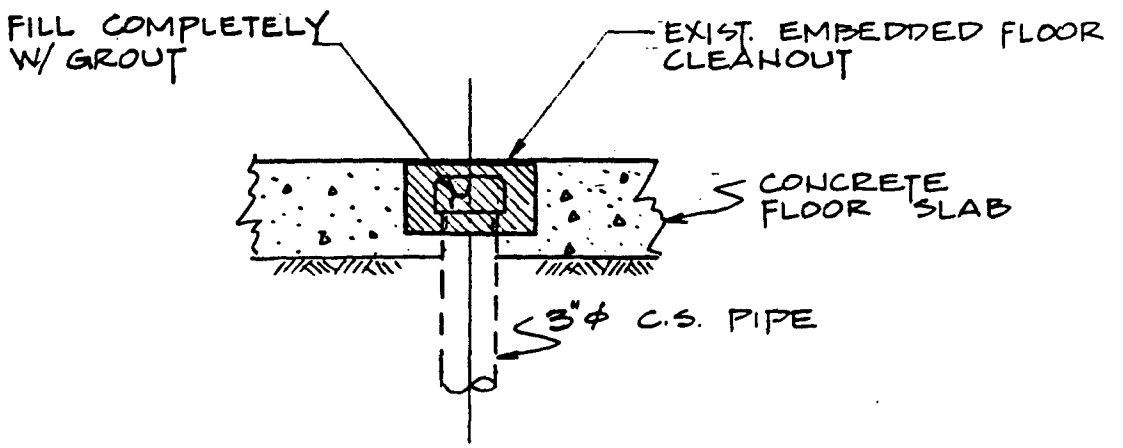


DETAIL 3

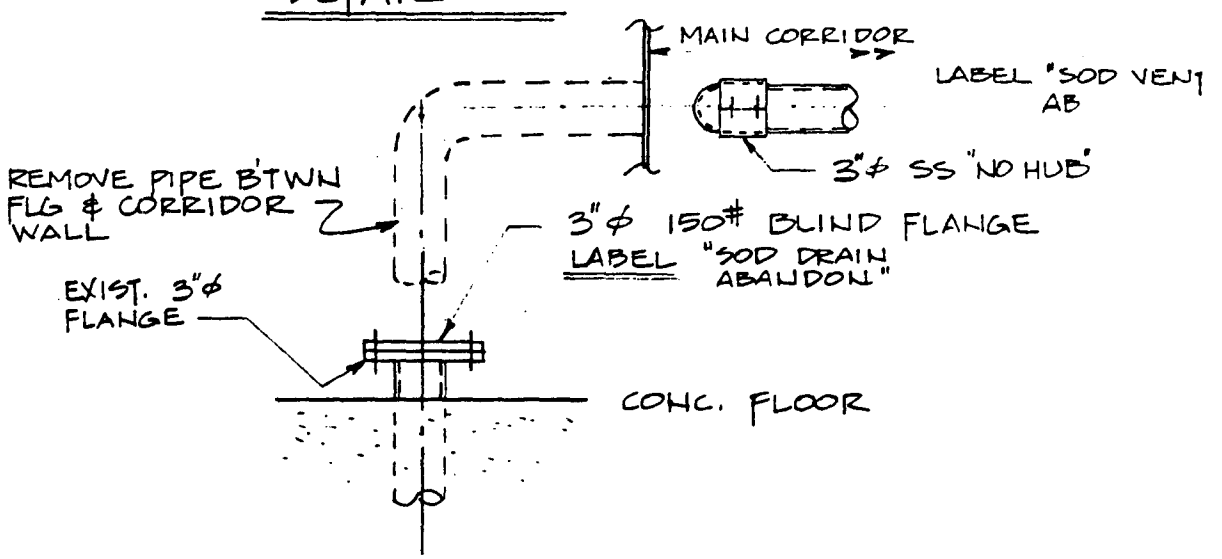


DETAIL 4

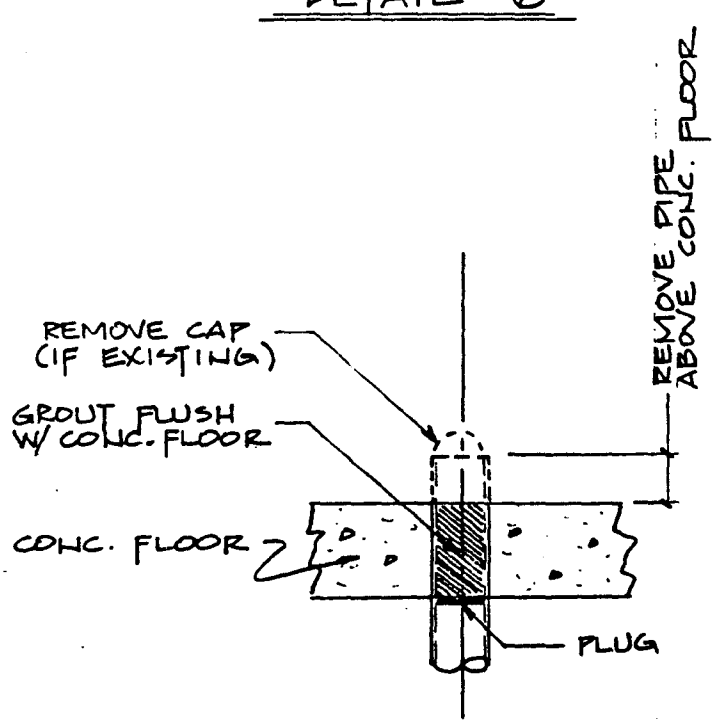
SCOEPA00054677



DETAIL 5

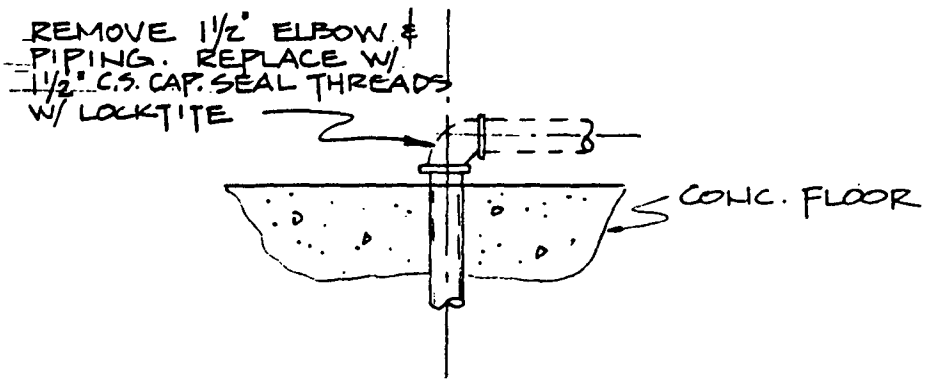


DETAIL 6

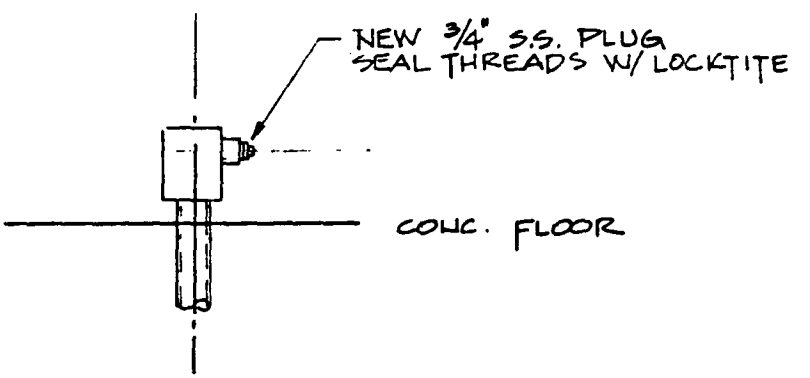


DETAIL 7

SCOEPA00054678



DETAIL 8



DETAIL 9

SCOEPA00054679

TABLE 1

SOD TANK REMOVAL COST SUMMARY

1.	Excavation, Tank Removal and Yard Restoration Hoffman Construction Co.	$60,655
2.	Slurry Sand Removal Crosby & Overton	6,539
3.	Removal of electrical enclosures conduit and wiring from area Siltronic Maintenance (MWR #20533)	2,511
4.	Drain Line Clean-Out	214
5.	Drain Plugging at Inlet Side Hoffman Construction Co.	5,332
6.	Sample Analyses	
	a.) Slurry Sand-TCE Content Coffey Laboratories	400
	b.) Rinse Water-TCE Content Coffey Laboratories	360
	Total	$76,011

Rev. 1/15/86

SCOEPA00054680

WASTE MANAGEMENT

Hillsboro Landfill Generator's Recertification

Permit Number: 6843, 6950

	YES	NO	N/A
1. *Is the waste represented by this waste profile sheet a "Hazardous Waste" as defined by the USEPA, Canadian, Mexican, and/or State, Providence regulation, in the location where generated or ultimately managed?*		X	
2. *Does the waste represented by this waste profile sheet contain regulated radioactive material or regulated concentration of Polychlorinated Biphenyls (PCB's)?*		X	
3. *Does this waste profile sheet and all attachments contain true and accurate descriptions of the waste material?*	X		
4. *Has all the relevant information within the possession of the Generator regarding known or suspected hazards pertaining to the waste been disclosed to the Contractor?*	X		
5. *Is the analytical data attached hereto derived from testing a representative sample in accordance with 40 CFR 260.21 or equivalent rules?*	X		
6. *Will all changes that occur in the character of the waste be identified by the Generator and disclosed to the Contractor prior to providing the waste to the Contractor?*	X		
7. *Has the process generating the waste been changed for the above referenced profile?*		X	

Generators Signature: Karen Lail *Title:* Env. Engineer

Name (type or print): Karen Lail

Company Name: Sithonia Corp *Date:* 4/7/2008

Waste Management Decision

Precautions, Special Handling: _____

Waste Approval Managers Signature: _____ *Date:* _____

Please note any changes to contact names, phone or fax in the space below

_____

_____

_____

0147209
SCOEPA00054681

Hillsboro Landfill Generator's Recertification

Permit Number: 6843

	YES	NO	N/A
1. Is the waste represented by this waste profile sheet a "Hazardous Waste" as Defined by USEPA, Canadian, Mexican and/or state/providence regulation, in the location where generated or ultimately managed?		X	
2. Does the waste represented by this waste profile sheet contain regulated radioactive material or regulated concentration of Polycholrinated Biphenyl's (PCB's).		X	
3. Does this waste profile sheet and all attachments contain true and accurate descriptions of the waste material?	X		
4. Has all relevant information within the possession of the Generator regarding known or suspected hazards pertaining to the waste been disclosed to the Contractor?	X		
5. Is the analytical data attached hereto derived from testing a representative sample in accordance with 40 CFR 261.209(c) or equivalent rules?			X
6. Will all changes that in occur in the character of the waste be identified by the Generator and disclosed to the Contractor prior to providing the waste to the Contractor?	X		
7. Has the process generating the waste been changed for the above referenced profile?		X	

Generators Signature: Koreen Lail for Siltronic Title: Env. Eng.

Name(Type or Print): Koreen Lail

Company Name: Siltronic Corporation Date: 5/17/2007

Waste Management Decision

Precautions, Special Handling: _____

Special Waste Decisions: _____

Environmental Specialist Signature: _____ Date: _____

Please note any changes to contact names, phone or fax number in space below

_____

_____

_____

Filter Press Cake

Hillsboro Landfill, Inc.

3205 SE MINTER BRIDGE ROAD HILLSBORO, OR 97123

PERMIT # 6843

PERMIT TO DISPOSE OF NON-HAZARDOUS MATERIALS

This permit authorizes disposal of Customer's waste materials in accordance with the Industrial Waste & Disposal Services Agreement dated *8/2003*.

EXPIRES: 7/14/08

GENERATOR: *WACKER SILTRONIC CORPORATION*

DESCRIPTION: *WASTEWATER TREATMENT SLUDGE*	TONS: *1000*
☒ SPECIAL WASTE ☐ CS ☐ CLEAN-UP MATERIAL	
LOCATION: *PORTLAND, OREGON*	COUNTY: *Multnomah*
CONTACT: *MYRON BURR*	PHONE: *503-219-7832*
	FAX: *503-219-7599*

BILLING: *Landfill account WACKER SILTRONIC CORPORATION*	PO#: *N/A*	JOB#: *N/A*

We accept business checks, cash, VISA / Mastercard or charge(with prior approval)

SPECIAL HANDLING : *NOTE: NO FREE LIQUIDS*
HAULER: METRO ROOTER

MK TT TyT

APPROVED: KC *KRISTIN CASTNER* DATE: *05/22/07 10:12:43 AM*

A COPY OF THIS PERMIT MUST BE SHOWN BY EACH DRIVER

THERE IS A MINIMUM CHARGE OF $50-$60 FOR EACH LOAD OF SPECIAL WASTE

WASTE MANAGEMENT

HAZARDOUS WASTE IS STRICTLY PROHIBITED

Specialty Analytical

19761 S.W. 95th Avenue
Tualatin, OR 97062
(503) 612-9007
Fax (503) 612-8572
1 (877) 612-9007

November 08, 2007

Thomas Rothschild
Siltronic Corporation
7200 NW Front Ave
M/S 30
Portland, OR 97210

TEL: (503) 219-7313
FAX (503) 219-7599

RE: 07-139-FP

Dear Thomas Rothschild: Order No.: 0711004

Specialty Analytical received 1 sample on 11/1/2007 for the analyses presented in the following report.

There were no problems with the analysis and all data for associated QC met EPA or laboratory specifications except where noted in the Case Narrative, or as qualified with flags. Results apply only to the samples analyzed. Without approval of the laboratory, the reproduction of this report is only permitted in its entirety.

If you have any questions regarding these tests, please feel free to call.

Sincerely,

Ned Engleson
Project Manager

Technical Review

0147212
SCOEPA00054684

Specialty Analytical

Date: *08-Nov-07*

CLIENT: Siltronic Corporation
Project: 07-139-FP
Lab Order: 0711004

Lab ID: 0711004-01
Client Sample ID: 07-139-FP
Collection Date: 11/1/2007 9:00:00 AM
Matrix: SOLID

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
TOTAL METALS BY ICP		**E6010**				Analyst: **zau**
Arsenic	6.12	1.92		mg/Kg	1	11/5/2007 4:13:42 PM
TCLP METALS		**E1311/6010/7470**				Analyst: **zau**
Arsenic, TCLP	ND	0.500		mg/L	1	11/2/2007 7:05:49 PM
Barium, TCLP	ND	0.250		mg/L	1	11/2/2007 7:05:49 PM
Cadmium, TCLP	ND	0.0250		mg/L	1	11/2/2007 7:05:49 PM
Chromium, TCLP	ND	0.125		mg/L	1	11/2/2007 7:05:49 PM
Lead, TCLP	ND	0.500		mg/L	1	11/2/2007 7:05:49 PM
Selenium, TCLP	ND	0.500		mg/L	1	11/2/2007 7:05:49 PM
Silver, TCLP	ND	0.250		mg/L	1	11/2/2007 7:05:49 PM
TCLP MERCURY		**1311/7000**				Analyst: **zau**
Mercury, TCLP	ND	0.000100		mg/L	1	11/7/2007

0147213
SCOEPA00054685

CLIENT: Siltronic Corporation
Work Order: 0711004
Project: 07-139-FP

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID	MBLK-19861	SampType:	MBLK	TestCode:	6010_S	Units:	mg/Kg	Prep Date:	11/2/2007	Run ID:	TJAIRIS_071105A
Client ID:	ZZZZZ	Batch ID:	19861	TestNo:	E6010			Analysis Date:	11/5/2007	SeqNo:	501803

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	2.00									

Sample ID	LCS-19861	SampType:	LCS	TestCode:	6010_S	Units:	mg/Kg	Prep Date:	11/2/2007	Run ID:	TJAIRIS_071105A
Client ID:	ZZZZZ	Batch ID:	19861	TestNo:	E6010			Analysis Date:	11/5/2007	SeqNo:	501804

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	97.82	2.00	100	0	97.8	85.1	107	0	0		

Sample ID	0711005-04AMS	SampType:	MS	TestCode:	6010_S	Units:	mg/Kg-dry	Prep Date:	11/2/2007	Run ID:	TJAIRIS_071105A
Client ID:	ZZZZZ	Batch ID:	19861	TestNo:	E6010			Analysis Date:	11/5/2007	SeqNo:	501807

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	115.4	2.31	115.7	4.076	96.2	86.1	109	0	0		

Sample ID	0711005-04AMSD	SampType:	MSD	TestCode:	6010_S	Units:	mg/Kg-dry	Prep Date:	11/2/2007	Run ID:	TJAIRIS_071105A
Client ID:	ZZZZZ	Batch ID:	19861	TestNo:	E6010			Analysis Date:	11/5/2007	SeqNo:	501809

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	111.8	2.23	111.4	4.076	96.6	86.1	109	115.4	3.21	20	

Sample ID	0711005-04ADUP	SampType:	DUP	TestCode:	6010_S	Units:	mg/Kg-dry	Prep Date:	11/2/2007	Run ID:	TJAIRIS_071105A
Client ID:	ZZZZZ	Batch ID:	19861	TestNo:	E6010			Analysis Date:	11/5/2007	SeqNo:	501808

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	3.326	2.27	0	0	0	0	0	4.076	20.2	20	RF

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

SCOEPA0005468 0147214

CLIENT: Siltronic Corporation
Work Order: 0711004
Project: 07-139-FP

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID	CCV	SampType:	CCV	TestCode:	6010_S	Units:	mg/Kg	Prep Date:		Run ID:	TJAIRIS_071105A
Client ID:	ZZZZZ	Batch ID:	19861	TestNo:	E6010			Analysis Date:	11/5/2007	SeqNo:	501802

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	97.56	2.00	100	0	97.6	90	110	0	0		

Sample ID	CCV	SampType:	CCV	TestCode:	6010_S	Units:	mg/Kg	Prep Date:		Run ID:	TJAIRIS_071105A
Client ID:	ZZZZZ	Batch ID:	19861	TestNo:	E6010			Analysis Date:	11/5/2007	SeqNo:	501805

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	98.06	2.00	100	0	98.1	90	110	0	0		

Sample ID	CCV	SampType:	CCV	TestCode:	6010_S	Units:	mg/Kg	Prep Date:		Run ID:	TJAIRIS_071105A
Client ID:	ZZZZZ	Batch ID:	19861	TestNo:	E6010			Analysis Date:	11/5/2007	SeqNo:	501816

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	98.57	2.00	100	0	98.6	90	110	0	0		

Sample ID	CCV	SampType:	CCV	TestCode:	6010_S	Units:	mg/L	Prep Date:		Run ID:	TJAIRIS_071105A
Client ID:	ZZZZZ	Batch ID:	19861	TestNo:	E6010			Analysis Date:	11/5/2007	SeqNo:	501819

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	98.38	2.00	100	0	98.4	90	110	0	0		

Sample ID	ICV	SampType:	ICV	TestCode:	6010_S	Units:	mg/Kg	Prep Date:		Run ID:	TJAIRIS_071105A
Client ID:	ZZZZZ	Batch ID:	19861	TestNo:	E6010			Analysis Date:	11/5/2007	SeqNo:	501801

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	99.86	2.00	100	0	99.9	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit; J - Analyte detected below quantitation limits; S - Spike Recovery outside accepted recovery limits; R - RPD outside accepted recovery limits; B - Analyte detected in the associated Method Blan

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CLIENT: Siltronic Corporation
Work Order: 0711004
Project: 07-139-FP

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_TCLP

Sample ID	MBLK-19863	SampType:	MBLK	TestCode:	6010_TCLP	Units:	mg/L	Prep Date:	11/2/2007	Run ID:	TJAIRIS_071102D
Client ID:	ZZZZZ	Batch ID:	19863	TestNo:	E1311/6010/7			Analysis Date:	11/2/2007	SeqNo:	501550

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic, TCLP	ND	0.0200									
Barium, TCLP	ND	0.0100									
Cadmium, TCLP	ND	0.00100									
Chromium, TCLP	ND	0.00500									
Lead, TCLP	ND	0.0200									
Selenium, TCLP	ND	0.0200									
Silver, TCLP	ND	0.0100									

Sample ID	LCS-19863	SampType:	LCS	TestCode:	6010_TCLP	Units:	mg/L	Prep Date:	11/2/2007	Run ID:	TJAIRIS_071102D
Client ID:	ZZZZZ	Batch ID:	19863	TestNo:	E1311/6010/7			Analysis Date:	11/2/2007	SeqNo:	501551

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic, TCLP	1.01	0.0200	1	0	101	93.8	107	0	0		
Barium, TCLP	0.5004	0.0100	0.5	0	100	95	111	0	0		
Cadmium, TCLP	0.0485	0.00100	0.05	0	97	91.8	110	0	0		
Chromium, TCLP	0.2593	0.00500	0.25	0	104	93.6	113	0	0		
Lead, TCLP	1.029	0.0200	1	0	103	93.1	112	0	0		
Selenium, TCLP	0.9902	0.0200	1	0	99	93.9	111	0	0		
Silver, TCLP	0.4764	0.0100	0.5	0	95.3	90.6	115	0	0		

Sample ID	A0711001-03BMS	SampType:	MS	TestCode:	6010_TCLP	Units:	mg/L	Prep Date:	11/2/2007	Run ID:	TJAIRIS_071102D
Client ID:	ZZZZZ	Batch ID:	19863	TestNo:	E1311/6010/7			Analysis Date:	11/2/2007	SeqNo:	501554

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic, TCLP	0.9219	0.0200	1	0	92.2	90.1	110	0	0		
Barium, TCLP	0.7042	0.0100	0.5	0.2645	87.9	90.7	112	0	0		S,RP
Cadmium, TCLP	0.046	0.00100	0.05	0.0008	90.4	93.4	110	0	0		S,RP
Chromium, TCLP	0.2361	0.00500	0.25	0.0032	93.2	93.4	112	0	0		S,RP
Lead, TCLP	0.9103	0.0200	1	0	91	91.9	112	0	0		S,RP
Selenium, TCLP	0.917	0.0200	1	0	91.7	93.5	113	0	0		S,RP
Silver, TCLP	0.4681	0.0100	0.5	0	93.6	90.1	113	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

SCOEPA0005468 0147216

CLIENT: Siltronic Corporation
Work Order: 0711004
Project: 07-139-FP

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_TCLP

Sample ID A0711001-03BMSD SampType: MSD TestCode: 6010_TCLP Units: mg/L Prep Date: 11/2/2007 Run ID: TJAIRIS_071102D
Client ID: ZZZZZ Batch ID: 19863 TestNo: E1311/6010/7 Analysis Date: 11/2/2007 SeqNo: 501555

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic, TCLP	0.9543	0.0200	1	0	95.4	90.1	110	0.9219	3.45	20	
Barium, TCLP	0.7318	0.0100	0.5	0.2645	93.5	90.7	112	0.7042	3.84	20	
Cadmium, TCLP	0.0483	0.00100	0.05	0.0008	95	93.4	110	0.046	4.88	20	
Chromium, TCLP	0.2428	0.00500	0.25	0.0032	95.8	93.4	112	0.2361	2.80	20	
Lead, TCLP	0.94	0.0200	1	0	94	91.9	112	0.9103	3.21	20	
Selenium, TCLP	0.9596	0.0200	1	0	96	93.5	113	0.917	4.54	20	
Silver, TCLP	0.4826	0.0100	0.5	0	96.5	90.1	113	0.4681	3.05	20	

Sample ID A0711001-03BDUP SampType: DUP TestCode: 6010_TCLP Units: mg/L Prep Date: 11/2/2007 Run ID: TJAIRIS_071102D
Client ID: ZZZZZ Batch ID: 19863 TestNo: E1311/6010/7 Analysis Date: 11/2/2007 SeqNo: 501553

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic, TCLP	ND	0.0200	0	0	0	0	0	0	0	20	
Barium, TCLP	0.2366	0.0100	0	0	0	0	0	0.2645	11.1	20	
Cadmium, TCLP	ND	0.00100	0	0	0	0	0	0.0008	0	20	
Chromium, TCLP	0.003	0.00500	0	0	0	0	0	0.0032	0	20	J
Lead, TCLP	ND	0.0200	0	0	0	0	0	0	0	20	
Selenium, TCLP	ND	0.0200	0	0	0	0	0	0	0	20	
Silver, TCLP	ND	0.0100	0	0	0	0	0	0	0	20	

Sample ID CCV SampType: CCV TestCode: 6010_TCLP Units: mg/L Prep Date: Run ID: TJAIRIS_071102D
Client ID: ZZZZZ Batch ID: 19863 TestNo: E1311/6010/7 Analysis Date: 11/2/2007 SeqNo: 501549

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic, TCLP	1.009	0.0200	1	0	101	90	110	0	0		
Barium, TCLP	0.494	0.0100	0.5	0	98.8	90	110	0	0		
Cadmium, TCLP	0.049	0.00100	0.05	0	98	90	110	0	0		
Chromium, TCLP	0.2568	0.00500	0.25	0	103	90	110	0	0		
Lead, TCLP	1.015	0.0200	1	0	102	90	110	0	0		
Selenium, TCLP	0.9996	0.0200	1	0	100	90	110	0	0		
Silver, TCLP	0.5011	0.0100	0.5	0	100	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blan
J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

SCOEPA0005468 9 0147217

CLIENT: Siltronic Corporation
Work Order: 0711004
Project: 07-139-FP

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_TCLP

Sample ID CCV	SampType: CCV	TestCode: 6010_TCLP	Units: mg/L	Prep Date:	Run ID: TJAIRIS_071102D
Client ID: ZZZZZ	Batch ID: 19863	TestNo: E1311/6010/7		Analysis Date: 11/2/2007	SeqNo: 501558

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic, TCLP	1.03	0.0200	1	0	103	90	110	0	0		
Barium, TCLP	0.5068	0.0100	0.5	0	101	90	110	0	0		
Cadmium, TCLP	0.05	0.00100	0.05	0	100	90	110	0	0		
Chromium, TCLP	0.2614	0.00500	0.25	0	105	90	110	0	0		
Lead, TCLP	1.033	0.0200	1	0	103	90	110	0	0		
Selenium, TCLP	1.02	0.0200	1	0	102	90	110	0	0		
Silver, TCLP	0.5113	0.0100	0.5	0	102	90	110	0	0		

Sample ID CCV	SampType: CCV	TestCode: 6010_TCLP	Units: mg/L	Prep Date:	Run ID: TJAIRIS_071102D
Client ID: ZZZZZ	Batch ID: 19863	TestNo: E1311/6010/7		Analysis Date: 11/2/2007	SeqNo: 501562

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic, TCLP	1.017	0.0200	1	0	102	90	110	0	0		
Barium, TCLP	0.4989	0.0100	0.5	0	99.8	90	110	0	0		
Cadmium, TCLP	0.0492	0.00100	0.05	0	98.4	90	110	0	0		
Chromium, TCLP	0.2588	0.00500	0.25	0	104	90	110	0	0		
Lead, TCLP	1.029	0.0200	1	0	103	90	110	0	0		
Selenium, TCLP	1.004	0.0200	1	0	100	90	110	0	0		
Silver, TCLP	0.4991	0.0100	0.5	0	99.8	90	110	0	0		

Sample ID ICV	SampType: ICV	TestCode: 6010_TCLP	Units: mg/L	Prep Date:	Run ID: TJAIRIS_071102D
Client ID: ZZZZZ	Batch ID: 19863	TestNo: E1311/6010/7		Analysis Date: 11/2/2007	SeqNo: 501548

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic, TCLP	1.035	0.0200	1	0	104	90	110	0	0		
Barium, TCLP	0.5086	0.0100	0.5	0	102	90	110	0	0		
Cadmium, TCLP	0.051	0.00100	0.05	0	102	90	110	0	0		
Chromium, TCLP	0.2634	0.00500	0.25	0	105	90	110	0	0		
Lead, TCLP	1.025	0.0200	1	0	103	90	110	0	0		
Selenium, TCLP	1.04	0.0200	1	0	104	90	110	0	0		
Silver, TCLP	0.5086	0.0100	0.5	0	102	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit; J - Analyte detected below quantitation limits; S - Spike Recovery outside accepted recovery limits; R - RPD outside accepted recovery limits; B - Analyte detected in the associated Method Blank

SCOEPA00054690 0147218

CLIENT: Siltronic Corporation
Work Order: 0711004
Project: 07-139-FP

ANALYTICAL QC SUMMARY REPORT

TestCode: HG_TCLP

Sample ID	MB-19895	SampType:	MBLK	TestCode:	HG_TCLP	Units:	mg/L	Prep Date:	11/7/2007	Run ID:	CVAA_071107C
Client ID:	ZZZZZ	Batch ID:	19895	TestNo:	1311/7000			Analysis Date:	11/7/2007	SeqNo:	502356

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury, TCLP	0.0000081	0.000100									J

Sample ID	LCS-19895	SampType:	LCS	TestCode:	HG_TCLP	Units:	mg/L	Prep Date:	11/7/2007	Run ID:	CVAA_071107C
Client ID:	ZZZZZ	Batch ID:	19895	TestNo:	1311/7000			Analysis Date:	11/7/2007	SeqNo:	502355

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury, TCLP	0.004046	0.000100	0.004	0.0000081	101	85.4	116	0	0		

Sample ID	A0711017-05BMS	SampType:	MS	TestCode:	HG_TCLP	Units:	mg/L	Prep Date:	11/7/2007	Run ID:	CVAA_071107C
Client ID:	ZZZZZ	Batch ID:	19895	TestNo:	1311/7000			Analysis Date:	11/7/2007	SeqNo:	502359

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury, TCLP	0.004303	0.000100	0.004	0.0005576	93.6	69.5	125	0	0		

Sample ID	A0711017-05BMSD	SampType:	MSD	TestCode:	HG_TCLP	Units:	mg/L	Prep Date:	11/7/2007	Run ID:	CVAA_071107C
Client ID:	ZZZZZ	Batch ID:	19895	TestNo:	1311/7000			Analysis Date:	11/7/2007	SeqNo:	502360

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury, TCLP	0.004428	0.000100	0.004	0.0005576	96.8	69.5	125	0.004303	2.86	20	

Sample ID	A0711017-05BDUP	SampType:	DUP	TestCode:	HG_TCLP	Units:	mg/L	Prep Date:	11/7/2007	Run ID:	CVAA_071107C
Client ID:	ZZZZZ	Batch ID:	19895	TestNo:	1311/7000			Analysis Date:	11/7/2007	SeqNo:	502358

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury, TCLP	0.0005479	0.000100	0	0	0	0	0	0.0005576	1.75	20	

Sample ID	CCV	SampType:	CCV	TestCode:	HG_TCLP	Units:	mg/L	Prep Date:		Run ID:	CVAA_071107C
Client ID:	ZZZZZ	Batch ID:	19895	TestNo:	1311/7000			Analysis Date:	11/7/2007	SeqNo:	502354

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blan

SCOEPA00054691 0147219

CLIENT: Siltronic Corporation
Work Order: 0711004
Project: 07-139-FP

ANALYTICAL QC SUMMARY REPORT

TestCode: HG_TCLP

Sample ID	CCV	SampType:	CCV	TestCode:	HG_TCLP	Units:	mg/L	Prep Date:		Run ID:	CVAA_071107C
Client ID:	ZZZZZ	Batch ID:	19895	TestNo:	1311/7000			Analysis Date:	11/7/2007	SeqNo:	502354

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury, TCLP	0.004105	0.000100	0.004	0	103	90	110	0	0		

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blan

SCOEPA00054692 0147220

KEY TO FLAGS

A	This sample contains a Gasoline Range Organic not identified as a specific hydrocarbon product. The result was quantified against gasoline calibration standards.
A1	This sample contains a Diesel Range Organic not identified as a specific hydrocarbon product. The result was quantified against diesel calibration standards.
A2	This sample contains a Lube Oil Range Organic not identified as a specific hydrocarbon product. The result was quantified against a lube oil calibration standard.
A3	The result was determined to be Non-Detect based on hydrocarbon pattern recognition. The product was carry-over from another hydrocarbon type.
B	The blank exhibited a positive result greater than the reporting limit for this compound.
CN	See Case Narrative.
D	Result is based from a dilution.
E	Result exceeds the calibration range for this compound. The result should be considered as estimate.
F	The positive result for this hydrocarbon is due to single component contamination. The product does not match any hydrocarbon in the fuels library.
H	Sample was analyzed outside recommended hold time.
HT	At clients request, sample was analyzed outside recommended hold time.
J	The result for this analyte is between the MDL and the PQL and should be considered as estimated concentration.
K	Diesel result is biased high due to amount of Oil contained in the sample.
L	Diesel result is biased high due to amount of Gasoline contained in the sample.
M	Oil result is biased high due to amount of Diesel contained in the sample.
N	Gasoline result is biased high due to amount of Diesel contained in the sample.
MC	Sample concentration is greater than 4x the spiked value, the spiked value is considered insignificant.
MI	Result is outside control limits due to matrix interference.
MSA	Value determined by Method of Standard Addition.
O	Laboratory Control Standard (LCS) exceeded laboratory control limits, but meets CCV criteria. Data meets EPA requirements.
P	Detection levels of Methylene Chloride may be laboratory contamination, due to previous analysis or background levels.
Q	Detection levels elevated due to sample matrix.
R	RPD control limits were exceeded.
RF	Duplicate failed due to result being at or near the method-reporting limit.
RP	Matrix spike values exceed established QC limits, post digestion spike is in control.
S	Recovery is outside control limits.
SC	Closing CCV or LCS exceeded high recovery control limits, but associated samples are non-detect. Data meets EPA requirements.
*	The result for this parameter was greater that the maximum contaminant level of the TCLP regulatory limit.

Rev Dec 15, 2004

CHAIN OF CUSTODY RECORD

Page ___ of ___

Specialty Analytical
19761 S.W. 95th. Avenue
Tualatin, OR 97062
(503) 612-9007 - Phone
(503) 612-8572 - Fax

Contact Person/Project Manager: Tom Rothschild
Company: Sc Utronics
Address: 7200 NW Front Ave
Portland, OR 97210
Phone: 503-219-7374 Fax: 503-219-7424
Project No. _____ Project Name _____
Invoice To: Accts Payable P.O. No.: 4500521869

Collected By:
Signature: Dianne Irish
Printed: Dianne Irish

Signature _____
Printed _____

Turn Around Time
☒ Normal
☐ Rush _____
Specify

Rush Analyses Must Be Scheduled With The Lab In Advance

For Laboratory Use
Lab Job No. 071100H
Shipped Via: Specialty
Air Bill No. _____
Temperature On Receipt: Amb °C
Specialty Analytical Containers? Y / N
Specialty Analytical Trip Blanks? Y / N

Date	Time	Sample I.D.	Matrix	No. of Containers	Analyses: TCLP Metals 8	Analyses: Total As	Comments	Lab I.D.
~~07-139~~								
11.1.07	0900	07-139-FP	Solid	1	X	X		

Relinquished By:	Date	Time	Received By:	Relinquished By:	Date	Time
Company: Sc Utronic	11.1.07	1330	Company: Specialty	Company:		

Unless Reclaimed, Samples Will Be Disposed of 60 Days After Receipt.

Received For Lab By:	Date	Time
Nikki Dalton	11/1/07	1448

Copies: White-Original Yellow-Project File Pink-Customer Copy

SCOEPA00054694 0147222

WASTE CHARACTERIZATION CHECKLIST

Date:

Waste Name/Process: Stormwater Fine Cleanout Catch Basins

		Yes	No	MSDS/knowledge/ analytical	Notes/Codes:
(1)	**Is this waste excluded as a RCRA solid or hazardous waste? (40 CFR 261.2 through 40 CFR 261.6)**	X			
(2)	**Is the waste included in EPA's list of hazardous wastes?**** (40 CFR 261 Subpart D)				
a	Is this a listed waste from a non specific source? (F Code)				
b	Is this a listed waste from a specific source? (K Code)				
c	Is this a discarded commercial chemical product? (U and P Code)				
(3)	**Is it corrosive?* (D002)**				
a	Is it an aqueous solution with a pH <= 2 or a pH >= 12.5?				
b	Is the waste capable of corroding steel? (.0.25 inches per year)				
c	*(examples: 2M hydrochloric acid, 2M sodium hydroxide)*	↔	↔		
(4)	**Is it ignitable or flammable?* (D001) (140°F)**				
a	Is it a liquid that has a flashpoint below 60° C (<140° F) (excluding aqueous solutions containing less than 24% alcohol by volume				Non-HAZ
b	Is it a non-liquid capable of causing fire by friction, absorption of moisture, or spontaneous chemical change?				
c	Is it a flammable or ignitable compressed gas?				
d	Is it an oxidizer that yields oxygen readily to stimulate the combustion of organic matter?				
	(examples: acetone, isopropyl alcohol, methanol, ethylene)	↔	↔		
(5)	**Is it reactive?* (D003)**				
a	Does it react violently with water or produce toxic gasses or explosive mixtures?				
b	Is it unstable or is it explosive?				
c	Does it contain cyanide or sulfides and generate toxic gasses or explosive mixtures when exposed to a pH between 2 and 12.5?				
	(examples: 30% hydrogen peroxide, lithium aluminum hydride)	↔	↔		
(6)	**Is it toxic or extremely hazardous?* (D004-D043)**				
a	Does it contain contaminants found in the EPA table of toxic substances in exceedance of the EPA standard?				
	(examples: benzene, chloroform, mercury) (TCLP 8 metals)	↔	↔		

Yes **to any of these questions 2 through 6 then it is a hazardous waste**

No **to all questions 2 through 6 then it is a non-hazardous waste**

*See 40 CFR 261 Subpart C

SCOEPA00054695 0147223

Hillsboro Landfill, Inc.

3205 SE MINTER BRIDGE ROAD HILLSBORO, OR 97123

PERMIT # 7153

PERMIT TO DISPOSE OF NON-HAZARDOUS MATERIALS

This permit authorizes disposal of Customer's waste materials in accordance with the Industrial Waste & Disposal Services Agreement dated *8/2003*.

EXPIRES: 11/18/08

GENERATOR: *SILTRONIC CORPORATION*

DESCRIPTION: *CATCH BASIN SLUDGE, MULTIMEDIA BEDDING*	TONS: *20*
☒ SPECIAL WASTE ☐ CS ☐ CLEAN-UP MATERIAL	
LOCATION: *PORTLAND, OREGON*	COUNTY: *Multnomah*
CONTACT: *KOREEN LAIL*	PHONE: *503-219-7832*
	FAX: *503-219-7599*

BILLING: *Landfill account SILTRONIC CORPORATION*	PO#: *N/A*	JOB#: *N/A*

We accept business checks, cash, VISA / Mastercard or charge(with prior approval)

SPECIAL HANDLING : *NOTE: CO-MINGLE, NO FREE LIQUIDS*

MK TyT

APPROVED: KC *KRISTIN CASTNER* DATE: *11/09/07 1:21:00 PM*

A COPY OF THIS PERMIT MUST BE SHOWN BY EACH DRIVER

THERE IS A MINIMUM CHARGE OF $50-$60 FOR EACH LOAD OF SPECIAL WASTE

WASTE MANAGEMENT

HAZARDOUS WASTE IS STRICTLY PROHIBITED

Hillsboro
~~Riverbend~~ Landfill Generator's Recertification

Permit Number: #7153

	YES	NO	N/A
1. *Is the waste represented by this waste profile sheet a "Hazardous Waste" as Defined by USEPA, Canadian, Mexican and/or state/providence regulation, in the location where generated or ultimately managed?*		X	
2. *Does the waste represented by this waste profile sheet contain regulated radioactive material or regulated concentration of Polycholrinated Biphenyl's (PCB's).*		X	
3. *Does this waste profile sheet and all attachments contain true and accurate descriptions of the waste material?*	X		
4. *Has all relevant information within the possession of the Generator regarding known or suspected hazards pertaining to the waste been disclosed to the Contractor?*	X		
5. *Is the analytical data attached hereto derived from testing a representative sample in accordance with 40 CFR 261.209(c) or equivalent rules?*	X		
6. *Will all changes that in occur in the character of the waste be identified by the Generator and disclosed to the Contractor prior to providing the waste to the Contractor?*	X		
7. *Has the process generating the waste been changed for the above referenced profile?*		X	

Generators Signature: Karen Laird SiHronic *Title:* Env. Engineer

Name(Type or Print): Karen Laird

Company Name: SiHronic Corporation *Date:* 11/9/07

Waste Management Decision

Precautions, Special Handling: _____

Special Waste Decisions: _____

Environmental Specialist Signature: _____ *Date:* _____

Please note any changes to contact names, phone or fax number in space below

_____

_____

_____

****
*** TX REPORT ***
****

TRANSMISSION OK

TX/RX NO	4355	
CONNECTION TEL		95034937822
CONNECTION ID		
ST. TIME	11/09 11:12	
USAGE T	02'03	
PGS. SENT	15	
RESULT	OK	

siltronic
perfect silicon solutions

Siltronic Corporation
7200 NW Front Avenue, MS
Portland, OR 97210-3676, USA
Tel.
Fax 503-219-7599

FAX (503) 493-7822

To: Kristin Castner

From: Karen Said

Date: 11/9/07

Page(s) incl: coversheet (15)

Specialty Analytical

19761 S.W. 95th Avenue
Tualatin, OR 97062
(503) 612-9007
Fax (503) 612-8572
1 (877) 612-9007

Analytical for stormwater line clean-out

November 12, 2007

Thomas Rothschild
Siltronic Corporation
7200 NW Front Ave
M/S 30
Portland, OR 97210

TEL: (503) 219-7313
FAX: (503) 219-7599

RE: Sediment Composites

Dear Thomas Rothschild:

Order No.: 0711013

Specialty Analytical received 7 samples on 11/2/2007 for the analyses presented in the following report.

There were no problems with the analysis and all data for associated QC met EPA or laboratory specifications except where noted in the Case Narrative, or as qualified with flags. Results apply only to the samples analyzed. Without approval of the laboratory, the reproduction of this report is only permitted in its entirety.

If you have any questions regarding these tests, please feel free to call.

Sincerely,

Ned Engleson
Project Manager

Technical Review

0147227
SCOEPA00054699

Specialty Analytical

Date: 12-Nov-07

CLIENT:	Siltronic Corporation	Client Sample ID:	07-138
Lab Order:	0711013	Collection Date:	11/2/2007
Project:	Sediment Composites		
Lab ID:	0711013-07	Matrix:	SEDIMENT

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
TOTAL METALS BY ICP		**E6010**				Analyst: **zau**
Arsenic	ND	1.72		mg/Kg	1	11/7/2007 6:17:03 PM
Barium	56.2	0.862		mg/Kg	1	11/7/2007 6:17:03 PM
Cadmium	0.845	0.0862		mg/Kg	1	11/7/2007 6:17:03 PM
Chromium	34.4	0.431		mg/Kg	1	11/7/2007 6:17:03 PM
Lead	43.9	1.72		mg/Kg	1	11/7/2007 6:17:03 PM
Molybdenum	4.91	0.862		mg/Kg	1	11/7/2007 6:17:03 PM
Selenium	ND	1.72		mg/Kg	1	11/7/2007 6:17:03 PM
Silver	ND	1.72		mg/Kg	1	11/7/2007 6:17:03 PM
Zinc	848	0.862		mg/Kg	1	11/7/2007 6:17:03 PM
TCLP METALS		**E1311/6010/7470**				Analyst: **zau**
Arsenic, TCLP	ND	0.100		mg/L	1	11/7/2007 3:35:44 PM
Barium, TCLP	1.65	0.250		mg/L	5	11/7/2007 4:01:06 PM
Cadmium, TCLP	ND	0.00500		mg/L	1	11/7/2007 3:35:44 PM
Chromium, TCLP	ND	0.0250		mg/L	1	11/7/2007 3:35:44 PM
Lead, TCLP	ND	0.100		mg/L	1	11/7/2007 3:35:44 PM
Molybdenum, TCLP	ND	0.0500		mg/L	1	11/7/2007 3:35:44 PM
Selenium, TCLP	ND	0.100		mg/L	1	11/7/2007 3:35:44 PM
Silver, TCLP	ND	0.0500		mg/L	1	11/7/2007 3:35:44 PM
Zinc, TCLP	2.98	0.0500		mg/L	1	11/7/2007 3:35:44 PM
MERCURY, TOTAL		**SW7471**				Analyst: **zau**
Mercury	0.0399	0.0122		mg/Kg	1	11/7/2007
TCLP MERCURY		**1311/7000**				Analyst: **zau**
Mercury, TCLP	ND	0.000100		mg/L	1	11/7/2007
SEMIVOLATILE ORGANICS, TCLP LEACHED		**1311/8270D**				Analyst: **bda**
1,4-Dichlorobenzene	ND	0.0100		mg/L	1	11/6/2007 7:09:00 PM
2,4,5-Trichlorophenol	ND	0.0500		mg/L	1	11/6/2007 7:09:00 PM
2,4-Dinitrotoluene	ND	0.0500		mg/L	1	11/6/2007 7:09:00 PM
2-Methylphenol	ND	0.0200		mg/L	1	11/6/2007 7:09:00 PM
3- & 4-Methylphenol	ND	0.100		mg/L	1	11/6/2007 7:09:00 PM
Hexachlorobenzene	ND	0.0100		mg/L	1	11/6/2007 7:09:00 PM
Hexachlorobutadiene	ND	0.0200		mg/L	1	11/6/2007 7:09:00 PM
Hexachloroethane	ND	0.0200		mg/L	1	11/6/2007 7:09:00 PM
Nitrobenzene	ND	0.0100		mg/L	1	11/6/2007 7:09:00 PM
Pentachlorophenol	ND	0.0500		mg/L	1	11/6/2007 7:09:00 PM
Pyridine	ND	0.100		mg/L	1	11/6/2007 7:09:00 PM
Surr: 2,4,6-Tribromophenol	90.1	33.1-99.7		%REC	1	11/6/2007 7:09:00 PM
Surr: 2-Fluorobiphenyl	38.5	33.1-96.2		%REC	1	11/6/2007 7:09:00 PM
Surr: 2-Fluorophenol	32.7	13.4-57.1		%REC	1	11/6/2007 7:09:00 PM
Surr: 4-Terphenyl-d14	47.6	41-122		%REC	1	11/6/2007 7:09:00 PM

0147229
SCOEPA00054701

CLIENT: Siltronic Corporation
Lab Order: 0711013
Project: Sediment Composites
Lab ID: 0711013-07

Client Sample ID: 07-138
Collection Date: 11/2/2007
Matrix: SEDIMENT

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
SEMIVOLATILE ORGANICS, TCLP LEACHED		**1311/8270D**				Analyst: **bda**
Surr: Nitrobenzene-d5	54.6	28.9-99.9		%REC	1	11/6/2007 7:09:00 PM
Surr: Phenol-d6	25.9	10.6-38.5		%REC	1	11/6/2007 7:09:00 PM
SEMIVOLATILE ORGANICS BY GC/MS		**SW8270D**				Analyst: **bda**
1,2,4-Trichlorobenzene	ND	66.6		µg/Kg	1	11/7/2007 3:09:00 PM
1,2-Dichlorobenzene	ND	66.6		µg/Kg	1	11/7/2007 3:09:00 PM
1,3-Dichlorobenzene	ND	66.6		µg/Kg	1	11/7/2007 3:09:00 PM
1,4-Dichlorobenzene	ND	66.6		µg/Kg	1	11/7/2007 3:09:00 PM
2,4,5-Trichlorophenol	ND	66.6		µg/Kg	1	11/7/2007 3:09:00 PM
2,4,6-Trichlorophenol	ND	66.6		µg/Kg	1	11/7/2007 3:09:00 PM
2,4-Dichlorophenol	ND	66.6		µg/Kg	1	11/7/2007 3:09:00 PM
2,4-Dimethylphenol	ND	66.6		µg/Kg	1	11/7/2007 3:09:00 PM
2,4-Dinitrophenol	ND	666		µg/Kg	1	11/7/2007 3:09:00 PM
2,4-Dinitrotoluene	ND	66.6		µg/Kg	1	11/7/2007 3:09:00 PM
2,6-Dinitrotoluene	ND	66.6		µg/Kg	1	11/7/2007 3:09:00 PM
2-Chloronaphthalene	ND	66.6		µg/Kg	1	11/7/2007 3:09:00 PM
2-Chlorophenol	ND	66.6		µg/Kg	1	11/7/2007 3:09:00 PM
2-Methylnaphthalene	1860	66.6		µg/Kg	1	11/7/2007 3:09:00 PM
2-Methylphenol	ND	66.6		µg/Kg	1	11/7/2007 3:09:00 PM
2-Nitroaniline	ND	66.6		µg/Kg	1	11/7/2007 3:09:00 PM
2-Nitrophenol	ND	334		µg/Kg	1	11/7/2007 3:09:00 PM
3,3-Dichlorobenzidine	ND	334		µg/Kg	1	11/7/2007 3:09:00 PM
3-&4-Methylphenol	426	66.6		µg/Kg	1	11/7/2007 3:09:00 PM
3-Nitroaniline	ND	66.6		µg/Kg	1	11/7/2007 3:09:00 PM
4,6-Dinitro-2-methylphenol	ND	334		µg/Kg	1	11/7/2007 3:09:00 PM
4-Bromophenyl phenyl ether	ND	66.6		µg/Kg	1	11/7/2007 3:09:00 PM
4-Chloro-3-methylphenol	ND	66.6		µg/Kg	1	11/7/2007 3:09:00 PM
4-Chloroaniline	ND	66.6		µg/Kg	1	11/7/2007 3:09:00 PM
4-Chlorophenyl phenyl ether	ND	66.6		µg/Kg	1	11/7/2007 3:09:00 PM
4-Nitroaniline	ND	66.6		µg/Kg	1	11/7/2007 3:09:00 PM
4-Nitrophenol	ND	334		µg/Kg	1	11/7/2007 3:09:00 PM
Acenaphthene	3120	66.6		µg/Kg	1	11/7/2007 3:09:00 PM
Acenaphthylene	1150	66.6		µg/Kg	1	11/7/2007 3:09:00 PM
Anthracene	3530	66.6		µg/Kg	1	11/7/2007 3:09:00 PM
Benz(a)anthracene	4330	66.6		µg/Kg	1	11/7/2007 3:09:00 PM
Benzo(a)pyrene	4510	66.6		µg/Kg	1	11/7/2007 3:09:00 PM
Benzo(b)fluoranthene	5640	66.6		µg/Kg	1	11/7/2007 3:09:00 PM
Benzo(g,h,i)perylene	2750	66.6		µg/Kg	1	11/7/2007 3:09:00 PM
Benzo(k)fluoranthene	1790	66.6		µg/Kg	1	11/7/2007 3:09:00 PM
Benzoic Acid	ND	1330		µg/Kg	1	11/7/2007 3:09:00 PM
Benzyl Alcohol	ND	66.6		µg/Kg	1	11/7/2007 3:09:00 PM

0147230
SCOEPA00054702

CLIENT: Siltronic Corporation
Client Sample ID: 07-138
Lab Order: 0711013
Collection Date: 11/2/2007
Project: Sediment Composites
Lab ID: 0711013-07
Matrix: SEDIMENT

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
SEMIVOLATILE ORGANICS BY GC/MS		**SW8270D**				Analyst: bda
Bis(2-chloroethoxy)methane	ND	66.6		µg/Kg	1	11/7/2007 3:09:00 PM
Bis(2-chloroethyl)ether	ND	66.6		µg/Kg	1	11/7/2007 3:09:00 PM
Bis(2-chloroisopropyl)ether	ND	66.6		µg/Kg	1	11/7/2007 3:09:00 PM
Bis(2-ethylhexyl)phthalate	8380	333		µg/Kg	5	11/7/2007 2:39:00 PM
Butyl benzyl phthalate	321	66.6		µg/Kg	1	11/7/2007 3:09:00 PM
Carbazole	591	66.6		µg/Kg	1	11/7/2007 3:09:00 PM
Chrysene	4860	66.6		µg/Kg	1	11/7/2007 3:09:00 PM
Di-n-butyl phthalate	ND	66.6		µg/Kg	1	11/7/2007 3:09:00 PM
Di-n-octyl phthalate	1380	66.6		µg/Kg	1	11/7/2007 3:09:00 PM
Dibenz(a,h)anthracene	ND	66.6		µg/Kg	1	11/7/2007 3:09:00 PM
Dibenzofuran	318	66.6		µg/Kg	1	11/7/2007 3:09:00 PM
Diethyl phthalate	ND	66.6		µg/Kg	1	11/7/2007 3:09:00 PM
Dimethyl phthalate	1040	66.6		µg/Kg	1	11/7/2007 3:09:00 PM
Fluoranthene	12600	333		µg/Kg	5	11/7/2007 2:39:00 PM
Fluorene	1990	66.6		µg/Kg	1	11/7/2007 3:09:00 PM
Hexachlorobenzene	ND	66.6		µg/Kg	1	11/7/2007 3:09:00 PM
Hexachlorobutadiene	ND	66.6		µg/Kg	1	11/7/2007 3:09:00 PM
Hexachlorocyclopentadiene	ND	66.6		µg/Kg	1	11/7/2007 3:09:00 PM
Hexachloroethane	ND	66.6		µg/Kg	1	11/7/2007 3:09:00 PM
Indeno(1,2,3-cd)pyrene	2210	66.6		µg/Kg	1	11/7/2007 3:09:00 PM
Isophorone	ND	66.6		µg/Kg	1	11/7/2007 3:09:00 PM
N-Nitrosodi-n-propylamine	ND	66.6		µg/Kg	1	11/7/2007 3:09:00 PM
N-Nitrosodimethylamine	ND	66.6		µg/Kg	1	11/7/2007 3:09:00 PM
N-Nitrosodiphenylamine	ND	66.6		µg/Kg	1	11/7/2007 3:09:00 PM
Naphthalene	2340	66.6		µg/Kg	1	11/7/2007 3:09:00 PM
Nitrobenzene	ND	66.6		µg/Kg	1	11/7/2007 3:09:00 PM
Pentachlorophenol	ND	100		µg/Kg	1	11/7/2007 3:09:00 PM
Phenanthrene	16600	333		µg/Kg	5	11/7/2007 2:39:00 PM
Phenol	124	66.6		µg/Kg	1	11/7/2007 3:09:00 PM
Pyrene	14600	333		µg/Kg	5	11/7/2007 2:39:00 PM
Surr: 2,4,6-Tribromophenol	33.7	57.8-119	S	%REC	1	11/7/2007 3:09:00 PM
Surr: 2-Fluorobiphenyl	77.9	52.6-93.2		%REC	1	11/7/2007 3:09:00 PM
Surr: 2-Fluorophenol	42.1	40.7-111		%REC	1	11/7/2007 3:09:00 PM
Surr: 4-Terphenyl-d14	47.3	49.8-118	S	%REC	1	11/7/2007 3:09:00 PM
Surr: Nitrobenzene-d5	46.4	44.8-103		%REC	1	11/7/2007 3:09:00 PM
Surr: Phenol-d6	62.8	47.5-117		%REC	1	11/7/2007 3:09:00 PM
VOLATILES, TCLP LEACHED		**SW1311/8260B**				Analyst: bda
1,1-Dichloroethene	ND	0.050		mg/L	1	11/6/2007 8:07:00 PM
1,2-Dichloroethane	ND	0.050		mg/L	1	11/6/2007 8:07:00 PM
2-Butanone	ND	0.50		mg/L	1	11/6/2007 8:07:00 PM

0147231
SCOEPA00054703

CLIENT: Siltronic Corporation
Client Sample ID: 07-138
Lab Order: 0711013
Collection Date: 11/2/2007
Project: Sediment Composites
Lab ID: 0711013-07
Matrix: SEDIMENT

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
VOLATILES, TCLP LEACHED		**SW1311/8260B**				Analyst: **bda**
Benzene	ND	0.050		mg/L	1	11/6/2007 8:07:00 PM
Carbon tetrachloride	ND	0.050		mg/L	1	11/6/2007 8:07:00 PM
Chlorobenzene	ND	0.050		mg/L	1	11/6/2007 8:07:00 PM
Chloroform	ND	0.050		mg/L	1	11/6/2007 8:07:00 PM
Tetrachloroethene	ND	0.050		mg/L	1	11/6/2007 8:07:00 PM
Trichloroethene	ND	0.050		mg/L	1	11/6/2007 8:07:00 PM
Vinyl chloride	ND	0.050		mg/L	1	11/6/2007 8:07:00 PM
Surr: 1,2-Dichloroethane-d4	83.0	72.2-129		%REC	1	11/6/2007 8:07:00 PM
Surr: 4-Bromofluorobenzene	102	73.5-125		%REC	1	11/6/2007 8:07:00 PM
Surr: Dibromofluoromethane	93.3	58.8-148		%REC	1	11/6/2007 8:07:00 PM
Surr: Toluene-d8	129	79.8-137		%REC	1	11/6/2007 8:07:00 PM
VOLATILES BY GC/MS		**SW8260B**				Analyst: **bda**
1,1,1,2-Tetrachloroethane	ND	10.0		µg/Kg	1	11/5/2007 3:52:00 PM
1,1,1-Trichloroethane	ND	10.0		µg/Kg	1	11/5/2007 3:52:00 PM
1,1,2,2-Tetrachloroethane	ND	10.0		µg/Kg	1	11/5/2007 3:52:00 PM
1,1,2-Trichloroethane	ND	10.0		µg/Kg	1	11/5/2007 3:52:00 PM
1,1-Dichloroethane	ND	10.0		µg/Kg	1	11/5/2007 3:52:00 PM
1,1-Dichloroethene	ND	10.0		µg/Kg	1	11/5/2007 3:52:00 PM
1,1-Dichloropropene	ND	10.0		µg/Kg	1	11/5/2007 3:52:00 PM
1,2,3-Trichlorobenzene	ND	10.0		µg/Kg	1	11/5/2007 3:52:00 PM
1,2,3-Trichloropropane	ND	10.0		µg/Kg	1	11/5/2007 3:52:00 PM
1,2,4-Trichlorobenzene	ND	10.0		µg/Kg	1	11/5/2007 3:52:00 PM
1,2,4-Trimethylbenzene	ND	10.0		µg/Kg	1	11/5/2007 3:52:00 PM
1,2-Dibromo-3-chloropropane	ND	10.0		µg/Kg	1	11/5/2007 3:52:00 PM
1,2-Dibromoethane	ND	10.0		µg/Kg	1	11/5/2007 3:52:00 PM
1,2-Dichlorobenzene	ND	10.0		µg/Kg	1	11/5/2007 3:52:00 PM
1,2-Dichloroethane	ND	10.0		µg/Kg	1	11/5/2007 3:52:00 PM
1,2-Dichloropropane	ND	10.0		µg/Kg	1	11/5/2007 3:52:00 PM
1,3,5-Trimethylbenzene	ND	10.0		µg/Kg	1	11/5/2007 3:52:00 PM
1,3-Dichlorobenzene	ND	10.0		µg/Kg	1	11/5/2007 3:52:00 PM
1,3-Dichloropropane	ND	10.0		µg/Kg	1	11/5/2007 3:52:00 PM
1,4-Dichlorobenzene	ND	10.0		µg/Kg	1	11/5/2007 3:52:00 PM
2,2-Dichloropropane	ND	10.0		µg/Kg	1	11/5/2007 3:52:00 PM
2-Butanone	ND	20.0		µg/Kg	1	11/5/2007 3:52:00 PM
2-Chlorotoluene	ND	10.0		µg/Kg	1	11/5/2007 3:52:00 PM
2-Hexanone	ND	20.0		µg/Kg	1	11/5/2007 3:52:00 PM
4-Chlorotoluene	ND	10.0		µg/Kg	1	11/5/2007 3:52:00 PM
4-Isopropyltoluene	ND	10.0		µg/Kg	1	11/5/2007 3:52:00 PM
4-Methyl-2-pentanone	ND	20.0		µg/Kg	1	11/5/2007 3:52:00 PM
Acetone	ND	50.0		µg/Kg	1	11/5/2007 3:52:00 PM

0147232
SCOEPA00054704

CLIENT: Siltronic Corporation
Client Sample ID: 07-138
Lab Order: 0711013
Collection Date: 11/2/2007
Project: Sediment Composites
Lab ID: 0711013-07
Matrix: SEDIMENT

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
VOLATILES BY GC/MS		SW8260B				Analyst: bda
Benzene	ND	10.0		µg/Kg	1	11/5/2007 3:52:00 PM
Bromobenzene	ND	10.0		µg/Kg	1	11/5/2007 3:52:00 PM
Bromochloromethane	ND	10.0		µg/Kg	1	11/5/2007 3:52:00 PM
Bromodichloromethane	ND	10.0		µg/Kg	1	11/5/2007 3:52:00 PM
Bromoform	ND	10.0		µg/Kg	1	11/5/2007 3:52:00 PM
Bromomethane	ND	10.0		µg/Kg	1	11/5/2007 3:52:00 PM
Carbon disulfide	16.5	10.0		µg/Kg	1	11/5/2007 3:52:00 PM
Carbon tetrachloride	ND	10.0		µg/Kg	1	11/5/2007 3:52:00 PM
Chlorobenzene	ND	10.0		µg/Kg	1	11/5/2007 3:52:00 PM
Chloroethane	ND	10.0		µg/Kg	1	11/5/2007 3:52:00 PM
Chloroform	ND	10.0		µg/Kg	1	11/5/2007 3:52:00 PM
Chloromethane	ND	10.0		µg/Kg	1	11/5/2007 3:52:00 PM
cis-1,2-Dichloroethene	ND	10.0		µg/Kg	1	11/5/2007 3:52:00 PM
cis-1,3-Dichloropropene	ND	10.0		µg/Kg	1	11/5/2007 3:52:00 PM
Dibromochloromethane	ND	10.0		µg/Kg	1	11/5/2007 3:52:00 PM
Dibromomethane	ND	10.0		µg/Kg	1	11/5/2007 3:52:00 PM
Dichlorodifluoromethane	ND	10.0		µg/Kg	1	11/5/2007 3:52:00 PM
Ethylbenzene	ND	10.0		µg/Kg	1	11/5/2007 3:52:00 PM
Hexachlorobutadiene	ND	10.0		µg/Kg	1	11/5/2007 3:52:00 PM
Isopropylbenzene	ND	10.0		µg/Kg	1	11/5/2007 3:52:00 PM
m,p-Xylene	ND	20.0		µg/Kg	1	11/5/2007 3:52:00 PM
Methyl tert-butyl ether	ND	10.0		µg/Kg	1	11/5/2007 3:52:00 PM
Methylene chloride	ND	50.0		µg/Kg	1	11/5/2007 3:52:00 PM
n-Butylbenzene	ND	10.0		µg/Kg	1	11/5/2007 3:52:00 PM
n-Propylbenzene	ND	10.0		µg/Kg	1	11/5/2007 3:52:00 PM
Naphthalene	48.9	10.0		µg/Kg	1	11/5/2007 3:52:00 PM
o-Xylene	ND	10.0		µg/Kg	1	11/5/2007 3:52:00 PM
sec-Butylbenzene	ND	10.0		µg/Kg	1	11/5/2007 3:52:00 PM
Styrene	ND	10.0		µg/Kg	1	11/5/2007 3:52:00 PM
tert-Butylbenzene	ND	10.0		µg/Kg	1	11/5/2007 3:52:00 PM
Tetrachloroethene	ND	10.0		µg/Kg	1	11/5/2007 3:52:00 PM
Toluene	10.4	10.0		µg/Kg	1	11/5/2007 3:52:00 PM
trans-1,2-Dichloroethene	ND	10.0		µg/Kg	1	11/5/2007 3:52:00 PM
trans-1,3-Dichloropropene	ND	10.0		µg/Kg	1	11/5/2007 3:52:00 PM
Trichloroethene	ND	10.0		µg/Kg	1	11/5/2007 3:52:00 PM
Trichlorofluoromethane	ND	10.0		µg/Kg	1	11/5/2007 3:52:00 PM
Vinyl chloride	ND	10.0		µg/Kg	1	11/5/2007 3:52:00 PM
Surr: 1,2-Dichloroethane-d4	98.3	71.5-112		%REC	1	11/5/2007 3:52:00 PM
Surr: 4-Bromofluorobenzene	92.9	75.7-122		%REC	1	11/5/2007 3:52:00 PM
Surr: Dibromofluoromethane	93.7	64.3-124		%REC	1	11/5/2007 3:52:00 PM
Surr: Toluene-d8	101	74.9-120		%REC	1	11/5/2007 3:52:00 PM

0147233
SCOEPA00054705

CLIENT:	Siltronic Corporation	Client Sample ID:	07-138
Lab Order:	0711013	Collection Date:	11/2/2007
Project:	Sediment Composites		
Lab ID:	0711013-07	Matrix:	SEDIMENT

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
FLUORIDE, TCLP LEACHED		**SW1311/E340.2**				Analyst: are
Fluoride, TCLP Leached	ND	12		mg/L	1	11/9/2007
CYANIDE, TOTAL IN SOIL		**SW9010A**				Analyst: are
Cyanide	ND	0.200		mg/Kg	1	11/7/2007
FLUORIDE		**E 340.2**				Analyst: are
Fluoride	ND	10		mg/Kg	1	11/9/2007
FREE LIQUID		**SW9095**				Analyst: are
Free Liquid	2.73	1.00		%	1	11/9/2007

0147234
SCOEPA00054706

CLIENT: Siltronic Corporation
Work Order: 0711013
Project: SedimentComposites

ANALYTICAL QC SUMMARY REPORT

TestCode: 1311_BNA

Sample ID	MB-19882	SampType:	MBLK	TestCode:	1311_BNA	Units:	mg/L	Prep Date:	11/5/2007	Run ID:	5973G_071106B
Client ID:	ZZZZZ	Batch ID:	19874	TestNo:	1311/8270D			Analysis Date:	11/6/2007	SeqNo:	502185

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,4-Dichlorobenzene	ND	0.00100									
2,4,5-Trichlorophenol	ND	0.00500									
2,4-Dinitrotoluene	ND	0.00500									
Hexachlorobenzene	ND	0.00100									
Hexachlorobutadiene	ND	0.00200									
Hexachloroethane	ND	0.00200									
m-Cresol	ND	0.0100									
Nitrobenzene	ND	0.00100									
o-Cresol	ND	0.0100									
p-Cresol	ND	0.0100									
Pentachlorophenol	ND	0.00500									
Pyridine	ND	0.0100									
Surr: 2,4,6-Tribromophenol	0.09498	0	0.1	0	95	33.1	99.7	0	0		
Surr: 2-Fluorobiphenyl	0.03349	0	0.1	0	33.5	33.1	96.2	0	0		
Surr: 2-Fluorophenol	0.04242	0	0.1	0	42.4	13.4	57.1	0	0		
Surr: 4-Terphenyl-d14	0.05229	0	0.1	0	52.3	41	122	0	0		
Surr: Nitrobenzene-d5	0.06042	0	0.1	0	60.4	28.9	99.9	0	0		
Surr: Phenol-d6	0.02925	0	0.1	0	29.2	10.6	38.5	0	0		

Sample ID	LCS-19882	SampType:	LCS	TestCode:	1311_BNA	Units:	mg/L	Prep Date:	11/5/2007	Run ID:	5973G_071106B
Client ID:	ZZZZZ	Batch ID:	19874	TestNo:	1311/8270D			Analysis Date:	11/6/2007	SeqNo:	502186

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,4-Dichlorobenzene	0.00545	0.00100	0.05	0	10.9	27.8	80.9	0	0		S
2,4-Dinitrotoluene	0.04087	0.00500	0.05	0	81.7	52.9	97.6	0	0		
2-Chlorophenol	0.03102	0.00100	0.05	0	62	27.8	77.9	0	0		
4-Chloro-3-methylphenol	0.03657	0.00200	0.05	0	73.1	33.5	88.5	0	0		
Pentachlorophenol	0.02924	0.00500	0.05	0	58.5	43.3	113	0	0		
Phenol	0.0144	0.00200	0.05	0	28.8	13.4	40.9	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

SCOEPA00054707 0147235

CLIENT: Siltronic Corporation
Work Order: 0711013
Project: SedimentComposites

ANALYTICAL QC SUMMARY REPORT

TestCode: 1311_BNA

Sample ID	LCSD-19882	SampType:	LCSD	TestCode:	1311_BNA	Units:	mg/L	Prep Date:	11/5/2007	Run ID:	5973G_071106B
Client ID:	ZZZZZ	Batch ID:	19874	TestNo:	1311/8270D			Analysis Date:	11/6/2007	SeqNo:	502187

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,4-Dichlorobenzene	0.01188	0.00100	0.05	0	23.8	27.8	80.9	0.00545	74.2	20	SR
2,4-Dinitrotoluene	0.04087	0.00500	0.05	0	81.7	52.9	97.6	0.04087	0	20	
2-Chlorophenol	0.03151	0.00100	0.05	0	63	27.8	77.9	0.03102	1.57	20	
4-Chloro-3-methylphenol	0.03605	0.00200	0.05	0	72.1	33.5	88.5	0.03657	1.43	20	
Pentachlorophenol	0.03019	0.00500	0.05	0	60.4	43.3	113	0.02924	3.20	20	
Phenol	0.01344	0.00200	0.05	0	26.9	13.4	40.9	0.0144	6.90	20	

Sample ID	CCV-19882	SampType:	CCV	TestCode:	1311_BNA	Units:	mg/L	Prep Date:	11/5/2007	Run ID:	5973G_071106B
Client ID:	ZZZZZ	Batch ID:	19874	TestNo:	1311/8270D			Analysis Date:	11/6/2007	SeqNo:	502184

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,4-Dichlorobenzene	0.0502	0.00100	0.05	0	100	80	120	0	0		
2,4,6-Trichlorophenol	0.0533	0.00500	0.05	0	107	80	120	0	0		
2-Methylphenol	0.04971	0.00200	0.05	0	99.4	80	120	0	0		
3- & 4-Methylphenol	0.09724	0.0100	0.1	0	97.2	80	120	0	0		
Pentachlorophenol	0.04563	0.00500	0.05	0	91.3	80	120	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

SCOEPA0005470B 0147236

CLIENT: Siltronic Corporation
Work Order: 0711013
Project: Sediment Composites

ANALYTICAL QC SUMMARY REPORT

TestCode: 1311_VOL

Sample ID MB | SampType: MBLK | TestCode: 1311_VOL | Units: mg/L | Prep Date: | Run ID: 5973J_071106C
Client ID: ZZZZZ | Batch ID: R49088 | TestNo: SW1311/8260 | Analysis Date: 11/6/2007 | SeqNo: 502140

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	ND	0.050									
1,2-Dichloroethane	ND	0.050									
2-Butanone	ND	0.50									
Benzene	ND	0.050									
Carbon tetrachloride	ND	0.050									
Chlorobenzene	ND	0.050									
Chloroform	ND	0.050									
Tetrachloroethene	ND	0.050									
Trichloroethene	ND	0.050									
Vinyl chloride	ND	0.050									
Surr:1,2-Dichloroethane-d4	4.062	0	5	0	81.2	72.2	129	0	0		
Surr:4-Bromofluorobenzene	5.068	0	5	0	101	73.5	125	0	0		
Surr:Dibromofluoromethane	4.628	0	5	0	92.6	58.8	148	0	0		
Surr:Toluene-d8	6.425	0	5	0	128	79.8	137	0	0		

Sample ID 40MSVWS-1711 | SampType: LCS | TestCode: 1311_VOL | Units: mg/L | Prep Date: | Run ID: 5973J_071106C
Client ID: ZZZZZ | Batch ID: R49088 | TestNo: SW1311/8260 | Analysis Date: 11/6/2007 | SeqNo: 502139

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	0.03523	0.0010	0.04	0	88.1	69.8	154	0	0		
Benzene	0.04062	0.0010	0.04	0	102	73.7	114	0	0		
Chlorobenzene	0.0466	0.0010	0.04	0	116	88.2	109	0	0		S,O
Trichloroethene	0.03829	0.0010	0.04	0	95.7	63.4	120	0	0		

Sample ID A0711003-02BMS | SampType: MS | TestCode: 1311_VOL | Units: mg/L | Prep Date: | Run ID: 5973J_071106C
Client ID: ZZZZZ | Batch ID: R49088 | TestNo: SW1311/8260 | Analysis Date: 11/6/2007 | SeqNo: 502146

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	0.04067	0.0010	0.04	0	102	51.4	176	0	0		
Benzene	0.04106	0.0010	0.04	0	103	71.5	118	0	0		
Chlorobenzene	0.04613	0.0010	0.04	0	115	79.8	114	0	0		S

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

SCOEPA00054709 0147237

CLIENT: Siltronic Corporation
Work Order: 0711013
Project: SedimentComposites

ANALYTICAL QC SUMMARY REPORT

TestCode: 1311_VOL

Sample ID	A0711003-02BMS	SampType:	MS	TestCode:	1311_VOL	Units:	mg/L	Prep Date:		Run ID:	5973J_071106C
Client ID:	ZZZZZ	Batch ID:	R49088	TestNo:	SW1311/8260			Analysis Date:	11/6/2007	SeqNo:	502146

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Trichloroethene	0.04168	0.0010	0.04	0	104	73.6	120	0	0		

Sample ID	A0711003-02BMSD	SampType:	MSD	TestCode:	1311_VOL	Units:	mg/L	Prep Date:		Run ID:	5973J_071106C
Client ID:	ZZZZZ	Batch ID:	R49088	TestNo:	SW1311/8260			Analysis Date:	11/6/2007	SeqNo:	502147

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	0.03943	0.0010	0.04	0	98.6	51.4	176	0.04067	3.10	20	
Benzene	0.04041	0.0010	0.04	0	101	71.5	118	0.04106	1.60	20	
Chlorobenzene	0.04503	0.0010	0.04	0	113	79.8	114	0.04613	2.41	20	
Trichloroethene	0.04035	0.0010	0.04	0	101	73.6	120	0.04168	3.24	20	

Sample ID	40MSVWS-1715	SampType:	CCV	TestCode:	1311_VOL	Units:	mg/L	Prep Date:		Run ID:	5973J_071106C
Client ID:	ZZZZZ	Batch ID:	R49088	TestNo:	SW1311/8260			Analysis Date:	11/6/2007	SeqNo:	502138

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	0.03713	0.0010	0.04	0	92.8	80	120	0	0		
Chloroform	0.04299	0.0010	0.04	0	107	80	120	0	0		
Vinyl chloride	0.04712	0.0010	0.04	0	118	80	120	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

SCOEPA0005471 0147238

CLIENT: Siltronic Corporation
Work Order: 0711013
Project: SedimentComposites

ANALYTICAL QC SUMMARY REPORT

TestCode: 1311_WC

Sample ID	MB-R49158	SampType:	MBLK	TestCode:	1311_WC	Units:	mg/L	Prep Date:		Run ID:	MANTECH_071109C
Client ID:	ZZZZZ	Batch ID:	R49158	TestNo:	SW1311/E34			Analysis Date:	11/9/2007	SeqNo:	503027

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride, TCLP Leached	0.4	4.0									J

Sample ID	LCS-R49158	SampType:	LCS	TestCode:	1311_WC	Units:	mg/L	Prep Date:		Run ID:	MANTECH_071109C
Client ID:	ZZZZZ	Batch ID:	R49158	TestNo:	SW1311/E34			Analysis Date:	11/9/2007	SeqNo:	503026

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride, TCLP Leached	97	4.0	100	0.4	96.6	90	110	0	0		

Sample ID	0711013-07ADUP	SampType:	DUP	TestCode:	1311_WC	Units:	mg/L	Prep Date:		Run ID:	MANTECH_071109C
Client ID:	07-138	Batch ID:	R49158	TestNo:	SW1311/E34			Analysis Date:	11/9/2007	SeqNo:	503024

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride, TCLP Leached	7.362	12	0	0	0	0	0	7.362	0	20	J

Sample ID	CCV	SampType:	CCV	TestCode:	1311_WC	Units:	mg/L	Prep Date:		Run ID:	MANTECH_071109C
Client ID:	ZZZZZ	Batch ID:	R49158	TestNo:	SW1311/E34			Analysis Date:	11/9/2007	SeqNo:	503025

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride, TCLP Leached	151.4	4.0	150	0	101	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

SCOEPA0005471 0147239

CLIENT: Siltronic Corporation
Work Order: 0711013
Project: SedimentComposites

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID	MBLK-19898	SampType:	MBLK	TestCode:	6010_S	Units:	mg/Kg	Prep Date:	11/7/2007	Run ID:	TJAIRIS_071107D
Client ID:	ZZZZZ	Batch ID:	19898	TestNo:	E6010			Analysis Date:	11/7/2007	SeqNo:	502422

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	2.00									
Barium	ND	1.00									
Chromium	ND	0.500									
Lead	ND	2.00									
Molybdenum	ND	1.00									
Selenium	ND	2.00									
Silver	ND	2.00									
Zinc	0.2	1.00									J

Sample ID	MBLK-19898	SampType:	MBLK	TestCode:	6010_S	Units:	mg/Kg	Prep Date:	11/7/2007	Run ID:	TJAIRIS_071107D
Client ID:	ZZZZZ	Batch ID:	19898	TestNo:	E6010			Analysis Date:	11/8/2007	SeqNo:	502626

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cadmium	ND	0.100									

Sample ID	LCS-19898	SampType:	LCS	TestCode:	6010_S	Units:	mg/Kg	Prep Date:	11/7/2007	Run ID:	TJAIRIS_071107D
Client ID:	ZZZZZ	Batch ID:	19898	TestNo:	E6010			Analysis Date:	11/7/2007	SeqNo:	502423

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	98.81	2.00	100	0	98.8	85.1	107	0	0		
Barium	49.87	1.00	50	0	99.7	85.7	110	0	0		
Cadmium	4.9	0.100	5	0	98	87.2	109	0	0		
Chromium	24.94	0.500	25	0	99.8	84	113	0	0		
Lead	101.7	2.00	100	0	102	84.9	109	0	0		
Molybdenum	48.62	1.00	50	0	97.2	80	120	0	0		
Selenium	99.6	2.00	100	0	99.6	88.7	111	0	0		
Silver	47.86	2.00	50	0	95.7	79.3	109	0	0		
Zinc	50.57	1.00	50	0	101	86.8	112	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit; J - Analyte detected below quantitation limits; S - Spike Recovery outside accepted recovery limits; R - RPD outside accepted recovery limits; B - Analyte detected in the associated Method Blank

SCOEPA0005471 2 0147240

CLIENT: Siltronic Corporation
Work Order: 0711013
Project: SedimentComposites

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID	0711013-07AMS	SampType:	MS	TestCode:	6010_S	Units:	mg/Kg	Prep Date:	11/7/2007	Run ID:	TJA!RIS_071107D
Client ID:	07-138	Batch ID:	19898	TestNo:	E6010			Analysis Date:	11/7/2007	SeqNo:	502428

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	83.19	1.75	87.72	0.7586	94	86.1	109	0	0		
Cadmium	4.825	0.0877	4.386	0.8448	90.7	86.4	113	0	0		
Chromium	52.18	0.439	21.93	34.45	80.9	75	121	0	0		
Lead	122.6	1.75	87.72	43.85	89.8	84.9	109	0	0		
Molybdenum	45.1	0.877	43.86	4.905	91.6	75	125	0	0		
Selenium	85.6	1.75	87.72	0	97.6	77.7	116	0	0		
Silver	40.09	1.75	43.86	0.6207	90	75	123	0	0		
Zinc	781.1	0.877	43.86	847.8	-152	86.2	113	0	0		S,MC

Sample ID	0711013-07AMS	SampType:	MS	TestCode:	6010_S	Units:	mg/Kg	Prep Date:	11/7/2007	Run ID:	TJA!RIS_071107D
Client ID:	07-138	Batch ID:	19898	TestNo:	E6010			Analysis Date:	11/8/2007	SeqNo:	502630

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	105.1	4.39	43.86	56.22	111	75	125	0	0		

Sample ID	0711013-07AMSD	SampType:	MSD	TestCode:	6010_S	Units:	mg/Kg	Prep Date:	11/7/2007	Run ID:	TJA!RIS_071107D
Client ID:	07-138	Batch ID:	19898	TestNo:	E6010			Analysis Date:	11/7/2007	SeqNo:	502429

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	81.73	1.75	87.72	0.7586	92.3	86.1	109	83.19	1.78	20	
Cadmium	4.675	0.0877	4.386	0.8448	87.3	86.4	113	4.825	3.14	20	
Chromium	50.37	0.439	21.93	34.45	72.6	75	121	52.18	3.54	20	S
Lead	122.5	1.75	87.72	43.85	89.6	84.9	109	122.6	0.143	20	
Molybdenum	42.98	0.877	43.86	4.905	86.8	75	125	45.1	4.80	20	
Selenium	83.59	1.75	87.72	0	95.3	77.7	116	85.6	2.37	20	
Silver	39.23	1.75	43.86	0.6207	88	75	123	40.09	2.17	20	
Zinc	784.6	0.877	43.86	847.8	-144	86.2	113	781.1	0.437	20	S,MC

Qualifiers: ND - Not Detected at the Reporting Limit; J - Analyte detected below quantitation limits; S - Spike Recovery outside accepted recovery limits; R - RPD outside accepted recovery limits; B - Analyte detected in the associated Method Blank

SCOEPA0005471 3 0147241

CLIENT: Siltronic Corporation
Work Order: 0711013
Project: SedimentComposites

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID	0711013-07AMSD	SampType:	MSD	TestCode:	6010_S	Units:	mg/Kg	Prep Date:	11/7/2007	Run ID:	TJAIRIS_071107D
Client ID:	07-138	Batch ID:	19898	TestNo:	E6010			Analysis Date:	11/8/2007	SeqNo:	502631

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	104.9	4.39	43.86	56.22	111	75	125	105.1	0.209	20	

Sample ID	0711013-07ADUP	SampType:	DUP	TestCode:	6010_S	Units:	mg/Kg	Prep Date:	11/7/2007	Run ID:	TJAIRIS_071107D
Client ID:	07-138	Batch ID:	19898	TestNo:	E6010			Analysis Date:	11/7/2007	SeqNo:	502427

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	1.85	0	0	0	0	0	0.7586	0	20	
Barium	53.33	0.926	0	0	0	0	0	56.22	5.26	20	
Cadmium	0.787	0.0926	0	0	0	0	0	0.8448	7.08	20	
Chromium	30.2	0.463	0	0	0	0	0	34.45	13.1	20	
Lead	39.68	1.85	0	0	0	0	0	43.85	10.0	20	
Molybdenum	4.769	0.926	0	0	0	0	0	4.905	2.83	20	
Selenium	ND	1.85	0	0	0	0	0	0	0	20	
Silver	0.4815	1.85	0	0	0	0	0	0.6207	0	20	J
Zinc	785.6	0.926	0	0	0	0	0	847.8	7.63	20	

Sample ID	CCV	SampType:	CCV	TestCode:	6010_S	Units:	mg/Kg	Prep Date:		Run ID:	TJAIRIS_071107D
Client ID:	ZZZZZ	Batch ID:	19898	TestNo:	E6010			Analysis Date:	11/7/2007	SeqNo:	502421

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	98.9	2.00	100	0	98.9	90	110	0	0		
Barium	51.29	1.00	50	0	103	90	110	0	0		
Cadmium	4.86	0.100	5	0	97.2	90	110	0	0		
Chromium	24.76	0.500	25	0	99	90	110	0	0		
Lead	101.5	2.00	100	0	102	90	110	0	0		
Molybdenum	47.72	1.00	50	0	95.4	90	110	0	0		
Selenium	100.7	2.00	100	0	101	90	110	0	0		
Silver	47.04	2.00	50	0	94.1	90	110	0	0		
Zinc	49.87	1.00	50	0	99.7	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit; J - Analyte detected below quantitation limits; S - Spike Recovery outside accepted recovery limits; R - RPD outside accepted recovery limits; B - Analyte detected in the associated Method Blan

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CLIENT: Siltronic Corporation
Work Order: 0711013
Project: Sediment Composites

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID	CCV	SampType:	CCV	TestCode:	6010_S	Units:	mg/Kg	Prep Date:		Run ID:	TJAIRIS_071107D
Client ID:	ZZZZZ	Batch ID:	19898	TestNo:	E6010			Analysis Date:	11/7/2007	SeqNo:	502424

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	98.85	2.00	100	0	98.8	90	110	0	0		
Barium	49.4	1.00	50	0	98.8	90	110	0	0		
Cadmium	4.87	0.100	5	0	97.4	90	110	0	0		
Chromium	24.85	0.500	25	0	99.4	90	110	0	0		
Lead	101.1	2.00	100	0	101	90	110	0	0		
Molybdenum	48.34	1.00	50	0	96.7	90	110	0	0		
Selenium	98.04	2.00	100	0	98	90	110	0	0		
Silver	48.52	2.00	50	0	97	90	110	0	0		
Zinc	50.31	1.00	50	0	101	90	110	0	0		

Sample ID	CCV	SampType:	CCV	TestCode:	6010_S	Units:	mg/Kg	Prep Date:		Run ID:	TJAIRIS_071107D
Client ID:	ZZZZZ	Batch ID:	19898	TestNo:	E6010			Analysis Date:	11/7/2007	SeqNo:	502432

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	99.72	2.00	100	0	99.7	90	110	0	0		
Barium	49.33	1.00	50	0	98.7	90	110	0	0		
Cadmium	4.86	0.100	5	0	97.2	90	110	0	0		
Chromium	24.82	0.500	25	0	99.3	90	110	0	0		
Lead	100.4	2.00	100	0	100	90	110	0	0		
Molybdenum	48.14	1.00	50	0	96.3	90	110	0	0		
Selenium	99.6	2.00	100	0	99.6	90	110	0	0		
Silver	48.07	2.00	50	0	96.1	90	110	0	0		
Zinc	50.58	1.00	50	0	101	90	110	0	0		

Sample ID	CCV	SampType:	CCV	TestCode:	6010_S	Units:	mg/Kg	Prep Date:		Run ID:	TJAIRIS_071107D
Client ID:	ZZZZZ	Batch ID:	19898	TestNo:	E6010			Analysis Date:	11/8/2007	SeqNo:	502628

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	50.37	1.00	50	0	101	90	110	0	0		
Cadmium	4.83	0.100	5	0	96.6	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

SCOEPA0005471 5 0147243

CLIENT: Siltronic Corporation
Work Order: 0711013
Project: SedimentComposites

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID	CCV	SampType:	CCV	TestCode:	6010_S	Units:	mg/Kg	Prep Date:		Run ID:	TJAIRIS_071107D
Client ID:	ZZZZZ	Batch ID:	19898	TestNo:	E6010			Analysis Date:	11/8/2007	SeqNo:	502636

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	52.3	1.00	50	0	105	90	110	0	0		

Sample ID	ICV	SampType:	ICV	TestCode:	6010_S	Units:	mg/Kg	Prep Date:		Run ID:	TJAIRIS_071107D
Client ID:	ZZZZZ	Batch ID:	19898	TestNo:	E6010			Analysis Date:	11/7/2007	SeqNo:	502420

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	100.8	2.00	100	0	101	90	110	0	0		
Barium	50.93	1.00	50	0	102	90	110	0	0		
Cadmium	5.06	0.100	5	0	101	90	110	0	0		
Chromium	25.71	0.500	25	0	103	90	110	0	0		
Lead	101.4	2.00	100	0	101	90	110	0	0		
Molybdenum	50.28	1.00	50	0	101	90	110	0	0		
Selenium	101.9	2.00	100	0	102	90	110	0	0		
Silver	49.75	2.00	50	0	99.5	90	110	0	0		
Zinc	50.81	1.00	50	0	102	90	110	0	0		

Sample ID	ICV	SampType:	ICV	TestCode:	6010_S	Units:	mg/Kg	Prep Date:		Run ID:	TJAIRIS_071107D
Client ID:	ZZZZZ	Batch ID:	19898	TestNo:	E6010			Analysis Date:	11/8/2007	SeqNo:	502625

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	51.67	1.00	50	0	103	90	110	0	0		
Cadmium	5.07	0.100	5	0	101	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

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CLIENT: Siltronic Corporation
Work Order: 0711013
Project: Sediment Composites

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_TCLP

Sample ID	MBLK-19896	SampType:	MBLK	TestCode:	6010_TCLP	Units:	mg/L	Prep Date:	11/7/2007	Run ID:	TJAIRIS_071107B
Client ID:	ZZZZZ	Batch ID:	19896	TestNo:	E1311/6010/7			Analysis Date:	11/7/2007	SeqNo:	502363

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic, TCLP	ND	0.0200									
Barium, TCLP	ND	0.0100									
Cadmium, TCLP	ND	0.00100									
Chromium, TCLP	ND	0.00500									
Lead, TCLP	ND	0.0200									
Molybdenum, TCLP	ND	0.0100									
Selenium, TCLP	ND	0.0200									
Silver, TCLP	ND	0.0100									
Zinc, TCLP	ND	0.0100									

Sample ID	LCS-19896	SampType:	LCS	TestCode:	6010_TCLP	Units:	mg/L	Prep Date:	11/7/2007	Run ID:	TJAIRIS_071107B
Client ID:	ZZZZZ	Batch ID:	19896	TestNo:	E1311/6010/7			Analysis Date:	11/7/2007	SeqNo:	502364

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic, TCLP	0.9902	0.0200	1	0	99	93.8	107	0	0		
Barium, TCLP	0.503	0.0100	0.5	0	101	95	111	0	0		
Cadmium, TCLP	0.0495	0.00100	0.05	0	99	91.8	110	0	0		
Chromium, TCLP	0.2537	0.00500	0.25	0	101	93.6	113	0	0		
Lead, TCLP	1.007	0.0200	1	0	101	93.1	112	0	0		
Selenium, TCLP	1.006	0.0200	1	0	101	93.9	111	0	0		
Silver, TCLP	0.4817	0.0100	0.5	0	96.3	90.6	115	0	0		
Zinc, TCLP	0.5003	0.0100	0.5	0	100	92.3	111	0	0		

Sample ID	0711019-01AMS	SampType:	MS	TestCode:	6010_TCLP	Units:	mg/L	Prep Date:	11/7/2007	Run ID:	TJAIRIS_071107B
Client ID:	ZZZZZ	Batch ID:	19896	TestNo:	E1311/6010/7			Analysis Date:	11/7/2007	SeqNo:	502367

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic, TCLP	4.842	0.100	5	0	96.8	90.1	110	0	0		
Cadmium, TCLP	0.2385	0.00500	0.25	0.002	94.6	93.4	110	0	0		
Chromium, TCLP	1.212	0.0250	1.25	0	97	93.4	112	0	0		
Lead, TCLP	4.826	0.100	5	0.0395	95.7	91.9	112	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit; J - Analyte detected below quantitation limits; S - Spike Recovery outside accepted recovery limits; R - RPD outside accepted recovery limits; B - Analyte detected in the associated Method Blan

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CLIENT: Siltronic Corporation
Work Order: 0711013
Project: SedimentComposites

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_TCLP

Sample ID	0711019-01AMS	SampType:	MS	TestCode:	6010_TCLP	Units:	mg/L	Prep Date:	11/7/2007	Run ID:	TJAIRIS_071107B
Client ID:	ZZZZZ	Batch ID:	19896	TestNo:	E1311/6010/7			Analysis Date:	11/7/2007	SeqNo:	502367

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium, TCLP	4.894	0.100	5	0.033	97.2	93.5	113	0	0		
Silver, TCLP	2.304	0.0500	2.5	0	92.1	90.1	113	0	0		
Zinc, TCLP	2.517	0.0500	2.5	0.0675	98	93	110	0	0		

Sample ID	0711019-01AMS	SampType:	MS	TestCode:	6010_TCLP	Units:	mg/L	Prep Date:	11/7/2007	Run ID:	TJAIRIS_071107B
Client ID:	ZZZZZ	Batch ID:	19896	TestNo:	E1311/6010/7			Analysis Date:	11/8/2007	SeqNo:	502611

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium, TCLP	4.602	0.250	2.5	1.895	108	90.7	112	0	0		

Sample ID	0711019-01AMSD	SampType:	MSD	TestCode:	6010_TCLP	Units:	mg/L	Prep Date:	11/7/2007	Run ID:	TJAIRIS_071107B
Client ID:	ZZZZZ	Batch ID:	19896	TestNo:	E1311/6010/7			Analysis Date:	11/7/2007	SeqNo:	502368

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic, TCLP	4.884	0.100	5	0	97.7	90.1	110	4.842	0.843	20	
Cadmium, TCLP	0.24	0.00500	0.25	0.002	95.2	93.4	110	0.2385	0.627	20	
Chromium, TCLP	1.222	0.0250	1.25	0	97.8	93.4	112	1.212	0.821	20	
Lead, TCLP	4.888	0.100	5	0.0395	97	91.9	112	4.826	1.29	20	
Selenium, TCLP	4.92	0.100	5	0.033	97.7	93.5	113	4.894	0.530	20	
Silver, TCLP	2.326	0.0500	2.5	0	93.1	90.1	113	2.304	0.994	20	
Zinc, TCLP	2.558	0.0500	2.5	0.0675	99.6	93	110	2.517	1.62	20	

Sample ID	0711019-01AMSD	SampType:	MSD	TestCode:	6010_TCLP	Units:	mg/L	Prep Date:	11/7/2007	Run ID:	TJAIRIS_071107B
Client ID:	ZZZZZ	Batch ID:	19896	TestNo:	E1311/6010/7			Analysis Date:	11/8/2007	SeqNo:	502612

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium, TCLP	4.855	0.250	2.5	1.895	118	90.7	112	4.602	5.34	20	S

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blan:

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CLIENT: Siltronic Corporation
Work Order: 0711013
Project: SedimentComposites

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_TCLP

Sample ID	0711019-01ADUP	SampType:	DUP	TestCode:	6010_TCLP	Units:	mg/L	Prep Date:	11/7/2007	Run ID:	TJAIRIS_071107B
Client ID:	ZZZZZ	Batch ID:	19896	TestNo:	E1311/6010/7			Analysis Date:	11/7/2007	SeqNo:	502366

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic, TCLP	ND	0.100	0	0	0	0	0	0	0	20	
Cadmium, TCLP	0.002	0.00500	0	0	0	0	0	0.002	0	20	J
Chromium, TCLP	ND	0.0250	0	0	0	0	0	0	0	20	
Lead, TCLP	0.0455	0.100	0	0	0	0	0	0.0395	0	20	J
Molybdenum, TCLP	ND	0.0500	0	0	0	0	0	0.0105	0	20	
Selenium, TCLP	ND	0.100	0	0	0	0	0	0.033	0	20	
Silver, TCLP	ND	0.0500	0	0	0	0	0	0	0	20	
Zinc, TCLP	0.065	0.0500	0	0	0	0	0	0.0675	3.77	20	

Sample ID	0711019-01ADUP	SampType:	DUP	TestCode:	6010_TCLP	Units:	mg/L	Prep Date:	11/7/2007	Run ID:	TJAIRIS_071107B
Client ID:	ZZZZZ	Batch ID:	19896	TestNo:	E1311/6010/7			Analysis Date:	11/8/2007	SeqNo:	502610

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium, TCLP	1.845	0.250	0	0	0	0	0	1.895	2.67	20	

Sample ID	CCV	SampType:	CCV	TestCode:	6010_TCLP	Units:	mg/L	Prep Date:		Run ID:	TJAIRIS_071107B
Client ID:	ZZZZZ	Batch ID:	19896	TestNo:	E1311/6010/7			Analysis Date:	11/7/2007	SeqNo:	502372

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic, TCLP	1.009	0.0200	1	0	101	90	110	0	0		
Barium, TCLP	0.5177	0.0100	0.5	0	104	90	110	0	0		
Cadmium, TCLP	0.0496	0.00100	0.05	0	99.2	90	110	0	0		
Chromium, TCLP	0.2541	0.00500	0.25	0	102	90	110	0	0		
Lead, TCLP	1.019	0.0200	1	0	102	90	110	0	0		
Molybdenum, TCLP	0.4902	0.0100	0	0	0	0	0	0	0		
Selenium, TCLP	1.022	0.0200	1	0	102	90	110	0	0		
Silver, TCLP	0.4836	0.0100	0.5	0	96.7	90	110	0	0		
Zinc, TCLP	0.5087	0.0100	0.5	0	102	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

SCOEPA00054719 0147247

CLIENT: Siltronic Corporation
Work Order: 0711013
Project: SedimentComposites

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_TCLP

Sample ID	CCV	SampType:	CCV	TestCode:	6010_TCLP	Units:	mg/L	Prep Date:		Run ID:	TJAIRIS_071107B
Client ID:	ZZZZZ	Batch ID:	19896	TestNo:	E1311/6010/7			Analysis Date:	11/7/2007	SeqNo:	502374

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium, TCLP	0.5129	0.0100	0.5	0	103	90	110	0	0		

Sample ID	CCV	SampType:	CCV	TestCode:	6010_TCLP	Units:	mg/L	Prep Date:		Run ID:	TJAIRIS_071107B
Client ID:	ZZZZZ	Batch ID:	19896	TestNo:	E1311/6010/7			Analysis Date:	11/8/2007	SeqNo:	502613

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium, TCLP	0.5037	0.0100	0.5	0	101	90	110	0	0		

Sample ID	ICV	SampType:	ICV	TestCode:	6010_TCLP	Units:	mg/L	Prep Date:		Run ID:	TJAIRIS_071107B
Client ID:	ZZZZZ	Batch ID:	19896	TestNo:	E1311/6010/7			Analysis Date:	11/7/2007	SeqNo:	502362

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic, TCLP	1.008	0.0200	1	0	101	90	110	0	0		
Barium, TCLP	0.5093	0.0100	0.5	0	102	90	110	0	0		
Cadmium, TCLP	0.0506	0.00100	0.05	0	101	90	110	0	0		
Chromium, TCLP	0.2571	0.00500	0.25	0	103	90	110	0	0		
Lead, TCLP	1.014	0.0200	1	0	101	90	110	0	0		
Molybdenum, TCLP	0.5028	0.0100	0	0	0	90	110	0	0		
Selenium, TCLP	1.019	0.0200	1	0	102	90	110	0	0		
Silver, TCLP	0.4975	0.0100	0.5	0	99.5	90	110	0	0		
Zinc, TCLP	0.5081	0.0100	0.5	0	102	90	110	0	0		

Sample ID	ICV	SampType:	ICV	TestCode:	6010_TCLP	Units:	mg/L	Prep Date:		Run ID:	TJAIRIS_071107B
Client ID:	ZZZZZ	Batch ID:	19896	TestNo:	E1311/6010/7			Analysis Date:	11/8/2007	SeqNo:	502608

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium, TCLP	0.5167	0.0100	0.5	0	103	90	110	0	0		

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

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CLIENT: Siltronic Corporation
Work Order: 0711013
Project: SedimentComposites

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_S

Sample ID: MB-19877	SampType: MBLK	TestCode: 8260_S	Units: µg/Kg	Prep Date: 11/5/2007	Run ID: 5973J_071105A		
Client ID: ZZZZZ	Batch ID: 19877	TestNo: SW8260B		Analysis Date: 11/5/2007	SeqNo: 501721		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1,1,2-Tetrachloroethane	ND	10.0									
1,1,1-Trichloroethane	ND	10.0									
1,1,2,2-Tetrachloroethane	ND	10.0									
1,1,2-Trichloroethane	ND	10.0									
1,1-Dichloroethane	ND	10.0									
1,1-Dichloroethene	ND	10.0									
1,1-Dichloropropene	ND	10.0									
1,2,3-Trichlorobenzene	ND	10.0									
1,2,3-Trichloropropane	ND	10.0									
1,2,4-Trichlorobenzene	ND	10.0									
1,2,4-Trimethylbenzene	0.94	10.0									J
1,2-Dibromo-3-chloropropane	ND	10.0									
1,2-Dibromoethane	ND	10.0									
1,2-Dichlorobenzene	ND	10.0									
1,2-Dichloroethane	ND	10.0									
1,2-Dichloropropane	ND	10.0									
1,3,5-Trimethylbenzene	ND	10.0									
1,3-Dichlorobenzene	ND	10.0									
1,3-Dichloropropane	ND	10.0									
1,4-Dichlorobenzene	ND	10.0									
2,2-Dichloropropane	ND	10.0									
2-Butanone	ND	20.0									
2-Chlorotoluene	ND	10.0									
2-Hexanone	ND	20.0									
4-Chlorotoluene	ND	10.0									
4-Isopropyltoluene	ND	10.0									
4-Methyl-2-pentanone	ND	20.0									
Acetone	ND	50.0									
Benzene	ND	10.0									
Bromobenzene	ND	10.0									
Bromochloromethane	ND	10.0									

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

SCOEPA00054721 0147249

CLIENT: Siltronic Corporation
Work Order: 0711013
Project: SedimentComposites

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_S

Sample ID	MB-19877	SampType:	MBLK	TestCode:	8260_S	Units:	µg/Kg	Prep Date:	11/5/2007	Run ID:	5973J_071105A
Client ID:	ZZZZZ	Batch ID:	19877	TestNo:	SW8260B			Analysis Date:	11/5/2007	SeqNo:	501721

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Bromodichloromethane	ND	10.0									
Bromoform	ND	10.0									
Bromomethane	ND	10.0									
Carbon disulfide	ND	10.0									
Carbon tetrachloride	ND	10.0									
Chlorobenzene	ND	10.0									
Chloroethane	ND	10.0									
Chloroform	ND	10.0									
Chloromethane	ND	10.0									
cis-1,2-Dichloroethene	ND	10.0									
cis-1,3-Dichloropropene	ND	10.0									
Dibromochloromethane	ND	10.0									
Dibromomethane	ND	10.0									
Dichlorodifluoromethane	ND	10.0									
Ethylbenzene	ND	10.0									
Hexachlorobutadiene	ND	10.0									
Isopropylbenzene	ND	10.0									
m,p-Xylene	ND	20.0									
Methyl tert-butyl ether	ND	10.0									
Methylene chloride	ND	50.0									
n-Butylbenzene	ND	10.0									
n-Propylbenzene	ND	10.0									
Naphthalene	4.8	10.0									J
o-Xylene	ND	10.0									
sec-Butylbenzene	ND	10.0									
Styrene	ND	10.0									
tert-Butylbenzene	ND	10.0									
Tetrachloroethene	ND	10.0									
Toluene	ND	10.0									
trans-1,2-Dichloroethene	ND	10.0									
trans-1,3-Dichloropropene	ND	10.0									

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

SCOEPA00054722 0147250

CLIENT: Siltronic Corporation
Work Order: 0711013
Project: SedimentComposites

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_S

Sample ID	MB-19877	SampType:	MBLK	TestCode:	8260_S	Units:	µg/Kg	Prep Date:	11/5/2007	Run ID:	5973J_071105A
Client ID:	ZZZZZ	Batch ID:	19877	TestNo:	SW8260B			Analysis Date:	11/5/2007	SeqNo:	501721

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Trichloroethene	ND	10.0									
Trichlorofluoromethane	ND	10.0									
Vinyl chloride	ND	10.0									
Surr:1,2-Dichloroethane-d4	93.9	0	100	0	93.9	71.5	112	0	0		
Surr:4-Bromofluorobenzene	98.71	0	100	0	98.7	75.7	122	0	0		
Surr:Dibromofluoromethane	90.29	0	100	0	90.3	64.3	124	0	0		
Surr: Toluene-d8	95.88	0	100	0	95.9	74.9	120	0	0		

Sample ID	LCS-19877	SampType:	LCS	TestCode:	8260_S	Units:	µg/Kg	Prep Date:	11/5/2007	Run ID:	5973J_071105A
Client ID:	ZZZZZ	Batch ID:	19877	TestNo:	SW8260B			Analysis Date:	11/5/2007	SeqNo:	501720

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	48.98	10.0	60	0	81.6	65.4	133	0	0		
Benzene	51.1	10.0	60	0	85.2	78	123	0	0		
Chlorobenzene	53	10.0	60	0	88.3	79.5	125	0	0		
Toluene	50.75	10.0	60	0	84.6	77.5	132	0	0		
Trichloroethene	50.73	10.0	60	0	84.6	72.4	124	0	0		

Sample ID	0711013-07AMS	SampType:	MS	TestCode:	8260_S	Units:	µg/Kg	Prep Date:	11/5/2007	Run ID:	5973J_071105A
Client ID:	07-138	Batch ID:	19877	TestNo:	SW8260B			Analysis Date:	11/5/2007	SeqNo:	501723

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	36.99	10.0	40	0	92.5	69.2	158	0	0		
Benzene	34.16	10.0	40	0	85.4	71.7	147	0	0		
Chlorobenzene	23.98	10.0	40	0	60	75	148	0	0		S
Toluene	35.14	10.0	40	10.4	61.8	75.8	153	0	0		S
Trichloroethene	32.19	10.0	40	0	80.5	77.1	138	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank
J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

SCOEPA00054723 0147251

CLIENT: Siltronic Corporation
Work Order: 0711013
Project: Sediment Composites

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_S

Sample ID	0711013-07AMSD	SampType:	MSD	TestCode:	8260_S	Units:	µg/Kg	Prep Date:	11/5/2007	Run ID:	5973J_071105A
Client ID:	07-138	Batch ID:	19877	TestNo:	SW8260B			Analysis Date:	11/5/2007	SeqNo:	501724

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	39.33	10.0	40	0	98.3	69.2	158	36.99	6.13	20	
Benzene	39.69	10.0	40	0	99.2	71.7	147	34.16	15.0	20	
Chlorobenzene	34.36	10.0	40	0	85.9	75	148	23.98	35.6	20	R
Toluene	41.22	10.0	40	10.4	77	75.8	153	35.14	15.9	20	
Trichloroethene	37.69	10.0	40	0	94.2	77.1	138	32.19	15.7	20	

Sample ID	CCV-19877	SampType:	CCV	TestCode:	8260_S	Units:	µg/Kg	Prep Date:		Run ID:	5973J_071105A
Client ID:	ZZZZZ	Batch ID:	19877	TestNo:	SW8260B			Analysis Date:	11/5/2007	SeqNo:	501719

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	59.96	10.0	60	0	99.9	80	120	0	0		
1,2-Dichloropropane	55.23	10.0	60	0	92	80	120	0	0		
Chloroform	51.04	10.0	60	0	85.1	80	120	0	0		
Ethylbenzene	57.32	10.0	60	0	95.5	80	120	0	0		
Toluene	57.66	10.0	60	0	96.1	80	120	0	0		
Vinyl chloride	68.05	10.0	60	0	113	80	120	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

SCOEPA00054724 0147252

CLIENT: Siltronic Corporation
Work Order: 0711013
Project: SedimentComposites

ANALYTICAL QC SUMMARY REPORT

TestCode: 8270LL_S

Sample ID: MB-19881	SampType: MBLK	TestCode: 8270LL_S	Units: µg/Kg	Prep Date: 11/5/2007		Run ID: 5973G_071106C	
Client ID: ZZZZZ	Batch ID: 19881	TestNo: SW8270D		Analysis Date: 11/6/2007		SeqNo: 502204	

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2,4-Trichlorobenzene	ND	33.3									
1,2-Dichlorobenzene	ND	33.3									
1,3-Dichlorobenzene	ND	33.3									
1,4-Dichlorobenzene	ND	33.3									
2,4,5-Trichlorophenol	ND	33.3									
2,4,6-Trichlorophenol	ND	33.3									
2,4-Dichlorophenol	ND	33.3									
2,4-Dimethylphenol	ND	33.3									
2,4-Dinitrophenol	ND	333									
2,4-Dinitrotoluene	ND	33.3									
2,6-Dinitrotoluene	ND	33.3									
2-Chloronaphthalene	ND	33.3									
2-Chlorophenol	ND	33.3									
2-Methylnaphthalene	ND	33.3									
2-Methylphenol	ND	33.3									
2-Nitroaniline	ND	33.3									
2-Nitrophenol	ND	167									
3,3-Dichlorobenzidine	ND	167									
3-&4-Methylphenol	ND	33.3									
3-Nitroaniline	ND	33.3									
4,6-Dinitro-2-methylphenol	ND	167									
4-Bromophenyl phenyl ether	ND	33.3									
4-Chloro-3-methylphenol	ND	33.3									
4-Chloroaniline	ND	33.3									
4-Chlorophenyl phenyl ether	ND	33.3									
4-Nitroaniline	ND	33.3									
4-Nitrophenol	ND	167									
Acenaphthene	ND	33.3									
Acenaphthylene	ND	33.3									
Anthracene	ND	33.3									
Benz(a)anthracene	ND	33.3									

Qualifiers: ND - Not Detected at the Reporting Limit; J - Analyte detected below quantitation limits; S - Spike Recovery outside accepted recovery limits; R - RPD outside accepted recovery limits; B - Analyte detected in the associated Method Blan

SCOEPA0005472S 0147253

CLIENT: Siltronic Corporation
Work Order: 0711013
Project: SedimentComposites

ANALYTICAL QC SUMMARY REPORT

TestCode: 8270LL_S

Sample ID	MB-19881	SampType:	MBLK	TestCode:	8270LL_S	Units:	µg/Kg	Prep Date:	11/5/2007	Run ID:	5973G_071106C
Client ID:	ZZZZZ	Batch ID:	19881	TestNo:	SW8270D			Analysis Date:	11/6/2007	SeqNo:	502204

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzo(a)pyrene	ND	33.3									
Benzo(b)fluoranthene	ND	33.3									
Benzo(g,h,i)perylene	ND	33.3									
Benzo(k)fluoranthene	ND	33.3									
Benzoic Acid	ND	667									
Benzyl Alcohol	ND	33.3									
Bis(2-chloroethoxy)methane	ND	33.3									
Bis(2-chloroethyl)ether	ND	33.3									
Bis(2-chloroisopropyl)ether	ND	33.3									
Bis(2-ethylhexyl)phthalate	ND	33.3									
Butyl benzyl phthalate	ND	33.3									
Carbazole	ND	33.3									
Chrysene	ND	33.3									
Di-n-butyl phthalate	ND	33.3									
Di-n-octyl phthalate	ND	33.3									
Dibenz(a,h)anthracene	ND	33.3									
Dibenzofuran	ND	33.3									
Diethyl phthalate	ND	33.3									
Dimethyl phthalate	ND	33.3									
Fluoranthene	ND	33.3									
Fluorene	ND	33.3									
Hexachlorobenzene	ND	33.3									
Hexachlorobutadiene	ND	33.3									
Hexachlorocyclopentadiene	ND	33.3									
Hexachloroethane	ND	33.3									
Indeno(1,2,3-cd)pyrene	ND	33.3									
Isophorone	ND	33.3									
N-Nitrosodi-n-propylamine	ND	33.3									
N-Nitrosodimethylamine	ND	33.3									
N-Nitrosodiphenylamine	6.333	33.3									J
Naphthalene	ND	33.3									

Qualifiers: ND - Not Detected at the Reporting Limit; J - Analyte detected below quantitation limits; S - Spike Recovery outside accepted recovery limits; R - RPD outside accepted recovery limits; B - Analyte detected in the associated Method Blank

SCOEPA00054726 0147254

CLIENT: Siltronic Corporation
Work Order: 0711013
Project: Sediment Composites

ANALYTICAL QC SUMMARY REPORT

TestCode: 8270LL_S

Sample ID MB-19881	SampType: MBLK	TestCode: 8270LL_S	Units: µg/Kg	Prep Date: 11/5/2007	Run ID: 5973G_071106C
Client ID: ZZZZZ	Batch ID: 19881	TestNo: SW8270D		Analysis Date: 11/6/2007	SeqNo: 502204

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrobenzene	10.67	33.3									J
Pentachlorophenol	ND	50.0									
Phenanthrene	ND	33.3									
Phenol	ND	33.3									
Pyrene	ND	33.3									
Surr: 2,4,6-Tribromophenol	3216	0	3333	0	96.5	57.8	119	0	0		
Surr: 2-Fluorobiphenyl	3012	0	3333	0	90.4	52.6	93.2	0	0		
Surr: 2-Fluorophenol	2851	0	3333	0	85.5	40.7	111	0	0		
Surr: 4-Terphenyl-d14	1762	0	3333	0	52.9	49.8	118	0	0		
Surr: Nitrobenzene-d5	2478	0	3333	0	74.3	44.8	103	0	0		
Surr: Phenol-d6	2868	0	3333	0	86	47.5	117	0	0		

Sample ID LCS-19881	SampType: LCS	TestCode: 8270LL_S	Units: µg/Kg	Prep Date: 11/5/2007	Run ID: 5973G_071106C
Client ID: ZZZZZ	Batch ID: 19881	TestNo: SW8270D		Analysis Date: 11/6/2007	SeqNo: 502205

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2,4-Trichlorobenzene	1354	33.3	1667	0	81.2	30.9	106	0	0		
1,4-Dichlorobenzene	1285	33.3	1667	0	77.1	31.4	98.2	0	0		
2,4-Dinitrotoluene	1373	33.3	1667	0	82.4	59.7	111	0	0		
2-Chlorophenol	1435	33.3	1667	0	86.1	46.2	105	0	0		
4-Chloro-3-methylphenol	1349	33.3	1667	0	80.9	47.4	114	0	0		
4-Nitrophenol	1173	167	1667	0	70.4	45.3	114	0	0		
Acenaphthene	1459	33.3	1667	0	87.5	48.2	105	0	0		
N-Nitrosodi-n-propylamine	1150	33.3	1667	0	69	42.4	101	0	0		
Pentachlorophenol	909.7	50.0	1667	0	54.6	46.8	120	0	0		
Phenol	1334	33.3	1667	0	80.1	51.1	103	0	0		
Pyrene	1629	33.3	1667	0	97.8	56.7	130	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit; J - Analyte detected below quantitation limits; S - Spike Recovery outside accepted recovery limits; R - RPD outside accepted recovery limits; B - Analyte detected in the associated Method Blank

SCOEPA00054727 0147255

CLIENT: Siltronic Corporation
Work Order: 0711013
Project: SedimentComposites

ANALYTICAL QC SUMMARY REPORT

TestCode: 8270LL_S

Sample ID	0711005-02AMS	SampType:	MS	TestCode:	8270LL_S	Units:	µg/Kg	Prep Date:	11/5/2007	Run ID:	5973G_071106C
Client ID:	ZZZZZ	Batch ID:	19881	TestNo:	SW8270D			Analysis Date:	11/6/2007	SeqNo:	502206

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2,4-Trichlorobenzene	953.7	33.3	1667	0	57.2	31.1	92.7	0	0		
1,4-Dichlorobenzene	797.7	33.3	1667	0	47.9	16.5	85.6	0	0		
2,4-Dinitrotoluene	1164	33.3	1667	0	69.8	43.4	118	0	0		
2-Chlorophenol	1164	33.3	1667	0	69.9	36.8	103	0	0		
4-Chloro-3-methylphenol	1143	33.3	1667	0	68.6	49.5	119	0	0		
4-Nitrophenol	1096	167	1667	0	65.8	45	111	0	0		
Acenaphthene	1205	33.3	1667	0	72.3	45.1	102	0	0		
N-Nitrosodi-n-propylamine	956.3	33.3	1667	0	57.4	45.6	94.1	0	0		
Pentachlorophenol	681	50.0	1667	0	40.9	36.6	112	0	0		
Phenol	1149	33.3	1667	0	68.9	37.7	107	0	0		
Pyrene	1257	33.3	1667	0	75.4	42.4	131	0	0		

Sample ID	0711005-02AMSD	SampType:	MSD	TestCode:	8270LL_S	Units:	µg/Kg	Prep Date:	11/5/2007	Run ID:	5973G_071106C
Client ID:	ZZZZZ	Batch ID:	19881	TestNo:	SW8270D			Analysis Date:	11/6/2007	SeqNo:	502207

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2,4-Trichlorobenzene	911	33.3	1667	0	54.7	31.1	92.7	953.7	4.58	20	
1,4-Dichlorobenzene	783	33.3	1667	0	47	16.5	85.6	797.7	1.86	20	
2,4-Dinitrotoluene	1074	33.3	1667	0	64.4	43.4	118	1164	8.07	20	
2-Chlorophenol	1059	33.3	1667	0	63.5	36.8	103	1164	9.48	20	
4-Chloro-3-methylphenol	1058	33.3	1667	0	63.5	49.5	119	1143	7.72	20	
4-Nitrophenol	992	167	1667	0	59.5	45	111	1096	9.99	20	
Acenaphthene	1087	33.3	1667	0	65.2	45.1	102	1205	10.3	20	
N-Nitrosodi-n-propylamine	869.3	33.3	1667	0	52.2	45.6	94.1	956.3	9.53	20	
Pentachlorophenol	617.7	50.0	1667	0	37.1	36.6	112	681	9.75	20	
Phenol	1034	33.3	1667	0	62	37.7	107	1149	10.5	20	
Pyrene	1158	33.3	1667	0	69.5	42.4	131	1257	8.14	20	

Qualifiers: ND - Not Detected at the Reporting Limit; J - Analyte detected below quantitation limits; S - Spike Recovery outside accepted recovery limits; R - RPD outside accepted recovery limits; B - Analyte detected in the associated Method Blank

SCOEPA00054728 0147256

CLIENT: Siltronic Corporation
Work Order: 0711013
Project: SedimentComposites

ANALYTICAL QC SUMMARY REPORT

TestCode: 8270LL_S

Sample ID	CCV-19881	SampType:	CCV	TestCode:	8270LL_S	Units:	µg/Kg	Prep Date:		Run ID:	5973G_071106C
Client ID:	ZZZZZ	Batch ID:	19881	TestNo:	SW8270D			Analysis Date:	11/6/2007	SeqNo:	502195

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,4-Dichlorobenzene	1673	33.3	1667	0	100	80	120	0	0		
2,4,6-Trichlorophenol	1777	33.3	1667	0	107	80	120	0	0		
2,4-Dichlorophenol	1703	33.3	1667	0	102	80	120	0	0		
2-Nitrophenol	1875	167	1667	0	113	80	120	0	0		
4-Chloro-3-methylphenol	1620	33.3	1667	0	97.2	80	120	0	0		
Acenaphthene	1802	33.3	1667	0	108	80	120	0	0		
Benzo(a)pyrene	1490	33.3	1667	0	89.4	80	120	0	0		
Di-n-octylphthalate	1908	33.3	1667	0	114	80	120	0	0		
Fluoranthene	1669	33.3	1667	0	100	80	120	0	0		
Hexachlorobutadiene	1553	33.3	1667	0	93.2	80	120	0	0		
N-Nitrosodiphenylamine	1733	33.3	1667	0	104	80	120	0	0		
Pentachlorophenol	1521	50.0	1667	0	91.3	80	120	0	0		
Phenol	1627	33.3	1667	0	97.6	80	120	0	0		

Sample ID	CCV-19881	SampType:	CCV	TestCode:	8270LL_S	Units:	µg/Kg	Prep Date:		Run ID:	5973G_071106C
Client ID:	ZZZZZ	Batch ID:	19881	TestNo:	SW8270D			Analysis Date:	11/7/2007	SeqNo:	502346

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,4-Dichlorobenzene	1648	33.3	1667	0	98.9	80	120	0	0		
2,4,6-Trichlorophenol	1811	33.3	1667	0	109	80	120	0	0		
2,4-Dichlorophenol	1684	33.3	1667	0	101	80	120	0	0		
2-Nitrophenol	1909	167	1667	0	115	80	120	0	0		
4-Chloro-3-methylphenol	1543	33.3	1667	0	92.6	80	120	0	0		
Acenaphthene	1762	33.3	1667	0	106	80	120	0	0		
Benzo(a)pyrene	1450	33.3	1667	0	87	80	120	0	0		
Di-n-octylphthalate	1882	33.3	1667	0	113	80	120	0	0		
Fluoranthene	1657	33.3	1667	0	99.4	80	120	0	0		
Hexachlorobutadiene	1602	33.3	1667	0	96.1	80	120	0	0		
N-Nitrosodiphenylamine	1637	33.3	1667	0	98.2	80	120	0	0		
Pentachlorophenol	1367	50.0	1667	0	82	80	120	0	0		
Phenol	1561	33.3	1667	0	93.6	80	120	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit; J - Analyte detected below quantitation limits; S - Spike Recovery outside accepted recovery limits; R - RPD outside accepted recovery limits; B - Analyte detected in the associated Method Blank

SCOEPA0054729 0147257

CLIENT: Siltronic Corporation
Work Order: 0711013
Project: Sediment Composites

ANALYTICAL QC SUMMARY REPORT

TestCode: CN-S

Sample ID	MB-R49100	SampType:	MBLK	TestCode:	CN-S	Units:	mg/Kg	Prep Date:		Run ID:	LACHAT_071107A
Client ID:	ZZZZZ	Batch ID:	R49100	TestNo:	SW9010A			Analysis Date:	11/7/2007	SeqNo:	502223

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide	ND	0.200									

Sample ID	LCS-R49100	SampType:	LCS	TestCode:	CN-S	Units:	mg/Kg	Prep Date:		Run ID:	LACHAT_071107A
Client ID:	ZZZZZ	Batch ID:	R49100	TestNo:	SW9010A			Analysis Date:	11/7/2007	SeqNo:	502222

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide	4.324	0.200	4	0	108	80	120	0	0		

Sample ID	A0711016-01AMS	SampType:	MS	TestCode:	CN-S	Units:	mg/Kg	Prep Date:		Run ID:	LACHAT_071107A
Client ID:	ZZZZZ	Batch ID:	R49100	TestNo:	SW9010A			Analysis Date:	11/7/2007	SeqNo:	502219

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide	2.458	0.200	2	0.376	104	67.9	119	0	0		

Sample ID	A0711016-01AMSD	SampType:	MSD	TestCode:	CN-S	Units:	mg/Kg	Prep Date:		Run ID:	LACHAT_071107A
Client ID:	ZZZZZ	Batch ID:	R49100	TestNo:	SW9010A			Analysis Date:	11/7/2007	SeqNo:	502220

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide	2.484	0.200	2	0.376	105	67.9	119	2.458	1.05	20	

Sample ID	CCV	SampType:	CCV	TestCode:	CN-S	Units:	mg/Kg	Prep Date:		Run ID:	LACHAT_071107A
Client ID:	ZZZZZ	Batch ID:	R49100	TestNo:	SW9010A			Analysis Date:	11/7/2007	SeqNo:	502221

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide	6.138	0.200	6	0	102	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

SCOEPA0005473 0147258

CLIENT: Siltronic Corporation
Work Order: 0711013
Project: SedimentComposites

ANALYTICAL QC SUMMARY REPORT

TestCode: FL_S

Sample ID	MB-R49157	SampType:	MBLK	TestCode:	FL_S	Units:	mg/Kg	Prep Date:		Run ID:	MANTECH_071109B
Client ID:	ZZZZZ	Batch ID:	R49157	TestNo:	E 340.2			Analysis Date:	11/9/2007	SeqNo:	503022

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	0.1	10									J

Sample ID	LCS-R49157	SampType:	LCS	TestCode:	FL_S	Units:	mg/Kg	Prep Date:		Run ID:	MANTECH_071109B
Client ID:	ZZZZZ	Batch ID:	R49157	TestNo:	E 340.2			Analysis Date:	11/9/2007	SeqNo:	503021

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	24.25	10	25	0.1	96.6	85	115	0	0		

Sample ID	0711013-07ADUP	SampType:	DUP	TestCode:	FL_S	Units:	mg/Kg	Prep Date:		Run ID:	MANTECH_071109B
Client ID:	07-138	Batch ID:	R49157	TestNo:	E 340.2			Analysis Date:	11/9/2007	SeqNo:	503019

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	0.7	10	0	0	0	0	0	0.7	0	20	J

Sample ID	CCV	SampType:	CCV	TestCode:	FL_S	Units:	mg/Kg	Prep Date:		Run ID:	MANTECH_071109B
Client ID:	ZZZZZ	Batch ID:	R49157	TestNo:	E 340.2			Analysis Date:	11/9/2007	SeqNo:	503020

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	37.85	10	37.5	0	101	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit; J - Analyte detected below quantitation limits; S - Spike Recovery outside accepted recovery limits; R - RPD outside accepted recovery limits; B - Analyte detected in the associated Method Blank

SCOEPA0005473 0147259

CLIENT: Siltronic Corporation
Work Order: 0711013
Project: Sediment Composites

ANALYTICAL QC SUMMARY REPORT

TestCode: FREE LIQ.

Sample ID	0711013-07BDUP	SampType:	DUP	TestCode:	FREE LIQ.	Units:	%	Prep Date:		Run ID:	WETCHEM_071109B
Client ID:	07-138	Batch ID:	R49137	TestNo:	SW9095			Analysis Date:	11/9/2007	SeqNo:	502724

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Free Liquid	1.47	1.00	0	0	0	0	0	2.73	60.0	20	RF

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

SCOEPA00054732 0147260

CLIENT: Siltronic Corporation
Work Order: 0711013
Project: Sediment Composites

ANALYTICAL QC SUMMARY REPORT

TestCode: HG_CTS

Sample ID	MB-19894	SampType:	MBLK	TestCode:	HG_CTS	Units:	mg/Kg	Prep Date:	11/7/2007	Run ID:	CVAA_071107A
Client ID:	ZZZZZ	Batch ID:	19894	TestNo:	SW7471			Analysis Date:	11/7/2007	SeqNo:	502260

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.0167									

Sample ID	LCS-19894	SampType:	LCS	TestCode:	HG_CTS	Units:	mg/Kg	Prep Date:	11/7/2007	Run ID:	CVAA_071107A
Client ID:	ZZZZZ	Batch ID:	19894	TestNo:	SW7471			Analysis Date:	11/7/2007	SeqNo:	502259

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.1926	0.0167	0.208	0	92.6	88.2	113	0	0		

Sample ID	0711017-03AMS	SampType:	MS	TestCode:	HG_CTS	Units:	mg/Kg-dry	Prep Date:	11/7/2007	Run ID:	CVAA_071107A
Client ID:	ZZZZZ	Batch ID:	19894	TestNo:	SW7471			Analysis Date:	11/7/2007	SeqNo:	502256

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.3387	0.0258	0.3207	0.003495	105	78.1	125	0	0		

Sample ID	0711017-03AMSD	SampType:	MSD	TestCode:	HG_CTS	Units:	mg/Kg-dry	Prep Date:	11/7/2007	Run ID:	CVAA_071107A
Client ID:	ZZZZZ	Batch ID:	19894	TestNo:	SW7471			Analysis Date:	11/7/2007	SeqNo:	502257

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.3373	0.0258	0.3207	0.003495	104	78.1	125	0.3387	0.418	20	

Sample ID	0710206-01ADUP	SampType:	DUP	TestCode:	HG_CTS	Units:	mg/Kg	Prep Date:	11/7/2007	Run ID:	CVAA_071107A
Client ID:	ZZZZZ	Batch ID:	19894	TestNo:	SW7471			Analysis Date:	11/7/2007	SeqNo:	502250

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	14.43	1.47	0	0	0	0	0	15.66	8.18	20	

Sample ID	0711017-03ADUP	SampType:	DUP	TestCode:	HG_CTS	Units:	mg/Kg-dry	Prep Date:	11/7/2007	Run ID:	CVAA_071107A
Client ID:	ZZZZZ	Batch ID:	19894	TestNo:	SW7471			Analysis Date:	11/7/2007	SeqNo:	502255

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limits; B - Analyte detected in the associated Method Blank
J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

SCOEPA00054733 0147261

CLIENT: Siltronic Corporation
Work Order: 0711013
Project: SedimentComposites

ANALYTICAL QC SUMMARY REPORT

TestCode: HG_CTS

Sample ID	0711017-03ADUP	SampType:	DUP	TestCode:	HG_CTS	Units:	mg/Kg-dry	Prep Date:	11/7/2007	Run ID:	CVAA_071107A	
Client ID:	ZZZZZ	Batch ID:	19894	TestNo:	SW7471			Analysis Date:	11/7/2007	SeqNo:	502255	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury		ND	0.0266	0	0	0	0	0	0.003495	0	20	

Sample ID	CCV	SampType:	CCV	TestCode:	HG_CTS	Units:	mg/Kg	Prep Date:		Run ID:	CVAA_071107A	
Client ID:	ZZZZZ	Batch ID:	19894	TestNo:	SW7471			Analysis Date:	11/7/2007	SeqNo:	502258	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury		0.2087	0.0167	0.208	0	100	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

SCOEPA0054734 0147262

CLIENT: Siltronic Corporation
WorkOrder: 0711013
Project: SedimentComposites

ANALYTICAL QC SUMMARY REPORT

TestCode: HG_TCLP

Sample ID	MB-19895	SampType:	MBLK	TestCode:	HG_TCLP	Units:	mg/L	Prep Date:	11/7/2007	Run ID:	CVAA_071107C
Client ID:	ZZZZZ	Batch ID:	19895	TestNo:	1311/7000			Analysis Date:	11/7/2007	SeqNo:	502356

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury, TCLP	0.0000081	0.000100									J

Sample ID	LCS-19895	SampType:	LCS	TestCode:	HG_TCLP	Units:	mg/L	Prep Date:	11/7/2007	Run ID:	CVAA_071107C
Client ID:	ZZZZZ	Batch ID:	19895	TestNo:	1311/7000			Analysis Date:	11/7/2007	SeqNo:	502355

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury, TCLP	0.004046	0.000100	0.004	0.0000081	101	85.4	116	0	0		

Sample ID	A0711017-05BMS	SampType:	MS	TestCode:	HG_TCLP	Units:	mg/L	Prep Date:	11/7/2007	Run ID:	CVAA_071107C
Client ID:	ZZZZZ	Batch ID:	19895	TestNo:	1311/7000			Analysis Date:	11/7/2007	SeqNo:	502359

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury, TCLP	0.004303	0.000100	0.004	0.0005576	93.6	69.5	125	0	0		

Sample ID	A0711017-05BMSD	SampType:	MSD	TestCode:	HG_TCLP	Units:	mg/L	Prep Date:	11/7/2007	Run ID:	CVAA_071107C
Client ID:	ZZZZZ	Batch ID:	19895	TestNo:	1311/7000			Analysis Date:	11/7/2007	SeqNo:	502360

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury, TCLP	0.004428	0.000100	0.004	0.0005576	96.8	69.5	125	0.004303	2.86	20	

Sample ID	A0711017-05BDUP	SampType:	DUP	TestCode:	HG_TCLP	Units:	mg/L	Prep Date:	11/7/2007	Run ID:	CVAA_071107C
Client ID:	ZZZZZ	Batch ID:	19895	TestNo:	1311/7000			Analysis Date:	11/7/2007	SeqNo:	502358

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury, TCLP	0.0005479	0.000100	0	0	0	0	0	0.0005576	1.75	20	

Sample ID	CCV	SampType:	CCV	TestCode:	HG_TCLP	Units:	mg/L	Prep Date:		Run ID:	CVAA_071107C
Client ID:	ZZZZZ	Batch ID:	19895	TestNo:	1311/7000			Analysis Date:	11/7/2007	SeqNo:	502354

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

SCOEPA0005473 5 0147263

CLIENT: Siltronic Corporation
Work Order: 0711013
Project: SedimentComposites

ANALYTICAL QC SUMMARY REPORT

TestCode: HG_TCLP

Sample ID	CCV	SampType:	CCV	TestCode:	HG_TCLP	Units:	mg/L	Prep Date:		Run ID:	CVAA_071107C
Client ID:	ZZZZZ	Batch ID:	19895	TestNo:	1311/7000			Analysis Date:	11/7/2007	SeqNo:	502354

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury, TCLP	0.004105	0.000100	0.004	0	103	90	110	0	0		

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

SCOEPA0005473 6 0147264

KEY TO FLAGS

A	This sample contains a Gasoline Range Organic not identified as a specific hydrocarbon product. The result was quantified against gasoline calibration standards.
A1	This sample contains a Diesel Range Organic not identified as a specific hydrocarbon product. The result was quantified against diesel calibration standards.
A2	This sample contains a Lube Oil Range Organic not identified as a specific hydrocarbon product. The result was quantified against a lube oil calibration standard.
A3	The result was determined to be Non-Detect based on hydrocarbon pattern recognition. The product was carry-over from another hydrocarbon type.
B	The blank exhibited a positive result greater than the reporting limit for this compound.
CN	See Case Narrative.
D	Result is based from a dilution.
E	Result exceeds the calibration range for this compound. The result should be considered as estimate.
F	The positive result for this hydrocarbon is due to single component contamination. The product does not match any hydrocarbon in the fuels library.
H	Sample was analyzed outside recommended hold time.
HT	At clients request, sample was analyzed outside recommended hold time.
J	The result for this analyte is between the MDL and the PQL and should be considered as estimated concentration.
K	Diesel result is biased high due to amount of Oil contained in the sample.
L	Diesel result is biased high due to amount of Gasoline contained in the sample.
M	Oil result is biased high due to amount of Diesel contained in the sample.
N	Gasoline result is biased high due to amount of Diesel contained in the sample.
MC	Sample concentration is greater than 4x the spiked value, the spiked value is considered insignificant.
MI	Result is outside control limits due to matrix interference.
MSA	Value determined by Method of Standard Addition.
O	Laboratory Control Standard (LCS) exceeded laboratory control limits, but meets CCV criteria. Data meets EPA requirements.
P	Detection levels of Methylene Chloride may be laboratory contamination, due to previous analysis or background levels.
Q	Detection levels elevated due to sample matrix.
R	RPD control limits were exceeded.
RF	Duplicate failed due to result being at or near the method-reporting limit.
RP	Matrix spike values exceed established QC limits, post digestion spike is in control.
S	Recovery is outside control limits.
SC	Closing CCV or LCS exceeded high recovery control limits, but associated samples are non-detect. Data meets EPA requirements.
*	The result for this parameter was greater that the maximum contaminant level of the TCLP regulatory limit.

Rev Dec 15, 2004

CHAIN OF CUSTODY RECORD

Page 1 of 1

Specialty Analytical
19761 S.W. 95th. Avenue
Tualatin, OR 97062
(503) 612-9007 - Phone
(503) 612-8572 - Fax

Contact Person/Project Manager: Tom Rothschild
Company: Siltronic
Address: 7200 NW Front Ave
Portland, OR 97210
Phone: 503-219-7374 Fax: 503-219-4144
Project No.: Project Name:
Invoice To: Accts Payable P.O. No.: 4500521869

Collected By:
Signature: Scott Mandel
Printed: Scott Mandel (MFA)
Signature: Myron W. Burr
Printed: MYRON BURR (SILTRONIC)

Turn Around Time
☒ Normal
☐ Rush _____
Specify
Rush Analyses Must Be Scheduled With The Lab In Advance

For Laboratory Use
Lab Job No. 0911013
Shipped Via: Specialty
Air Bill No.:
Temperature On Receipt: AMB °C
Specialty Analytical Containers? Y / N
Specialty Analytical Trip Blanks? Y / N

Date	Time	Sample I.D.	Matrix	No. of Containers	Analyses: Total, As, Ba, Cd, Cr, F, Pb, Hg, Mo, Se, Ag, Zn ✓	TCLP - As, Ba, Cd, Cr, F, Pb, Hg, Mo, Se, Ag, Zn	Total, Cn ✓	TCLP - As, Ba, Cd, Cr, F, Pb, Hg, Mo, Se, Ag, Zn	8260, TCLP + Total ✓	8270, TCLP + Total ✓	Paint Filter Test NEED 2.			Comments	Lab I.D.
11.2.07	0927	07-138-a	Sed	1	X	X	X	X	X	X	X	X		composite all	
11.2.07	0931	07-138-b	Sed	1	X	X	X	X	X	X	X	X		6 samples -	
11.2.07	0934	07-138-c	Sed	1	X	X	X	X	X	X	X	X		a through f -	
11.2.07	0938	07-138-d	Sed	1	X	X	X	X	X	X	X	X		and report as	
11.2.07	0941	07-138-e	Sed		X	X	X	X	X	X	X	X		07-138.	
11.2.07	0944	07-138-f	Sed		X	X	X	X	X	X	X	X			

Relinquished By	Company	Date	Time	Received By	Company	Date	Time
Myron Burr	Siltronic	11.2.07	1323	Nikki Dalton	Specialty		
Received For Lab By: Nikki Dalton						11/2/07	1459

Unless Reclaimed, Samples Will Be Disposed of 60 Days After Receipt.
Copies: White-Original Yellow-Project File Pink-Customer Copy

SCOEPA00054738 0147266

Specialty Analytical

19761 S.W. 95th Avenue
Tualatin, OR 97062
(503) 612-9007
Fax (503) 612-8572
1 (877) 612-9007

September 11, 2007

CATCH BASIN SOLIDS ANALYSIS

Thomas Rothschild
Siltronic Corporation
7200 NW Front Ave
M/S 30
Portland, OR 97210

TEL: (503) 219-7313
FAX (503) 219-7599

RE: Waste Characterization

Dear Thomas Rothschild:

Order No.: 0709012

Specialty Analytical received 1 sample on 9/5/2007 for the analyses presented in the following report.

There were no problems with the analysis and all data for associated QC met EPA or laboratory specifications except where noted in the Case Narrative, or as qualified with flags. Results apply only to the samples analyzed. Without approval of the laboratory, the reproduction of this report is only permitted in its entirety.

If you have any questions regarding these tests, please feel free to call.

Sincerely,

Ned Engleson
Project Manager

Technical Review

0147267
SCOEPA00054739

Specialty Analytical

Date: *11-Sep-07*

CLIENT: Siltronic Corporation
Project: Waste Characterization

Lab Order: 0709012

Lab ID: 0709012-01
Client Sample ID: 07-114-CB

Collection Date: 9/4/2007 11:20:00 AM
Matrix: SOLID

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
NWTPH-HCID		**NWHCID**				Analyst: **jrp**
Gasoline	ND	45.5		mg/Kg-dry	1	9/6/2007
Mineral Spirits	ND	45.5		mg/Kg-dry	1	9/6/2007
Kerosene	ND	114		mg/Kg-dry	1	9/6/2007
Diesel	ND	114		mg/Kg-dry	1	9/6/2007
Lube Oil	Lube Oil	227		mg/Kg-dry	1	9/6/2007
Surr: BFB	67.2	50-150		%REC	1	9/6/2007
Surr: o-Terphenyl	79.3	50-150		%REC	1	9/6/2007
NWTPH-DX		**NWTPH-DX**				Analyst: **jrp**
Diesel	334	34.1	A1	mg/Kg-dry	1	9/11/2007
Lube Oil (overlap with diesel)	1800	114		mg/Kg-dry	1	9/11/2007
Surr: o-Terphenyl	124	50-150		%REC	1	9/11/2007
TCLP METALS		**E1311/6010/7470**				Analyst: **zau**
Arsenic, TCLP	ND	0.500		mg/L	1	9/6/2007 3:40:01 PM
Barium, TCLP	1.42	0.250		mg/L	1	9/6/2007 3:40:01 PM
Cadmium, TCLP	ND	0.0250		mg/L	1	9/6/2007 3:40:01 PM
Chromium, TCLP	ND	0.125		mg/L	1	9/6/2007 3:40:01 PM
Lead, TCLP	ND	0.500		mg/L	1	9/6/2007 3:40:01 PM
Selenium, TCLP	ND	0.500		mg/L	1	9/6/2007 3:40:01 PM
Silver, TCLP	ND	0.250		mg/L	1	9/6/2007 3:40:01 PM
TCLP MERCURY		**1311/7000**				Analyst: **zau**
Mercury, TCLP	ND	0.000100		mg/L	1	9/7/2007
EXTRACTED ORGANIC HALOGENS		**SW9023**				Analyst: **jrp**
Extractable Organic Halides	28.6	5.00		mg/Kg	1	9/7/2007

0147268
SCOEPA00054740

CLIENT: Siltronic Corporation
Work Order: 0709012
Project: WasteCharacterization

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_TCLP

Sample ID	MBLK-19372	SampType:	MBLK	TestCode:	6010_TCLP	Units:	mg/L	Prep Date:	9/6/2007	Run ID:	TJAIRIS_070906C
Client ID:	ZZZZZ	Batch ID:	19372	TestNo:	E1311/6010/7			Analysis Date:	9/6/2007	SeqNo:	489026

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic, TCLP	0.0126	0.0200									J
Barium, TCLP	0.0016	0.0100									J
Cadmium, TCLP	ND	0.00100									
Chromium, TCLP	0.0009	0.00500									J
Lead, TCLP	ND	0.0200									
Selenium, TCLP	ND	0.0200									
Silver, TCLP	ND	0.0100									

Sample ID	LCS-19372	SampType:	LCS	TestCode:	6010_TCLP	Units:	mg/L	Prep Date:	9/6/2007	Run ID:	TJAIRIS_070906C
Client ID:	ZZZZZ	Batch ID:	19372	TestNo:	E1311/6010/7			Analysis Date:	9/6/2007	SeqNo:	489027

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic, TCLP	0.9872	0.0200	1	0.0126	97.5	93.8	107	0	0		
Barium, TCLP	0.5319	0.0100	0.5	0.0016	106	95	111	0	0		
Cadmium, TCLP	0.049	0.00100	0.05	0	98	91.8	110	0	0		
Chromium, TCLP	0.2537	0.00500	0.25	0.0009	101	93.6	113	0	0		
Lead, TCLP	1.061	0.0200	1	0	106	93.1	112	0	0		
Selenium, TCLP	1.005	0.0200	1	0	101	93.9	111	0	0		
Silver, TCLP	0.4838	0.0100	0.5	0	96.8	90.6	115	0	0		

Sample ID	A0709004-01BMS	SampType:	MS	TestCode:	6010_TCLP	Units:	mg/L	Prep Date:	9/6/2007	Run ID:	TJAIRIS_070906C
Client ID:	ZZZZZ	Batch ID:	19372	TestNo:	E1311/6010/7			Analysis Date:	9/6/2007	SeqNo:	489031

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic, TCLP	1.025	0.0200	1	0	103	90.1	110	0	0		
Barium, TCLP	0.5569	0.0100	0.5	0.016	108	90.7	112	0	0		
Cadmium, TCLP	0.0504	0.00100	0.05	0.0006	99.6	93.4	110	0	0		
Chromium, TCLP	0.2612	0.00500	0.25	0.0036	103	93.4	112	0	0		
Lead, TCLP	1.095	0.0200	1	0	110	91.9	112	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit; J - Analyte detected below quantitation limits; S - Spike Recovery outside accepted recovery limits; R - RPD outside accepted recovery limits; B - Analyte detected in the associated Method Blan

SCOEPA0054741 0147269

CLIENT: Siltronic Corporation
Work Order: 0709012
Project: WasteCharacterization

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_TCLP

Sample ID	A0709004-01BMS	SampType:	MS	TestCode:	6010_TCLP	Units:	mg/L	Prep Date:	9/6/2007	Run ID:	TJAIRIS_070906C
Client ID:	ZZZZZ	Batch ID:	19372	TestNo:	E1311/6010/7			Analysis Date:	9/6/2007	SeqNo:	489031

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium, TCLP	1.029	0.0200	1	0.0081	102	93.5	113	0	0		
Silver, TCLP	0.4981	0.0100	0.5	0	99.6	90.1	113	0	0		

Sample ID	A0709004-01BMSD	SampType:	MSD	TestCode:	6010_TCLP	Units:	mg/L	Prep Date:	9/6/2007	Run ID:	TJAIRIS_070906C
Client ID:	ZZZZZ	Batch ID:	19372	TestNo:	E1311/6010/7			Analysis Date:	9/6/2007	SeqNo:	489032

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic, TCLP	1.017	0.0200	1	0	102	90.1	110	1.025	0.784	20	
Barium, TCLP	0.5495	0.0100	0.5	0.016	107	90.7	112	0.5569	1.34	20	
Cadmium, TCLP	0.0503	0.00100	0.05	0.0006	99.4	93.4	110	0.0504	0.199	20	
Chromium, TCLP	0.2582	0.00500	0.25	0.0036	102	93.4	112	0.2612	1.16	20	
Lead, TCLP	1.079	0.0200	1	0	108	91.9	112	1.095	1.47	20	
Selenium, TCLP	1.025	0.0200	1	0.0081	102	93.5	113	1.029	0.389	20	
Silver, TCLP	0.4952	0.0100	0.5	0	99	90.1	113	0.4981	0.584	20	

Sample ID	A0709004-01BDUP	SampType:	DUP	TestCode:	6010_TCLP	Units:	mg/L	Prep Date:	9/6/2007	Run ID:	TJAIRIS_070906C
Client ID:	ZZZZZ	Batch ID:	19372	TestNo:	E1311/6010/7			Analysis Date:	9/6/2007	SeqNo:	489030

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic, TCLP	ND	0.0200	0	0	0	0	0	0	0	20	
Barium, TCLP	0.0161	0.0100	0	0	0	0	0	0.016	0.623	20	
Cadmium, TCLP	ND	0.00100	0	0	0	0	0	0.0006	0	20	
Chromium, TCLP	0.0037	0.00500	0	0	0	0	0	0.0036	0	20	J
Lead, TCLP	ND	0.0200	0	0	0	0	0	0	0	20	
Selenium, TCLP	ND	0.0200	0	0	0	0	0	0.0081	0	20	
Silver, TCLP	0.0034	0.0100	0	0	0	0	0	0	0	20	J

Sample ID	CCV	SampType:	CCV	TestCode:	6010_TCLP	Units:	mg/L	Prep Date:		Run ID:	TJAIRIS_070906C
Client ID:	ZZZZZ	Batch ID:	19372	TestNo:	E1311/6010/7			Analysis Date:	9/6/2007	SeqNo:	489029

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blan

SCOEPA0054742 0147270

CLIENT: Siltronic Corporation
Work Order: 0709012
Project: WasteCharacterization

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_TCLP

Sample ID CCV	SampType: CCV	TestCode: 6010_TCLP	Units: mg/L	Prep Date:	Run ID: TJAIRIS_070906C
Client ID: ZZZZZ	Batch ID: 19372	TestNo: E1311/6010/7		Analysis Date: 9/6/2007	SeqNo: 489029

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic, TCLP	0.984	0.0200	1	0	98.4	90	110	0	0		
Barium, TCLP	0.5153	0.0100	0.5	0	103	90	110	0	0		
Cadmium, TCLP	0.0483	0.00100	0.05	0	96.6	90	110	0	0		
Chromium, TCLP	0.2481	0.00500	0.25	0	99.2	90	110	0	0		
Lead, TCLP	1.036	0.0200	1	0	104	90	110	0	0		
Selenium, TCLP	0.9819	0.0200	1	0	98.2	90	110	0	0		
Silver, TCLP	0.4793	0.0100	0.5	0	95.9	90	110	0	0		

Sample ID CCV	SampType: CCV	TestCode: 6010_TCLP	Units: mg/L	Prep Date:	Run ID: TJAIRIS_070906C
Client ID: ZZZZZ	Batch ID: 19372	TestNo: E1311/6010/7		Analysis Date: 9/6/2007	SeqNo: 489036

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic, TCLP	0.9665	0.0200	1	0	96.6	90	110	0	0		
Barium, TCLP	0.5057	0.0100	0.5	0	101	90	110	0	0		
Cadmium, TCLP	0.0475	0.00100	0.05	0	95	90	110	0	0		
Chromium, TCLP	0.2434	0.00500	0.25	0	97.4	90	110	0	0		
Lead, TCLP	1.021	0.0200	1	0	102	90	110	0	0		
Selenium, TCLP	0.9655	0.0200	1	0	96.6	90	110	0	0		
Silver, TCLP	0.4739	0.0100	0.5	0	94.8	90	110	0	0		

Sample ID ICV	SampType: ICV	TestCode: 6010_TCLP	Units: mg/L	Prep Date:	Run ID: TJAIRIS_070906C
Client ID: ZZZZZ	Batch ID: 19372	TestNo: E1311/6010/7		Analysis Date: 9/6/2007	SeqNo: 489025

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic, TCLP	0.9798	0.0200	1	0	98	90	110	0	0		
Barium, TCLP	0.5205	0.0100	0.5	0	104	90	110	0	0		
Cadmium, TCLP	0.0492	0.00100	0.05	0	98.4	90	110	0	0		
Chromium, TCLP	0.2512	0.00500	0.25	0	100	90	110	0	0		
Lead, TCLP	1.04	0.0200	1	0	104	90	110	0	0		
Selenium, TCLP	0.9893	0.0200	1	0	98.9	90	110	0	0		
Silver, TCLP	0.4911	0.0100	0.5	0	98.2	90	110	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit; J - Analyte detected below quantitation limits; S - Spike Recovery outside accepted recovery limits; R - RPD outside accepted recovery limits; B - Analyte detected in the associated Method Blank

SCOEPA0054743 0147271

CLIENT: Siltronic Corporation
Work Order: 0709012
Project: WasteCharacterization

ANALYTICAL QC SUMMARY REPORT

TestCode: EOX

Sample ID	MBLK	SampType:	MBLK	TestCode:	EOX	Units:	mg/Kg	Prep Date:		Run ID:	TOX_070907A	
Client ID:	ZZZZZ	Batch ID:	R48211	TestNo:	SW9023			Analysis Date:	9/7/2007	SeqNo:	488878	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Extractable Organic Halides		ND	5.00									

Sample ID	LCS	SampType:	LCS	TestCode:	EOX	Units:	mg/Kg	Prep Date:		Run ID:	TOX_070907A	
Client ID:	ZZZZZ	Batch ID:	R48211	TestNo:	SW9023			Analysis Date:	9/7/2007	SeqNo:	488877	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Extractable Organic Halides		81.56	5.00	100	0	81.6	80	120	0	0		

Sample ID	0709012-01BMS	SampType:	MS	TestCode:	EOX	Units:	mg/Kg	Prep Date:		Run ID:	TOX_070907A	
Client ID:	07-114-CB	Batch ID:	R48211	TestNo:	SW9023			Analysis Date:	9/7/2007	SeqNo:	488880	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Extractable Organic Halides		138.8	5.00	100	28.6	110	75	125	0	0		

Sample ID	0709012-01BMSD	SampType:	MSD	TestCode:	EOX	Units:	mg/Kg	Prep Date:		Run ID:	TOX_070907A	
Client ID:	07-114-CB	Batch ID:	R48211	TestNo:	SW9023			Analysis Date:	9/7/2007	SeqNo:	488881	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Extractable Organic Halides		131.8	5.00	100	28.6	103	75	125	138.8	5.17	20	

Sample ID	CCV	SampType:	CCV	TestCode:	EOX	Units:	mg/Kg	Prep Date:		Run ID:	TOX_070907A	
Client ID:	ZZZZZ	Batch ID:	R48211	TestNo:	SW9023			Analysis Date:	9/7/2007	SeqNo:	488882	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Extractable Organic Halides		99.56	5.00	100	0	99.6	85	115	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blan

SCOEPA00054744 0147272

CLIENT: Siltronic Corporation
Work Order: 0709012
Project: WasteCharacterization

ANALYTICAL QC SUMMARY REPORT

TestCode: HCID_NW

Sample ID	MB-19364	SampType:	MBLK	TestCode:	HCID_NW	Units:	mg/Kg	Prep Date:	9/4/2007	Run ID:	GC-M_070905A
Client ID:	ZZZZZ	Batch ID:	19364	TestNo:	NWHCID			Analysis Date:	9/5/2007	SeqNo:	488691

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	4.57	20.0									J
Mineral Spirits	ND	20.0									
Kerosene	ND	50.0									
Diesel	1.24	50.0									J
Lube Oil	28.25	100									J
Surr: BFB	102.4	0	100	0	102	50	150	0	0		
Surr: o-Terphenyl	103.6	0	100	0	104	50	150	0	0		

Sample ID	0709006-01ADUP	SampType:	DUP	TestCode:	HCID_NW	Units:	mg/Kg-dry	Prep Date:	9/4/2007	Run ID:	GC-M_070905A
Client ID:	ZZZZZ	Batch ID:	19364	TestNo:	NWHCID			Analysis Date:	9/5/2007	SeqNo:	488693

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	5.6	22.0	0	0	0	0	0	5.732	0	20	J
Mineral Spirits	ND	22.0	0	0	0	0	0	0	0	20	
Kerosene	ND	55.0	0	0	0	0	0	0	0	20	
Diesel	3.631	55.0	0	0	0	0	0	6.106	0	20	J
Lube Oil	31.68	110	0	0	0	0	0	34.5	0	20	J

Sample ID	0709012-01ADUP	SampType:	DUP	TestCode:	HCID_NW	Units:	mg/Kg-dry	Prep Date:	9/4/2007	Run ID:	GC-M_070905A
Client ID:	07-114-CB	Batch ID:	19364	TestNo:	NWHCID			Analysis Date:	9/6/2007	SeqNo:	488823

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	25.05	45.5	0	0	0	0	0	23.68	0	20	J
Mineral Spirits	ND	45.5	0	0	0	0	0	0	0	20	
Kerosene	ND	114	0	0	0	0	0	0	0	20	
Diesel	66.55	114	0	0	0	0	0	0	0	20	J
Lube Oil	282.4	227	0	0	0	0	0	729.8	88.4	20	R

Qualifiers: ND - Not Detected at the Reporting Limit; J - Analyte detected below quantitation limits; S - Spike Recovery outside accepted recovery limits; R - RPD outside accepted recovery limits; B - Analyte detected in the associated Method Blan

SCOEPA0005474 0147273

CLIENT: Siltronic Corporation
Work Order: 0709012
Project: WasteCharacterization

ANALYTICAL QC SUMMARY REPORT

TestCode: HG_TCLP

Sample ID	MB-19385	SampType:	MBLK	TestCode:	HG_TCLP	Units:	mg/L	Prep Date:	9/7/2007	Run ID:	CVAA_070907A
Client ID:	ZZZZZ	Batch ID:	19385	TestNo:	1311/7000			Analysis Date:	9/7/2007	SeqNo:	489057

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury, TCLP	ND	0.000100									

Sample ID	LCS-19385	SampType:	LCS	TestCode:	HG_TCLP	Units:	mg/L	Prep Date:	9/7/2007	Run ID:	CVAA_070907A
Client ID:	ZZZZZ	Batch ID:	19385	TestNo:	1311/7000			Analysis Date:	9/7/2007	SeqNo:	489056

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury, TCLP	0.003698	0.000100	0.004	0	92.4	85.4	116	0	0		

Sample ID	0709012-01BMS	SampType:	MS	TestCode:	HG_TCLP	Units:	mg/L	Prep Date:	9/7/2007	Run ID:	CVAA_070907A
Client ID:	07-114-CB	Batch ID:	19385	TestNo:	1311/7000			Analysis Date:	9/7/2007	SeqNo:	489053

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury, TCLP	0.004057	0.000100	0.004	0	101	69.5	125	0	0		

Sample ID	0709012-01BMSD	SampType:	MSD	TestCode:	HG_TCLP	Units:	mg/L	Prep Date:	9/7/2007	Run ID:	CVAA_070907A
Client ID:	07-114-CB	Batch ID:	19385	TestNo:	1311/7000			Analysis Date:	9/7/2007	SeqNo:	489054

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury, TCLP	0.00448	0.000100	0.004	0	112	69.5	125	0.004057	9.91	20	

Sample ID	0709012-01BDUP	SampType:	DUP	TestCode:	HG_TCLP	Units:	mg/L	Prep Date:	9/7/2007	Run ID:	CVAA_070907A
Client ID:	07-114-CB	Batch ID:	19385	TestNo:	1311/7000			Analysis Date:	9/7/2007	SeqNo:	489052

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury, TCLP	ND	0.000100	0	0	0	0	0	0	0	20	

Sample ID	CCV	SampType:	CCV	TestCode:	HG_TCLP	Units:	mg/L	Prep Date:		Run ID:	CVAA_070907A
Client ID:	ZZZZZ	Batch ID:	19385	TestNo:	1311/7000			Analysis Date:	9/7/2007	SeqNo:	489055

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Qualifiers: ND - Not Detected at the Reporting Limit; J - Analyte detected below quantitation limits; S - Spike Recovery outside accepted recovery limits; R - RPD outside accepted recovery limits; B - Analyte detected in the associated Method Blank

SCOEPA0054746 0147274

CLIENT: Siltronic Corporation
Work Order: 0709012
Project: WasteCharacterization

ANALYTICAL QC SUMMARY REPORT

TestCode: HG_TCLP

Sample ID	CCV	SampType:	CCV	TestCode:	HG_TCLP	Units:	mg/L	Prep Date:		Run ID:	CVAA_070907A	
Client ID:	ZZZZZ	Batch ID:	19385	TestNo:	1311/7000			Analysis Date:	9/7/2007	SeqNo:	489055	

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury, TCLP	0.003686	0.000100	0.004	0	92.2	90	110	0	0		

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

SCOEPA00054747 0147275

CLIENT: Siltronic Corporation
Work Order: 0709012
Project: Waste Characterization

ANALYTICAL QC SUMMARY REPORT

TestCode: NWTPHDX_S

Sample ID	MB-19410	SampType:	MBLK	TestCode:	NWTPHDX_S	Units:	mg/Kg	Prep Date:	9/10/2007	Run ID:	GC-M_070911A
Client ID:	ZZZZZ	Batch ID:	19410	TestNo:	NWTPH-Dx			Analysis Date:	9/11/2007	SeqNo:	489624

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel	ND	15.0									
Lube Oil	ND	50.0									
Surr: o-Terphenyl	39.44	0	33.33	0	118	50	150	0	0		

Sample ID	LCS-19410	SampType:	LCS	TestCode:	NWTPHDX_S	Units:	mg/Kg	Prep Date:	9/10/2007	Run ID:	GC-M_070911A
Client ID:	ZZZZZ	Batch ID:	19410	TestNo:	NWTPH-Dx			Analysis Date:	9/11/2007	SeqNo:	489625

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel	190.8	15.0	167.3	0	114	76.3	125	0	0		
Lube Oil	191.5	50.0	168.3	0	114	69.9	127	0	0		

Sample ID	0709012-01ADUP	SampType:	DUP	TestCode:	NWTPHDX_S	Units:	mg/Kg-dry	Prep Date:	9/10/2007	Run ID:	GC-M_070911A
Client ID:	07-114-CB	Batch ID:	19410	TestNo:	NWTPH-Dx			Analysis Date:	9/11/2007	SeqNo:	489629

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel	330.9	34.1	0	0	0	0	0	333.7	0.864	20	A1
Lube Oil	1778	114	0	0	0	0	0	1795	0.970	20	

Sample ID	CCV	SampType:	CCV	TestCode:	NWTPHDX_S	Units:	mg/Kg	Prep Date:		Run ID:	GC-M_070911A
Client ID:	ZZZZZ	Batch ID:	19410	TestNo:	NWTPH-Dx			Analysis Date:	9/11/2007	SeqNo:	489627

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel	1074	15.0	1002	0	107	85	115	0	0		
Lube Oil	558.7	50.0	497.6	0	112	85	115	0	0		

Sample ID	CCV	SampType:	CCV	TestCode:	NWTPHDX_S	Units:	mg/Kg	Prep Date:		Run ID:	GC-M_070911A
Client ID:	ZZZZZ	Batch ID:	19410	TestNo:	NWTPH-Dx			Analysis Date:	9/11/2007	SeqNo:	489630

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel	1083	15.0	1002	0	108	85	115	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit; J - Analyte detected below quantitation limits; S - Spike Recovery outside accepted recovery limits; R - RPD outside accepted recovery limits; B - Analyte detected in the associated Method Blank

SCOEPA0005474B 0147276

CLIENT: Siltronic Corporation
Work Order: 0709012
Project: Waste Characterization

ANALYTICAL QC SUMMARY REPORT

TestCode: NWTPHDX_S

Sample ID	CCV	SampType:	CCV	TestCode:	NWTPHDX_S	Units:	mg/Kg	Prep Date:		Run ID:	GC-M_070911A
Client ID:	ZZZZZ	Batch ID:	19410	TestNo:	NWTPH-Dx			Analysis Date:	9/11/2007	SeqNo:	489630

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lube Oil	546	50.0	497.6	0	110	85	115	0	0		

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

SCOEPA0054749 0147277

KEY TO FLAGS

A	This sample contains a Gasoline Range Organic not identified as a specific hydrocarbon product. The result was quantified against gasoline calibration standards.
A1	This sample contains a Diesel Range Organic not identified as a specific hydrocarbon product. The result was quantified against diesel calibration standards.
A2	This sample contains a Lube Oil Range Organic not identified as a specific hydrocarbon product. The result was quantified against a lube oil calibration standard.
A3	The result was determined to be Non-Detect based on hydrocarbon pattern recognition. The product was carry-over from another hydrocarbon type.
B	The blank exhibited a positive result greater than the reporting limit for this compound.
CN	See Case Narrative.
D	Result is based from a dilution.
E	Result exceeds the calibration range for this compound. The result should be considered as estimate.
F	The positive result for this hydrocarbon is due to single component contamination. The product does not match any hydrocarbon in the fuels library.
H	Sample was analyzed outside recommended hold time.
HT	At clients request, sample was analyzed outside recommended hold time.
J	The result for this analyte is between the MDL and the PQL and should be considered as estimated concentration.
K	Diesel result is biased high due to amount of Oil contained in the sample.
L	Diesel result is biased high due to amount of Gasoline contained in the sample.
M	Oil result is biased high due to amount of Diesel contained in the sample.
N	Gasoline result is biased high due to amount of Diesel contained in the sample.
MC	Sample concentration is greater than 4x the spiked value, the spiked value is considered insignificant.
MI	Result is outside control limits due to matrix interference.
MSA	Value determined by Method of Standard Addition.
O	Laboratory Control Standard (LCS) exceeded laboratory control limits, but meets CCV criteria. Data meets EPA requirements.
P	Detection levels of Methylene Chloride may be laboratory contamination, due to previous analysis or background levels.
Q	Detection levels elevated due to sample matrix.
R	RPD control limits were exceeded.
RF	Duplicate failed due to result being at or near the method-reporting limit.
RP	Matrix spike values exceed established QC limits, post digestion spike is in control.
S	Recovery is outside control limits.
SC	Closing CCV or LCS exceeded high recovery control limits, but associated samples are non-detect. Data meets EPA requirements.
*	The result for this parameter was greater that the maximum contaminant level of the TCLP regulatory limit.

Rev Dec 15, 2004

CHAIN OF CUSTODY RECORD

Page ___ of ___

Specialty Analytical
19761 S.W. 95th. Avenue
Tualatin, OR 97062
(503) 612-9007 - Phone
(503) 612-8572 - Fax

Contact Person/Project Manager: Tom Rothschild
Company: Siltronic
Address: 7200 NW Front Ave
Portland, OR
Phone: 503-219-7374 Fax: 503-219-4144
Project No.: ___ Project Name: Waste Characterization
Invoice To: Accts Payable P.O. No.: 4500521869

Collected By:
Signature: Dianne Frisch
Printed: Dianne Frisch

Signature: ___
Printed: ___

Turn Around Time
☐ Normal
☒ Rush 9/4/07 - final report
Specify

Rush Analyses Must Be Scheduled With The Lab In Advance

For Laboratory Use
Lab Job No.: CHD9012
Shipped Via: Specialty
Air Bill No.: ___
Temperature On Receipt: 4 °C
Specialty Analytical Containers? Y / N
Specialty Analytical Trip Blanks? Y / N

Date	Time	Sample I.D.	Matrix	No. of Containers	Analyses: TCLP-metals 8	TPH-HCID	EDX	WSTPH Dx	Comments	Lab I.D.
9-4-07	1120	07-114-CB	SOIL	1	X	X	X	X		

Relinquished By	Date	Time	Received By	Relinquished By	Date	Time
Dianne Frisch	9-5-07	1103	Nikki Dalton			
Company: Siltronic			Company: Specialty	Company:		

Unless Reclaimed, Samples Will Be Disposed of 60 Days After Receipt.

Copies: White-Original Yellow-Project File Pink-Customer Copy

Received For Lab By: Nikki Dalton — Date: 9/5/07 — Time: 1158

SCOEPA00054751 0147279

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180
7200 N.W. Front Ave.
Portland, OR 97210-3676
Phone (503) 243-2020
FAX 503-226-0052
TWX 910-464-4777
TLX 4970339

August 21, 1990

RECEIVED
ENGINEERING
AUG 22 1990

John L. Pittman
Wacker Siltronic

Becky Roper
Chemical Waste Management, Inc.
Star Route
Box 9
Arlington, Oregon 97812

RE: Generator's Waste Material Profile Sheet No. J82851

Dear Ms. Roper:

You contacted me last week concerning the EPA hazardous waste numbers for the disposal of drilling muds, profile sheet number J82851. I contacted Don Peters of the DEQ for his recommendation on what waste numbers should be assigned to this waste. Don contacted Paul Christiansen, also of the DEQ, for his recommendation. Their comments are as follows:

1. Until September 25, 1990, this waste does not have to be handled as a hazardous waste, but it should be handled as a state waste, code X004 (because it is a soil with a hazardous waste constituent). If you could accept these drums for disposal before September 25, they will be labeled with a blue "NON-REGULATED WASTE" sticker. This label will state that it is a "non-regulated material per 49 CFR 172.101" and that the drum contains "State Waste X004".

2. If you can not accept this material until after September 25, they would have to be handled as a hazardous waste with EPA waste number D018. Paul mentioned that because Wacker has no knowledge of how the waste originated or if it came from an "F" listed waste, we do not have to designate the material as an "F" waste. In this case, the drums would be labeled with a hazardous waste sticker. The proper shipping name would be "Hazardous waste, solid, n.o.s., ORM-E, NA9189 (D018)".

Obviously, we would like to dispose of this material before September 25, 1990. The original date was September 15, as stated in my letter to you dated August 6.

I hope this clarifies your question on the EPA waste code for this material. If you have any further questions or comments, please contact me at 243-2020, extension 132.

Very truly yours,

WACKER SILTRONIC CORPORATION

Richard G. Gariepy
Environmental Engineer

cc: John Pittman
Steve Beiswenger
Toni Santos - Chemical Waste Management, Kent, WA

drilmud1.ltr

August 6, 1990

RECEIVED
ENGINEERING
AUG 8 1990
John L. Pittman
Wacker Siltronic

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180
7200 N.W. Front Ave.
Portland, OR 97210-3676
Phone (503) 243-2020
FAX 503-226-0052
TWX 910-464-4777
TLX 4970339

Chem-Security Systems , Inc.
Star Route
Arlington, Oregon 97812

ATTN: Becky Roper

RE: Generator's Waste Material Profile Sheet No. J82851

Dear Ms. Roper:

This letter and the attached profile sheet accompany a sample of waste that was generated at our facility. I have spoke to both Joyce Johnson and Toni Santos concerning disposal of this material.

At this time, we have 17 drums of this waste which was generated from a drilling operation conducted on our site in June. Several of the drums contain protective clothing and visqeen used during the operation. Most of the drums contain drilling mud. One or two of the drums will contain a mixture of both. The sample I have sent you is of the drill mud only. This sample is a composite of drilling muds from the 17 drums. In most cases, the mud is very wet, and free liquid can be found in the top of at least two or three drums. Since the material was somewhat unknown to us, we conducted a number of analysis on the waste to determine its makeup and characteristics. These analysis results are attached.

Our 90 day storage limit expires September 15, so I would appreciate any help you can give me to expedite this disposal request. If you have any questions, please call me at 243-2020, ext. 132.

Very truly yours,

WACKER SILTRONIC CORPORATION

Richard G. Gariepy
Environmental Engineer

Enclosures

cc: Jerry Schaeffer
Steve Beiswenger
Toni Santos - Chemical Waste Management, Kent, WA

Chemical Waste Management, Inc.

GENERATOR'S WASTE MATERIAL PROFILE SHEET

PLEASE PRINT IN INK OR TYPE (Elite, 12-pitch).

PDX J 82851

Waste Profile Sheet Code

CWM Location of Original: _____ (SHADED AREAS FOR CWM USE ONLY) CWM Sales Rep. #: 042

A. GENERAL INFORMATION

1. Generator Name: Wacker Siltronic Corporation 2. Generator USEPA ID: ORD096253737
3. Facility Address: 7200 N.W. Front Ave. 4. Generator State ID: _____
Portland, Oregon 97208
5. Zip Code: _____
6. Technical Contact: Richard G. Gariepy 7. Title: Environmental Eng. 8. Phone: (503) 243-2020 x132

B. MAIL CHEMICAL WASTE MANAGEMENT, INC. INVOICES TO

1. ☐ Generating Facility (A, above), or
2. Company Name: Wacker Siltronic Corporation 3. Phone: (503) 243-2020 x132
4. Address: P.O. Box 83180
Portland, Oregon 97283-0180
5. Zip Code: _____

C.

1. NAME OF WASTE: Drilling Mud
2. PROCESS GENERATING WASTE: Soil core testing
3. Is this waste a Dioxin listed waste as defined in 40 CFR 261.31 (e.g., F020, F021, F022, F023, F026, F027, or F028)?
☐ Yes ☒ No If yes, **DO NOT COMPLETE** this form. Contact your Chemical Waste Management, Inc. sales representative for assistance.

D. PHYSICAL CHARACTERISTICS OF WASTE

1. Color:	2. Does the waste have a strong incidental odor?	3. Physical State @ 70°F:	4. Layers:	5. Specific Gravity:	6. Free Liquids:
Sandy to Black	☐ No ☒ Yes If known, describe: Coal Tar	☐ Solid ☐ Semi-Solid ☐ Liquid ☐ Powder Other: MUD	☐ Multilayered ☒ Bi-layered ☒ Single Phased	Range: 1.2 - 1.4	☒ Yes ☐ No Volume: 0 - 5 %

7. pH: ☐ ≤ 2 ☐ > 2-4 ☐ 4-7 ☐ 7 ☐ 7-10 ☐ 10- < 12.5 ☐ ≥ 12.5 ☐ Range _____ - _____ ☐ NA

8. Liquid Flash Point: ☐ < 73°F ☐ 73-99°F ☐ 100-139°F ☐ 140-199°F ☒ ≥ 200°F ☐ None ☒ Closed Cup ☐ Open Cup

E. CHEMICAL COMPOSITION

1.	RANGE MIN. - MAX.	
Sand/Soil contaminated with tar-like	-	%
substance. See attached analysis	-	%
results. Most of the drums contain drilling mud		%
with some protective clothing in them.	-	%
	-	%
Visqueen, protective clothing: 2-3 drums contain		%
50%-100% of this material. Most of the other		%
drums would have 0-5% of this material.	-	%
	-	%
NOTE: The sample only contains drilling mud	-	%
	-	%
	-	%

Please note: The chemical composition total in the maximum column must be greater than or equal to 100%. TOTAL: 100 %

2. Indicate if this waste contains any of the following:

	NONE	or LESS THAN	or ACTUAL
PCB's	☐	☒ < 50 ppm	_____ ppm
Cyanides	☐	☒ < 50 ppm	_____ ppm
Phenolics	☐	☒ < 50 ppm	_____ ppm
Sulfides	☐	☒ < 50 ppm	_____ ppm

F. METALS Indicate if this waste contains any of the following:

1. ☒ EP TOX/TCLP or 2. ☐ Total

METAL	LESS THAN	or	ACTUAL (Parts Per Million)
Arsenic	☐ < 5	☐ < 500	0.002
Barium	☐ < 100		0.50
Cadmium	☐ < 1	☐ < 100	0.02
Chromium	☐ < 5		0.01
Lead	☐ < 5	☐ < 500	ND
Mercury	☐ < 0.2	☐ < 20	ND
Selenium	☐ < 1	☐ < 100	ND
Silver	☐ < 5		ND
Chromium-Hex	☐ < 5	☐ < 500	
Copper	☐ < 5		15 total
Nickel	☐ < 5	☐ < 134	14 total
Thallium	☐ < 5	☐ < 130	14 total
Zinc	☐ < 5	Total	46
See analysis	☐ <		
results	☐ <		
	☐ <		

Form CWM-6000 © 1987 Chemical Waste Management, Inc.

SCOEPA00054755

GENERATOR'S WASTE MATERIAL PROFILE SHEET (Continued)

[ ] J 82851
Waste Profile Sheet Code

G. OTHER HAZARDOUS CHARACTERISTICS

1. Is this waste a listed solvent waste as defined by 40 CFR 261.31 (F001, F002, F003, F004, or F005)? ☐ Yes ☒ No
2. Does this waste contain greater than 1000 ppm total halogenated organic compounds? See analysis results. ☐ Yes ☐ No
3. Indicate if this waste is any of the following:

☐ RCRA Reactive ☐ Radioactive
☐ Water Reactive ☐ Etiological
☐ Explosive ☐ Pesticide Manufacturing Waste
☐ Shock Sensitive ☐ Other _____
☐ Pyrophoric ☒ None of the above

H. COMPLETE ONLY FOR WASTES INTENDED FOR FUELS or INCINERATION

	LESS THAN	or	ACTUAL
Beryllium	☐ < 5000 ppm		_____ ppm
Potassium	☐ < 5000 ppm		_____ ppm
Sodium	☐ < 5000 ppm		_____ ppm
Total Bromine	☐ < 2 %		_____ %
Total Chlorine	☐ < 35 %		_____ %
Total Fluorine	☐ < 1 %		_____ %
Total Sulfur			_____ %

I. OPTIONAL — RECLAMATION, FUELS, OR INCINERATION PARAMETERS Provide if information is available.

Range

1. Heat Value (BTU/lb): _____ – _____ 2. Water: _____ %
3. Viscosity (cps): _____ @ ☐ _____ °F ☐ 100°F ☐ 150°F
4. Ash: _____ % 5. Settleable solids: _____ %
6. Vapor Pressure @ STP (mm/Hg): _____
7. Is this waste a pumpable liquid? ☐ Yes ☐ No
   Type of pump? _____
8. Can this waste be heated to improve flow? ☐ Yes ☐ No
9. Is this waste soluble in water? ☐ Yes ☐ No
10. Particle size: Will the solid portion of this waste pass through a 1/8 inch screen? ☐ Yes ☐ No

J. TRANSPORTATION INFORMATION

1. Is this a DOT Hazardous Material? ☒ Yes ☐ No 2. Anticipated Annual Volume/Units: 17 - 55 gal drums
3. Proper Shipping Name: Hazardous waste, solid, n.o.s.
4. Hazard Class: ORM-E 5. I.D. #: NA9189
6. Additional Description: (D018)
7. Method of Shipment: ☐ Bulk Liquid ☐ Bulk Solid ☒ Drum (Type/Size): 17H / 55 gal Other: _____
8. CERCLA Reportable Quantity (RQ): 10 9. RQ Units (lb/kg): lb (Benzene)
10. USEPA Hazardous Waste? ☒ Yes ☐ No 11. USEPA Hazardous Waste Number(s): D018
12. State Hazardous Waste? ☒ Yes ☐ No 13. State Hazardous Waste Number(s): D018

K. SPECIAL HANDLING INFORMATION Wear gloves, goggles and protective clothing.

☐ Additional Page(s) Attached

L. GENERATOR CERTIFICATION I hereby certify that all information submitted in this and all attached documents contains true and accurate descriptions of this waste material, and all relevant information regarding known or suspected hazards in the possession of the generator has been disclosed.

1. Richard G. Gariepy
   Signature
2. Environmental Engineer
   Title
3. Wacker Siltronic/Richard G. Gariepy
   Name (Type or Print)
4. 8-3-90
   Date

Side 2 of 2

Form CWM-6000 © 1987 Chemical Waste Management, Inc.

Chemical Waste Management, Inc.

GENERATOR'S CERTIFICATION OF REPRESENTATIVE SAMPLE

PLEASE PRINT IN INK OR TYPE (Elite, 12-pitch).

J82851

PDX J 82851
Waste Profile Sheet Code

CWM Location of Original: _____ (SHADED AREAS FOR CWM USE ONLY) **CWM Sales Rep. #:** 042

This completed form must be returned, with the representative sample, to:

_____

_____

_____

_____

INSTRUCTIONS FOR COMPLETING THIS FORM ARE FOUND ON THE OPPOSITE SIDE. In order to determine whether Chemical Waste Management, Inc. can accept the special waste described in the Generator's Waste Material Profile Sheet referenced above, you must obtain and supply us with a representative sample of the waste. We may analyze the sample to verify the information that you have provided to us. A representative sample is defined as a sample obtained using any of the applicable sampling methods specified in 40 CFR 261-Appendix I or an equivalent method. Collect a representative sample of your waste and complete the form below. Apply the peel off label and ship your sample along with this form to the address noted above. If you have any questions regarding obtaining a representative sample of your waste, please refer to the instructions for this form, or contact your Chemical Waste Management, Inc. sales representative.

A. SAMPLING METHOD (Indicate which method was employed)

If sampling requirement has been waived by Chemical Waste Management, Inc., do not complete this Generator's Certification of Representative Sample form.

1. ☐ I have obtained a representative sample of the waste material described in the Generator's Waste Material Profile Sheet referenced above according to the sampling methods specified in 40 CFR 261-Appendix I.
2. ☒ I have obtained a representative sample of the waste material described in the Generator's Waste Material Profile Sheet referenced above using a method equivalent to the sampling methods described in 40 CFR 261-Appendix I.

B. SAMPLE SOURCE (e.g., drum, lagoon, pit, pond, tank, vat)

Composit from drums

C. SAMPLE LABEL — COMPLETE LABEL BEFORE REMOVING

1. Waste Profile Sheet Code:		1. Waste Profile Sheet Code:
2. [redacted] Generator's Name:	Wacker Siltronic Corporation	2. Generator's Name:
3. [redacted] Name of Waste:	Drilling Mud	3. Name of Waste:
4. [redacted] Sample Hour/Date:	July 30, 1990/ 2:00 pm	4. Sample Hour/Date:
5. [redacted] Sampler's Signature:	Richard G. Gariepy	5. Sampler's Signature:

6. Print Sampler's Name: Richard G. Gariepy
7. Sampler's Title: Environmental Engineer
8. Sampler's Employer (if CWM, see D. below): Wacker Siltronic Corporation

D. WITNESS VERIFICATION (if required) In most circumstances you will be obtaining the sample. However, in those cases in which Chemical Waste Management, Inc. obtains the sample, one of your employees must be present to direct the particular source to be sampled, to witness the sampling, and to complete this Part D.

I was personally present during the sampling described. I directed the waste source to be sampled, and I verify the information noted above.

1. Witness' Signature: _____
2. Witness' Name: _____ 3. Witness' Title: _____
4. Witness' Employer: _____ 5. Date: _____

Form CWM-51 © 1987 Chemical Waste Management, Inc.

Chemical Waste Management, Inc.

ADDENDUM TO GENERATOR'S WASTE MATERIAL PROFILE SHEET FOR LAND DISPOSAL RESTRICTIONS

CWM Location of Original _____ (shaded area for CWM use only)

A. GENERATOR INFORMATION—INSTRUCTIONS FOR COMPLETING THIS FORM ARE FOUND ON THE OPPOSITE SIDE OF THIS PAGE.

1. Generator Name: Wacker Siltronic Corporation
2. USEPA ID Number: O R D 0 9 6 2 5 3 7 3 7
3. Waste Profile Sheet Code: J 8 2 8 5 1

B. WASTE STREAM INFORMATION

1. Is this a USEPA hazardous waste? ☒ Yes ☐ No
2. If yes, is this waste: ☒ Characteristic ☐ Listed ☐ Both

a. Is this waste a nonwastewater or a wastewater? Check ONE: ☒ Nonwastewater ☐ Wastewater

b. Identify ALL Characteristic and Listed USEPA hazardous waste numbers that apply (as defined by 40 CFR 261). For each waste number, identify the subcategory (as applicable, check none, or write in the description from 40 CFR 268.41, 268.42, and 268.43). The following waste numbers have subcategories: D001, D002, D003, D006, D008, D009, F001, F002, F003, F004, F005, F025, K006, K046, K061, K069, K071, K106, and U151.

USEPA HAZARDOUS WASTE NO.	SUBCATEGORY	
	NONE	DESCRIPTION
D018	X	

USEPA HAZARDOUS WASTE NO.	SUBCATEGORY	
	NONE	DESCRIPTION

To list additional USEPA waste number(s), and subcategories, use the supplemental sheet provided (CWM-6000-B). If an additional page (CWM-6000-B) is used, please check here: ☐

3. If the waste is identified as USEPA Waste No. D008, identify the total concentration of lead: _____
4. Is this waste a soil and/or debris? ☐ Yes, Soil; ☐ Yes, Debris; ☒ Yes, Both; ☐ No, Neither

C. GENERATOR CERTIFICATION—I hereby certify that all information submitted in this and all attached documents contains true and accurate descriptions of this waste material and all relevant information regarding known or suspected hazards in the posession of the generator has been disclosed.

1. Richard G. Gariepy
Signature

2. Environmental Engineer
Title

3. Wacker Siltronic/Richard G. Gariepy
Name (Type or Print)

4. 8-3-90
Date

Printed on recycled paper.

SCOEPA00054758

WACKER
Wacker Siltronic Corporation

April 28, 1997 ER18:ES

Heather Schijf
Department of Environmental Quality
Northwest Region
2020 SW Fourth Avenue, Suite 400
Portland, OR 97201-4987

Dear Ms Schijf,

On April 12, 1997 we experienced a spill of a caustic water solution to the ground. A map is attached (Attachment 1) showing the site and the approximate spill area.

The spill was caused by a flange that failed on the discharge side of a pump allowing the fluid to spray outside of the containment area. The spill was neutralized and the fluid cleaned up with a vacuum. The recovered fluid was treated on site in our waste water treatment plant. Also, the failed equipment was repaired and placed back into service.

Calculations estimate that there was between 36 and 55 pounds of caustic released during this incident. This number is well below the reportable quantity for caustic.

After cleanup of the recoverable fluids, soil samples were taken to determine if cleanup of the soil was necessary. Five samples were taken and are referenced by number on Attachment 1. The results of soil pH tests, in accordance with EPA SW-846 Method 9045, are shown below:

Sample 1:	7.4	
Sample 2:	9.2	
Sample 3:	10.4	
Sample 4:	11.3	
Sample 5:	7.6	(Control sample)

Based on these results, we chose to remove the soil surrounding the locations with the highest pH values. Attachment 2 shows the area of soil that was removed. This material will be sent to USA Waste Services Inc. for disposal under a special waste permit. The area was excavated to a depth of about 6 inches. Samples of the soil at that depth were the same as the control sample +/- 0.5 pH. These results indicated that we had removed the contaminated soil. The area was then back filled with new gravel.

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180
Phone (503) 243-2020
TDD (503) 241-7519

An ISO 9001 Certified Corporation

If you have any questions about this incident, please call me at 219-7132.

Very truly yours,

WACKER SILTRONIC CORPORATION

Eric Spiering
Environmental Engineer

cc: Tom McCue
John Pittman

Wacker Siltronic Corporation

Water Comparisons Parts Per Million

Parameter	Drinking Water Maximum Limit	Wacker's Discharge To Willamete River	Ultra-Pure Water Industrial Limit	Wacker's Ultra-Pure Water
Iron	0.3	0.05	0.0002	<0.0001
Chromium	0.05	0.0009	0.0005	<0.000007
Arsenic	0.05	0.03		
Barium	1	0.005		
Copper	1	0.01	0.0005	0.000005
Zinc	5	0.002	0.0005	<0.00002
Manganese	0.05	0.01	0.001	<0.00003
Cadmium	0.01	0.001		
pH	6 - 9	7.5		
Fluoride	2	1.9		
Benzene	0.005	<0.002		
Carbon Tetra-Chloride	0.005	<0.002		
Tri-Chloro Ethane	0.2	<0.002		
Tri-Chloro Ethylene	0.005	<0.002		

TO: Jerry Linden
Tom McCue

31 Jul 92

SUBJECT: Preliminary Comparison Between Wastewater Discharge And Drinking Water Standards

FROM: Facilities Chemist/Thomas J. Rothschild

1. References:
   A. Oregon Administrative Rules, Chapter 333, Public Water Systems, 1991

2. All of the analyses are not complete at this time. The Analytical Laboratory is having a little difficulty with the samples from the waste plant because soap is in these samples.

3. Preliminary Data:

TEST	DRINKING H2O STD	PARSHAL Flume	WAD 1st	CE
Hardness mg/L	250	1250	6.0	250
pH	6.0 - 9.0	8.9	8.7	8.1
Fluoride mg/L	4.0 Pri. 2.0 Sec.	17.4	0.49	2.8
Total solids mg/l	250	Analyses Incomplete		
Metals mg/l				
Arsenic	0.05	Analyses Incomplete. The Analytical Laboratory is having a a little trouble with the soap bubbles. I was told Iron looks the the highest at 0.1 mg/L		
Barium	1.0			
Cadmium	0.01			
Chromium	0.05			
Copper	1.0			
Iron	0.3			
Manganese	0.05			
Zinc	5.0			

SCOEPA00054762

Rad Savings 42 33

STR# 1086

WACKER SILTRONIC

ANALYTICAL SUPPORT LABORATORIES

DATE REPORTED: August 5, 1992
FROM: Nancy Lao, Sandra Sailors
TO: Tom Rothschild

SAMPLE DESCRIPTION:

Sample #	Sample ID	Description/ Time	Date
1086-1	WAD	1st Stage/ 14:15	7/28/92
1086-2	PF	Partial Flume/14:15	7/28/92
1086-3	CE	Combined Effluent/14:15	7/28/92

SAMPLE COLLECTED BY: Tom Rothschild

SAMPLE ANALYZED BY: Nancy Lao

Results:

The Results below are reported in ppb. (ng/ml)

Maximum Concentrations for Drinking Water

ID	Fe	Cr	As	Ba	Cu	Zn	Mn	Cd
1086-1	19.9	0.7	< 1	3.3	10.4	2.2	12.7	< 1
1086-2	130	5.8	93	5.2	24.6	4.3	46.6	< 1
1086-3	53	0.9	33.5	5.1	11.6	1.6	13.9	< 1
DL	5	1	1	1	7	3	1	1
	300	50	50	1000	1000	5000	50	10

Note: The samples were analyzed by Zeeman Graphite Furnace. Sample preparation for analysis was done by evaporation which produced suds upon dilution with DI water. The analytical results indicated high matrix interference. The results of this test give metal concentrations that can be measured by ICP.

WWTP Performance
(all values mg/l)

		BOD	TSS	FLUORIDE	TOTAL PO4	OWW FLUORIDE
	MON AVE	15	15	6	2.0	17.4
	DAILY MAX	30	30	12	5.0	32.0
			1987			
	2/6	6.2				
	2/13	4.2	6.5	7.8	0.13	11.0
	2/20	4.6	7.5	5.8	0.14	2.3
	2/27	3.6	11.5	5.5	0.06	16.0
AVE		4.7	8.5	6.3 &	0.11	9.8
	3/6	6.5	9.0	6.1	0.01	16.8
	3/13	3.2	5.5	5.9	0.04	4.3
	3/20	5.0	5.7	10.0		1.3
	3/27	5.3	10.5	5.7	0.30	1.1
AVE		5.0	7.7	6.9 &	0.12	5.9
	4/3	3.6	10.8	8.0	0.01	12.2
	4/10	2.8	15.5	4.6	1.10	9.0
	4/17	6.2	6.5	6.0	0.35	14.4
	4/24	1.2	12.8	5.0	0.02	4.6
AVE		3.5	11.4	5.9	0.37	10.1
	5/1	3.3	16.5	4.6	0.01	7.4
	5/8	2.3	10.3	4.6	0.70	5.7
	5/15	5.0	9.3	5.5	0.05	4.8
	5/22	3.0	18.2	4.4	1.40	9.8
	5/29	5.8	13.5	6.1	1.50	9.8
AVE		3.9	13.6	5.0	0.93	7.7
	6/5	5.7	13.2	5.0	0.04	8.8
	6/12	6.6	14.0	4.3	0.10	31.5
	6/19	5.4	26.0	6.3	0.34	21.5
	6/26	14.7	37.0 *	8.8	1.22	13.5
AVE		8.1	22.6 &	6.1 &	0.42	18.8
	7/3	3.4	30.5	5.4	0.48	10.2
	7/10	12.9	22.0	6.0	0.90	13.7
	7/17	5.2	21.0	10.2	0.15	10.6
	7/24	2.0	34.7 *	5.4	0.10	8.2
	7/31	4.1	49.7 *	5.7	1.00	1.0
AVE		5.5	31.6 &	6.5 &	0.53	8.7
	8/7	5.0	12.8	5.4	0.49	15.0
	8/14	3.8	8.8	4.5	1.05	0.2
	8/21	5.4	9.8	3.9	0.08	4.8
	8/28	5.0	8.5	5.0	0.11	4.1
AVE		4.8	10.0	4.7	0.43	6.0
	9/4	4.5	10.5	22.0 *	0.03	8.3
	9/11	3.7	5.0	3.8	10.80 *	4.3
	9/18	4.0	15.2	6.8	0.35	3.4
	9/25	7.3	4.8	7.4	2.80	12.0
AVE		4.9	8.9	10.0 &	3.75 &	7.0
	10/2	10.6	11.5	7.6	2.10	3.6
	10/9	4.7	9.0	6.9	0.80	4.4
	10/17	8.8	5.2	7.6	3.00	1.3
	10/23		6.8	7.6	3.00	3.2

SCOEPA00054764

WWTP Performance
(all values mg/l)

		BOD	TSS	FLUORIDE	TOTAL PO4	OWW FLUORIDE
	MON AVE	15	15	6	2.0	17.4
	DAILY MAX	30	30	12	5.0	32.0
	10/30	5.0	4.2	4.9	8.50 *	4.9
AVE		7.3	7.3	6.9 &	3.48 &	3.5
	11/6	4.6	3.0	4.6	2.05	3.1
	11/13	4.3	3.8	5.4	2.20	2.2
	11/20	4.6	9.0	4.5	1.40	4.6
	11/27	5.6	5.0	5.5	2.10	7.4
AVE		4.8	5.2	5.0	1.94	4.3
	12/4	5.4	8.0	3.8	1.20	9.2
	12/11	10.9	6.0	5.8	7.60 *	9.5
	12/18	5.4	11.8	5.2	2.50	2.5
	12/25	5.7	6.0	3.8	8.80 *	8.7
AVE		6.9	8.0	4.7	5.03 &	7.5
			1988			
	1/1/88	5.4	20.0	4.2	3.20	3.5
	1/8	5.3	22.5	11.8	0.80	7.0
	1/15	5.5	25.7	7.1	0.70	10.1
	1/22	6.9	19.8	11.2	2.20	1.4
	1/29	5.0	13.0	6.8	0.80	4.8
AVE		5.6	20.2 &	8.2 &	1.54	5.4
	2/5	2.8	6.0	5.1	0.40	3.4
	2/12	27.0	9.2	6.1	1.20	7.1
	2/19	3.8	3.8	5.8	1.60	4.7
	2/26	5.4	5.8	5.5	0.90	6.1
AVE		9.8	6.2	5.6	1.03	5.3
	3/4	6.1	5.5	6.2	1.00	4.8
	3/11	8.7	4.5	6.0	1.20	5.4
	3/18	4.7	4.8	7.6	1.50	7.2
	3/25	7.5	8.0	7.4	3.70	4.3
AVE		6.8	5.7	6.8 &	1.85	5.4
	4/1	5.5	6.2	11.2	0.40	7.7
	4/8	5.7	12.5	9.0	3.20	4.8
	4/15	4.3	9.0	4.2	2.40	8.7
	4/22	2.0	6.0	6.0	0.04	5.6
	4/29	3.3	4.5	6.7	0.50	8.9
AVE		4.2	7.6	7.4 &	1.31	7.1
	5/6	5.7	8.8	7.2	0.70	10.6
	5/13	7.0	8.2	4.6	0.60	10.7
	5/20	8.0	7.0	4.2	0.50	9.5
	5/27	10.4	5.5	5.3	0.50	9.4
AVE		7.8	7.4	5.3	0.58	10.1
	6/3	6.7	7.2	4.2	0.50	5.8
	6/10	6.5	8.5	4.5	0.30	8.6
	6/17	6.0	8.0	4.4	0.20	4.6
	6/24	4.2	8.0	4.6		4.0
AVE		5.9	7.9	4.4	0.33	5.8
	7/1					

SCOEPA00054765

WWTP Performance
(all values mg/l)

		BOD	TSS	FLUORIDE	TOTAL PO4	OWW FLUORIDE
	MON AVE	15	15	6	2.0	17.4
	DAILY MAX	30	30	12	5.0	32.0
	7/8	5.4	8.5	3.9	3.00	1.6
	7/15	4.4	6.0	5.1	11.90 *	8.9
	7/22	7.5	8.3	4.4	0.70	4.2
	7/29	6.0	7.5	3.7	0.30	18.8
AVE		5.8	7.6	4.3	3.98 &	8.4
	8/5	6.9	5.8	4.2	0.20	4.8
	8/12	5.0	4.0	4.9	0.30	9.9
	8/19	4.5	5.2	5.2	0.20	12.6
	8/26	7.7	2.7	4.8	0.04	39.0 *
AVE		6.0	4.4	4.8	0.19	16.6
	9/2	5.0	3.3	5.6	0.02	8.0
	9/9	5.1	6.8	5.6	1.30	34.0 *
	9/16	1.3	9.0	4.8	0.90	12.1
	9/23	9.7	6.3	4.1	0.90	9.7
	9/30	5.3	5.5	6.4	0.90	8.0
AVE		5.3	6.2	5.3	0.80	14.4
	10/7	5.9	8.0	4.6	0.20	2.1
	10/14	6.1	7.2	6.6	3.60	6.4
	10/21	5.6	5.8	5.2	0.30	11.1
	10/28	8.1	6.2	4.4	1.30	4.0
AVE		6.4	6.8	5.2	1.35	5.9
	11/4	4.7	9.8	5.5	1.80	21.0
	11/11	7.1	6.5	3.3	1.50	16.0
	11/18	5.6	14.5	5.1	0.30	4.5
	11/25	5.4	9.0	4.6	1.60	12.3
AVE		5.7	10.0	4.6	1.30	13.5
	12/2	4.8	10.5	5.2	0.20	4.6
	12/9	12.2	9.0	5.4	2.10	4.4
	12/16	4.3	9.5	4.9	0.40	4.5
	12/23	9.4	9.2	4.5	0.20	9.0
	12/30	3.6	10.2	5.7	0.30	9.6
AVE		6.9	9.7	5.1	0.64	6.4
			1989			
	1/6/89	6.3	8.2	4.9	1.50	6.3
	1/13	4.2	8.5	5.8	0.20	6.9
	1/20	6.9	10.5	5.2	0.20	5.6
	1/27	3.9	8.5	4.0	0.20	3.3
AVE		5.3	8.9	5.0	0.53	5.5
	2/3	5.1	14.8	6.4	0.30	1.0
	2/10	4.2	4.8	4.4	0.50	10.1
	2/17	5.1	6.0	3.9	0.06	8.3
	2/24	2.5	8.8	7.2	0.30	3.8
AVE		4.2	8.6	5.5	0.29	5.8
	3/3	4.4	8.5	4.0	0.40	12.5
	3/10	4.9	8.8	13.0 *	0.24	7.4
	3/17	10.9	5.5	8.1	0.04	17.4

SCOEPA00054766

WWTP Performance
(all values mg/l)

		BOD	TSS	FLUORIDE	TOTAL PO4	OWW FLUORIDE
	MON AVE	15	15	6	2.0	17.4
	DAILY MAX	30	30	12	5.0	32.0
	3/24	3.7	16.5	6.1	0.10	8.8
	3/31	12.7	14.2	8.6	0.34	15.8
AVE		7.3	10.7	8.0 &	0.22	12.4
	4/7	7.9	8.8	6.0	0.20	4.6
	4/14		12.2	8.8	0.02	7.1
	4/21	5.4	21.0	4.1	0.05	8.0
	4/28	5.9	16.0	7.7	0.01	4.8
AVE		6.4	14.5	6.6 &	0.07	6.1
	5/5	4.5	14.0	8.8	0.01	7.7
	5/12		6.7	11.4		9.9
	5/19	2.5	28.0	6.3	0.01	8.9
	5/26	7.6	7.5	8.1	0.01	18.0
AVE		4.9	14.0	8.6 &	0.01	9.9
	6/2	3.0	6.2	14.0 *	0.01	13.0
	6/9	3.0	5.2	11.0	0.01	6.6
	6/16	2.5	13.2	7.6	0.005	15.0
	6/23	5.5	5.5	8.1	0.04	4.4
	6/30	1.6	38.2 *	3.8	0.02	4.7
AVE		3.1	13.7	8.9 &	0.02	8.7
	7/7	2.1	20.8	8.2	0.02	6.4
	7/14	1.8	19.2	5.6	0.02	3.6
	7/21	4.2	16.0	15.0 *	0.03	6.1
	7/28	4.0	24.2	5.6	0.03	2.9
AVE		3.0	20.1 &	8.6 &	0.02	4.8
	8/4	3.5	9.8	5.7	0.20	5.0
	8/11	2.3	12.0	10.2	0.03	6.6
	8/18	5.3	13.5	9.2	0.03	6.7
	8/25	4.0	22.2	5.2	0.03	7.1
AVE		3.8	14.4	7.6 &	0.07	6.4
	9/1	7.8	10.8	7.8	0.03	5.5
	9/8	12.8	22.5	3.6	0.03	5.2
	9/15	3.9	15.2	5.0	0.02	6.5
	9/22	2.9	12.6	5.2	0.05	4.2
	9/29	4.6	37.2 *	3.3	0.03	2.6
AVE		6.4	19.7 &	5.0	0.03	4.8
	10/6	2.7	39.4 *	3.4	0.04	2.8
	10/13	3.6	26.5	3.4	0.03	2.0
	10/20	4.8	21.8	3.0	0.03	2.9
	10/27	3.5	12.0	3.6	0.04	3.6
AVE		3.7	24.9 &	3.4	0.04	2.8
	11/3	4.6	15.2	3.3	0.03	5.9
	11/10	5.3	10.2	2.9	0.02	2.1
	11/17	6.0	28.5	3.4	0.04	4.2
	11/24	3.6	12.0	4.0	0.06	3.8
AVE		4.9	16.5 &	3.4	0.04	4.0
	12/1	6.2	15.0	3.1	0.03	18.0
	12/8	18.0	18.8	4.1	0.03	2.4
	12/15	10.9	6.8	8.1	0.01	4.0

SCOEPA00054767

WWTP Performance
(all values mg/l)

		BOD	TSS	FLUORIDE	TOTAL PO4	OWW FLUORIDE
	MON AVE	15	15	6	2.0	17.4
	DAILY MAX	30	30	12	5.0	32.0
	12/22	5.8	31.5 *	2.9		2.0
	12/29	5.1	7.8	4.4	0.01	6.7
AVE		9.2	16.0 &	4.5	0.02	6.6
			1990			
	1/5	5.6	12.2	5.3	0.01	2.2
	1/12	4.8	30.8 *	4.0	0.01	2.5
	1/19	6.8	18.5	5.7	0.01	4.3
	1/26	3.8	38.0 *	4.0	0.01	4.4
AVE		5.3	24.9 &	4.8	0.01	3.4
	2/2	6.3	28.0	3.8	0.01	3.0
	2/9		37.5 *	3.6	0.01	0.6
	2/16					
	2/23					
AVE		6.3	32.8 &	3.7	0.01	1.8

NOTE: Blanks indicate that a sample was not tested for that day.
* - Out of compliance for the daily max
& - Out of compliance for the monthly average

wwtp/wwtpperf.wk1

SCOEPA00054768

TPST SOIL RECYCLERS OF OREGON

9333 N. Harborgate Street Portland, OR 97203

OR023021

WEIGHMASTER CERTIFICATE – LICENSE #68636

THIS IS TO CERTIFY that the following described soil commodity was weighed, measured, or counted by a weighmaster, whose signature is on this certificate, as prescribed by the Division of Measurement Standards of the Oregon Department of Agriculture.

Manifest # A09 -05782 -045 06/25/01

Generator Site Information	Facility Information
WACKER SILTRONIC CORP/CAKE PRESS	TPST SOIL RECYCLERS OF OREGON
7200 NW FRONT AVENUE	9333 N HARBORGATE STREET
WWTP FILTER CAKE PRESS	
PORTLAND, OR 97210 USA	PORTLAND, OR 97203 USA

				LBS	TONS	
0	IN --->	09:29:16am	Gross Wt:	49,820	24.91	Manual Wt
0	OUT -->	09:32:15am	Tare Wt:	30,680	15.34	Manual Wt
			NET WT:	19,140	09.57	

TRANSPORTER/DRIVER: ANOBLE/MASON

Weighmaster

Manifest

TPS Technologies Soil Recycling

Non-Hazardous Soils

↓ Manifest # ↓

Date of Shipment:	Responsible for Payment:	Transporter Truck #:	Facility #:	Given by TPS:	Load #
6/25/01	Generator	Anoble	A09	05782	045

Generator and/or Consultant

Generator's Name and Billing Address:	Generator's Phone #:	Generator's US EPA ID No.
WACKER SILTRONIC CORPORATION P.O. BOX 83180 M/S 30 PORTLAND, OR 97283-0180 USA	(503) 219-4469 Person to Contact: PETRA HOY FAX #: (503) 219-7599	Customer Account Number with TPS: 10025
Consultant's Name and Billing Address:	Consultant's Phone #: Person to Contact: FAX #:	Customer Account Number with TPS:
Generation Site (Transport from): *(name & address)* WACKER SILTRONIC CORP/CAKE PRESS 7200 NW FRONT AVENUE WWTP FILTER CAKE PRESS PORTLAND, OR 97210 USA	Site Phone #: (503) 219-4469 Person to Contact: PETRA HOY FAX #: (503) 219-7599	BTEX Levels TPH Levels AVG. Levels
Designated Facility (Transport to): *(name & address)* TPST SOIL RECYCLERS OF OREGON 9333 N HARBORGATE STREET PORTLAND, OR 97203 USA	Facility Phone #: 503-735-9525 Person to Contact: SHARON QUAST FAX #: 503-240-1712	Facility Permit Numbers
Transporter Name and Mailing Address:	Transporter's Phone #: Person to Contact: FAX #:	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 ❑			49820	30680	19140
Sand ❑ Organic ❑ Clay ❑ Other ❑	0 - 10% ❑ 10 - 20% ❑ 20% - over ❑	Gas ❑ Diesel ❑ Other ❑				9.57	

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:	Signature and date:	Month	Day	Year
Daniel J. Mason	Daniel J. Mason			

Discrepancies:

Recycling Facility

Recycling Facility certifies the receipt of the soil covered by this manifest except as noted above:

Print or Type Name:	Signature and date:
SHARON QUAST / JOHN BARBAY	Sharon Quast

Please print or type.

TRANSPORTER'S COPY

SCOEPA00054770

Manifest

TPS Technologies Soil Recycling
Non-Hazardous Soils

↓ Manifest # ↓

Date of Shipment:	Responsible for Payment:	Transporter Truck #:	Facility #:	Given by TPS:	Load #
6/25/01	Generator	Anoble	A09	05782	045

Generator and/or Consultant

Generator's Name and Billing Address: WACKER SILTRONIC CORPORATION P.O. BOX 83180 M/S 30 PORTLAND, OR 97283-0180 USA	Generator's Phone #: (503) 219-4469 Person to Contact: PETRA HOY FAX #: (503) 219-7599	Generator's US EPA ID No. Customer Account Number with TPS: 1002525
Consultant's Name and Billing Address:	Consultant's Phone #: Person to Contact: FAX #:	Customer Account Number with TPS:
Generation Site (Transport from): *(name & address)* WACKER SILTRONIC CORP/CAKE PRESS 7200 NW FRONT AVENUE WWTP FILTER CAKE PRESS PORTLAND, OR 97210 USA	Site Phone #: (503) 219-4469 Person to Contact: PETRA HOY FAX #: (503) 219-7599	BTEX Levels TPH Levels AVG. Levels
Designated Facility (Transport to): *(name & address)* TPST SOIL RECYCLERS OF OREGON 9333 N HARBORGATE STREET PORTLAND, OR 97203 USA	Facility Phone #: 503-735-9525 Person to Contact: SHARON QUAST FAX #: 503-240-1712	Facility Permit Numbers
Transporter Name and Mailing Address:	Transporter's Phone #: Person to Contact: FAX #:	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 ❑			49870	30050	19140
Sand ❑ Organic ❑ Clay ❑ Other ❑	0 - 10% ❑ 10 - 20% ❑ 20% - over ❑	Gas ❑ Diesel ❑ Other ❑				9.57	

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: Daniel J Mason | Signature and date: Daniel J. Mason | Month | Day | Year

Recycling Facility

Discrepancies:

Recycling Facility certifies the receipt of the soil covered by this manifest except as noted above:

Print or Type Name: SHARON QUAST / JOHN BARBAY | Signature and date: Sharon Quast

Please print or type.

GENERATOR/consultant's COPY

SCOEPA00054771

9/20/05

LAND DISPOSAL NOTIFICATION AND CERTIFICATION FORM (PHASE IV)

ARL-C14493

Generator Name: SILTRONIC CORP Manifest Doc. No.: _____

Profile Number: C14493 DEBRIS State Manifest No: _____

1. Is this waste a non-wastewater or wastewater? (See 40 CFR 268.2) Check ONE: Nonwastewater X Wastewater
2. Identify ALL USEPA hazardous waste codes that apply to this waste shipment, as defined by 40 CFR 261. For each waste code, identify the corresponding subcategory, or check NONE if the waste code has no subcategory. Spent solvent treatment standards are listed on the following page. If F039, multi-source leachate applies, those constituents must be listed and attached by the generator. If D001-D043 requires treatment of the characteristic and meet 268.48 standards, then the underlying hazardous constituent(s) present in the waste must be listed and attached.

REF #	3. US EPA HAZARDOUS WASTE CODE(S)	4. SUBCATEGORY ENTER THE SUBCATEGORY DESCRIPTION. IF NOT APPLICABLE, SIMPLY CHECK NONE		5. HOW MUST THE WASTE BE MANAGED? ENTER LETTER FROM BELOW
		DESCRIPTION	NONE	
1	D007		X	A
2				
3				
4				

To identify F039 or D001-D043, underlying hazardous constituent(s), use the "F039/Underlying Hazardous Constituent Form" provided (CWM-2004) and check here:
If no UHCs are present in the waste upon its initial generation check here: X
To list additional USEPA waste code(s) and subcategorie(s), use the supplemental sheet provided (CWM-2005-D) and check here:
Disposal facility monitors for all UHCs check here
If waste will be managed in a system regulated under the CWA, or a Class 1 injection well under the SDWA check here

HOW MUST THE WASTE BE MANAGED? In column 5 above, enter the letter (A, B1, B3, B4, B5, B6, C, D or E) below that describes how the waste must be managed to comply with the land disposal regulations (40 CFR 268.7). Please understand that if you enter the letter B1, B3, B4, B5, B6, or D you are making the appropriate certification as provided below. (States authorized by EPA to manage the LDR program may have regulatory citations different from the 40 CFR citations listed below. Where these regulatory citations differ, your certification will be deemed to refer to those state citations instead of the 40 CFR citations.

A. RESTRICTED WASTE REQUIRES TREATMENT
This waste must be treated to the applicable treatment standards set forth in 40 CFR 268.40.
X For Hazardous Debris: "This hazardous debris is subject to the alternative treatment standards of 40 CFR 268.45."

B.1 RESTRICTED WASTE TREATED TO PERFORMANCE STANDARDS
"I certify under penalty of law that I have personally examined and am familiar with the treatment technology and operation of the treatment process used to support this certification. Based on my inquiry of those individuals immediately responsible for obtaining this information, I believe that the treatment process has been operated and maintained properly so as to comply with the treatment standards specified in 40 CFR 268.40 without impermissible dilution of the prohibited waste. I am aware there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment."

B.3 GOOD FAITH ANALYTICAL CERTIFICATION FOR INCINERATED ORGANICS
"I certify under penalty of law that I have personally examined and am familiar with the treatment technology and operation of the treatment process used to support this certification. Based on my inquiry of those individuals immediately responsible for obtaining this information, I believe that the nonwastewater organic constituents have been treated by combustion in units as specified in 268.42 Table 1. I have been unable to detect the nonwastewater organic constituents despite having used best good faith efforts to analyze for such constituents. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment."

B.4 DECHARACTERIZED WASTE REQUIRES TREATMENT FOR UNDERLYING HAZARDOUS CONSTITUENTS
"I certify under penalty of law that the waste has been treated in accordance with the requirements of 40 CFR 268.40 or 268.49, to remove the hazardous characteristic. This decharacterized waste contains underlying hazardous constituents that require further treatment to meet treatment standards. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment."

B.6 RESTRICTED DEBRIS TREATED TO ALTERNATE PERFORMANCE STANDARDS
"I certify under penalty of law that I have personally examined and am familiar with the treatment technology and operation of the treatment process used to support this certification and believe that it has been maintained and operated properly so as to comply with treatment standards specified in 40 CFR 268.45 without impermissible dilution of the prohibited wastes. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment."

C. RESTRICTED WASTE SUBJECT TO A VARIANCE
This waste is subject to a national capacity variance, a treatability variance, or a case-by-case extension. Enter the effective date of prohibition in column 5 above.
For Hazardous Debris: "This hazardous debris is subject to the alternative treatment standards of 40 CFR Part 268.45."

D. RESTRICTED WASTE CAN BE LAND DISPOSED WITHOUT FURTHER TREATMENT
"I certify under penalty of law I have personally examined and am familiar with the waste through analysis and testing or through knowledge of the waste to support this certification that the waste complies with the treatment standards specified in 40 CFR Part 268 Subpart D. I believe that the information I submitted is true, accurate and complete. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment."

E. WASTE IS NOT CURRENTLY SUBJECT TO PART 268 RESTRICTIONS
This waste is a newly identified waste that is not currently subject to any 40 CFR Part 268 restrictions.

I hereby certify that all information submitted in this and all associated documents is complete and accurate, to the best of my knowledge and information.

Signature [signature] for Siltronic Env. Engr. Date 9/22/05

1990 Chemical Waste Management, Inc. - 08/99- Form CWM-2005-C

LAND DISPOSAL NOTIFICATION AND CERTIFICATION FORM (PHASE IV) -REVERSE SIDE ARL-C14493

SOLVENT

If the waste identified on the first page of this form is described by any of the following USEPA hazardous waste codes: F001, F002, F003, F004, F005, and all solvent constituents will not be monitored by the treater, then each constituent MUST be identified below by checking the appropriate box, and this page must accompany the shipment, along with the previous page of this form. If the waste code F039 describes this waste, then the corresponding list of constituents must be attached. If D001-D043 require treatment to 268.48 standards, then the underlying hazardous constituent(s) must also be attached.

SOLVENT WASTE TREATMENT STANDARDS[2]

F001 through F005 spent solvent constituents and their associated USEPA hazardous waste code(s).	Treatment Standard[1]		F001 through F005 spent solvent constituents and their associated USEPA hazardous waste code(s).	Treatment Standard[1]	
	Wastewaters	Nonwastewaters		Wastewaters	Nonwastewaters

[1] All spent solvent treatment standards are measured through a total waste analysis (TCA), unless otherwise noted. Wastewater units are mg/l, nonwastewater are mg/kg.

[2] For contaminated soils using the alternative soil treatment standards, the treatment standards for F001-F005 spent solvents must be a 90% reduction of constituents or less than 10 x the standards listed.

SUBCATEGORY REFERENCE

D001:
A. Ignitable characteristic wastes, except for the 40 CFR 261.21(a)(1) High TOC subcategory.
B. High TOC Ignitable characteristic liquids subcategory based on 40 CFR 261.21(a)(1) - Greater than or equal to 10% total organic carbon.

PO BOX 94291
SEATTLE, WA 98124
(206) 343-1247
(206) 343-7445 FAX
EPA ID#WAH000026371

BILL OF LADING

№ 70114

☐ ALASKA
EPA ID # AKR 000 201 897

☐ OREGON
EPA ID # ORQ 000 026 789

☐ OTHER
EPA ID # _____

GENERATOR OF WASTE:

Name: [illegible]
Address: [illegible]
City/Zip: [illegible]
EPA I.D. # _____
Contact: [illegible]
Phone: [illegible]

BILLING INFORMATION:

Name: [illegible]
Address: [illegible]
City/Zip: [illegible]
EPA I.D. # _____
Contact: [illegible]
Phone: [illegible]

I hereby declare the material detailed below was properly identified and prepared for transportation in accordance with all applicable, rules, and regulations of the federal, state and local governments in whose jurisdiction the materials originated, passed through, or are recycled in.

Generator Signature	Print Name	Month	Day	Year
[illegible]	[illegible]	12	25	08

I hereby declare that the described waste was tendered to me for transport in accordance with all applicable rules and regulations.

Transporter #1 Signature	Company	Month	Day	Year
[illegible]	ECOLIGHTS	12	25	08

MATERIAL	ESTIMATED COUNT	VERIFIED COUNT	INIT.	PRICE	AMOUNT	MATERIAL	ESTIMATED COUNT	VERIFIED COUNT	INIT.	PRICE	AMOUNT
8 FOOT [illegible]						FIXTURES (BY SIZE/TYPE)					
4 FOOT [illegible]											
2 FOOT [illegible]											
OTHER						MERCURY DEVICES					
						THERMOSTATS					
SHATTERSHIELDS											
INCANDESCENTS						BATTERIES (MIXED)					
COMPACTS						BATTERIES (BY TYPE)					
CIRCULAR/U-SHAPED											
HID											
ARC/DLP LAMP											
						SUPPLIES					
CRUSHED LAMPS (LBS)						TRANSPORTATION FEE					
ACCIDENTALLY BROKEN LAMPS (LBS)						HANDLING FEE					
NON-PCB BALLASTS						OFF-SPEC LABOR					
PCB BALLASTS [NOT AK]											

☐ CASH ☐ ON ACCT. ☐ CREDIT CARD TYPE: EXP. __/__/__ TOTAL _____

_____

I certify material was received and consolidated for shipment to EcoLights Northwest for recycling on the date indicated. Date Received

Signature of Authorized Consolidator Total Reclaim, Inc.	Print Name	Month	Day	Year

I hereby declare that the described waste was tendered to me for transport in accordance with all applicable rules and regulations.

Transporter #2 Signature	Company	Month	Day	Year

* Estimation from driver - 150# total

CERTIFICATE OF RECYCLING

I hereby certify, under penalty of perjury, that the above described shipment of materials were recycled by EcoLights Northwest in accordance with all applicable federal, state, and local regulations on the date indicated. Date Processed

Signature of Authorized Agent Ecolights Northwest, LLC	Print Name	Month	Day	Year

WHITE & YELLOW – BILLING PINK - CONSOLIDATOR GOLDENROD - CUSTOMER

150#

TPST SOIL RECYCLERS OF OREGON

OR 026289

9333 N. Harborgate Street Portland, OR 97203

WEIGHMASTER CERTIFICATE – LICENSE #68636

THIS IS TO CERTIFY that the following described soil commodity was weighed, measured, or counted by a weighmaster, whose signature is on this certificate, as prescribed by the Division of Measurement Standards of the Oregon Department of Agriculture.

Manifest # A09 -06807 -041 06/07/02

Generator Site Information

WACKER SILTRONICS CORPORATION
7200 NW FRONT AVENUE
WWTP FILTER CAKE PRESS
PORTLAND , OR 97210 USA

Facility Information

TPST SOIL RECYCLERS OF OREGON
9333 N HARBORGATE STREET
PORTLAND, OR 97203 USA

				LBS	TONS	
0	IN --->	09:08:17am	Gross Wt:	51,520	25.76	Manual Wt
0	OUT -->	09:18:09am	Tare Wt:	28,440	14.22	Manual Wt
			NET WT:	23,080	11.54	

TRANSPORTER/DRIVER: MRP/DUNCAN

Weighmaster _____

SCOEPA00054776

Manifest

TPS Technologies Soil Recycling
Non-Hazardous Soils

↓ Manifest # ↓

Date of Shipment:	Responsible for Payment:	Transporter Truck #:	Facility #:	Given by TPS:	Load #
6/7/02	Generator	MRP #10	409	06807	041

Generator and/or Consultant

Generator's Name and Billing Address: WACKER SILTRONIC CORPORATION P.O. BOX 83180 M/S 30 PORTLAND, OR 97283-0180 USA	Generator's Phone #: (503) 219-4469 Person to Contact: PETRA HOY FAX #: (503) 219-7599	Generator's US EPA ID No. Customer Account Number with TPS: 1002525
Consultant's Name and Billing Address:	Consultant's Phone #: Person to Contact: FAX #:	Customer Account Number with TPS:
Generation Site (Transport from): *(name & address)* WACKER SILTRONICS CORPORATION 7200 NW FRONT AVENUE WWTP FILTER CAKE PRESS PORTLAND , OR 97210 USA	Site Phone #: (503) 219-4469 Person to Contact: MYRON BURR FAX #: (503) 219-7599	BTEX Levels TPH Levels AVG. Levels
Designated Facility (Transport to): *(name & address)* TPST SOIL RECYCLERS OF OREGON 9333 N HARBORGATE STREET PORTLAND, OR 97203 USA	Facility Phone #: 503-735-9525 Person to Contact: SHARON QUAST FAX #: 503-240-1712	Facility Permit Numbers
Transporter Name and Mailing Address:	Transporter's Phone #: Person to Contact: FAX #:	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 ❑			51520	28440	
Sand ❑ Organic ❑ Clay ❑ Other ❑	0 - 10% ❑ 10 - 20% ❑ 20% - over ❑	Gas ❑ Diesel ❑ Other ❑			23080		11.54

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
SIGNATURE ON FILE				

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:	Signature and date:	Month	Day	Year
Mike Duncan		6	7	02

Recycling Facility

Discrepancies:

Recycling Facility certifies the receipt of the soil covered by this manifest except as noted above:

Print or Type Name:	Signature and date:
SHARON QUAST / JULI BENT	6/7/02

Please print or type.

TRANSPORTER'S COPY

SCOEPA00054777

Manifest

TPS Technologies Soil Recycling
Non-Hazardous Soils

↓ Manifest # ↓

Date of Shipment:	Responsible for Payment:	Transporter Truck #:	Facility #:	Given by TPS:	Load #
6/7/02	Generator	MKP #10	409	06807	041

Generator and/or Consultant

Generator's Name and Billing Address: WACKER SILTRONIC CORPORATION P.O. BOX 83180 M/S 30 PORTLAND, OR 97283-0180 USA	Generator's Phone #: (503) 219-4469 Person to Contact: PETRA HOY FAX #: (503) 219-7599	Generator's US EPA ID No. Customer Account Number with TPS: 1002525
Consultant's Name and Billing Address:	Consultant's Phone #: Person to Contact: FAX #:	 Customer Account Number with TPS:
Generation Site (Transport from): *(name & address)* WACKER SILTRONICS CORPORATION 7200 NW FRONT AVENUE WWTP FILTER CAKE PRESS PORTLAND , OR 97210 USA	Site Phone #: (503) 219-4469 Person to Contact: MYRON BURR FAX #: (503) 219-7599	BTEX Levels TPH Levels AVG. Levels
Designated Facility (Transport to): *(name & address)* TPST SOIL RECYCLERS OF OREGON 9333 N HARBORGATE STREET PORTLAND, OR 97203 USA	Facility Phone #: 503-735-9525 Person to Contact: SHARON QUAST FAX #: 503-240-1712	Facility Permit Numbers
Transporter Name and Mailing Address:	Transporter's Phone #: Person to Contact: FAX #:	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 ☐			51520	28440	
Sand ☐ Organic ☐ Clay ☐ Other ☐	0 - 10% ☐ 10 - 20% ☐ 20% - over ☐	Gas ☐ Diesel ☐ Other ☐			23080		11.54

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 ON FILE

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: Mike Duncan

Signature and date: Month 6 Day 7 Year 2

Recycling Facility

Discrepancies:

Recycling Facility certifies the receipt of the soil covered by this manifest except as noted above:

Print or Type Name: SHARON QUAST / JULI BENT

Signature and date: 6/7/02

Please print or type.

GENERATOR/consultant's COPY

SCOEPA00054778

TPST SOIL RECYCLERS OF OREGON

OR 27939

9333 N. Harborgate Street Portland, OR 97203

WEIGHMASTER CERTIFICATE – LICENSE #68636

THIS IS TO CERTIFY that the following described soil commodity was weighed, measured, or counted by a weighmaster, whose signature is on this certificate, as prescribed by the Division of Measurement Standards of the Oregon Department of Agriculture.

Manifest # A09 -06807 -084 11/06/02

Generator Site Information	Facility Information
WACKER SILTRONICS CORPORATION	TPST SOIL RECYCLERS OF OREGON
7200 NW FRONT AVENUE	9333 N HARBORGATE STREET
WWTP FILTER CAKE PRESS	
PORTLAND , OR 97210 USA	PORTLAND, OR 97203 USA

				LBS	TONS	
0	IN --->	07:47:46am	Gross Wt:	46,060	23.03	Manual Wt
0	OUT -->	07:51:37am	Tare Wt:	28,720	14.36	Manual Wt
			NET WT:	17,340	08.67	

TRANSPORTER/DRIVER: METRO/AISPORO

Manifest

TPS Technologies Soil Recycling
Non-Hazardous Soils

↓ Manifest # ↓

Date of Shipment:	Responsible for Payment:	Transporter Truck #:	Facility #:	Given by TPS:	Load #
11/8/02	Generator	[illegible] Transport	109	06807	084

Generator and/or Consultant

Generator's Name and Billing Address:	Generator's Phone #:	Generator's US EPA ID No.
WACKER SILTRONIC CORPORATION P.O. BOX 83180 M/S 30 PORTLAND, OR 97283-0180 USA	(503) 219-4469	
	Person to Contact: MYRON BURR	
	FAX #: (503) 219-7599	Customer Account Number with TPS: 1002525
Consultant's Name and Billing Address:	Consultant's Phone #:	
	Person to Contact:	
	FAX #:	Customer Account Number with TPS:
Generation Site (Transport from): *(name & address)* WACKER SILTRONICS CORPORATION 7200 NW FRONT AVENUE WWTP FILTER CAKE PRESS PORTLAND , OR 97210 USA	Site Phone #: (503) 219-4469	BTEX Levels
	Person to Contact: MYRON BURR	TPH Levels
	FAX #: (503) 219-7599	AVG. Levels
Designated Facility (Transport to): *(name & address)* TPST SOIL RECYCLERS OF OREGON 9333 N HARBORGATE STREET PORTLAND, OR 97203 USA	Facility Phone #: 503-735-9525	Facility Permit Numbers
	Person to Contact: SHARON QUAST	
	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 ❑			19400	18720	
Sand ❑ Organic ❑ Clay ❑ Other ❑	0 - 10% ❑ 10 - 20% ❑ 20% - over ❑	Gas ❑ Diesel ❑ Other ❑			17340	18607	

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
SIGNATURE ON FILE				

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:	Signature and date:	Month	Day	Year
[illegible]	[illegible]	11	8	02

Recycling Facility

Discrepancies: [illegible]

Recycling Facility certifies the receipt of the soil covered by this manifest except as noted above:

Print or Type Name:	Signature and date:
SHARON QUAST / JULI BENT	[illegible]

Please print or type.

TRANSPORTER'S COPY

SCOEPA00054780

Manifest

TPS Technologies Soil Recycling
Non-Hazardous Soils

↓ Manifest # ↓

Date of Shipment:	Responsible for Payment:	Transporter Truck #:	Facility #:	Given by TPS:	Load #
11/8/02	Generator	[illegible]	A09	06807	084

Generator and/or Consultant

Generator's Name and Billing Address: WACKER SILTRONIC CORPORATION P.O. BOX 83180 M/S 30 PORTLAND, OR 97283-0180 USA	Generator's Phone #: (503) 219-4469 Person to Contact: MYRON BURR FAX #: (503) 219-7599	Generator's US EPA ID No. Customer Account Number with TPS: 1002525
Consultant's Name and Billing Address:	Consultant's Phone #: Person to Contact: FAX #:	Customer Account Number with TPS:
Generation Site (Transport from): *(name & address)* WACKER SILTRONICS CORPORATION 7200 NW FRONT AVENUE WWTP FILTER CAKE PRESS PORTLAND , OR 97210 USA	Site Phone #: (503) 219-4469 Person to Contact: MYRON BURR FAX #: (503) 219-7599	BTEX Levels TPH Levels AVG. Levels
Designated Facility (Transport to): *(name & address)* TPST SOIL RECYCLERS OF OREGON 9333 N HARBORGATE STREET PORTLAND, OR 97203 USA	Facility Phone #: 503-735-9525 Person to Contact: SHARON QUAST FAX #: 503-240-1712	Facility Permit Numbers
Transporter Name and Mailing Address:	Transporter's Phone #: Person to Contact: FAX #:	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 ❑			45920	28720	
Sand ❑ Organic ❑ Clay ❑ Other ❑	0 - 10% ❑ 10 - 20% ❑ 20% - over ❑	Gas ❑ Diesel ❑ Other ❑			17340	8.67	

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
SIGNATURE ON FILE				

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:	Signature and date:	Month	Day	Year
Agapito Aispuro	Agapito Aispuro	11	8	02

Recycling Facility

Discrepancies:

Recycling Facility certifies the receipt of the soil covered by this manifest except as noted above:

Print or Type Name:	Signature and date:
SHARON QUAST / JULI BENT	[signature]

Please print or type.

GENERATOR/consultant's COPY

SCOEPA00054781

0146689
SCOEPA00054782

Discharge to Willamette River

Date	Yearly totals	Nitrates lbs/day	BOD lbs/day	TSS lbs/day	Fluoride lbs/day	Phosphate lbs/day (CE+MV3)	Hydrogen peroxide lbs/day	Ammonia lbs/day	Chromium VI lbs/day	Total Chromium lbs/day	COD lbs/day	Yearly totals	CE Flow 10E6 gal/day	MV3 Flow 10E6 gal/day	CE + MV3 10E6 gal/day
1999															
1/7/1999		4291.71	27.92	10.09	31.62	6.10	235.44	11.81	0.05	0.01	104.27		0.806	0.708	1.514
1/14/1999		3114.03	37.30	33.62	29.02	1.77	106.16	9.26	0.01	0.01	104.04		0.848	0.480	1.328
1/21/1999		2749.75	20.77	22.83	19.28	1.91	72.11	10.82	0.03	0.01	56.73		0.576	0.871	1.447
1/28/1999		2041.38	25.82	23.20	24.29	1.26	109.16	8.43	0.01	0.01	79.69		0.654	0.544	1.198
2/4/1999		3007.54	27.34	11.96	34.72	5.86	205.06	4.09	0.01	0.01	118.25		0.819	0.542	1.361
2/11/1999		3141.94	26.64	7.76	27.69	5.74	310.47	5.09	0.04	0.01	121.70		0.744	0.744	1.488
2/18/1999			19.44	17.30	33.35	5.64	242.16	11.69	0.05	0.01	131.46		0.829	0.557	1.386
2/25/1999		3134.60	25.91	24.29	30.37	6.33	97.15	7.70	0.05	0.01	79.66		0.776	0.508	1.284
3/4/1999		2484.62	34.35	29.90	23.65	4.27	199.30	3.88	0.07	0.01	81.05		0.796	0.508	1.304
3/11/1999			29.38	9.73	30.41	4.70	97.27	5.44	0.01	0.01	97.92		0.777	0.478	1.255
3/18/1999		2846.69	32.83	10.22	26.97	4.27	170.26	4.43	0.01	0.01	121.90		0.816	0.557	1.373
3/25/1999		2069.29	26.87	16.80	20.96	5.77	201.55	5.97	0.02	0.01	142.43		0.805	0.495	1.300
4/1/1999		2362.88	30.33	12.64	26.54	6.66	157.95	7.42	0.03	0.01	121.30		0.757	0.535	1.292
4/8/1999		2690.26	34.65	18.68	28.60	9.69	237.78	8.67	0.05	0.01	132.47		0.814	0.631	1.445
4/15/1999		2328.55	54.42	7.78	28.76	9.97	249.04	8.96	0.05	0.01	118.30		0.746	0.540	1.286
4/22/1999			56.01	8.76	32.32	3.82	210.32	5.90	0.04	0.01	150.03		0.840	0.582	1.422
4/29/1999			67.31	9.67	41.16	1.50	232.10		0.03	0.01	138.49		0.927	0.569	1.496
5/6/1999		2173.95	32.73	16.98	35.94	0.39	494.08	7.58	0.01	0.01	154.40		0.740	0.505	1.245
5/14/1999		1360.55	32.10	6.18	37.11	0.97	185.53	5.64	0.02	0.01	125.54		0.741	0.492	1.233
5/20/1999			37.13	19.94	43.08	1.69	290.10	19.33	0.01	0.01	127.65		0.869	0.550	1.419
5/27/1999		2911.69	41.84	25.73	35.73	0.87	220.58	13.00	0.09	0.01	110.29		0.881	0.474	1.355
6/3/1999			48.35	9.47	32.74	1.23	227.34	9.75	0.08	0.01	132.62		0.908	0.542	1.450
6/10/1999			48.24	9.01	26.39	1.39	180.27	8.75	0.08	0.01	166.57		0.864	0.510	1.374
6/18/1999			40.12	17.88	36.71	0.87	198.63	7.83	0.05	0.01	129.51		0.952	0.524	1.476
6/24/1999		2541.17	41.73	9.02	26.13	0.69	180.48	4.19	0.04	0.01	109.73		0.865	0.500	1.365
7/1/1999		2819.15	43.21	16.02	42.14	1.04	213.57	8.91	0.04	0.01	108.92		0.853	0.459	1.312
7/8/1999			56.20	8.83	32.62	0.84	282.43	7.19	0.04	0.01	153.92		0.846	0.492	1.338
7/15/1999			59.10	12.33	39.59	1.10	246.54	7.05	0.03	0.01	157.08		0.844	0.524	1.368
7/22/1999		3750.06	66.69	5.33	49.22	1.04	284.10	13.18	0.09	0.01	223.01		0.851	0.521	1.372
7/29/1999		3582.97	69.88	7.40	54.48	4.21	444.17	4.94	0.05	0.01	208.02		0.887	0.619	1.506
8/5/1999			66.17	13.50	47.04	1.14		7.05	0.10	0.01	215.15		0.924	0.507	1.431

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8/12/1999			58.44	7.13	50.60	0.97	356.37	6.41	0.04	0.01	223.09		0.854	0.519	1.373
8/20/1999		2696.87	58.41	14.42	51.92	8.94	432.65	7.63	0.03	0.02	262.48		0.864	0.345	1.209
8/26/1999		4234.42	52.12	5.55	38.49	1.07	222.09	10.85	0.06	0.01	141.39		0.887	0.372	1.259
9/2/1999		3667.80	56.99	5.68	40.32	0.99	227.34	13.35	0.09	0.02	175.05		0.908	0.518	1.426
9/9/1999		3427.82	44.55	5.56	40.07	1.11	148.39	11.25	0.08	0.01	234.46		0.889	0.612	1.501
9/16/1999		1898.53	50.37	9.81	36.24	1.13	156.90	8.88	0.03	0.03	164.75		0.940	0.262	1.202
9/23/1999		2416.31	61.90	7.85	36.40	0.92	392.26	13.49	0.01	0.01	199.27		0.940	0.224	1.164
9/30/1999		1078.34	66.87	7.00	30.74	0.58	210.07	15.01	0.03	0.02	226.87		0.839	0.316	1.155
10/7/1999		1848.59	51.19	13.02	35.57	1.11	350.11	11.53	0.01	0.01	165.25		0.839	0.263	1.102
10/14/1999		3708.19	49.80	6.74	54.40	0.88	383.08	12.69	0.01	0.02	140.21		0.918	0.232	1.150
10/21/1999		3139.74	51.06	7.93	43.45	1.19	396.43	8.83	0.01	0.01	175.22		0.950	0.289	1.239
10/28/1999		2982.75	37.18	11.63	31.11	0.68	214.07	10.94	0.01	0.01	165.55		0.855	0.281	1.136
11/4/1999		2986.24	40.94	9.86	35.01	0.69	285.76	8.34	0.04	0.01	129.31		0.856	0.253	1.109
11/11/1999		2478.74	60.17	4.73	45.29	0.88	300.45	12.44	0.08	0.02	209.57		0.900	0.378	1.278
11/18/1999		3620.61	73.51	19.59	48.59	1.58	235.10	5.84	0.05	0.01	212.38		0.939	0.252	1.191
11/25/1999		2855.51	43.40	8.11	47.86	1.03	243.37	6.81	0.02	0.01	172.79		0.972	0.218	1.190
12/2/1999		3226.95	60.14	9.65	46.01	0.94	231.60	4.32	0.02	0.02	177.56		0.925	0.319	1.244
12/9/1999		4714.56	111.12	22.82	47.62	0.95	238.11	7.12	0.04	0.01			0.951	0.318	1.269
12/16/1999		3281.30	32.96	13.07	33.38	5.70	213.07	13.07	0.04	0.01	151.99		0.851	0.336	1.187
12/23/1999			20.68	10.49	41.21	2.08	304.13	5.07	0.01	0.02	87.44		0.911	0.248	1.159
12/30/1999			84.58	11.47	38.99	3.63	249.38	11.80	0.02	0.01	225.27		0.996	0.330	1.326
average	lbs/day	2885.95	46.68	12.79	36.58	2.69	242.58	8.82	0.04	0.01	150.24	avg flow	0.853	0.461	1.313
	lbs/yr	1053371.32	17036.43	4667.59	13350.00	980.97	88543.51	3217.87	13.88	4.03	54835.82	max flow	0.996	0.871	1.867
max	lbs/day	4714.56	111.12	33.62	54.48	9.97	494.08	19.33	0.10	0.03	262.48	min flow	0.576	0.218	0.794
2000															
1/6/2000		3528.99	102.66	28.07	47.32	4.41	240.61	4.21	0.02	0.01	251.04		0.961	0.293	1.254
1/13/2000		3551.39	100.51	54.21	47.75	4.19	254.88	7.04	0.05	0.01	208.16		1.018	0.22	1.238
1/20/2000		4404.63	88.79	29.42	47.01	5.69	261.14	16.25	0.01	0.01	219.36		1.043	0.137	1.180
1/27/2000		3083.92	48.47	23.98	39.25	0.88	332.00	7.28	0.01	0.01	137.23		0.884	0.21	1.094
2/4/2000		3312.33	53.60	12.27	39.07	1.05	301.12	20.14	0.04	0.02	159.59		0.902	0.191	1.093
2/11/2000		3682.31	58.90	16.98	40.33	0.61	159.41	10.27	0.02	0.02	281.35		0.955	0.143	1.098
2/17/2000		4080.74	41.03	18.55	46.00	0.95	370.98	14.56	0.04	0.01	181.04		0.889	0.145	1.034
2/25/2000		3848.47	47.01	25.15	51.78	0.78	349.86	8.17	0.03	0.01	139.94		1.048	0.101	1.149
3/3/2000		2677.04	62.38	30.42	37.48	0.77	243.37	6.94	0.03	0.01	189.83		0.972	0.16	1.132

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3/10/2000		50.72	28.97	41.18	0.97	267.40	8.00	0.04	0.01	242.45	1.068	0.169	1.237
3/17/2000		53.44	24.60	44.89	9.44	227.09		0.03	0.01	200.60	0.907	0.173	1.080
3/24/2000	4091.94	27.82	20.08	45.48	0.91	422.72	11.35	0.03	0.01	146.26	1.013	0.16	1.173
3/31/2000	5026.88	39.78	13.75	50.78	0.95	253.88	9.43	0.03	0.01	380.82	1.014	0.146	1.160
4/7/2000	3004.78	42.34	55.77	49.44	0.81	273.16	11.10	0.01	0.01	101.98	1.091	0.202	1.293
4/14/2000	2961.27	54.18	49.47	44.25	0.92	168.25	15.67	0.03	0.02	124.51	1.008	0.211	1.219
4/21/2000	3230.62	41.20	53.99	37.92	0.86	259.14	11.12	0.03	0.02	144.26	1.035	0.185	1.220
4/28/2000		26.54	24.77	55.73	1.29	530.80		0.05	0.02	176.93	1.06	0.241	1.301
5/5/2000	3227.50	35.38	56.09	41.94	0.92		13.35	0.03	0.01	133.76	1.034	0.168	1.202
5/12/2000	4840.70	47.39	19.04	51.12	0.74	423.14	9.63	0.03	0.03	99.86	1.014	0.183	1.197
5/19/2000	4164.28	41.83	18.93	59.15	0.91	283.93	9.20	0.03	0.01	75.71	1.134	0.381	1.515
5/26/2000	3242.19	56.25	16.37	59.11	0.68	163.75	8.79	0.02	0.02	143.28	0.981	0.186	1.167
6/2/2000	3371.09	51.47	12.44	34.07	0.72	270.41	11.29	0.05	0.01		1.08	0.24	1.320
6/9/2000	4463.75	51.17	19.85	41.20	1.61	529.30	9.19	0.04	0.02		1.057	0.24	1.297
6/15/2000	3859.67	50.54	12.53	70.18	0.84	334.17	9.50	0.02	0.01		1.001	0.22	1.221
6/23/2000	4387.92	46.25	16.62	57.08	0.81	284.93	14.63	0.04	0.01		1.138	0.174	1.312
6/30/2000	5265.58	51.37	17.31	61.59	17.88	276.17	11.35	0.05	0.02	81.01	1.103	0.166	1.269
7/7/2000	3628.14	48.49	12.37	56.81	1.04	329.83	9.79	0.07	0.01	124.51	0.988	0.195	1.183
7/14/2000	2663.08	47.30	21.62	67.70	0.63	345.86	12.75	0.03	0.01	98.57	1.036	0.206	1.242
7/21/2000	3480.15	51.85	16.35	63.71	0.76	263.65	11.80	0.03	0.01	161.70	1.053	0.186	1.239
7/28/2000		63.32	4.09	48.21	15.15	245.12	8.23	0.07	0.01	172.40	0.979	0.221	1.200
8/4/2000	6163.80	82.18	13.07	64.44	18.84	280.17	13.26	0.07	0.02	237.21	1.119	0.198	1.317
8/11/2000	4835.93	96.97	11.67	53.09	0.82	253.63	18.81	0.02	0.01	184.31	1.013	0.259	1.272
8/18/2000	2978.89	87.51	14.81	45.70	5.36	84.63	15.15	0.02	0.01	184.49	1.014	0.286	1.300
8/25/2000	3680.47	77.92	33.02	57.23	11.69	264.15	11.00	0.02	0.01	271.19	1.055	0.222	1.277
9/1/2000	3252.47	105.14	33.74	52.18	4.58	260.89	6.44		0.01	259.15	1.042	0.315	1.357
9/9/2000	3984.34	115.91	13.58	70.27	6.19	362.21	11.62		0.01	210.99	1.085	0.238	1.323
9/15/2000	3202.53	89.31	13.96	72.10	0.75	342.52	7.34	0.07	0.01	411.02	1.026	0.254	1.280
9/22/2000		34.69	10.84	57.84	7.74	260.14	7.78	0.11	0.01	370.27	1.039	0.312	1.351
9/29/2000	2993.40	62.51	9.00	51.38	0.97	240.11	6.38	0.05	0.01	147.27	0.959	0.196	1.155
10/6/2000	3516.51	115.00	26.64	65.71	16.90	266.40	2.55	0.04	0.01	142.97	1.064	0.107	1.171
10/13/2000	3656.05	92.01	18.63	65.60	1.30	437.33	16.94	0.04	0.02	162.69	1.048	0.15	1.198
10/20/2000	3446.00	101.81	36.86	66.34	0.77	322.49	7.62	0.05	0.01	236.80	1.104	0.184	1.288
10/27/2000	5905.09	103.39	20.83	61.09	0.71	69.42	14.97	0.02	0.02	167.53	1.109	0.163	1.272
11/3/2000	4165.38	131.04	44.84	65.07	0.76	498.25		0.08	0.02	573.99	1.194	0.164	1.358
11/10/2000	3186.01	96.55	21.16	52.30	0.62	241.36	14.64	0.02	0.01	299.29	0.964	0.165	1.129
11/17/2000	4975.11	84.80	17.67	60.12	1.14	376.90	10.68	0.05	0.01	253.47	1.129	0.191	1.320

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11/24/2000		5953.93	60.14	13.83	64.95	0.73	501.17	10.96	0.03	0.01	451.06		1.201	0.15	1.351
12/2/2000			107.56	30.30	61.85	1.93				0.01			1.074	0.177	1.251
12/15/2000		3463.63	87.47	16.27	47.23	0.84	437.33	8.63	0.03	0.01	230.91		1.048	0.105	1.153
12/22/2000		2791.61	63.45	26.10	60.73	10.18	181.27	8.08	0.03	0.01	233.84		1.086	0.134	1.220
12/29/2000		2908.39	61.69	23.18	50.24	0.92	264.40	22.48	0.04	0.02			1.056	0.153	1.209
average	lbs/day	3825.31	67.43	23.61	53.39	3.37	298.18	10.99	0.04	0.01	208.99	avg flow	1.037	0.196	1.233
	lbs/yr	1396237.96	24612.58	8617.11	19487.99	1230.56	108835.97	4010.09	13.55	4.65	76281.63	max flow	1.201	0.381	1.582
max	lbs/day	6163.80	131.04	56.09	72.10	18.84	530.80	22.48	0.11	0.03	573.99	min flow	0.884	0.101	0.985
2001															
1/4/2001		4202.84	63.68	20.47	56.40	2.90	272.91	10.98	0.01	0.01	183.76		1.090	0.105	1.195
1/11/2001		3863.16	70.24	20.90	69.27	0.99	263.40	8.67	0.05	0.01	172.96		1.052	0.118	1.170
1/18/2001		3698.28	56.03	24.56	64.72	1.87	186.78	13.12	0.08	0.01	217.60		1.119	0.156	1.275
1/25/2001		1021.24	61.89	11.61	59.42	2.65	154.73	6.02	0.05	0.01	150.87		0.927	0.141	1.068
2/1/2001		3576.00	63.21	24.83	58.52	1.18	270.91	8.91	0.05	0.01	176.99		1.082	0.231	1.313
2/8/2001		3865.37	73.98	22.01	59.18	0.42	184.95	10.64	0.04	0.01			1.108	0.166	1.274
2/15/2001		3069.97	43.61	6.98	51.11	1.32	261.64	6.80	0.04	0.01	160.48		1.045	0.106	1.151
2/22/2001		2354.62	38.22	16.28	49.39	6.75	229.35	7.39	0.05	0.01	149.07		0.916	0.156	1.072
3/1/2001															0.000
3/3/2001		2154.85	48.97	16.32	59.01	0.61	244.87	13.46	0.06	0.02			0.978	0.12	1.098
3/10/2001		2108.58	52.28	12.02	62.12	1.05		14.70	0.03	0.01	197.79		1.044	0.09	1.134
3/17/2001		3149.47	42.11	17.60	69.89	0.43			0.01	0.01	165.89		1.009	0.14	1.149
3/25/2001		2776.19	36.05	31.55	62.55	0.73	360.54	12.82	0.01	0.01	118.08		1.080	0.076	1.156
3/31/2001		1983.36	24.59	11.31	56.22	0.48	245.87	8.21	0.02	0.01	127.85		0.982	0.091	1.073
4/5/2001		2229.40	31.18	23.39	50.51	0.62	233.85	5.77	0.03	0.01	256.46		0.934	0.073	1.007
4/12/2001		3115.13	41.65	15.66	57.47	0.97		5.29	0.04	0.01	122.44		0.998	0.042	1.040
4/19/2001		2627.46	39.81	13.93	59.72	1.04	238.86	7.86	0.01	0.01	185.51		0.954	0.08	1.034
4/26/2001		2375.18	30.85	25.06	50.90	0.97	231.35		0.02	0.01	124.16		0.924	0.089	1.013
5/3/2001		2937.21	31.41	17.67	67.54	0.42	235.61	13.70	0.03	0.01	144.50		0.941	0.12	1.061
5/10/2001		3068.31	73.84	12.31	62.76	1.11	246.12		0.03	0.01	195.26		0.983	0.09	1.073
5/17/2001		2044.68	23.24	16.50	60.88	1.02	232.35		0.03	0.01			0.928	0.14	1.068
5/25/2001		218.13	14.87	16.76	21.32	0.63	89.23	2.51	0.00	0.00	48.58		0.594	0.076	0.670
5/31/2001		1926.39	39.06	14.69	53.90	3.64			0.03	0.01			0.936	0.091	1.027
6/7/2001		2519.13	40.90	13.33	58.40	1.13	163.58	8.61	0.03	0.01	368.06		0.980	0.074	1.054
6/14/2001		1460.80	29.51	17.56	56.66	0.63	147.56	6.60	0.01	0.01			0.884	0.084	0.968

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6/21/2001		2503.53	37.93	11.38	62.21	10.17	151.73	6.99	0.02	0.01	5272.58		0.909	0.072	0.981
6/28/2001		1837.57	20.88	9.61	54.85	7.89	139.21	6.98	0.03	0.01	552.66		0.834	0.116	0.950
7/3/2001		3009.01	32.18	10.06	65.97	1.12	241.36	14.59	0.03	0.01	629.16		0.964	0.123	1.087
7/12/2001			37.97	10.48	52.10	7.87	227.84	6.56	0.02	0.01	463.28		0.910	0.072	0.982
7/19/2001		1063.99	36.64	8.28	40.45	0.71	146.55	8.26	0.01	0.01	197.85		0.878	0.069	0.947
7/26/2001		2295.50	37.26	34.51	42.33	0.65	149.06	11.78	0.04	0.01	7.45		0.893	0.13	1.023
8/2/2001		2022.65	38.31	8.66	56.31	0.89	153.23	7.95	0.02	0.02	95.00		0.918	0.079	0.997
8/9/2001		1198.50	31.67	4.75	56.06	6.54	126.69	8.22	0.01	0.01	87.42		0.759	0.07	0.829
8/16/2001		2310.85	30.45	12.41	58.46	1.01	228.34	10.40	0.02	0.01	51.00		0.912	0.069	0.981
8/24/2001			32.85	9.28	54.86	0.91				0.01			0.984	0.171	1.155
8/30/2001		2952.84	32.15	6.03	60.04	0.52	200.93	8.80	0.01	0.01	139.04		0.963	0.052	1.015
9/6/2001		2390.61	30.85	9.64	50.05	1.62	269.91	6.39	0.01	0.01	60.92		0.924	0.078	1.002
9/13/2001		1052.03	9.03	2.26	24.20	0.27	22.58	3.79	0.00	0.00	23.93		0.541	0.084	0.625
9/20/2001		2835.38	59.79	15.81	45.17	0.72	265.73	9.10	0.01	0.01	126.22		0.796	0.046	0.842
9/24/2001															0.000
9/25/2001															0.000
9/26/2001															0.000
9/27/2001															0.000
9/27/2001		2641.05	41.40	12.42	65.90	0.82	248.37	10.50	0.03	0.01	162.27		0.992	0.064	1.056
9/28/2001															0.000
9/29/2001															0.000
9/30/2001															0.000
10/4/2001		2637.01	35.89	8.07	70.91	0.68	251.21	10.55	0.03	0.01	78.95		0.860	0.096	0.956
10/11/2001		2811.28	31.75	14.92	63.34	0.55	277.79	14.76	0.02	0.01			0.951	0.072	1.023
10/18/2001		3243.29	24.04	18.03	63.94	1.53	400.60	16.59	0.03	0.01	69.71		0.960	0.098	1.058
10/25/2001		2452.20	8.86	11.08	81.25	1.07	258.52	10.93	0.03	0.01	106.36		0.885	0.187	1.072
11/1/2001		1891.80	22.08	7.36	54.91	0.52	147.22	7.73	0.01	0.01	60.36		0.882	0.086	0.968
11/8/2001			32.08	10.03	58.55	0.56				0.01			0.961	0.114	1.075
11/15/2001			43.67	13.10	52.40	0.53	291.11			0.01	130.27		0.872	0.183	1.055
11/22/2001		7102.05	40.35	8.07	54.72	0.96	282.47	8.72	0.06	0.01	146.08		0.967	0.119	1.086
11/29/2001		2156.10	31.61	7.90	58.41	1.31	276.63	11.46	0.03	0.01	140.68		0.947	0.136	1.083
12/6/2001		1959.91	37.43	9.36	62.14	0.73	149.73	11.98	0.04	0.01	95.08		0.897	0.177	1.074
12/13/2001		2241.77	38.31	16.32	61.29	6.91	191.54	16.78	0.38	0.01			0.918	0.092	1.010
12/20/2001		2885.77	37.26	15.87	54.48	0.55	186.32	22.88	0.03	0.01			0.893	0.158	1.051
12/27/2001			32.15	9.38	39.01	0.79	133.95		0.02	0.01			0.642	0.105	0.747
average	lbs/day	2549.80	38.38	14.20	56.58	1.77	215.50	9.88	0.03	0.01	291.77	avg flow	0.929	0.107	1.036

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12/30/2004		1245.61	28.31	8.49	47.56	0.71	212.32	8.34	0.01	0.00	75.02		0.848	0.033	0.881
average	lbs/day	1907.45	32.00	30.41	52.41	0.94	282.44	10.38	0.02	0.00	109.74	avg. flow	0.8608	0.1717	1.032
	lbs/yr	696218.78	11680.98	11099.16	19130.99	342.45	103090.40	3790.13	7.69	1.65	40056.56	max flow	1.010	0.537	1.547
max	lbs/day	3764.75	58.13	135.40	71.93	2.90	887.59	20.88	0.06	0.02	346.79	min flow	0.687	0.033	0.720
2005															
1/6/2005		924.29	28.01	11.20	45.16	1.86	350.11	4.18	0.01	0.00	75.62		0.839	0.053	0.892
1/13/2005		1308.77	37.18	12.64	60.23	0.76	148.72	5.18	0.02	0.00	70.64		0.891	0.064	0.955
1/20/2005		1566.20	10.68	16.37	62.65	1.33	213.57	4.34	0.01	0.00	55.53		0.853	0.191	1.044
1/27/2005		1483.94	37.47	17.99	65.65	1.10	299.79	5.22	0.01	0.00	96.68		0.898	0.118	1.016
2/3/2005		1560.69	42.56	215.66	69.66	0.80	283.76	7.74	0.01	0.00	154.65		0.85	0.058	0.908
2/10/2005		1450.89	36.64	9.53	61.26	0.60	293.11	7.49	0.02	0.00	95.26		0.878	0.056	0.934
2/17/2005		1298.13	12.64	5.90	61.87	0.72	337.18	10.13	0.01	0.00	42.15		1.01	0.082	1.092
2/24/2005		1307.31	29.71	17.08	60.17	1.24	668.51	6.91	0.02	0.00	88.39		0.89	0.054	0.944
3/3/2005		1198.61	27.24	10.90	51.08	0.82	408.62	5.79	0.02	0.00	64.70		0.816	0.071	0.887
3/10/2005		946.33	28.68	17.21	48.75	1.16	358.46	9.32	0.01	0.00	74.56		0.859	0.025	0.884
3/17/2005		1665.71	9.46	10.10	43.54	1.00	315.48	9.46	0.01	0.00	27.76		0.756	0.039	0.795
3/24/2005		985.80	19.20	14.08	41.61	0.79	384.08	7.49	0.04	0.00	112.66		0.767	0.045	0.812
3/31/2005		1568.03	35.64	3.56	57.73	0.80	427.65	5.92	0.03	0.00	101.21		0.854	0.052	0.906
4/7/2005		1263.42	41.02	12.31	59.89	0.85	410.20	14.07	0.04	0.01	135.37		0.983	0.013	0.996
4/14/2005		1069.61	26.71	13.35	49.21	0.84	667.67	8.95	0.04	0.01	30.05		0.8	0.021	0.821
4/21/2005		537.61	18.33	11.00	65.98	0.35	305.46	10.81	0.06	0.00	51.93		0.732	0.009	0.741
4/28/2005		1751.09	28.94	12.66	76.70	1.43	506.51	8.10	0.01	0.00	42.69		0.867	0.079	0.946
5/5/2005		2699.99	28.88	5.78	58.48	1.77	433.15	28.59	0.01	0.00	119.12		0.865	0.039	0.904
5/12/2005		2786.10	35.18	2.11	61.21	0.60	351.78	12.72	0.03	0.01	79.50		0.843	0.015	0.858
5/19/2005		311.77	28.34	4.96	56.76	0.79	283.43	6.84	0.01	0.00	89.28		0.849	0.089	0.938
5/26/2005		1254.43	35.64	10.69	57.02	0.80	285.10	7.56	0.07	0.00	149.68		0.854	0.050	0.904
6/2/2005		1660.20	20.58	15.78	44.39	0.59	274.41	7.10	0.03	0.00	42.53		0.822	0.011	0.833
6/9/2005		1648.82	22.48	11.24	53.21	0.86	374.73	10.77	0.01	0.00	41.22		0.898	0.050	0.948
6/16/2005		1320.53	11.25	5.25	51.77	0.51	300.12	9.18	0.02	0.00	45.77		0.899	0.031	0.930
6/23/2005		1714.92	11.69	10.13	49.89	1.96	311.80	8.39	0.03	0.01	147.33		0.934	0.240	1.174
6/30/2005		5431.19	36.30	13.80	38.12	1.67	290.44	8.68	0.01	0.01	46.47		0.870	0.129	0.999
7/7/2005		3704.16	30.61	12.25	37.04	0.98	382.66	8.18	0.01	0.01	52.81		0.917	0.047	0.964
7/13/2005		1930.85	31.91	13.56	60.32	1.03	319.15	12.28	0.02	0.02	70.21		0.956	0.015	0.971
7/21/2005		1591.90	36.18	5.79	49.93	0.38	361.80	8.87	0.01	0.01	115.05		0.867	0.048	0.915

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7/28/2005		1462.46	29.54	11.08	56.13	0.71	369.31	23.15	0.01	0.01	37.67		0.885	0.098	0.983
8/4/2005		1792.04	40.73	13.85	61.91	0.81	325.82	9.01	0.02	0.01	54.58		0.976	0.018	0.994
8/11/2005		1558.30	31.48	25.97	58.16	0.81		11.84	0.02	0.00	59.81		0.943	0.057	1.000
8/18/2005		7117.84	33.18	18.25	60.06	1.25	165.92	7.39	0.03	0.00	43.14		0.994	0.029	1.023
8/25/2005		1510.38	22.88	12.21	39.44	0.83	305.13	8.21	0.03	0.00	130.44		0.914	0.022	0.936
9/1/2005		1521.95	38.43	8.46	43.04	3.09	384.33	8.23	0.02	0.00	142.97		0.921	0.035	0.956
9/8/2005		1410.13	24.04	12.02	59.53	0.83	240.36	7.55	0.02	0.03	41.66		0.960	0.035	0.995
9/15/2005		1799.38	24.54	13.90	60.61	1.31	327.16	14.33	0.03	0.01	74.43		0.980	0.045	1.025
9/22/2005		1521.95	30.75	12.30	61.49	0.86	307.46	8.58	0.04	0.01	28.44		0.921	0.053	0.974
9/29/2005		1404.25	23.94	11.97	63.03	1.17	319.15	8.84	0.04	0.00	68.62		0.956	0.018	0.974
10/6/2005		1725.94	23.54	13.34	64.33	0.59	313.81	9.29	0.03	0.00	50.21		0.94	0.018	0.958
10/13/2005		665.40	22.68	11.34	70.17	0.83	302.46	8.57	0.01	0.00	31.76		0.906	0.039	0.945
10/20/2005		2256.94	51.29	32.97	62.58	1.08	293.11	7.89	0.01	0.00	106.98		0.878	0.035	0.913
10/27/2005		1531.86	30.95	10.06	57.64	0.73	309.47	8.00	0.02	0.00	61.12		0.927	0.031	0.958
11/4/2005		1597.96	54.88	12.11	54.88	1.14	242.12	13.03	0.02	0.00	87.16		0.967	0.033	1.000
11/10/2005		1546.73	35.15	21.87	57.18	1.76	312.47	8.39	0.02	0.00	87.49		0.936	0.077	1.013
11/14/2005		1418.94	31.44	20.96	51.60	1.38	403.11	7.72	0.02	0.01	74.98		0.966	0.036	1.002
11/22/2005		1926.81	56.53	23.89	68.47	1.89	398.10	12.54	0.01	0.00	145.70		0.954	0.019	0.973
12/1/2005		2478.74	52.05	27.04	57.54	2.87	375.57	8.41	0.01	0.02	114.92		0.9	0.032	0.932
12/8/2005		3053.81	36.86	21.59	59.38	3.71	385.58	13.67	0.01	0.00	94.85		0.924	0.032	0.956
12/15/2005		2044.68	33.54	10.07	61.19	2.34	387.25	8.65	0.01	0.00	102.23		0.928	0.025	0.953
12/22/2005		1965.37	41.84	14.14	59.26	2.19	372.23	8.74	0.01	0.00	90.08		0.892	0.035	0.927
12/29/2005		1410.13	43.91	11.22	54.72	0.75	320.48	7.01	0.02	0.00	95.34		0.96	0.052	1.012
average	lbs/day	1781.99	31.03	17.18	56.57	1.18	343.29	9.41	0.02	0.01	79.68	avg. flow	0.897	0.051	0.948
	lbs/yr	650424.87	11324.49	6271.51	20647.83	430.73	125301.14	3434.44	7.77	2.18	29083.60	max flow	1.010	0.240	1.250
max	lbs/day	7117.84	56.53	215.66	76.70	3.71	668.51	28.59	0.07	0.03	154.65	min flow	0.732	0.009	0.741
2006															
1/5/2006		1536.82	15.52	17.85	56.66	0.69	388.09	8.25	0.02	0.00	45.79		0.93	0.019	0.949
1/12/2006		1683.71	15.31	27.55	64.29	0.99	306.13	8.13	0.02	0.00	45.15		0.917	0.029	0.946
1/19/2006		984.89	14.92	14.18	64.17	1.36	373.06	8.47	0.01	0.00	53.72		0.894	0.028	0.922
1/26/2006		1634.32	33.35	29.71	60.01	0.88	412.71	8.88	0.02	0.00	64.38		0.989	0.025	1.014
2/2/2006		3030.86	35.17	11.35	53.49	0.64	324.16	8.28	0.01	0.00	50.24		0.971	0.017	0.988
2/9/2006		2033.67	15.41	40.06	53.92	0.71	539.23	14.48	0.01	0.00	47.76		0.923	0.043	0.966
2/16/2006		1805.62	69.09	23.13	43.28	0.79	223.84	10.97	0.10	0.00	64.17		0.894	0.02	0.914

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2/23/2006	2035.87	36.86	27.76	67.09	1.05	616.93	12.88	0.03	0.00	120.30	0.924	0.033	0.957
3/2/2006	1690.50	13.97	25.15	57.98	0.69	349.28	12.22	0.03	0.00	53.79	0.837	0.037	0.874
3/9/2006	1543.43	31.18	16.37	61.43	1.05	467.71	12.12	0.02	0.00	101.34	0.934	0.019	0.953
3/16/2006	864.80	36.95	19.65	52.91	0.87	471.71	13.81	0.00	0.00	69.97	0.942	0.034	0.976
3/23/2006	2086.18	14.59	10.21	57.26	0.95	364.72	9.21	0.01	0.00	67.11	0.874	0.048	0.922
3/30/2006	1906.61	44.91	15.76	57.91	1.12	393.93	9.22	0.01	0.00	70.91	0.944	0.034	0.978
4/6/2006	2349.48	46.53	26.70	51.11	0.57	305.13	10.95	0.02	0.04	66.37	0.914	0.026	0.940
4/13/2006	2250.88	37.62	22.04	59.42	2.48	314.81	8.93	0.01	0.00	96.80	0.943	0.035	0.978
4/20/2006	3301.31	42.47	26.26	50.80	1.98	375.15	11.88	0.01	0.00	77.28	0.899	0.032	0.931
4/27/2006	2170.27	16.44	14.80	51.30	1.08	411.04	17.63	0.00	0.00	75.63	0.985	0.018	1.003
5/4/2006	1417.84	31.08	27.21	58.15	0.59	358.04	10.75	0.01	0.00	35.09	0.858	0.061	0.919
5/11/2006	1574.83	15.91	37.38	62.04	0.90	318.15	8.39	0.02	0.00	100.22	0.953	0.037	0.990
5/18/2006	2327.26	33.20	31.74	45.24	1.94	406.86	12.40	0.01	0.00	63.47	0.975	0.096	1.071
5/25/2006	1553.34	32.01	16.47	47.86	1.59	313.81	9.40	0.01	0.00	52.56	0.94	0.032	0.972
6/1/2006	1427.75	14.42	26.68	43.27	0.84	360.54	11.09	0.01	0.01	316.56	0.864	0.068	0.932
6/8/2006	1684.44	31.60	27.84	43.16	0.86	626.45	9.51	0.01	0.00	103.71	0.834	0.014	0.848
6/15/2006	1388.09	27.89	30.92	37.35	0.56	378.57	7.22	0.01	0.02	56.15	0.756	0.024	0.780
6/22/2006	1894.86	14.35	25.12	43.14	1.30	358.87	11.37	0.01	0.01	59.57	0.860	0.020	0.880
6/29/2006	784.93	14.27	46.38	37.11	0.95	285.43	9.74	0.01	0.00	56.37	0.855	0.055	0.910
7/6/2006	812.48	14.77	32.50	55.40	0.63	295.45	10.64	0.01	0.00	62.78	0.885	0.023	0.908
7/13/2006	1311.71	14.91	23.85	38.76	0.93	372.65	8.85	0.01	0.00	90.18	0.893	0.026	0.919
7/19/2006	1440.97	14.56	24.74	49.49	3.35	363.88	8.19	0.01	0.00	50.94	0.872	0.038	0.910
7/27/2006	1947.00	35.56	34.60	62.75	1.34	402.27	14.82	0.01	0.00	50.69	0.964	0.056	1.020
8/2/2006	1963.16	16.22	17.85	48.67	1.56	405.61	9.43	0.01	0.00	60.03	0.972	0.050	1.022
8/10/2006	1584.74	43.30	27.21	57.63	1.38	400.19	9.43	0.02	0.00	126.46	0.959	0.042	1.001
8/17/2006	2159.26	16.36	24.54	72.79	1.08	408.95	9.18	0.01	0.01	52.35	0.980	0.066	1.046
8/24/2006	1846.02	30.67	26.70	61.79	1.96	381.41	9.98	0.02	0.00	97.64	0.914	0.041	0.955
8/31/2006	1812.23	10.98	7.14	33.99	0.49	274.58	7.84	0.01	0.01	18.67	0.658	0.038	0.696
9/6/2006	3728.94	14.74	38.32	55.57	1.11	368.47	9.29	0.01	0.01	45.69	0.883	0.036	0.919
9/14/2006	1985.38	16.41	29.53	67.44	3.13	410.20	7.85	0.00	0.00		0.983	0.041	1.024
9/21/2006	2447.16	15.89	23.04	63.01	2.64	397.27	6.74	0.01	0.01		0.952	0.058	1.010
9/25/2006	2396.48	16.76	20.95	78.77	1.79	418.97	9.92	0.01	0.01		1.004	0.054	1.058
10/5/2006	1991.81	34.71	25.65	51.00	1.38	377.24	10.28	0.01	0.00	126.75	0.904	0.050	0.954
10/12/2006	2201.12	57.20	29.18	55.78	2.46	416.88	10.68	0.02	0.00	88.38	0.999	0.057	1.056
10/17/2006	2490.86	45.61	23.45	56.13	2.24	242.62	8.40	0.01	0.00	95.43	0.969	0.057	1.026
10/26/2006	889.04	50.38	26.27	21.82	6.19	134.70	4.90	0.01	0.00	74.76	0.807	0.096	0.903
11/2/2006	1906.61	15.76	24.42	60.11	2.01	393.93	5.47	0.01	0.00	126.84	0.944	0.071	1.015

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11/9/2006		2267.59	49.63	13.48	57.72	1.44	396.43	5.74	0.01	0.00	160.95		0.950	0.035	0.985
11/16/2006		2110.78	15.99	14.39	68.28	3.15	399.77	7.60	0.02	0.00	75.96		0.958	0.048	1.006
11/23/2006		3227.87	51.43	11.74	66.76	2.59	440.16	5.33	0.00	0.00	93.17		0.879	0.055	0.934
11/30/2006		2200.75	45.40	21.55	54.63	1.93	307.80	8.25	0.03	0.00	165.44		0.922	0.052	0.974
12/6/2006		2062.31	64.75	31.01	56.68	1.29	216.33	5.30	0.00	0.00	164.41		0.864	0.069	0.933
12/14/2006		1445.93	43.30	41.63	49.66	1.29	292.11	7.23	0.00	0.01	102.97		0.875	0.026	0.901
12/21/2006		1516.62	56.53	28.26	45.50	1.34	275.75	6.78	0.01	0.00	71.01		0.826	0.040	0.866
12/28/2006		1866.22	40.10	33.93	44.73	1.58	308.47	6.59	0.01	0.02	70.95		0.924	0.051	0.975
average	lbs/day	1895.69	30.13	24.89	54.14	1.49	368.20	9.44	0.01	0.01	83.41	avg. flow	0.911	0.042	0.952
	lbs/yr	691925.05	10998.63	9084.26	19760.12	545.59	134392.91	3445.54	4.57	2.14	30442.94	max flow	1.004	0.096	1.100
max	lbs/day	3728.94	69.09	46.38	78.77	6.19	626.45	17.63	0.10	0.04	316.56	min flow	0.658	0.014	0.672
2007															
1/4/2007		2068.92	90.91	42.32	49.37	1.82	235.10	12.07	0.01	0.01	168.49		0.939	0.064	1.003
1/11/2007		2524.28	16.39	29.50	32.78	0.51	327.83	6.30	0.02	0.00	46.72		0.982	0.027	1.009
1/18/2007		1282.33	31.18	36.43	34.32	1.00	72.86	8.08	0.01	0.00	30.60		0.873	0.431	1.304
1/25/2007		2699.99	32.78	38.26	37.90	0.81	360.96	11.04	0.01	0.00	43.32		0.865	0.048	0.913
2/1/2007		1771.29		15.37	44.72	0.51	365.97	10.93	0.01	0.00	84.90		0.877	0.043	0.920
2/8/2007		2418.88	35.18	38.48	47.75	1.04	392.68	7.88	0.02	0.00	62.04		0.941	0.044	0.985
2/15/2007		1485.41	13.50	11.48	44.90	0.77	270.07	7.10	0.01	0.00	33.08		0.809	0.057	0.866
2/22/2007		1938.93	16.02	19.23	46.47	0.74	240.36	10.95	0.02	0.00	45.67		0.96	0.038	0.998
3/1/2007		1823.25	16.58	14.92	49.73	0.94	331.50	9.81	0.00	0.00	35.64		0.993	0.052	1.045
3/8/2007		2324.87	38.04	26.01	60.15	0.95	487.74	11.03	0.01	0.00	40.64		0.974	0.074	1.048
3/15/2007		1908.08	14.46	23.85	44.81	0.69	216.83	5.22	0.01	0.00	33.97		0.866	0.047	0.913
3/22/2007		2317.71	16.21	25.93	55.92	1.03	405.19	7.01	0.02	0.00	76.18		0.971	0.028	0.999
3/26/2007		2301.00	37.65	13.68	65.97	1.15	402.27	5.53	0.01	0.00	30.57		0.964	0.065	1.029
4/5/2007		2525.56	73.16	27.55	45.92	1.07	382.66	9.43	0.02	0.00	56.63		0.917	0.06	0.977
4/12/2007		1954.35	58.48	25.17	53.30	1.44	370.14	8.77	0.01	0.00	54.04		0.887	0.054	0.941
4/19/2007		1874.29	34.08	24.01	50.34	1.23	309.80	9.84	0.01	0.00	44.15		0.928	0.039	0.967
4/26/2007		1849.87	26.52	18.11	52.39	0.49	194.04	4.93	0.03	0.00	63.39		0.775	0.06	0.835
5/3/2007		2167.34	31.60	18.19	42.44	0.92	303.12	10.28	0.01	0.06	37.89		0.908	0.053	0.961
5/10/2007		1688.48	39.98	13.26	41.86	2.04	279.09	7.50	0.01	0.00	46.05		0.836	0.056	0.892
5/18/2007		2262.81	70.57	16.62	53.80	0.82	316.48	5.03	0.02	0.00	57.76		0.948	0.053	1.001
5/24/2007		1613.93	14.67	13.94	38.15	0.77	366.80	7.71	0.03	0.00	22.01		0.879	0.068	0.947
5/30/2007		1634.13	14.86	10.40	54.97	1.56	148.56	7.63	0.01	0.00	7.43		0.89	0.084	0.974
6/7/2007		1866.22	33.16	14.65	49.35	1.42	231.35	8.25		0.00	43.19		0.924	0.09	1.014

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6/14/2007			47.14	13.78	64.55	1.19		6.50		0.00	139.25		0.869	0.064	0.933
6/21/2007		2120.70	39.43	425.02	42.94	0.77	350.53	10.21		0.00	117.43		1.05	0.089	1.139
6/28/2007		1746.13	23.26	19.05	46.03	1.36	317.48	8.50		0.00	58.73		0.951	0.138	1.089
7/5/2007		2141.08	32.19	8.98	47.91	1.09	224.59	5.36		0.00	28.45		0.897	0.118	1.015
7/12/2007		1424.45	43.17	10.79	51.80	0.99	215.83	5.59		0.00	92.09		0.862	0.17	1.032
7/19/2007		1658.19	19.87	19.87	55.50	2.07	274.08	7.24		0.00	29.46		0.821	0.151	0.972
7/26/2007		1852.63	8.42	29.47	65.68	2.18	252.63	5.51		0.00	36.21		1.009	0.141	1.150
8/2/2007		1646.98	7.49	26.20	34.36	1.98	299.45	9.79		0.00	32.19		0.897	0.152	1.049
8/10/2007		1898.53	15.69	14.91	65.11	1.54	235.36	5.67		0.00	36.09		0.94	0.159	1.099
8/16/2007		2285.21	15.58	25.23	69.82	2.48	296.78	4.80		0.00	34.13		0.889	0.177	1.066
8/23/2007		2364.90	24.57	10.75	50.52	1.36	307.13	4.17		0.00	132.07		0.92	0.236	1.156
8/27/2007		2143.47	31.70	14.24	50.59	1.28	299.79	3.62		0.00	50.21		0.898	0.25	1.148
9/6/2007		1912.67	42.68	24.50	58.49	0.99	395.18	4.50		0.00	56.12		0.947	0.131	1.078
9/13/2007		2169.54	57.06	21.84	46.49	1.56	352.20	5.35		0.00	141.58		0.844	0.25	1.094
9/20/2007		1839.96	45.85	10.64	55.35	1.43	304.13	7.03		0.00	107.20		0.911	0.564	1.475
9/27/2007		1817.74	34.55	11.27	57.84	0.75	300.45	4.25		0.00	30.05		0.9	0.191	1.091
10/4/2007		2049.09	16.30	15.52	61.78	1.17	232.85	5.74		0.00	47.35		0.93	0.272	1.202
10/11/2007		2200.39	7.14	3.57	71.16	2.42	285.76	7.42		0.00	32.86		0.856	0.277	1.133
10/18/2007		2341.58	32.75	15.56	71.23	1.81	327.49	5.55		0.00	76.14		0.981	0.278	1.259
10/25/2007		907.77	30.95	8.94	49.86	1.51	206.31	3.19		0.00	52.27		0.824	0.311	1.135
11/1/2007		2445.69	53.27	19.30	51.72	3.50	231.60	9.14		0.00	129.70		0.925	0.193	1.118
11/8/2007		2961.82	75.82	20.55	47.47	1.09	354.28	4.77		0.00	119.04		0.849	0.348	1.197
11/15/2007		2238.94	42.16	22.53	55.97	1.03	290.77	5.98		0.00	107.59		0.871	0.236	1.107
11/21/2007		2184.05	48.31	14.56	56.26	0.97	330.92	3.22		0.00	180.68		0.793	0.3	1.093
11/29/2007		3988.93	92.11	13.78	51.20	1.50	290.10	10.22		0.00	185.67		0.869	0.321	1.190
12/6/2007		2005.03	44.87	17.53	48.93	1.01	350.53	6.67		0.00	114.27		0.84	0.287	1.127
12/13/2007		1969.77	66.41	15.67	48.13	0.83	298.45	5.52		0.02	137.29		0.894	0.239	1.133
12/20/2007		2227.01	62.29	9.34	56.53	1.01	389.34	8.12		0.00	120.69		0.933	0.235	1.168
12/27/2007		1110.48	31.41	11.22	37.58	0.75	224.34	3.49		0.00	77.40		0.672	0.272	0.944
average	lbs/day	2038.33	36.24	26.77	51.31	1.26	299.01	7.10	0.01	0.01	70.51	avg. flow	0.899	0.157	1.056
	lbs/yr	743989.32	13228.87	9770.52	18728.23	458.70	109140.42	2593.25	4.91	1.92	25736.31	max flow	1.050	0.564	1.614
max	lbs/day	3988.93	92.11	425.02	71.23	3.50	487.74	12.07	0.03	0.06	185.67	min flow	0.672	0.0270	0.699
2008															0.000
1/3/2008		1672.32	36.63	33.17	61.99	1.33	207.31	5.40		0.00	102.27		0.828	0.331	1.159
1/9/2008		1757.15	43.57	18.15	56.49	1.41	290.44	4.11		0.00	98.02		0.87	0.168	1.038

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1/17/2008	1872.83	41.85	7.09	57.11	5.71	354.70	6.16	0.00	75.91	0.85	0.342	1.192
1/24/2008	1730.53	24.20	12.10	43.75	0.78	544.57	7.70	0.00	72.61	0.725	0.318	1.043
1/31/2008	1227.99	29.30	40.47	64.89	1.72	348.86	7.34	0.00	66.98	0.836	0.318	1.154
2/7/2008	1480.63	35.89	26.92	73.28	3.03	299.12	5.51	0.00	56.08	0.896	0.307	1.203
2/14/2008	1487.24	47.32	12.17	63.68	0.61	270.41	4.10	0.00	63.55	0.81	0.154	0.964
2/20/2008	1826.56	33.21	9.69	50.99	1.00	345.94	4.88	0.00	22.14	0.829	0.22	1.049
2/28/2008	1343.48	37.32	10.86	50.21	0.96	339.26	5.08	0.00	37.32	0.813	0.105	0.918
3/6/2008	1639.64	37.26	15.65	62.01	0.80	298.12	3.90	0.00	8.94	0.893	0.131	1.024
3/12/2008	1656.17	42.91	10.54	51.94	0.65	301.12	4.14	0.00	23.34	0.902	0.151	1.053
3/20/2008	1579.05	45.22	16.51	54.55	0.51	358.87	10.77	0.01	47.37	0.86	0.129	0.989
3/25/2008	1659.84	36.21	9.81	54.32	1.26	377.24	5.18	0.01	24.14	0.904	0.227	1.131

Record Title	Storage Medium	Storage Location	Retention Period	Collection Method	Retrieval Contact	Disposal Method
SOLID WASTE - NONHAZARDOUS						
Manifests	Paper	Enviro	Permanent	Env Eng	Env Eng	NONE
Recycling	Paper/Electronic	Enviro	CY + 3 Y	Env Eng	Env Eng	Recycle/ Delete
Soil:						
General	Paper	Enviro	Permanent	Env Eng	Env Eng	NONE
Data	Paper	Enviro	Permanent	Env Eng	Env Eng	NONE
Legal	Paper	Enviro	Permanent	Env Eng	Env Eng	NONE
Reports	Paper	Enviro	Permanent	Env Eng	Env Eng	NONE
LAND						
Permits:						
Building (City)	Paper	Enviro	Permanent	Env Eng	Env Eng	NONE
Certificate of Completion (City/PDC)	Paper	Enviro	Permanent	Env Eng	Env Eng	NONE
Conditional Use (City)	Paper	Enviro	Permanent	Env Eng	Env Eng	NONE
Greenway (City)	Paper	Enviro	Permanent	Env Eng	Env Eng	NONE
Outfall Easement (OR State Lands Div)	Paper	Enviro	Permanent	Env Eng	Env Eng	NONE
Outfall Pipe (Fed Corp of Engrs)	Paper	Enviro	Permanent	Env Eng	Env Eng	NONE
Removal Fill (OR State Lands Div)	Paper	Enviro	Permanent	Env Eng	Env Eng	NONE
Wetlands (Fed Corp of Engrs)	Paper	Enviro	Permanent	Env Eng	Env Eng	NONE
TAXES						
Tax Credits						
General (Correspondence & Misc.)	Paper	Enviro	Permanent	Env Eng	Env Eng	NONE
Applications	Paper	Enviro	Permanent	Env Eng	Eng Eng	NONE
Certification	Paper/Electronic	Enviro	Permanent	Env Eng	Env Eng	NONE
Documentation	Paper/Electronic	Enviro	CY + 5 Y	Env Eng	Env Eng	Recycle/ Delete
WATER						
Permit 1200 Z Stormwater File #93450 (OR DEQ)	Paper	Enviro	Permanent	Env Eng	Env Eng	NONE
General (Correspondence, Misc.)	Paper	Enviro	Permanent	Env Eng	Env Eng	NONE

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Record Title	Storage Medium	Storage Location	Retention Period	Collection Method	Retrieval Contact	Disposal Method
Application (Renewal)	Paper	Enviro	Permanent	Env Eng	Env Eng	NONE
Data & Calculations	Paper/Electronic	Lab	CY + 3 Y	Lab	Lab	Recycle/ Delete
Data: Benchsheets for NPDES, POTW & Storm Water Results	Paper	Lab	CY + 3 Y	Lab	Lab	Recycle
Data: External Lab Analytical Results	Paper	Lab	CY + 3 Y	Lab	Lab	Recycle
Inspections	Paper	Enviro	CY + 5 Y	Env Eng	Env Eng	Recycle
Plan: Storm Water Pollution Control	Electronic	Doc	Current	Doc	Doc	Delete
Reports: Annual	Paper/Electronic	Enviro	CY + 5 Y	Env Eng	Env Eng	Recycle/ Delete
Permit 101128 NPDES to River (OR DEQ)	Paper	Enviro	Permanent	Env Eng	Env Eng	NONE
General (Correspondence, Misc.)	Paper	Enviro	Permanent	Env Eng	Env Eng	NONE
Application (Renewal)	Paper	Enviro	Permanent	Env Eng	Env Eng	NONE
Data & Calculations	Paper/Electronic	Lab	CY + 3 Y	Lab	Lab	Recycle/ Delete
Data: Charts - Effluent to City & River	Paper	Fac Ops	CY + 3 Y	Fac Ops	Fac Ops	Recycle
Data: Benchsheets for NPDES, POTW & Storm Water Results	Paper	Lab	CY + 3 Y	Lab	Lab	Recycle
Data: External Lab Analytical Results	Paper	Lab	CY + 3 Y	Lab	Lab	Recycle
Data: Log Book – WWTP	Paper	Fac Ops	CY + 3 Y	Fac Ops	Fac Ops	Recycle
Data: Log Sheet – WWTP (Fab 2)	Paper	Fac Ops	CY + 3 Y	Fac Ops	Fac Ops	Recycle
Data: Log Sheet – WWTP Effluent (Fab 2)	Paper	Fac Ops	CY + 3 Y	Fac Ops	Fac Ops	Recycle
Data: Log Sheet – WWTP NPDES Monitoring	Paper	Fac Ops	CY + 3 Y	Fac Ops	Fac Ops	Recycle
Inspections	Paper	Enviro	Permanent	Env Eng	Env Eng	NONE

Record Title	Storage Medium	Storage Location	Retention Period	Collection Method	Retrieval Contact	Disposal Method
Notice of Intent to Construct (NOIC)	Paper/Electronic	Enviro	LOE	Env Eng	Env Eng	Recycle/ Delete
Plan: Temperature Management	Paper	Enviro	Permanent	Env Eng	Env Eng	NONE
Reports: Annual - Bioassay	Paper	Enviro	Permanent	Env Eng	Env Eng	NONE
Reports: Daily – WW Exception	Paper/Electronic	Lab	CY + 3 Y	Lab	Lab	Recycle/ Delete
Reports: Monthly – Discharge Monitor	Paper/Electronic	Enviro	CY + 3 Y	Env Eng	Env Eng	Recycle/ Delete
Studies: DMR-QA	Paper	Enviro	CY + 5 Y	Env Eng	Env Eng	Recycle
Studies: Mixing Zone	Paper	Enviro	Permanent	Env Eng	Env Eng	NONE
Permit 469-001 Industrial WW Discharge (POTW) (City)	Paper	Enviro	Permanent	Env Eng	Env Eng	NONE
General (Correspondence, Misc.)	Paper	Enviro	Permanent	Env Eng	Env Eng	NONE
Application (Renewal)	Paper	Enviro	Permanent	Env Eng	Env Eng	NONE
Data & Calculations	Paper/Electronic	Lab	CY + 5 Y	Lab	Lab	Recycle/ Delete
Data: Benchsheets for NPDES, POTW & Storm Water Results	Paper	Lab	CY + 5 Y	Lab	Lab	Recycle
Data: Charts - Effluent to City & River	Paper	Fac Ops	CY + 3 Y	Fac Ops	Fac Ops	Recycle
Data: External Lab Analytical Results	Paper	Lab	CY + 5 Y	Lab	Lab	Recycle
Data: Log Book – WWTP	Paper	Fac Ops	CY + 5 Y	Fac Ops	Fac Ops	Recycle
Data: Log Sheet – WWTP NPDES Monitoring	Paper	Fac Ops	CY + 3 Y	Fac Ops	Fac Ops	Recycle
Inspections	Paper	Enviro	Permanent	Env Eng	Env Eng	NONE
Data: Log Sheet – WWTP (Fab 1)	Paper	Fac Ops	CY + 3 Y	Fac Ops	Fac Ops	Recycle
Plans: Accidental Spill Prevention	Paper	Enviro	CY	Env Eng	Env Eng	Recycle
Reports: Annual – Split Sample	Paper/Electronic	Enviro	CY + 5 Y	Env Eng	Env Eng	Recycle/ Delete

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Record Title	Storage Medium	Storage Location	Retention Period	Collection Method	Retrieval Contact	Disposal Method
Reports: Daily – WW Exception	Paper/Electronic	Lab	CY + 3 Y	Lab	Lab	Recycle/ Delete
Reports: Monthly – Industrial Discharge	Paper/Electronic	Enviro	Permanent	Env Eng	Env Eng	NONE
Reports: Quarterly – Data Sampling	Paper/Electronic	Enviro	Permanent	Env Eng	Env Eng	NONE
Various						
Log Sheet: Chemical Tank Levels	Paper	Fac Ops	CY + 3 Y	Fac Ops	Fac Ops	Recycle
Log Sheet: Slurry – Cell 10	Paper	Fac Ops	CY + 3 Y	Fac Ops	Fac Ops	Recycle
Log Sheet: WW Checklist - Weekly	Paper	Fac Ops	CY + 3 Y	Fac Ops	Fac Ops	Recycle

Definitions:

CY	= Current Year
CY + #	= Keep current year, destroy in # year(s) stated after current year.
Doc	= Documentation Department
Enviro or Env Eng	= Environmental Engineering Department
Fac Maint	= Facilities Maintenance Department
Fac Ops	= Facilities Operations Department
HR	= Human Resources Department
Lab	= Facilities Department Lab
LOE	= Life of Equipment
Permanent	= Do Not Destroy this record
RES	= At resolution of issue, conflict, or problem.
Retention Period	= Example: CY+1 = Retain all records for 1 full year. Destroy CY records after 1 full year. 1998 (CY) records would be destroyed on or after Dec 31, 1999; thus retaining records for 1 year. Destroy only after prior Enviro Manager approval. Example: CY+5 = Retain all records for 5 full years. Destroy CY records after 5 full years. 2000 (CY) records would be destroyed on or after Dec 31, 2005; thus retaining records for 5 years. Destroy only after prior Enviro Manager approval.
Y	= Year

Executive Records Matrix

Record Name	Storage Medium	Storage Location	Retention Period	Collection Method	Retrieval Contact	Disposal Method

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Stormwater Data Summary

Total Copper mg/l

Date	10/4/1996	12/21/1996	5/28/1997	11/19/1997	5/19/1998	11/10/1998	5/11/1999	10/27/1999	5/10/2000	11/29/2000	4/20/2001	4/30/2001	10/23/2001	5/13/2002	11/12/2002	5/15/2003
North	0.019	0.6	0.024	0.009	0.008	0.0056	0.0118	0.0097	0.0198	<0.05	0.05		<0.03	0.07	0.03	0.03
South	0.028	0.836	0.039	0.006	0.0176	0.0094	0.0142	0.0116	0.0087	<0.05	<0.05		<0.03	0.05	0.03	0.03
East	0.016	0.008	0.03	0.004	0.0173	0.0099	0.0128	0.0122	0.0068	<0.05	0.03		<0.03	<0.03	0.03	0.03
Benchmark & Sample Date	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1

Total Lead mg/l

	10/4/1996	12/21/1996	5/28/1997	11/19/1997	5/19/1998	11/10/1998	5/11/1999	10/27/1999	5/10/2000	11/29/2000	4/20/2001	4/30/2001	10/23/2001	5/13/2002	11/12/2002	5/15/2003
North	0.0061	0.007	0.008	0.002	0.001	0.001	0.0015	0.002	0.0090	<0.005	0.007		<0.001	0.005	0.005	<0.005
South	0.017	0.009	0.02	0.004	0.006	0.0012	0.0017	0.002	0.0071	<0.005	<0.005		<0.001	0.005	0.005	<0.005
East	0.011	0.001	0.01	0.001	0.0017	0.001	0.001	0.0018	0.0028	<0.005	<0.005		<0.001	<0.005	0.005	<0.005
Benchmark & Sample Date	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4

Total Zinc mg/l

	10/4/1996	12/21/1996	5/28/1997	11/19/1997	5/19/1998	11/10/1998	5/11/1999	10/27/1999	5/10/2000	11/29/2000	4/20/2001	4/30/2001	10/23/2001	5/13/2002	11/12/2002	5/15/2003
North	0.18	0.178	0.319	0.091	0.173	0.193	0.33	0.173	0.347	0.33	0.39		0.16	0.48	0.18	0.26
South	0.65	0.233	0.282	0.133	0.199	0.207	0.298	0.423	0.143	0.30	0.29		0.18	0.49	0.09	0.23
East	0.61	0.286	0.36	0.167	0.167	0.247	0.28	0.287	0.202	0.33	0.26		0.35	0.31	0.24	0.17
Benchmark & Sample Date	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6

pH S.U.

	10/4/1996	12/21/1996	5/28/1997	11/19/1997	5/19/1998	11/10/1998	5/11/1999	10/27/1999	5/10/2000	11/29/2000	4/20/2001	4/30/2001	10/23/2001	5/13/2002	11/12/2002	5/15/2003
North	6.65	6.95	9.29	7.35	7.35	6.87	6.36	7.05	7.0	6.97	6.4		6.47	6.12	6.4	7.12
South	6.5	6.85	5.64	6.92	6.9	7.47	6.39	6.41	6.7	6.95	6.3		6.77	6.30	7.1	7.12
East	7	6.58	5.09	6.96	6.9	6.65	6.54	6.74	6.7	6.97	6.4		6.76	6.42	6.6	6.46
Lower Benchmark & Sample Date	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Upper Benchmark & Sample Date	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0

TSS mg/l

	10/4/1996	12/21/1996	5/28/1997	11/19/1997	5/19/1998	11/10/1998	5/11/1999	10/27/1999	5/10/2000	11/29/2000	4/20/2001	4/30/2001	10/23/2001	5/13/2002	11/12/2002	5/15/2003
North		71	117	26.75	20.25	3.75	6	14	151.5	6.88	207	58	6.88	29.25	6.9	5.5
South		18	75	13.5	34.25	1.25	5	6.25	27.5	4.38	19		3.88	32.5	3.3	2.4
East		<10	82	5.75	7	1.25	1	8.25	19	3	10		3.5	14.5	7.5	14.7
Benchmark & Sample Date		130	130	130	130	130	130	130	130	130	130	130	130	130	130	130

Oil and Grease mg/l

	10/4/1996	12/21/1996	5/28/1997	11/19/1997	5/19/1998	11/10/1998	5/11/1999	10/27/1999	5/10/2000	11/29/2000	4/20/2001	4/30/2001	10/23/2001	5/13/2002	11/12/2002	5/15/2003
North	<5.0	<5.0	1.11	<0.5	<5.0	<5.0	<5.0	<5.0	<5.0	<3.0	<3.0		<3.0	<3.0	4.0	<3.0
South	<5.0	<5.0	2.69	1.75	<5.0	<5.0	<5.0	<5.0	<5.0	<3.0	<3.0		<3.0	<3.0	3.0	<3.0
East	<5.0	<5.0	<0.5	0.685	<5.0	<5.0	<5.0	<5.0	<5.0	<3.0	<3.0		<3.0	<3.0	4.0	<3.0
Benchmark & Sample Date	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10

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Stormwater Data Summary

11/18/2003	5/26/2004	11/2/2004	3/23 & 28/2005	11/1/2005	4/10/2006	11/2/2006	5/2/2007	10/16/2007	11/12/2007	3/13/2008
0.03	0.07	<0.03	<0.03	<0.03	0.0048	0.00911	0.022	0.0203	0.00705	0.00466
<0.03	0.05	<0.03	<0.03	<0.03	0.00505	0.00911	0.0112	<0.01	0.00671	0.00566
0.04	<0.03	<0.03	0.03	<0.03	0.00813	0.604	0.0305	0.0149	0.0174	0.0164
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1

11/18/2003	5/26/2004	11/2/2004	3/23 & 28/2005	11/1/2005	4/10/2006	11/2/2006	5/2/2007	10/16/2007	11/12/2007	3/13/2008
<0.005	0.018	<0.005	<0.005	<0.0052	<0.001	0.00349	0.004	<0.02	0.0037	0.000392
<0.005	<0.005	<0.005	<0.005	<0.0052	0.00106	0.00166	0.00398	<0.02	0.00913	0.000924
<0.005	<0.005	<0.005	<0.005	<0.0052	<0.001	0.0125	0.00618	<0.02	0.00164	0.000498
0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4

11/18/2003	5/26/2004	11/2/2004	3/23 & 28/2005	11/1/2005	4/10/2006	11/2/2006	5/2/2007	10/16/2007	11/12/2007	3/13/2008
0.24	0.47	<0.1	0.17	0.06	0.0887	0.164	0.203	0.25	0.184	0.145
0.08	0.4	<0.1	0.15	0.08	0.117	0.26	0.0309	0.0283	0.00164	0.0173
0.33	0.35	<0.1	0.23	0.1	0.156	0.458	0.193	0.21	0.269	0.208
0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6

11/18/2003	5/26/2004	11/2/2004	3/23 & 28/2005	11/1/2005	4/10/2006	11/2/2006	5/2/2007	10/16/2007	11/12/2007	3/13/2008
6.5	6.17	5.95	5.8	6.0	5.76	6.44	5.63	5.9	6.21	5.8
7.3	6.13	6.17	6.5	6.3	6.49	6.35	5.97	5.9	6.08	6.5
6.3	6.43	6.14	6.8	6.1	6.31	6.37	6.14	6.5	6.37	6.3
5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0

11/18/2003	5/26/2004	11/2/2004	3/23 & 28/2005	11/1/2005	4/10/2006	11/2/2006	5/2/2007	10/16/2007	11/12/2007	3/13/2008
23	142.25	5.0	1.7	4.75	2.6	18.2	26.5	34.5	2.3	1.6
3.9	28	3.6	11.2	10.5	4.0	9.6	33.8	6.25	4.0	7.3
12	4	17.3	16.2	6.0	10.2	78.2	27.0	7.75	5.8	2.6
130	130	130	130	130	130	130	130	130	130	130

11/18/2003	5/26/2004	11/2/2004	3/23 & 28/2005	11/1/2005	4/10/2006	11/2/2006	5/2/2007	10/16/2007	11/12/2007	3/13/2008
<3.0	<3.0	<3.0	<3.0	<3.0	<4.81	<3.97	<4.00	<5.00	<5.0	<5.0
<3.0	<3.0	<3.0	<3.0	<3.0	<4.81	<4.9	<4.00	<5.00	5.8	<5.0
<3.0	<3.0	<3.0	<3.0	<3.0	<4.81	<4.55	39.4	<5.00	23.2	<5.0
10	10	10	10	10	10	10	10	10	10	10

Reused amount in Tons (from Yearly Recycle Report)

Year	Item	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	Total
1997	Plastic Drum (*all)	5.70	5.70	5.70	5.70	5.70	5.70	5.70	5.70	5.70	5.70	5.70	5.70	**68.40**
1998	Plastic Drum (*all)	5.70	5.70	5.70	5.70	0.74	5.00	0.00	0.00	3.40	0.00	0.00	0.00	**31.94**
1999	Plastic Drum (*all)	0.00	0.00	6.00	7.80	6.50	6.00	6.00	0.00	6.00	7.00	6.00	0.00	**51.30**
2000	Plastic Drum (*all)	23.37	20.00	21.05	22.04	22.00	23.50	28.16	28.16	35.20	15.12	15.12	15.12	**268.84**
2001	Plastic Drum	3.50	3.50	3.50	3.00	3.00	2.80	2.33	3.12	5.71	1.86	2.49	2.50	**37.31**
2002	Plastic Drum	3.41	2.92	3.49	3.53	3.65	3.10	4.07	3.64	2.16	2.97	2.47	1.79	**37.20**
2003	Plastic Drum	2.14	2.08	2.56	2.65	2.89	2.87	2.98	2.36	2.80	2.94	2.92	3.27	**32.46**
2004	Plastic Drum	2.99	3.14	3.39	3.69	3.32	3.27	3.26	3.26	3.26	3.20	2.97	2.75	**38.50**
2005	Plastic Drum	2.78	2.77	3.03	3.09	3.23	2.92	3.00	2.58	1.98	1.73	1.50	1.69	**30.30**
2006	Plastic Drum	1.61	1.53	1.73	2.55	3.49	3.18	2.51	1.71	3.31	3.37	3.08	3.07	**31.13**
2007	Plastic Drum	3.06	2.27	2.37	1.95	2.38	1.48	3.16	2.67	2.37	4.00	2.47	1.55	**29.73**
2008	Plastic Drum	1.50	1.38	2.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**4.91**
1997	Wood Pallet	5.00	8.99	11.75	16.75	6.46	4.58	8.79	7.90	12.41	9.84	9.08	11.55	**9.43**
1998	Wood Pallet	10.49	12.42	10.12	10.73	8.08	8.07	0.93	4.64	11.00	0.00	0.00	0.00	**13.42**
1999	Wood Pallet	9.21	7.74	8.17	1.37	1.25	8.17	1.09	2.23	1.80	1.72	2.11	8.18	**53.04**
2000	Wood Pallet	14.15	18.76	3.90	7.80	7.00	8.38	6.30	11.38	18.60	10.62	7.50	10.50	**124.88**
2001	Wood Pallet	18.15	13.60	15.30	10.50	1.65	3.33	1.80	1.95	2.05	3.66	3.60	3.70	**79.29**
2002	Wood Pallet	7.18	6.25	6.06	6.09	9.26	7.11	6.98	8.32	6.48	8.76	7.30	6.22	**86.01**
2003	Wood Pallet	8.10	7.00	6.50	6.75	8.23	6.41	10.46	4.79	5.31	5.85	6.80	6.73	**82.93**
2004	Wood Pallet	6.73	6.30	2.43	2.66	1.19	5.15	4.05	10.08	9.97	6.95	7.97	7.54	**71.02**
2005	Wood Pallet	7.20	12.65	4.50	9.23	4.28	10.22	1.91	0.90	7.14	8.44	9.11	10.24	**85.81**
2006	Wood Pallet	6.53	2.38	2.11	2.43	1.39	0.36	0.45	1.46	2.35	4.76	2.68	2.50	**29.40**
2007	Wood Pallet	0.00	4.61	3.94	4.30	3.89	2.09	2.27	6.28	1.78	0.23	0.23	1.35	**30.97**
2008	Wood Pallet	1.23	1.01	0.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**2.92**

*Recycle and reuse drum totals were combined.

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12/30/2004		1245.61	28.31	8.49	47.56	0.71	212.32	8.34	0.01	0.00	75.02		0.848	0.033	0.881
average	lbs/day	1907.45	32.00	30.41	52.41	0.94	282.44	10.38	0.02	0.00	109.74	avg. flow	0.8608	0.1717	1.032
	lbs/yr	696218.78	11680.98	11099.16	19130.99	342.45	103090.40	3790.13	7.69	1.65	40056.56	max flow	1.010	0.537	1.547
max	lbs/day	3764.75	58.13	135.40	71.93	2.90	887.59	20.88	0.06	0.02	346.79	min flow	0.687	0.033	0.720
2005															
1/6/2005		924.29	28.01	11.20	45.16	1.86	350.11	4.18	0.01	0.00	75.62		0.839	0.053	0.892
1/13/2005		1308.77	37.18	12.64	60.23	0.76	148.72	5.18	0.02	0.00	70.64		0.891	0.064	0.955
1/20/2005		1566.20	10.68	16.37	62.65	1.33	213.57	4.34	0.01	0.00	55.53		0.853	0.191	1.044
1/27/2005		1483.94	37.47	17.99	65.65	1.10	299.79	5.22	0.01	0.00	96.68		0.898	0.118	1.016
2/3/2005		1560.69	42.56	215.66	69.66	0.80	283.76	7.74	0.01	0.00	154.65		0.85	0.058	0.908
2/10/2005		1450.89	36.64	9.53	61.26	0.60	293.11	7.49	0.02	0.00	95.26		0.878	0.056	0.934
2/17/2005		1298.13	12.64	5.90	61.87	0.72	337.18	10.13	0.01	0.00	42.15		1.01	0.082	1.092
2/24/2005		1307.31	29.71	17.08	60.17	1.24	668.51	6.91	0.02	0.00	88.39		0.89	0.054	0.944
3/3/2005		1198.61	27.24	10.90	51.08	0.82	408.62	5.79	0.02	0.00	64.70		0.816	0.071	0.887
3/10/2005		946.33	28.68	17.21	48.75	1.16	358.46	9.32	0.01	0.00	74.56		0.859	0.025	0.884
3/17/2005		1665.71	9.46	10.10	43.54	1.00	315.48	9.46	0.01	0.00	27.76		0.756	0.039	0.795
3/24/2005		985.80	19.20	14.08	41.61	0.79	384.08	7.49	0.04	0.00	112.66		0.767	0.045	0.812
3/31/2005		1568.03	35.64	3.56	57.73	0.80	427.65	5.92	0.03	0.00	101.21		0.854	0.052	0.906
4/7/2005		1263.42	41.02	12.31	59.89	0.85	410.20	14.07	0.04	0.01	135.37		0.983	0.013	0.996
4/14/2005		1069.61	26.71	13.35	49.21	0.84	667.67	8.95	0.04	0.01	30.05		0.8	0.021	0.821
4/21/2005		537.61	18.33	11.00	65.98	0.35	305.46	10.81	0.06	0.00	51.93		0.732	0.009	0.741
4/28/2005		1751.09	28.94	12.66	76.70	1.43	506.51	8.10	0.01	0.00	42.69		0.867	0.079	0.946
5/5/2005		2699.99	28.88	5.78	58.48	1.77	433.15	28.59	0.01	0.00	119.12		0.865	0.039	0.904
5/12/2005		2786.10	35.18	2.11	61.21	0.60	351.78	12.72	0.03	0.01	79.50		0.843	0.015	0.858
5/19/2005		311.77	28.34	4.96	56.76	0.79	283.43	6.84	0.01	0.00	89.28		0.849	0.089	0.938
5/26/2005		1254.43	35.64	10.69	57.02	0.80	285.10	7.56	0.07	0.00	149.68		0.854	0.050	0.904
6/2/2005		1660.20	20.58	15.78	44.39	0.59	274.41	7.10	0.03	0.00	42.53		0.822	0.011	0.833
6/9/2005		1648.82	22.48	11.24	53.21	0.86	374.73	10.77	0.01	0.00	41.22		0.898	0.050	0.948
6/16/2005		1320.53	11.25	5.25	51.77	0.51	300.12	9.18	0.02	0.00	45.77		0.899	0.031	0.930
6/23/2005		1714.92	11.69	10.13	49.89	1.96	311.80	8.39	0.03	0.01	147.33		0.934	0.240	1.174
6/30/2005		5431.19	36.30	13.80	38.12	1.67	290.44	8.68	0.01	0.01	46.47		0.870	0.129	0.999
7/7/2005		3704.16	30.61	12.25	37.04	0.98	382.66	8.18	0.01	0.01	52.81		0.917	0.047	0.964
7/13/2005		1930.85	31.91	13.56	60.32	1.03	319.15	12.28	0.02	0.02	70.21		0.956	0.015	0.971
7/21/2005		1591.90	36.18	5.79	49.93	0.38	361.80	8.87	0.01	0.01	115.05		0.867	0.048	0.915

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7/28/2005		1462.46	29.54	11.08	56.13	0.71	369.31	23.15	0.01	0.01	37.67		0.885	0.098	0.983
8/4/2005		1792.04	40.73	13.85	61.91	0.81	325.82	9.01	0.02	0.01	54.58		0.976	0.018	0.994
8/11/2005		1558.30	31.48	25.97	58.16	0.81		11.84	0.02	0.00	59.81		0.943	0.057	1.000
8/18/2005		7117.84	33.18	18.25	60.06	1.25	165.92	7.39	0.03	0.00	43.14		0.994	0.029	1.023
8/25/2005		1510.38	22.88	12.21	39.44	0.83	305.13	8.21	0.03	0.00	130.44		0.914	0.022	0.936
9/1/2005		1521.95	38.43	8.46	43.04	3.09	384.33	8.23	0.02	0.00	142.97		0.921	0.035	0.956
9/8/2005		1410.13	24.04	12.02	59.53	0.83	240.36	7.55	0.02	0.03	41.66		0.960	0.035	0.995
9/15/2005		1799.38	24.54	13.90	60.61	1.31	327.16	14.33	0.03	0.01	74.43		0.980	0.045	1.025
9/22/2005		1521.95	30.75	12.30	61.49	0.86	307.46	8.58	0.04	0.01	28.44		0.921	0.053	0.974
9/29/2005		1404.25	23.94	11.97	63.03	1.17	319.15	8.84	0.04	0.00	68.62		0.956	0.018	0.974
10/6/2005		1725.94	23.54	13.34	64.33	0.59	313.81	9.29	0.03	0.00	50.21		0.94	0.018	0.958
10/13/2005		665.40	22.68	11.34	70.17	0.83	302.46	8.57	0.01	0.00	31.76		0.906	0.039	0.945
10/20/2005		2256.94	51.29	32.97	62.58	1.08	293.11	7.89	0.01	0.00	106.98		0.878	0.035	0.913
10/27/2005		1531.86	30.95	10.06	57.64	0.73	309.47	8.00	0.02	0.00	61.12		0.927	0.031	0.958
11/4/2005		1597.96	54.88	12.11	54.88	1.14	242.12	13.03	0.02	0.00	87.16		0.967	0.033	1.000
11/10/2005		1546.73	35.15	21.87	57.18	1.76	312.47	8.39	0.02	0.00	87.49		0.936	0.077	1.013
11/14/2005		1418.94	31.44	20.96	51.60	1.38	403.11	7.72	0.02	0.01	74.98		0.966	0.036	1.002
11/22/2005		1926.81	56.53	23.89	68.47	1.89	398.10	12.54	0.01	0.00	145.70		0.954	0.019	0.973
12/1/2005		2478.74	52.05	27.04	57.54	2.87	375.57	8.41	0.01	0.02	114.92		0.9	0.032	0.932
12/8/2005		3053.81	36.86	21.59	59.38	3.71	385.58	13.67	0.01	0.00	94.85		0.924	0.032	0.956
12/15/2005		2044.68	33.54	10.07	61.19	2.34	387.25	8.65	0.01	0.00	102.23		0.928	0.025	0.953
12/22/2005		1965.37	41.84	14.14	59.26	2.19	372.23	8.74	0.01	0.00	90.08		0.892	0.035	0.927
12/29/2005		1410.13	43.91	11.22	54.72	0.75	320.48	7.01	0.02	0.00	95.34		0.96	0.052	1.012
average	lbs/day	1781.99	31.03	17.18	56.57	1.18	343.29	9.41	0.02	0.01	79.68	avg. flow	0.897	0.051	0.948
	lbs/yr	650424.87	11324.49	6271.51	20647.83	430.73	125301.14	3434.44	7.77	2.18	29083.60	max flow	1.010	0.240	1.250
max	lbs/day	7117.84	56.53	215.66	76.70	3.71	668.51	28.59	0.07	0.03	154.65	min flow	0.732	0.009	0.741
2006															
1/5/2006		1536.82	15.52	17.85	56.66	0.69	388.09	8.25	0.02	0.00	45.79		0.93	0.019	0.949
1/12/2006		1683.71	15.31	27.55	64.29	0.99	306.13	8.13	0.02	0.00	45.15		0.917	0.029	0.946
1/19/2006		984.89	14.92	14.18	64.17	1.36	373.06	8.47	0.01	0.00	53.72		0.894	0.028	0.922
1/26/2006		1634.32	33.35	29.71	60.01	0.88	412.71	8.88	0.02	0.00	64.38		0.989	0.025	1.014
2/2/2006		3030.86	35.17	11.35	53.49	0.64	324.16	8.28	0.01	0.00	50.24		0.971	0.017	0.988
2/9/2006		2033.67	15.41	40.06	53.92	0.71	539.23	14.48	0.01	0.00	47.76		0.923	0.043	0.966
2/16/2006		1805.62	69.09	23.13	43.28	0.79	223.84	10.97	0.10	0.00	64.17		0.894	0.02	0.914

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2/23/2006	2035.87	36.86	27.76	67.09	1.05	616.93	12.88	0.03	0.00	120.30	0.924	0.033	0.957
3/2/2006	1690.50	13.97	25.15	57.98	0.69	349.28	12.22	0.03	0.00	53.79	0.837	0.037	0.874
3/9/2006	1543.43	31.18	16.37	61.43	1.05	467.71	12.12	0.02	0.00	101.34	0.934	0.019	0.953
3/16/2006	864.80	36.95	19.65	52.91	0.87	471.71	13.81	0.00	0.00	69.97	0.942	0.034	0.976
3/23/2006	2086.18	14.59	10.21	57.26	0.95	364.72	9.21	0.01	0.00	67.11	0.874	0.048	0.922
3/30/2006	1906.61	44.91	15.76	57.91	1.12	393.93	9.22	0.01	0.00	70.91	0.944	0.034	0.978
4/6/2006	2349.48	46.53	26.70	51.11	0.57	305.13	10.95	0.02	0.04	66.37	0.914	0.026	0.940
4/13/2006	2250.88	37.62	22.04	59.42	2.48	314.81	8.93	0.01	0.00	96.80	0.943	0.035	0.978
4/20/2006	3301.31	42.47	26.26	50.80	1.98	375.15	11.88	0.01	0.00	77.28	0.899	0.032	0.931
4/27/2006	2170.27	16.44	14.80	51.30	1.08	411.04	17.63	0.00	0.00	75.63	0.985	0.018	1.003
5/4/2006	1417.84	31.08	27.21	58.15	0.59	358.04	10.75	0.01	0.00	35.09	0.858	0.061	0.919
5/11/2006	1574.83	15.91	37.38	62.04	0.90	318.15	8.39	0.02	0.00	100.22	0.953	0.037	0.990
5/18/2006	2327.26	33.20	31.74	45.24	1.94	406.86	12.40	0.01	0.00	63.47	0.975	0.096	1.071
5/25/2006	1553.34	32.01	16.47	47.86	1.59	313.81	9.40	0.01	0.00	52.56	0.94	0.032	0.972
6/1/2006	1427.75	14.42	26.68	43.27	0.84	360.54	11.09	0.01	0.01	316.56	0.864	0.068	0.932
6/8/2006	1684.44	31.60	27.84	43.16	0.86	626.45	9.51	0.01	0.00	103.71	0.834	0.014	0.848
6/15/2006	1388.09	27.89	30.92	37.35	0.56	378.57	7.22	0.01	0.02	56.15	0.756	0.024	0.780
6/22/2006	1894.86	14.35	25.12	43.14	1.30	358.87	11.37	0.01	0.01	59.57	0.860	0.020	0.880
6/29/2006	784.93	14.27	46.38	37.11	0.95	285.43	9.74	0.01	0.00	56.37	0.855	0.055	0.910
7/6/2006	812.48	14.77	32.50	55.40	0.63	295.45	10.64	0.01	0.00	62.78	0.885	0.023	0.908
7/13/2006	1311.71	14.91	23.85	38.76	0.93	372.65	8.85	0.01	0.00	90.18	0.893	0.026	0.919
7/19/2006	1440.97	14.56	24.74	49.49	3.35	363.88	8.19	0.01	0.00	50.94	0.872	0.038	0.910
7/27/2006	1947.00	35.56	34.60	62.75	1.34	402.27	14.82	0.01	0.00	50.69	0.964	0.056	1.020
8/2/2006	1963.16	16.22	17.85	48.67	1.56	405.61	9.43	0.01	0.00	60.03	0.972	0.050	1.022
8/10/2006	1584.74	43.30	27.21	57.63	1.38	400.19	9.43	0.02	0.00	126.46	0.959	0.042	1.001
8/17/2006	2159.26	16.36	24.54	72.79	1.08	408.95	9.18	0.01	0.01	52.35	0.980	0.066	1.046
8/24/2006	1846.02	30.67	26.70	61.79	1.96	381.41	9.98	0.02	0.00	97.64	0.914	0.041	0.955
8/31/2006	1812.23	10.98	7.14	33.99	0.49	274.58	7.84	0.01	0.01	18.67	0.658	0.038	0.696
9/6/2006	3728.94	14.74	38.32	55.57	1.11	368.47	9.29	0.01	0.01	45.69	0.883	0.036	0.919
9/14/2006	1985.38	16.41	29.53	67.44	3.13	410.20	7.85	0.00	0.00		0.983	0.041	1.024
9/21/2006	2447.16	15.89	23.04	63.01	2.64	397.27	6.74	0.01	0.01		0.952	0.058	1.010
9/25/2006	2396.48	16.76	20.95	78.77	1.79	418.97	9.92	0.01	0.01		1.004	0.054	1.058
10/5/2006	1991.81	34.71	25.65	51.00	1.38	377.24	10.28	0.01	0.00	126.75	0.904	0.050	0.954
10/12/2006	2201.12	57.20	29.18	55.78	2.46	416.88	10.68	0.02	0.00	88.38	0.999	0.057	1.056
10/17/2006	2490.86	45.61	23.45	56.13	2.24	242.62	8.40	0.01	0.00	95.43	0.969	0.057	1.026
10/26/2006	889.04	50.38	26.27	21.82	6.19	134.70	4.90	0.01	0.00	74.76	0.807	0.096	0.903
11/2/2006	1906.61	15.76	24.42	60.11	2.01	393.93	5.47	0.01	0.00	126.84	0.944	0.071	1.015

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11/9/2006		2267.59	49.63	13.48	57.72	1.44	396.43	5.74	0.01	0.00	160.95		0.950	0.035	0.985
11/16/2006		2110.78	15.99	14.39	68.28	3.15	399.77	7.60	0.02	0.00	75.96		0.958	0.048	1.006
11/23/2006		3227.87	51.43	11.74	66.76	2.59	440.16	5.33	0.00	0.00	93.17		0.879	0.055	0.934
11/30/2006		2200.75	45.40	21.55	54.63	1.93	307.80	8.25	0.03	0.00	165.44		0.922	0.052	0.974
12/6/2006		2062.31	64.75	31.01	56.68	1.29	216.33	5.30	0.00	0.00	164.41		0.864	0.069	0.933
12/14/2006		1445.93	43.30	41.63	49.66	1.29	292.11	7.23	0.00	0.01	102.97		0.875	0.026	0.901
12/21/2006		1516.62	56.53	28.26	45.50	1.34	275.75	6.78	0.01	0.00	71.01		0.826	0.040	0.866
12/28/2006		1866.22	40.10	33.93	44.73	1.58	308.47	6.59	0.01	0.02	70.95		0.924	0.051	0.975
average	lbs/day	1895.69	30.13	24.89	54.14	1.49	368.20	9.44	0.01	0.01	83.41	avg. flow	0.911	0.042	0.952
	lbs/yr	691925.05	10998.63	9084.26	19760.12	545.59	134392.91	3445.54	4.57	2.14	30442.94	max flow	1.004	0.096	1.100
max	lbs/day	3728.94	69.09	46.38	78.77	6.19	626.45	17.63	0.10	0.04	316.56	min flow	0.658	0.014	0.672
2007															
1/4/2007		2068.92	90.91	42.32	49.37	1.82	235.10	12.07	0.01	0.01	168.49		0.939	0.064	1.003
1/11/2007		2524.28	16.39	29.50	32.78	0.51	327.83	6.30	0.02	0.00	46.72		0.982	0.027	1.009
1/18/2007		1282.33	31.18	36.43	34.32	1.00	72.86	8.08	0.01	0.00	30.60		0.873	0.431	1.304
1/25/2007		2699.99	32.78	38.26	37.90	0.81	360.96	11.04	0.01	0.00	43.32		0.865	0.048	0.913
2/1/2007		1771.29		15.37	44.72	0.51	365.97	10.93	0.01	0.00	84.90		0.877	0.043	0.920
2/8/2007		2418.88	35.18	38.48	47.75	1.04	392.68	7.88	0.02	0.00	62.04		0.941	0.044	0.985
2/15/2007		1485.41	13.50	11.48	44.90	0.77	270.07	7.10	0.01	0.00	33.08		0.809	0.057	0.866
2/22/2007		1938.93	16.02	19.23	46.47	0.74	240.36	10.95	0.02	0.00	45.67		0.96	0.038	0.998
3/1/2007		1823.25	16.58	14.92	49.73	0.94	331.50	9.81	0.00	0.00	35.64		0.993	0.052	1.045
3/8/2007		2324.87	38.04	26.01	60.15	0.95	487.74	11.03	0.01	0.00	40.64		0.974	0.074	1.048
3/15/2007		1908.08	14.46	23.85	44.81	0.69	216.83	5.22	0.01	0.00	33.97		0.866	0.047	0.913
3/22/2007		2317.71	16.21	25.93	55.92	1.03	405.19	7.01	0.02	0.00	76.18		0.971	0.028	0.999
3/26/2007		2301.00	37.65	13.68	65.97	1.15	402.27	5.53	0.01	0.00	30.57		0.964	0.065	1.029
4/5/2007		2525.56	73.16	27.55	45.92	1.07	382.66	9.43	0.02	0.00	56.63		0.917	0.06	0.977
4/12/2007		1954.35	58.48	25.17	53.30	1.44	370.14	8.77	0.01	0.00	54.04		0.887	0.054	0.941
4/19/2007		1874.29	34.08	24.01	50.34	1.23	309.80	9.84	0.01	0.00	44.15		0.928	0.039	0.967
4/26/2007		1849.87	26.52	18.11	52.39	0.49	194.04	4.93	0.03	0.00	63.39		0.775	0.06	0.835
5/3/2007		2167.34	31.60	18.19	42.44	0.92	303.12	10.28	0.01	0.06	37.89		0.908	0.053	0.961
5/10/2007		1688.48	39.98	13.26	41.86	2.04	279.09	7.50	0.01	0.00	46.05		0.836	0.056	0.892
5/18/2007		2262.81	70.57	16.62	53.80	0.82	316.48	5.03	0.02	0.00	57.76		0.948	0.053	1.001
5/24/2007		1613.93	14.67	13.94	38.15	0.77	366.80	7.71	0.03	0.00	22.01		0.879	0.068	0.947
5/30/2007		1634.13	14.86	10.40	54.97	1.56	148.56	7.63	0.01	0.00	7.43		0.89	0.084	0.974
6/7/2007		1866.22	33.16	14.65	49.35	1.42	231.35	8.25		0.00	43.19		0.924	0.09	1.014

TO: Distribution

FROM: Greg Carr

SUBJECT: Unusual Dumps in Waste Chromic Acid System

DATE: September 15, 1986

I have been examining the records of how much chromic acid waste has been generated since the leak in the etch station was fixed. It appears that we have the potential to cut our waste volume in half again. There have been 6 unusual dumps into the system in the last 45 days that account for over half of the waste generated during this period. If the source of these dumps can be identified and eliminated, we could reduce the waste volume to 20 gallons per day. We currently generate about 40 gallons per day.

A graph showing the waste tank levels vs time is attached - Figure 1. The days of a significant level rise are evident - they occurred on July 3, August 11, August 13, August 29, August 30, and September 5. These dumps were from 120 to 240 gallons. The date, time and size of the dumps are listed in the table on Figure 2. We record the levels every 4 hours, so the dumps can be tied down to 4 hour periods. Copies of the actual log sheets are also attached.

It appears that these dumps are occurring in the Chromic Etch Station in Acid Etching. The volumes are too great to come from the Customer Service Lab. Perhaps the water is coming from a "hidden" source such as the plenum rinse or the glove rinse nozzles. Maybe these uses could be disconnected if they are not important - I believe they are both city water. I believe the Ingot Transformers are the people best suited to investigate these dumps as they are always in the area and us the equipment. The potential savings are about one-third of our current waste disposal bill, or another $6,000 per year.

GEC/md

cc: Terry Allan
John Catanoso
Tom D'Silva
Steve Henley
Pat Niiranen
Murray Tilson
File

Waste Chromic Tank Levels

FIGURE I

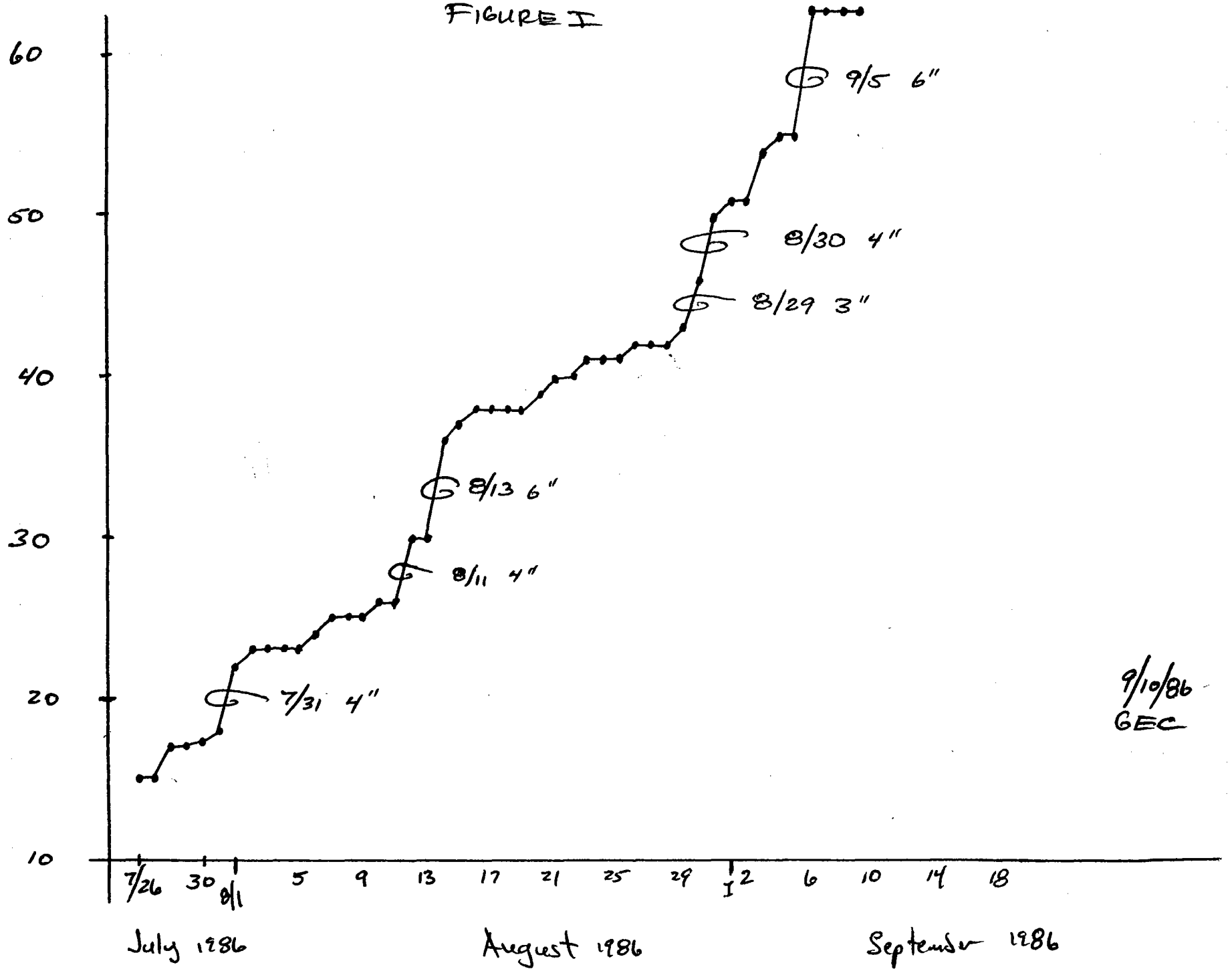

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FIGURE 2

Summary of Unusual Dumps into Waste Chrome Tank

Date	Time	Amount	Rise
7/31/86	14:00 – 22:00	160 gallons	(4")
8/11/86	18:00 – 22:00	160 gallons	(4")
8/13/86	14:00 – 18:00	240 gallons	(6")
8/29/86	06:00 – 10:00	120 gallons	(3")
8/30/86	06:00 – 10:00	160 gallons	(4")
9/5/86	10:00 – 14:00	240 gallons	(6")

9/10/86 GEC

SCOEPA00054806

redi-letter

31688 TRIP

TO John Pittman
Dirk Dunning
Otto Sweep
Peter Mayling
Tom D'Silva

FROM J.R. Ellis

SUBJECT Chromic Acid Spills DATE 3/10/81

MESSAGE Steve Carter, Oregon DEQ, called today in regard to the most recent chromic acid spill. He said that he would like to inspect the site (ref. etch machine) and have someone describe to him as to how the spills occurred. I told him that I do not have the authority to take him into a production area, that he would have to wait until next week until the Directors return to the plant. Tentatively made appointment for 10:30 A.M. on Tuesday March 17th for a possible inspection and a discussion regarding Report Calculations. SIGNED Jim Ellis

REPLY

3/10

Dirk -

Steve would like to review your calculations for the monthly reports on TDS. Also

Jim

SIGNED DATE / /

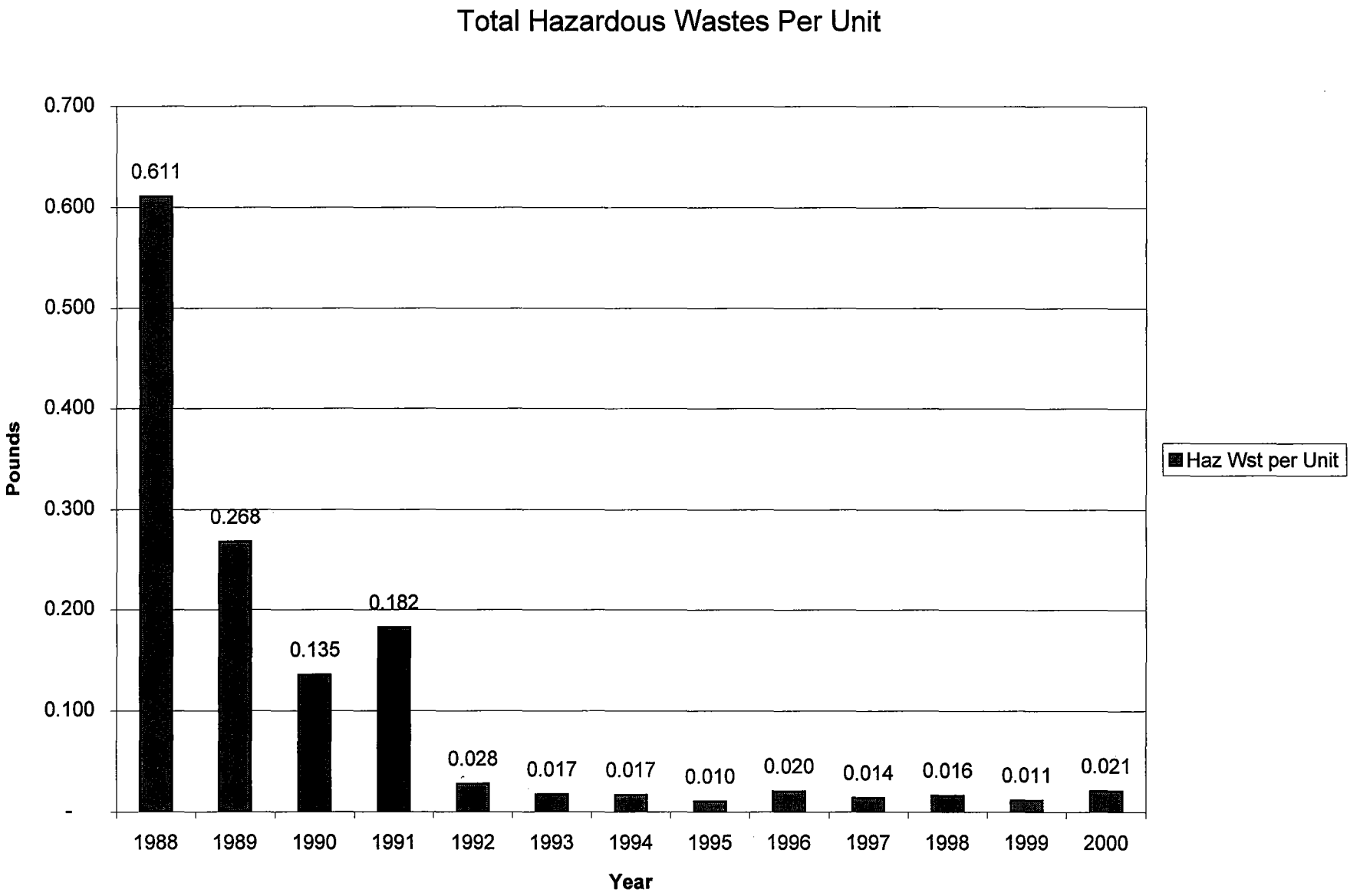
REDIFORM® 4S 471

SEND PARTS 1 AND 3 WITH CARBON INTACT - PART 3 WILL BE RETURNED WITH REPLY.

POLY PAK (50 SETS) 4P 471

DETACH AND FILE FOR FOLLOW-UP

SCOEPA00054807


Total Hazardous Wastes Per Unit
0.700
0.600
0.500
0.400
0.300
0.200
0.100
-
Pounds
0.611
0.268
0.135
0.182
0.028
0.017
0.017
0.010
0.020
0.014
0.016
0.011
0.021
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
Year
Haz Wst per Unit

1999 Monthly Hazardous Waste Generation - Pounds

WASTE	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Mercury contaminated debris	2	1	1	1	1	1	-	1	40	-	-	-	48
Alcohol mixture	138	137	138	620	620	75	413	826	413	413	413	413	4,619
Wax from Enya	904	372	394	451	571	555	460	598	538	466	518	550	6,377
Partially full spray cans	17	18	10	60	60	1	1	1	-	1	5	-	174
Chrome debris	17	18	17	18	33	33	34	18	18	19	-	-	225
Chrome sludge	287	287	628	277	277	386	386	386	344	343	344	503	4,448
													-
Labpack Expired Product	3	3	3	3	3	-	-	-	-	-	-	-	15
Labpack Expired Product	1	1	1	1	1	-	-	-	-	-	-	-	5
Labpack Expired Product	8	8	8	8	8	-	-	-	-	-	-	-	40
Labpack Expired Flammable Liquids	50	50	50	50	50	-	-	-	-	-	-	-	250
Labpack Old Product. Flammable	20	30	20	-	-	-	-	-	-	-	-	-	70
Labpack Old Chemical and Spill Residue. Flammable	15	20	1	1	1	1	1	1	-	-	-	-	41
Labpack Potassium Permanganate. Spill Residue	3	3	-	-	-	-	-	-	-	-	-	-	6
Labpack PPE Contaminated with HF and Nitric Acid	170	170	-	-	-	-	-	-	-	-	-	-	340
Waste Product Aerosol cans	3	3	3	3	3	-	-	-	-	-	-	-	15
Expired Products	20	20	20	20	-	-	-	-	-	-	-	-	80
Waste Product	-	-	1	1	1	1	1	1	1	1	-	-	8
Waste Product. Flammable Liquids	5	5	7	8	-	-	-	-	-	-	-	-	25
Waste Mercury contained in manufactured articles	1	-	1	-	1	-	-	-	-	-	-	-	3
Expired Products	1	2	1	1	-	-	-	-	-	-	-	-	5
Expired Products. Toxic Liquids	7	7	7	7	7	-	-	-	-	-	-	-	35
Waste Product	4	4	4	4	4	-	-	-	-	-	-	-	20
Waste Product. Corrosive	50	50	50	50	50	8	229	230	-	-	-	-	717
Waste Product Flammable Liquids	14	14	14	14	14	6	6	6	6	6	-	-	100
Total Pounds Per Month	**1,740**	**1,223**	**1,379**	**1,598**	**1,705**	**1,067**	**1,531**	**2,068**	**1,360**	**1,249**	**1,280**	**1,466**	**17,666**

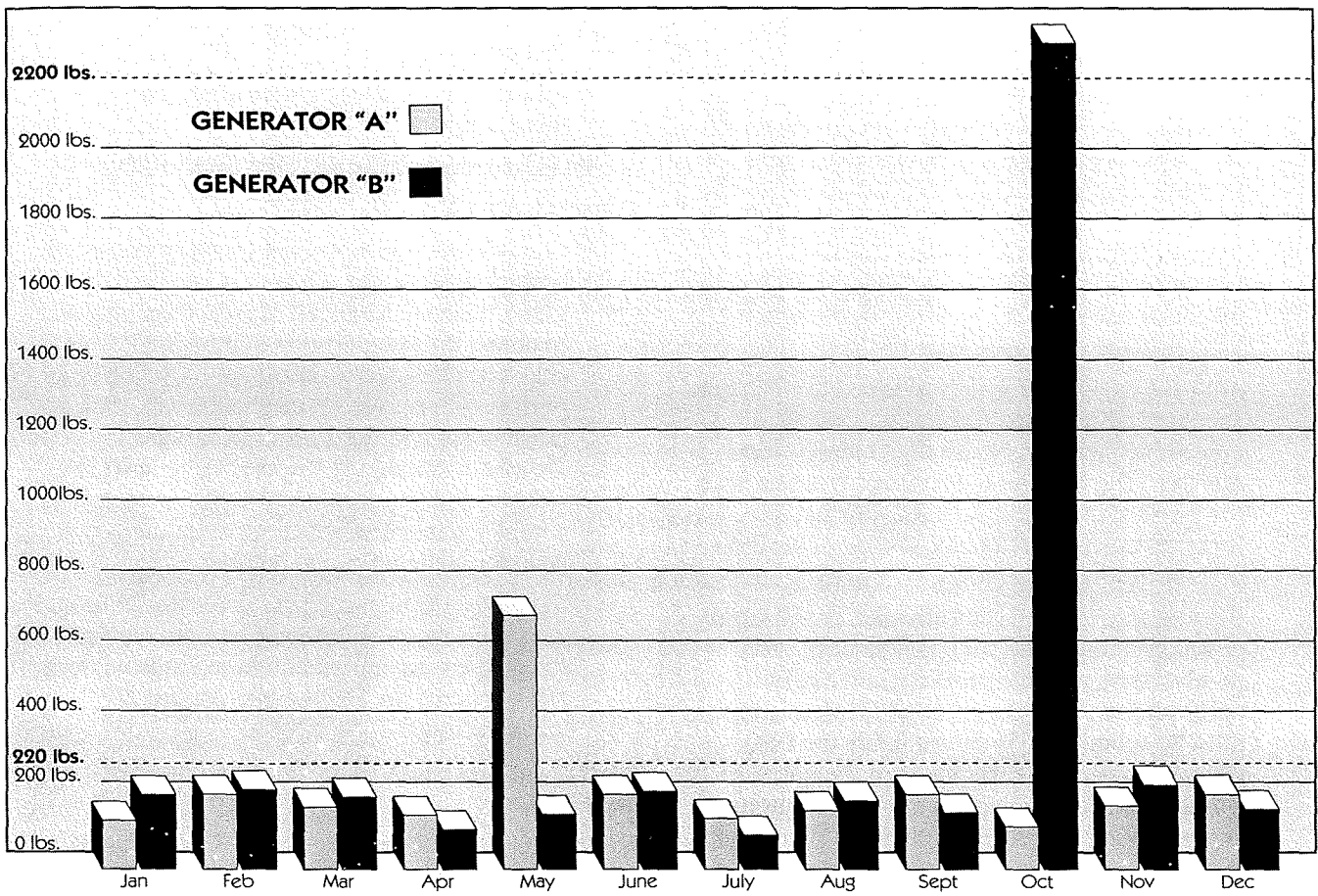
SQG status: Generate less than 2,200 pounds of hazardous waste per month.
Accumulate no more than 13,200 pounds of hazardous waste on-site at any time.

2000 Hazardous Waste Generation (as of 2/29/00)

Waste	Amount generated YTD 2000 (lbs)	Monthly average (lbs)
Mercury contaminated debris	-	0.0
Alcohol mixture	667	333.5
Wax from Enya	1,152	576.0
Partially full spray cans	142	71.0
Chrome debris	225	112.5
Chromic Acid	5,588	2794.0
		0.0
All other hazardous wastes (sum of below)	1,080	540.0
Labpack Expired Product	-	
Labpack Expired Product	-	
Labpack Expired Product	-	
Labpack Expired Flammable Liquids	-	
Labpack Old Product. Flammable	-	
Labpack Old Chemical and Spill Residue. Flammable	-	
Labpack Potassium.Permanganate. Spill Residue	-	
Labpack PPE Contaminated with HF and Nitric Acid	-	
Waste Product Aerosol cans	-	
Expired Products	-	
Waste Product	-	
Waste Product. Flammable Liquids	-	
Waste Mercury contained in manufactured articles	-	
Expired Products	-	
Expired Products. Toxic Liquids	-	
Waste Product	-	
Waste Product. Corrosive	-	
Waste Product Flammable Liquids	-	
	-	
Total	**8,854**	**4,427**

SQG status: Generate less than 2,200 pounds of hazardous waste per month.
Accumulate no more than 13,200 pounds of hazardous waste on-site at any time.

HAZARDOUS WASTE GENERATION AND GENERATOR CATEGORY



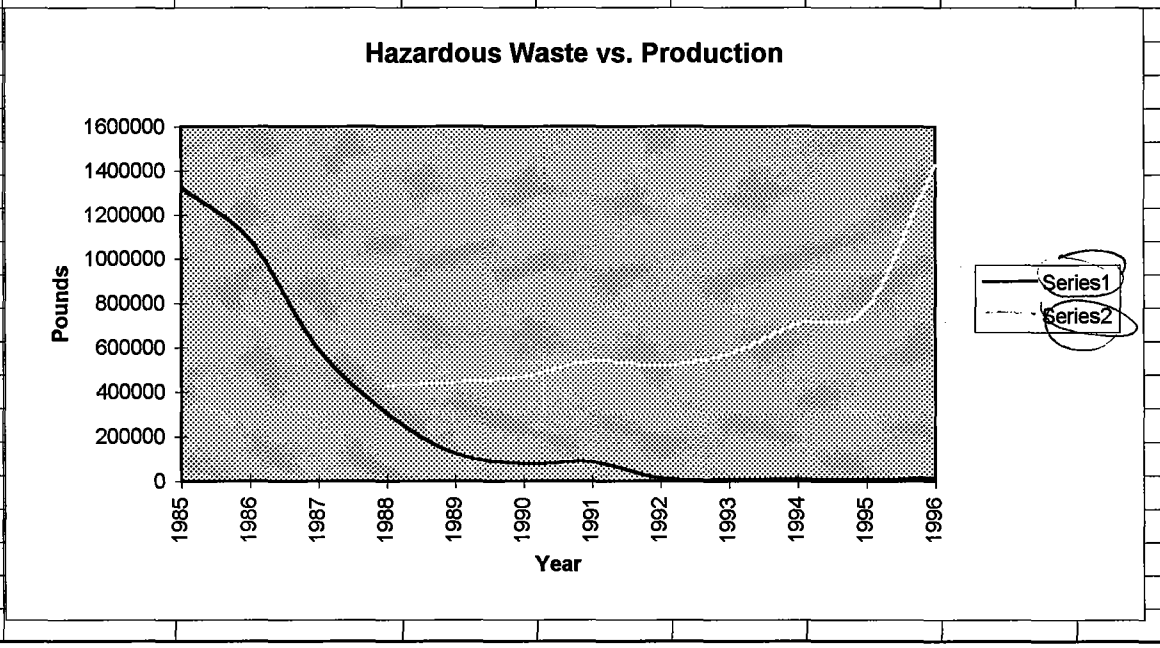
Consider the following for Generator "A":
Even though Generator "A" produced less than 220 lbs. in 11 months of the year, because May's generation exceeded 220 lbs. this generator has the generator category of a small quantity generator (SQG). They must annually report total hazardous waste generated for the year, pay fees on it, and prepare a toxics use reduction plan. They must also manage May's hazardous waste as a small quantity generator by complying with the appropriate small quantity generator hazardous waste regulations. For the other 11 months they may manage their hazardous waste as a conditionally exempt hazardous waste generator.

For more information on hazardous waste management requirements for SQGs, refer to Chapter 7; refer to Chapter 11 for fees; and refer to Chapter 12 for reporting requirements.

Consider the following for Generator "B":
Even though Generator "B" produced less than 220 lbs. in 11 months of the year, because October's generation exceeded 2,200 lbs. this generator has the generator category of a large quantity generator (LQG).
They must annually report total waste generated for the year, pay fees based on the year's total of waste and prepare a toxic use reduction plan. They must manage October's hazardous waste as a large quantity generator by complying with large quantity generator regulations which are more extensive than small quantity generator regulations.

SCOEPA00054811

Hazardous Waste vs. Production								
	Haz. Waste	Production Units		Ratio				
1985	1,326,800							
1986	1,087,805							
1987	594,975							
1988	304,183	430		707.4				
1989	125,885	443		284.2				
1990	77,041	470		163.9				
1991	86,074	540		159.4				
1992	14,198	520		27.3				
1993	9,841	570		17.3				
1994	11,800	708		16.7				
1995	8,019	781		10.3				
1996	16,593	1,427		11.6				



SCOEPA00054812

Wacker Siltronic Pollution Prevention Program
Hazardous Waste Reduction

HAZARDOUS WASTE - POUNDS

Total Hazardous Waste	Haz Wst per Unit	Waste Alcohol	Waste Alcohol per Unit	Wax from Enya	Waste Wax per Unit	Chrome Sludge / Chromic Acid	Waste Chrome Sludge / Chromic Acid per Unit
1,326,800							
1,087,805							
594,975							
304,183	0.611						
125,885	0.268						
77,041	0.135						
86,074	0.182						
14,198	0.028						
9,841	0.017						
11,800	0.017						
8,019	0.010					6,850	0.009
16,593	0.020					7,936	0.010
14,924	0.014	2891	0.003	7,435	0.007	3,874	0.004
19,891	0.016	1652	0.001	9,977	0.008	6,225	0.005
17,666	0.011	4,619	0.003	6,377	0.004	4,448	0.003
41,365	0.021	667	0.0003	9,094	0.005	27,613	0.014

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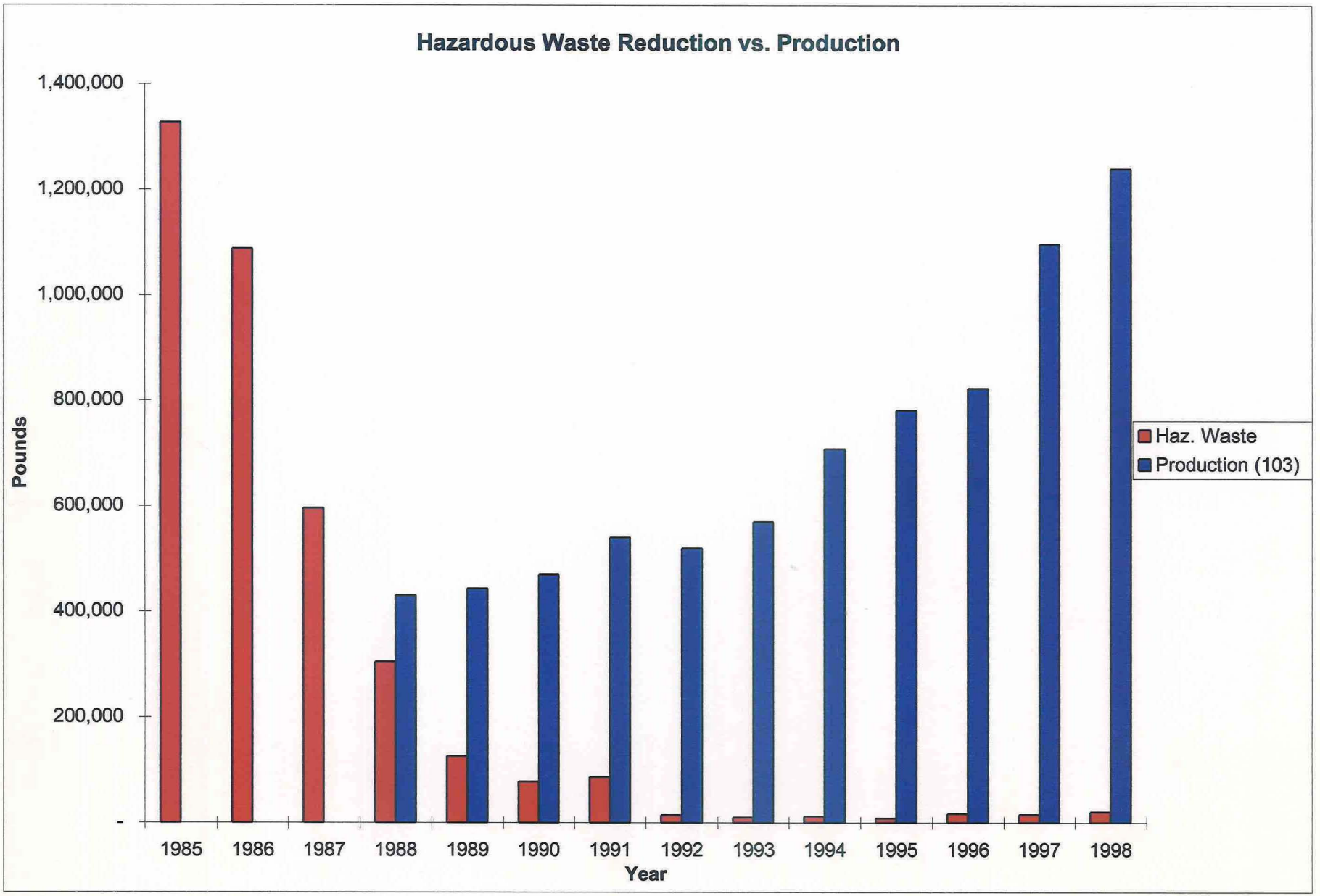


SCOEPA00054814

WACKER SILTRONIC ENVIRONMENTAL MEASURES

Pollution Prevention and Waste Minimization

Hazardous Waste reduced by 99%

Solid Waste reduced by 60%

Air Pollution reduced by 89%

Toxic Use Reduction

Average Chemical Use reduced by 47%

TCE reduced by 100%

CFC reduced by 100%

Total Solvents reduced by 85%

Energy Conservation

5.3 Million Kilowatts/year

Water Conservation

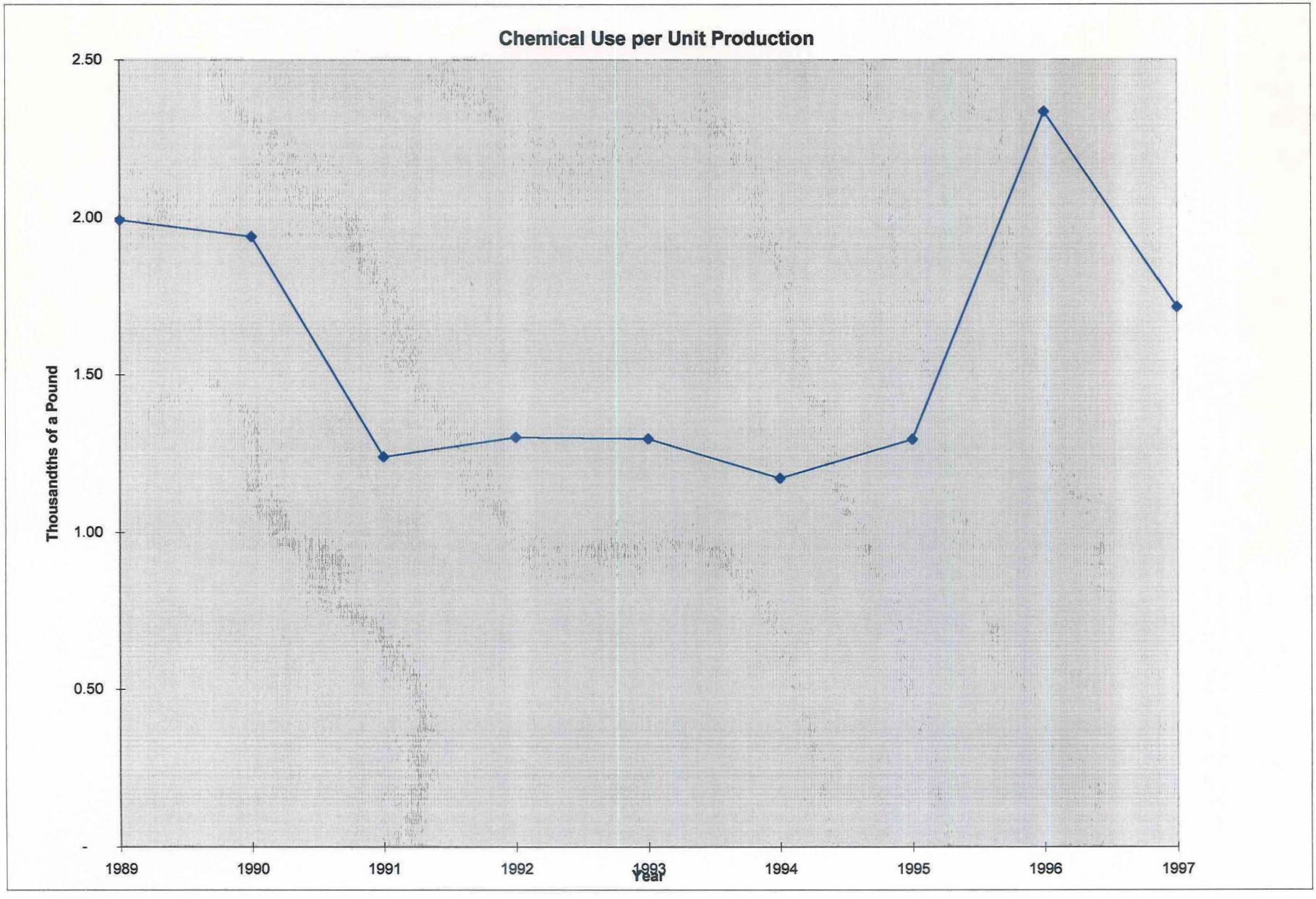
37 Million Gallons/year

Recycling

633,000 Pounds of Solid Waste Recycled per year
386,000 Gallons of Liquids Reused per year

WACKER

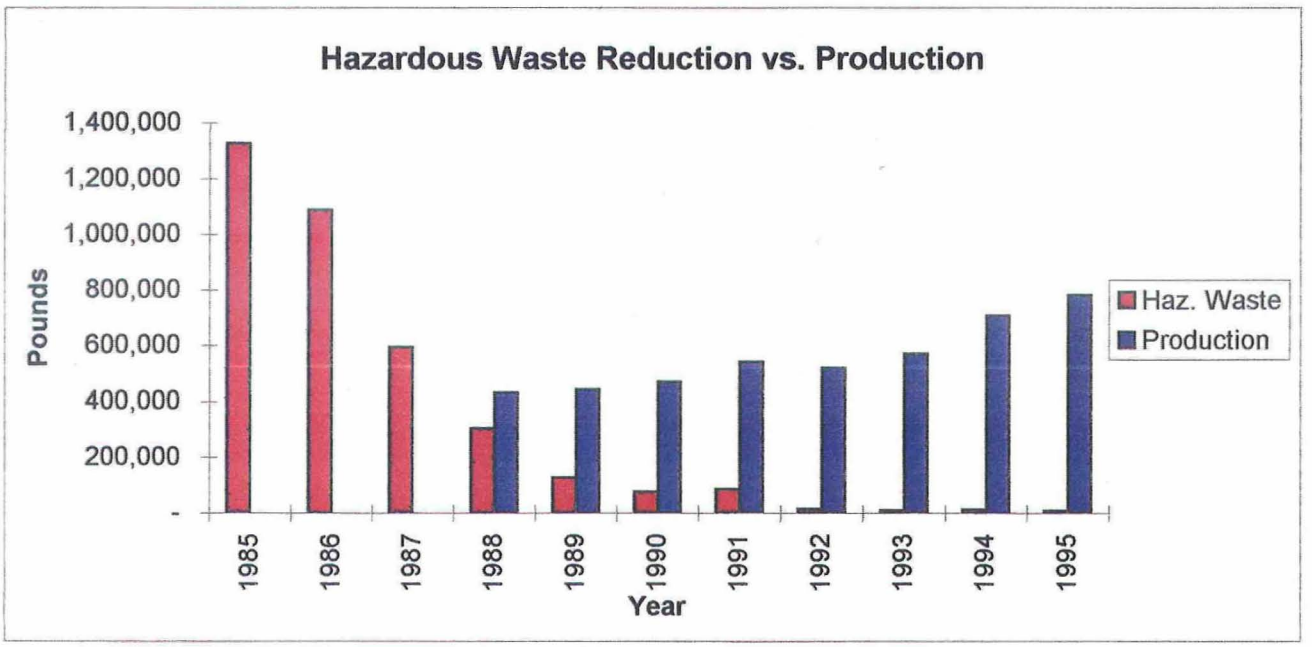
SCOEPA00054815

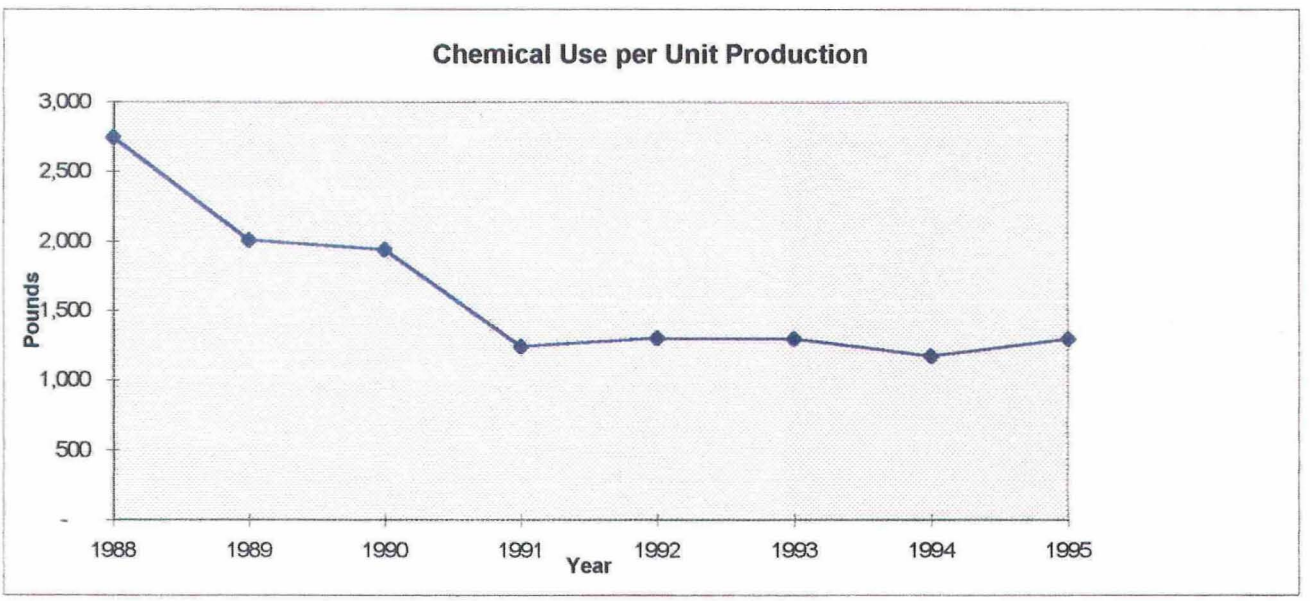


SCOEPA00054816

Wacker Siltronic Pollution Prevention Program
Hazardous Waste Reduction

	Haz. Waste	Production	Chemical Use	Use/Unit Prod.
1985	1,326,800			
1986	1,087,805			
1987	594,975			
1988	304,183	430,000	1,180,000	2,744
1989	125,885	443,000	883,000	2,007
1990	77,041	470,000	912,000	1,940
1991	86,074	540,000	670,000	1,241
1992	14,198	520,000	677,000	1,302
1993	9,841	570,000	740,000	1,298
1994	11,800	708,000	830,000	1,172
1995	8,019	781,000	1,011,896	1,296





Thomas C. McCue

4/5/96

SCOEPA00054817

Wacker Siltronic Pollution Prevention Program
Hazardous Waste Reduction

	Haz. Waste	Production	Chemical Use	Use/Unit Prod.
1985	1,326,800			
1986	1,087,805			
1987	594,975			
1988	304,183	430,000	1,180,000	2,744
1989	125,885	443,000	883,000	2,007
1990	77,041	470,000	912,000	1,940
1991	86,074	540,000	670,000	1,241
1992	14,198	520,000	677,000	1,302
1993	9,841	570,000	740,000	1,298
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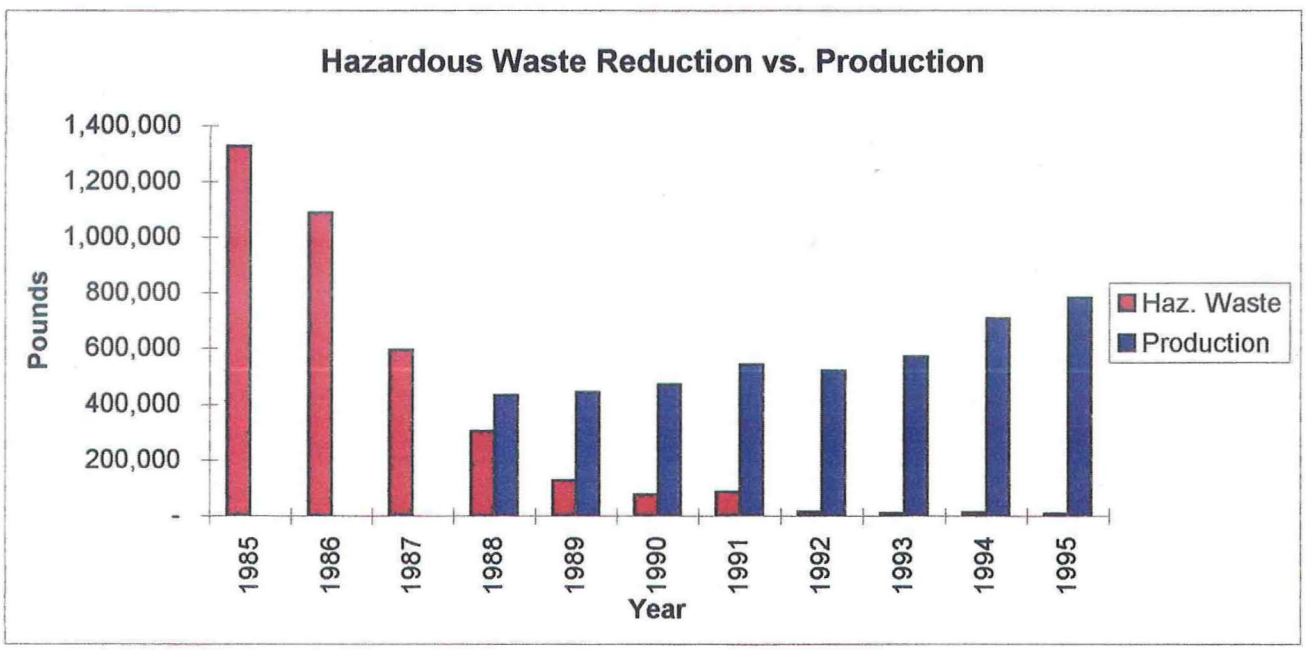
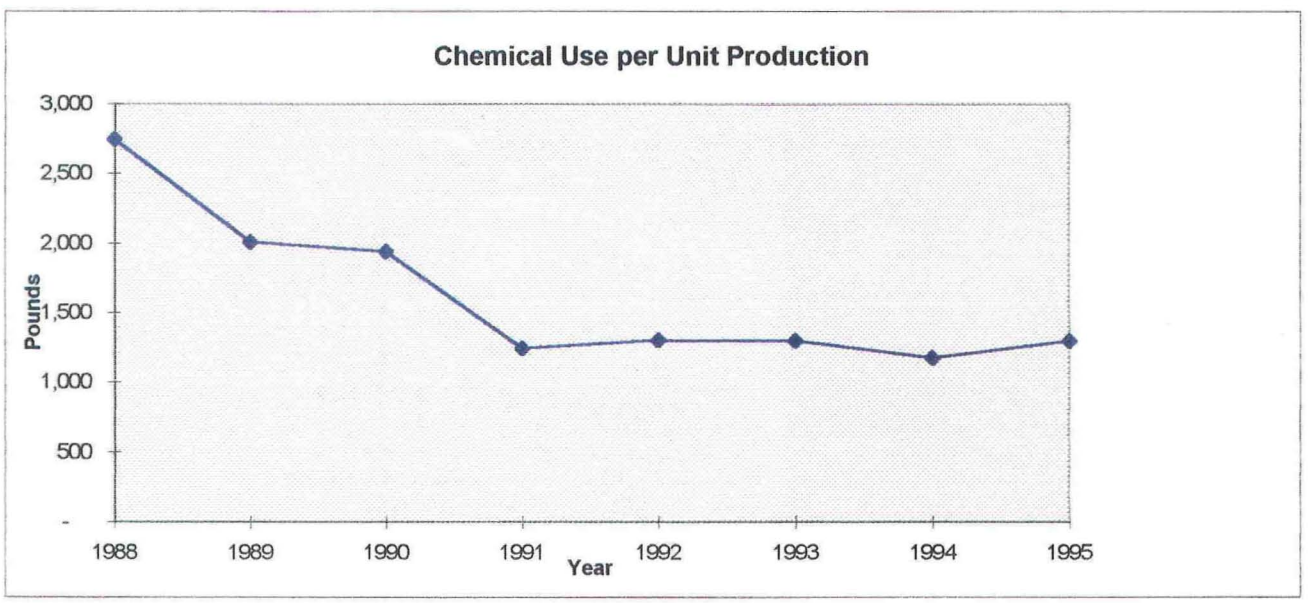




Thomas C. McCue

4/5/96

WACKER

FROM: J.R. Ellis

JRE

TO: J.L. Pittman

SUB: Two-Stage Neutralization at WWTP - Submittal of Investment Appropriation Request

OUR REF:

YOUR REF:

DATE: April 26, 1982

The attached Investment Appropriation Request asks for a $40,000 investment to install two additional neutralization tanks at the Wastewater Treatment Plant. One additional tank would be placed in the Weak Acid (WAD) System while the other tank would be placed in the Concentrated Acid (CAD) System.

Because reactant peak concentrations are unknown and vary greatly with time, it is very difficult to accurately design this neutralization process. For this reason, I prefer to complete this project in two phases with a trial period after Phase I, to determine its effect, before proceeding with Phase II.

Phase I - Install a 2000 gallon concrete neutralization tank between the WWTP building and the existing CAD Neutralization Tank. Use the new tank for first stage neutralization by installing a new agitator and by relocating pH control equipment and the reagent addition piping from the existing tank. Use the existing neutralization tank as a 'stilling' tank with only pH indicator and no agitator. Estimated Cost: $26,000.

Phase II- (Use only if Phase I is not totally effective). Install the remaining instruments necessary to make the second stage neutralization a separate pH control loop complete with supply of reagents. Install new agitator in existing tank to gain proper reagent blending and reaction time. Estimated cost: $14,000 additional.

I believe the attached Investment Appropriation Request should be processed on the basis of the two-phase approach discussed above.

JE/kk

Attachment

cc: S. Beiswenger
G. Pendleton
File

3/4/88

Russ,

I hope you proceed w/ this -
Looks like a 'No Lose' project!

Murray

TO: Hal Wilson

FROM: Greg Carr

SUBJECT: Freon TMC Saving

DATE: March 1, 1988

cc: John Pittman
Greg Carr

I have found a good potential cost savings concerning the Freon TMC Cleaner in Final cleaning. From last years figures, we purchased 43,900 lbs. of Freon TMC. 64% of this Freon evaporated into the air at the Freon TMC degreaser, while only 36% was dumped out as bath dumps. Decreasing these vapor losses will result in an immediate cost savings for your department since Final Cleaning is the only place that uses Freon TMC.

I propose we install a fold-down lid to cover the cleaner when it is not in use (see drawing #1). The cleaner could be left on, ready for use, at all times, but the ventilation losses would be reduced. I estimate the lid could be down 50% to 75% of the time, based on conversations with Leona. This would directly reduce the ventilation losses by 50% to 75%, saving $12,000 to $17,600 per year. In addition, it would decrease the Freon TMC losses to the atmosphere by 14,000 lbs. to 21,9000 lbs. per year. Since Freon TMC is included in the global ozone problem, it behooves us to reduce unnecessary losses.

The cover could be fabricated out of clear polycarborate, hinged at the back, that would fold up against the back wall of the flowhood when the cleaner is being used. It should not generate any significant amount of particles since there won't be any sliding motion. A polypropylene hinge would eliminate any particle generation in the hinge. The traveling carrier could remain in place under the cover.

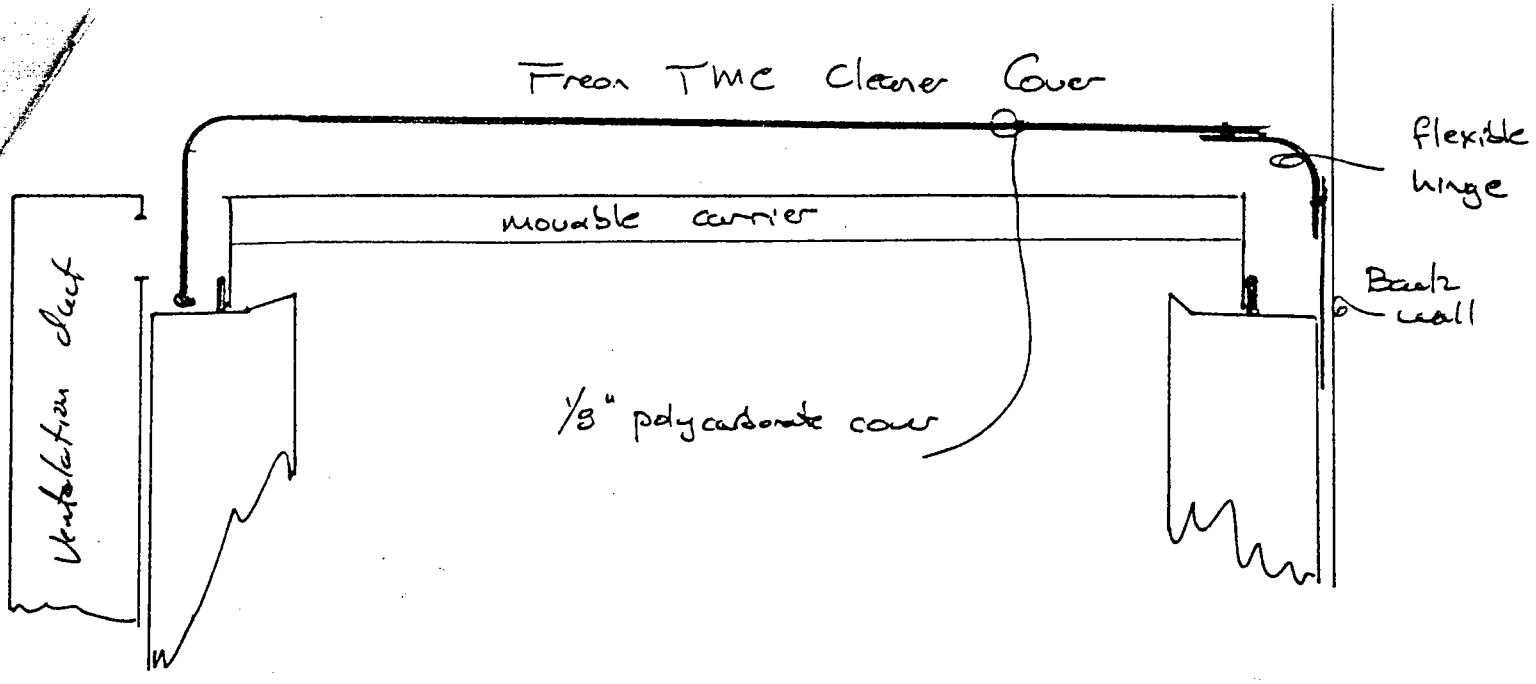
If you approve of this, we will proceed with it.

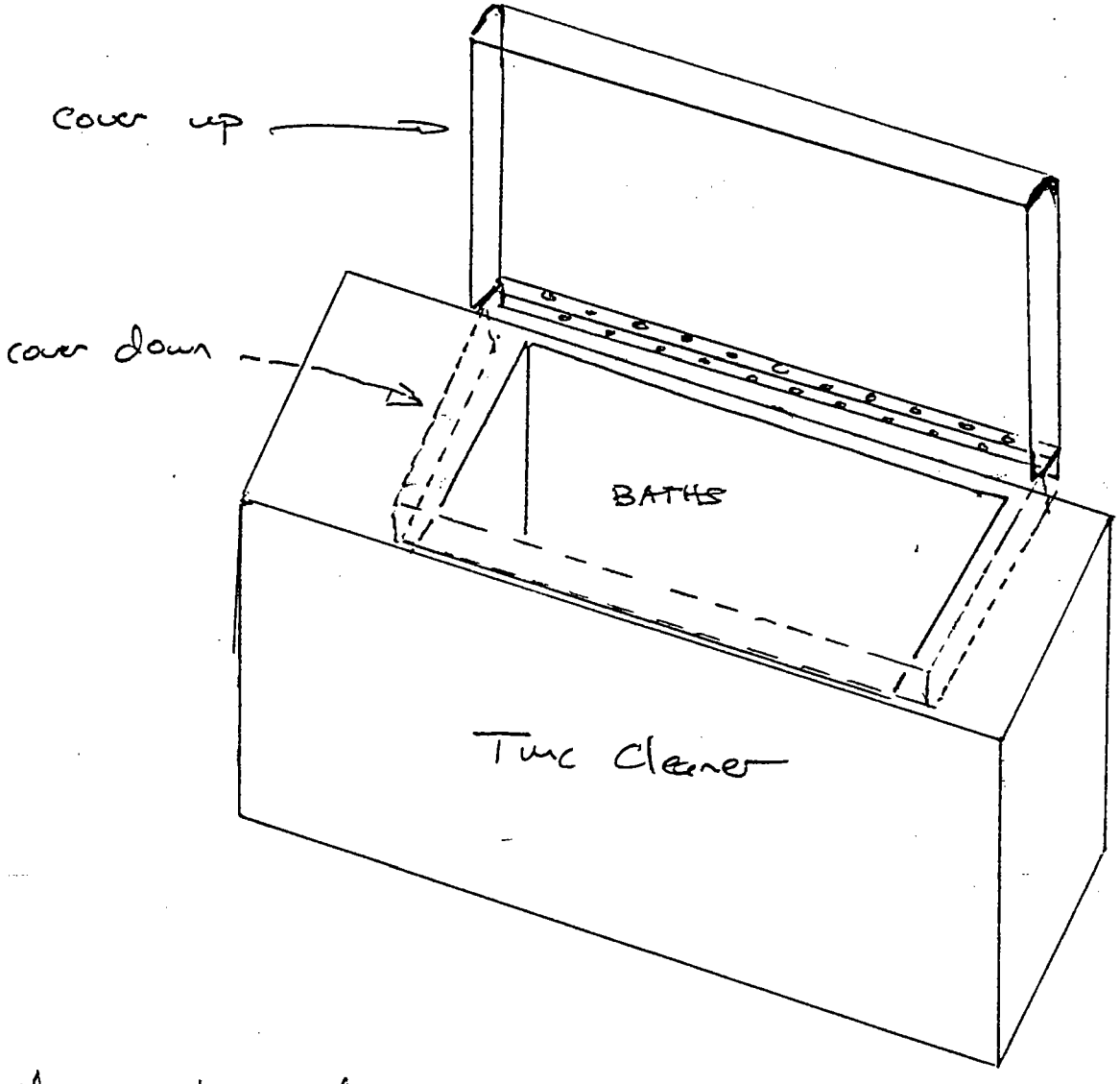
GC:dj G Carr

cc: Jerry Carson
Mai Le
Dick McManus
Russ Miller
Murray Tilson

SCOEPA00054820

Freon TMC Cleaner Cover





As an option - use a S.S. rim with a stretched PFA film as a cover - may be lighter.

SCOEPA00054821

TO: Distribution

FROM: Greg Carr

SUBJECT: Freon TMC Losses

DATE: May 31, 1988

Distribution: Leona Antoine
Jerry Carson
Russ Miller
Rick Musick
John Pittman
Murray Tilson
Hal Wilson

Here is a brief summary and graph showing the effect of the stainless steel covers installed on the Freon TMC cleaner on May 16, 1988.

For the two week period from May 16 to May 27 we have used 33% less Freon TMC than in the four week period from April 1 to May 2, 1988. This represents an annual savings of about $16,000 in Freon TMC purchases. This also reduces the Freon TMC emissions into the atmosphere and the workplace by about 50%.

Keep up the good work - keep those covers in place when the cleaner isn't in use!

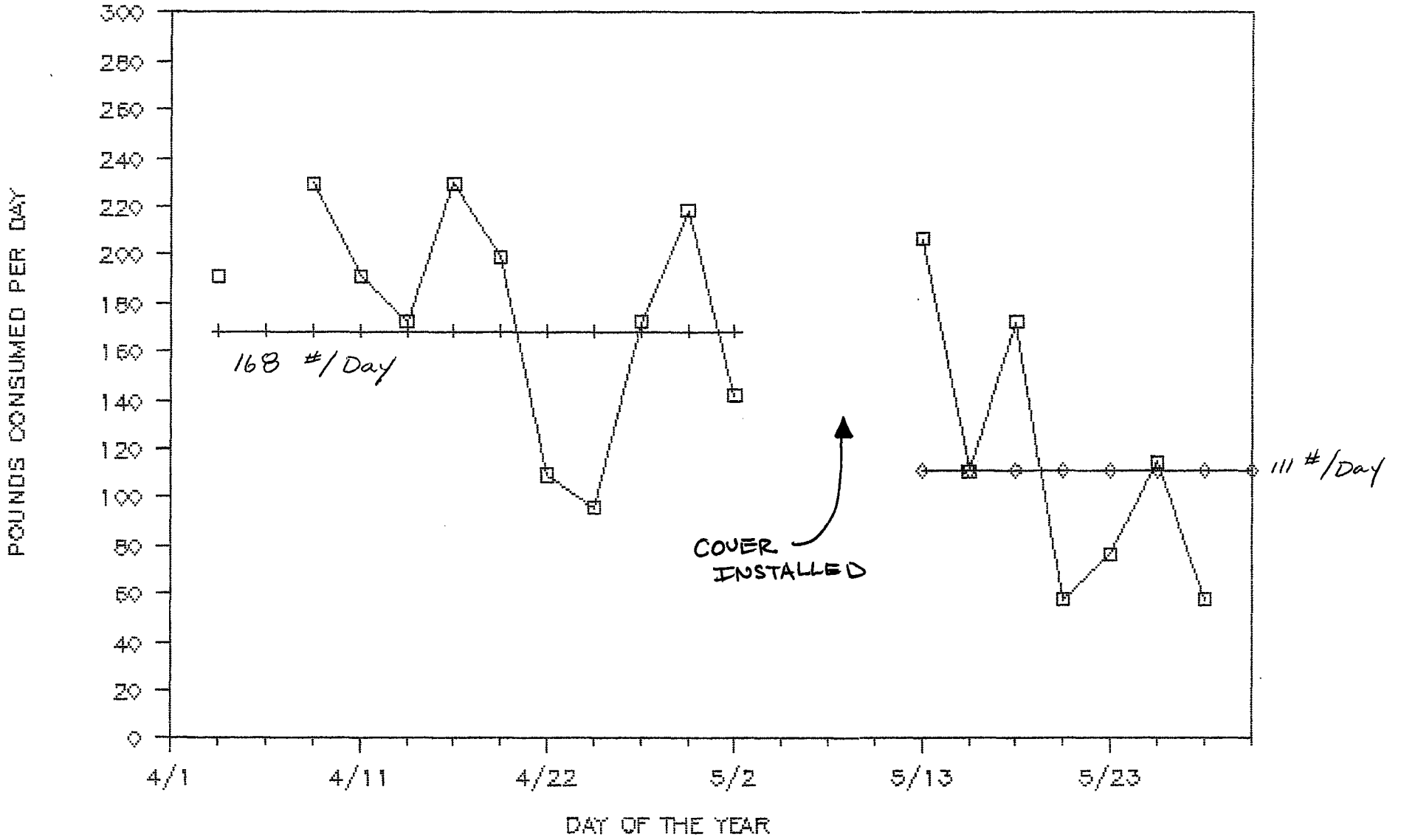
In addition, I would like us to try to do something about the Freon TE cleaners along the same line. A savings of 33% in their consumption would be an annual savings of around $60,000, which is quite significant.

Please get back to me with your ideas.

GC:dj

FREON TMC CONSUMPTION

APRIL AND MAY 1988



SCOEPA00054823

GREG C.

Wacker Siltronic Corporation

To: All Managers, Supervisors

From: Murray Tilson M. Tilson
Facilities Operations

Subj: TCE Permit Violations

Date: October 8, 1985

1. We have recently experienced some TCE Permit violations in our Organic Wastewater system (OWW) system. This system discharges into the City Sewer system and has a maximum TCE concentration limit of 1.37 mg/l as per our City of Portland Discharge Permit.

2. During the last 11 weeks we have observed TCE violations on 4 of the last 11 samples analyzed. Violations were noted on the following dates:

Date:	TCE (mg/l):
8/9	2.4
9/6	3.35
9/27	50.0
10/2	5.6

3. It only takes about 1 pint of TCE discharged into the OWW drain in a 24-hr period to result in a Permit violation.

4. Your cooperation is extremely important to get this problem under control. Please insure that ALL your employees understand the importance and consequence of spilling TCE down any drain other than into the Solvent Organic Drain (SOD) drain system.

5. Please contact me if you are aware of any situation that may have caused these violations or of a present situation where improper disposal is occurring.

cc: Jim Moreland
John Pittman
Fred Voegerl

M. T

Wacker Siltronic Corporation

Wacker Siltronic Corporation
P.O. Box 03180
Portland, OR 97203
7200 N.W. Front Ave.
Portland, OR 97229
Phone (503) 243-2020
TWX 910-464-4777
FAX 503 226-0052

March 19, 1985

Mr. Harry Edmonds
Bureau of Environmental Services
1120 S.W. Fifth Avenue
Portland, Oregon 97204 - 1972

Dear Mr. Edmonds:

Thank you for meeting with Murray Tilson and me on March 14, 1985 in your office. As we discussed in our meeting, we plan on diverting the waste stream from our slicing operations into the Organic Waste Water (OWW) system.

This slicing waste stream currently has a flow rate of approximately 6 GPM (8640 GPD), but we will shortly have installed capacity to generate 12 GPM (17,300 GPD) of this waste. This stream contains 140 pounds of TSS and about 100 pounds of BOD per day at current production rates. The majority of the solids are 5 microns (.0002 inches) or less in diameter, and should not cause any settling or wear problems in any of the City's Sewer facilities. At the same time as this diversion, we are planning to do other diversions and water conservation projects that will result in no net increase in wastewater flow to the City Sewer.

We are doing this to reduce the BOD in our effluent to the Willamette River. As shown in the illustrations, we are unable to meet our current NPDES Permit due to excessive BOD. This BOD is concentrated in this particular waste stream. Other forms of treatment have been considered, but it appears diversion is the most feasible way to solve this problem.

We understand that we have your provisional approval to do this diversion. Because of the tight deadline of this project, we are proceeding with construction at present. We hope to have it completed by April 8, or April 15, at the latest. We will inform you when the diversion is complete, so that you may re-sample our waste stream if you desire.

SCOEPA00054826

Thank you very much for your time and trouble. If you have any further questions regarding this, please call Murray Tilson or me at 243-2020.

Sincerely,

WACKER SILTRONIC CORPORATION

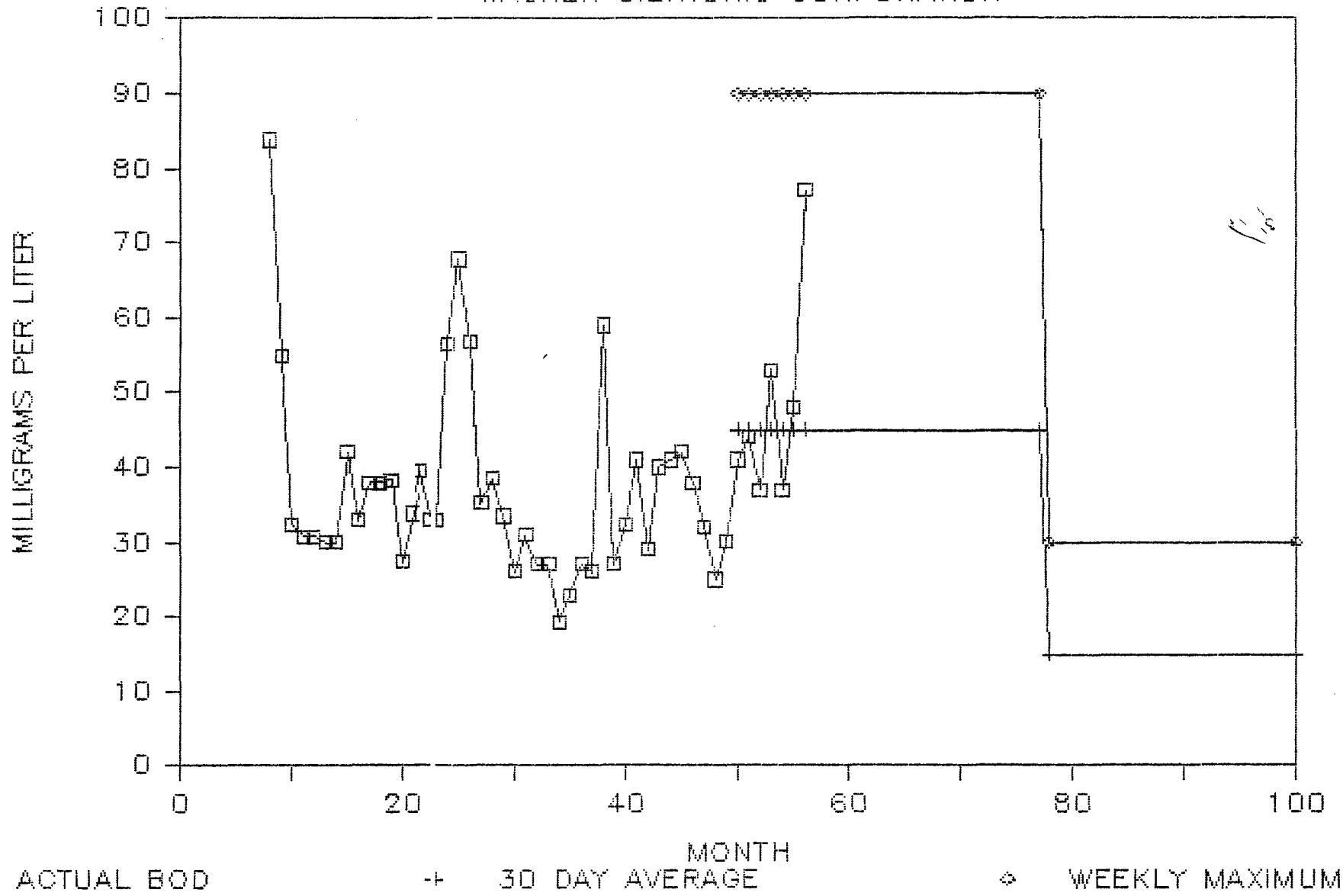
Gregory E. Carr

Gregory Carr
Facilities Engineer

cc: Molly Heany, Bureau of Environmental Energy
Jim Ellis
John Pittman
Murray Tilson

WASTEWATER BOD

WACKER SILTRONIC CORPORATION



SCOEPA00054828

TO: Sam Pengally

FROM: Greg Carr

SUB: Monitoring the OWW

DATE: February 21, 1985

According to the new City Sewer Permit we need to analyse the OWW samples weekly for Fluoride. Please arrange to do this along with the NPDES fluoride sampling of the CE.

Also, we need to arrange to take a 5-day composite sample of the OWW to check for the following heavy metals:
Arsenic
Cadmium
Chromium
Zinc

Please set this up the week of Feb.25. We will get an outside lab to do the actual analysis:

Greg Carr

GC/md

cc: Murray Tilson
File

B 801

3 00

4 00

Murray Tilson

THE CITY OF
PORTLAND
OREGON

DEPARTMENT OF
PUBLIC WORKS

MIKE LINDBERG
COMMISSIONER

OFFICE OF
PUBLIC WORKS
ADMINISTRATOR

621 S.W. ALDER
PORTLAND, OR 97205

Copy - John P.

February 22, 1980

Wacker Siltronic Corp.
7200 NW Front Avenue
Portland, Oregon 97229

Attn: Mr. James R. Ellis, Facilities Manager

Gentlemen:

This will confirm your letter of 2/13/80 documenting your request for permission to discharge 25,000 gallons of trichloroethylene (TCE)-contaminated wastewater into the municipal sanitary sewer system. The letter followed our meeting of that date outlining the criteria under which this effluent would be accepted. Subsequently, on the same day, the contents of the two tanks (SOD-T and Organic Wastewater collection tanks) were mixed together and released to the sewer.

The City's permission was based upon the following conditions and understanding:

1. That DEQ approval was obtained.

2. That the pollutant would not jeopardize the treatment plant or receiving stream.

3. That alternative disposal methods would create an extreme hardship for Wacker.

4. That the contaminated wastewater was the result of normal plant start-up and testing, and not the result of operator negligence.

5. That any permission given by the City to discharge would be for this incident only.

6. And lastly, there would be no other toxic and/or incompatible materials (as listed under EPA's priority pollutant list) in this effluent.

To the best of our knowledge this discharge met the above criteria. However, to prevent problems in the future, it is extremely important that the following points be understood.

SCOEPA00054831

1. The City expects all future discharges to be in compliance with the City Code. This means that with the exception of BOD and suspended solids (which are chargeable under Section 17.32.140 of said Code) all other discharges must comply with the pretreatment requirements under 17.32.110 of said Code.

2. Wacker has stated in earlier communication that there will be no toxic pollutants in its effluent.

3. Responsible waste management practices shall be employed at all times so that if any discharges of questionable wastes are anticipated such requests are made in advance and with ample time to give a studied answer.

4. The inquiry and/or request shall be in writing and appropriate analytical and other data provided at that time.

We trust these comments cover our major area of concern regarding future discharges. If you have any questions, please contact Harry Edmonds at 248-4678.

Very truly yours,

L. D. Brownson, P.E.
Principal Engineer

HGE:al

cc: Joe Niehuser, Chief, Bureau of Sanitary Engineering
Jim Cooke, Pollution Control Laboratory

SCOEPA00054832

ATTACHMENT C

SCOEPA00054833

CETONE ELECTRONIC REVISION OF:01-10-89

SHIP TO:

02005857
. WACKER SILTRONIC CORP
ATTN: MARK ORGSIL
7200 NW FRONT ST
PO BOX 03180
PORTLAND OR 97203

ORDER NO: 020507580
PROD NO: 04007250

VAN WATERS & ROGERS INC. 1600 NORTON BLDG. SEATTLE, WA 98104-1564

EMERGENCY ASSISTANCE

FOR EMERGENCY ASSISTANCE INVOLVING CHEMICALS CALL CHEMTREC (800) 424-9300.

FOR PRODUCT AND SALES INFORMATION

CONTACT YOUR LOCAL VAN WATERS & ROGERS BRANCH OFFICE

PRODUCT IDENTIFICATION

RODUCT NAME: ACETONE
OMMON NAMES/SYNONYMS: ACETONE;
-PROPANONE
ORMULA: C3 H6 O
AZARD RATING (NFPA 704)
HEALTH: 1
FIRE: 3
REACTIVITY: 0
SPECIAL: NONE

CAS NO.:67-64-1
VW&R CODE:T1018

DATE ISSUED: 12/88
SUPERCEDES: 08/87
HAZARD RATING SCALE:
0=MINIMAL 3=SERIOUS
1=SLIGHT 4=SEVERE
2=MODERATE

HAZARDOUS INGREDIENTS

COMPONENT	%	EXPOSURE LIMITS, PPM OSHA PEL	ACGIH TLV	OTHER LIMIT	HAZARD
ACETONE	>99	1000	750	1000 (ACGIH STEL)	FLAMMABLE;IRRITANT

PHYSICAL/CHEMICAL CHARACTERISTICS

OILING POINT, DEG F: 133
ELTING POINT, DEG F: -142
PECIFIC GRAVITY (WATER=1): 0.79
PPEARANCE AND ODOR: CLEAR, OLORLESS LIQUID; SWEET ODOR
VAPOR PRESSURE, MM HG/20 DEG C:184
VAPOR DENSITY (AIR=1):2.0
WATER SOLUBILITY, %:100
EVAPORATION RATE (BUTYL ACETATE=1):14

FIRST AID MEASURES

F INHALED: REMOVE TO FRESH AIR. GIVE ARTIFICIAL RESPIRATION IF NOT REATHING. GET IMMEDIATE MEDICAL ATTENTION.

N CASE OF EYE CONTACT: IMMEDIATELY FLUSH EYES WITH LOTS OF RUNNING ATER FOR 15 MINUTES, LIFTING THE UPPER AND LOWER EYELIDS OCCASIONALLY. ET IMMEDIATE MEDICAL ATTENTION.

N CASE OF SKIN CONTACT: IMMEDIATELY WASH SKIN WITH LOTS OF SOAP AND ATER. REMOVE CONTAMINATED CLOTHING AND SHOES; WASH BEFORE REUSE. GET EDICAL ATTENTION IF IRRITATION PERSISTS AFTER WASHING.

F SWALLOWED: IF CONSCIOUS, IMMEDIATELY INDUCE VOMITING BY GIVING 2

SCOEPA00054834

GLASSES OF WATER AND STICKING A FINGER DOWN THE THROAT. GET IMMEDIATE MEDICAL ATTENTION. DO NOT GIVE ANYTHING TO AN UNCONSCIOUS OR CONVULSING PERSON.

----------HEALTH HAZARD INFORMATION----------

PRIMARY ROUTES OF EXPOSURE: INHALATION, SKIN OR EYE CONTACT.

SIGNS AND SYMPTOMS OF EXPOSURE
INHALATION: PROLONGED OR REPEATED EXPOSURE OR BREATHING VERY HIGH CONCENTRATIONS MAY CAUSE HEADACHES, NAUSEA, VOMITING, DIZZINESS, OTHER CENTRAL NERVOUS SYSTEM EFFECTS, CONVULSIONS, AND IN EXTREME CASES, UNCONSCIOUSNESS AND DEATH.

EYE CONTACT: VAPORS WILL IRRITATE THE EYES. LIQUID AND MISTS WILL IRRITATE AND MAY BURN THE EYES.

SKIN CONTACT: BRIEF CONTACT MAY DRY THE SKIN. PROLONGED OR REPEATED CONTACT MAY IRRITATE THE SKIN, CAUSING DERMATITIS.

SWALLOWED: SWALLOWING LARGE QUANTITIES CAUSES HEADACHES, NAUSEA, VOMITING, AND PERHAPS UNCONSCIOUSNESS. CAN ALSO CAUSE LIVER AND KIDNEY INJURY.

CHRONIC EFFECTS OF EXPOSURE: NO SPECIFIC INFORMATION AVAILABLE.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: PREEXISTING EYE OR SKIN DISORDERS MAY BE AGGRAVATED BY ACETONE EXPOSURE. ALSO, USE OF ALCOHOLIC BEVERAGES ENHANCES TOXIC EFFECTS.

----------TOXICITY DATA----------

ORAL: RAT LD50 = 9750 MG/KG

DERMAL: RABBIT LD50 = 20 G/KG

INHALATION: RAT LC50 = 16,000 PPM/4 HR

CARCINOGENICITY: THIS MATERIAL IS NOT CONSIDERED TO BE A CARCINOGEN BY THE NATIONAL TOXICOLOGY PROGRAM, THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER, OR THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

OTHER DATA:INHALATION HUMAN TCLO = 500 PPM (EYE)

----------PERSONAL PROTECTION----------

VENTILATION: LOCAL MECHANICAL EXHAUST VENTILATION CAPABLE OF MAINTAINING EMISSIONS AT THE POINT OF USE BELOW THE PEL.

RESPIRATORY PROTECTION: IF USE CONDITIONS GENERATE VAPORS OR MISTS, WEAR A NIOSH-APPROVED RESPIRATOR APPROPRIATE FOR THOSE EMISSION LEVELS. APPROPRIATE RESPIRATORS MAY BE A FULL FACEPIECE OR A HALF MASK AIR-PURIFYING CARTRIDGE RESPIRATOR EQUIPPED FOR ORGANIC VAPORS/MISTS, A SELF-CONTAINED BREATHING APPARATUS IN THE PRESSURE DEMAND MODE, OR A SUPPLIED-AIR RESPIRATOR.

EYE PROTECTION: CHEMICAL GOGGLES UNLESS A FULL FACEPIECE RESPIRATOR IS ALSO WORN. IT IS GENERALLY RECOGNIZED THAT CONTACT LENSES SHOULD NOT BE WORN WHEN WORKING WITH CHEMICALS BECAUSE CONTACT LENSES MAY CONTRIBUTE TO THE SEVERITY OF AN EYE INJURY.

PROTECTIVE CLOTHING: LONG-SLEEVED SHIRT, TROUSERS, SAFETY SHOES, RUBBER GLOVES, AND RUBBER APRON.

OTHER PROTECTIVE MEASURES: AN EYEWASH AND SAFETY SHOWER SHOULD BE NEARBY AND READY FOR USE.

----------FIRE AND EXPLOSION INFORMATION----------

FLASH POINT, DEG F: 0
METHOD USED: TCC

FLAMMABLE LIMITS IN AIR, %
LOWER: 2 UPPER:13

SCOEPA00054835

XTINGUISHING MEDIA: USE WATER SPRAY, DRY CHEMICAL, CO2, OR ALCOHOL OAM.

PECIAL FIRE FIGHTING PROCEDURES: FIRE FIGHTERS SHOULD WEAR SELF-ONTAINED BREATHING APPARATUS AND FULL PROTECTIVE CLOTHING. USE WATER PRAY TO COOL NEARBY CONTAINERS AND STRUCTURES EXPOSED TO FIRE.

NUSUAL FIRE AND EXPLOSION HAZARDS: ACETONE IS EXTREMELY FLAMMMABLE. XTINGUISH ALL NEARBY SOURCES OF IGNITION. AVOID ACCUMULATION OF WATER R ACETONE VAPORS BECAUSE AQUEOUS SOLUTIONS CONTAINING MORE THAN 2.5% CETONE ARE FLAMMABLE.

----------HAZARDOUS REACTIVITY----------

TABILITY: STABLE POLYMERIZATION: WILL NOT OCCUR
ONDITIONS TO AVOID: HEAT, SPARKS, AND OPEN FLAMES.

ATERIALS TO AVOID: ACIDS, OXIDIZING MATERIALS, POTASSIUM T-BUTOXIDE, LKALIS, AMINES, ALKANOLAMINES, AMMONIA, ALDEHYDES, AND CHLORINATED OMPOUNDS.

AZARDOUS DECOMPOSITION PRODUCTS: MAY LIBERATE CARBON MONOXIDE, CARBON IOXIDE, AND UNIDENTIFIED ORGANIC COMPOUNDS IN BLACK SMOKE.

----------SPILL, LEAK, AND DISPOSAL PROCEDURES----------

CTION TO TAKE FOR SPILLS OR LEAKS: WEAR PROTECTIVE EQUIPMENT INCLUDING UBBER BOOTS, RUBBER GLOVES, RUBBER APRON, AND A SELF-CONTAINED REATHING APPARATUS IN THE PRESSURE DEMAND MODE OR A SUPPLIED-AIR RES-IRATOR. IF THE SPILL OR LEAK IS SMALL, A FULL FACEPIECE AIR-PURIFYING ARTRIDGE RESPIRATOR EQUIPPED FOR ORGANIC VAPORS MAY BE SATISFACTORY. N ANY EVENT, ALWAYS WEAR EYE PROTECTION. EXTINGUISH ALL IGNITION OURCES AND ENSURE THAT ALL HANDLING EQUIPMENT IS ELECTRICALLY GROUNDED. OR SMALL SPILLS OR DRIPS, MOP OR WIPE UP AND DISPOSE OF IN DOT-APPROVED ASTE CONTAINERS. FOR LARGE SPILLS, CONTAIN BY DIKING WITH SOIL OR THER NON-COMBUSTIBLE ABSORBENT MATERIALS AND THEN PUMP INTO DOT-PPROVED WASTE CONTAINERS; OR ABSORB WITH NON-COMBUSTIBLE SORBENT ATERIAL, PLACE RESIDUE IN DOT-APPROVED WASTE CONTAINERS. KEEP OUT OF EWERS, STORM DRAINS, SURFACE WATERS, AND SOIL.
OMPLY WITH ALL APPLICABLE GOVERNMENTAL REGULATIONS ON SPILL REPORTING, ND HANDLING AND DISPOSAL OF WASTE.

ISPOSAL METHODS: DISPOSE OF CONTAMINATED PRODUCT AND MATERIALS USED N CLEANING UP SPILLS OR LEAKS IN A MANNER APPROVED FOR THIS MATERIAL. ONSULT APPROPRIATE FEDERAL, STATE AND LOCAL REGULATORY AGENCIES TO SCERTAIN PROPER DISPOSAL PROCEDURES.
OTE: EMPTY CONTAINERS CAN HAVE RESIDUES, GASES AND MISTS AND ARE UBJECT TO PROPER WASTE DISPOSAL, AS ABOVE.

----------SPECIAL PRECAUTIONS----------

ANDLING AND STORAGE PRECAUTIONS: KEEP AWAY FROM HEAT, SPARKS, AND LAMES. STORE IN A COOL, DRY, WELL-VENTILATED PLACE AWAY FROM INCOM-ATIBLE MATERIALS. VENT CONTAINER FREQUENTLY, AND MORE OFTEN IN WARM EATHER, TO RELIEVE PRESSURE. ELECTRICALLY GROUND ALL EQUIPMENT WHEN ANDLING THIS PRODUCT AND USE ONLY NON-SPARKING TOOLS. KEEP CONTAINER IGHTLY CLOSED WHEN NOT IN USE. DO NOT USE PRESSURE TO EMPTY CONTAINER. ASH THOROUGHLY AFTER HANDLING. DO NOT GET IN EYES, ON SKIN, OR ON LOTHING.

EPAIR AND MAINTENANCE PRECAUTIONS: DO NOT CUT, GRIND, WELD, OR DRILL N OR NEAR THIS CONTAINER.

THER PRECAUTIONS: CONTAINERS, EVEN THOSE THAT HAVE BEEN EMPTIED, WILL ETAIN PRODUCT RESIDUE AND VAPORS. ALWAYS OBEY HAZARD WARNINGS AND ANDLE EMPTY CONTAINERS AS IF THEY WERE FULL.

----------FOR ADDITIONAL INFORMATION----------

ONTACT DOUGLAS EISNER, TECHNICAL DIRECTOR, VAN WATERS & ROGERS INC.
DURING BUSINESS HOURS, PACIFIC TIME (206)447-5911

ROD: 04007250 10:46:03 17 MAY 1989 CUST: 02005857 INVOICE: 020507580

SCOEPA00054836

OTHER REGULATORY INFORMATION

DO NOT DETACH THIS SECTION FROM THE MSDS AND BE SURE TO INCLUDE THIS SECTION WHEN COPYING THE MSDS.

THIS PRODUCT IS A TOXIC CHEMICAL SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 313 OF TITLE III OF THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 AND 40 CFR PART 372.

THIS PRODUCT CONTAINS THE FOLLOWING CHEMICAL(S) CONSIDERED BY THE STATE OF CALIFORNIA'S SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986 (PROPOSITION 65) AS CAUSING CANCER OR REPRODUCTIVE TOXICITY AND FOR WHICH WARNINGS ARE NOW REQUIRED:

CHEMICAL	CAS NO.
BENZENE	71-43-2

NOTICE

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REVISION

08/87: REPORTED ADDITIONAL PERSONAL EXPOSURE LIMIT.

12/88: ADDED OTHER REGULATORY INFORMATION.

**** E N D O F M S D S ****

PROD: 04007250 10:46:03 17 MAY 1989 CUST: 02005857 INVOICE: 020507580

SCOEPA00054837

AIRCO
Division of The BOC Group, Inc
575 Mountain Avenue
Murray Hill
New Jersey 07974
Telephone: 201-464-8100
TWX: 710-984-7970

MATERIAL SAFETY DATA SHEET

Welding Consumables
and Related Products
Conforms to OSHA 1910.1200

IDENTIFICATION

PRODUCT NAME: Ammonia

SYNONYMS: Anhydrous Ammonia

CAS NUMBER: 7664-41-7

FORMULA: NH_3

CHEMICAL FAMILY: Nitrogen Hydride

DOT HAZARD CLASS: Nonflammable Gas

DOT IDENTIFICATION NUMBER: UN 1005

CHEMTREC: 800-424-9300

HEALTH HAZARD DATA

TIME WEIGHTED AVERAGE EXPOSURE LIMIT:

25 Molar PPM; STEL = 35 Molar PPM (ACGIH, 1984-85)

OSHA LIMIT = 50 PPM

SYMPTOMS OF EXPOSURE:

Corrosive and irritating to the skin, eyes, upper respiratory system and all mucosal tissue. Depending on the concentration inhaled, it may cause burning sensations, coughing, wheezing, shortness of breath, headache, nausea, with eventual collapse. Mild concentrations of vapor will cause dermatitis or conjuctivitis. Higher concentrations of vapor or liquid contact will cause caustic-like dermal burns and inflammation and swelling of the eyes with possible loss of vision. Rapidly evaporating liquid contacting dermal tissue or the eyes will cause cryogenic "burns."

TOXICOLOGICAL PROPERTIES:

Inhalation: Affects the upper airway (larynx and bronchi) by causing caustic-like burning resulting in edema and chemical pneumonitis. If it enters the deep lung, pulmonary edema will result.

Toxic level exposure to dermal tissue causes caustic-like burns and skin lesions resulting in early necrosis and scarring. Burns to the eye result in lesions and possible loss of vision.

Cryogenic "burns" are like frostbite with a change in color of the skin to gray or white, possibly followed by blistering.

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RECOMMENDED FIRST AID TREATMENT:

PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE TO AMMONIA. RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS AND BE COGNIZANT OF EXTREME FIRE AND EXPLOSION HAZARD.

Inhalation: Conscious persons should be assisted to an uncontaminated area and inhale fresh air. Unconscious persons should be moved to an uncontaminated area, given mouth-to-mouth resuscitation and supplemental oxygen. Keep the victim warm and quiet. Assure that mucus or vomited material does not obstruct the airway by positional drainage.

Eye Contact: PERSONS WITH POTENTIAL EXPOSURE TO AMMONIA SHOULD NOT WEAR CONTACT LENSES.

Flush contaminated eye(s) with copious quantities of water. Part eyelids to assure complete flushing. Continue for a minimum of 15 minutes.

Skin Contact: Flush affected area with copious quantities of water. Remove affected clothing as rapidly as possible.

Dermal Contact or Frostbite: Remove contaminated clothing and flush affected areas with lukewarm water. DO NOT USE HOT WATER. A physician should see the patient promptly if the cryogenic "burn" has resulted in blistering of the dermal surface or deep tissue freezing.

Hazardous Mixtures of Other Liquids, Solids, or Gases:

Ammonia is flammable over a relatively narrow range in air. It reacts vigorously with fluorine, chlorine, hydrogen chloride, hydrogen bromide, nitrosyl chloride, chromyl chloride, trioxygen difluoride, nitrogen dioxide and nitrogen trichloride.

PHYSICAL DATA

Boiling Point: -28°F (-33.3°C)

Liquid Density @ Boiling Point: 42.6 lb/ft^3 (682 kg/m^3)

Vapor Pressure @ 70°F (21.1°C): 129 psia (889 kPa)

Specific Gravity @ 70°F, 1 atm (Air=1): .590

Solubility in Water: Very soluable liberating heat

Freezing Point: -107.9°F (-77.7°C)

Appearance and Odor: Colorless gas with pungent odor.

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SPECIAL PROTECTION INFORMATION

Respiratory Protection: Positive pressure air line with mask or self-contained breathing apparatus should be available for emergency use.

Ventilation: Hood with forced ventilation.

Local Exhaust: To prevent accumulation above the TWA.

Special:

Mechanical (Gen.): In accordance with electrical codes.

Other

Protective Gloves: Plastic or rubber.

Eye Protection: Safety goggles or glasses, eyewash "fountain".

Other Protective Equipment: Safety shoes, safety shower.

SPECIAL PRECAUTIONS

Special Labeling Information:

DOT Shipping Name: Ammonia, Anhydrous (RQ 100/45.4)
DOT Shipping Label: Nonflammable Gas
DOT Hazard Class: Nonflammable Gas
I.D. No.: UN 1005

Special Handling Recommendations:

Use only in well-ventilated areas. Valve protection caps must remain in place unless container is secured with valve outlet piped to use point. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Use a pressure reducing regulator when connecting cylinder to lower pressure (< 500 psig) piping or systems. Do not heat cylinder by any means to increase the discharge rate of product from the cylinder. Use a check valve or trap in the discharge line to prevent hazardous back flow into the cylinder.

For additional handling recommendations, consult Compressed Gas Asssociation Pamphlets P-1. and G2.

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FIRE/EXPLOSION HAZARDS DATA

Flash Point (Method Used): None

Auto Ignition Temperature: 1274°F (690 °C)

LEL: 15 UEL: 27

Extinguishing Media: Water.

Electrical Classification: Class 1, Group D

Special Fire Fighting Procedures: If possible, stop the flow of gas. Since ammonia is soluble in water, it is the best extinguishing media--not only extinguishing the fire, but also absorbing the escaped ammonia gas. Use water spray to cool surrounding containers.

Unusual Fire and Explosion Hazards: The minimum ignition energy for ammonia is very high. It is approximately 500 times greater than the energy required for igniting hydrocarbons and 1000 to 10,000 times greater that that required for hydrogen.

REACTIVITY DATA

Stability:

Unstable

Incompatibility (Materials to Avoid): See Hazardous Mixtures of Other Liquids, Solids, or Gases.

Hazardous Decomposition Products:

Hydrogen at very high temperatures (1544°F; 840°C)

Hazardous Polymerization:

Will not occur

Conditions to Avoid: None

SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Evacuate all personnel from affected area. Use appropriate protective equipment. If leak is in user's equipment, be certain to purge piping with an inert gas prior to attempting repairs. If leak is in container or container valve, contact CHEMTREC for emergency assistance or call your closest Airco location.

Waste Disposal Method:

Do not attempt to dispose of waste or unused quantities. Return in the shipping container properly labeled, with any valve outlet plugs or caps [illegible] protection cap in place to Airco for proper disposal.

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Special Storage Recommendations:

Protect cylinders from physical damage. Store in cool, dry, well-ventilated area of non-combustible construction away from heavily trafficked areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 130°F (54°C). Cylinders should be stored upright and firmly secured to prevent falling or being knocked over. Full and empty cylinders should be segregated. Use a "first in-first out" inventory system to prevent full cylinders being stored for excessive periods of time. Post "No Smoking or Open Flames" signs in the storage or use area. There should be no sources of ignition in the storage or use area.

For additional recommendations, consult Compressed Gas Association Pamphlets P-1 and G-2.

Special Packaging Recommendations:

Gaseous or liquid anhydrous ammonia corrodes certain metals at ambient temperatures. Oxygen presence enhances the corrosion of ordinary or semi-alloy steels. The addition of water inhibits this enhancement.

Keep anhydrous ammonia systems scrupulously dry.

Other Recommendations or Precautions:

Earth-ground and bond on all lines and equipment associated with the ammonia system. Electrical equipment should be non-sparking or explosion proof. Compressed gas cylinders should not be refilled except by qualified producers of compressed gases. Shipment of a compressed gas cylinder which has not been filled by the owner or with his (written) consent is a violation of Federal Law (49CFR).

SCOEPA00054842

Doug Miller
Nancy / Material Data Binder
file

~~Material~~ Safety Data Sheet

Anti-Rust
(Coolant Concentrate) 404T

Manufacturer: Franz Voitlander, Kronuch

1. Chemical Characterization

Prepared as alkonalamines, synthetic nitrogen containing condensation products and water.

2. Physical Data

Melting point -	-30 degrees C.
Boiling point -	100 degrees C.
Decomposition temp. -	200 degrees C.
pH -	9.2 (100 g/d H_2O)

Water soluable
Very mild odor
Fluid at 20 degrees C.

3. Handling

Special measures for transport and storage: none
Incompatible materials: strong oxidizers
Hazardous Decomposition Products: none
Dangerous Reactions: none
Protective Equipment: gloves
eye protection
In case of spills: Dilute with water
Disposal: Used solutions can be sent to sewer after dilution with water (1:100) if no other contaminants require otherwise.

4. Fire and Explosion Hazard Data

Flash Point: Not determined
Ignition Temp.: Not determined
Extinguishing materials: water fog, CO_2, foam, water, dry chemicals
Special Fire Protection Measures: none
Fire and Explosion Danger: none

5. Toxicology

Oral: LD50 (rats) > 5,000 mg/kg
Skin: Irritant in concentrate form
Not irritating as usable solution
Eye: Irritant as concentrate
Not irritating as usable solution

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6. Emergency and First Aid Measures

Swallowing: Treat symptoms
Drink vinegar or lemon water
Eye or skin contact: Wash thoroughly with water, remove contaminated clothing

7. Environmental Effects

High dilutions with water are not toxic to fish and do not damage the operation of biological treatment plants.

Product is only moderately biologically decomposable - 50%/5 days.

No water endangering fluid.

8. Special Notes

Contains no materials from Arb St. V
No Hazard - transportation
Not listed in MAK list

SCOEPA00054844

Mineral Oil work
F R A N Z V O I T L A E N D E R G M B H
8640 Kronach (Bavaria)

ARGON Metal Treatment Substance "404/T"

Characteristics:

in water up to 20 degrees (C.) that is soluble by opal
over 20 degrees (C.) that is couldy soluble

ARGON "404/T" in watery thinnings up to 1 : 200 results in no corrosion according to the Herbert-Test.

Watery emulsions posess a certain smearability, so that, with the treatment of metal, smooth surfaces can be obtained. Because of the excellent cooling effect there can -in case of deformations caused by lifting of splinters- be achieved high cutting speeds without detriment of the standing time of the instruments

Application:

ARGON "410/T" is used in a thinning of 0.5-5% in the following treatment processes:

drilling - milling - turning - sawing
round- and flat grinding
cutting and milling of windings
rubbing - vacating - planeing
pulling on presses and pulling of pipes

For grinding concentrations of 0.5-1% are sufficient. For most deformations 2% emulsions are sufficient. Only with harder materials or stronger deformations concentrations of 3-5% are advised.

Production of the "404/T" Emulsion:

Tc obtain constant and transparent emulsions, the following is to be observed:
2 to 4 parts water are mixed with approx. 10 parts "404/T" during constant stirring. A gel-like mixture results, which is slowly mixed with water until the consistancy clearly decreases. Only then the mixture is diluted to the final concentration.

404/T can be canalized, however the guidelines of the respective local public authority are to be observed.

SCOEPA00054845

Mineral Oil work
F R A N Z V O I T L A E N D E R G M B H
8640 Kronach (Bavaria)

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SCOEPA00054846

Mineral Oil work
F R A N Z V O I T L A E N D E R G M B H
8640 Kronach (Bavaria)

ARGON Metal Treatment Substance "404/T"

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404/T can be canalized, however the guidelines of the respective local public authority are to be observed.

SCOEPA00054847

Translation from German by: Christel Wandel
THE GERMAN LANGUAGE CENTER
636-8005
File: sich; Date: Oct. 1991

Wacker Chemitronic Bgh. CT-IM/MW 361 PO2

Security Date Leaflet
(Form of the Chemical Industry Unit e.V.) Date

Commercial Name: Cooling Agent Concentrate 404 T
Chemical Characterization: Preparation from alkane amides, synthetic nitrogenous condensation products and water-

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1 Physical data

1.1	Melting temperature/ softening temperature	under - 30	degrees Celsius
1.2	Boiling temperature	over 100	degrees Celsius
1.3	Dissolution temperature	over 200	degrees Celsius; determination method
1.4	pH-value	9,2	(with 100 g/l water)
1.5	Solubility in water (20 degr.C) (degr.C)	soluble (g/l)	mixable x unsoluble
1.6	Own smell very minor		
1.7	Condition (20 degrees Celsius)	solid	pasty fluid x gaseous
1.8	Vapour pressure (20 degrees Celsius)		mbar
1.9	Density (20 degrees Celsius)/ apparent weight	1,128	g/cm3 kg/ m3

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2 Shelf life and handling

2.1	Special measures to be taken with transport and storage		none
2.2	Incompatible substances		strong oxydation agents
2.3	Dangerous dissolution reactions		none
2.4	Dangerous reactions		none
2.4.1	Prevention measures		- none
2.5	Protection measures	Face masc Gloves x Goggles x	{over}

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{Page 2 German document} 3

3 Fire - and Explosion Protection

3.1	Fire point cannot be determined	appr. 200;	degrees Celsius determination method:
3.2	Inflammation Point cannot be determined	appr. 350;	degrees Celsius determination method
3.3	Extinguishing Means	x Water mist x Foam x Water	x CO7 x Powder type fire extinguisher
3.4	Special Fire Protection Measures	none	
3.5	Danger of Fire and Explosion	none	

4. Toxycology Information

Oral: LD 50 rat larger {than} 5.000 mg/kg
Skin: Concentrate is irritating
Non-irritating as operation/working solution
Eye: Concentrate is irritating
Non-irritating as operation/working solution

5. Emergency- and Fist Aid Measures

Swallowing: Symptomatic treatment
Drinking of vinegar- or lemon water
Eye- and skin contact: Rinsing with much water, taking off wettened clothing

6 Ecology Information

When highly diluted with water, not harmful to fish or to function of biological sewage.
However, product can biologically be decomposed only in a moderate way (50% in 15 days)

Solution does not endanger water.

7. Special Information

Does not contain substances of the Arb. St. V {?}

Is not dangerous when transported.

Not listed on MAK-list.
This information is according to today´s knowledge.

SCOEPA00054849

BUTYL ACETATE NORMAL ELECTRONIC GRD REVISION OF: 07-21-87

SHIP TO:

02005857
WACKER SILTRONIC CORP
For address
see page 5
--- ---- - OR 97203
ATTN: DICK CONLEE/JUDY DUNCAN

ORDER NO: 029502741
PROD NO: 04023347

VAN WATERS & ROGERS INC. 1600 NORTON BLDG. SEATTLE, WA 98104-1564

EMERGENCY ASSISTANCE

FOR EMERGENCY ASSISTANCE INVOLVING CHEMICALS CALL CHEMTREC (800) 424-9300.

FOR PRODUCT AND SALES INFORMATION

CONTACT YOUR LOCAL VAN WATERS & ROGERS BRANCH OFFICE

PRODUCT IDENTIFICATION

PRODUCT NAME: BUTYL ACETATE
COMMON NAMES/SYNONYMS: N-BUTYL ACETATE; NORMAL BUTYL ACETATE, BUTYL ETHANOATE

CAS NO.: 123-86-4
VW&R CODE: T1053

FORMULA: C6 H12 O2
HAZARD RATING (NFPA 325M)
HEALTH: 1
FIRE: 3
REACTIVITY: 0
SPECIAL: NONE

DATE ISSUED: 08/87
SUPERCEDES: 11/86
HAZARD RATING SCALE:
0=MINIMAL 3=SERIOUS
1=SLIGHT 4=SEVERE
2=MODERATE

HAZARDOUS INGREDIENTS

COMPONENT	%	EXPOSURE LIMITS, PPM OSHA PEL	ACGIH TLV	OTHER LIMIT	HAZARD
BUTYL ACETATE	99	150	150	200 (ACGIH STEL)	FLAMMABLE; IRRITANT

PHYSICAL/CHEMICAL CHARACTERISTICS

BOILING POINT, DEG F: 259
MELTING POINT, DEG F: -100
SPECIFIC GRAVITY (WATER=1): 0.882
APPEARANCE AND ODOR: WATER-WHITE LIQUID; FRUITY ODOR

VAPOR PRESSURE, MM HG/20 DEG C: 8
VAPOR DENSITY (AIR=1): 4.0
WATER SOLUBILITY, %: 0.68
EVAPORATION RATE (BUTYL ACETATE=1): 1.0

FIRST AID MEASURES

IF INHALED: REMOVE TO FRESH AIR. GIVE ARTIFICIAL RESPIRATION IF NOT BREATHING. GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF EYE CONTACT: IMMEDIATELY FLUSH EYES WITH LOTS OF RUNNING WATER FOR 15 MINUTES, LIFTING THE UPPER AND LOWER EYELIDS OCCASIONALLY. GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF SKIN CONTACT: IMMEDIATELY WASH SKIN WITH LOTS OF SOAP AND WATER. REMOVE CONTAMINATED CLOTHING AND SHOES; WASH BEFORE REUSE. GET MEDICAL ATTENTION IF IRRITATION PERSISTS AFTER WASHING.

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IF SWALLOWED: IF CONSCIOUS, IMMEDIATELY INDUCE VOMITING BY GIVING 2 GLASSES OF WATER AND STICKING A FINGER DOWN THE THROAT. GET IMMEDIATE MEDICAL ATTENTION. DO NOT GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSING PERSON.

HEALTH HAZARD INFORMATION

PRIMARY ROUTES OF EXPOSURE: SKIN OR EYE CONTACT, INHALATION.

SIGNS AND SYMPTOMS OF EXPOSURE

INHALATION: VAPORS AND MISTS IRRITATE THE NOSE AND THROAT. INHALATION OF HIGHER CONCENTRATIONS MAY CAUSE NARCOTIC EFFECTS SUCH AS HEADACHES, NAUSEA, VOMITING, AND COMA.

EYE CONTACT: VAPORS WILL IRRITATE THE EYES. LIQUID AND MISTS WILL IRRITATE AND MAY BURN THE EYES.

SKIN CONTACT: NO IRRITATION IS LIKELY AFTER BRIEF CONTACT BUT MAY BE IRRITATING AFTER PROLONGED CONTACT.

SWALLOWED: SWALLOWING LARGE QUANTITIES MAY CAUSE NAUSEA, VOMITING, HEADACHE, DROWSINESS, AND UNCONSCIOUSNESS.

CHRONIC EFFECTS OF EXPOSURE: NO SPECIFIC INFORMATION AVAILABLE.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: NONE REPORTED.

TOXICITY DATA

ORAL: RAT LD50=14.0G/KG

DERMAL: 500 MG/24 HRS. ON A RABBIT'S SKIN PRODUCED MODERATE IRRITATION

'HALATION: RAT LC50=2000PPM/4 HRS; HUMAN TCLO=200 PPM(IRRITANT EFFECTS)

CARCINOGENICITY: THIS MATERIAL IS NOT CONSIDERED TO BE A CARCINOGEN BY THE NATIONAL TOXICOLOGY PROGRAM, THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER, OR THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

OTHER DATA: NONE

PERSONAL PROTECTION

VENTILATION: LOCAL MECHANICAL EXHAUST VENTILATION CAPABLE OF MAINTAINING EMISSIONS AT THE POINT OF USE BELOW THE PEL.

RESPIRATORY PROTECTION: IF USE CONDITIONS GENERATE VAPORS OR MISTS, WEAR A NIOSH-APPROVED RESPIRATOR APPROPRIATE FOR THOSE EMISSION LEVELS. APPROPRIATE RESPIRATORS MAY BE A FULL FACEPIECE AIR-PURIFYING CARTRIDGE RESPIRATOR EQUIPPED FOR ORGANIC VAPORS/MISTS, A SELF-CONTAINED BREATHING APPARATUS IN THE PRESSURE DEMAND MODE, OR A SUPPLIED-AIR RESPIRATOR.

EYE PROTECTION: CHEMICAL GOGGLES UNLESS A FULL FACEPIECE RESPIRATOR IS ALSO WORN. IT IS GENERALLY RECOGNIZED THAT CONTACT LENSES SHOULD NOT BE WORN WHEN WORKING WITH CHEMICALS BECAUSE CONTACT LENSES MAY CONTRIBUTE TO THE SEVERITY OF AN EYE INJURY.

PROTECTIVE CLOTHING: LONG-SLEEVED SHIRT, TROUSERS, NEOPRENE OR RUBBER BOOTS, NEOPRENE OR RUBBER GLOVES, AND NEOPRENE OR RUBBER APRON.

OTHER PROTECTIVE MEASURES: AN EYEWASH AND SAFETY SHOWER SHOULD BE NEARBY AND READY FOR USE.

FIRE AND EXPLOSION INFORMATION

FLASH POINT, DEG F: 76 FLAMMABLE LIMITS IN AIR, %
METHOD USED: TCC LOWER: 1.7 UPPER: 7.6
.TINGUISHING MEDIA: USE DRY CHEMICAL, CO2, OR ALCOHOL FOAM. WATER MAY BE INEFFECTIVE.

SPECIAL FIRE FIGHTING PROCEDURES: FIRE FIGHTERS SHOULD WEAR SELF-

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CONTAINED BREATHING APPARATUS AND FULL PROTECTIVE CLOTHING. USE WATER SPRAY TO COOL NEARBY CONTAINERS AND STRUCTURES EXPOSED TO FIRE.

UNUSUAL FIRE AND EXPLOSION HAZARDS: EXTINGUISH ALL NEARBY SOURCES OF IGNITION. AVOID ACCUMULATION OF WATER BECAUSE THIS PRODUCT WILL FLOAT ON WATER AND MAY REIGNITE ON THE SURFACE OF THE WATER. VAPORS ARE HEAVIER THAN AIR AND MAY TRAVEL A CONSIDERABLE DISTANCE TO A SOURCE OF IGNITION AND FLASHBACK.

HAZARDOUS REACTIVITY

STABILITY: STABLE POLYMERIZATION: WILL NOT OCCUR
CONDITIONS TO AVOID: HEAT, SPARKS, AND OPEN FLAMES.

MATERIALS TO AVOID: ACIDS, ALKALIS, OXIDIZING OR REDUCING MATERIALS, AND WATER.

HAZARDOUS DECOMPOSITION PRODUCTS: MAY LIBERATE CARBON MONOXIDE OR CARBON DIOXIDE.

SPILL, LEAK, AND DISPOSAL PROCEDURES

ACTION TO TAKE FOR SPILLS OR LEAKS: WEAR PROTECTIVE EQUIPMENT INCLUDING RUBBER BOOTS, RUBBER GLOVES, RUBBER APRON, AND A SELF-CONTAINED BREATHING APPARATUS IN THE PRESSURE DEMAND MODE OR A SUPPLIED-AIR RESPIRATOR. IF THE SPILL OR LEAK IS SMALL, A FULL FACEPIECE AIR-PURIFYING CARTRIDGE RESPIRATOR EQUIPPED FOR ORGANIC VAPORS MAY BE SATISFACTORY. IN ANY EVENT, ALWAYS WEAR EYE PROTECTION. EXTINGUISH ALL IGNITION SOURCES AND ENSURE THAT ALL HANDLING EQUIPMENT IS ELECTRICALLY GROUNDED. FOR SMALL SPILLS OR DRIPS, MOP OR WIPE UP AND DISPOSE OF IN DOT-APPROVED WASTE CONTAINERS. FOR LARGE SPILLS, CONTAIN BY DIKING WITH SOIL OR OTHER NON-COMBUSTIBLE ABSORBENT MATERIALS AND THEN PUMP INTO DOT-APPROVED WASTE CONTAINERS; OR ABSORB WITH NON-COMBUSTIBLE SORBENT MATERIAL, PLACE RESIDUE IN DOT-APPROVED WASTE CONTAINERS. KEEP OUT OF SEWERS, STORM DRAINS, SURFACE WATERS, AND SOIL.
COMPLY WITH ALL APPLICABLE GOVERNMENTAL REGULATIONS ON SPILL REPORTING, AND HANDLING AND DISPOSAL OF WASTE.

DISPOSAL METHODS: DISPOSE OF CONTAMINATED PRODUCT AND MATERIALS USED IN CLEANING UP SPILLS OR LEAKS IN A MANNER APPROVED FOR THIS MATERIAL. CONSULT APPROPRIATE FEDERAL, STATE AND LOCAL REGULATORY AGENCIES TO ASCERTAIN PROPER DISPOSAL PROCEDURES.
NOTE: EMPTY CONTAINERS CAN HAVE RESIDUES, GASES AND MISTS AND ARE SUBJECT TO PROPER WASTE DISPOSAL, AS ABOVE.

SPECIAL PRECAUTIONS

HANDLING AND STORAGE PRECAUTIONS: KEEP AWAY FROM HEAT, SPARKS, AND FLAMES. STORE IN A COOL, DRY, WELL-VENTILATED PLACE AWAY FROM INCOMPATIBLE MATERIALS. VENT CONTAINER FREQUENTLY, AND MORE OFTEN IN WARM WEATHER, TO RELIEVE PRESSURE. ELECTRICALLY GROUND ALL EQUIPMENT WHEN HANDLING THIS PRODUCT AND USE ONLY NON-SPARKING TOOLS. KEEP CONTAINER TIGHTLY CLOSED WHEN NOT IN USE. DO NOT USE PRESSURE TO EMPTY CONTAINER. WASH THOROUGHLY AFTER HANDLING. DO NOT GET IN EYES, ON SKIN, OR ON CLOTHING.

REPAIR AND MAINTENANCE PRECAUTIONS: DO NOT CUT, GRIND, WELD, OR DRILL ON OR NEAR THIS CONTAINER.

OTHER PRECAUTIONS: CONTAINERS, EVEN THOSE THAT HAVE BEEN EMPTIED, WILL RETAIN PRODUCT RESIDUE AND VAPORS. ALWAYS OBEY HAZARD WARNINGS AND HANDLE EMPTY CONTAINERS AS IF THEY WERE FULL.

FOR ADDITIONAL INFORMATION

CONTACT DOUGLAS EISNER, TECHNICAL DIRECTOR, VAN WATERS & ROGERS INC.
DURING BUSINESS HOURS, PACIFIC TIME (206)447-5911

NOTICE

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OR IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WITH RESPECT TO THE PRODUCT OR INFORMATION PROVIDED HEREIN. **

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----------REVISION----------

08/87: REPORTED ADDITIONAL PERSONAL EXPOSURE LIMIT.

**** E N D O F M S D S ****

PROD: 04023347 15:02:45 28 MAR 1988 CUST: 02005857 INVOICE: 029502741

SCOEPA00054853

SHIP TO:

02005857 ORDER NO: 028534751
WACKER SILTRONIC CORP PROD NO: 04021851
For address
see page 4
--- ---- - OR 97203
ATTN: DICK CONLEE/JUDY DUNCAN

VAN WATERS & ROGERS INC. 2600 CAMPUS DRIVE SAN MATEO, CA 94403

EMERGENCY ASSISTANCE

FOR EMERGENCY ASSISTANCE INVOLVING CHEMICALS CALL CHEMTREC (800) 424-9300.

FOR PRODUCT AND SALES INFORMATION

CONTACT YOUR LOCAL VAN WATERS & ROGERS BRANCH OFFICE

PRODUCT IDENTIFICATION

PRODUCT NAME: N-BUTYL ALCOHOL CAS NO.: 71-36-3
COMMON NAMES/SYNONYMS: N-BUTANOL; VW&R CODE: T1369
NORMAL BUTANOL; 1-BUTANOL; PROPYL CARBINOL

RMULA: C4 H9 O H DATE ISSUED: 11/86
AZARD RATING (NFPA 325M) SUPERCEDES: 02/86
HEALTH: 1 HAZARD RATING SCALE:
FIRE: 3 0=MINIMAL 3=SERIOUS
REACTIVITY: 0 1=SLIGHT 4=SEVERE
SPECIAL: NONE 2=MODERATE

HAZARDOUS INGREDIENTS

COMPONENT	%	EXPOSURE LIMITS, PPM OSHA PEL	ACGIH TLV	OTHER LIMIT	HAZARD
N-BUTANOL	>99	100	50 (CEILING, SKIN)	NONE	FLAMMABLE; IRRITANT

PHYSICAL PROPERTIES

BOILING POINT, DEG F: 244 VAPOR PRESSURE, MM HG/20 DEG C: 4
MELTING POINT, DEG F: -128 VAPOR DENSITY (AIR=1): 2.6
SPECIFIC GRAVITY (WATER=1): 0.81 WATER SOLUBILITY, %: 7.7
APPEARANCE AND ODOR: CLEAR EVAPORATION RATE (BUTYL ACETATE=1): 0.43
COLORLESS, STRONG NON-RESIDUAL ODOR

FIRST AID MEASURES

IF INHALED: REMOVE TO FRESH AIR. GIVE ARTIFICIAL RESPIRATION IF NOT BREATHING. GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF EYE CONTACT: IMMEDIATELY FLUSH EYES WITH LOTS OF RUNNING WATER FOR 15 MINUTES, LIFTING THE UPPER AND LOWER EYELIDS OCCASIONALLY. GET IMMEDIATE MEDICAL ATTENTION.

' CASE OF SKIN CONTACT: IMMEDIATELY WASH SKIN WITH LOTS OF SOAP AND
.TER. REMOVE CONTAMINATED CLOTHING AND SHOES; WASH BEFORE REUSE. GET
EDICAL ATTENTION IF IRRITATION PERSISTS AFTER WASHING.

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SWALLOWED: IF CONSCIOUS, IMMEDIATELY INDUCE VOMITING BY GIVING 2 GLASSES OF WATER AND STICKING A FINGER DOWN THE THROAT. GET IMMEDIATE MEDICAL ATTENTION. DO NOT GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSING PERSON.

HEALTH HAZARD INFORMATION

PRIMARY ROUTES OF EXPOSURE: SKIN , EYE CONTACT, OR SWALLOWED

SIGNS AND SYMPTOMS OF EXPOSURE

INHALATION: VAPORS AND MISTS IRRITATE THE NOSE AND THROAT. INHALATION OF HIGHER CONCENTRATIONS MAY CAUSE HEADACHES, NAUSEA, VOMITING, DIZZINESS, INCOORDINATION, DROWSINESS AND COMA. INHALATION OF VERY HIGH CONCENTRATIONS MAY CAUSE UNCONSCIOUSNESS.

EYE CONTACT: VAPORS WILL IRRITATE THE EYES. LIQUID AND MISTS MAY SEVERELY IRRITATE OR IRREVERSIBLY DAMAGE THE EYES.

SKIN CONTACT: MINIMAL IRRITATION AFTER BRIEF CONTACT BUT PROLONGED CONTACT CAUSES SEVERE SKIN INJURY. SLIGHTLY TOXIC BY SKIN ABSORPTION.

SWALLOWED: SWALLOWING LARGE QUANTITIES CAUSES HEADACHES, NAUSEA, VOMITING, ABDOMINAL DISCOMFORT, AND PERHAPS UNCONSCIOUSNESS.

CHRONIC EFFECTS OF EXPOSURE: THERE IS SOME EVIDENCE THAT LONG TERM REPEATED EXPOSURE TO VAPOR CONCENTRATIONS GREATER THAN 50 PPM MAY RESULT IN SOME LOSS OF HEARING.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: NONE REPORTED.

TOXICITY DATA

ORAL: RAT LD50=790 MG/KG

RMAL: RABBIT LD50=4.2 G/KG

INHALATION: RAT LC50=8000 PPM/4HR

CARCINOGENICITY: THIS MATERIAL IS NOT CONSIDERED TO BE A CARCINOGEN BY THE NATIONAL TOXICOLOGY PROGRAM, THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER, OR THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

OTHER DATA: NONE

PERSONAL PROTECTION

VENTILATION: LOCAL MECHANICAL EXHAUST VENTILATION CAPABLE OF MAINTAINING EMISSIONS AT THE POINT OF USE BELOW THE PEL.

RESPIRATORY PROTECTION: IF USE CONDITIONS GENERATE VAPORS OR MISTS, WEAR A NIOSH-APPROVED RESPIRATOR APPROPRIATE FOR THOSE EMISSION LEVELS. APPROPRIATE RESPIRATORS MAY BE A FULL FACEPIECE AIR-PURIFYING CARTRIDGE RESPIRATOR EQUIPPED FOR ORGANIC VAPORS/MISTS, A SELF-CONTAINED BREATHING APPARATUS IN THE PRESSURE DEMAND MODE, OR A SUPPLIED-AIR RESPIRATOR.

EYE PROTECTION: CHEMICAL GOGGLES UNLESS A FULL FACEPIECE RESPIRATOR IS ALSO WORN. IT IS GENERALLY RECOGNIZED THAT CONTACT LENSES SHOULD NOT BE WORN WHEN WORKING WITH CHEMICALS BECAUSE CONTACT LENSES MAY CONTRIBUTE TO THE SEVERITY OF AN EYE INJURY.

PROTECTIVE CLOTHING: LONG-SLEEVED SHIRT, TROUSERS, SAFETY SHOES, NEOPRENE GLOVES, AND NEOPRENE APRON.

OTHER PROTECTIVE MEASURES: AN EYEWASH AND SAFETY SHOWER SHOULD BE NEARBY AND READY FOR USE.

FIRE AND EXPLOSION INFORMATION

ASH POINT, DEG F: 95-98
METHOD USED: TCC

FLAMMABLE LIMITS IN AIR, %
LOWER: 1.4 UPPER: 11.2

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EXTINGUISHING MEDIA: USE WATER SPRAY, DRY CHEMICAL, CO2, OR ALCOHOL FOAM. DO NOT USE A DIRECT WATER STREAM.

SPECIAL FIRE FIGHTING PROCEDURES: FIRE FIGHTERS SHOULD WEAR SELF-CONTAINED BREATHING APPARATUS AND FULL PROTECTIVE CLOTHING. USE WATER SPRAY TO COOL NEARBY CONTAINERS AND STRUCTURES EXPOSED TO FIRE.

UNUSUAL FIRE AND EXPLOSION HAZARDS: VAPOR IS HEAVIER THAN AIR AND MAY TRAVEL TO OTHER IGNITION SOURCES.

HAZARDOUS REACTIVITY

STABILITY: STABLE POLYMERIZATION: WILL NOT OCCUR
CONDITIONS TO AVOID: HEAT, SPARKS, AND OPEN FLAMES.

MATERIALS TO AVOID: ACIDS, OXIDIZING MATERIALS, ALDEHYDES AND ISOCYANATES

HAZARDOUS DECOMPOSITION PRODUCTS: MAY LIBERATE CARBON MONOXIDE, CARBON DIOXIDE, OR ISOBUTYLENE.

SPILL, LEAK, AND DISPOSAL PROCEDURES

ACTION TO TAKE FOR SPILLS OR LEAKS: WEAR PROTECTIVE EQUIPMENT INCLUDING NEOPRENE BOOTS, NEOPRENE GLOVES, NEOPRENE APRON, A A SELF-CONTAINED BREATHING APPARATUS IN THE PRESSURE DEMAND MODE OR A SUPPLIED-AIR RESPIRATOR. IF THE SPILL OR LEAK IS SMALL, A FULL FACEPIECE AIR-PURIFYING CARTRIDGE RESPIRATOR EQUIPPED FOR ORGANIC VAPORS MAY BE SATISFACTORY. IN ANY EVENT, ALWAYS WEAR EYE PROTECTION. EXTINGUISH ALL IGNITION SOURCES AND ENSURE THAT ALL HANDLING EQUIPMENT IS ELECTRICALLY GROUNDED. FOR SMALL SPILLS OR DRIPS, MOP OR WIPE UP AND DISPOSE OF IN DOT-APPROVED WASTE CONTAINERS. FOR LARGE SPILLS, CONTAIN BY DIKING WITH SOIL OR OTHER NON-COMBUSTIBLE ABSORBENT MATERIALS AND THEN PUMP INTO DOT-APPROVED WASTE CONTAINERS; OR ABSORB WITH NON-COMBUSTIBLE SORBENT MATERIAL, PLACE RESIDUE IN DOT-APPROVED WASTE CONTAINERS. KEEP OUT OF SEWERS, STORM DRAINS, SURFACE WATERS, AND SOIL.
COMPLY WITH ALL APPLICABLE GOVERNMENTAL REGULATIONS ON SPILL REPORTING, AND HANDLING AND DISPOSAL OF WASTE.

DISPOSAL METHODS: DISPOSE OF CONTAMINATED PRODUCT AND MATERIALS USED IN CLEANING UP SPILLS OR LEAKS IN A MANNER APPROVED FOR THIS MATERIAL. CONSULT APPROPRIATE FEDERAL, STATE AND LOCAL REGULATORY AGENCIES TO ASCERTAIN PROPER DISPOSAL PROCEDURES.
NOTE: EMPTY CONTAINERS CAN HAVE RESIDUES, GASES AND MISTS AND ARE SUBJECT TO PROPER WASTE DISPOSAL, AS ABOVE.

SPECIAL PRECAUTIONS

HANDLING AND STORAGE PRECAUTIONS: KEEP AWAY FROM HEAT, SPARKS, AND FLAMES. STORE IN A COOL, DRY, WELL-VENTILATED PLACE AWAY FROM INCOMPATIBLE MATERIALS. VENT CONTAINER FREQUENTLY, AND MORE OFTEN IN WARM WEATHER, TO RELIEVE PRESSURE. ELECTRICALLY GROUND ALL EQUIPMENT WHEN HANDLING THIS PRODUCT AND USE ONLY NON-SPARKING TOOLS. KEEP CONTAINER TIGHTLY CLOSED WHEN NOT IN USE. DO NOT USE PRESSURE TO EMPTY CONTAINER. WASH THOROUGHLY AFTER HANDLING. DO NOT GET IN EYES, ON SKIN, OR ON CLOTHING.

REPAIR AND MAINTENANCE PRECAUTIONS: DO NOT CUT, GRIND, WELD, OR DRILL ON OR NEAR THIS CONTAINER.

OTHER PRECAUTIONS: CONTAINERS, EVEN THOSE THAT HAVE BEEN EMPTIED, WILL RETAIN PRODUCT RESIDUE AND VAPORS. ALWAYS OBEY HAZARD WARNINGS AND HANDLE EMPTY CONTAINERS AS IF THEY WERE FULL.
VAPORS OF THIS PRODUCT ARE HEAVIER THAN AIR AND WILL COLLECT IN LOW PLACES, SUCH AS PITS OR DEGREASERS, OR OTHER POORLY VENTILATED AREAS. DO NOT ENTER PLACES WHERE VAPORS ARE SUSPECTED UNLESS SPECIAL RESPIRATORY PROTECTION IS WORN AND AN OBSERVER IS PRESENT.

FOR ADDITIONAL INFORMATION

CONTACT DOUGLAS EISNER, TECHNICAL DIRECTOR, VAN WATERS & ROGERS INC.

SCOEPA00054856

DURING BUSINESS HOURS, PACIFIC TIME (415)573-8000

NOTICE

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REVISION

11/86: CORRECTED NFPA REFERENCE, PERSONNEL EXPOSURE LIMIT AND FIRST AID FOR SWALLOWING. EXPANDED SKIN CONTACT HAZARDS. REVISED PERSONAL PROTECTION, FIRE FIGHTING INFORMATION, SPILL AND LEAK PROCEDURES, AND HANDLING ADVICE.

**** E N D O F M S D S ****

PROD: 04021851 11:55:43 01 MAR 1988 CUST: 02005857 INVOICE: 028534751

SHIP TO:

02005857
WACKER SILTRONIC CORP
ATTN: MARK ORGSIL
7200 NW FRONT ST
PO BOX 03180
PORTLAND OR 97203

ORDER NO: 020501256
PROD NO: 04173408

VAN WATERS & ROGERS INC. 1600 NORTON BLDG. SEATTLE, WA 98104-1564

EMERGENCY ASSISTANCE

FOR EMERGENCY ASSISTANCE INVOLVING CHEMICALS CALL CHEMTREC (800) 424-9300.

FOR PRODUCT AND SALES INFORMATION

CONTACT YOUR LOCAL VAN WATERS & ROGERS BRANCH OFFICE

PRODUCT IDENTIFICATION

PRODUCT NAME: CITRIC ACID, ANHYDROUS CAS NO.: 77-92-9
COMMON NAMES/SYNONYMS: CITRIC ACID, ANHYDROUS; 2-HYDROXY-1,2,3-PROPANETRICARBOXYLIC ACID VW&R CODE: T1145

FORMULA: C6 H8 O7
HAZARD RATING (MANUFACTURER)

DATE ISSUED: 12/88
SUPERCEDES: 10/87

HEALTH: 1
FIRE: 0
REACTIVITY: 0
SPECIAL: NONE

HAZARD RATING SCALE:
0=MINIMAL 3=SERIOUS
1=SLIGHT 4=SEVERE
2=MODERATE

HAZARDOUS INGREDIENTS

			EXPOSURE LIMITS, PPM			
			OSHA	ACGIH	OTHER	
COMPONENT	CAS NO.	%	PEL	TLV	LIMIT	HAZARD
CITRIC ACID	77-92-9	>99	NONE	NONE	NONE	NONE

PHYSICAL PROPERTIES

BOILING POINT, DEG F: N/D
MELTING POINT, DEG F: APPROX. 300
SPECIFIC GRAVITY (WATER=1): 1.665
APPEARANCE AND ODOR: ODOR-LESS, WHITE CRYSTALS
VAPOR PRESSURE, MM HG/20 DEG C: N/A
VAPOR DENSITY (AIR=1): N/A
WATER SOLUBILITY, %: 50
EVAPORATION RATE (BUTYL ACETATE=1): NIL

FIRST AID MEASURES

IF INHALED: REMOVE TO FRESH AIR. GIVE ARTIFICIAL RESPIRATION IF NOT BREATHING. GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF EYE CONTACT: IMMEDIATELY FLUSH EYES WITH LOTS OF RUNNING WATER FOR 15 MINUTES, LIFTING THE UPPER AND LOWER EYELIDS OCCASIONALLY. GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF SKIN CONTACT: IMMEDIATELY WASH SKIN WITH LOTS OF SOAP AND WATER. REMOVE CONTAMINATED CLOTHING AND SHOES; WASH BEFORE REUSE. GET MEDICAL ATTENTION IF IRRITATION PERSISTS AFTER WASHING.

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IF SWALLOWED: TREATMENT NOT NORMALLY REQUIRED.

HEALTH HAZARD INFORMATION

PRIMARY ROUTES OF EXPOSURE: SKIN CONTACT.

SIGNS AND SYMPTOMS OF EXPOSURE
INHALATION: BREATHING DUST MAY IRRITATE THE NOSE AND THROAT AND CAUSE COUGHING AND CHEST DISCOMFORT.

EYE CONTACT: DUSTS MAY IRRITATE THE EYES.

SKIN CONTACT: NO IRRITATION IS LIKELY AFTER BRIEF CONTACT BUT MAY BE IRRITATING AFTER PROLONGED CONTACT.

SWALLOWED: NONE CURRENTLY KNOWN.

CHRONIC EFFECTS OF EXPOSURE: PROLONGED EXPOSURE MAY DAMAGE TOOTH ENAMEL.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: NONE REPORTED.

TOXICITY DATA

ORAL: RAT, LD50 = 11,700 MG/KG

DERMAL: RABBIT 500 MG/24 HR = MODERATE IRRITATION

INHALATION: NOT ESTABLISHED

CARCINOGENICITY: THIS MATERIAL IS NOT CONSIDERED TO BE A CARCINOGEN BY THE NATIONAL TOXICOLOGY PROGRAM, THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER, OR THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

OTHER DATA: NONE

PERSONAL PROTECTION

VENTILATION: LOCAL MECHANICAL EXHAUST VENTILATION CAPABLE OF MINIMIZING DUST EMISSIONS AT THE POINT OF USE.

RESPIRATORY PROTECTION: A RESPIRATOR IS NORMALLY NOT REQUIRED IF THIS PRODUCT IS USED WITH ADEQUATE VENTILATION.

EYE PROTECTION: CHEMICAL GOGGLES. IT IS GENERALLY RECOGNIZED THAT CONTACT LENSES SHOULD NOT BE WORN WHEN WORKING WITH CHEMICALS BECAUSE CONTACT LENSES MAY CONTRIBUTE TO THE SEVERITY OF AN EYE INJURY.

PROTECTIVE CLOTHING: LONG-SLEEVED SHIRT, TROUSERS, SAFETY SHOES, AND GLOVES.

OTHER PROTECTIVE MEASURES: AN EYEWASH AND SAFETY SHOWER SHOULD BE NEARBY AND READY FOR USE.

FIRE AND EXPLOSION INFORMATION

FLASH POINT, DEG F: NONE FLAMMABLE LIMITS IN AIR, %
METHOD USED: N/A LOWER: N/D UPPER: N/D
EXTINGUISHING MEDIA: THIS MATERIAL IS NOT COMBUSTIBLE. USE EXTINGUISHING MEDIA APPROPRIATE FOR SURROUNDING FIRE.

SPECIAL FIRE FIGHTING PROCEDURES: NONE.

UNUSUAL FIRE AND EXPLOSION HAZARDS: NONE.

HAZARDOUS REACTIVITY

STABILITY: STABLE POLYMERIZATION: WILL NOT OCCUR
CONDITIONS TO AVOID: NONE

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MATERIALS TO AVOID: STRONG ALKALIES

HAZARDOUS DECOMPOSITION PRODUCTS: NONE

SPILL, LEAK, AND DISPOSAL PROCEDURES

ACTION TO TAKE FOR SPILLS OR LEAKS: WEAR PROTECTIVE EQUIPMENT INCLUDING RUBBER BOOTS, RUBBER GLOVES, RUBBER APRON, AND A FULL FACEPIECE OR A HALF MASK AIR-PURIFYING CARTRIDGE RESPIRATOR WITH PARTICULATE FILTERS. WEAR CHEMICAL GOGGLES IF A HALF MASK IS WORN. FOR SMALL SPILLS, SWEEP UP AND DISPOSE OF IN DOT-APPROVED WASTE CONTAINERS. FOR LARGE SPILLS, SHOVEL INTO DOT-APPROVED WASTE CONTAINERS. KEEP OUT OF SEWERS, STORM DRAINS, SURFACE WATERS, AND SOIL.
COMPLY WITH ALL APPLICABLE GOVERNMENTAL REGULATIONS ON SPILL REPORTING, AND HANDLING AND DISPOSAL OF WASTE.

DISPOSAL METHODS: DISPOSE OF CONTAMINATED PRODUCT AND MATERIALS USED IN CLEANING UP SPILLS OR LEAKS IN A MANNER APPROVED FOR THIS MATERIAL. CONSULT APPROPRIATE FEDERAL, STATE AND LOCAL REGULATORY AGENCIES TO ASCERTAIN PROPER DISPOSAL PROCEDURES.
NOTE: EMPTY CONTAINERS CAN HAVE RESIDUES, GASES AND MISTS AND ARE SUBJECT TO PROPER WASTE DISPOSAL, AS ABOVE.

SPECIAL PRECAUTIONS

STORAGE AND HANDLING PRECAUTIONS: STORE IN A COOL, DRY, WELL-VENTILATED PLACE AWAY FROM INCOMPATIBLE MATERIALS. KEEP BAGS OR FIBER DRUMS DRY AT ALL TIMES. WASH THOROUGHLY AFTER HANDLING. DO NOT GET IN EYES, ON SKIN, OR ON CLOTHING.

REPAIR AND MAINTENANCE PRECAUTIONS: NONE.

OTHER PRECAUTIONS: CONTAINERS, EVEN THOSE THAT HAVE BEEN EMPTIED, WILL RETAIN PRODUCT RESIDUE AND VAPORS. ALWAYS OBEY HAZARD WARNINGS AND HANDLE EMPTY CONTAINERS AS IF THEY WERE FULL.
OTHER PRECAUTIONS: THIS PRODUCT IS INTENDED FOR USE IN FOOD, ANIMAL FEED, DRUG, OR COSMETIC MANUFACTURE AND IT HAS BEEN PRODUCED AND PACKAGED IN ACCORDANCE WITH STRICT QUALITY PRACTICES. MAINTAIN THIS QUALITY LEVEL BY STORING THIS PRODUCT AWAY FROM OTHER CHEMICALS, HANDLING IT WITH CARE, AND AVOIDING ALL SOURCES OF CONTAMINATION.

FOR ADDITIONAL INFORMATION

CONTACT DOUGLAS EISNER, TECHNICAL DIRECTOR, VAN WATERS & ROGERS INC.
DURING BUSINESS HOURS, PACIFIC TIME (206)447-5911

THIS PRODUCT CONTAINS THE FOLLOWING CHEMICAL(S) CONSIDERED BY THE STATE OF CALIFORNIA'S SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986 (PROPOSITION 65) AS CAUSING CANCER OR REPRODUCTIVE TOXICITY AND FOR WHICH WARNINGS ARE NOW REQUIRED:

CHEMICAL	CAS NO.
ARSENIC	7440-38-2
LEAD	7439-92-1

NOTICE

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TION OR USE OF, OR RELIANCE UPON, INFORMATION CONTAINED HEREIN. THIS INFORMATION RELATES ONLY TO THE PRODUCT DESIGNATED HEREIN, AND DOES NOT RELATE TO ITS USE IN COMBINATION WITH ANY OTHER MATERIAL OR IN ANY OTHER PROCESS.

REVISION

12/88: ADDED OTHER REGULATORY INFORMATION.

**** E N D O F M S D S ****

PROD: 04173408 08:54:03 14 MAR 1989 CUST: 02005857 INVOICE: 020501256

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DU PONT

MATERIAL SAFETY DATA SHEET

IDENTIFICATION

NAME
LUDOX* Colloidal Silica

GRADE
HS-40, HS-30, TM, SM, ASM, AM, FM, FMA, AS, LS, CL-X

CHEMICAL FAMILY
Silicate

SYNONYMS
Silicon Dioxide; Amorphous Silica

CAS REGISTRY NO.
7631-86-9

CAS NAME
Silica

TSCA INVENTORY STATUS
Reported/Included

I.D. NOS./CODES
NIOSH Registry No.: VV7322000

PRODUCT INFORMATION PHONE
(800) 441-9442

MANUFACTURER/DISTRIBUTOR
E. I. du Pont de Nemours & Co. (Inc.)

MEDICAL EMERGENCY PHONE
(800) 441-3637

ADDRESS
Wilmington, DE 19898

TRANSPORTATION EMERGENCY PHONE
CHEMTREC (800) 424-9300

*Reg. U.S. Pat. & Tm. Off., Du Pont Company. LUDOX(R) Colloidal Silica is made only by Du Pont.

H-01307 Date: 4/88

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

PHYSICAL DATA

BOILING POINT, 760 mmHg
100°C (212°F) Liquid component is water.

MELTING POINT
0°C (32°F)

SPECIFIC GRAVITY
1.10-1.40

VAPOR PRESSURE
24 mmHg at 25°C (77°F)
48 mmHg at 38°C (100°F)

VAPOR DENSITY
Vapor is water

SOLUBILITY IN WATER
100%

pH INFORMATION
8.4-10.4 (see below for specific grades)

EVAPORATION RATE (BUTYL ACETATE = 1)
<1

FORM
Liquid

APPEARANCE
Clear to opalescent

COLOR
Colorless

ODOR
Odorless

LUDOX(R) Grade	pH	Titratable Alkali (as Na_2O) Wt.%	Wt.% Silica (as SiO_2)
HS-40	9.7	0.41	40
HS-30	9.8	0.32	30
TM	9.1	0.21	50
SM	10.0	0.56	30
ASM	10.0	0.56	30
AM	8.8	0.24	30
FM	10.1	0.40	15
FMA	10.1	0.40	15
AS	9.1	*	40
LS	8.1	0.10	30
CL-X	9.2	0.19	46

*Sol. contains 0.16% NH_3 and 0.08% Na_2O (occluded inside the particles).

HAZARDOUS COMPONENTS

MATERIAL(S)	CAS No.	APPROXIMATE %
Amorphous Silica	7631-86-9	15 to 50
Formaldehyde*	50-00-0	0.02
Titrable Alkali (as Na_2O)	-----	0.10 to 0.58

*LUDOX(R) SM, AM, and AS grades do not contain formaldehyde.

NONHAZARDOUS COMPONENTS

Water	7732-18-5	50-85

H-01307 Date: 4/88

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HAZARDOUS REACTIVITY

INSTABILITY
No known hazardous instability.

INCOMPATIBILITY
No known hazardous incompatibility.

DECOMPOSITION
No known hazardous decomposition.

POLYMERIZATION
Will not occur.

FIRE AND EXPLOSION DATA

FLASH POINT
Will not burn

AUTOIGNITION TEMPERATURE
Not applicable

AUTODECOMPOSITION TEMPERATURE
Not applicable

FIRE AND EXPLOSION HAZARDS
None

EXTINGUISHING MEDIA
As appropriate for combustibles in area.

SPECIAL FIRE FIGHTING INSTRUCTIONS
None

FLAMMABLE LIMITS IN AIR, % BY VOL.
LOWER Not applicable
UPPER Not applicable

SCOEPA00054864

HEALTH HAZARD INFORMATION

PRINCIPAL HEALTH HAZARDS (Including Significant Routes, Effects, Symptoms of Over-Exposure, and Medical Conditions Aggravated by Exposure)

May irritate skin and eyes. Overexposure to aerosols, mists, or dusts may cause a tissue response in the lungs.

Oral LD50: > 10,000 mg/kg in rats

The compound is a skin irritant and a mild eye irritant in animals. Toxic effects observed in animals exposed by inhalation include upper respiratory irritation and emphysema. Toxic effects described in animals exposed by ingestion include nonspecific effects such as weight loss and diarrhea. Toxic effects described in animals exposed by insufflation (intratracheal instillation) for one to two years include collengized fibrosis of the lungs. 1)

Human health effects of overexposure by eye contact may include eye irritation with discomfort, tearing, or blurring of vision. Human health effects of overexposure by skin contact may include skin irritation with discomfort or rash. Human health effects of overexposure by inhalation may include temporary lung irritation with cough, discomfort, difficulty breathing, or shortness of breath. Individuals with preexisting diseases of the lungs may have increased susceptibility to the toxicity of excessive exposures.

CARCINOGENICITY

Not listed as a carcinogen by IARC, NTP, OSHA, ACGIH, or Du Pont.

EXPOSURE LIMITS [PEL (OSHA), TLV (ACGIH), AEL (DU PONT), ETC.]

Dust resulting from dried LUDOX(R) spills or deposits may be considered to be amorphous silica. The exposure limits for amorphous silica are:

OSHA 8-hour Time Weighted Average (TWA) = 20 million particles per cubic foot of air (mppcf); ACGIH TLV(R) - TWA = 10 mg/m^3 (total dust); Du Pont AEL = 3 mg/m^3 (respirable dust), 6 mg/m^3 (total dust).

When aerosols are intentionally produced such as in spray applications, respirable LUDOX particles may be produced. Animal studies are underway at Du Pont to facilitate establishment of an Acceptable Exposure Limits (AEL) for LUDOX Aerosols. Meantime, where there is inhalation exposure potential for LUDOX aerosols, Du Pont advises that precautions be taken similar to those used for crystalline (quartz) silica. Accordingly, exposure to LUDOX colloidal silica aerosols should be limited to 0.1 mg/m^3 respirable SiO_2.

SAFETY PRECAUTIONS

Avoid contact with eyes, skin, and clothing.
Avoid breathing aerosols and mists (also dust from dried-down product).
Wash thoroughly after handling.
Wash contaminated clothing before reuse and before LUDOX(R) dries.

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HEALTH HAZARD INFORMATION (cont.)

FIRST AID

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician. Flush skin with water.

If inhaled, remove to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

If swallowed, no specific intervention is indicated as the compound is not likely to be hazardous by ingestion. However, consult a physician if necessary.

PROTECTION INFORMATION

GENERALLY APPLICABLE CONTROL MEASURES

Good general ventilation should be provided to keep aerosol, mist and dust concentrations below the exposure limits.

PERSONAL PROTECTIVE EQUIPMENT

Chemical splash goggles and rubber gloves. Where there is potential for inhalation exposure to product dust, mist, or aerosols in excess of applicable exposure limits, use respirators approved by NIOSH for protection against dusts and mists.

DISPOSAL INFORMATION

SPILL, LEAK OR RELEASE

Flush with water to chemical sewer.

WASTE DISPOSAL

Comply with Federal, State and local regulations.

SHIPPING INFORMATION

Not regulated as a hazardous material by DOT or IMO.

SHIPPING CONTAINERS

Tank cars, tank trucks, 55-gallon PE lined steel drums.

STORAGE CONDITIONS

Keep containers tightly closed. Store at temperatures above 2°C (35°F) to avoid irreversible precipitation of silica.

SCOEPA00054866

ADDITIONAL INFORMATION AND REFERENCES

NPCA - HMIS RATINGS

Health (Acute)	1
Flammability	0
Reactivity	0
Personal Protection	-

Personal Protection rating to be supplied by user depending on use conditions.

SARA/Title III Hazard Categories and Lists

Categories:		Lists	
Chronic Health	- Yes	Extremely Hazardous Substance	- No
Acute Health	- Yes	CERCLA Hazardous Substance	- No
Fire Hazard	- No	Toxic Chemicals	- No
Pressure Hazard	- No		
Reactivity	- No		

For further information, see Du Pont "LUDOX(R) Colloidal Silica" and "LUDOX CL-X Colloidal Silica" Data Sheets; "LUDOX(R) Properties, Uses, Storage, and Handling" Bulletin.

DATE OF LATEST REVISION/REVIEW: 2/88

PERSON RESPONSIBLE FOR MSDS:

J. C. WATTS
Du Pont Co.
C&P Dept., Chestnut Run-709
Wilmington, DE 19898
(302) 999-4946

103278C

FUJIMI CORPORATION

MATERIAL SAFETY DATA SHEET

EMERGENCY TELEPHONE NO. 708-941-1400

SECTION I

PRODUCT: FO FUJIMI OPTICAL EMERY PRECISION ABRASIVE

MANUFACTURER: FUJIMI CORPORATION

ADDRESS: 747 Church Rd., Suite F-3, Elmhurst, IL 60126-1420

SECTION II - HAZARDOUS INGREDIENTS INFORMATION

	CAS #	OSHA PEL	ACGIH TLV TWA	OTHER LIMITS RECOMMENDED	% COMP
Al2O3 ALUMINUM OXIDE	1344-28-1	5.0mg/mc	10 mg/mc	15 mg/mc	52.50
ZrO2 ZIRCONIUM DIOXIDE	1314-23-4	5.0mg/mc	5.0mg/mc		28.50
SiO2 SILICON DIOXIDE*NOTE	14464-46-1	0.5mg/mc	10 mg/mc		17.60
TiO2 TITANIUM DIOXIDE	13463-67-7	15 mg/mc	10 mg/mc		1.20

mc - METERS CUBED
TWA - EIGHT-HOUR TIME-WEIGHTED AVERAGE OF TOTAL DUST, UNLESS SPECIFIED OTHERWISE.

SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS

BOILING POINT:	N/A (in degrees celsius (C) or fahrenheit (F))
VAPOR PRESSURE (mm Hg.):	N/A
VAPOR DENSITY (AIR = 1):	N/A
SPECIFIC GRAVITY (H2O = 1):	4.0
MELTING POINT:	NOTE
EVAPORATION RATE (BUTYL ACETATE = 1):	NAIF
SOLUBILITY IN WATER:	INSOLUBLE
APPEARANCE, ODOR, AND pH:	GRANULAR, TAN COLOR, NO ODOR, pH:7-8.0

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (METHOD USED): NO FIRE OR EXPLOSION HAZARDS

FLAMMABLE LIMITS: lel uel N/A

EXTINGUISHING MEDIA: N/A SPECIAL FIRE FIGHTING PROCEDURES: NONE

UNUSUAL FIRE/EXPLOSION HAZARDS: NONE

SECTION V - REACTIVITY DATA

STABILITY: STABLE CONDITIONS TO AVOID: NAIF

INCOMPATIBILITY (MATERIALS TO AVOID): NAIF

HAZARDOUS DECOMPOSITION OR BYPRODUCTS: NAIF

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

CONDITIONS TO AVOID: NAIF

SECTION VI - HEALTH HAZARD DATA

ROUTES OF ENTRY: INHALATION-DUST , SKIN-CONTACT , INGESTION . CONTACT MAY CAUSE IRRITATION TO EYES.

HEALTH HAZARDS: DUST MAY CAUSE CHOKING OR COUGHING, SKIN CONTACT MAY CAUSE IRRITATION BY A DRYING EFFECT.
IF INGESTED, VOMITING MAY OCCUR.

CARCINOGENICITY: NTP-NO , IARC MONOGRAPHS-SEE NOTES , OSHA-NO.

SIGNS AND SYMPTOMS OF EXPOSURE: N/A

MEDICAL CONDITIONS
GENERALLY AGGRAVATED BY EXPOSURE: N/A

EMERGENCY AND
FIRST AID PROCEDURES: REMOVE TO A DUST FREE AREA IF CHOKING.
CONSULT A DOCTOR IF INGESTED.

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:	NORMAL CLEAN UP PROCEDURES. RESPIRATORS MAY BE REQUIRED.
WASTE DISPOSAL METHOD:	SEE THE NOTE CONCERNING DISPOSAL. NO SPECIAL PROCEDURES REQUIRED. DISPOSE CONSISTENT WITH APPLICABLE FEDERAL, STATE, AND LOCAL REGULATIONS.
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:	ADEQUATE VENTILATION FOR AIR CONTAMINANTS. DUST LIMITATIONS ARE LISTED ON THE FRONT PAGE. SEE OSHA 29CFR 1910.94 FOR VENTILATION INFORMATION.
OTHER PRECAUTIONS:	NONE

SECTION VIII - CONTROL MEASURES

RESPIRATORY PROTECTION:	IF TLV IS EXCEEDED, USE AN APPROVED DUST RESPIRATOR. SEE OSHA 29CFR 1910.134.
VENTILATION:	LOCAL EXHAUST AND MECHANICAL VENTILATION ARE RECOMMENDED FOR DUST HAZARDS.
PROTECTIVE GLOVES:	RECOMMENDED
EYE PROTECTION:	PROTECTIVE GOGGLES RECOMMENDED
OTHER PROTECTIVE CLOTHING OR EQUIPMENT:	NONE
WORK/HYGIENIC PRACTICES:	---

SECTION IX - NOTES AND COMMENTS

ALUMINUM OXIDE AND TITANIUM DIOXIDE APPEAR ON THE EPA SECTION 313 LIST FOR TOXIC CHEMICAL RELEASES INTO THE
ENVIRONMENT SUBJECT TO REPORTING. THE SiO2 IS CRISTOBALITE.
CRYSTALLINE SILICA APPEARS IN THE IARC MONOGRAPHS. SEE CARCINOGEN- ICITY.
THERE IS A LIMITED DEGREE OF EVIDENCE
SUPPORTING THIS. THE OSHA PEL FOR Al2O3 AND SiO2 ARE FOR RESPIRABLE DUST.
'HASE DIAGRAM IS NEEDED FOR M.P.;SiO2 1713(C)
'A - NOT APPLICABLE

GLYCERINE 99.7% SYNTHETIC USP REVISION OF: 12-08-89

MAIL TO:

02005857
. WACKER SILTRONIC CORP
ATTN: MARK ORGSIL
7200 NW FRONT ST
PO BOX 03180
PORTLAND OR 97203

ORDER NO: 020529817
PROD NO: 04290252

VAN WATERS & ROGERS INC., SUBSIDIARY OF UNIVAR
1600 NORTON BLDG. SEATTLE, WA 98104-1564 (408) 435-8700

EMERGENCY ASSISTANCE

FOR EMERGENCY ASSISTANCE INVOLVING CHEMICALS CALL CHEMTREC (800)424-9300

FOR PRODUCT AND SALES INFORMATION

CONTACT YOUR LOCAL VAN WATERS & ROGERS BRANCH OFFICE

PRODUCT IDENTIFICATION

PRODUCT NAME: GLYCERINE
COMMON NAMES/SYNONYMS: GLYCYL ALCOHOL; GLYCERAL; GLYCERIN USP, CP, NF, NATURAL, TECH, IMPORT; GLYCEROL; EMERY 908 KOSHER; USP GRADE

CAS NO.: 56-81-5
VW&R CODE: P1104

FORMULA: C3 H8 O3
HAZARD RATING (NFPA 325M)
HEALTH: 1
FIRE: 1
REACTIVITY: 0
SPECIAL: NONE

DATE ISSUED: 12/89
SUPERCEDES: 08/89
HAZARD RATING SCALE:
0=MINIMAL 3=SERIOUS
1=SLIGHT 4=SEVERE
2=MODERATE

HAZARDOUS INGREDIENTS

COMPONENT	CAS NO.	%	EXPOSURE LIMITS, MG/M3 OSHA PEL	ACGIH TLV	OTHER LIMIT	HAZARD
GLYCERINE	56-81-5	>96	NONE	10 (MIST)	NONE	ACGIH LIST
WATER	7732-18-5	BALANCE	NONE	NONE	NONE	NONE

PHYSICAL PROPERTIES

BOILING POINT, DEG F: 99.5%=550 AT 760 MM HG; 96%=360 AT 20 MM HG
MELTING POINT, DEG F: N/A
SPECIFIC GRAVITY (WATER=1): 1.26
APPEARANCE AND ODOR: CLEAR, COLORLESS VISCOUS LIQUID, BLAND ODOR

VAPOR PRESSURE, MM HG/20 DEG C: 3
VAPOR DENSITY (AIR=1): 3.1
WATER SOLUBILITY, %: 100
EVAPORATION RATE (BUTYL ACETATE=1): N/A

FIRST AID MEASURES

IF INHALED: REMOVE TO FRESH AIR. GIVE ARTIFICIAL RESPIRATION IF NOT BREATHING. GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF EYE CONTACT: IMMEDIATELY FLUSH EYES WITH LOTS OF RUNNING WATER FOR 15 MINUTES, LIFTING THE UPPER AND LOWER EYELIDS OCCASIONALLY. GET IMMEDIATE MEDICAL ATTENTION.

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IN CASE OF SKIN CONTACT: IMMEDIATELY WASH SKIN WITH LOTS OF SOAP AND WATER. REMOVE CONTAMINATED CLOTHING AND SHOES; WASH BEFORE REUSE. GET MEDICAL ATTENTION IF IRRITATION PERSISTS AFTER WASHING.

IF SWALLOWED: DO NOT INDUCE VOMITING. GET IMMEDIATE MEDICAL ATTENTION.

HEALTH HAZARD INFORMATION

PRIMARY ROUTES OF EXPOSURE: SKIN OR EYE CONTACT

SIGNS AND SYMPTOMS OF EXPOSURE
INHALATION: WILL CAUSE ONLY SLIGHT IRRITATION OF MUCOUS MEMBRANES REGARDLESS OF EXTENT OF EXPOSURE.

EYE CONTACT: LIQUID AND MIST MAY IRRITATE THE EYES.

SKIN CONTACT: WILL CAUSE ONLY SLIGHT IRRITATION OF SKIN REGARDLESS OF EXTENT OF EXPOSURE.

SWALLOWED: SWALLOWING LARGE QUANTITIES MAY CAUSE NAUSEA AND VOMITING.

CHRONIC EFFECTS OF EXPOSURE: NO SPECIFIC INFORMATION AVAILABLE.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: NONE REPORTED.

TOXICITY DATA

ORAL: RAT LD50 = 17-27.2 G/KG

DERMAL: RABBIT = 500 MG/24 HR MODERATE IRRITATION

INHALATION: NO DATA FOUND

CARCINOGENICITY: THIS MATERIAL IS NOT CONSIDERED TO BE A CARCINOGEN BY THE NATIONAL TOXICOLOGY PROGRAM, THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER, OR THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

OTHER DATA: REPEATED EXCESSIVE EXPOSURE MAY CAUSE KIDNEY AND LIVER EFFECTS, AND INCREASED FAT LEVELS IN BLOOD. OBSERVATIONS IN ANIMALS INCLUDE GASTROINTESTINAL IRRITATION WITH VERY LARGE ORAL DOSES. BIRTH DEFECTS ARE UNLIKELY. EXPOSURES HAVING NO ADVERSE EFFECTS ON THE MOTHER SHOULD HAVE NO EFFECT ON THE FETUS. REPRODUCTION STUDIES INDICATE THAT GLYCERINE DOES NOT DIRECTLY INTERFERE WITH REPRODUCTION IN ANIMALS. WHEN ANIMALS WERE MAINTAINED ON SYNTHECTIC DIETS OR DOSED AT EXTREMELY HIGH LEVELS, REPRODUCTION IN FEMALES WAS AFFECTED-PERHAPS DUE TO ALTERED NUTRITIONAL STATES.

PERSONAL PROTECTION

VENTILATION: GENERAL ROOM VENTILATION.

RESPIRATORY PROTECTION: A RESPIRATOR IS NORMALLY NOT REQUIRED IF THIS PRODUCT IS USED WITH ADEQUATE VENTILATION.

EYE PROTECTION: SAFETY GLASSES WITH SIDE SHIELDS. IT IS GENERALLY RECOGNIZED THAT CONTACT LENSES SHOULD NOT BE WORN WHEN WORKING WITH CHEMICALS BECAUSE CONTACT LENSES MAY CONTRIBUTE TO THE SEVERITY OF AN EYE INJURY.

PROTECTIVE CLOTHING: LONG-SLEEVED SHIRT, TROUSERS, AND SAFETY SHOES.

OTHER PROTECTIVE MEASURES: AN EYEWASH AND SAFETY SHOWER SHOULD BE NEARBY AND READY FOR USE.

FIRE AND EXPLOSION INFORMATION

FLASH POINT, DEG F: 320
METHOD USED: TCC

FLAMMABLE LIMITS IN AIR, %
LOWER: UNKNOWN
UPPER: UNKNOWN

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EXTINGUISHING MEDIA: USE WATER SPRAY, DRY CHEMICAL, ALCOHOL FOAM OR CO2.

SPECIAL FIRE FIGHTING PROCEDURES: FIRE FIGHTERS SHOULD WEAR SELF-CONTAINED BREATHING APPARATUS AND FULL PROTECTIVE CLOTHING. USE WATER SPRAY TO COOL NEARBY CONTAINERS AND STRUCTURES EXPOSED TO FIRE.

UNUSUAL FIRE AND EXPLOSION HAZARDS: NONE.

HAZARDOUS REACTIVITY

STABILITY: STABLE POLYMERIZATION: WILL NOT OCCUR
CONDITIONS TO AVOID: NONE

MATERIALS TO AVOID: CONTACT WITH STRONG OXIDIZING AGENTS MAY CAUSE AN EXPLOSION.

HAZARDOUS DECOMPOSITION PRODUCTS: MAY LIBERATE ACROLEIN.

SPILL, LEAK, AND DISPOSAL PROCEDURES

ACTION TO TAKE FOR SPILLS OR LEAKS: WEAR PROTECTIVE EQUIPMENT INCLUDING RUBBER BOOTS, RUBBER GLOVES, RUBBER APRON, AND A SELF-CONTAINED BREATHING APPARATUS IN THE PRESSURE DEMAND MODE OR A SUPPLIED-AIR RESPIRATOR. IF THE SPILL OR LEAK IS SMALL, A FULL FACEPIECE AIR-PURIFYING CARTRIDGE RESPIRATOR EQUIPPED FOR ORGANIC VAPORS MAY BE SATISFACTORY. IN ANY EVENT, ALWAYS WEAR EYE PROTECTION. FOR SMALL SPILLS OR DRIPS, MOP OR WIPE UP AND DISPOSE OF IN DOT-APPROVED WASTE CONTAINERS. FOR LARGE SPILLS, CONTAIN BY DIKING WITH SOIL OR OTHER NON-COMBUSTIBLE SORBENT MATERIAL AND THEN PUMP INTO DOT-APPROVED WASTE CONTAINERS; OR ABSORB WITH NON-COMBUSTIBLE SORBENT MATERIAL, PLACE RESIDUE IN DOT-APPROVED WASTE CONTAINERS. KEEP OUT OF SEWERS, STORM DRAINS, SURFACE WATERS, AND SOILS.
COMPLY WITH ALL APPLICABLE GOVERNMENTAL REGULATIONS ON SPILL REPORTING, AND HANDLING AND DISPOSAL OF WASTE.

DISPOSAL METHODS: DISPOSE OF CONTAMINATED PRODUCT AND MATERIALS USED IN CLEANING UP SPILLS OR LEAKS IN A MANNER APPROVED FOR THIS MATERIAL. CONSULT APPROPRIATE FEDERAL, STATE AND LOCAL REGULATORY AGENCIES TO ASCERTAIN PROPER DISPOSAL PROCEDURES.
NOTE: EMPTY CONTAINERS CAN HAVE RESIDUES, GASES AND MISTS AND ARE SUBJECT TO PROPER WASTE DISPOSAL, AS ABOVE.

SPECIAL PRECAUTIONS

STORAGE AND HANDLING PRECAUTIONS: STORE IN A COOL, DRY, WELL-VENTILATED PLACE. STORE AWAY FROM ALL OTHER CHEMICALS AND POTENTIAL SOURCES OF CONTAMINATION. KEEP CONTAINER TIGHTLY CLOSED WHEN NOT IN USE. DO NOT USE PRESSURE TO EMPTY CONTAINER. WASH THOROUGHLY AFTER HANDLING. DO NOT GET IN EYES, ON SKIN, OR ON CLOTHING.

REPAIR AND MAINTENANCE PRECAUTIONS: NONE.

OTHER PRECAUTIONS: THIS PRODUCT IS INTENDED FOR USE IN FOOD, ANIMAL FEED, DRUG, OR COSMETIC MANUFACTURE AND IT HAS BEEN PRODUCED AND PACKAGED IN ACCORDANCE WITH STRICT QUALITY PRACTICES. MAINTAIN THIS QUALITY LEVEL BY STORING THIS PRODUCT AWAY FROM OTHER CHEMICALS, HANDLING IT WITH CARE, AND AVOIDING ALL SOURCES OF CONTAMINATION. CONTAINERS, EVEN THOSE THAT HAVE BEEN EMPTIED, WILL RETAIN PRODUCT RESIDUE AND VAPORS. ALWAYS OBEY HAZARD WARNINGS AND HANDLE EMPTY CONTAINERS AS IF THEY WERE FULL.

FOR ADDITIONAL INFORMATION

CONTACT MSDS COORDINATOR, VAN WATERS & ROGERS INC.
DURING BUSINESS HOURS, PACIFIC TIME (408)435-8700

NOTICE

**VAN WATERS & ROGERS INC. ("VW&R") EXPRESSLY DISCLAIMS ALL EXPRESS OR IMPLIED WARRENTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR

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PURPOSE, WITH RESPECT TO THE PRODUCT OR INFORMATION PROVIDED HEREIN.**

ALL INFORMATION APPEARING HEREIN IS BASED UPON DATA OBTAINED FROM RECOGNIZED TECHNICAL SOURCES. WHILE THE INFORMATION IS BELIEVED TO BE ACCURATE, VW&R MAKES NO REPRESENTATIONS AS TO ITS ACCURACY OR SUFFICIENCY. CONDITIONS OF USE ARE BEYOND VW&R'S CONTROL AND THEREFORE USERS ARE RESPONSIBLE TO VERIFY THIS DATA UNDER THEIR OWN OPERATING CONDITIONS TO DETERMINE WHETHER THE PRODUCT IS SUITABLE FOR THEIR PARTICULAR PURPOSES AND THEY ASSUME ALL RISKS OF THEIR USE, HANDLING, AND DISPOSAL OF THE PRODUCT, OR FROM THE PUBLICATION OR USE OF, OR RELIANCE UPON, INFORMATION CONTAINED HEREIN. THIS INFORMATION RELATES ONLY TO THE PRODUCT DESIGNATED HEREIN, AND DOES NOT RELATE TO ITS USE IN COMBINATION WITH ANY OTHER MATERIAL OR IN ANY OTHER PROCESS.

----------REVISION----------

12/89: REVISED; VAPOR PRESSURE, VAPOR DENSITY. ADDED; OTHER EFFECTS AND REVISED ORAL TOXICANTS.

**** E N D O F M S D S ****

PROD: 04290252 21:41:13 18 DEC 1989 CUST: 02005857 INVOICE: 020529817

SHIP TO:

02005857
WACKER SILTRONIC CORP
ATTN: MARK ORGSIL
7200 NW FRONT ST
PO BOX 03180
PORTLAND OR 97203

ORDER NO: 029532380
PROD NO: 04312173

VAN WATERS & ROGERS INC. 1600 NORTON BLDG. SEATTLE, WA 98104-1564

EMERGENCY ASSISTANCE

FOR EMERGENCY ASSISTANCE INVOLVING CHEMICALS CALL CHEMTREC (800) 424-9300.

FOR PRODUCT AND SALES INFORMATION

CONTACT YOUR LOCAL VAN WATERS & ROGERS BRANCH OFFICE

PRODUCT IDENTIFICATION

PRODUCT NAME: HYDROGEN PEROXIDE (30-52% PEROXIDE) CAS NO.: 7722-84-1
COMMON NAMES/SYNONYMS: HYDROGEN PEROXIDE SOLUTION; ALBONE (R) 35, 50, 35CG, 50CG, M; KASTONE (R); PERONE (R) 30, 35, 50; TYSUL (R) S, WW35, WW50; SUPER D VW&R CODE: T1124

(R) TRADEMARK OF DUPONT

FORMULA: H2 O2
HAZARD RATING (NFPA 49)
HEALTH: 2
FIRE: 0
REACTIVITY: 1
SPECIAL: OXY

DATE ISSUED: 04/87
SUPERCEDES: 08/86
HAZARD RATING SCALE:
0=MINIMAL 3=SERIOUS
1=SLIGHT 4=SEVERE
2=MODERATE

HAZARDOUS INGREDIENTS

			EXPOSURE LIMITS, PPM			
COMPONENT	CAS NO.	%	OSHA PEL	ACGIH TLV	OTHER LIMIT	HAZARD
HYDROGEN PEROXIDE	7722-84-1	30-52	1 (90%)	1	NONE	OXIDIZER; CORROSIVE
WATER	7732-18-5	BALANCE	NONE	NONE	NONE	NONE

PHYSICAL PROPERTIES

BOILING POINT, DEG F: A = 222; B = 220; C = 226; D = 237
MELTING POINT, DEG F: A = -15; B = -19; C = -27; D = -62
SPECIFIC GRAVITY (WATER=1): A = 1.112; B = 1.11; C = 1.133; D = 1.196
APPEARANCE AND ODOR:
CLEAR, COLORLESS LIQUID; PUNGENT ODOR

VAPOR PRESSURE, MM HG/30 DEG C: 18-24
VAPOR DENSITY (AIR=1): N/A
WATER SOLUBILITY, %: 100
EVAPORATION RATE (BUTYL ACETATE=1): >1

WHERE: A = 30%; B = 31%; C = 35%; D = 50%

FIRST AID MEASURES

IF INHALED: REMOVE TO FRESH AIR. GIVE ARTIFICIAL RESPIRATION IF NOT

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BREATHING. GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF EYE CONTACT: IMMEDIATELY FLUSH EYES WITH LOTS OF RUNNING WATER FOR 15 MINUTES, LIFTING THE UPPER AND LOWER EYELIDS OCCASIONALLY. GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF SKIN CONTACT: IMMEDIATELY FLOOD SKIN WITH LOTS OF RUNNING WATER FOR 15 MINUTES. REMOVE CONTAMINATED CLOTHING AND SHOES. GET MEDICAL ATTENTION IF IRRITATION PERSISTS AFTER FLOODING. DESTROY CONTAMINATED CLOTHING AND SHOES.

IF SWALLOWED: DO NOT INDUCE VOMITING. IF CONSCIOUS, GIVE LOTS OF WATER. GET IMMEDIATE MEDICAL ATTENTION. DO NOT GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSING PERSON.

NOTE TO PHYSICIAN: INSERT A GASTRIC TUBE TO PREVENT INCREASED PRESSURE THAT MAY RESULT FROM THE RAPID EVOLUTION OF OXYGEN.

----------HEALTH HAZARD INFORMATION----------

PRIMARY ROUTES OF EXPOSURE: SKIN OR EYE CONTACT, INHALATION.

SIGNS AND SYMPTOMS OF EXPOSURE
INHALATION: VAPORS AND MISTS SEVERELY IRRITATE THE NOSE AND THROAT.

EYE CONTACT: VAPORS WILL IRRITATE THE EYES. LIQUID AND MISTS WILL IRRITATE AND MAY BURN THE EYES. THIS PRODUCT IS CORROSIVE TO THE EYES AND ITS EFFECTS MAY BE DELAYED. DIRECT LIQUID CONTACT ON THE EYES MAY CAUSE IRREVERSIBLE DAMAGE.

SKIN CONTACT: BRIEF EXPOSURE WILL IRRITATE THE SKIN. LONGER EXPOSURE CAUSES IRRITATION, BLISTERS, AND BURNS.

SWALLOWED: THE LIQUID IS SEVERELY IRRITATING TO THE MOUTH AND THROAT. SWALLOWING THE LIQUID MAY CAUSE A SUDDEN EVOLUTION OF OXYGEN, WHICH CAN CAUSE INJURY BY DISTENSION OF THE ESOPHAGUS OR STOMACH. LOCAL INTERNAL BLEEDING MAY RESULT.

CHRONIC EFFECTS OF EXPOSURE: HUMAN HEALTH EFFECTS OF OVEREXPOSURE MAY INITIALLY INCLUDE SKIN IRRITATION WITH DISCOMFORT OR RASH, EYE IRRITATION WITH DISCOMFORT, TEARING OR BLURRING OF VISION, OR IRRITATION OF THE UPPER RESPIRATORY TRACT. HIGHER EXPOSURES MAY LEAD TO EYE CORROSION WITH CORNEAL OR CONJUNCTIVAL ULCERATION, SKIN BURNS OR ULCERATION, OR TEMPORARY LUNG IRRITATION EFFECTS WITH COUGH, DISCOMFORT, DIFFICULTY IN BREATHING, OR SHORTNESS OF BREATH. THERE ARE INCONCLUSIVE OR UNVERIFIED REPORTS OF HUMAN SENSITIZATION.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: NONE REPORTED.

----------TOXICITY DATA----------

ORAL: RAT LD50 = 75 MG/KG (FOR 75% H2 O2)

DERMAL: RABBIT LD50 = 9200 MG/KG (FOR 70% H2O2)

INHALATION: RAT LC50 > 2000 PPM/8 HR (90% H2O2)

CARCINOGENICITY: THIS MATERIAL IS NOT CONSIDERED TO BE A CARCINOGEN BY THE NATIONAL TOXICOLOGY PROGRAM, THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER, OR THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

OTHER DATA: THIS PRODUCT HAS BEEN REPORTED TO BE CARCINOGENIC TO MOUSE DUODENUM WHEN ADMINISTERED AT A LEVEL OF 0.4% IN THE DRINKING WATER CONTINUOUSLY OVER A 108 WEEK LIFETIME. HOWEVER, IT IS IMPROBABLE THAT HUMANS WILL BE EXPOSED TO SUCH HIGH ORAL DOSES DUE TO THE ACUTE TOXICITY OF CONCENTRATED SOLUTIONS AND THE CORROSIVITY OF THIS PRODUCT TO MUCOUS MEMBRANES. ACCIDENTAL HUMAN EXPOSURE TO SUCH HIGH DOSES IS ALSO UNLIKELY SINCE THIS DOSE IS EXPECTED TO CAUSE ACUTE TOXICITY AFTER ONE EXPOSURE.
TESTS FOR MUTAGENIC ACTIVITY IN MAMMALIAN CELL CULTURES OR FOR FETUS EFFECTS IN ANIMALS HAVE BEEN INCONCLUSIVE, WITH POSITIVE RESULTS IN SOME

SCOEPA00054876

STUDIES AND NEGATIVE RESULTS IN OTHERS. TESTS IN ANIMALS DEMONSTRATE NO REPRODUCTIVE TOXICITY.

----------PERSONAL PROTECTION----------

VENTILATION: LOCAL MECHANICAL EXHAUST VENTILATION CAPABLE OF MAINTAINING EMISSIONS AT THE POINT OF USE BELOW THE PEL.

RESPIRATORY PROTECTION: WEAR A NIOSH-APPROVED SELF-CONTAINED BREATHING APPARATUS IN THE PRESSURE DEMAND MODE, OR A SUPPLIED-AIR RESPIRATOR IF USE CONDITIONS GENERATE VAPORS OR MISTS.

EYE PROTECTION: CHEMICAL GOGGLES AND FULL FACESHIELD UNLESS A FULL FACEPIECE RESPIRATOR IS ALSO WORN. IT IS GENERALLY RECOGNIZED THAT CONTACT LENSES SHOULD NOT BE WORN WHEN WORKING WITH CHEMICALS BECAUSE CONTACT LENSES MAY CONTRIBUTE TO THE SEVERITY OF AN EYE INJURY.

PROTECTIVE CLOTHING: POLYESTER OR ACRYLIC FULL BODY COVERING CLOTHING. NITRILE RUBBER OR NEOPRENE BOOTS, APRON, AND GLOVES. DO NOT WEAR LEATHER SHOES OR SHOES THAT ARE CRACKED, SUEDE, OR OTHER POROUS MATERIALS.

OTHER PROTECTIVE MEASURES: AN EYEWASH AND SAFETY SHOWER SHOULD BE NEARBY AND READY FOR USE.

----------FIRE AND EXPLOSION INFORMATION----------

FLASH POINT, DEG F: NONE FLAMMABLE LIMITS IN AIR, %
METHOD USED: N/A LOWER: N/A UPPER: N/A
EXTINGUISHING MEDIA: FLOOD WITH WATER.

SPECIAL FIRE FIGHTING PROCEDURES: FIRE FIGHTERS SHOULD WEAR SELF-CONTAINED BREATHING APPARATUS AND FULL PROTECTIVE CLOTHING. USE WATER SPRAY TO COOL NEARBY CONTAINERS AND STRUCTURES EXPOSED TO FIRE.

UNUSUAL FIRE AND EXPLOSION HAZARDS: THIS PRODUCT MAY CAUSE A FIRE IF IT DRYS ON CLOTHING, WOOD, OR OTHER COMBUSTIBLES. CONTACT WITH FLAMMABLE LIQUIDS OR VAPORS MAY CAUSE IMMEDIATE FIRE OR EXPLOSION, ESPECIALLY IF HEATED, OR IT MAY RESULT IN A DELAYED EXPLOSION. DECOMPOSITION WILL RELEASE OXYGEN WHICH WILL INCREASE THE EXPLOSIVE LIMITS AND BURNING RATE OF FLAMMABLE VAPORS.

----------HAZARDOUS REACTIVITY----------

STABILITY: UNSTABLE POLYMERIZATION: WILL NOT OCCUR
CONDITIONS TO AVOID: EXCESSIVE HEAT AND CONTAMINATION OF ANY KIND.

MATERIALS TO AVOID: REDUCING AGENTS, COMBUSTIBLE MATERIALS SUCH AS WOOD, CLOTH, OR ORGANIC MATERIALS, METALS SUCH AS IRON AND COPPER AND THEIR ALLOYS, AND DIRT. ALSO RUST, CYANIDES, HEXAVALENT CHROMIUM COMPOUNDS, NITRIC ACID, POTASSIUM PERMANGANATE, AND HEAVY METALS AND THEIR SALTS.

HAZARDOUS DECOMPOSITION PRODUCTS: RELEASES OXYGEN GAS WHICH, IN A CONFINED SPACE, WILL INCREASE EXPLOSIVE LIMITS AND BURNING RATE OF FLAMMABLE VAPORS. DECOMPOSITION WILL ALSO RESULT IN DANGEROUS PRESSURE INCREASES WITHIN CONTAINERS OR STORAGE VESSELS.

----------SPILL, LEAK, AND DISPOSAL PROCEDURES----------

ACTION TO TAKE FOR SPILLS OR LEAKS: WEAR POLYESTER OR ACRYLIC BODY-COVERING CLOTHING AND RUBBER BOOTS, RUBBER APRON, RUBBER GLOVES, HARD HAT WITH BRIM, AND A SELF-CONTAINED BREATHING APPARATUS IN THE PRESSURE-DEMAND MODE. ALWAYS WEAR CHEMICAL GOGGLES AND A FULL FACE SHIELD IF A SELF-CONTAINED BREATHING APPARATUS IS NOT WORN. EXTINGUISH ALL IGNITION SOURCES AND CONTAIN BY DIKING WITH A NON-COMBUSTIBLE ABSORBENT. DILUTE WITH LOTS OF WATER AND ALLOW PEROXIDE TO DECOMPOSE. THEN PUMP RESIDUE INTO DOT-APPROVED WASTE CONTAINERS OR ABSORB THE RESIDUE ON NON-COMBUSTIBLE ABSORBENT AND PLACE THAT RESIDUE IN DOT-APPROVED WASTE CONTAINERS. KEEP OUT OF SEWERS, STORM DRAINS, SURFACE WATERS, AND SOIL. COMPLY WITH ALL APPLICABLE GOVERNMENTAL REGULATIONS ON SPILL REPORTING,

SCOEPA00054877

AND HANDLING AND DISPOSAL OF WASTE.

DISPOSAL METHODS: DISPOSE OF CONTAMINATED PRODUCT AND MATERIALS USED IN CLEANING UP SPILLS OR LEAKS IN A MANNER APPROVED FOR THIS MATERIAL. CONSULT APPROPRIATE FEDERAL, STATE AND LOCAL REGULATORY AGENCIES TO ASCERTAIN PROPER DISPOSAL PROCEDURES.
NOTE: EMPTY CONTAINERS CAN HAVE RESIDUES, GASES AND MISTS AND ARE SUBJECT TO PROPER WASTE DISPOSAL, AS ABOVE.

SPECIAL PRECAUTIONS

STORAGE AND HANDLING PRECAUTIONS: STORE IN A COOL, DRY PLACE. STORE AWAY FROM ALL OTHER CHEMICALS AND POTENTIAL SOURCES OF CONTAMINATION. KEEP CONTAINER TIGHTLY CLOSED WHEN NOT IN USE. DO NOT USE PRESSURE TO EMPTY CONTAINER. WASH THOROUGHLY AFTER HANDLING. DO NOT GET IN EYES, ON SKIN, OR ON CLOTHING. STORE ONLY IN A PROPERLY VENTED CONTAINER OR APPROVED BULK STORAGE FACILITY. DO NOT BLOCK VENT IN BUNG CAP. NEVER ADD ANY OTHER PRODUCT TO CONTAINER. NEVER RETURN UNUSED PEROXIDE TO ORIGINAL CONTAINER.

REPAIR AND MAINTENANCE PRECAUTIONS: DO NOT CUT, GRIND, WELD, OR DRILL ON OR NEAR THIS CONTAINER.

OTHER PRECAUTIONS: CONTAINERS, EVEN THOSE THAT HAVE BEEN EMPTIED, WILL RETAIN PRODUCT RESIDUE AND VAPORS. ALWAYS OBEY HAZARD WARNINGS AND HANDLE EMPTY CONTAINERS AS IF THEY WERE FULL.

FOR ADDITIONAL INFORMATION

CONTACT DOUGLAS EISNER, TECHNICAL DIRECTOR, VAN WATERS & ROGERS INC.
DURING BUSINESS HOURS, PACIFIC TIME (206)447-5911

NOTICE

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REVISION

04/87: CORRECTED NFPA REFERENCE AND VAPOR PRESSURE UNITS. ADDED HAZARD. CORRECTED INHALATION TOXICITY. EXPANDED RESPIRATORY PROTECTION AND CLOTHING.

**** E N D O F M S D S ****

PROD: 04312173 09:58:37 17 JAN 1989 CUST: 02005857 INVOICE: 029532380

ISOPROPYL ALCOHOL MICROPROCESS REVISION OF: 09-27-89

MAIL TO:

02005857
. WACKER SILTRONIC CORP
ATTN: MARK ORGSIL
7200 NW FRONT ST
PO BOX 03180
PORTLAND OR 97203

ORDER NO: 020521871
PROD NO: 04326625

VAN WATERS & ROGERS INC., SUBSIDIARY OF UNIVAR
1600 NORTON BLDG. SEATTLE, WA 98104-1564 (408) 435-8700

EMERGENCY ASSISTANCE

FOR EMERGENCY ASSISTANCE INVOLVING CHEMICALS CALL CHEMTREC (800)424-9300

FOR PRODUCT AND SALES INFORMATION

CONTACT YOUR LOCAL VAN WATERS & ROGERS BRANCH OFFICE

PRODUCT IDENTIFICATION

PRODUCT NAME: ISOPROPYL ALCOHOL
COMMON NAMES/SYNONYMS: ISOPROPANOL; 2-PROPANOL; DIMETHYL CARBINOL; IPA

CAS NO.: 67-63-0
VW&R CODE: P1238

FORMULA: C3 H8 O
HAZARD RATING (MANUFACTURER)
HEALTH: 2
FIRE: 3
REACTIVITY: 0
SPECIAL: NONE

DATE ISSUED: 09/89
SUPERCEDES: 08/89
HAZARD RATING SCALE:
0=MINIMAL 3=SERIOUS
1=SLIGHT 4=SEVERE
2=MODERATE

HAZARDOUS INGREDIENTS

COMPONENT	%	EXPOSURE LIMITS, PPM OSHA PEL	ACGIH TLV	OTHER LIMIT	HAZARD
ISOPROPYL ALCOHOL	>99	400	400	500 (ACGIH STEL)	FLAMMABLE

PHYSICAL PROPERTIES

BOILING POINT, DEG F: 181
MELTING POINT, DEG F: -127
SPECIFIC GRAVITY (WATER=1): 0.79
APPEARANCE AND ODOR: CLEAR, COLORLESS LIQUID; MEDICINAL ALCOHOLIC ODOR
VAPOR PRESSURE, MM HG/20 DEG C: 33
VAPOR DENSITY (AIR=1): 2.07
WATER SOLUBILITY, %: 100
EVAPORATION RATE (BUTYL ACETATE=1): 3

FIRST AID MEASURES

IF INHALED: REMOVE TO FRESH AIR. GIVE ARTIFICIAL RESPIRATION IF NOT BREATHING. GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF EYE CONTACT: IMMEDIATELY FLUSH EYES WITH LOTS OF RUNNING WATER FOR 15 MINUTES, LIFTING THE UPPER AND LOWER EYELIDS OCCASIONALLY. GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF SKIN CONTACT: IMMEDIATELY WASH SKIN WITH LOTS OF SOAP AND WATER. REMOVE CONTAMINATED CLOTHING AND SHOES; WASH BEFORE REUSE. GET MEDICAL ATTENTION IF IRRITATION PERSISTS AFTER WASHING.

IF SWALLOWED: IF CONSCIOUS, IMMEDIATELY INDUCE VOMITING BY GIVING 2 GLASSES OF WATER AND STICKING A FINGER DOWN THE THROAT. GET IMMEDIATE MEDICAL ATTENTION. DO NOT GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSING PERSON. KEEP THE VICTIM'S HEAD BELOW HIS HIPS WHILE VOMITING SO HE DOES NOT BREATHE THE VOMITUS INTO HIS LUNGS.

HEALTH HAZARD INFORMATION

PRIMARY ROUTES OF EXPOSURE: SKIN OR EYE CONTACT, INHALATION, SWALLOWED

SIGNS AND SYMPTOMS OF EXPOSURE

INHALATION: VAPORS AND MISTS IRRITATE THE NOSE AND THROAT. INHALATION OF HIGHER CONCENTRATIONS MAY CAUSE HEADACHES, VOMITING, AND COMA. INHALATION OF VERY HIGH CONCENTRATIONS OR PROLONGED EXPOSURE MAY CAUSE UNCONSCIOUSNESS OR DEATH.

EYE CONTACT: VAPORS WILL IRRITATE THE EYES. LIQUID AND MISTS CAN SEVERELY IRRITATE OR DAMAGE THE EYES AND CAUSE CORNEAL BURNS.

SKIN CONTACT: BRIEF CONTACT MAY DRY THE SKIN, OR CAUSE BURNING OR STINGING SENSATION. PROLONGED OR REPEATED CONTACT MAY IRRITATE THE SKIN, CAUSING DERMATITIS.

SWALLOWED: SWALLOWING LARGE QUANTITIES CAUSES HEADACHES, NAUSEA, VOMITING, STOMACH CRAMPS AND DIARREHA, AND PERHAPS UNCONSCIOUSNESS, OR DEATH.

CHRONIC EFFECTS OF EXPOSURE: PROLONGED OR REPEATED EXPOSURE TO HIGH CONCENTRATIONS CAN PRODUCE SEVERE OR FATAL CNS DEPRESSION.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: PERSONS WITH PRE-EXISTING SKIN DISORDERS, EYE PROBLEMS, OR IMPAIRED RESPIRATORY FUNCTION MAY BE MORE SUSCEPTIBLE TO THE EFFECTS OF THIS SUBSTANCE.

TOXICITY DATA

ORAL: RAT LD50 = 5840 MG/KG
HUMAN LETHAL DOSE = 250 ML

DERMAL: RABBIT LD50 = 13 GM/KG

INHALATION: RAT LC50 = 16,000 PPM/8 HR

CARCINOGENICITY: THIS MATERIAL IS NOT CONSIDERED TO BE A CARCINOGEN BY THE NATIONAL TOXICOLOGY PROGRAM, THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER, OR THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

OTHER DATA: NONE

PERSONAL PROTECTION

VENTILATION: LOCAL MECHANICAL EXHAUST VENTILATION CAPABLE OF MAINTAINING EMISSIONS AT THE POINT OF USE BELOW THE PEL.

RESPIRATORY PROTECTION: IF USE CONDITIONS GENERATE VAPORS OR MISTS, WEAR A NIOSH-APPROVED RESPIRATOR APPROPRIATE FOR THOSE EMISSION LEVELS. APPROPRIATE RESPIRATORS MAY BE A FULL FACEPIECE OR A HALF MASK AIR-PURIFYING CARTRIDGE RESPIRATOR EQUIPPED FOR ORGANIC VAPORS/MISTS, A SELF-CONTAINED BREATHING APPARATUS IN THE PRESSURE DEMAND MODE, OR A SUPPLIED-AIR RESPIRATOR.

EYE PROTECTION: CHEMICAL GOGGLES UNLESS A FULL FACEPIECE RESPIRATOR IS ALSO WORN. IT IS GENERALLY RECOGNIZED THAT CONTACT LENSES SHOULD NOT BE WORN WHEN WORKING WITH CHEMICALS BECAUSE CONTACT LENSES MAY CONTRIBUTE TO THE SEVERITY OF AN EYE INJURY.

PROTECTIVE CLOTHING: LONG-SLEEVED SHIRT, TROUSERS, SAFETY SHOES, RUBBER GLOVES, AND RUBBER APRON.

OTHER PROTECTIVE MEASURES: AN EYEWASH AND SAFETY SHOWER SHOULD BE NEARBY AND READY FOR USE.

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FIRE AND EXPLOSION INFORMATION

FLASH POINT, DEG F: 53 FLAMMABLE LIMITS IN AIR, %
METHOD USED: TCC LOWER: 2 UPPER: 12.7
EXTINGUISHING MEDIA: USE WATER SPRAY, DRY CHEMICAL, CO2, OR ALCOHOLIC FOAM. DO NOT USE A DIRECT WATER STREAM.

SPECIAL FIRE FIGHTING PROCEDURES: FIRE FIGHTERS SHOULD WEAR SELF-CONTAINED BREATHING APPARATUS AND FULL PROTECTIVE CLOTHING. USE WATER SPRAY TO COOL NEARBY CONTAINERS AND STRUCTURES EXPOSED TO FIRE.

UNUSUAL FIRE AND EXPLOSION HAZARDS: EXTINGUISH ALL NEARBY SOURCES OF IGNITION BECAUSE VAPORS MAY BE MOVED BY AIR CURRENTS TO IGNITION SOURCES DISTANT FROM THE HANDLING POINT.

HAZARDOUS REACTIVITY

STABILITY: STABLE POLYMERIZATION: WILL NOT OCCUR

CONDITIONS TO AVOID: HEAT, SPARKS, AND OPEN FLAMES.

MATERIALS TO AVOID: STRONG OXIDIZERS, ALUMINUM, ACETALDEHYDE, CHLORINE, ETHYLENE OXIDE, HYDROGEN-PALLADIUM COMBINATION, H2 O2-H2 SO4 COMBINATION, HYPOCHLOROUS ACID, ISOCYANATES, NITROFORM, PHOSGENE, OLEUM, PERCHLORIC ACID, POTASSIUM T-BUTOXIDE, ACIDS, ALKALIS, AMINES, HALOGENS, HALOGEN COMPOUNDS, ANHYDRIDES, AND ALDEHYDES.

HAZARDOUS DECOMPOSITION PRODUCTS: MAY LIBERATE CARBON MONOXIDE OR CARBON DIOXIDE.

SPILL, LEAK, AND DISPOSAL PROCEDURES

ACTION TO TAKE FOR SPILLS OR LEAKS: WEAR PROTECTIVE EQUIPMENT INCLUDING RUBBER BOOTS, RUBBER GLOVES, RUBBER APRON, AND A SELF-CONTAINED BREATHING APPARATUS IN THE PRESSURE DEMAND MODE OR A SUPPLIED-AIR RESPIRATOR. IF THE SPILL OR LEAK IS SMALL, A FULL FACEPIECE AIR-PURIFYING CARTRIDGE RESPIRATOR EQUIPPED FOR ORGANIC VAPORS MAY BE SATISFACTORY. IN ANY EVENT, ALWAYS WEAR EYE PROTECTION. EXTINGUISH ALL IGNITION SOURCES AND ENSURE THAT ALL HANDLING EQUIPMENT IS ELECTRICALLY GROUNDED. FOR SMALL SPILLS OR DRIPS, MOP OR WIPE UP AND DISPOSE OF IN DOT-APPROVED WASTE CONTAINERS. FOR LARGE SPILLS, CONTAIN BY DIKING WITH SOIL OR OTHER NON-COMBUSTIBLE ABSORBENT MATERIALS AND THEN PUMP INTO DOT-APPROVED WASTE CONTAINERS; OR ABSORB WITH NON-COMBUSTIBLE SORBENT MATERIAL, PLACE RESIDUE IN DOT-APPROVED WASTE CONTAINERS. KEEP OUT OF SEWERS, STORM DRAINS, SURFACE WATERS, AND SOIL.
COMPLY WITH ALL APPLICABLE GOVERNMENTAL REGULATIONS ON SPILL REPORTING, AND HANDLING AND DISPOSAL OF WASTE.

DISPOSAL METHODS: DISPOSE OF CONTAMINATED PRODUCT AND MATERIALS USED IN CLEANING UP SPILLS OR LEAKS IN A MANNER APPROVED FOR THIS MATERIAL. CONSULT APPROPRIATE FEDERAL, STATE AND LOCAL REGULATORY AGENCIES TO ASCERTAIN PROPER DISPOSAL PROCEDURES.
NOTE: EMPTY CONTAINERS CAN HAVE RESIDUES, GASES AND MISTS AND ARE SUBJECT TO PROPER WASTE DISPOSAL, AS ABOVE.

SPECIAL PRECAUTIONS

HANDLING AND STORAGE PRECAUTIONS: KEEP AWAY FROM HEAT, SPARKS, AND FLAMES. STORE IN A COOL, DRY, WELL-VENTILATED PLACE AWAY FROM INCOMPATIBLE MATERIALS. VENT CONTAINER FREQUENTLY, AND MORE OFTEN IN WARM WEATHER, TO RELIEVE PRESSURE. ELECTRICALLY GROUND ALL EQUIPMENT WHEN HANDLING THIS PRODUCT AND USE ONLY NON-SPARKING TOOLS. KEEP CONTAINER TIGHTLY CLOSED WHEN NOT IN USE. DO NOT USE PRESSURE TO EMPTY CONTAINER. WASH THOROUGHLY AFTER HANDLING. DO NOT GET IN EYES, ON SKIN, OR ON CLOTHING.

REPAIR AND MAINTENANCE PRECAUTIONS: DO NOT CUT, GRIND, WELD, OR DRILL ON OR NEAR THIS CONTAINER.

OTHER PRECAUTIONS: CONTAINERS, EVEN THOSE THAT HAVE BEEN EMPTIED, WILL

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RETAIN PRODUCT RESIDUE AND VAPORS. ALWAYS OBEY HAZARD WARNINGS AND HANDLE EMPTY CONTAINERS AS IF THEY WERE FULL.

FOR ADDITIONAL INFORMATION

CONTACT MSDS COORDINATOR, VAN WATERS & ROGERS INC.
DURING BUSINESS HOURS, PACIFIC TIME (408)435-8700

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REVISION

09/89: REVISEDE NFPA RATING.

**** E N D O F M S D S ****

PROD: 04326625 00:49:06 11 OCT 1989 CUST: 02005857 INVOICE: 020521871

SCOEPA00054882

Page 1 (for Q 9)

{Page 3 German document}

DIN-SECURITY DATA FORM Date: 03-17-??

Company: LABORAT Laboratory Chemical Corporation GMBH

Trade Name: Q 9 - Laboratory Cleaners

1.1 Chemical characterization:

Preparation on basis of anionic and non-ionic tensides, solution mediators, phosphates.

1.2 Form: liquid 1.3 Color: yellowish 1.4 smell: slight

---

2. Physical- and ....{not legible} technical data:

			Tested according to
2.1	Change of state		
	In the temperature region	0 degrees Celsius 100 degrees C	none
2.2	Density (20 degrees C.) Settled apparent density	1,21g/cm3 kg/m3	
2.3	Steam pressure (20 d. C.) (50 d. C.)	23 mbar mbar	
2.4	Viscosity (25 d. C.)	appr. 30 mpas	Rotation vis=cometer
2.5	Solubility in water (20 d. C.) in (50 d. C.)	gl unlimited gl	
2.6	pH-value (with 20 g/l H2O) (20 d. C.)	11,5	electrical measurement
2.7	Inflammation point	none degrees C.	DIN 51758
2.8	Fire point	none degrees C.	DIN 51794

2.9 Explosion limits lower: none upper: none

2.10	Thermal dissolution	With correct handling: none
2.11	Dangerous dissolution products	With correct use: none
2.12	Dangerous reactions	With correct handling: none

2.13 Further information

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3. Transport GGVsea/IMDG-Code: - UN-no.:- ICAO/IATA-DCR:-
GGVE/GGVS: - RID/ADR:- ADNR:

Other Information:

{over}

SCOEPA00054883

{Page 3 German document cont.}

4. Guidelines
Substances in MAK-list: none
Marking according to working/operation substances: not required
R-sets: - S-sets:-
Hazard symbol: -
Substance class: -
Vbf: -
Hazard class: -

SCOEPA00054884

{Page 4 German document}

Trade Name: Q 9 Laboratory Cleaner

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5 Protection measures, storage and handling: No special measures requiered

5.1 Technical protection measures

5.2 Personal protection gear Mouth: none Eyes: none
Hand: none Other: none

5.3 Work Hygiene Avoid eye contact
Avoid contact with skin over long period of time

5.4 Fire-and explosion protection: not required

5.5 Waste disposal: To be removed according to guideline, for example diluted with much water, then leading into sewage.

---

6 Measures to be taken with accidents and fires

6.1 After spilling/leaking/gas emission Take-off mechanically

6.2 Extinguishing means Suitable: not required

Not to be used:

6.3 First aid: With eye contact, thorough rinsing with water immediately

6.4 Further information:

---

7. Information regarding toxycology: With correct handling, no damaging effects have been known or are to be expected.

---

8. Information regarding ecology: fulfills with over 90% decomposition ability according to OECB-method the requirements of the laundry detergent law.
So far there had been no disturbances with sewage cleaning when correctly handled.

Translation by: Christel Wandel
THE GERMAN LANGUAGE CENTER
636-8005
Date: Oct. 22, 1991; File: sich; Hours: 3 1/2

SCOEPA00054885

12/18/91

MATERIAL SAFETY DATA SHEET

Wacker Siltronic Corp.
P.O. Box 83180
Portland, Oregon 97283-0180

Emergency Phone:
1-800-424-9300 (Chemtrec)
1-503-243-2020 (Wacker)

Product:
Silicon (N-type, P-type wafers)

Chemical Formula:
Si

Chemical Family:
IV A

---

1. HAZARDOUS INGREDIENTS:

Material	CAS No.	%	TLV	PEL
Silicon	7440-21-3	99.99	10 mg/M^3 (TWA)	10 mg/M^3 (TWA)

Other Trace Materials:

Type P+ wafers normally contain 95 ppm of Boron (cas no. 7440-42-8)
Type P- wafers normally contain 0.04 ppm of Boron
Type N- wafers normally contain 0.04 ppm of phosphorous (cas no. 7723-14-0)
Type N+ wafers normally contain 29 ppm of Antimony (cas no. 7440-36-0)

All materials are in compliance with TSCA

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2. PHYSICAL DATA:

Boiling point (°C): 2355
Vapor Pressure (mmHg): N/A
Vapor Density (Air=1): N/A
Melting point (°C): 1410

Solubility in water = Insoluble
Specific Gravity (H_2O = 1): 2.33
% Volatile by volume: 0
Evaporation rate: N/A

Appearance and odor: Metallic gray solid with no odor.

---

3. FIRE AND EXPLOSION HAZARD DATA:

Flashpoint = N/A
Flammable Limits:
LEL: N/A
UEL: N/A

Extinguishing Media: Dry sand & dolomite or dry chemical

Unusual Fire and Explosion Hazards:

Dust can be readily ignited propogate flames & generate some pressure and/or a mild explosion

4. **HEALTH HAZARD DATA:**

OSHA PEL: 10 mg/M^3 (TWA)
ACGIH TLV: 10 mg/M^3 (TWA)

Silicon is a nuisance dust which may cause unpleasant deposits in the eyes, ears and nasal passages.

Chronic Effects of Overexposure: None known

Sharp silicon edges may result in skin cuts

Emergency and First Aid Procedures:

Inhalation: remove to clean air

Eye Contact: wash with water

Skin Contact: wash with water and soap

Ingestion: If swallowed, drink two glasses of water. Obtain medical attention.

Obtain medical attention for any condition where adverse health affects occur.

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5. **REACTIVITY DATA:**

Stability: Stable

Hazardous Polymerization: will not occur

Incompatibility (materials to avoid): acids

---

6. **ENVIRONMENTAL INFORMATION:**

Spill or leak procedures:

Wear proper protective equipment. Sweep or shovel spills into appropriate container for disposal.

Waste Disposal Method: Dispose of all wafers in accordance with Federal, State and local regulations.

7. **SPECIAL HANDLING INFORMATION:**

Respirator protection: Avoid inhalation of dusts. Use an OSHA/NIOSH approved high efficiency particulate respirator for use where levels exceed standards.

Ventilation: local ventilation at the source of dusting is recommended.

Eye Protection: ANSI approved safety goggles or glasses are recommended when cutting, grinding or breaking of wafers is performed.

Skin Protection: Wear protective gloves to prevent cuts where contact with sharp edges is possible.

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8. **COMMENTS:**

MSDS Revised: 3/20/91

Prepared by: Health and Safety Department
Wacker Siltronic Corporation

VANWET 9N9 NONIONIC SURFACTANT VW&R REVISION DF:11-16-88

SHIP TO:

02005857
WACKER SILTRONIC CORP
ATTN: MARK ORGSIL
7200 NW FRONT ST
PO BOX 03180
PORTLAND OR 97203

ORDER NO: 029532380
PROD NO: 04200158

VAN WATERS & ROGERS INC. 1600 NORTON BLDG. SEATTLE, WA 98104-1564

EMERGENCY ASSISTANCE

FOR EMERGENCY ASSISTANCE INVOLVING CHEMICALS CALL CHEMTREC (800) 424-9300.

FOR PRODUCT AND SALES INFORMATION

CONTACT YOUR LOCAL VAN WATERS & ROGERS BRANCH OFFICE

PRODUCT IDENTIFICATION

PRODUCT NAME: VANWET 9N9 CAS NO.: 26027-38-3
COMMON NAMES/SYNONYMS: A NONYLPHENOL SURFACTANT VW&R CODE: T3185002

FORMULA: C33 H60 O10
HAZARD RATING (NFPA 704 CRITERIA)
HEALTH: 3
FIRE: 1
REACTIVITY: 0
SPECIAL: NONE

DATE ISSUED: 04/87
SUPERCEDES: 12/86
HAZARD RATING SCALE:
0=MINIMAL 3=SERIOUS
1=SLIGHT 4=SEVERE
2=MODERATE

HAZARDOUS INGREDIENTS

COMPONENT	CAS NO.	%	EXPOSURE LIMITS, PPM OSHA PEL	ACGIH TLV	OTHER LIMIT	HAZARD
VANWET 9N9	26027-38-3	>99	NONE	NONE	NONE	IRRITANT
ETHYLENE OXIDE	75-21-8	TRACE	1	1	0.5 (OSHA ACTION)	CARCINOGEN

PHYSICAL PROPERTIES

BOILING POINT, DEG F: >482 (DECOMPOSES)
VAPOR PRESSURE, MM HG/20 DEG C: NIL
MELTING POINT, DEG F: 39
VAPOR DENSITY (AIR=1): >1
SPECIFIC GRAVITY (WATER=1): 1.057
WATER SOLUBILITY, %: 3.2
APPEARANCE AND ODOR: CLOUDY LIQUID; MILD ODOR
EVAPORATION RATE (BUTYL ACETATE=1): NIL

FIRST AID MEASURES

IF INHALED: REMOVE TO FRESH AIR. GIVE ARTIFICIAL RESPIRATION IF NOT BREATHING. GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF EYE CONTACT: IMMEDIATELY FLUSH EYES WITH LOTS OF RUNNING WATER FOR 15 MINUTES, LIFTING THE UPPER AND LOWER EYELIDS OCCASIONALLY. GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF SKIN CONTACT: IMMEDIATELY WASH SKIN WITH LOTS OF SOAP AND

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WATER. REMOVE CONTAMINATED CLOTHING AND SHOES; WASH BEFORE REUSE. GET MEDICAL ATTENTION IF IRRITATION PERSISTS AFTER WASHING.

IF SWALLOWED: DO NOT INDUCE VOMITING. IF CONSCIOUS, GIVE LOTS OF WATER. GET IMMEDIATE MEDICAL ATTENTION. DO NOT GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSING PERSON.

HEALTH HAZARD INFORMATION

PRIMARY ROUTES OF EXPOSURE: SKIN OR EYE CONTACT

SIGNS AND SYMPTOMS OF EXPOSURE
INHALATION: MISTS MAY CAUSE CHEST DISCOMFORT AND COUGHING.

EYE CONTACT: VAPORS WILL IRRITATE THE EYES. LIQUID AND MISTS WILL IRRITATE AND MAY BURN THE EYES, POSSIBLY CAUSING PERMANENT INJURY.

SKIN CONTACT: BRIEF CONTACT MAY DRY THE SKIN. PROLONGED OR REPEATED CONTACT MAY IRRITATE THE SKIN, CAUSING DERMATITIS. PROLONGED OR REPEATED CONTACT MAY ALSO RESULT IN THE ABSORPTION OF HARMFUL AMOUNTS.

SWALLOWED: SWALLOWING LARGE QUANTITIES MAY CAUSE NAUSEA AND VOMITING.

CHRONIC EFFECTS OF EXPOSURE: NO SPECIFIC INFORMATION AVAILABLE.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: NONE REPORTED.

TOXICITY DATA

ORAL: NO DATA FOUND

DERMAL: NO DATA FOUND

INHALATION: NO DATA FOUND

CARCINOGENICITY: THIS MATERIAL IS NOT CONSIDERED TO BE A CARCINOGEN BY THE NATIONAL TOXICOLOGY PROGRAM, THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER, OR THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

OTHER DATA: THIS PRODUCT MAY CONTAIN TRACE AMOUNTS OF ETHYLENE OXIDE, A CONDITION WHICH CREATES THE POTENTIAL FOR ACCUMULATION OF ETHYLENE OXIDE IN THE HEAD SPACE OF SHIPPING AND STORAGE CONTAINERS OR IN ENCLOSED AREAS WHERE THE PRODUCT IS BEING HANDLED OR USED. IF THE PRODUCT IS HANDLED ACCORDING TO THE RECOMMENDATIONS IN THIS MATERIAL SAFETY DATA SHEET, THE PRESENCE OF THESE TRACE AMOUNTS OF ETHYLENE OXIDE IS NOT EXPECTED TO RESULT IN ANY SHORT- OR LONG-TERM HAZARD. ETHYLENE OXIDE IS CONSIDERED BY OSHA AS A POTENTIAL CARCINOGEN FOR HUMANS. USERS OF THIS PRODUCT SHOULD CONFIRM THAT THEIR OPERATING, STORAGE AND DISTRIBUTION FACILITIES COMPLY WITH THE OSHA STANDARD (29 CFR 1910.1047). PERSONNEL SHOULD BE MONITORED FOR A SUFFICIENT PERIOD OF TIME TO DETERMINE IF THERE IS EXPOSURE TO ETHYLENE OXIDE ABOVE THE PERMISSIBLE LEVELS AND, IF NECESSARY, PRECAUTIONARY AND PROTECTIVE MEASURES SHOULD BE TAKEN TO KEEP ETHYLENE OXIDE PERSONNEL EXPOSURE LIMITS BELOW THE OSHA PERMISSIBLE LEVEL OF 1 PPM TWA(8) AND THE ACTION LEVEL OF 0.5 PPM TWA(8).

PERSONAL PROTECTION

VENTILATION: LOCAL MECHANICAL EXHAUST VENTILATION CAPABLE OF MINIMIZING EMISSIONS AT THE POINT OF USE.

RESPIRATORY PROTECTION: WEAR A NIOSH-APPROVED RESPIRATOR APPROPRIATE FOR THE VAPOR OR MIST CONCENTRATION AT THE POINT OF USE. APPROPRIATE RESPIRATORS MAY BE A FULL FACEPIECE OR A HALF MASK AIR-PURIFYING CARTRIDGE RESPIRATOR EQUIPPED FOR ORGANIC VAPORS/MISTS, A SELF-CONTAINED BREATHING APPARATUS IN THE PRESSURE DEMAND MODE, OR A SUPPLIED-AIR RESPIRATOR.

EYE PROTECTION: CHEMICAL GOGGLES UNLESS A FULL FACEPIECE RESPIRATOR IS

SCOEPA00054890

ALSO WORN. IT IS GENERALLY RECOGNIZED THAT CONTACT LENSES SHOULD NOT BE WORN WHEN WORKING WITH CHEMICALS BECAUSE CONTACT LENSES MAY CONTRIBUTE TO THE SEVERITY OF AN EYE INJURY.

PROTECTIVE CLOTHING: LONG-SLEEVED SHIRT, TROUSERS, SAFETY SHOES, AND GLOVES.

OTHER PROTECTIVE MEASURES: AN EYEWASH AND SAFETY SHOWER SHOULD BE NEARBY AND READY FOR USE.

FIRE AND EXPLOSION INFORMATION

FLASH POINT, DEG F: 477 FLAMMABLE LIMITS IN AIR, %
METHOD USED: PMCC LOWER: N/A UPPER: N/A
EXTINGUISHING MEDIA: USE WATER SPRAY, DRY CHEMICAL, CO2, OR ALCOHOL FOAM.

SPECIAL FIRE FIGHTING PROCEDURES: FIRE FIGHTERS SHOULD WEAR SELF-CONTAINED BREATHING APPARATUS AND FULL PROTECTIVE CLOTHING. USE WATER SPRAY TO COOL NEARBY CONTAINERS AND STRUCTURES EXPOSED TO FIRE.

UNUSUAL FIRE AND EXPLOSION HAZARDS: NONE.

HAZARDOUS REACTIVITY

STABILITY: STABLE POLYMERIZATION: WILL NOT OCCUR
CONDITIONS TO AVOID: EXCESSIVE HEAT

MATERIALS TO AVOID: STRONG ALKALIS AT HIGH TEMPERATURES, STRONG ACIDS, STRONG OXIDIZERS, AND MATERIALS REACTIVE WITH HYDROXYL COMPOUNDS.

HAZARDOUS DECOMPOSITION PRODUCTS: MAY LIBERATE CARBON MONOXIDE, CARBON DIOXIDE, AND UNIDENTIFIED ORGANIC COMPOUNDS IN BLACK SMOKE.

SPILL, LEAK, AND DISPOSAL PROCEDURES

ACTION TO TAKE FOR SPILLS OR LEAKS: WEAR PROTECTIVE EQUIPMENT INCLUDING RUBBER BOOTS, RUBBER GLOVES, RUBBER APRON, AND A SELF-CONTAINED BREATHING APPARATUS IN THE PRESSURE DEMAND MODE OR A SUPPLIED-AIR RESPIRATOR. IF THE SPILL OR LEAK IS SMALL, A FULL FACEPIECE AIR-PURIFYING CARTRIDGE RESPIRATOR EQUIPPED FOR ORGANIC VAPORS MAY BE SATISFACTORY. IN ANY EVENT, ALWAYS WEAR EYE PROTECTION. FOR SMALL SPILLS OR DRIPS, MOP OR WIPE UP AND DISPOSE OF IN DOT-APPROVED WASTE CONTAINERS. FOR LARGE SPILLS, CONTAIN BY DIKING WITH SOIL OR OTHER NON-COMBUSTIBLE SORBENT MATERIAL AND THEN PUMP INTO DOT-APPROVED WASTE CONTAINERS; OR ABSORB WITH NON-COMBUSTIBLE SORBENT MATERIAL, PLACE RESIDUE IN DOT-APPROVED WASTE CONTAINERS. KEEP OUT OF SEWERS, STORM DRAINS, SURFACE WATERS, AND SOILS. THIS PRODUCT IS HIGHLY TOXIC TO AQUATIC LIFE.

COMPLY WITH ALL APPLICABLE GOVERNMENTAL REGULATIONS ON SPILL REPORTING, AND HANDLING AND DISPOSAL OF WASTE.

DISPOSAL METHODS: DISPOSE OF CONTAMINATED PRODUCT AND MATERIALS USED IN CLEANING UP SPILLS OR LEAKS IN A MANNER APPROVED FOR THIS MATERIAL. CONSULT APPROPRIATE FEDERAL, STATE AND LOCAL REGULATORY AGENCIES TO ASCERTAIN PROPER DISPOSAL PROCEDURES.
NOTE: EMPTY CONTAINERS CAN HAVE RESIDUES, GASES AND MISTS AND ARE SUBJECT TO PROPER WASTE DISPOSAL, AS ABOVE.

SPECIAL PRECAUTIONS

STORAGE AND HANDLING PRECAUTIONS: STORE IN A DRY, WELL-VENTILATED PLACE AWAY FROM INCOMPATIBLE MATERIALS. KEEP CONTAINER TIGHTLY CLOSED WHEN NOT IN USE. DO NOT USE PRESSURE TO EMPTY CONTAINER. WASH THOROUGHLY AFTER HANDLING. DO NOT GET IN EYES, ON SKIN, OR ON CLOTHING. STORE AT TEMPERATURES ABOVE 39 DEGREES F. TO PROTECT FROM FREEZING.

REPAIR AND MAINTENANCE PRECAUTIONS: DO NOT CUT, GRIND, WELD, OR DRILL ON OR NEAR THIS CONTAINER.

SCOEPA00054891

OTHER PRECAUTIONS: CONTAINERS, EVEN THOSE THAT HAVE BEEN EMPTIED, WILL RETAIN PRODUCT RESIDUE AND VAPORS. ALWAYS OBEY HAZARD WARNINGS AND HANDLE EMPTY CONTAINERS AS IF THEY WERE FULL.

FOR ADDITIONAL INFORMATION

CONTACT DOUGLAS EISNER, TECHNICAL DIRECTOR, VAN WATERS & ROGERS INC.
DURING BUSINESS HOURS, PACIFIC TIME (206)447-5911

NOTICE

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REVISION

04/87: CORRECTED CAS NUMBER.

**** E N D O F M S D S ****

PROD: 04200158 09:58:47 17 JAN 1989 CUST: 02005857 INVOICE: 029532380

SCOEPA00054892

August 10, 1989

Additional Information

I contacted the chemical laboratory of Van Waters & Rogers, Inc. to determine the amount of ethylene oxide found in the product Vanwet 9N9. Ethylene oxide (ETO) is not used in the production of 9N9, however, the product may contain trace amounts of ETO. The trace amounts are considered undetectable concentrations within the product.

Daniel L. White (IH)

SCOEPA00054893

Georgia-Pacific Corporation

MATERIAL SAFETY DATA SHEET

SECTION I - PRODUCT IDENTIFICATION

Vansol A-1200 Denatured Ethyl Alcohol

PRODUCT NAME AND SYNONYMS: PUGETSOL; VANSOL; SDA; Denatured ethyl alcohol

CAS NAME AND NO.: Denatured ethyl alcohol [64-17-5]

CHEMICAL FAMILY: Alcohol

CHEMICAL FORMULA: CH_3CH_2OH (Ethyl alcohol)

MANUFACTURER'S NAME AND ADDRESS:

Georgia-Pacific Corporation
P.O. Box 1236
Bellingham, WA 98227

EMERGENCY TELEPHONE NO.: (404) 981-3220 ext. 19 or (800) 424-9300

SECTION II - HAZARDOUS INGREDIENTS

COMPONENT	% (WT OR VOL)	ACGIH TWA (UNITS)	ACGIH STEL (UNITS)	OSHA PEL (UNITS)
Ethyl Alcohol	81-99	1000 ppm	- - -	1000 ppm
Product may contain one or more of the following:				
Methyl Alcohol (skin)	0 or 4.3 - 17.0	200 ppm	250 ppm	200 ppm
Isopropyl Alcohol	0 or 4.5 - 9.0	400 ppm	500 ppm	400 ppm
Methyl Isobutyl Ketone	0 or 0.4 - 1.8	50 ppm	75 ppm	100 ppm
Ethyl Acetate	0 or 1.0 - 4.72	400 ppm	- - -	400 ppm
Brucine Sulfate	0 or .01	- - - none established - - -		

FOR SPECIFIC PRODUCT INFORMATION, CONTACT YOUR LOCAL GEORGIA-PACIFIC REPRESENTATIVE.

SCOEPA00054894

SECTION III - PHYSICAL PROPERTIES

APPEARANCE AND ODOR: Clear, colorless liquid with vinous odor.

MOLECULAR WEIGHT: 46.07

BOILING POINT (DEGREES FAHRENHEIT): 173°F (ethyl alcohol)

MELTING POINT (DEGREES FAHRENHEIT): -178°F

VAPOR PRESSURE (MM. OF MERCURY): 40-50 @ 66°F (ethyl alcohol)

SPECIFIC GRAVITY (WATER = 1): .8

VAPOR DENSITY (AIR = 1): 1.6

PERCENT VOLATILE (BY WEIGHT): 100%

pH: N/A

SOLUBILITY IN WATER: Complete

EVAPORATION RATE (BUTYL ACETATE = 1): 3 - 4

SECTION IV - FIRE AND EXPLOSION DATA

FLASH POINT: 55° - 75°F TOC

FIRE EXTINGUISHING MEDIA:

Dry chemical, carbon dioxide, alcohol foam. Use water spray to cool fire-exposed metal containers, to dilute and flush spills, to suppress vapors and to reduce fire intensity.

FLAMMABLE LIMITS (PERCENT BY VOLUME):	LOWER	UPPER
	3.3	19

SPECIAL FIRE FIGHTING PROCEDURES & EQUIPMENT:

Firefighters should use self-contained breathing apparatus in enclosed areas.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

Moderate explosion hazard and dangerous fire hazard when exposed to heat, sparks or flames, and can react vigorously with oxidizing agents.

SCOEPA00054895

SECTION V - REACTIVITY DATA

STABILITY: UNSTABLE _____ STABLE X

CONDITIONS TO AVOID: Heat

INCOMPATIBILITY (MATERIALS TO AVOID):

Strong oxidizing agents, such as nitrates, perchlorates, peroxides, chromic, nitric and sulfuric acid.

HAZARDOUS DECOMPOSITION PRODUCTS:

Thermal-oxidative degradation can include oxides of carbon and nitrogen. Toxic gases and vapors (i.e., carbon monoxide, formaldehyde) may be released in a methanol fire.

HAZARDOUS POLYMERIZATION: WILL OCCUR _____ WILL NOT OCCUR X

CONDITIONS TO AVOID: N/A

SECTION VI - HEALTH HAZARD INFORMATION

EFFECTS OF OVEREXPOSURE:

Brucine sulfate is a deadly poison.

The denaturants present make this material much more toxic than ethyl alcohol alone.

Excessive exposure to vapors can be irritating to eyes and respiratory tract and can produce headache, drowsiness, nausea and narcosis. Ingestion can produce drunkenness, followed by severe systemic illness, and perhaps blindness and death.

PROBABLE ROUTES OF EXPOSURE: Ingestion, inhalation, skin absorption

EMERGENCY AND FIRST AID PROCEDURES **

INGESTION: Get medical attention immediately! Induce vomiting with 1 tablespoon of ipecac or by touching the back of the throat (only if conscious). Once vomiting has occurred, have the patient drink milk, water or a solution of sodium bicarbonate in water (1 heaping teaspoon per quart).

SCOEPA00054896

INHALATION: Remove victim to fresh air at once. Restore and/or support breathing as required. Keep victim warm and at rest. Get medical attention as soon as possible. Prevent exposure to denatured alcohol for 7 days.

EYE CONTACT: Wash eyes immediately with running water, lifting the lower and upper lids occasionally. Get medical attention as soon as possible.

SKIN CONTACT: Remove contaminated clothing. Wash affected area with soap and water; apply skin lotions. If skin irritation persists, get medical attention.

** If medical treatment is required, refer to product label for product ingredients and tell medical personnel.

SECTION VII - TOXICITY DATA

ORAL: Ethyl alcohol: TD_{LO} (Man) - 50 mg/kg
LD_{50} (Rat) - 7060 mg/kg
Methyl alcohol: LD_{LO} (Human) - 340 mg/kg

DERMAL: Ethyl alcohol: LD_{LO} (Rabbit) - 20 gm/kg
Methyl alcohol: LD_{LO} (Monkey) - 500 mg/kg

INHALATION: Ethyl alcohol: LC_{50} (Rat) - 20,000 ppm/10H
Methyl alcohol: TC_{LO} (Human) - 86,000 mg/m^3

CARCINOGENICITY: None of the components of this product is listed as a carcinogen by IARC, NTP, OSHA or ACGIH.

OTHER PERTINENT DATA:

Information on the toxicity of denatured alcohol was not found.

SECTION VIII - SPECIAL PROTECTION INFORMATION

PERSONAL PROTECTIVE EQUIPMENT

PROTECTIVE GLOVES: Rubber

EYE PROTECTION: Chemical safety goggles

RESPIRATORY PROTECTION (SPECIFY TYPE):

Air supplied mask in confined areas. Only MSHA- or NIOSH-approved equipment should be used.

SCOEPA00054897

OTHER PROTECTIVE EQUIPMENT: Protective clothing to minimize skin contact. Eye bath and safety shower.

VENTILATION

LOCAL EXHAUST: Preferred

MECHANICAL (GENERAL): Required

SPECIAL: N/A

OTHER: N/A

SECTION IX - SPILL, LEAK, AND DISPOSAL PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Remove sources of heat or ignition, or when feasible, remove leaking container. Provide ventilation. Contain spill. (Dilution of spill with water to raise flash point may be desirable.) Pick up liquid for recovery or disposal when feasible. Absorb small spills and residues on sand, sawdust, vermiculite or other suitable material.

NOTE: Clean-up personnel need protection against inhalation and liquid contact.

WASTE DISPOSAL METHODS:

Waste material can be burned in a suitable incinerator, or disposed of through a licensed waste disposal company. Follow all federal, state and local regulations.

CLEAN WATER ACT REQUIREMENTS: N/A

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) REQUIREMENTS:

Defined under 40 CFR 261.21 as exhibiting the characteristic of ignitability (EPA Hazardous Waste #D001).

SECTION X - REGULATORY INFORMATION

FDA: N/A. For industrial use only.

USDA: N/A

CPSC: N/A

SCOEPA00054898

TSCA: CAS# 64-17-5 (Denatured ethanol)

DOT

PROPER SHIPPING NAME: Denatured alcohol

HAZARD CLASS: Flammable liquid

LABEL REQUIRED: Flammable liquid

IDENTIFICATION NO.: NA 1986

OTHER PERTINENT INFORMATION: See 49 CFR 172.101

OSHA: Either Class IB flammable liquid (if Flash Point <73°F), or Class IC flammable liquid (if Flash Point >73°F).

SECTION XI - SPECIAL PRECAUTIONS AND COMMENTS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:

WARNING: FLAMMABLE. POISON. Keep away from heat, sparks and open flame. Keep container closed. Use with adequate ventilation. DO NOT INGEST.

Avoid repeated or prolonged skin contact or breathing of vapors. Use with adequate ventilation. Eyewash stations and safety showers should be available in areas of handling and use. Store in tightly closed containers in a cool, dry, well-ventilated, fire resistant area away from oxidizing agents and away from sources of heat or ignition. Store out of direct sunlight. Protect containers from physical damage. Electrically bond and ground metal containers for transfers to eliminate static sparks. Use non-sparking tools.

OTHER PRECAUTIONS:

Alcohol exposure enhances toxicity hazards of other materials, such as chlorinated hydrocarbon solvents or drugs. Provide preplacement medical exams for industrially exposed workers, with emphasis on neurological and visual functions, liver and kidney systems. Provide suitable training to those working with denatured alcohol. Monitor the workplace. Keep records.

SCOEPA00054899

REGISTRATIONS/CERTIFICATIONS: N/A

EFFECTIVE DATE: 2/5/86 SUPERSEDES: 11/19/85

PREPARER: Nancy E. Wagner PHONE NUMBER: (202) 659-3600

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SCOEPA00054900

PART III SEE 5.3.1C

PERCENT FROM STORMWATER

AREA DATA FROM STEVE BETSWENGER EXT 526

TOTAL AREA 85 ACRES (85 AC × 43,500 ft²/AC = 3,697,500 ft²)

FENCED AREA (GROSS) 19.5 ACRES OR 850,000 ft²

LESS BLDGS. (NET) 13.5 ACRES OR 590,000 ft²

GRASS AREA 5 ACRES OR 217,500 ft²

LANDSCAPED AREA 0.5 - 1 ACRES OR ~ 43,500 ft²

ROOF AREA 260,000 ft²

ASPHALTIC AREA 375,000 ft²

(FAB 2 CONSTRUCTION AREA ~ 5 AC OR 217,500 ft²)

UNIMPROVED AREA

3,697,500 ft²	TOTAL	
− 272,500 ft²	NET FENCED	(LESS FAB 2 AND 100K ROAD SWAP
− 260,000 ft²	BUILDINGS	
− 375,000 ft²	ASPHALT	
− 217,500 ft²	GRASS	
− 43,500 ft²	LANDSCAPED	

NOTE: NO STORMWATER ANALYSIS HAS BEEN PERFORMED ∴ ALL STORMWATER QUESTIONS ARE ANSWERED AS N.A.

			FACTOR
2,529,000 ft²	UNIMPROVED	= 68.4% × 0.2	= 0.137
272,500 ft²	LIGHT INDUSTRIAL	= 7.4% × 0.5	= 0.037
260,000 ft²	ROOF SURFACE	= 7.0% × .80	= 0.056
375,000 ft²	ASPHALT	= 10.1% × .80	= 0.081
217,500 ft²	GRASS	= 5.9% × .07	= 0.004
43,500 ft²	LANDSCAPED	= 1.2% × .10	= 0.001

STORMWATER POTENTIAL 0.316 OR 32%

SCOEPA00054901

Wacker Siltronic Corporation

WACKER

TO: Gary Pendleton

FROM: John Pittman

SUBJECT: Facilities Operations

DATE: December 5, 1984

After the Facility Group meeting yesterday, Greg Carr informed me there had occurred a TCE spill the previous day on December 3, 1984. This incident was confirmed by you that there was indeed an upset to the TCE stripper operation. Greg Carr indicated that approximately 700 gallons of water was discharged into the yard area which could have contained up to 10 gallons of disbursed TCE in the solution. He indicated the reason for the upset was due to a forwarding pump failing to operate because someone had put the operational switch in the "off" position therefore causing the pump to not function when the surge tank was filled, causing the overflow of waste to the yard area. I indicated the following action plans to be performed.

1) A plexiglas enclosure be put over the pump operating switch and this cover be locked with accessibility only to authorized personnel.

2) A dyked area be installed around the TCE carbon absorption and still units such that any future spills will be contained within this area.

3) The soil area in the yard be analyzed to determine if there are any contaminations in the ground that exceed environmental agencies' limits. If so, this material will have to be disposed of in the proper manner.

The operation of such a critical facilities function should be well known by all facility operators that will be running these systems. It is inexcusable to start up such a system and walk away for an hours' time without observing that the system is functioning properly. All valves and switches on any system must be checked before operation to ensure that the proper functioning will occur. The excuse that a switch is in automatic mode and has always been that way, and that <u>someone</u> changed the position will not be tolerated. These systems must be learned and all operators knowledgable of their functions. If the operators do not have knowledge of these systems, it is your responsibility as their supervisor to provide this training or to see that it is made available to them through Engineering.

cc: Steve Beiswenger
Greg Carr

~~ECD~~
CHG

April 16, 1985

James R. Ellis
Wacker Siltronics
P.O. Box 03180
Portland, Oregon 97203

Dear Mr. Ellis:

We have reviewed the information and samples your company submitted to us on April 12, 1985. This data confirms that all residue of the TCE spill which occurred at your facility on December 28, 1984 has been removed to below background levels (less than one part per million).

Filling the affected area and construction of a spill containment area around the stripper seem to be in order.

We appreciate your company's efforts over the past few months to clean up this spill.

Sincerely,

Janet A. Gillapsie
Regional Manager
Northwest Region

JAG/mb
cc: Director's Office, DEQ
Hazardous Waste Section, DEQ
Regional Operations, DEQ

SCOEPA00054903

April 5, 1985

Mr. James R. Ellis
Wacker Siltronic Corporation
P.O. Box 03180
Portland, Oregon 97203

Re: HW - Wacker Siltronic
Corporation
ORD 096253737
Multnomah County

Dear Mr. Ellis:

We have reviewed your spill sampling report dated March 19, 1985,, Wacker conducted a testing program in the spill area which included one core hole and three surface samples in area 1 and three surface samples in area 2. The sampling data showed 3.9 ppm of TCE at 9 to 18 inches depth in area 1 and 1.6 ppm TCE on the surface at area 2.

The material spilled was delisted waste and must therefore be removed to background levels (<1 ppm) or delisted. If you choose to do cleanup to background levels we recommend the following:

1. Excavate to one and one-half feet depth in area 1 south and in front of the stripper unit.

2. Excavate to half a foot depth around sampling point number 5 in area 2.

3. After excavation, take one surface soil sample in each area for TCE analysis.

Should you have further questions, please call Mr. Renato C. Dulay at 229-5393.

Sincerely,

Janet A. Gillaspie
Regional Manager
Northwest Region

JAG/emc
cc: Hazardous and Solid Waste Division, DEQ ✓ done

SCOEPA00054904

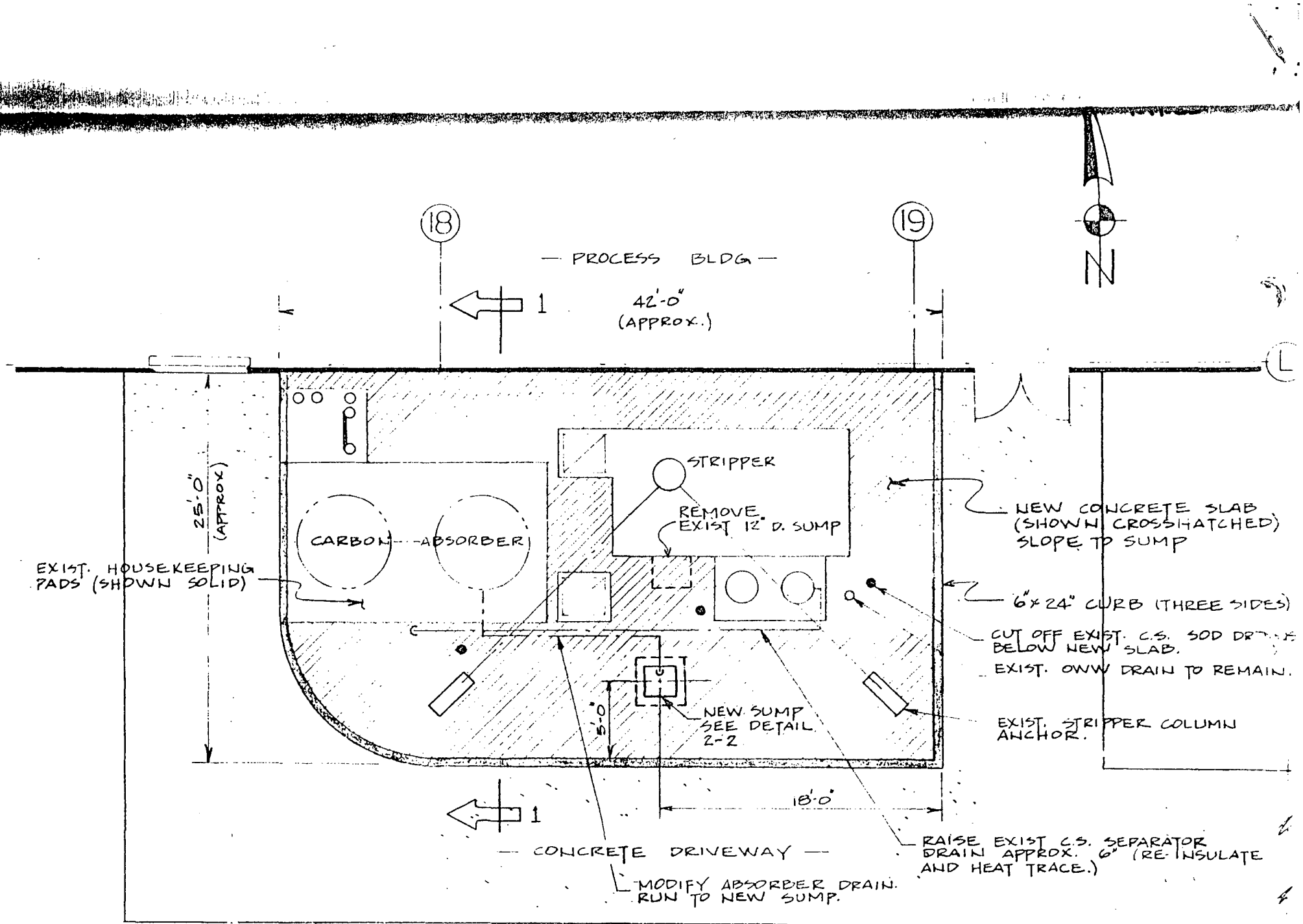


Fig. 1

SITE PLAN
SCALE: 1/8" = 1'-0"

SCOEPA00054905

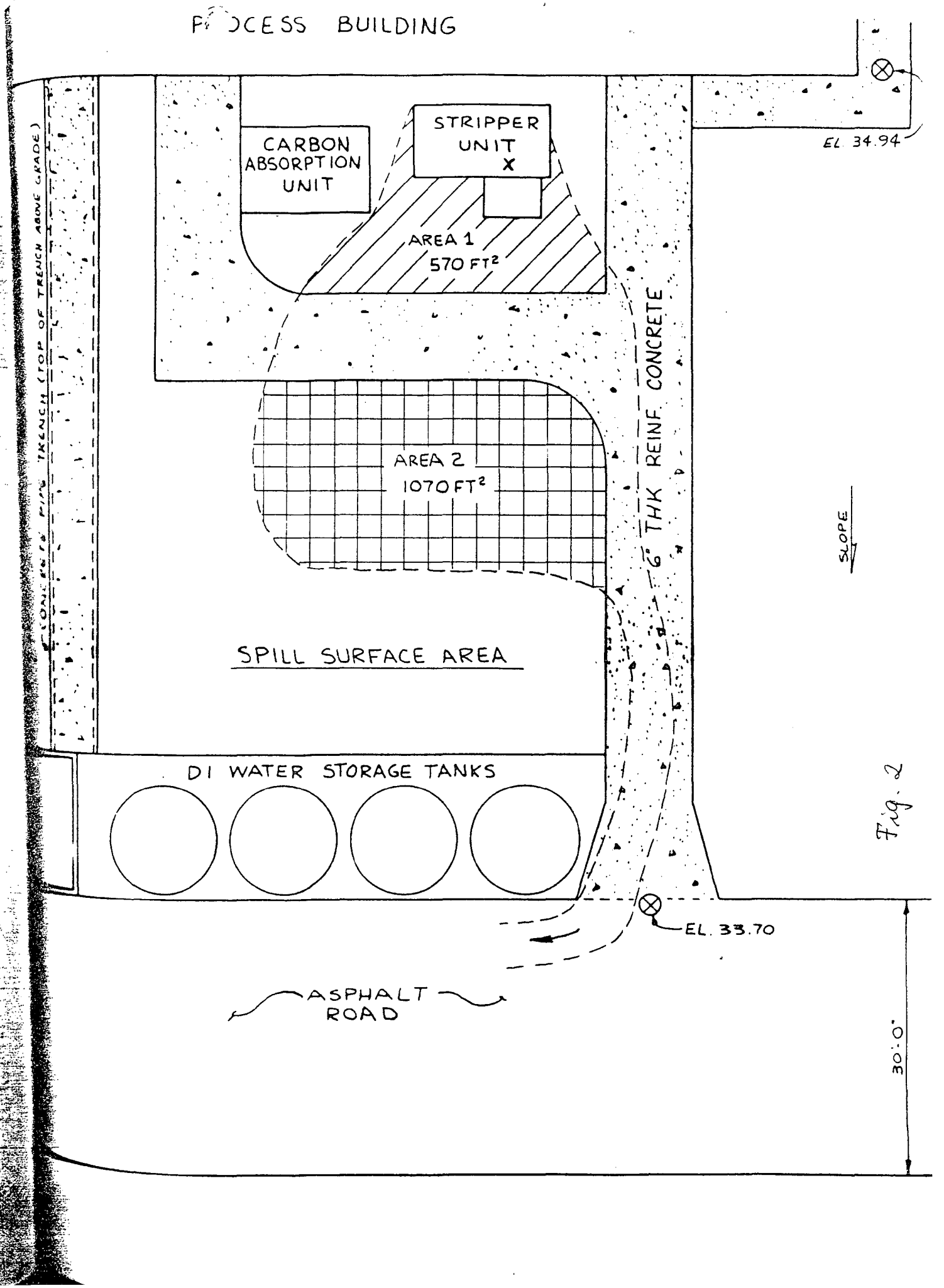


Fig. 2

SCOEPA00054906

for CC: HW

Wacker Siltronic Corporation
P.O. Box 03180
Portland, OR 97203
7200 N.W. Front Ave.
Portland, OR 97229
Phone (503) 243-2020
TWX 910-464-4777
FAX 503 226-0052

March 19, 1985

Ms. Janet A. Gillaspie
Regional Manager
Northwest Region
Department of Environmental Quality
Post Office Box 1760, Portland 97207
522 S.W. Fifth Avenue
Portland, Oregon 97204

Dept. of Environmental Quality
RECEIVED
MAR
NORTHWEST REGION

Dear Ms. Gillaspie:

Receipt of your letter of March 11, 1985 is acknowledged. Enclosed is a summary of TCE Stripper Operations setting forth the data upon which our response is based.

On the basis of your oral advice regarding the contents of your letter, Wacker Siltronic Corporation embarked on a testing program which included drilling on the site over the weekend of March 9 and 10, 1985. As you may know, we coordinated our sampling program with Renato Dulay. Attachment (O) to the enclosed summary includes a diagram of the sampling program which was approved by Mr. Dulay. We have now completed the sampling as outlined in our letter of March 11, 1985, to Mr. Dulay. Attachment (Q) shows the results of our sampling program. You will note that very little TCE remains on the surface and that the levels are less than one part per million at a relatively shallow depth.

We have determined the maximum amount of TCE which could have been spilled on our property from April, 1984, the effective date of the current regulations. Attachment (G) sets forth our computations and is based upon a worst-case analysis. Promptly after the December 31, 1984 spill occurred we took steps to deal with the situation. There is a chronology of events related to the December spills included in the enclosed summary. Attachment (I) is the report and recommendation of Environmental Emergency Services Company, a copy of which has previously been provided to you.

We have removed substantially more material than was recommended by Environmental Emergency Services Company. Attachment (J) shows the extent of our removal program. Based upon concentrations of TCE in Environmental Emergency Services soil samples, and more recent soil samples, Attachment (Q), we have determined that removal of the soil in January would have accomplished the removal of all waste material spilled since April 1984, Attachment (R). Therefore, we believe that we have completed removal of the waste as required by OAR 340-108-010 (2).

Your letter refers to removal of spill residue to background levels. We assume that when you wrote your letter you did not have in mind that the present facility, which was constructed in late 1982, replaced equipment which had been subject to corrosion and had experienced leaks on occasion. Therefore, there was undoubtedly some TCE in the ground at the effective date of the current DEQ regulations.

We are confident that the remaining amounts of TCE disclosed by our sampling are a result of prior incidents. This view is supported not only by the amount of TCE which has been removed from the site, but also by the fact that the ground was frozen when the December 31 spill occurred and there was a minimal amount of rainfall between the date of that spill and our removal of the affected material.

As noted above, we have removed the spill residue as required by DEQ regulations. We interpret the regulations to justify additional requirements only when there is a demonstrated hazard to the environment. In view of the small amounts of TCE remaining from these prior spills, it is apparent that there is no hazard to the environment.

Attachment (D) shows our containment plan to prevent any damage from future spills. As noted on the chronology of events, we already have received bids for these improvements and are ready to proceed with construction. We request your consent to filling the excavated areas and construction of the containment improvements as soon as possible so that we can put our facility back into operation.

Yours very truly,

WACKER SILTRONIC CORPORATION

James R. Ellis
Acting Facilities Manager

JE:jsm

Enclosures

SCOEPA00054908

Dept. of Environmental Quality

RECEIVED

MAR 14 1985

NORTHWEST REGION

Department of Environmental Quality

[illegible] FIFTH AVENUE, BOX 1760 PORTLAND, OREGON 97207 PHONE (503) [illegible]

MAR 13 1985

CERTIFIED MAIL NO. P 497 014 845

Wacker Siltronic Corporation
c/o Virginia Gilbert,
Registered Agent
7200 N.W. Front Avenue
Portland, OR 97229

Re: Notice of Violation and Intent
to Assess Civil Penalty
HW-NWR-85-16
Multnomah County

On December 3, 1984 and again on December 31, 1984, you spilled waste water containing trichloroethylene, a listed hazardous waste or substance. Oregon Administrative Rule (OAR) 340-108-020(2) requires a spiller of hazardous waste or substance to "immediately take the following actions in the order listed:

(a) Activate alarms or otherwise warn persons in the immediate area;

(b) Undertake every reasonable method to contain the hazardous substance or hazardous waste;

(c)(A) Report the spill or other incident to the Oregon Emergency Management Division (telephone 800-452-0311) if the amount of hazardous waste or hazardous substance exceeds the following reportable quantities - - - ."

The reportable quantity for trichloroethylene, which is listed under EPA hazardous waste number F001 in OAR 340-101-031, is 10 lbs.

The December 3rd spill occurred at noon. Your company first reported that spill to the Department at 11:30 a.m. on December 4th, approximately 18 hours later. The December 31st spill occurred at 11:30 p.m. and Emergency Management Division was not notified of that spill until 6:30 p.m. on January 1, 1985, 19 hours later. Your failure to immediately report these spills was in violation of the Department's rule.

In addition, at the time of the spills, you had not met the rule requirements for contingency plans and emergency procedures; for emergency preparedness and prevention; and personnel training. You have since drafted those documents and have submitted a copy for review.

Because of your violations, I have enclosed a formal notice warning you of the Department's intent to assess a civil penalty should any of the violations cited continue or any similar violation occur in the future. Hazardous waste violations are subject to civil penalties of up to $10,000 for each day of each violation. The minimum penalty for failure to immediately report a spill is $1,000. A copy of our civil penalty schedule is enclosed.

If you have any questions regarding this action or our hazardous waste regulations, please contact Mr. Renato Dulay of the Department's Northwest Region at 229-5393.

Sincerely,

Fred M. Bolton
Administrator
Regional Operations Division

VAK:b
GB4288.L
Enclosure(s)
cc: Northwest Region, DEQ
Hazardous & Solid Waste Division, DEQ
Department of Justice
Environmental Protection Agency

BEFORE THE ENVIRONMENTAL QUALITY COMMISSION

OF THE STATE OF OREGON

DEPARTMENT OF ENVIRONMENTAL QUALITY, OF THE STATE OF OREGON, Department, v. WACKER SILTRONIC CORPORATION, a Delaware corporation, Respondent.	)	NOTICE OF VIOLATION AND INTENT TO ASSESS CIVIL PENALTY No. HW-NWR-85-16 MULTNOMAH COUNTY

I

This notice is being sent to Respondent, Wacker Siltronic Corporation, a Delaware corporation, pursuant to Oregon Revised Statutes (ORS) 468.125(1) and Oregon Administrative Rules (OAR) Section 340-12-040(1) and (2).

II

A. On or about December 3, 1984, Respondent spilled more than 10 lbs. of trichloroethylene, a listed hazardous waste. Respondent did not immediately report that spill to the Oregon Emergency Management Division, in violation of OAR 340-108-020(c)(A).

B. On or about December 31, 1985, Respondent again spilled more than 10 lbs. of trichloroethylene, a listed hazardous waste, and failed to immediately report that spill to the Oregon Emergency Management Division, in violation of OAR 340-108-020(c)(A).

///

///

///

SCOEPA00054911

C. At the time of the above spills, Respondent, a generator of hazardous waste, had not complied with the requirements of OAR 340-102-034(1)(e) and/or the "preparedness and prevention" requirements of OAR Chapter 340, Division 104, Subdivision C; the "contingency plan and emergency procedures" requirements of OAR Chapter 340, Division 104, Subdivision D; and the "personnel training" requirements of OAR 340-104-016.

III

If five (5) or more days after Respondent receives this notice, the one or more violations cited in Paragraph II of this notice continue, or any similar violation occurs, the Department will impose upon Respondent a civil penalty pursuant to Oregon statutes and OAR, Chapter 340, Divisions 11 and 12. In the event that a civil penalty is imposed upon Respondent, it will be assessed by a subsequent written notice, pursuant to ORS 468.135(1) and (2), ORS 183.415(1) and (2), and OAR 340-11-100 and 340-12-070. Respondent will be given an opportunity for a contested case hearing to contest the allegations and penalty assessed in that notice, pursuant to ORS 468.135(2) and (3), ORS Chapter 183, and OAR Chapter 340, Division 11. Respondent is not entitled to a contested case hearing at this time.

March 13 1985
Date

Leon A. Kollias For:
Fred M. Bolton, Administrator
Regional Operations, DEQ

Certified Mail P 497 014 845

SCOEPA00054912

Dept. of Environmental Quality
RECEIVED
MAR 1985
NORTHWEST REGION

Wacker Siltronic Corporation
P.O. Box 03180
Portland, OR 97203
7200 N.W. Front Ave.
Portland, OR 97229
Phone (503) 243-2020
TWX 910-464-4777
FAX 503 226-0052

March 4, 1985

Ms. Janet A. Gillaspie
Regional Manager, Northwest Region
Department of Environmental Quality
Post Office Box 1760, Portland 97207
522 S.W. Fifth Avenue
Portland, Oregon 97204

Dear Ms. Gillaspie:

I want to thank you and Mr. Dulay for taking time out of your busy schedule to meet with Jim Ellis, Murray Tilson and myself on Friday afternoon. As was discussed, I believe our new organization with Murray Tilson as Supervisor of the Facilities Operation/Environmental Area shall provide us the technical capability to get the plant into compliance. Wacker Siltronic is very concerned with providing a safe working environment for its employees and meeting the environmental requirements of the state. Work is continuing with outside consultants to identify problem areas that cause upsets to our N.P.D.E.S. Permit. A status report of the progress and future plans will be submitted to you this week.

We look forwarded to working with you and would welcome any suggestions from your department on how we might improve our operation. Thank you again for your time.

Sincerely,

WACKER SILTRONIC CORPORATION

John L. Pittman
Director of Engineering

JP:jm

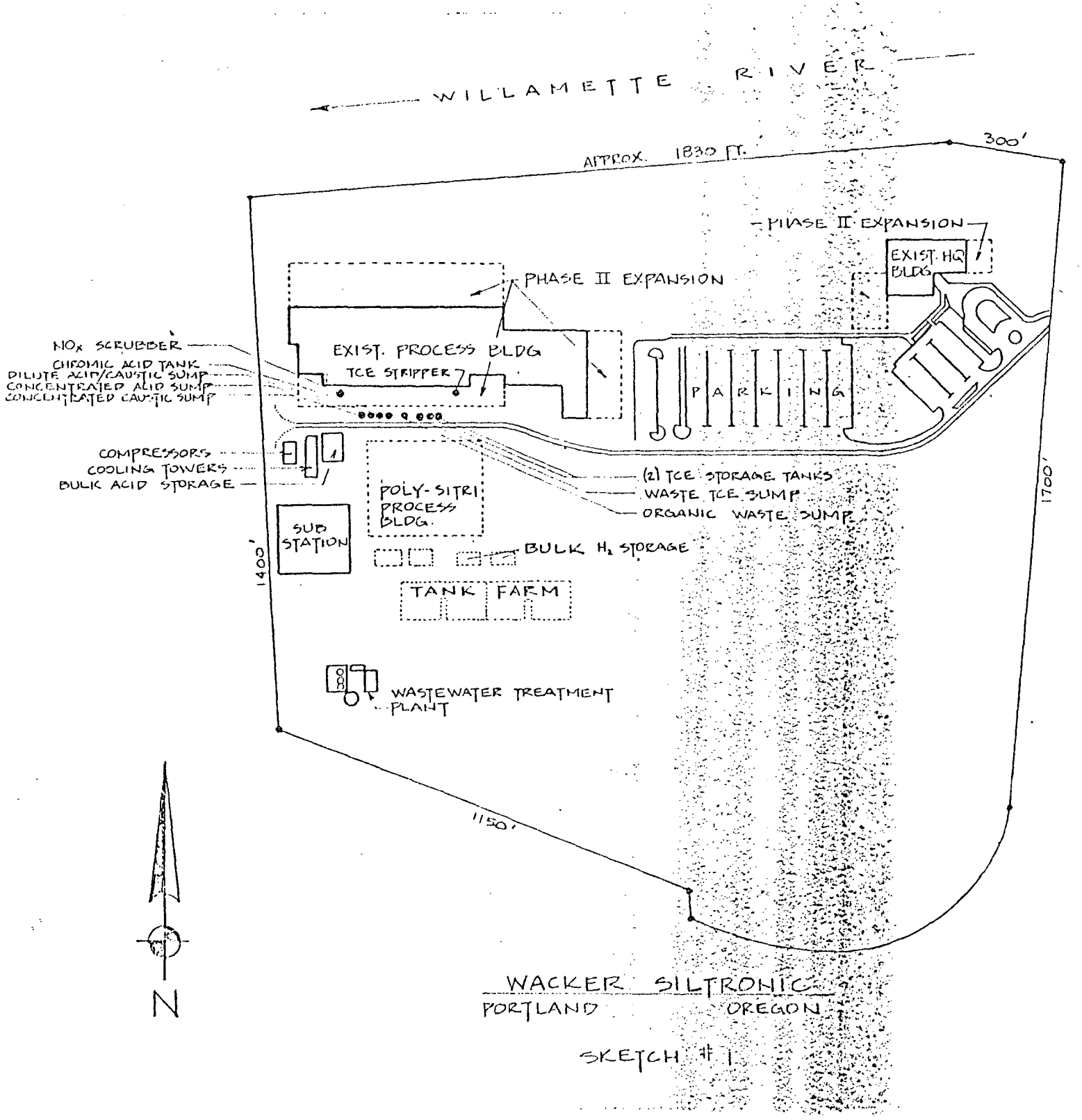
cc: Renato C. Dulay
Jim Harper
Mal Russ

SCOEPA00054913

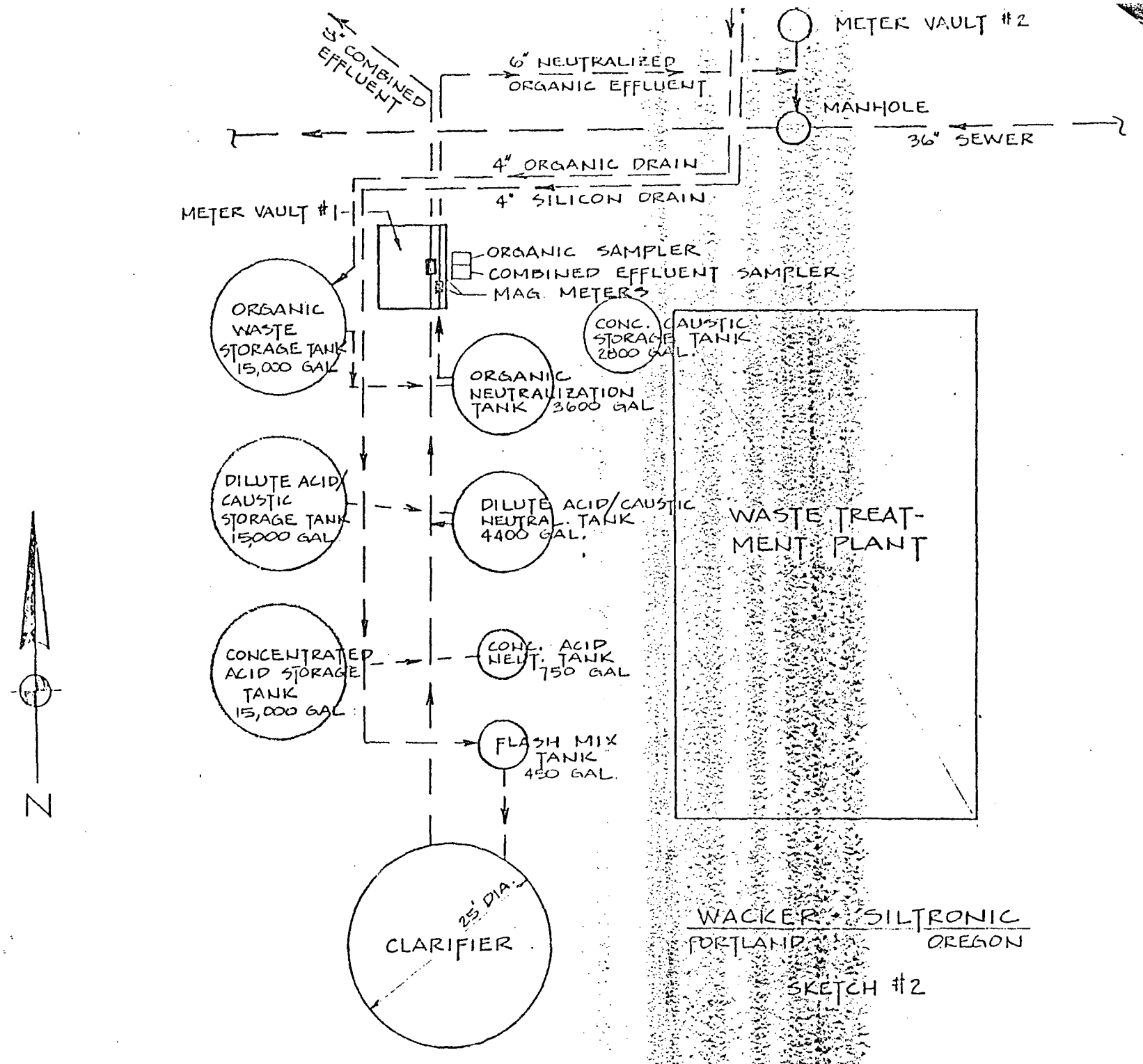
WACKER SILTRONIC CORPORATIC

Portland, Oregon

SCOEPA00054914



SCOEPA00054915



SCOEPA00054916

108-020

Subdivision C: Required Action

Emergency action, reporting.

340-108-020 In the event of a spill or other incident, the person having the care, custody, or control of the hazardous waste or hazardous substance shall take the following actions, as appropriate:

(1) Immediately implement the site modified SPCC plan or other applicable contingency plan.

(Comment: Generators storing hazardous waste for less than 90 days are required to have a contingency plan prepared in accordance with rule 340-102-034.)

(2) If a contingency plan is not required or available, immediately take the following actions in the order listed:

(a) Activate alarms or otherwise warn persons in the immediate area;

(b) Undertake every reasonable method to contain the hazardous substance or hazardous waste;

(c)(A) Report the spill or other incident to the Oregon Emergency Management Division (telephone 800-452-0311) if the amount of hazardous waste or hazardous substance exceeds the following reportable quantity (in the event a substance or waste falls into more than one category, the lower quantity shall be reported):

Substance or Waste Type	Reportable Quantity (pounds)
Ignitable, rule 340-101-021	200
Corrosive, rule 340-101-022	200
Reactive, rule 340-101-023	200
EP Toxic, rule 340-101-024	10
Listed, rule 340-101-031 and -032	10
Listed, rule 340-101-033(1)(a) and (2)(a)	2
Listed, rule 340-101-033(1)(b), (2)(b) and (3)(a)	10
Pesticide, rule 340-101-034	10
PCB, rule 340-110-001(2)	10

(Comment: "Ignitable" includes the DOT classifications "Flammable," "Oxidizer," and some "Combustible.")

(B) Transporters must report spills of any quantity that occur during transportation. Transporters must also report spills or other incidents to the National Response Center (800-424-8802) as required by 49 CFR 171.15, and, if a water transporter, as required by 33 CFR 153.203;

(C) The spill or other incident need not be reported if:

(i) It occurs on private property and is known to the owner of the property (or his representative);

(ii) It occurs on an impervious surface where it is fully contained; and

(iii) It is completely cleaned up without further incident.

(Comment: For reporting purposes, quantity calculation involving hazardous waste shall be made independent of the concentrations of the hazardous components. For example, the table in this rule requires reporting a 10 pound spill of acrolein (a rule 340-101-033(3)(a) waste). This shall be interpreted as requiring reporting a 10 pound spill of a waste containing acrolein whether the concentration of acrolein is 3, 30 or 100%.)

SCOEPA00054917

applicable, to notify all facility personnel; and

(b) Notify appropriate state or local agencies with designated response roles if their help is needed.

(2) Whenever there is a release, fire, or explosion, the emergency coordinator must immediately identify the character, exact source, amount, and areal extent of any release of materials. He may do this by observation or review of facility records or manifests, and, if necessary, by chemical analysis.

(3) Concurrently, the emergency coordinator must assess possible hazards to human health or the environment that may result from the release, fire or explosion. This assessment must consider both direct and indirect effects of the release, fire, or explosion (e.g., the effects of any toxic, irritating, or asphyxiating gases that are generated, or the effects of any hazardous surface water runoff from water or chemical agents used to control fire and heat-induced explosions).

(4) If the emergency coordinator determines that the facility has had a release, fire, or explosion which could threaten human health, or the environment, outside the facility, he must report his findings as follows:

(a) If his assessment indicates that evacuation of local areas may be advisable, he must immediately notify appropriate local authorities. He must be available to help appropriate officials decide whether local areas should be evacuated; and

(b) He must immediately notify either the Department or the Oregon Emergency Management Division (using their 24-hour toll-free number 800-452-3011). The report must include:

(A) Name and telephone number of the reporter;

(B) Name and address of facility;

(C) Time and type of incident (e.g., release, fire);

(D) Name and quantity of material(s) involved, to the extent known;

(E) The extent of injuries, if any; and

(F) The possible hazards to human health, or the environment, outside the facility.

(5) During an emergency, the emergency coordinator must take all reasonable measures necessary to ensure that fires, explosions, and releases do not occur, recur, or spread to other hazardous waste at the facility. These measures must include, where applicable, stopping processes and operations, collecting and containing released waste, and removing or isolating containers.

(6) If the facility stops operations in response to a fire, explosion, or release, the emergency coordinator must monitor for leaks, pressure buildup, gas generation, or ruptures in valves, pipes, or other equipment, wherever this is appropriate.

(7) Immediately after an emergency, the emergency coordinator must provide for treating, storing, or disposing of recovered waste, contaminated soil or surface water, or any other material that results from a release, fire, or explosion at the facility.

(Comment: Unless the owner or operator can demonstrate, in accordance with rule 340-101-003(3) or (4), that the recovered material is not a hazardous waste, the owner or operator becomes a generator of hazardous waste and must manage it in accordance with all applicable requirements of Divisions 100 to 108.)

(8) The emergency coordinator must ensure that, in the affected area(s) of the facility:

(a) No waste that may be incompatible with the released material is treated, stored, or disposed of until cleanup procedures are completed;

SCOEPA00054918

blocked by releases of hazardous waste or fires).

Copies of contingency plan.

340-104-053 A copy of the contingency plan and all revisions to the plan must be:

(1) Maintained at the facility; and

(2) Submitted to all local police departments, fire departments, hospitals, and state and local emergency response teams that may be called upon to provide emergency services.

(Comment: The contingency plan must be submitted to the Department with Part B of the permit application under Division 105 and, after modification or approval, will become a condition of any permit issued.)

Amendment of contingency plan.

340-104-054 The contingency plan must be reviewed, and immediately amended, if necessary, whenever:

(1) The facility permit is revised;

(2) The plan fails in an emergency;

(3) The facility changes--in its design, construction, operation, maintenance, or other circumstances--in a way that materially increases the potential for fires, explosions, or releases of hazardous waste or hazardous waste constituents, or changes the response necessary in an emergency;

(4) The list of emergency coordinators changes; or

(5) The list of emergency equipment changes.

(Comment: A change in the lists of facility emergency coordinators or equipment in the contingency plan constitutes a minor modification to the facility permit to which the plan is a condition.)

Emergency coordinator.

340-104-055 At all times, there must be at least one employee either on the facility premises or on call (i.e., available to respond to an emergency by reaching the facility within a short period of time) with the responsibility for coordinating all emergency response measures. This emergency coordinator must be thoroughly familiar with all aspects of the facility's contingency plan, all operations and activities at the facility, the location and characteristics of waste handled, the location of all records within the facility, and the facility layout. In addition, this person must have the authority to commit the resources needed to carry out the contingency plan.

(Comment: The emergency coordinator's responsibilities are more fully spelled out in rule 340-104-056. Applicable responsibilities for the emergency coordinator vary, depending on factors such as type and variety of waste(s) handled by the facility, and type and complexity of the facility.)

Emergency procedures.

340-104-056 (1) Whenever there is an imminent or actual emergency situation, the emergency coordinator (or his designee when the emergency coordinator is on call) must immediately:

(a) Activate internal facility alarms or communication systems, where

SCOEPA00054919

STATE OF OREGON INTEROFFICE MEMO

TO: CHGray, JAGillaspie DATE: January 7, 1985

FROM: RCDulay

SUBJECT: HW - Wacker Siltronic Corporation
ORD #096253737
Multnomah County

On January 2, 1985, I met with Greg Carr regarding a trichloroethylene (TCE) contaminated wastewater spill at the Wacker Siltronic TCE stripping facility.

Apparently, the facilities operator made his inspection of the TCE stripping equipment about 10 p.m., 12-31-85, and everything was fine. He made his next inspection about 11:30 p.m. and discovered that the SOD-T forwarding tank was overflowing. The SOD-T is a surge tank for the stripper bottom liquid stream and recycled to the feed stream tank. He immediately shut off the pump feeding the SOD-T tank. The plant supervisor was notified about 2 a.m., 1-1-85, of the incident but the operator was told to get hold of Greg Carr. Greg was notified around 6:30 p.m., 1-1-85. In turn Greg called our 229-5263 recording phone and Emergency Management Division. CRClinton was notified about 7:00 p.m. Therefore, the Department was notified about 18 hours after the incident.

Greg estimated about 500 gallons wastewater containing more than 10% TCE spilled onto the ground and unknown amounts went into a storm drain and discharged to the Willamette River. Since no sample was taken by the operator, Greg assumed that TCE was 10%.

Wacker contracted Environmental Emergency Services Company (EES) to do the cleanup. EES started taking soil samples about 10 a.m., 1-2-85, at different depths.

On January 7, 1985, I met again with John Pittman, Greg Carr et al of Wacker and Richard Gariepy of EES to discuss the TCE spill cleanup. I informed John Pittman and Greg Carr that TCE is an F001 listed hazardous waste at any concentration and is fully regulated.

Attached is the EES cleanup proposal to Wacker. The soil analysis results showed TCS went down deeper than two (2) feet. In the preliminary discussion Wacker proposed to dig to about two feet for the cleanup.

RCD/emc
cc: HW done

81-125-1387

SCOEPA00054920

Wacker Siltronic Corporation
P.O. Box 03180
Portland, OR 97203
7200 N.W. Front Ave.
Portland, OR 97229
Phone (503) 243-2020
TWX 910-464-4777
FAX 503 226-0052

December 12, 1984

Renee Dulay
Oregon DEQ-Northwest Region
P.O. Box 1760
Portland, Oregon 97206

Mr. Dulay:

As reported in my phone call to the DEQ, on December 3 we had a spill onto the ground of some wastewater containing TCE. I estimate the wastewater volume to be 700 gallons or less of waste, containing roughly 1% TCE. The total amount of TCE spilled was around 7 gallons (85lbs). The spill immediately soaked into the ground and did not enter any waterway or sewer system. The amount of TCE is a reportable amount under OAR 304-108-020 (c)(a), but the wastewater is not a hazardous waste under OAR-304-101-033- (3)(a).

The spill occured around noon on December 3. The facilities operator started up the steam stripper, used to remove TCE from a wastewater stream. He did not notice that an automatic forwarding pump, normally on, was switched off. As a result the small forwarding tank gradually filled up and overflowed onto the ground. After an hour absence the operator returned and observed the material spilling onto the ground. He immediately shut off the flow of material and, after locating the problem, restarted the forwarding pump. After observing that all the equipment was in operating order the steam stripper was restarted and operated as normal. No cleanup was attempted as all the material had soaked into the ground immediately.

To prevent further incidents like this, the operator was instructed to manually check the operation of all the pumps before starting the unit. The operating controls will be locked with access limited to authorized personel. The area around the equipment will be enclosed with an impervious floor and dike. We will keep you informed of future developments.

Thank you.

Sincerely,

WACKER SILTRONIC CORPORATION

Greg Carr
Facilities Engineer

GC/md

Dept. of Environmental Quality
RECEIVED
DEC 17 1984
NORTHWEST REGION

SCOEPA00054921

- Upset Conditions -

MEMORANDUM - Re: Code-A-Phone/Phone Messages

Logged: _____ To: RCD, ~~CHEF~~

Report received by: MB

Call received from: Greg Carr

Source/Company: Wacker

Phone: 243-2020 ext. 132 County: Mult

AQ _____

WQ (HW)

NP _____

SW _____

Other _____

Date: 12/4/84

Time: 10:28

Return call: ✓

They will call later: _____

Message:

yesterday (12/3/84) about noon - they had an equipment failure. Spilled approximately 700 gallons of water (with 10 gals of TEC in it). Went on ground - did not go direct to river

NWR/6-79

SCOEPA00054922

WACKER Siltronian EXTRA

TO: ALL WACKER SILTRONIC EMPLOYEES

The attached newspaper article appeared in today's paper describing two spills of waste water that occurred in our plant on December 3 and on New Year's Eve. The article is incorrect in the sense that it implies that several hundred gallons of TCE was spilled, whereas in reality the material was mostly waste water containing a low percentage of TCE.

Siltronic is fully committed to operating a plant which is safe and meeting all environmental standards. As soon as the December 3 spill occurred, engineering programs were commenced to re-analyze the equipment and operating procedures and make any corrections where needed. In addition, a decision was made immediately (at the beginning of December) to build a concrete containment basin around this waste treatment area. To complete our action plan, a commitment was made to remove the soil adjacent to the facility just to be sure that there would be no concerns. As soon as DEQ confirms that they are satisfied with our actions, we will install the concrete basin. Our goal is to complete this before the end of January.

Neither of these situations were considered to be of any danger to employees or to the environment because of the low concentrations present. Up until the mid-1970's TCE had been used in the processing of coffee and was permissible even for human consumption in the 10 to 25 parts per million range. Trichlorethylene is widely used throughout the industry for drycleaning and degreasing and is considered acceptable under present Government health regulations at a level of 100 ppm in the air for long term working conditions.

Tests at the center of the spill area, on January 2, 1985, by an outside analytical laboratory, indicate that the removal of a few inches of soil will resolve the surface contamination. We are removing the maximum amount recommended. Siltronic is absolutely convinced that it has responded promptly and competently to the situation.

January 16, 1985

SCOEPA00054923

Wacker begins cleanup of 2 solvent spills

By STAN FEDERMAN
of The Oregonian staff

Wacker Siltronic Corp. this week began to clean up two major spills involving a toxic chemical solvent used in its silicon-wafer manufacturing process. The spills occurred last month in a plant waste-treatment area.

The two spills took place Dec. 3 and Dec. 31 but did not involve any safety to the public health, according to Janet Gillaspie, Northwest region manager for the state Department of Environmental Quality.

Gillaspie said Tuesday, however, that Wacker was slow in reporting the spills, and DEQ was still evaluating any possible penalties against the West German-based company. The company's plant is located at 7200 N.W. Front Ave.

"We're considering censuring the company through a legal notification for its slow reporting procedures and perhaps even a fine," Gillaspie said.

She said DEQ did not provide any public information on the spills when they happened because "we have various-type spills around the state almost every day, and if they are not a safety hazard to the public we do not issue any news release."

Gillaspie noted that because Wacker is a generator of hazardous wastes, it is supposed to have on file with DEQ a prevention-contingency plan for dealing with spills. She said the company at present does not have such a plan on file with the agency.

James Harper, Wacker's director of human resources, said the company had such a plan, although he did not know if it was on file at DEQ. He also said it was the company's understanding that there was a 24-hour report period — "and we believe we were in the DEQ time frame regarding these two spills."

Gillaspie said the first spill occurred around noon Dec. 1, but DEQ did not learn about it until 11:15 a.m. the next day. "Apparently the company didn't know it had to be reported under DEQ regulations, but when they found out differently, they did so," she said.

She said the spill involved some 700 gallons or less of trichloroethylene, a chemical solvent known as TCE. The spill occurred, Gillispie said, when a pump switch that normally is on was inadvertently switched off, causing a tank containing some of the solvent to overflow and spill out on the ground.

TCE is a common solvent used in many manufacturing processes for removing oils and is considered toxic, said Ralph Rodia of the Accident Prevention Division of the state Worker Compensation Department. He added that TCE is believed to be a cancer-potential chemical in any major concentrations.

The Dec. 1 spill involved a 1 percent TCE concentration, Harper said, while the Dec. 31 spill involved a 2 percent concentration. "A concentration of 10 percent or more would be considered hazardous," Harper said.

The Dec. 31 spill occurred in the same area as the Dec. 1 spill and involved 500 to 700 gallons of TCE. A small amount of the spillage apparently leaked into a storm drain and ended up in the Willamette River where it quickly dissolved, Gillaspie said.

Gillaspie said the Dec. 31 spill happened at 11:3 p.m. and was reported to the state Emergenc Management Division of the state Executive De partment, which handles spill reports after hour. The DEQ was notified of the spill at 7 p.m. the ne day.

Gillaspie said DEQ lab reports showed concen trations of TCE in the soil around the spills ar that Wacker would be required to clean up the are to zero levels as required by DEQ regulations.

The cleanup work began Monday by crews c the Environmental Emergency Services Co., a div sion of Riedel International Inc. A compan spokesman estimated the cleanup work would tak about two weeks.

Harper said Wacker's cleanup actions woul take care of both spills and "we plan to build special cement floor base in this waste treatmer area so such spills cannot occur again in the soil. He said the area contains some concrete pads no for treatment tanks, but they are surrounded b soil.

He said the company still was investigating th causes of the second spill, but he said it was be lieved to have been caused by equipment malfunc tion. Until exact causes are determined, he added the company plans to operate the waste treatmen facility under constant supervision until the cemen floor base is completed.

competently to the situation.

January 16, 1985

SCOEPA00054924

CC: HW done

Dept. of Environmental Quality
RECEIVED
JAN 15 1985

January 15, 1985

NORTHWEST REGION
State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY
RECEIVED
JAN 16 1985
OFFICE OF THE DIRECTOR

Wacker Siltronic Corporation
P.O. Box 03180
Portland, OR 97203
7200 N.W. Front Ave.
Portland, OR 97229
Phone (503) 243-2020
TWX 910-464-4777
FAX 503 226-0052

RED JAG

Mr. Renee Dulay
DEQ - Northwest Region
PO Box 1760
Portland, Oregon 97207

Dear Mr. Dulay:

I am writing to inform you of the specifics of a spill of wastewater containing TCE on our plant on Monday, December 31, 1984.

Between about 11 pm. on New Year's Eve and 1 am. New Year Day, the waste treatment process at Wacker Siltronic spilled between 700 and 900 gallons of liquid which was in the course of processing. Chemical analysis of liquid samples from the site of the spill were collected and analyzed by Emergency Environmental Services -- from the results it is indicated that the solution was 98% water containing about 1.9% trichlorethylene (TCE). This low level of concentration was not considered an emergency.

On observing the spill, the facility operation staff immediately shut off the flow of the liquid. A small amount of effluent had drained across the walkway and along the road toward a storm drain approximately 100 yards from the spill -- the drain was immediately valved off to prevent any further discharge into the storm sewer. Due to the heavy ground frost and due to the fact that most of the area was paved, little adsorption into the ground occurred and it was possible to clean up the surface liquid on January 2. In addition to chemical tests on the surface liquid, analysis of the soil adjacent to the equipment was also carried out on January 2 by Environmental Emergency Services Inc. DEQ was informed of the spill on January 1 and a representative viewed the site the following day -- they were given complete copies of the analyses.

Wacker Siltronic asked the consultant what steps should be taken to be absolutely certain that the soil adjacent to the equipment would meet present and anticipated future environmental standards. It was recommended that two feet of soil be removed directly adjacent to the equipment tapering down to six inches several feet away. This action has already been put into effect. Soil samples will be taken after the soil removal to verify that no significant contamination remains.

Excavation to the levels recommended by EES was started on 1/14/85. In all, 175 cubic yards of soil, weighing 300,00 lbs will be removed.

SCOEPA00054925

Two spills of this dilute waste liquid have occurred in the past months. To absolutely prevent any further problems, the company has designed a concrete containment basin which was scheduled for installation before the end of January 1985 -- this will be installed immediately following the soil removal and satisfactory tests.

The cause was an equipment failure related to the forwarding pump on the SOD-T tank. The equipment was restarted following the spill and ran normally. The intermittent failure cannot be explained, but actions are being taken to eliminate this possibility in the future as detailed below.

The following equipment modifications will be done before re-starting the operation. The forwarding tanks will have high-level alarms installed to automatically shut-down the operation if a pump malfunction occurs. The pumps themselves will be replaced with a different type of pump that will be more reliable. The equipment will be modified to allow it to be run as an entirely closed unit to the fullest extent possible.

If you have any comments or questions please feel free to call me.

Thank you.

Sincerely yours,

WACKER SILTRONIC CORPORATION

John Pittman
Director of Engineering

GC/md

cc: Greg Carr
Jim Harper
Don Crane
Mal Russ

SCOEPA00054926

STATE OF OREGON

DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE MEMO

TO: File

DATE: January 15, 1985

FROM: J.A. Gillaspie

SUBJECT: TCE Spill at Wacker Siltronics

Today, I discussed the recent TCE spills at Wacker Siltronics with Jim Harper, 243-2020. Jim explained that he would be taking over the environmental compliance monitoring portion of the plant's operations, and merging that with the safety portion of the organization.

We discussed the spill prevention plans. Jim said that his company had plans to deal with spills. I explained that as a generator of hazardous wastes, Wacker is required to have the prevention and preparedness plans and emergency contingency plans developed in accordance with our rules, Subdivision C and Subdivision D of Rule 104, along with the personnel training requirements of 340-104-016. He said he would start working on the plans right away.

We then discussed timely reporting of spills. He explained that the company thought they had 24 hours to report. I said I could not cite the exact reporting rule without some reading, but as a rule of thumb, when a spill occurs, personnel safety should be secured. The second action should be to call DEQ through Emergency Management Division.

I reviewed for him the cleanup requirements when a listed waste such as TCE is spilled. Cleanup must be to background. I cautioned him to be sure all the contaminated material is removed before putting any concrete down. He asked that I put the clean up requirements in a letter to him.

JAG:b
RB4196

cc: HW

SCOEPA00054927

January 5, 1984

Wacker Siltronic Corporation
P.O. Box 03180
Portland, OR 97203
7200 N.W. Front Ave.
Portland, OR 97229
Phone (503) 243-2020
TWX 910-464-4777
FAX 503 226-0052

Oregon DEQ
Northwest Region
PO Box 1760
Portland, Oregon 97207

Attention: Chuck Clinton

Mr. Clinton:

As you know we had a spill of TCE (Trichloroethylene) in one of our processing areas on 12/21/83 sometime between 7 and 8 p.m. The incident occurred as follows:

There was a special holiday dinner for all swingshift employees from 7 p.m. to 8 p.m. Upon returning to the work area at about 8 p.m. the employees found a degreaser bath overflowing with TCE onto the floor. The TCE flow was immediately stopped. The operating areas were evacuated because of the fumes, and mechanics began to clean up the spill wearing Scott Air Packs. I was called into the plant and arrived approximately 9:30 p.m. It appeared some TCE had run into a floor trench that eventually, after neutralization and clarification, discharges through our Willamatte River outfall (see illustration). I immediately pulled samples from the floor trench, the SWW (Silicon Waste Water) forwarding sump, the Flash Mix tank and the clarifier outfall. There was a slight odor of TCE in the samples from the SWW Forwarding Sump and the Flash Mix Tank, but no free TCE. Based on the odor I estimated there was 40 ppm TCE in these flows at that time, but chemical analysis was not run. From this I estimate that the total amount of TCE that entered the floor trench was 10 to 20 gallons. The only other source for estimating the quantity of TCE spilled into the trench is the tank inventory sheets. Due to TCE consumption in other parts of the plant these sheets are not all that accurate. From the sheets the spill could have ranged from nothing to 120 gallons.

Because of the room construction most of the spilled TCE remained on the floor. Roughly 20 gallons of TCE was vacuumed up and disposed of into an in-plant waste solvent drain. The majority of the spill, about 300 gallons, was allowed to evaporate with help from ventilating fans placed to blow the fumes outside the building. No granular adsorbent was used as this would have introduced unacceptable quantities of dirt into a clean processing area.

To prevent a similar incident from recurring we are planning to install overflow lines on the degreaser baths that do not already have them. These will divert any excess liquid from the baths to the waste solvent drain system.

SCOEPA00054928

On Wednesday night 12/21 and on Monday night 12/26 we had minor spills of Chromic acid into the wastewater system. These incidents occurred as follows: By Wednesday 12/21 the pump-out line from the inside waste Chromic Acid tank to the outside storage tank had frozen due to the extremely cold weather. The inside tank filled up and about 20 gallons of dilute chromic waste ran out on the floor. This waste sat on top of a drain that had been previously plugged to prevent such spills from entering the waste water system. Evidently the plug leaked, allowing about 10 gallons of waste containing 1.5 lbs chromic acid to enter the waste system over a 14 hour period. On 12/22 when the spill was discovered the remainder of the spilled waste was cleaned up and the inside storage tank was pumped into plastic barrels for temporary storage.

The chromium spill was first noticed by the operator at the WWTP (Waste Water Treatment Plant). The flow of the wastewater stream was diverted to the municipal sewer since they have a chromium limitation of 5.0 ppm. The water was analyzed and found to have 1.48 ppm chromium. The decision was made to resume normal operation by redirecting the waste water flow to the river.

Over the long weekend the inside storage tank again filled up, probably due to a slow leak of rinse water (it only holds 60 gallons). The contamination was discovered by the WWTP operator on 12/27 and the flow was diverted to the municipal sewer. The water was analyzed and found to have 2.02 ppm chromium. It was diverted to the sewer for 4 hours and then allowed to discharge to the river.

All in all, the chromium-contaminated wastewater discharges were as follows:

12/21 - 12/22	294,000 gallons	14 hrs.	1.5 lbs Cr	1.5 ppm
12/26 - 12/27	210,000 gallons	10 hrs.	10. lbs Cr	2.0 ppm

Our NPDES limitations are a maximum of 1.0 ppm Cr for a 24 hr. average, with a daily maximum of 1.1 lbs Cr per day.

To prevent this from recurring we will do the following:

1) On 12/27 the floor drain plug was heat-sealed in place to absolutely assure no leakage into the waste water system.

2) The waste chromic line will be properly heat-traced and insulated.

Sincerely, Greg Carr

WACKER SILTRONIC CORPORATION

Greg Carr

GC/kk

SCOEPA00054929

Wacker Siltronic Corporation
P.O. Box 03180
Portland, OR 97203
7200 N.W. Front Ave.
Portland, OR 97229
Phone (503) 243-2020
TWX 910-464-4777
FAX 503 226-0052

December 12, 1984

Renee Dulay
Oregon DEQ-Northwest Region
P.O. Box 1760
Portland, Oregon 97206

Mr. Dulay:

As reported in my phone call to the DEQ, on December 3 we had a spill onto the ground of some wastewater containing TCE. I estimate the wastewater volume to be 700 gallons or less of waste, containing roughly 1% TCE. The total amount of TCE spilled was around 7 gallons (85lbs). The spill immediately soaked into the ground and did not enter any waterway or sewer system. The amount of TCE is a reportable amount under OAR 304-108-020 (c)(a), but the wastewater is not a hazardous waste under OAR-304-101-033- (3)(a).

The spill occured around noon on December 3. The facilities operator started up the steam stripper, used to remove TCE from a wastewater stream. He did not notice that an automatic forwarding pump, normally on, was switched off. As a result the small forwarding tank gradually filled up and overflowed onto the ground. After an hour absence the operator returned and observed the material spilling onto the ground. He immediately shut off the flow of material and, after locating the problem, restarted the forwarding pump. After observing that all the equipment was in operating order the steam stripper was restarted and operated as normal. No cleanup was attempted as all the material had soaked into the ground immediately.

To prevent further incidents like this, the operator was instructed to manually check the operation of all the pumps before starting the unit. The operating controls will be locked with access limited to authorized personel. The area around the equipment will be enclosed with an impervious floor and dike. We will keep you informed of future developments.

Thank you.

Sincerely,

WACKER SILTRONIC CORPORATION

Greg Carr
Facilities Engineer

GC/md

FILE HW MULT.

August 31, 1988

Wacker Siltronic Corporation
P.O. Box 03180
Portland, OR 97203
7200 N.W. Front Ave.
Portland, OR 97210
Phone (503) 243-2020
FAX 503-226-0052
TWX 910-464-4777
TLX 4970339

Dept of Environmental Quality
RECEIVED
SEP 01 1988
NORTHWEST REGION

Don L. Peters
Sr. Environmental Analyst
Northwest Region
Department of Environmental Quality
811 S.W. Sixth Avenue
Portland, OR 97204-1390

Dear Mr. Peters:

Subj: Response to Notice of Violation
NWR-HW-88-86

This letter will serve as a formal reply to your letter of August 2, 1988, in which you formally presented the results of the hazardous waste inspection conducted at our facility on June 6, 1988.

I will briefly review each item identified and provide a status of corrective action taken to date and any plans for further action to be taken.

Item No. 1 & 2:

There was no formal documentation showing arrangements made with external emergency response organizations.

Discussion/Action Taken:

Formal receipts have been received from each external emergency response organization and will be included in the revisions being made to the Spill Contingency Plan.

Item No. 3:

The Contingency Plan does not list all the emergency coordinators in the order in which they will assume responsibilities as alternates, and their addresses and phone numbers (office and home):

Discussion:

As discussed with you in a telephone conversation on August 8, 1988, I stated that this question had been raised previously by DEQ staff but was adequately answered.

SCOEPA00054931

Our procedure works as follows:

During each normal work day, Monday through Friday, I am the designated Emergency Coordinator and can be reached by telephone, beeper or page to respond to any emergency. During any swing or graveyard shift during the week or on any shift on the week end, the Stand-By Director acts as the designated Coordinator and can be contacted through the Security Guard at extension 420. Each individual on Stand-By is required to carry a beeper at all times. The Security Guard has a roster of all individuals on Stand-By with home phone numbers and beeper numbers (a sample of this Weekly Stand-by sheet is attached).

Each Director at Wacker is required to rotate through a 24-hr. one week Stand-By tour. Each of the eight Directors rotate through this assignment every 2 months. All Stand-By Directors and Engineering Managers and Supervisors have received a thorough training session in the contents of the Spill Contingency Plan and are required to have a copy at their home when on Stand-by.

Each week I personally present a 45 minute environmental orientation briefing to each new employee and specifically emphasize our emergency reporting procedure as shown on pg. 18 and 21 of our Contingency Spill Plan.

Through the above method, I feel confident that any employee can easily notify the Emergency Coordinator or his official designee through the use of the Security Guard at extension 420.

Item No. 4:

The Spill Plan did not show location and physical description of each piece of emergency equipment.

Discussion/Action Taken:

As discussed with you on August 8, 1988, Table 4 of the Spill Plan does include room numbers for each Fire Extinguisher located at our facility. An inventory of equipment and supplies for our ERT room has been added to the Spill Plan on page 73 and 73a. This revision will be distributed under separate cover within the next 2 weeks.

Item No. 5:

A container of hazardous waste was not completely covered during the inspection.

Action Taken:

At the time of the inspection the items in the drum were pushed down so the drum lid could easily be fitted over the entire drum opening.

Item No. 6:

Two TCE storage tanks were found not to contain hazardous waste signs.

Discussion:

As discussed in our telephone conversation of August 8, 1988, the two tanks that were referred to are not to be considered as hazardous waste storage tanks in that they are the SOD-T and SOD-C tanks and are used to temporarily hold material prior to being pumped to the TCE stripper for treatment. Therefore, signs are not needed on these tanks.

Item No. 7:

A container of waste freon was not marked with an accumulation date.

Action Taken:

We have discussed this with production personnel and emphasized the need to correctly complete these hazardous waste drum labels. Facilities Operations and Shipping both monitor this activity now to insure this does not occur in the future.

Item No. 8:

The waste freon waste code used has been F001. Since this material is not used in a degreaser application, but rather in a cleaning application, it should be considered F002.

Action Taken:

1 have requested that McClary Columbia change our waste code to F002. All future shipments of waste freon will reflect this change.

Item No. 9:

We are not including the volume of generation of liquid chromic III waste in our quarterly reporting.

Discussion:

As discussed in our earlier telephone conversation, I would like to formally request an extension to October 31, 1988, to respond to this item. I am presently reviewing the additional information you provided on this subject of "counting of hazardous waste".

If you have any questions regarding any of these items, please call me at 243-2020, extension 301.

Very truly yours,

WACKER SILTRONIC CORPORATION

Murray M. Tilson, P.E.
Environmental Manager

MMT:ll

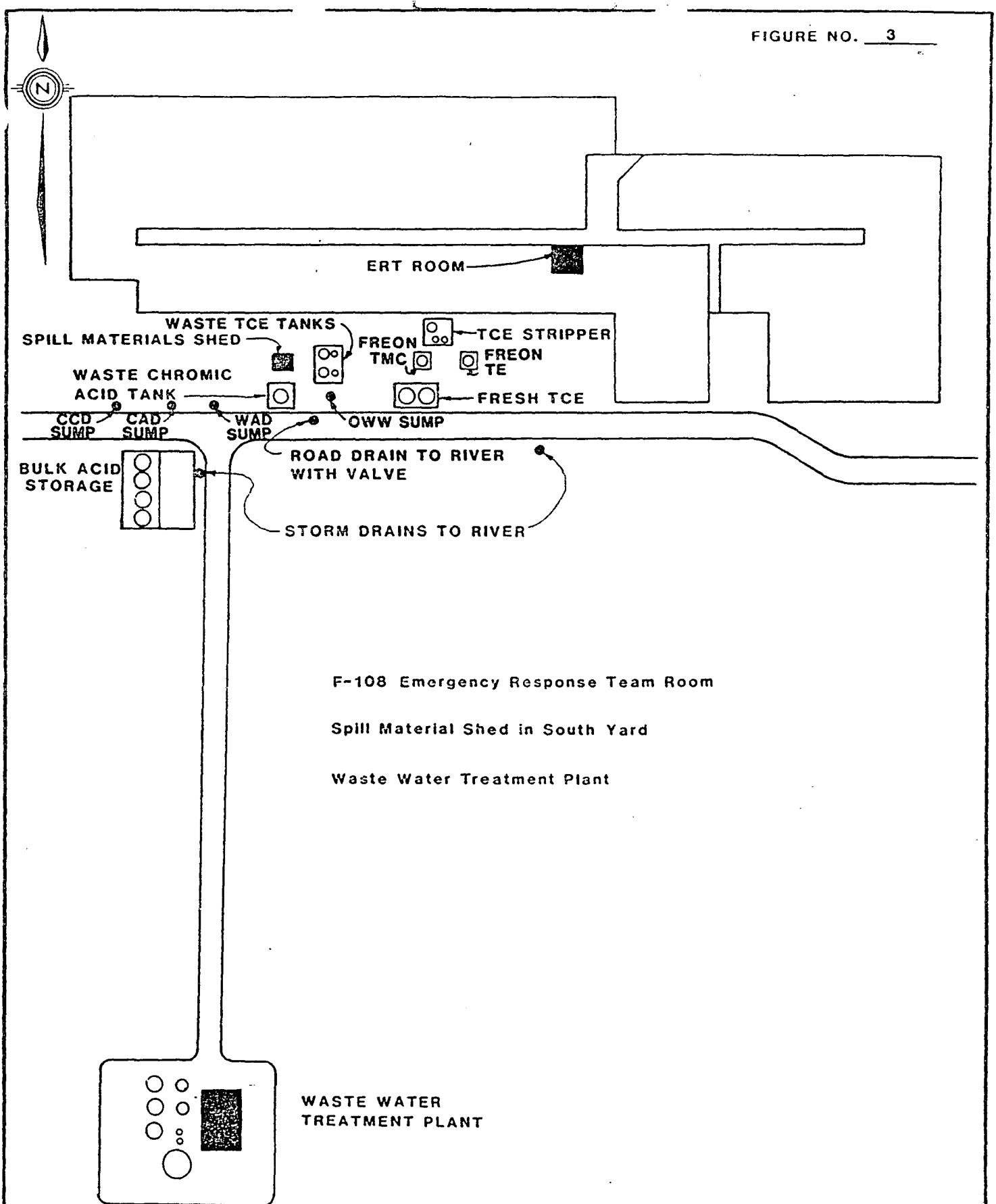
Enclosure:

1) Wacker Weekly Stand-By List

cc: John Pittman
Mike Pilkington
Tom Rothschild

SCOEPA00054934

FIGURE NO. 3

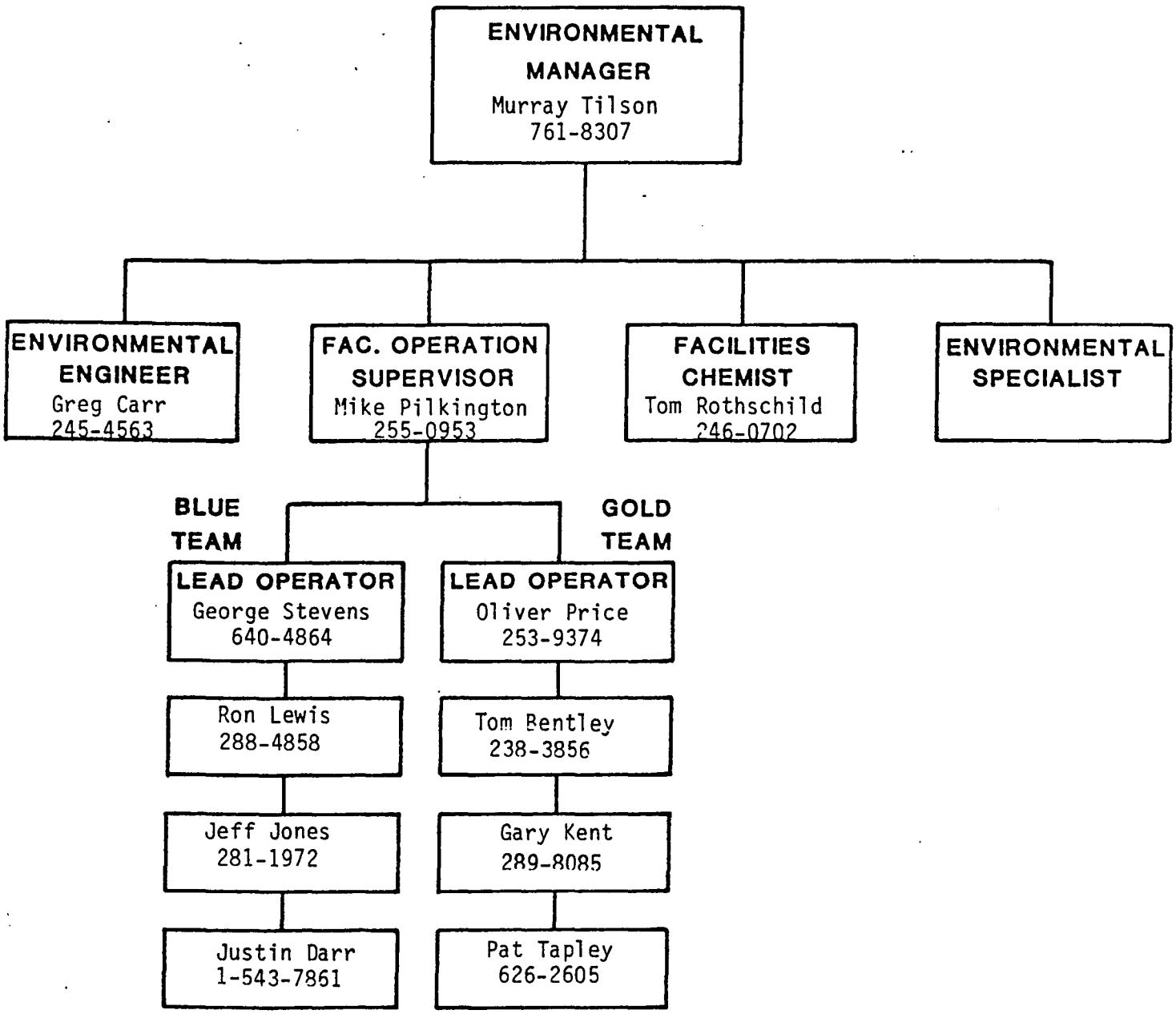


SPILL CLEAN-UP MATERIAL STORAGE PLAN

SCOEPA00054935

ENVIRONMENTAL ENGINEERING DEPARTMENT

4/3/88



The following is a list of hazardous materials located within the production facility and their associated drain:

Solvents
Acetone (SOD)
Butyl acetate (SOD)
Ethyl alcohol (SOD)
Freon TE (SOD)
Freon TP (SOD)
Freon TMC (SOD)
Isopropyl alcohol (SOD)
Trichloroethylene (SOD)

Acids
Hydrofluoric (CAD)
Nitric acid (CAD)
Chromic acid (chromic waste tank)
Citric acid (OWW)
Hydrochloric acid (CAD)
Sulfuric acid (CAD)

Caustics
Sodium hydroxide (CCD)
Potassium hydroxide (CCD)
Potassium carbonate (OWW)
Hydrogen peroxide (OWW)

Soaps & Miscellaneous
Q-9 (OWW)
9N9 (OWW)
Antirust (OWW)
Antifoam (OWW)

Toxics
Antimony (none)
Boron (none)
Mercury (none)

Disposal Sites

The above hazardous materials can be disposed of at predesignated strategic locations.

Solvents (SOD)

1. F-104 sink drain
2. Allowed to evaporate to atmosphere in SOD containment area.
3. Allowed to evaporate in D-125.

SCOEPA00054937

FACILITIES OPERATIONS

HAZARDOUS CHEMICAL SYSTEMS CHECKLIST

SYSTEM	CHECK INTEGRITY OF:	LOCATION
TCE		
1. WAX MOUNT. SOD-W TANK	TANK,PIPES,VALVES,PUMP	LITTLE D/C UNDER GRATING
2. CARB. ADSORP. SOD-R TANK	TANK,PIPES,VALVES,PUMP	STRIPPER CONTAINMENT AREA
3. STRIPPER SOD-W TANK	TANK,PIPES,VALVES,PUMP	STRIPPER CONTAINMENT AREA
4. STRIPPER SOD-T TANK	TANK,PIPES,VALVES,PUMP	STRIPPER CONTAINMENT AREA
5. SOD-W STORAGE TANK	TANK,PIPES,VALVES	SOD CONTAINMENT AREA
6. SOD-R STORAGE TANK	TANK,PIPES,VALVES	SOD CONTAINMENT AREA
7. SOD-T STORAGE TANK	TANK,PIPES,VALVES	SOD CONTAINMENT AREA
8. SOD-C STORAGE TANK	TANK,PIPES,VALVES	SOD CONTAINMENT AREA
9. FRESH TCE STORAGE TANK	TANK,PUMP,PIPES,VALVES	SO. YARD TCE CONTAINMENT
10. RECYCLE TCE STORAGE TANK	TANK,PUMP,PIPES,VALVES	SO. YARD TCE CONTAINMENT
CHROME		
1. WASTE CHROMIC STORAGE TANK	TANK,PUMP,PIPES,VALVES	CHROMIC CONTAINMENT AREA
2. WASTE ETCH CHROMIC TANK	TANK,PUMP,PIPES,VALVES	ACID ETCH ROOM
FREON		
1. FREON TMC STORAGE TANK	TANK,PUMP,PIPES,VALVES	SO. YARD WEST CONTAINMENT
2. FREON TE STORAGE TANK	TANK,PIPES,VALVES	SO. YARD EAST CONTAINMENT
3. WASTE FREON TMC TANK	TANK,PIPES,VALVES	SOLVENT STORAGE
4. WASTE FREON TE TANK	TANK,PIPES,VALVES	SOLVENT STORAGE, ELEVATED
5. WASTE FREON TE RECYCLE SYSTEM	TANKS,PUMP,PIPES,VALVES	SOLVENT STORAGE
FORWARDING SUMPS		
1. CAD TANK/CONTAINMENT	TANK,PUMPS,PIPES,VALVES	SOUTH YARD
2. CCD TANK	TANK,PUMPS,PIPES,VALVES	SOUTH YARD
WWTP		
1. CAD STORAGE TANK	TANK,PIPES,VALVES	WEST STORAGE CONTAINMENT
2. CCD STORAGE TANK	TANK,PIPES,VALVES	EAST STORAGE CONTAINMENT

SCOEPA00054938

FACILITIES OPERATIONS

HAZARDOUS CHEMICAL SYSTEMS CHECKLIST

OPERATOR PT (0100)
OPERATOR _____ (1300)

(NOTE:
✓ =SYSTEM INTEGRITY MAINTAINED
X =SYSTEM INTEGRITY DEFICIENT)

DATE 5/22/08

TCE

SYSTEM	0100	1300	COMMENTS
1. WAX MOUNT. SOD-W TANK	✓	✓	1.
2. CARB. ADSORP. SOD-R TANK	✓	✓	2.
3. STRIPPER SOD-W TANK	✓	✓	3.
4. STRIPPER SOD-T TANK	✓	✓	4.
5. SOD-W STORAGE TANK	✓	✓	5.
6. SOD-R STORAGE TANK	✓	✓	6.
7. SOD-T STORAGE TANK	✓	✓	7.
8. SOD-C STORAGE TANK	✓	✓	8.
9. FRESH TCE STORAGE TANK	✓	✓	9.
10. RECYCLE TCE STORAGE TANK	✓	✓	10.

CHROME

1. WASTE CHROMIC STORAGE TANK	✓	✓	1.
2. WASTE ETCH CHROMIC TANK	✓	✓	2.

FREON

1. FREON TMC STORAGE TANK	✓	✓	1.
2. FREON TE STORAGE TANK	✓	✓	2.
3. WASTE FREON TMC TANK	✓	✓	3.
4. WASTE FREON TE TANK	✓	✓	4.
5. WASTE FREON TE RECYCLE SYSTEM	✓	✓	5.

FORWARDING SUMPS

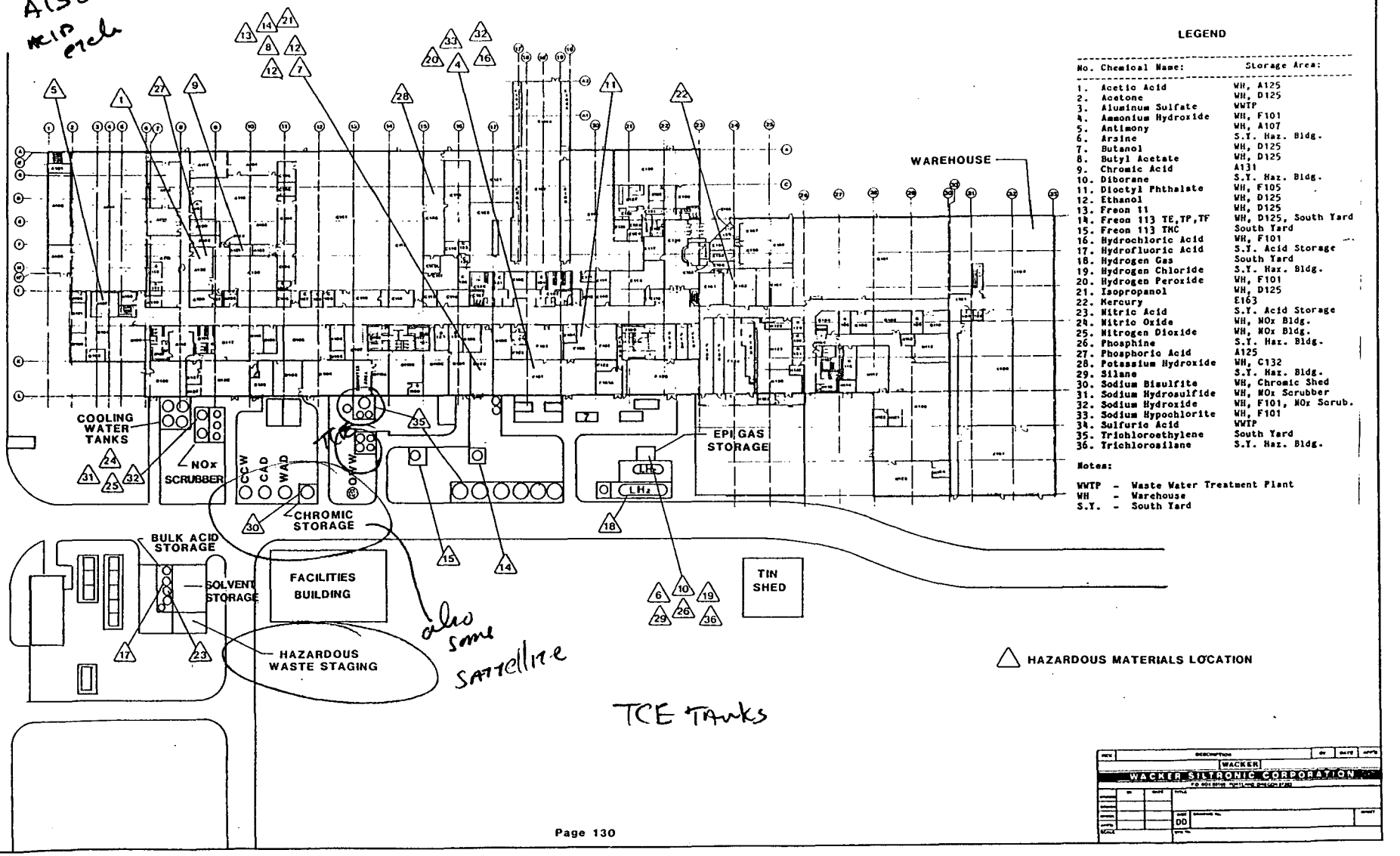
1. CAD TANK/CONTAINMENT	✓	✓	1.
2. CCD TANK	✓	✓	2.

WTP

1. CAD STORAGE TANK	✓	✓	1.
2. CCD STORAGE TANK	✓	✓	2.

FIGURE NO. 14

HAZARDOUS MATERIALS STORAGE LOCATION PLAN



LEGEND

No.	Chemical Name:	Storage Area:
1.	Acetic Acid	WH, A125
2.	Acetone	WH, D125
3.	Aluminum Sulfate	WWTP
4.	Ammonium Hydroxide	WH, F101
5.	Antimony	WH, A107
6.	Arsine	S.Y. Haz. Bldg.
7.	Butanol	WH, D125
8.	Butyl Acetate	WH, D125
9.	Chromic Acid	A131
10.	Diborane	S.Y. Haz. Bldg.
11.	Dioctyl Phthalate	WH, F105
12.	Ethanol	WH, D125
13.	Freon 11	WH, D125
14.	Freon 113 TE,TP,TF	WH, D125, South Yard
15.	Freon 113 TMC	South Yard
16.	Hydrochloric Acid	WH, F101
17.	Hydrofluoric Acid	S.Y. Acid Storage
18.	Hydrogen Gas	South Yard
19.	Hydrogen Chloride	S.Y. Haz. Bldg.
20.	Hydrogen Peroxide	WH, F101
21.	Isopropanol	WH, D125
22.	Mercury	E163
23.	Nitric Acid	S.Y. Acid Storage
24.	Nitric Oxide	WH, NOx Bldg.
25.	Nitrogen Dioxide	WH, NOx Bldg.
26.	Phosphine	S.Y. Haz. Bldg.
27.	Phosphoric Acid	A125
28.	Potassium Hydroxide	WH, C132
29.	Silane	S.Y. Haz. Bldg.
30.	Sodium Bisulfite	WH, Chromic Shed
31.	Sodium Hydrosulfide	WH, NOx Scrubber
32.	Sodium Hydroxide	WH, F101, NOx Scrub.
33.	Sodium Hypochlorite	WH, F101
34.	Sulfuric Acid	WWTP
35.	Trichloroethylene	South Yard
36.	Trichlorosilane	S.Y. Haz. Bldg.

Notes:

WWTP - Waste Water Treatment Plant
WH - Warehouse
S.Y. - South Yard

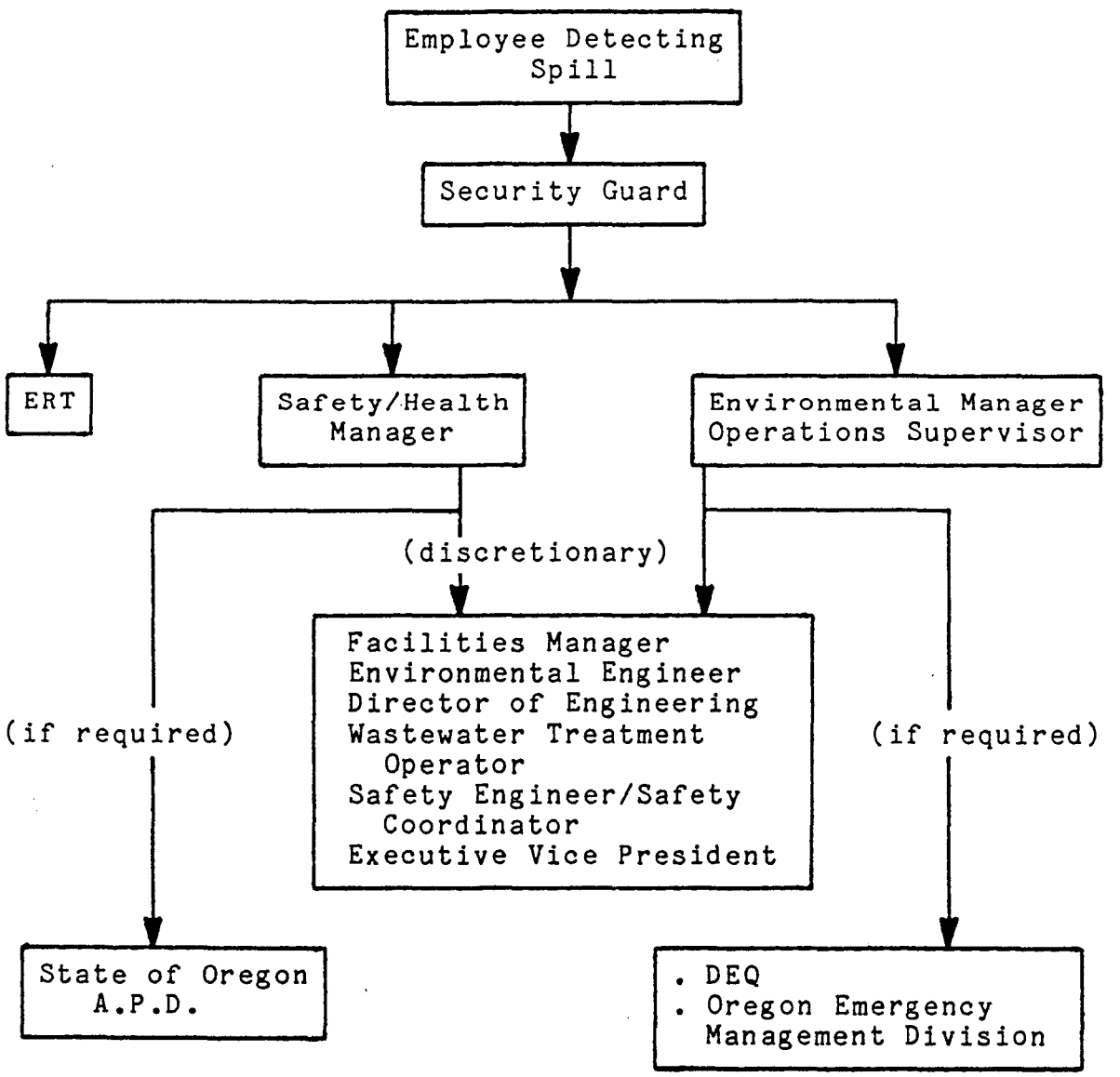
WACKER SILTRONIC CORPORATION

SCOEPA00054940

FIGURE NO. 1

NOTIFICATION PROCEDURE - HAZARDOUS MATERIAL SPILL DURING BUSINESS HOURS

(8 a.m. - 5 p.m., weekdays)

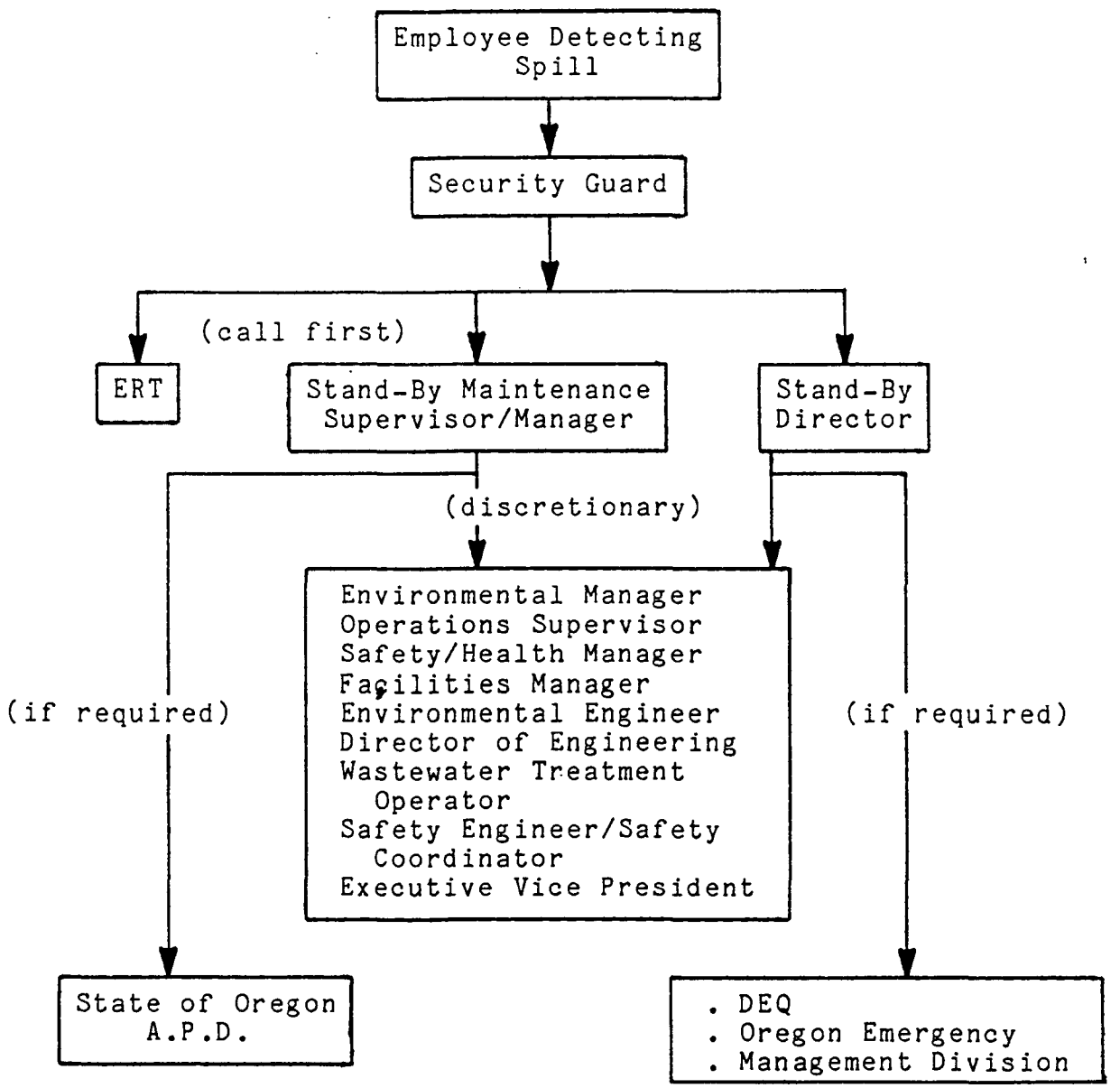


SCOEPA00054941

FIGURE NO. 2

NOTIFICATION PROCEDURE - HAZARDOUS MATERIAL SPILL DURING OFF-SHIFT

(other than 8 a.m. - 5 p.m., weekdays)



SCOEPA00054942

TABLE 1
WACKER SILTRONIC CORPORATION
SPILLS REPORTABLE TO GOVERNMENT AGENCIES

No.	Chemical Name:	Charact.	Reportable Quantity (lbs): (1) 302:	(2) CERCLA:	(3) RCRA:	(4) 313:
1.	Acetic Acid	Organic Acid		5000		
2.	Acetone	Solvent		5000	5000	X
3.	Aluminum Sulfate	Inorganic Salt		5000		
4.	Ammonium Hydroxide	Strong Base		1000		
5.	Antimony	Metal		5000		X
6.	Arsine	Poisonous Gas	1			
7.	Butanol	Solvent		5000	5000	X
8.	Butyl Acetate	Solvent		5000	5000	
9.	Chromic Acid	Heavy Metal Acid		1000	1000	
10.	Diborane	Dopant	1			
11.	Dioctyl Phthalate	Plastisizer		1000	1000	X
12.	Ethanol	Solvent			100	
13.	Freon 11	Refrigerant Gas		5000	5000	
14.	Freon 113 TE,TP,TF	Solvent		5000	5000	X
15.	Freon 113 TMC	Solvent		1000	1000	X
16.	Hydrochloric Acid	Strong Acid		5000	5000	X
17.	Hydrofluoric Acid	Strong Acid	100	100	100	X
18.	Hydrogen Gas	Flammable			100	
19.	Hydrogen Chloride	Corrosive		1		X
20.	Hydrogen Peroxide	Oxidizer			100	
21.	Isopropanol	Solvent			100	
22.	Mercury	Heavy Metal		1	1	X
23.	Nitric Acid	Strong Acid	1000	1000	1000	X
24.	Nitric Oxide	Gas	10	10	10	
25.	Nitrogen Dioxide	Gas	10	10	10	
26.	Phosphine	Poisonous Gas	100	100	100	
27.	Phosphoric Acid	Strong Acid		5000		X
28.	Potassium Hydroxide	Reducing Agent		1000	1000	
39.	Silane	Flammable			100	
30.	Sodium Bisulfite	Reducing Agent		5000		
31.	Sodium Hydrosulfide	Reducing Agent		5000		
32.	Sodium Hydroxide	Strong Base		1000	1000	X
33.	Sodium Hypochlorite	Oxidizer		100		
34.	Sulfuric Acid	Strong Acid	1000	1000	1000	X
35.	Trichloroethylene	Solvent		1000	1000	X
36.	Trichlorosilane	Corrosive			100	

Notes:
(1) SARA Sect. 302 Extremely Hazardous Substances List.
(2) CERCLA Sect. 313 Toxic Chemicals List.
(3) RCRA Hazardous Waste List.
(4) SARA Sect. 313 Toxic Chemicals List (annual reporting requirement)

SCOEPA00054943

~~CHG~~, JAG

TO FILE 9/4/87

FROM ED WOODS

RE: WACKER SILTRONICS CORP
ORD 096253737
HW-MULTNOMAH COUNTY

ON 9/4/87 I INSPECTED THE WACKER PLANT AT 7200 NW FRONT AVE FOR COMPLIANCE WITH THE HAZARDOUS WASTE REGULATIONS. I MET WITH MURRAY TILSON, MARK RASWELL, MICHAEL PILKINGTON, AND CHARLES TILDEN. WACKER MANUFACTURES SILICON WAFERS FOR THE ELECTRONICS INDUSTRY. THE CRYSTALS ARE GROWN, SLICED, CLEANED AND POLISHED AT THIS PLANT.

I INSPECTED RECENT MANIFESTS AND ALL WERE CORRECTLY COMPLETED. QUARTERLY REPORTS HAVE BEEN SUBMITTED ON TIME. WACKER IS A FULLY REGULATED GENERATOR. THE WASTE STREAMS GENERATED DURING THE NORMAL COURSE OF BUSINESS ARE WASTE FREON AND TCE, AND CHROMIC ACID SLUDGE.

TRICHLOROETHYLENE (TCE) IS USED TO CLEAN THE WAFERS BEFORE APPLYING A WAX COATING. WASTE TCE IS TAKEN TO VAN WATERS AND ROGERS FOR RECYCLING. CURRENTLY ABOUT 4000 GALLONS PER MONTH IS RECYCLED. HOWEVER THAT IS ABOUT 50% OF THE AMOUNT RECYCLED 1 YEAR AGO. WACKER PLANS TO DISCONTINUE USE OF TCE WITHIN THE NEXT YEAR. VAN WATERS AND ROGERS RETURNS ABOUT 2000 GALLONS TO WACKER FOR USE IN A PROCESS WHICH DOES NOT REQUIRE VIRGIN TCE. THE WASTE TCE FROM THE IN PLANT PROCESSES IS PUMPED TO A HOLDING TANK OUTSIDE THE BUILDING. THIS TANK AS WELL AS THE OTHER WASTE TANKS ARE EQUIPPED WITH LEVEL INDICATORS AND ARE DIKED TO CONTAIN SPILLS AND LEAKS.

WASTE FREON IS ALSO GENERATED DURING THE WAFER MANUFACTURING PROCESS. WASTE FREON IS SENT TO MCCLARY COLUMBIA FOR RECYCLING. WACKER GENERATES 5 TO 10 DRUMS PER MONTH. SOME OF THE WASTE FREON IS RECYCLED IN THE PLANT BY USING IT IN A PROCESS WHICH DOES NOT REQUIRE A HIGH QUALITY FREON. WASTE FREON IS STORE IN A TANK OUTSIDE THE BUILDING.

WASTE CHROMIC ACID IS PUMPED FROM THE MAIN PLANT TO A SMALL TREATMENT BUILDING. THERE THE CHROMIC ACID IS NEUTRALIZED AND REDUCED TO CHROME+3. THE LIQUID PORTION IS PUMPED TO THE WASTEWATER TREATMENT UNIT (WWTU). THE SLUDGE IS DRIED AND SENT TO CSSI FOR DISPOSAL. ABOUT 1 DRUM PER MONTH IS GENERATED.

CHROME CONTAMINATED MATERIALS ARE ACCUMULATED IN A SATELLITE STORAGE AREA IN THE TESTING AREA. WACKER GENERATES 2 TO 3 DRUMS PER YEAR. THESE MATERIALS ARE DISPOSED AT CSSI.

SCOEPA00054944

WACKER GENERATES WASTE CAUSTIC AND WASTE ACID. THESE MATERIALS ARE PUMPED TO A CONCRETE SUMP AND THEN TO THE WWTU. THE CAUSTIC IS EITHER NEUTRALIZED AND DISCHARGED TO THE RIVER OR USED TO NEUTRALIZE THE WASTE ACID STREAM.

THE COMPANY GENERATES A WASTE WATER STREAM WHICH CONTAINS 5PPM OR LESS OF TCE. THIS WASTE STREAM IS DISCHARGED ON A BATCH BASIS TO THE WWTU.

WACKER MAINTAINS AN ENCLOSED WASTE STORAGE AREA. THIS AREA IS ALSO USED FOR SOME RAW MATERIAL STORAGE. AT THE TIME OF THE INSPECTION THERE WERE 3 DRUMS OF WASTE FREON, AND 4 DRUMS OF WASTE OIL CONTAMINATED WITH TCE. THE WASTE OIL IS A ONE TIME GENERATION. ALL DRUMS WERE PROPERLY LABELED AND DATED.

THE FOUR WASTE STORAGE TANKS ARE INSPECTED AND LOGGED AT LEAST DAILY. THE WASTE STORAGE TANKS ARE FED ON A BATCH BASIS. THE DRUM STORAGE AREA IS INSPECTED DAILY. IT IS ALSO DIKED AND HAS NO DRAIN.

THE WWTU DISCHARGE TO THE CITY SEWER SYSTEM AND THE DISCHARGE TO THE RIVER ARE INCLUDED IN A NPDES PERMIT ISSUED BY DEQ.

NO VIOLATIONS WERE OBSERVED DURING THIS INSPECTION.

cc: H&SW DIV

WACKER

State of Oregon

Department of Environmental Quality — Memorandum

To: Matt McClincy, VCS Project Manager — Date: February 23, 2004

From: Dave Wall, HW Inspector

Subject: Wacker Siltronic Question: Should the contaminated soil and ground water at the 7200 SW Front site be listed as an F002 waste?

EPA ID #ORD096253737

This memo is in response to your request to Andree Pollock for the Hazardous Waste Section to review Wacker Siltronic's determination that TCE contamination in soil and groundwater should not be characterized as F002 waste.

Andree asked me to investigate this matter. My investigation found that the TCE contamination at the Wacker site originated from spent solvent that was used for polishing and dewatering during wafer manufacturing processes at the Wacker facility addressed above. I found that it is likely that the TCE escaped from Wacker's solvent recycling system. Once the TCE escaped from the solvent recycling system it became a waste.

The original TCE concentrations fluctuated from approximately pure TCE (95%) to a recycled purity of about 25% TCE. 40 CFR 261.31 states that TCE is listed as an F002 waste because of its hazardous characteristics. EPA further states that this material cannot lose this listing because it became diluted in soil, water, or through other means. EPA's F002 listing states that any F002 listed material that originally contained more than 10% pure product must retain the F002 listing.

EPA's FAXBACK 14291 as it relates to the "Contained in Policy" states that EPA generally considers contaminated environmental media (soil, groundwater, etc.) to contain hazardous waste if the media exhibit a characteristic of hazardous waste. Wacker's analysis of the groundwater and soil shows that TCE is present.

Wacker's argument that they do not know where the contamination comes from, given their process and use of TCE since the early 1980's is not compelling. It is likely that the TCE contamination originated from one of many sources listed in Wacker's documentation.

Wacker's characterization of the TCE contamination as either a D040 or a non-contaminant because they think it may have leaked from a recycling holding tank that contained trace amounts of TCE is not valid according to EPA rule.

The results of my investigation of this matter determined that the contaminated soils and ground water at the Wacker site listed above must be considered F002 listed wastes.

SCOEPA00054946

Siltronic will respond to any reasonable request for additional information on this matter. Please contact me directly if you have any questions or need additional information

Sincerely,

Siltronic Corporation

Tom McCue,
Manager, Environmental Affairs

cc: Kevin McCrann, Oregon DEQ
Christopher L. Reive, Esq.

TCE WSE 1980

TCE = 12.1 lbs/GAL

166,592 lbs

WASTE 8% TCE

	DATE	MANIFEST	WASTE		CONC.
1980	7/17/80	21468	3600	GAL	8%
	7/15/80	22705	3600		8%
	6/24/80	7849	2901		8%
	6/16/80	7848	1301		8%
CHROM WASTE	6/6/80	12682	5943		8%
	5/27/80	7847	5975		8%
	5/20/80	12677	5960		8%
	5/16/80	12676	5400		8%
Drum Recovery	8/4/80	101535 (WSC. P.O.)	3600	RECYCLE TEST	8%
CHROM WASTE	3/24/80	7841	5903		8%
	3/22/80	7840	4800		85%
	3/8/80	7769	6000		8%
	2/27/80	7765	5768		8%
	1/28/80	7693	6107		8%
Drum Recovery	11/11/80	23103 (VWR PO)	3600	RECYCLED	8%
	11/3/80	23103 (VWR PO)	—		0.75%
	10/29/80	8	1500		8%
	10/21/80	7	3600		8%
	10/7/80	6	2000		8%
	9/26/80	5	3600		8%
SPE-DE-WAY	12/4/80	15	6234		~ 8%
	12/2/80	14	4411		~ 8%
	11/12/80	11	3600		8%
	11/6/80	13	2564		~ 8%
Drum Recovery	11/5/80	9	3000		0.75%
SPE-DE-WAY	9/15/80		4068		8%
	9/5/80	4 (NUMBERING ERROR)	3600		8%
SPE-DE-WAY	8/22/80	4 (NUMBERING ERROR)	2100		8%
	8/4/80	3	3600		8%
VWR	12/29/80	122980-2	6429		~ 8
	12/22/80	12 221980-1	4500		~ 8
	12/29/80	122980-1	4556		~ 8
	12/18/80	CM-02-4390	4000		~ 8
	12/15/80	CM-02-4373	5591		~ 8

120,429 GAL OF 8% = 49,368 lbs

4800 GAL OF 85% = 599

~ 6600 GAL OF 0.75%

166,542

= 116,575 lbs

SCOEPA00054948

To: Mike Pilkington

From: Murray Tilson

Subj: SOD Tank Level Descrepencies

Date: 8/25/86

1. I have reviewed tank level data for July and August to help substantiate positive TCE waste reductions and have determined that we have reduced actual SOD-H waste by approx. 22 % since the start of our Degreaser Bath TCE Recyle/Reduction Program.

2. I also reviewed tank level data for the other SOD tanks and found an increased discharge into the SOD-R and SOD-T tanks. This data is summarized below:

Time Period:	Ave. Daily Fill Rate (gpd)				
	SOD-H	SOD-R	SOD-T	SOD-C	Total
7/7 -7/14	196	19	160	10	285
8/18 - 8/25	152	45	357	8	562

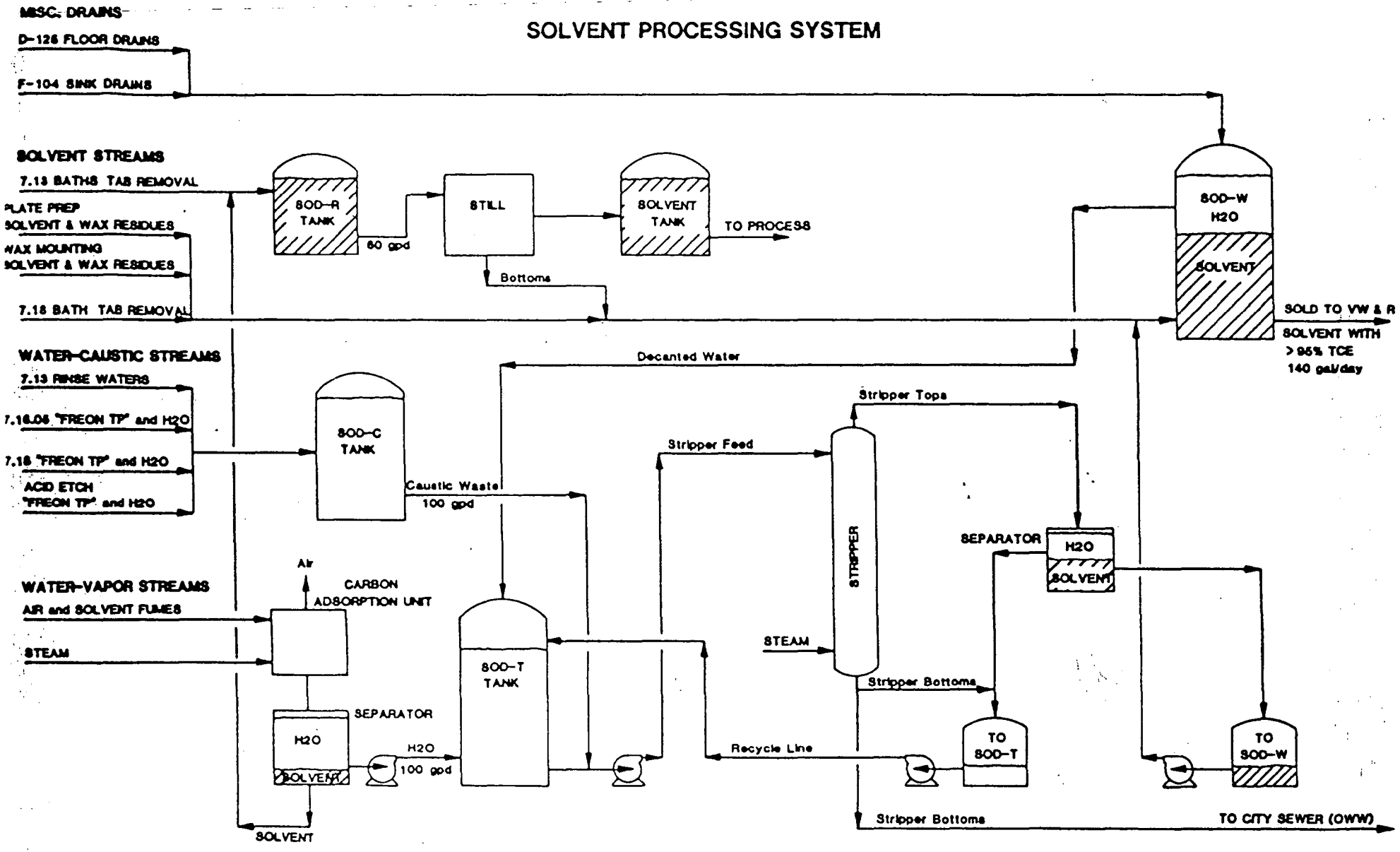
3. As discussed, I would like Facilities Maintenance to check out the Carbon Adsorbtion cooling condensor system to see if there is a leak causing this increased flow into the SOD-R and SOD-T during the past month.

cc: Greg Carr
Sam Pengelly
Dave Stalder
Jerry Schaeffer

9/2-9/5. 123 71. 125 9. 330.

SCOEPA00054949

SOLVENT PROCESSING SYSTEM



RECEIVED
APR 18 1985
WACKER SILTRONIC ENGINEERING

WACKER SILTRONIC CORPORATION

SPECIAL TEST REPORT: INCOMING INSPECTION

TEST METHOD DESCRIPTION AND IDENTIFICATION:

ANALYSIS OF ORGANIC WASTEWATER GRAB SAMPLE FOR TCE.
After liquid/liquid extraction of blanks, standards, and samples, the extracts were analyzed by gas liquid chromatography using the electron capture detector.

SAMPLE COLLECTED BY: Sam Pengelly DATE 3/28/85
17.00 hrs

SAMPLE ANALYZED BY: Elinor Levin DATE 4/2 and 4/9/85

RESULTS:

SAMPLE	TCE PPM
3/28/85 Organic Wastewater	5.9 PPM

COPIES SENT TO: Greg Carr, Jim Ellis, Murray Tilson
FORM# 107-016

SCOEPA00054951

RECEIVED
APR 15 1985
WACKER SILTRONIC ENGINEERING

WACKER SILTRONIC CORPORATION

SPECIAL TEST REPORT: INCOMING INSPECTION

TEST METHOD DESCRIPTION AND IDENTIFICATION:

ANALYSIS OF PROCESS WASTEWATER AND ORGANIC WASTEWATER GRAB SAMPLES FOR TCE

After liquid/liquid extraction of blanks, standards, samples, and samples with added TCE for recoveries of TCE, the extracts were analyzed by gas liquid chromatography using the electron capture detector.

SAMPLE COLLECTED BY: Sam Pengelly DATE 4/5/85
OWW 15:30 hrs.4/9/85 PWW 8:45 hrs OWW 8:55 hrs

SAMPLE ANALYZED BY: Elinor Levin DATE 4/9/85

RESULTS:

SAMPLE	TCE PPM	SAMPLE PLUS 0.52 PPM TCE ADDED TCE PPM	% RECOVERY
PWW 4/9/85	0.07	0.53	88%
OWW 4/5/85	1.20	1.33	25%
OWW 4/9/85	0.60	1.25	125%

COPIES SENT TO: Greg, Murray Tilson, Jim Ellis
FORM# 107-016

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WACKER SILTRONIC CORPORATION

RECEIV
APR 15
WACKER SILTRONIC ENGINEERING

SPECIAL TEST REPORT: INCOMING INSPECTION

TEST METHOD DESCRIPTION AND IDENTIFICATION:

ANALYSIS OF ORGANIC WASTEWATER GRAB SAMPLE FOR TCE.
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SAMPLE COLLECTED BY: Sam Pengelly DATE 3/28/85
17.00 hrs

SAMPLE ANALYZED BY: Elinor Levin DATE 4/2 and 4/9/85

RESULTS:

SAMPLE		TCE PPM	SAMPLE PLUS 0.52 PPM TCE ADDED TCE PPM	% RECOVERY
3/28/85	Organic Wastewater	5.9 PPM	1.03	85%

COPIES SENT TO: Greg, Murray Tilson, Jim Ellis
FORM# 107-016

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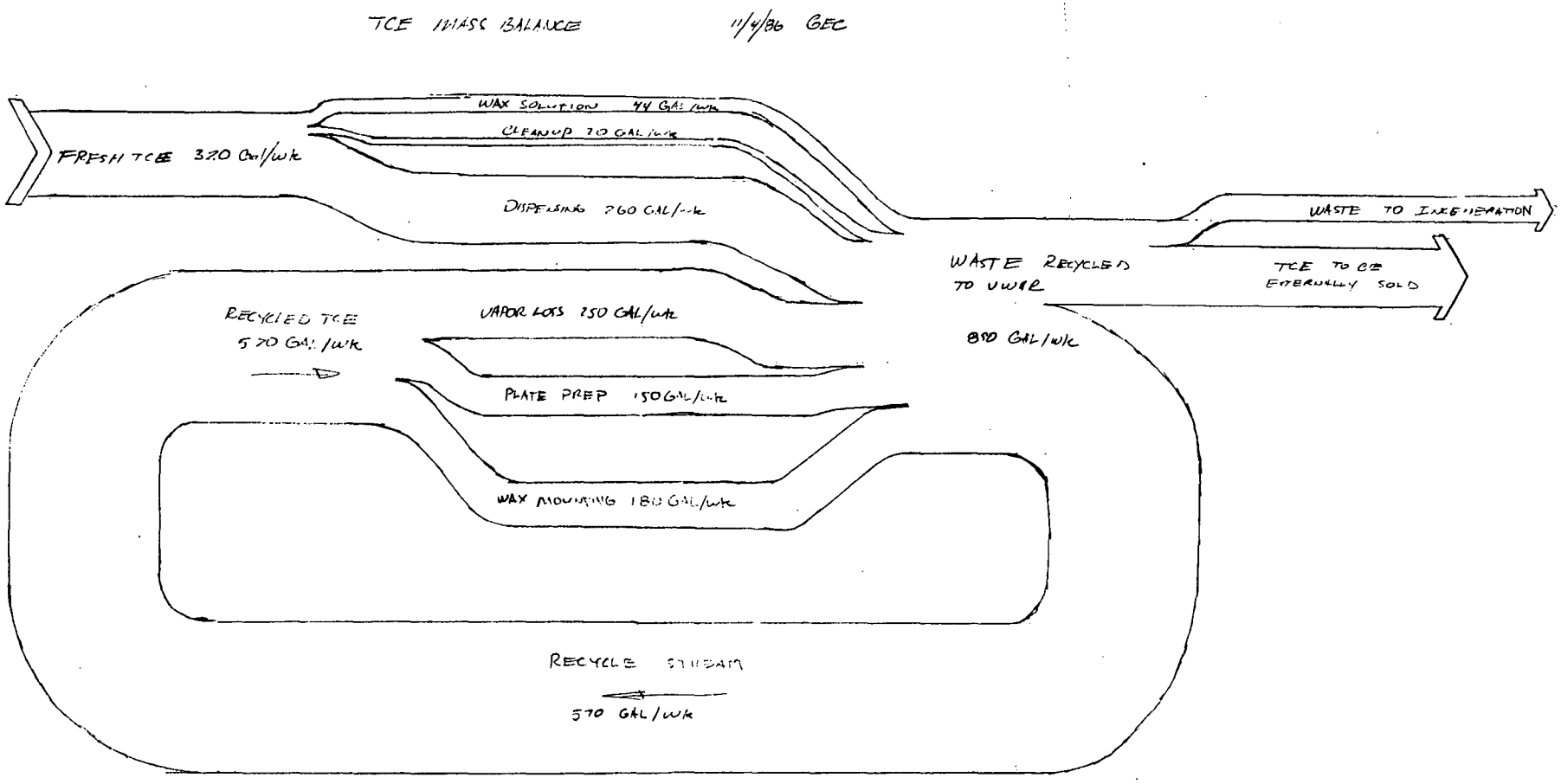

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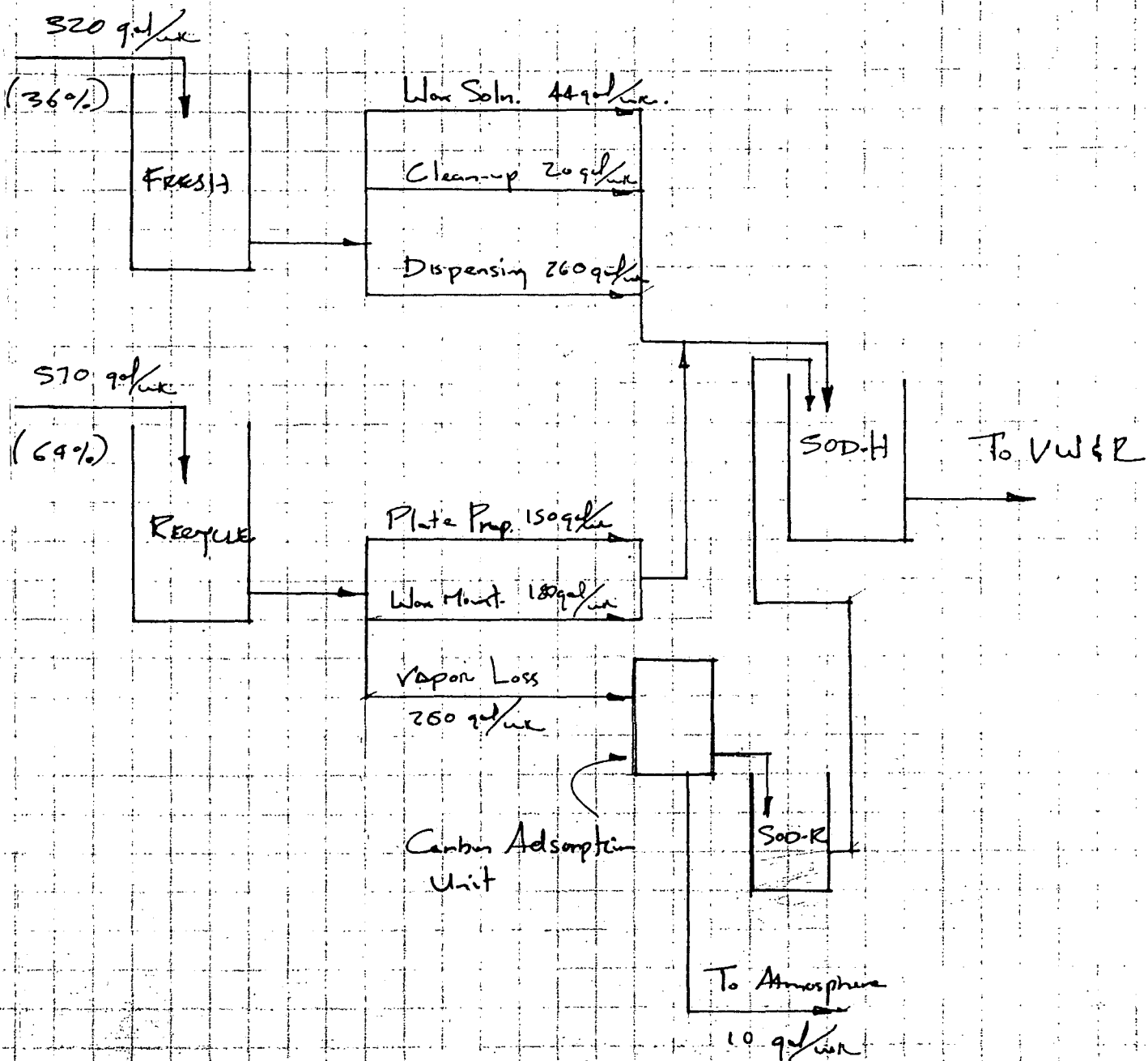
11/10/26

TCE Fresh / Recycle Usk



SCOEPA00054955

Greg Carr
Page -2-

TCE USAGE

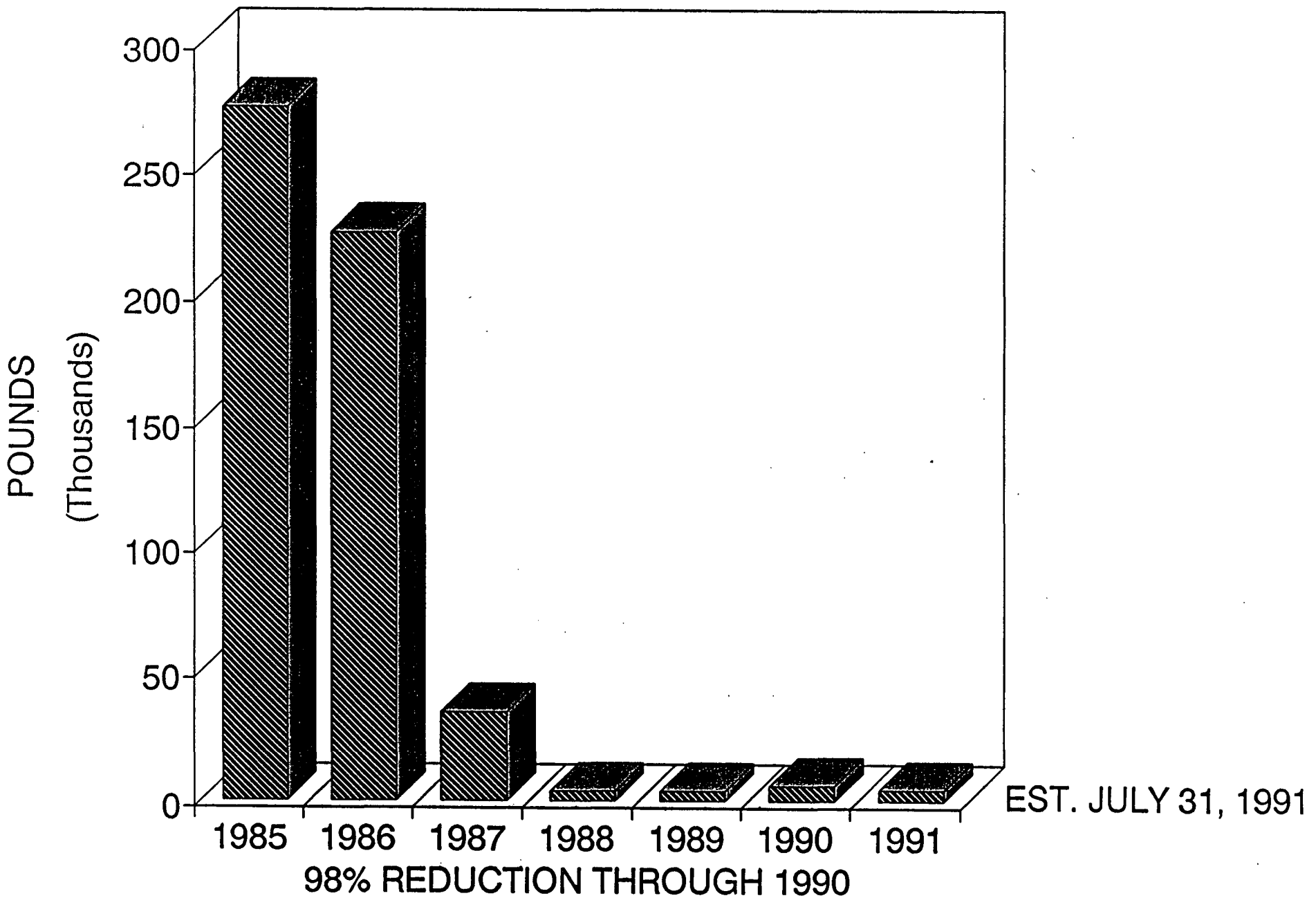
April 1986

Section 7	
7.13 Degreasers	30 Gallons/day
Section 8	
Wax Mounting Degreasers	100-150 gallons/day
Plate Prep	30 gallons/day
Wax Dispensing	20 gallons/day
Wax Make-Up	15 gallons/day
TOTAL	185-245 gallons/day

July 1983

Section 7	
7.13 Degreaser	30 gallons/day (20 gallons being recycled)
Section 8	
Wax Dispensing	56 gallons/day
Wax Make-Up	15 gallons/day
Wax Mounting Degreasers	11 gallons/day
Plate Prep	6 gallons/day
TOTAL	98 gallons/day

CHROME WASTE REDUCTION



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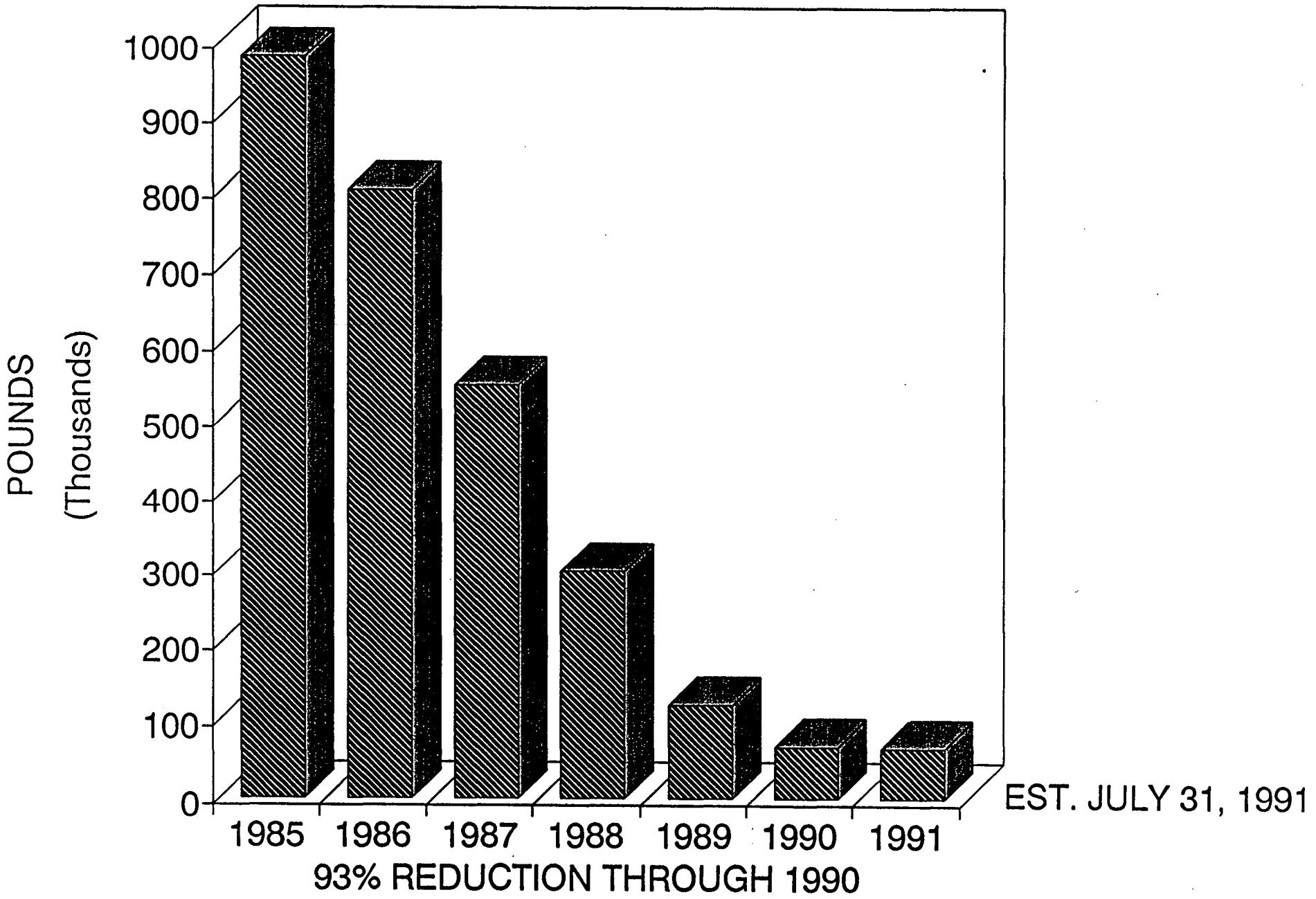
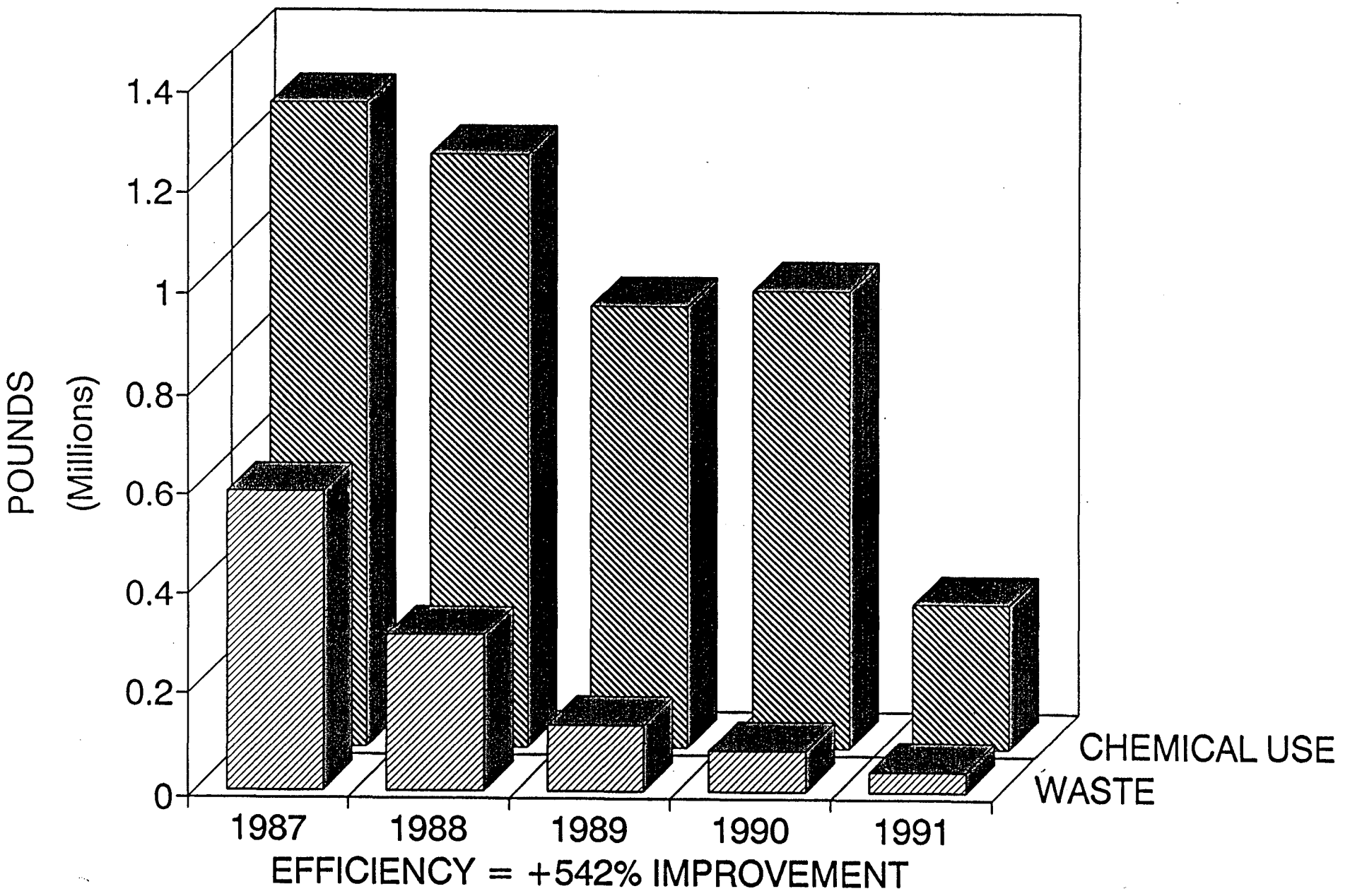
TOTAL SOLVENT WASTE REDUCTION



CHEMICAL USE VS WASTE GENERATED

EST. JULY 31, 1991



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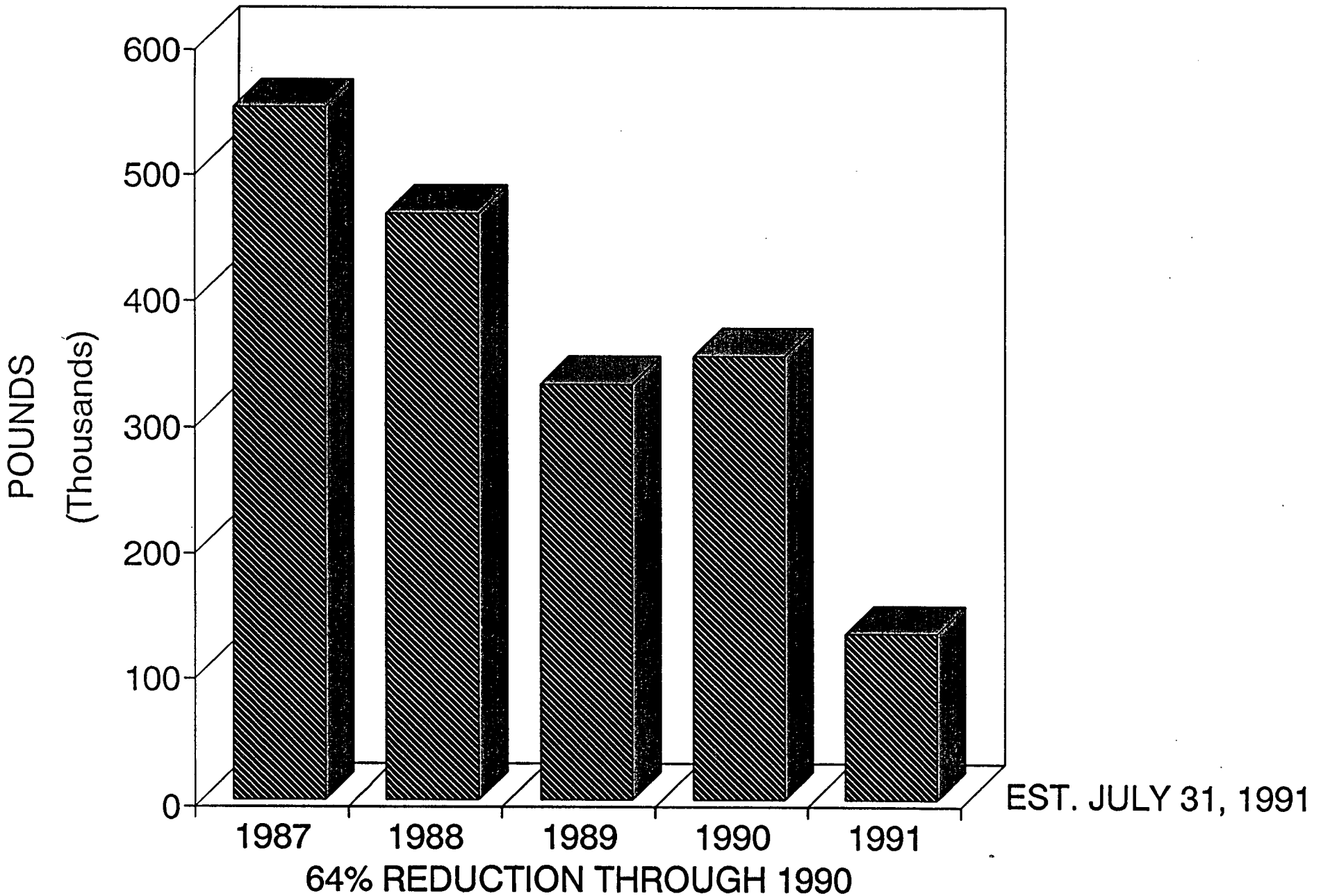
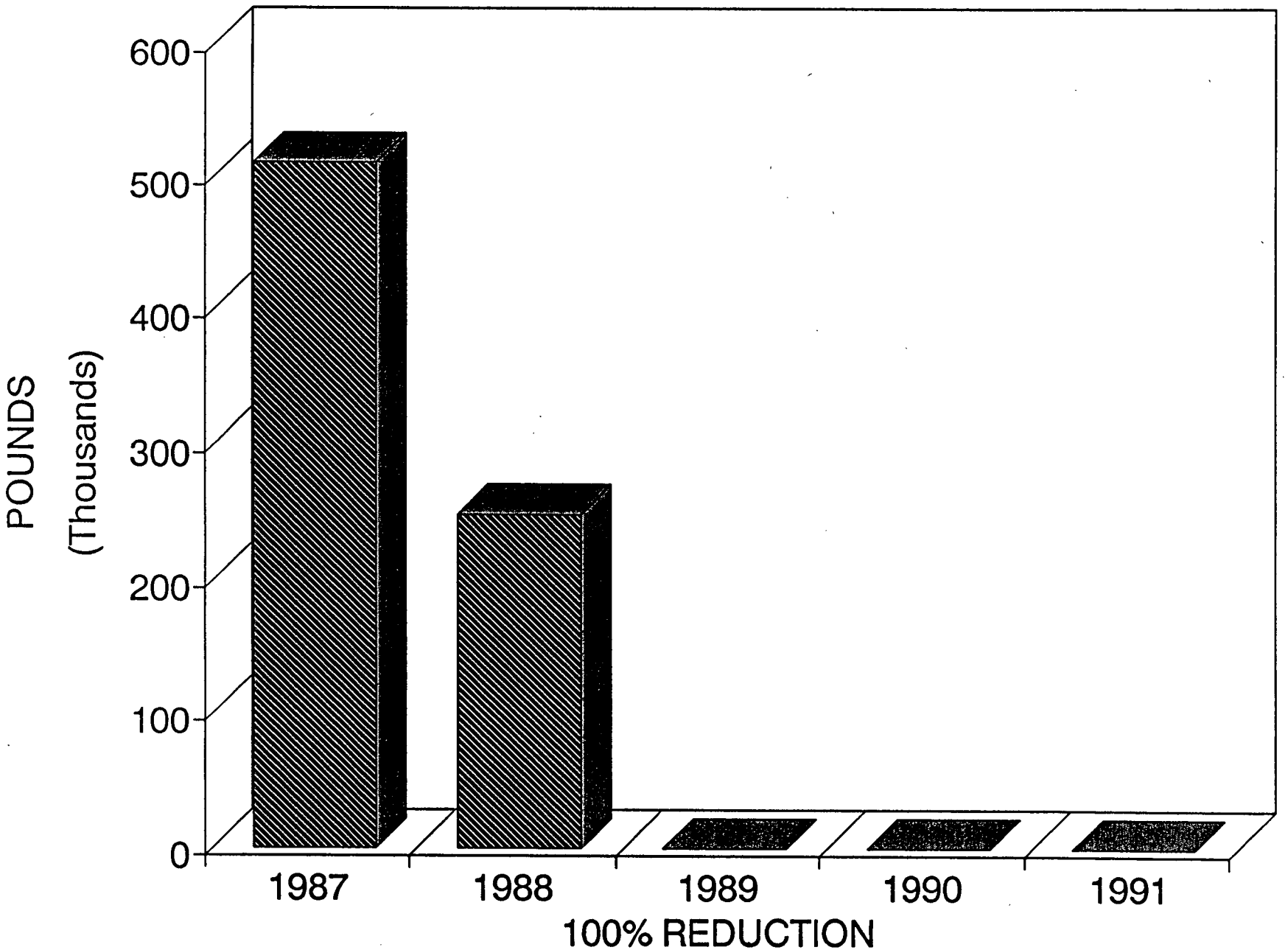
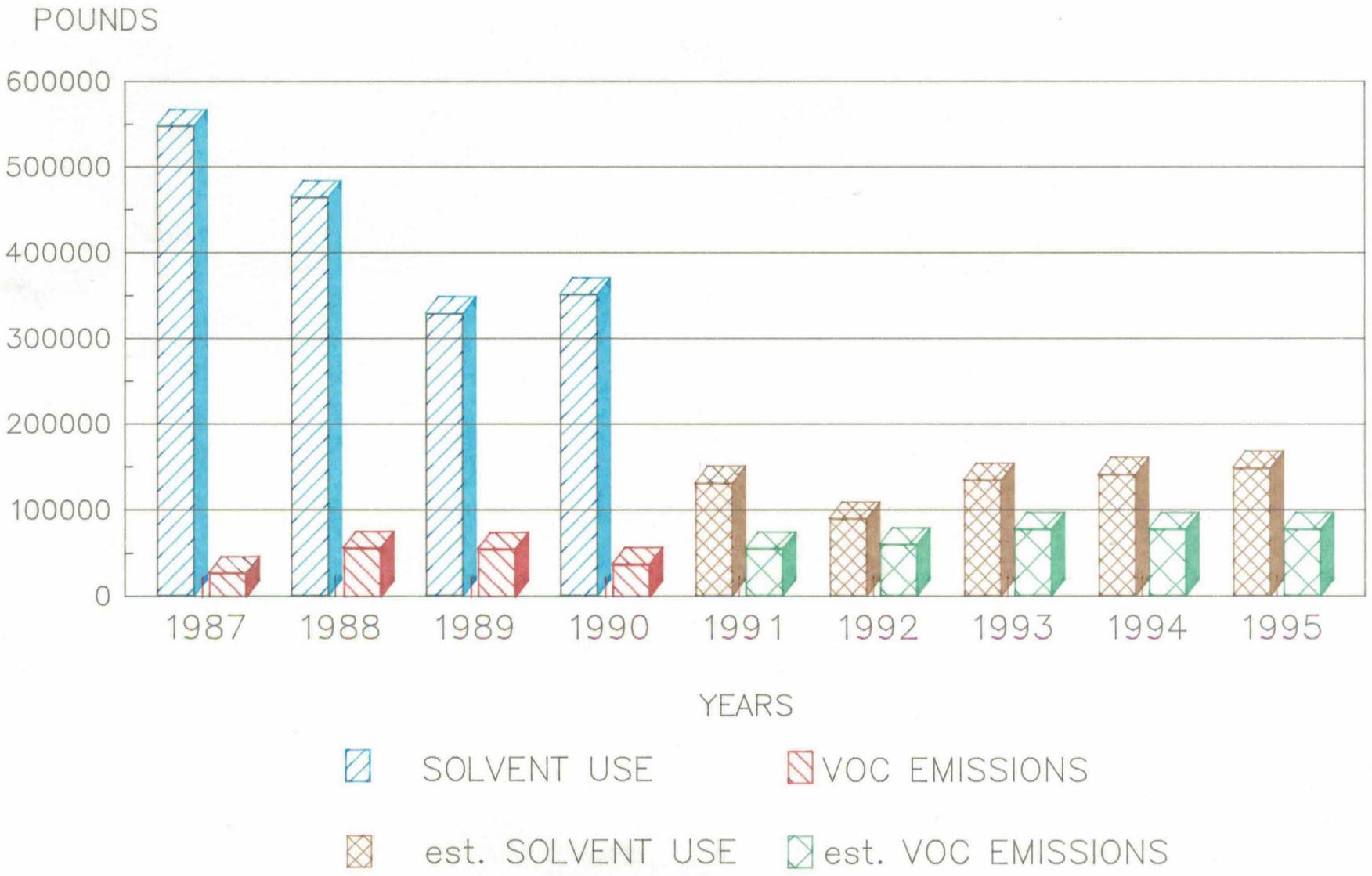
TOTAL SOLVENT USE REDUCTION



TCE USE REDUCTION



TOTAL SOLVENT vs. VOC EMISSIONS



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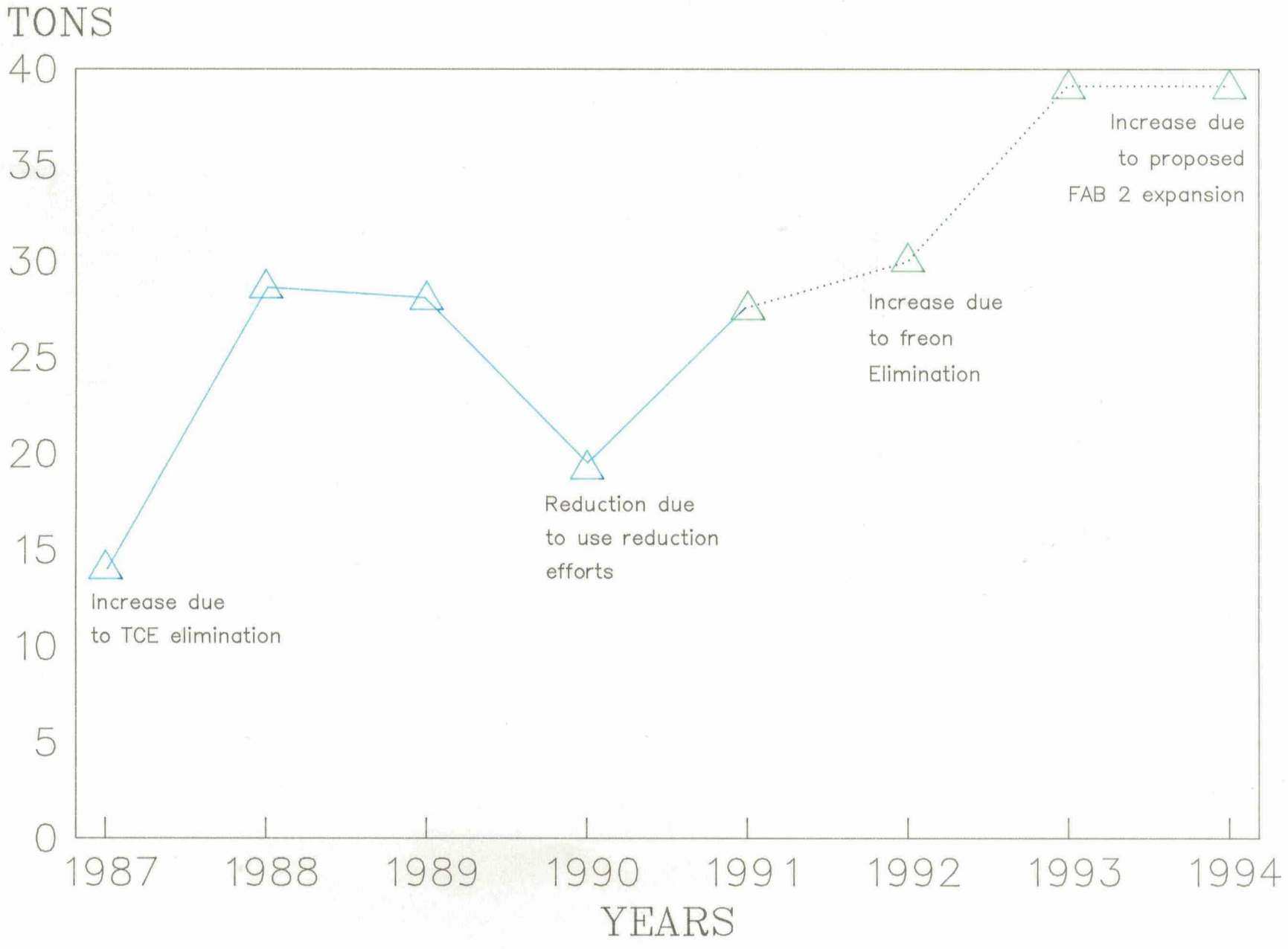
VOC EMISSIONS



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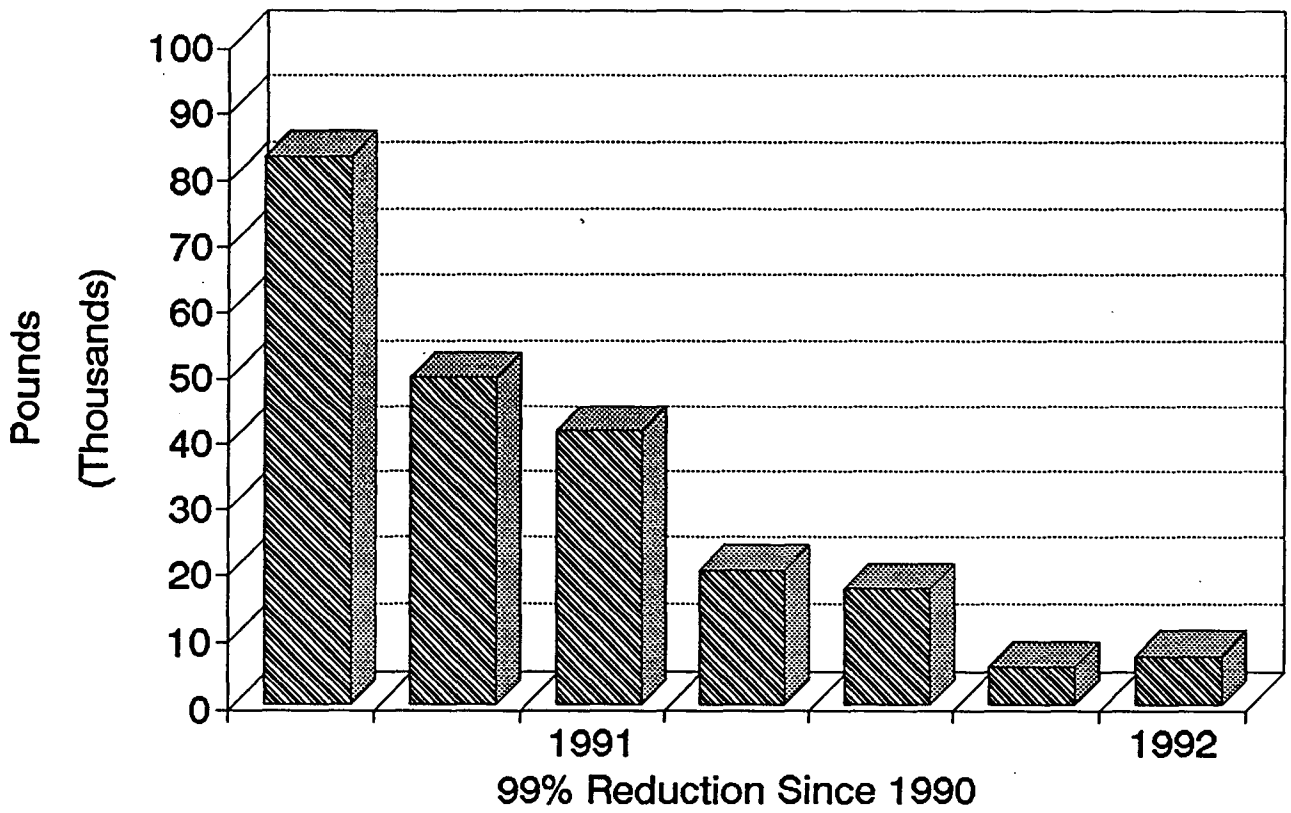
HAZARDOUS WASTE REDUCTION TARGETS

WASTE	1990	1991	1992	PRIORITY
Chrome	5,847	6,671	2,373	HIGH
Freon	68,354	59,832	5,534	HIGH
Solvents	2,533	1,420	2,115	LOW
Solid Waste	?	?	?	

Business Division Semiconductors of Wacker-Chemie

Freon Use Reduction



Wacker Siltronic Corporation

TMC 5/92

WACKER

Speed Letter®

From Murray Tilson To Jim Ellis

√Greg Coerr

Subject Waste Minimization – Solvent Wastes

– No. 9 & 10 FOLD

MESSAGE

Find attached the write-up to describe Siltronic's past and current programs/activities to minimize solvent wastes. This write-up should substantiate that we do have a program for solvents. We need the same sort of write-up for Freon and Ultrapure Acid. We meet next Tues. at 9:00 a.m. on this subject.

Date 1/10/85 Signed Jim

REPLY

– No. 9 FOLD

– No. 10 FOLD

Date Signed

Wilson Jones Company
GRAYLINE FORM 44-902 3-PART
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TURN OVER FOR USE WITH WINDOW ENVELOPE.

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WASTE MINIMIZATION PROGRAM
SOLVENT RECOVERY

1. CHRONOLOGY OF SOLVENT RECOVERY OPERATIONS

The original plant design included drain and collection systems for three (3) types of waste solvent streams. All three (3) of these systems utilized underground gravity-drain piping from the generation point in the process to buried tanks located in the South Yard Area of the plant. These systems included:

a.) SOD-T System - (Solvent-Organic Drain-Trace) - designed to collect all water wastes with a trace of organic-solvent wastes.

b.) SOD-R System - (Solvent-Organic Drain-Recycle) - designed to collect all organic-solvent wastes which are suitable for recycling back to the Siltronic process after distillation.

c.) SOD-W System - (Solvent-Organic Drain-Waste) - designed to collect all organic solvent wastes which are contaminated to such a degree that the stream must be distilled and recovered for consumption by an outside recycler.

The liquid collected in the SOD-T System is pumped through a steam stripper where the trace of solvent is vaporized, then condensed and transferred to the SOD-W System. The water stream from the stripper is virtually free of solvent and is directed to the city sewer.

The SOD-R System collects solvent mixtures which contain a large percentage of solvent, and are considered to be suitable for recycle to Wacker Siltronic processes. Using a still, this solvent portion is boiled off of the mixture to a recycle solvent holding tank. The solvent waste from the still is transferred to the SOD-W System.

The SOD-W System is designed to collect the aforementioned wastes from the SOD-T and SOD-R Systems as well as the solvent-rich streams from the process. There is enough water in this solvent-rich waste to form three (3) phases, i.e. a water phase, an emulsion phase and a solvent phase. Because most of the solvents are water-soluble to some degree, there is some solvent present in both the water and emulsion phases.

Originally these SOD-W wastes were collected in a buried tank, primarily due to the fact that all of the drains were gravity-fed. Because the phase interface levels could not be

accurately detected in the underground tank, the entire solvent mixture was pumped into a tank truck and shipped to Van Waters and Rogers for solvent recovery and subsequent outside sale. However, due to the presence of variable quantities of water in this stream, Van Waters and Rogers' refining process produced an aqueous by-product which had to be shipped to the Arlington Disposal Site.

It was apparent that waste generation could be minimized if only the solvent phase could be separated and sent to Van Waters & Rogers for recovery. The emulsion and water phases could then be transferred to the SOD-T system where the solvent could be recovered and sent back to the SOD-W system, ultimately finding its way to Van Waters and Rogers in the solvent phase shipments.

During the Second Quarter of 1982, a modified process was developed to allow for better separation of the SOD-W waste. To effect this separation an above-ground tank and containment basin was installed in July, 1982 and put into operation during August, 1982.

Figure No. 1, attached, indicates the total quantity of raw solvent waste shipped to Van Waters and Rogers, for recovery, per unit of production volume. The effect of the aforementioned process change is made apparent by the data presented in Figure No. 1. Prior to August 1982 the solvent mixture shipped to Van Waters and Rogers averaged 390 gallons per production unit. After installation of the above ground tank in August, 1982, Van Waters and Rogers' shipments have averaged only 163 gallons per production unit. This represents a 58% reduction in raw solvent waste volume. The true results are even better, as the 163 gallon average figure has been adversely affected by unusually high waste solvent shipments during the period January - July, 1985 when the solvent stripper was out of operation.

Consistent with the above-mentioned waste volume reductions, it is interesting to note the reduction of aqueous by-product shipped by Van Waters and Rogers to the Arlington Disposal Site:

1981	96,436 gallons
1982	167,650 gallons
1983	1,304 gallons
1984	12,717 gallons

The significant reductions shown for 1983 and 1984 are attributable to two (2) factors:

SCOEPA00054969

a.) The aforementioned reduction in waste solvent shipped to Van Waters and Rogers from Wacker Siltronic, and,
b.) The higher concentration of recoverable solvent in the waste solvent mixture from Wacker Siltronic.

In the second quarter of 1983, further process changes were made to allow for separate collection of those solvent wastes which tend to form emulsions. This change was made possible with the addition of the SOD-C system, which increases the efficiency of solvent separation in the emulsions by providing a means to feed the steam stripper with either a 100% emulsion stream or a 100% water phase stream rather than a mixture.

Wacker Siltronic has also initiated a source reduction program in an attempt to minimize waste solvent. In 1981, Trichloroethylene (TCE) was totally eliminated as a solvent for degreasing wafers in the final cleaning step. This change reduced waste TCE generation by approximately 50 gallons per day. Current programs are underway to eliminate or reduce TCE from two other cleaning operations in the process.

This report will be updated as more data is gathered and as further improvements, related to waste minimization, are put into operation.

JRE:ll

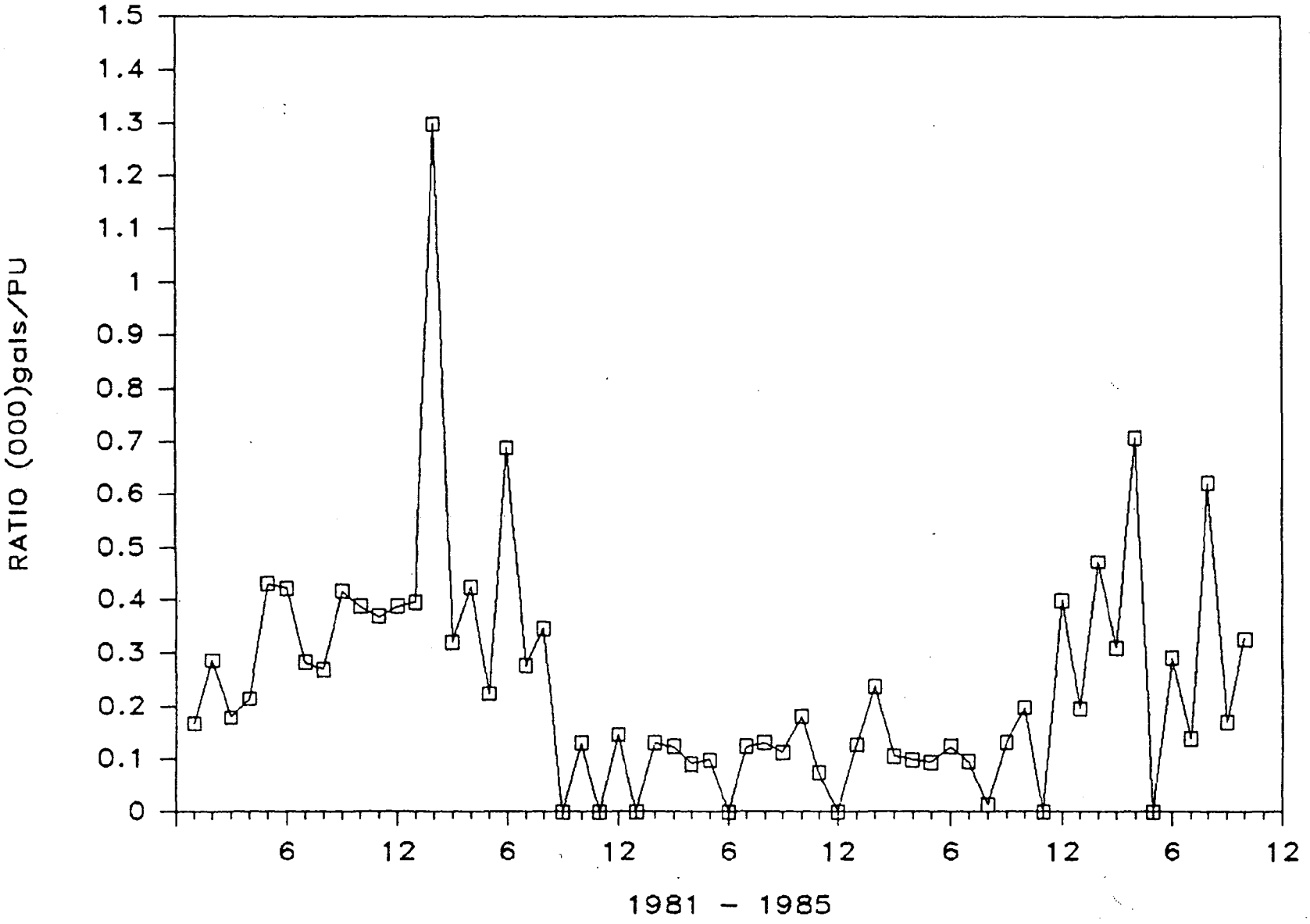
James R. Ellis
11/19/85 JRE

SCOEPA00054970

Figure No. 1

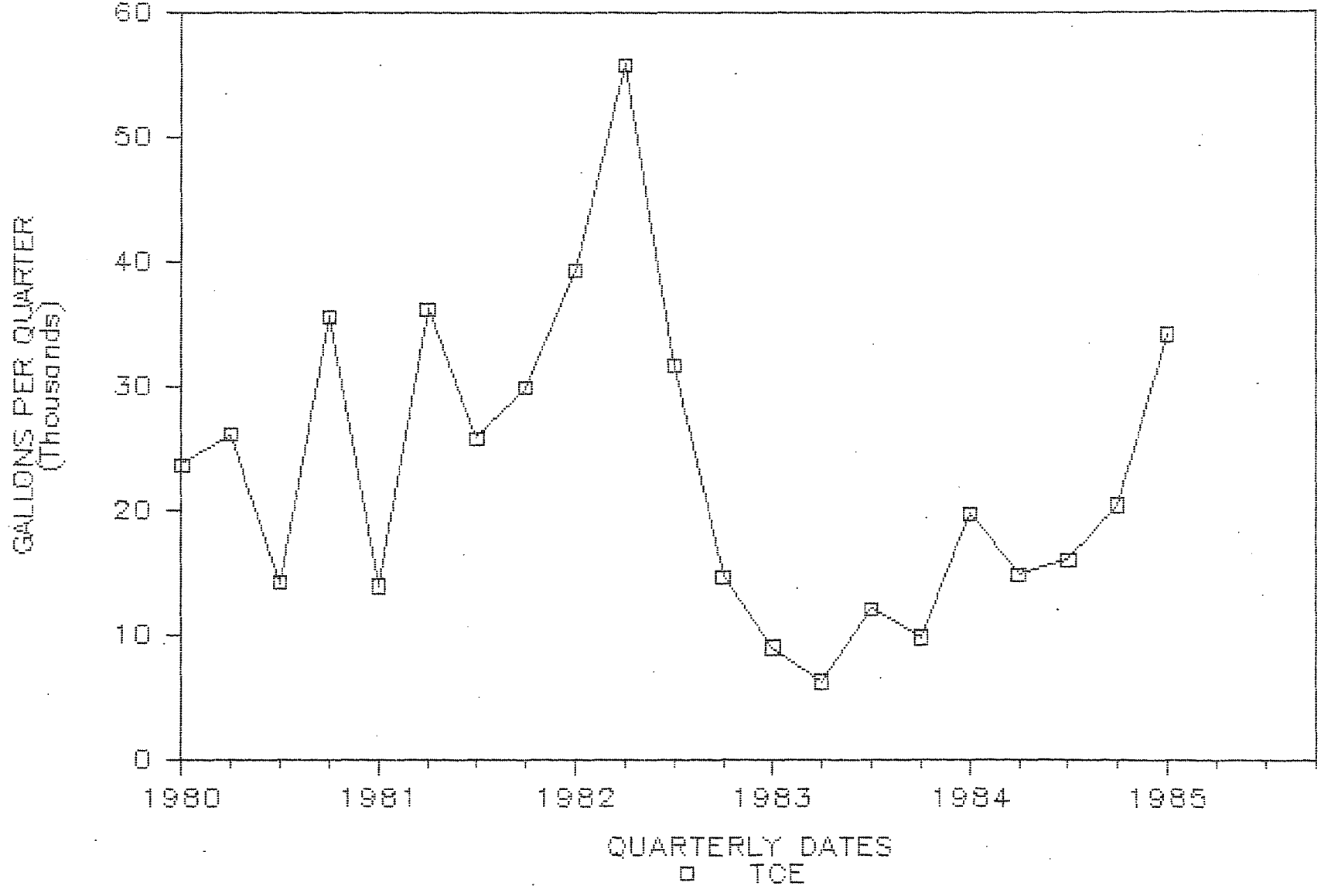
SOLVENT RECOVERY VOLUME

WACKER SILTRONIC CORPORATION



HAZARDOUS WASTE SHIPMENTS

WACKER SILTRONIC CORPORATION



TCE WASTE DISPOSAL PROBLEM 6/17/86

CURRENT PROBLEM:

1) Our current rate of TCE Waste production exceeds VW&R's capacity to handle our waste stream.

   a) VW&R have removed themselves from the Hazardous Waste Treatment business EXCEPT for taking our TCE waste.

   b) They can distille and sell a portion of our waste stream as Recyle TCE but are unable to handle 100% of our present load.

2) VW&R can only keep our TCE waste on their site as waste TCE for 10 days. After 10 days the waste must be processed and stored for sale as Recylce TCE.

POSSIBLE SOLUTIONS:

1) Reduce TCE consumption within the plant.

2) Use Recycle TCE in process areas where allowed. This problem has been discussed with Bill McCord of Process Engineering. Apparently if the percent water limits are met and stabilizers are added the Wax Mounting Degreasers stations could use Recylce TCE.

The remainder of this discussion will present a historical overview of TCE Consumption and Waste Disposal since 1983.

A cost analysis is presented showing volume and dollar savings if Recycle TCE can be used in the Wax Mounting Degreaser operation.

SCOEPA00054973

HISTORICAL SUMMARY 6/17/86

VIRGIN TCE CONSUMPTION

YEAR:	CONSUMPTION (lbs/YR)	PERCENT CHANGE (1984 Base)
1983	768,000	-
1984	720,000	-
1985	848,870	+17.9
1986 (projected)	920,000	+27.8

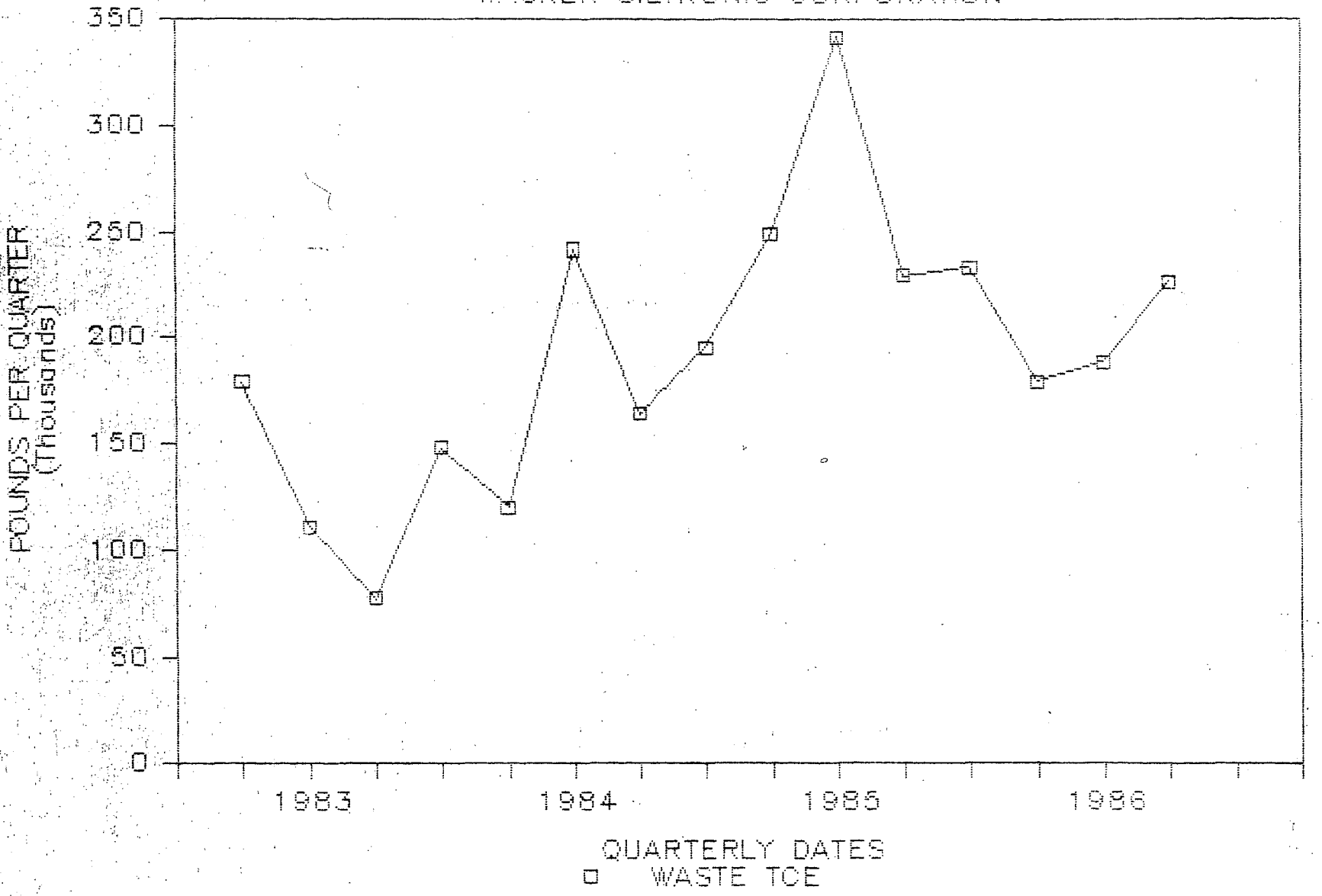
WASTE TCE SHIPPED TO VW&R

YEAR:	WASTE SHIPPED (lbs/yr)	PERCENT CHANGE (1984 Base)
1983	457,400	-
1984	851,180	-
1985	985,400	15.8
1986 (projected)	998,200	17.3

SCOEPA00054974

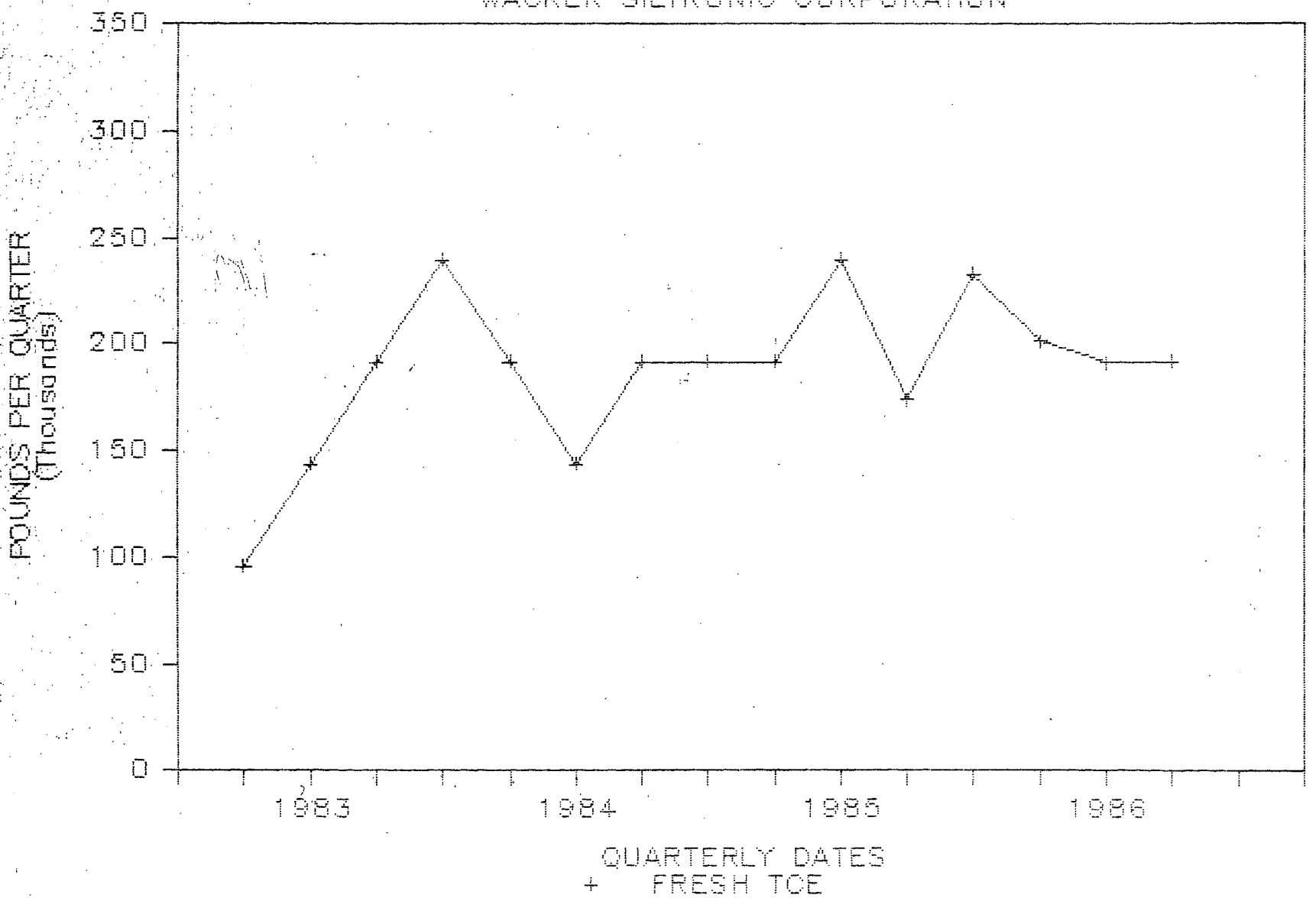
HAZARDOUS WASTE SHIPMENTS

WACKER SILTRONIC CORPORATION



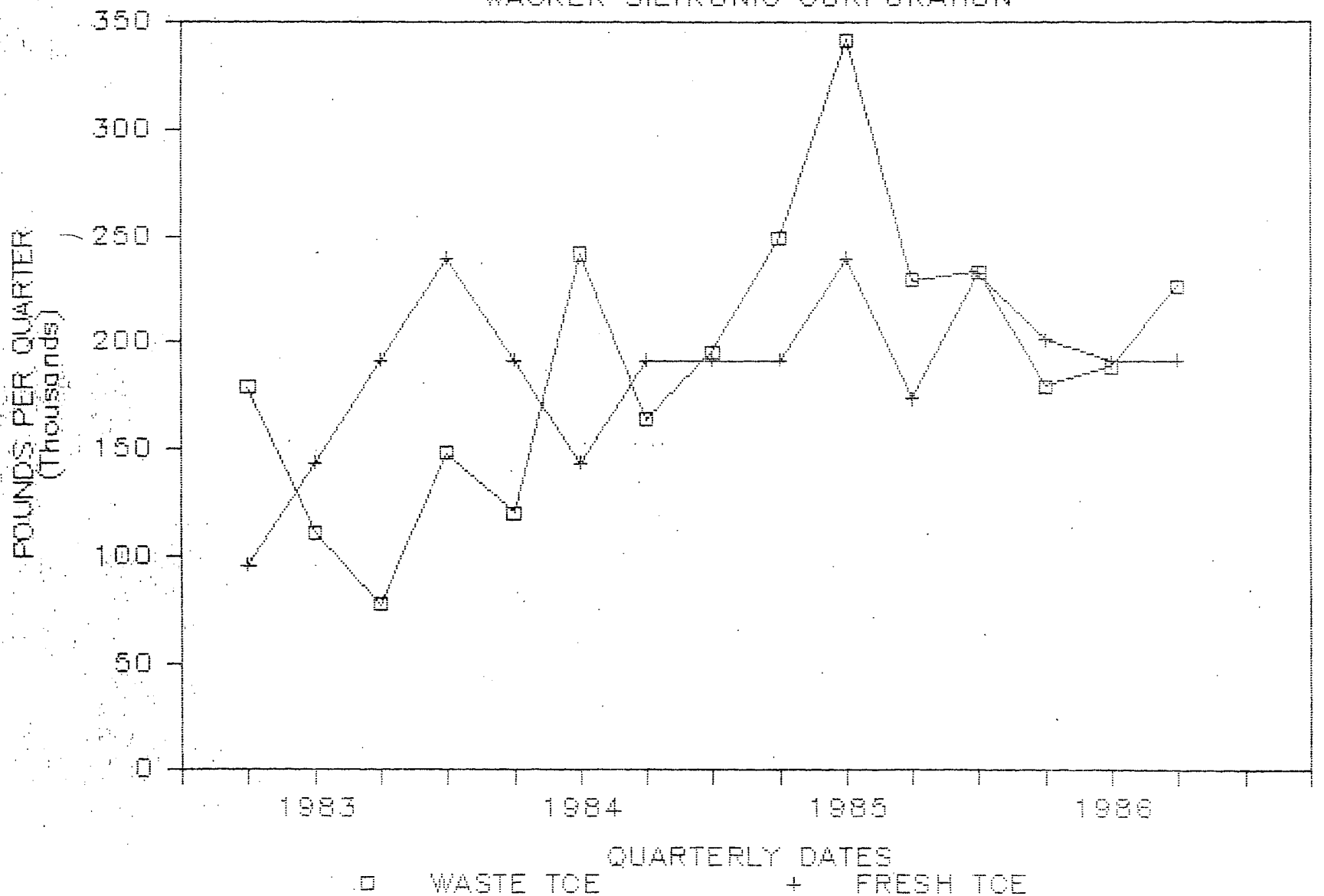
HAZARDOUS WASTE SHIPMENTS

WACKER SILTRONIC CORPORATION



HAZARDOUS WASTE SHIPMENTS

WACKER SILTRONIC CORPORATION



TCE USAGE

April 1986

Section 7	
7.13 Degreasers	30 Gallons/day
Section 8	
Wax Mounting Degreasers	100-150 gallons/day
Plate Prep	30 gallons/day
Wax Dispensing	20 gallons/day
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TOTAL	185-245 gallons/day

July 1983

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Wax Make-Up	15 gallons/day
Wax Mounting Degreasers	11 gallons/day
Plate Prep	6 gallons/day
TOTAL	98 gallons/day

PRELIMINARY ANALYSIS 6/17/86

TCE RECYCLE/COST ANALYSIS

1) PRESENT SITUATION:

Virgin TCE Cost = $0.358/lb

Est. Annual Use (1/85-12/86) = 920,000 lbs/yr

Est. Annual Cost = 920,000 lbs/yr x $0.358/lb

= $329,360/yr

2) NET SAVINGS/LB WITH RECYCLE TCE:

Virgin TCE Cost = $0.358

Less Recycle TCE Cost = $0.280

Net Savings = $0.078/lb

3) POTENTIAL FOR RECYCLE TCE USE:

Wax Mounting Degreasers: 100 to 150 gal/day

Monthly Potential Savings = 125 gal/day x 6 day/wk x 4 wk/mo

= 3,000 gal/mo

= 3,000 gal/mo x 8.34 lb/gal x 1.464

= 36,630 lb/mo

4) NET MONTHLY DOLLAR SAVINGS:

Monthly Savings = 36,630 lb/mo x $0.078/lb

= $2,857/mo

Annual Savings = $34,286/yr

SCOEPA00054979

MEMO TO: DICK MCMANUS
RUSS MILLER
GREG WINN
DOUG MILLER
DAVE COLE
MURRAY TILSON
DON BARCKLEY

APR 4 cc: Mike Greg Tom

FROM: RAY GOODE RRG

SUBJECT: WATER WAX PROGRESS REPORT - WEEK ENDING 4/1/88

WAX STREET #2 HAS SLIPPED TWO WEEKS BEHIND SCHEDULE FOR STARTUP. PROBLEMS WITH LOCATING BAD PNEUMATIC LOGIC MODULES AND ERRONEOUS TUBE CONNECTIONS, COMPOUNDED BY SHUTDOWN TIME TO FIX STEAM LEAKS INITIATED BY THE COLD STARTUP, ARE THE REASONS FOR THE DELAY. RALPH WADE, JOSEPH WALLNER, AND BOB CRAWFORD ARE WORKING ON THE FINAL LOGIC PROBLEM, WHICH INVOLVES CORRECTING A LATCHING DIFICULTY WHICH PREVENTS CARRIER MOVEMENT AFTER WAFER DEPOSITION.

PLATE PREP CLEANING STREET #3 CONVERSION IS COMPLETE AND RE-PROGRAMMED TO RUN IN THE MODIFIED MODE. THE STREET IS SCHEDULED FOR TRYOUT AS SOON AS THE PROBLEM WITH WAX STREET #2 IS RESOLVED.

HAVING GAINED SOME EXPERIENCE IN MODIFYING THE FIRST CLEANING STREET, WE EXPECT TO TRIM TWO WEEKS OFF THE NEXT STREET'S FOUR WEEK CONVERSION SCHEDULE, AND HOPEFULLY MEET THE APRIL 22 TARGET TCE CUTOFF DATE.

WAX ST. #2	STATUS	COMMENTS
WAX SUPPLY	COMPLETE	FLOAT SWITCHES INSTALLED.
WAX DOSING	COMPLETE	STATION CHARACTERIZED.
AUTOPALLET/BAD PLATE BYPASS	INSTALLED	LOGIC PROBLEMS BEING WORKED ON.
HEATING STATIONS	COMPLETE	STEAM LEAKS CORRECTED.
AMMONIA RINSE	COMPLETE	STATION CHARACTERIZED.
AMMONIA SUPPLY	INSTALLED	READY FOR USE 4/4/88.

P. CLEAN ST. #3	STATUS	COMMENTS
MECH. CONVERSION	COMPLETE	TRYOUT WEEK OF 4/4/88.
CONTROL MOD.	COMPLETE	TRYOUT WEEK OF 4/4/88.

ATTACH. (1)

SCOEPA00054980

NEIL GOLDSCHMIDT
GOVERNOR

Department of Environmental Quality

cc: John Pittman
Greg Carr

811 S.W. SIXTH AVENUE, PORTLAND, OREGON 97204 PHONE: (503) 229-5696

RECEIVED
APR 10 1987
WACKER SILTRONIC
ENGINEERING

April 7, 1987

Dan McCaskill
Van Waters & Rogers
Box 5932
San Mateo, CA 94402

Re: Van Waters & Rogers
HW - Multnomah County

Dear Mr. McCaskill:

At your request, the Department has reviewed its interpretation of 40 CFR 261.6(c)(2) as stated in my letter to you dated December 16, 1986. This regulation exempts recycling facilities from permit and other requirements if the waste is not stored prior to recycling.

In applying this regulation to your specific operation, the definition of "storage" is a key issue. Storage is defined in 40 CFR 260.10 as "the holding of hazardous waste for a temporary period . . .". It is the Department's decision that storage does not occur during your current operation because the recycling takes place on consecutive work days and the truck containing the material to be recycled does not arrive before you are prepared to recycle. Therefore, you may continue your current operation under the exemption provided by 40 CFR 261.6(c)(2). Changes in your operation may require a reassessment of the applicability of this regulation.

Should you decide to discontinue your operation, you must "close" your facility in accordance with 40 CFR 265.197 and 265.111. 40 CFR 265.115 requires a certification of closure by a registered professional engineer to insure that the tanks and related equipment are properly decontaminated before being scrapped or used for another purpose.

Thank you for your patience and for working with us to accomplish our common goal of environmental protection. If you have any questions on this interpretation or any other matters, please contact me at (503) 229-5296.

Sincerely,

Edward Woods

Edward G. Woods
Senior Environmental Analyst
Northwest Region

EGW:p
RP469
cc: Murray Tilson, Wacker Siltronics
Hazardous & Solid Waste Division, DEQ

Q-1A (2-86)

To: TCE Recycle Committee

From: Murray Tilson MT

Subj: Summary of 7/15/86 Meeting

Date: 7/16/86

The following will serve as a summary of our meeting on 7/15/86 with the attendees listed below relating to the recyling of TCE in the Wax Mounting Degreaser Baths:

1. The following was agreed upon by those in attendance as to what parameters and limits should be incorporated into a Preliminary Specification for Recycle TCE:

Test:	Exist. Fresh TCE:	Recycle TCE:
Residue on Evap.	10 ppm max.	10 ppm max.
Specific Gravity	1.460 - 1.464	1.455 - 1.460
Color	10 APHA max.	15 APHA max.
Water	63 ppm max.	100 ppm max.
Other Constituents	-	< 3 %

2. Greg Carr reported that any of the following substances could be found in the SOD-H tank and ultimately in the Recycle TCE stream:

Acetone	Freon TP
Butyl Alcohol	Butyl Acetate
Freon TF	Ethyl Alcohol
Freon TMC	Isopropyl Alcohol
Freon TE	

Judy Duncan acknowledged that any type of lab waste could be found in the SOD-H tank as a result of dumping in the sink in F-104. It was felt that these minor constituents would have no negative effect on the process.

3. It was estimated that the total percent contaminants should not exceed 3 percent.

4. Process Engineering has performed some base-line testing on Fresh TCE in the Wax Mounting Degreaser Baths and will do further testing prior to using Recylce TCE.

5. Greg presented a piping diagram tracing the Fresh and Recylce piping from the tanks to the end users. The recycle piping was shown to serve the 7.13 and 7.17 machines, Wax Mounting Degreaser Bath and Plate Prep Degreaser Bath.

6. Judy Duncan confired with Wynn of VW&R and said that calcium chloride could be found in the residue (less than 10 ppm).

SCOEPA00054982

Action Items/Recommendation:

1. It was agreed that a 5,000 gallon shipment of Recylce TCE could be ordered from VW&R at this time.

2. Greg Winn would prepare a Purchase Order Requisition and submit it to Dick Conlee for purchasing. It was agreed that this material would be ordered later this week.

3. The Preliminary Specification listed in this memo would be used as the basis of certifying each shipment of Recycle TCE until further changes are made.

4. Once the material is delivered further coordination will be done between Manufacturing, Process Engineering, the Lab and the Environmental Engineering Dept. to insure a smooth transition in the changeover to Recylce TCE in the Degreaser Operations.

Attendees:

Bill McCord
Judy Duncan
Greg Carr
Dick Conlee
Murray Tilson

cc: John Pittman
Russ Paul
Russ Miller
Jim Ellis
Jerry Schaeffer

SCOEPA00054983

WACKER SILTRONIC CORPORATION

SPECIAL TEST REPORT: INCOMING INSPECTION

TEST METHOD DESCRIPTION AND IDENTIFICATION:

TCE SAMPLE FROM VWR WAS TESTED ON COLOR, SPECIFICATION AT @20 DEGREE C, AND RESIDUE ON EVAPORATION BY FOLLOWING WACKER PROCEDURE.

Recycled TCE: worst material they have.

SAMPLE COLLECTED BY: VWR DATE: 5/12/86

SAMPLE ANALYZED BY: NANCY LAO DATE: 5/13/86

DATE

DATE

RESULTS:

COLOR: > 15 APHA, (MAX 10 APHA)

SPECIFIC GRAVITY: 1.4571 g/ml, (1.460 to 1.464 g/ml)

RESIDUE: 6.7 PPM, (MAX 10 PPM)

COPIES SENT TO: Murray, Bill McCord

FORM# 107-016

Further testing on this sample on hold since Murray is working with VWR to arrange for a known material re-cycled specifically for us.

SCOEPA00054984

WACKER

VENDOR CONTACT REPORT

Murray
Dick

DATE 5/13/86

VENDOR VWR

REPRESENTATIVE ~~Judy D~~ Wynn Perryman / Helen

PHONE 222-1721

WACKER REPRESENTATIVE Judy Duncan

SUBJECT Recycled TCE samples

- Mike Harvey not in
- Spoke to Wynn - she doesn't know where the samples came from. Probably didn't test the combined batch mixture although she tested the individual batches. I would need to speak to Mike Harvey to request and test results. also to find out where sample came from. She runs water, acidity, residue & adds inhibitor package
- Spoke to Helen (order desk) - It was ran Fri - Its tested on a batch basis. She doesn't know where the sample came from. She will talk to Mike Harvey to find out what went into our samples. Left message w/ Sally. She will have mike talk to Helen & give me a call back.
- Mike Harvey - the TCE is the dregs of an almost empty tank. It is the worst we will ever see. They will dedicate a tank if we request it. We suggested holding off further testing until they get material we will see in a week or two. Explained that Murray had been asked to rush this through so we could use material they couldn't get rid of & so he could have them (VWR) pick up waste TCE. Michael will call Murray as they can still take the waste & Murray told me we can hold further testing for now.

SCOEPA00054985

WACKER

TCE SOLVENT SYSTEM

DATE 7/30/86 DAYS RD NIGHTS OP

	SOLVENT STORAGE		WASTE STORAGE				
	FRESH	RECYCLE	SOD-T	SOD-R	SOD-H	SOD-C	CR_6
0200	55	32	54%	72	7'6"	28	17.5
0600	55	32	54%	72	7'8"	28	17.5
1000	55	36	55	74	7'9"	28	18
1400	55	35	55	75	7'9"	28	19
1800	55	35	56	75	7'11"	28	19
2200	53	31	56	75	7'11"	28	19

STILL: ON _____ OFF _____

STRIPPER: ON _____ OFF _____ GPM _____

Eng. Form No. 26

WACKER

TCE SOLVENT SYSTEM

DATE 7/31/86 DAYS RD. NIGHTS PT/RL

	SOLVENT STORAGE		WASTE STORAGE				
	FRESH	RECYCLE	SOD-T	SOD-R	SOD-H	SOD-C	CR_6
0200	53	31	56	75	7'11"	28	18
0600	53	31	56	75	7'11"	28	18
1000	53	34	56	75	8'2"	30	19
1400	54	34	56	75	8'3"	30	19
1800	53	34	57	76	8'3"	30	21
2200	52	30	57	76	8'4"	30	22

STILL: ON _____ OFF _____

STRIPPER: ON _____ OFF _____ GPM _____

Eng. Form No. 26

REV. 1 5/20/86

SCOEPA00054986

WACKER

TCE SOLVENT SYSTEM

DATE 8/11/86 DAYS GS GK NIGHTS PT

	SOLVENT STORAGE		WASTE STORAGE				
	FRESH	RECYCLE	SOD-T	SOD-R	SOD-H	SOD-C	CR_6
0200	39	26	66	84	Full	33	26
0600	39	26	66	85	"	34	27
1000	39	28	67	85	11'6"	34	27
1400	39	28	68	85	6'8"	34	27
1800	39	26	68	87	6'8"	34+	27
2200	38	24	68	87	6'8"	34	30

STILL: ON _____ OFF _____

STRIPPER: ON _____ OFF _____ GPM _____

Eng. Form No. 26

WACKER

TCE SOLVENT SYSTEM

DATE 8/12/86 DAYS GS GK NIGHTS PT

	SOLVENT STORAGE		WASTE STORAGE				
	FRESH	RECYCLE	SOD-T	SOD-R	SOD-H	SOD-C	CR_6
0200	38	23	68	87	6'8"	34	30
0600	38	23	68	87	6'10"	34	30
1000	39	27	69	88	6'11"	34	>30
1400	40	27	66	89	7'0"	35	31
1800	38	25	52	90	7'2"	35	31
2200	11	11	11	11	11	11	11

STILL: ON _____ OFF _____

STRIPPER: ON 1030 TO SODT OFF 1300 TO OWW GPM _____

Eng. Form No. 26 REV. 1 5/20/86

A

WACKER

TCE SOLVENT SYSTEM

DATE 8/13/86 DAYS RD NIGHTS S

	SOLVENT STORAGE		WASTE STORAGE				
	FRESH	RECYCLE	SOD-T	SOD-R	SOD-H	SOD-C	CR_6
0200	37	22	51%	90	7'3"	35	30
0600	37	22	51%	90	7'4"	35	30
1000	37	24	51	92	7'5"	35	~~30~~
1400	38	25	50	93	7'6"	36	30
1800	38	25	46?	93	7'8"	35	35
2200	36	20	53	93	7'8"	35	36

STILL: ON _____ OFF _____

STRIPPER: ON _____ OFF _____ GPM _____

Eng. Form No. 26

WACKER

TCE SOLVENT SYSTEM

DATE 8/14/86 DAYS RD NIGHTS PT/RL

	SOLVENT STORAGE		WASTE STORAGE				
	FRESH	RECYCLE	SOD-T	SOD-R	SOD-H	SOD-C	CR_6
0200	36	2-R	[illegible]	93	7'8"	[illegible]	36
0600	36	19	55	94	7'8"	36	36
1000	37	23	50	97	7'8"	36	36
1400	38	22	49	98	7'8"	37	37
1800	36	22	48	65	8'11"	36	37
2200	36	21	57	65	9'0"	36	37

STILL: ON _____ OFF _____

STRIPPER: ON _____ OFF _____ GPM _____

Eng. Form No. 26

REV. 1 5/20/86

SCOEPA00054988

WACKER

TCE SOLVENT SYSTEM

DATE 8/29/86 DAYS GKGS NIGHTS PST

	SOLVENT STORAGE		WASTE STORAGE				
	FRESH	RECYCLE	SOD-T	SOD-R	SOD-H	SOD-C	CR_6
0200	52	45	33	75	7'8"	44	43
0600	51	44	33	75	7'8"	44	43
1000	52	45	34	77	7'9"	44	46
1400	51	44	32	77	7'9"	43	46
1800	51	44	33	77	7'10"	43	46
2200	51	44	33	77	7'10"	43	46

Dirty sight glass

STILL: ON _____ OFF _____

STRIPPER: ON _____ OFF _____ GPM _____

Eng. Form No. 26

WACKER

TCE SOLVENT SYSTEM

DATE 8/30/86 DAYS GKGS NIGHTS _____

	SOLVENT STORAGE		WASTE STORAGE				
	FRESH	RECYCLE	SOD-T	SOD-R	SOD-H	SOD-C	CR_6
0200	51	44	35%	78	8'1"	45	46
0600	51	44	35%	78	8'1"	45	46
1000	51	44	35	78	8'2"	45	50
1400	51	44	35	78	8'2"	45	49
1800	50	40	34	79	8'2"	45	50
2200	50	44	38%	79	8'2"	45	50

STILL: ON _____ OFF _____

STRIPPER: ON _____ OFF _____ GPM _____

Eng. Form No. 26 REV. 1 5/20/86

SCOEPA00054989

WACKER

TCE SOLVENT SYSTEM

DATE 9/4/86 DAYS OKGS NIGHTS

	SOLVENT STORAGE		WASTE STORAGE				
	FRESH	RECYCLE	SOD-T	SOD-R	SOD-H	SOD-C	CR_6
0200	49	41	30%	88	8'7"	5	55
0600	49	40	43%	89	8'7"	5	55
1000	49	40	41	91	8'8"	6	55
1400	50	40	35	92	8'8"	6	55
1800	51	40	28	92	8'8"	6	55
2200	50	40	28	92	8'9"	6	55

STILL: ON _____ OFF _____

STRIPPER: ON _____ OFF _____ GPM _____

Eng. Form No. 26

WACKER

TCE SOLVENT SYSTEM

DATE 9/5/86 DAYS Jan. 42° NIGHTS

	SOLVENT STORAGE		WASTE STORAGE				
	FRESH	RECYCLE	SOD-T	SOD-R	SOD-H	SOD-C	CR_6
0200	49	38	42%	93	8'9"	6	55
0600	49	38	42%	93	8'9"	6	55
1000	49	38	43	97	8'11	5	56
1400	51	38	38	98	9'	7	62
1800	49	37	31	65	10'	7	63
2200		32 - See R.O. log					

STILL: ON _____ OFF _____

STRIPPER: ON _____ OFF _____ GPM _____

Eng. Form No. 26

REV. 1 5/20/86

SCOEPA00054990

To: John Pittman

From: Murray Tilson

Subj: TCE Reduction Program Update

Date: 8/25/86

1) I have reviewed the TCE Recycle and Reduction program with Dave Cole, Process Engineering, this morning and was told they are on the reduction program outlined in his memo of 8/12/86.

2) This program is following the schedule shown below:

	Bath Dump Frequency:	
Degreaser Bath:	Last Week: (8/18 - 8/25)	Current Week: (8/25 - 9/1)
Wax Montng. #1	1/day	2/week
Wax Montng. #2	1/shift	1/day
Wax Montng. #3	1/shift	1/day
Plate Prep.	1/shift	1/day

3) The goal is to only dump bathes with recycle TCE twice per week. This will result in an estimated annual savings of $144,000 in TCE material and disposal costs.

4) A review of SOD-H Level readings during a week before the reduction program got started and current conditions is shown below based on information taken off the attached SOD-H Level Graphs for July and August.

7/7 - 7/14 (Mon thru Sun) - 196 gal/day increase

8/18 -8/25 (Mon thru Sun) - 152 gal/day increase

5) Percent Reduction in accumulation of TCE waste in the SOD-H tank is shown below:

Percent Reduction = (1 - Exist. Rate/Prev. Rate) x 100

= (1 - 152 gpd/196 gpd) x 100

= 22.4 %

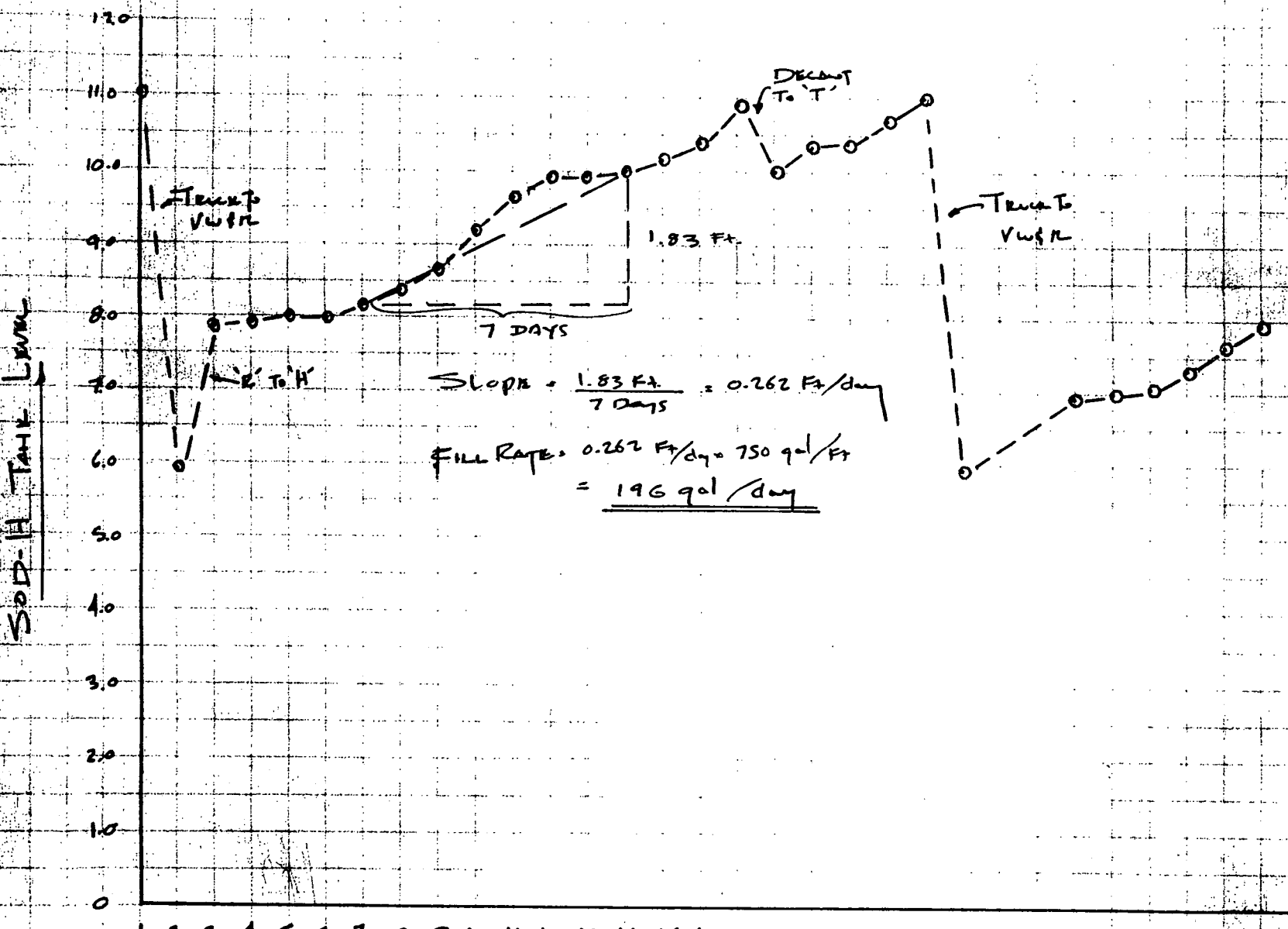
Enclosures
(1) July Daily SOD-H Tank Levels
(2) August Daily SOD-H Tank Levels

cc: Greg Carr Mike Pilkington Sam Pengelly

SCOEPA00054991

DAILY SOD-H TANK LEVELS

M. Tilson
8/19/86



Slope = $\frac{1.83 \text{ Ft.}}{7 \text{ Days}}$ = 0.262 Ft/day

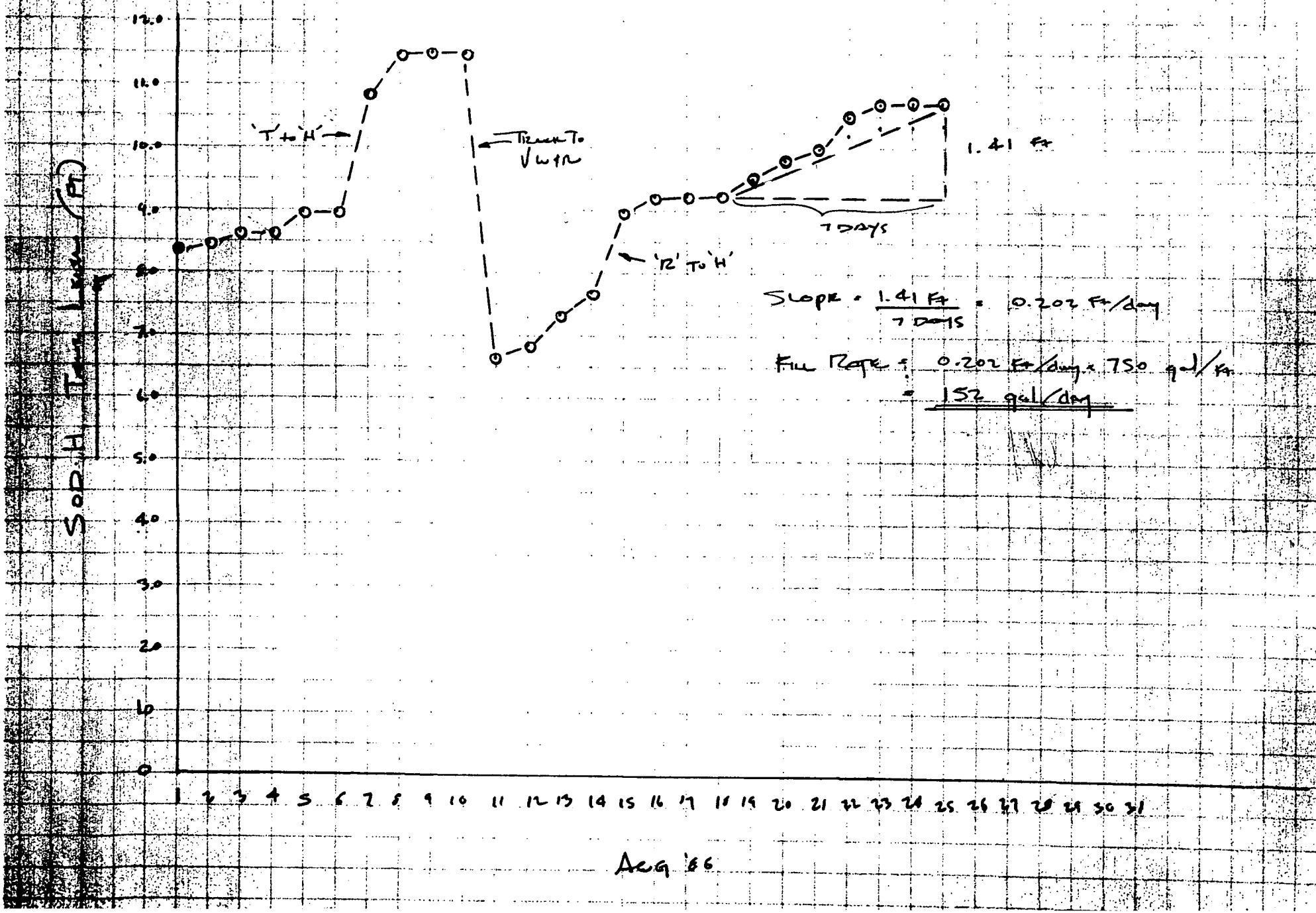
Fill Rate = 0.262 Ft/day × 750 gal/Ft

= 196 gal/day

SCOEPA00054992

DAILY SOD-H TANK LEVELS

M. Tasch
8/12/86



Slope = $\frac{1.41 \text{ Ft}}{7 \text{ Days}}$ = 0.202 Ft/day

Fill Rate = 0.202 Ft/day × 750 gal/Ft

= 152 gal/day

SCOEPA00054993

DATE: 8-12-86

TO: RUSS MILLER

FROM: DAVE COLE

SUBJECT: SCHEDULE FOR REDUCTION OF T.C.E. USAGE AND INTRODUCTION OF RECYCLED T.C.E.

Two projects are being implemented in Wax Mounting to reduce the cost of T.C.E. usage.

First, recycled T.C.E. is being used in all degreasing tanks. This has been in effect for three weeks, in limited applications, and is now in effect in all degreasers. Unless problems develop which can be directly attributed to the use of the recycled solvent, this will remain unchanged.

Second, the frequency of degreasing bath changes has been reduced from twice a shift to once a shift.

A schedule for further reduction follows:

Monday, August 18th	Reduce to once per day on St. 1 only
Monday, August 25th	Reduce to twice per week on St. 1 only and to once per day on Sts. 2 & 3
Monday, September 1st	Reduce to twice per week on all Sts.

This includes all Wax Mounting Streets and the Cleaning Streets in Plate Lapping.

The only anticipated quality problem is likely to be an increase in masking of Final Polish Only rework material. For this reason, it will be important to run as much FPO material as possible on Wax Mountin St. 1 to determine whether or not any increase in masking or overpolish is seen.

If any increase in these or other related defects is observed, the test and schedule will be suspended or terminated after an evaluation has been made.

If there are any questions about these projects, please contact me at Ext. 277.

cc: Bill McCord
Russ Paul
John Pittman
Jim Ellis
Murry Tilson
Greg Winn
Greg Carr
Zeki Atay
Emil Dogaru

SCOEPA00054994

PRELIMINARY ANALYSIS 6/17/86

TCE RECYCLE/COST ANALYSIS

1) PRESENT SITUATION:

Virgin TCE Cost = $0.358/lb

Est. Annual Use (1/85-12/86) = 920,000 lbs/yr

Est. Annual Cost = 920,000 lbs/yr x $0.358/lb

= $329,360/yr

2) NET SAVINGS/LB WITH RECYCLE TCE:

Virgin TCE Cost = $0.358

Less Recycle TCE Cost = $0.280

Net Savings = $0.078/lb

3) POTENTIAL FOR RECYCLE TCE USE:

Wax Mounting Degreasers: 100 to 150 gal/day

Monthly Potential Savings = 125 gal/day x 6 day/wk x 4 wk/mo

= 3,000 gal/mo

= 3,000 gal/mo x 8.34 lb/gal x 1.464

= 36,630 lb/mo

4) NET MONTHLY DOLLAR SAVINGS:

Monthly Savings = 36,630 lb/mo x $0.078/lb

= $2,857/mo

Annual Savings = $34,286/yr

SCOEPA00054995

DATE: 8-12-86

TO: RUSS MILLER

FROM: DAVE COLE

SUBJECT: SCHEDULE FOR REDUCTION OF T.C.E. USAGE AND INTRODUCTION OF RECYCLED T.C.E.

Two projects are being implemented in Wax Mounting to reduce the cost of T.C.E. usage.

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cc: Bill McCord
Russ Paul
John Pittman
Jim Ellis
Murry Tilson
Greg Winn
Greg Carr
Zeki Atay
Emil Dogaru

RECEIVED
ENGINEERING
AUG 13 1986
John L. Pittman
Wacker Siltronic

Murray
Please put together what the M&T's cost saving will be as of Sept 1 for these changes.
JLP

TCE USAGE

April 1986

Section 7	
7.13 Degreasers	30 Gallons/day
Section 8	
Wax Mounting Degreasers	100-150 gallons/day
Plate Prep	30 gallons/day
Wax Dispensing	20 gallons/day
Wax Make-Up	15 gallons/day
TOTAL	185-245 gallons/day

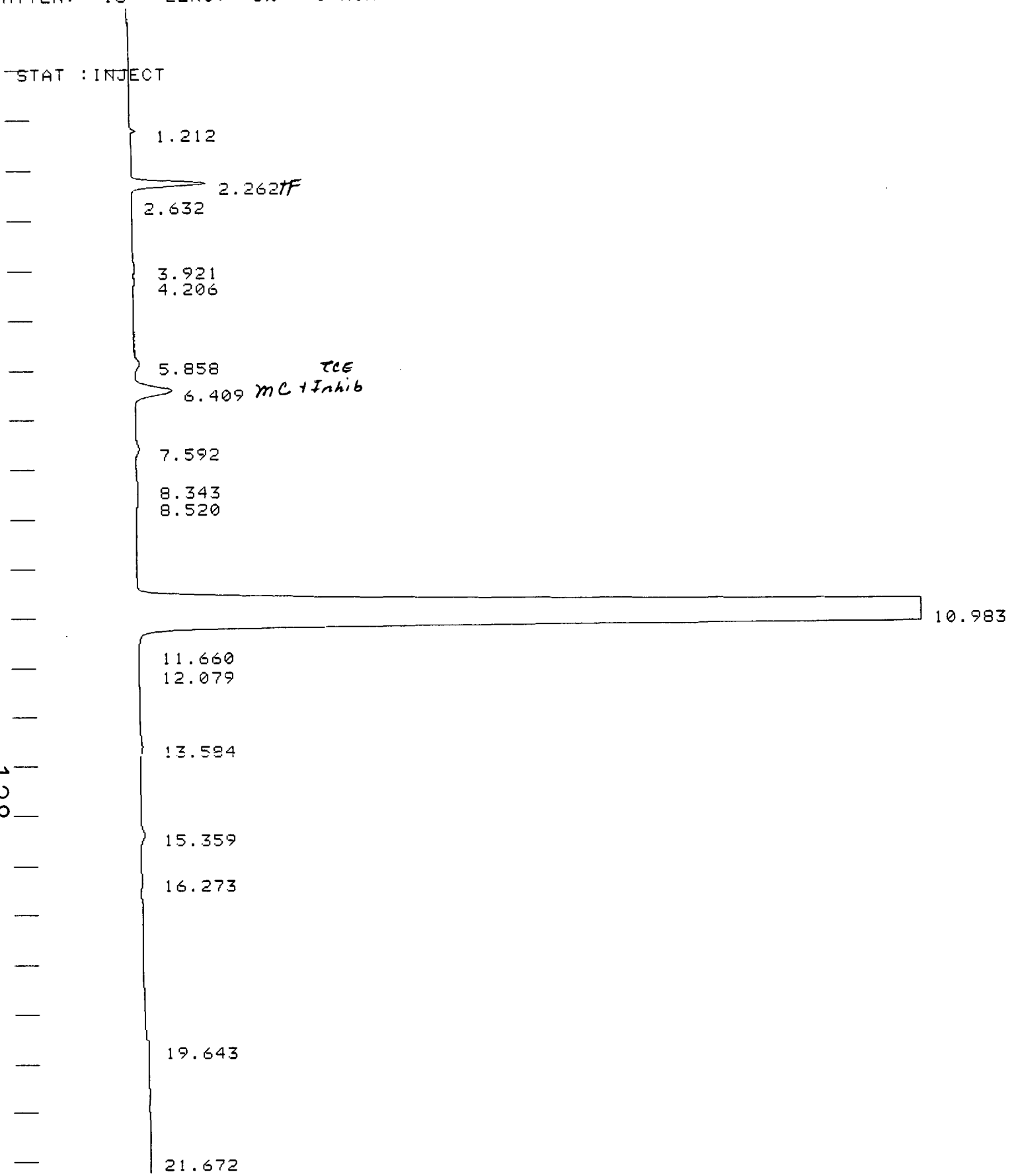
July 1983

Section 7	
7.13 Degreaser	30 gallons/day (20 gallons being recycled)
Section 8	
Wax Dispensing	56 gallons/day
Wax Make-Up	15 gallons/day
Wax Mounting Degreasers	11 gallons/day
Plate Prep	6 gallons/day
TOTAL	98 gallons/day

varian /sunnyvale.calif.p/n 03-906362-00

CHART SPEED 1.0 CM/MIN
ATTEN: 16 ZERO: 5% 1 MIN/TICK

STAT : INJECT



128

varian / sunnyvale, calif. p/n 03-906362-00

TITLE: TCE 11:10 10 JUN 86

CHANNEL NO: 1 SAMPLE: TK29/wacker METHOD: AUTO

PEAK NO	PEAK NAME	RESULT	TIME (MIN)	AREA COUNTS	SEP CODE
1		0.0293	1.212	398	BB
2		0.7530	2.262	10222	BV
3		0.0270	3.921	366	BV
4		0.0076	4.206	103	VB
5		0.0973	5.858	1321	BV
6		0.6754	6.409	9168	VB
7		0.0968	7.592	1314	BV
8		0.0354	8.343	480	VV
9		0.0234	8.520	318	VB
10		97.9174	10.983	1329240	BV
11		0.1110	13.584	1507	T
12		0.0896	15.359	1217	BV
13		0.0188	16.273	255	VV
14		0.1181	21.672	1603	VB
TOTALS:		100.0000		1357510	

MULTIPLIER: 1.00000

RACK: 8 VIAL: 8 INJ: 1

SCOEPA0005500

TCE RECOVERY TANK

(2) PIPES INSTALL BLIND FLANGES

10'-6"

17'-0"

REMOVE THIS PIPING

G G G G G G G G G G G

14'-0"

3" CS SDD-W

3'-0"

CONCRETE SLAB

6"

2'-6"

18"

18"

35'-0"

SOD-W

T-37-14

SOD-R

T-37-13

SOD-T

T-37-30

10'-0"

J10.545

DGE OF CURB

6"

CUT AND CAP PIPE WHERE INDICATED (5 PLACES)

EXCAVATION BOUNDARY (APPROX. 20'X44')

4'-4½"

9'-4"

4'-2½"

WACKER SILTRONIC CORPORATION
Regular

SPECIAL TEST REPORT: INCOMING INSPECTION
Date Reported: 6/2/89

TEST METHOD DESCRIPTION AND IDENTIFICATION:
Coffey Laboratories analyzed one sample to provide a comparison of results and methods. Coffey used EPA method 601 to determine the amount of trichloroethylene present in the waste water samples. Wacker used liquid extraction of a set of blanks, standards and samples and analyzed the extracts for trichloroethylene by gas chromatograph using an electron capture detector. Due to problems with the squalane column and the autosampler on 5-19-89, the OWW samples of 5-12-89 and 5-17-89 and the PWW sample of 5-17-89 were reanalyzed 5-24-89.

SAMPLE COLLECTED BY: Tom Rothschild DATE:

OWW 5-3-89	1105
OWW 5-12-89	0830
OWW 5-17-89	1330
PWW 5-17-89	1330
OWW 5-26-89	0750
OWW 5-31-89	1530

SAMPLE ANALYZED BY: Coffey Laboratories DATE: 5-5-89
Wacker Siltronic 5-5-89
5-19-89
5-24-89
6-1-89

RESULTS:

SAMPLE	TCE in ppb	DETECTION LIMIT
Coffey Laboratories:		
OWW 5-3-89	3.4 ppb	0.5 ppb
Wacker Siltronic:		
OWW 5-3-89	11 ppb	6 ppb
OWW 5-12-89/1st Run	21 ppb	5 ppb
OWW 5-12-89/2nd Run	17 ppb	2 ppb
OWW 5-17-89/1st Run	31 ppb	5 ppb
OWW 5-17-89/2nd Run	20 ppb	2 ppb
PWW 5-17-89/1st Run	20 ppb	5 ppb

COPIES SENT TO: Jerry Linden, Rick Gariepy, Tom Rothschild
FORM# 107-016

SCOEPA00055001

SAMPLE	TCE IN PPB	DETECTION LIMIT
PWW 5-17-89/2nd Run	18 ppb	2 ppb
OWW 5-26-89	6 ppb	0.5 ppb
OWW 5-31-89	8 ppb	0.5 ppb

SCOEPA00055002

TCE

SCOEPA00055003

WS-8-59

SAMPLE	DATE	MEDIA	DEPTH	UNITS	PCE	TCE	CIS-1,2 DCE	VC
WS-8-59	10/08/01	WATER	54	ug/L	NA	1U	345	129
WS-8-59	12/12/01	WATER	54	ug/L	NA	3.53	409	332
WS-8-59	04/03/02	WATER	54	ug/L	NA	1U	99.8	136
WS-8-59	07/10/02	WATER	54	ug/L	NA	1.19	117	160

WS-8-33

SAMPLE	DATE	MEDIA	DEPTH	UNITS	PCE	TCE	CIS-1,2 DCE	VC
WS-8-33	10/09/01	WATER	28	ug/L	NA	10U	10U	12U
WS-8-33	12/13/01	WATER	28	ug/L	NA	5U	5U	6U
WS-8-33	04/03/02	WATER	28	ug/L	NA	1U	1U	1.2U
WS-8-33	07/10/02	WATER	28	ug/L	NA	1U	1U	1.2U

P-3

SAMPLE	MEDIA	DEPTH	UNITS	PCE	TCE	CIS-1,2 DCE	VC
P-3	SOIL	17	mg/Kg	NA	0.5U	0.5U	0.6U
P-3	WATER	30.5	ug/L	NA	10U	10U	12U
P-3	WATER	57	ug/L	NA	10U	312	212
P-3	WATER	98	ug/L	NA	1U	5.99	21.2

GP7

SAMPLE	MEDIA	DEPTH	UNITS	PCE	TCE	CIS-1,2 DCE	VC
GP7-S-9.0	SOIL	9	mg/Kg	0.0055U	0.0022U	0.0055U	0.0055U
GP7-S-15.5	SOIL	15.5	mg/Kg	0.0054U	0.0022U	0.0054U	0.0054U
GP7-S-30.0	SOIL	30	mg/Kg	0.027U	0.011U	0.027U	0.027U
GP7-W-78.0	WATER	78	ug/L	13U	1000	6900	440
GP7-W-98.0	WATER	98	ug/L	13U	250	23000	6300

P-2

SAMPLE	MEDIA	DEPTH	UNITS	PCE	TCE	CIS-1,2 DCE	VC
P-2	SOIL	22.5	mg/Kg	NA	0.005U	0.005U	0.01U
P-2	WATER	30	ug/L	NA	1U	1U	1.2U
P-2	WATER	56	ug/L	NA	1U	6.4	1.2U
P-2	WATER	98	ug/L	NA	11200	6780	720

GP4

SAMPLE	MEDIA	DEPTH	UNITS	PCE	TCE	CIS-1,2 DCE	VC
GP4-S-7.5	SOIL	7.5	mg/Kg	15U	1.2U	15U	15U
GP4-S-19.0	SOIL	19	mg/Kg	0.0064U	0.0022U	0.0054U	0.0054U
GP4-S-28.0	SOIL	28	mg/Kg	0.0063U	0.0021U	0.0053U	0.0053U
GP4-W-69.0	WATER	69	ug/L	0.5U	0.2U	21	1.4
GP4-W-98.0	WATER	98	ug/L	0.5U	0.6	21	9.1

P-1

SAMPLE	MEDIA	DEPTH	UNITS	PCE	TCE	CIS-1,2 DCE	VC
P-1	SOIL	30	mg/Kg	NA	1U	1U	2U
P-1A	WATER	26	ug/L	NA	1U	1U	1.3U
P-1A	WATER	56	ug/L	NA	1U	4.19	1.3U

GP5

SAMPLE	MEDIA	DEPTH	UNITS	PCE	TCE	CIS-1,2 DCE	VC
GP5-S-13.0	SOIL	13	mg/Kg	0.0054U	0.0022U	0.0064U	0.0054U
GP5-S-21.0	SOIL	21	mg/Kg	0.0052U	0.0021U	0.0062U	0.0062
GP5-S-26.0	SOIL	26	mg/Kg	0.0071U	0.0029U	0.0071	0.0071
GP5-W-68.0	WATER	68	ug/L	0.5U	2.6	320	54
GP5-W-95.0	WATER	95	ug/L	25U	12000	12000	2000

GP6

SAMPLE	MEDIA	DEPTH	UNITS	PCE	TCE	CIS-1,2 DCE	VC
GP6-S-15.0	SOIL	15	mg/Kg	0.0053U	0.0021U	0.0053U	0.0053U
GP6-S-23.0	SOIL	23	mg/Kg	0.071U	0.029U	0.071U	0.071U
GP6-S-30.0	SOIL	30	mg/Kg	0.0074U	0.0030U	0.0074U	0.0074U
GP6-W-74.0	WATER	74	ug/L	0.5U	36D	230	47
GP6-W-88.0	WATER	98	ug/L	25U	2500	16000	2700

GP02-03

SAMPLE	MEDIA	DEPTH	UNITS	PCE	TCE	CIS-1,2 DCE	VC
GP02-03	SOIL	4	mg/Kg	0.0060U	0.0050U	0.0050U	0.010U
GP02-03	SOIL	23	mg/Kg	0.0060U	0.0050U	0.0050U	0.010U
GP02-03	SOIL	25	mg/Kg	0.0060U	0.0050U	0.0050U	0.010U
GP02-03	WATER	33	ug/L	1U	4.29	1U	1.2U
GP02-03	WATER	58	ug/L	1U	33.4	101	204
GP02-03	WATER	98	ug/L	1U	1U	1U	1.2U

GP02-02

SAMPLE	MEDIA	DEPTH	UNITS	PCE	TCE	CIS-1,2 DCE	VC
GP02-02	SOIL	3	mg/Kg	0.010U	0.010U	0.042	0.020U
GP02-02	SOIL	19	mg/Kg	0.020U	2.0	0.064	0.040U
GP02-02	SOIL	22	mg/Kg	0.0050U	0.016	0.041	0.010U
GP02-02	SOIL	24	mg/Kg	1.0U	1.0U	1.0U	2.0U
GP02-02	WATER	25	ug/L	1000U	1000U	21500	1200U
GP02-02	WATER	56	ug/L	250U	21000	57900	3000
GP02-02	WATER	98	ug/L	1U	57500D	975E	25.4

GP02-01

SAMPLE	MEDIA	DEPTH	UNITS	PCE	TCE	CIS-1,2 DCE	VC
GP02-01	SOIL	4	mg/Kg	0.0050U	0.0050U	0.0084	0.010U
GP02-01	SOIL	12.5	mg/Kg	0.10U	0.10U	0.10U	0.20U
GP02-01	SOIL	23.5	mg/Kg	1.0U	1.0U	1.0U	2.0U
GP02-01	WATER	36	ug/L	1U	1U	88.9	2.3
GP02-01	WATER	58	ug/L	1U	1U	1U	1.2U
GP02-01	WATER	98	ug/L	1U	1U	1U	1.2U

P-4

SAMPLE	MEDIA	DEPTH	UNITS	PCE	TCE	CIS-1,2 DCE	VC
P-4	SOIL	17.5	mg/Kg	NA	0.02U	0.02U	0.04U
P-4	WATER	30	ug/L	NA	1U	1U	1.2U
P-4	WATER	52	ug/L	NA	33.3	453	29.8

P-5

SAMPLE	MEDIA	DEPTH	UNITS	PCE	TCE	CIS-1,2 DCE	VC
P-5	SOIL	9.5	mg/Kg	NA	0.1U	10U	0.12U
P-5	WATER	31	ug/L	NA	1U	1U	1.2U
P-5	WATER	54	ug/L	NA	1U	1.33	1.2U
P-5	WATER	98	ug/L	NA	1U	1U	1.2U

P-7

SAMPLE	MEDIA	DEPTH	UNITS	PCE	TCE	CIS-1,2 DCE	VC
P-7	SOIL	22.5	mg/Kg	NA	0.005U	0.005U	0.01U
P-7	WATER	59	ug/L	NA	1U	1U	1.2U

P-10

SAMPLE	MEDIA	DEPTH	UNITS	PCE	TCE	CIS-1,2 DCE	VC
P-10	SOIL	26	mg/Kg	NA	0.005U	0.005U	0.01U

P-9

SAMPLE	MEDIA	DEPTH	UNITS	PCE	TCE	CIS-1,2 DCE	VC
P-9	WATER	33	ug/L	NA	1U	1U	1.2U

P-8

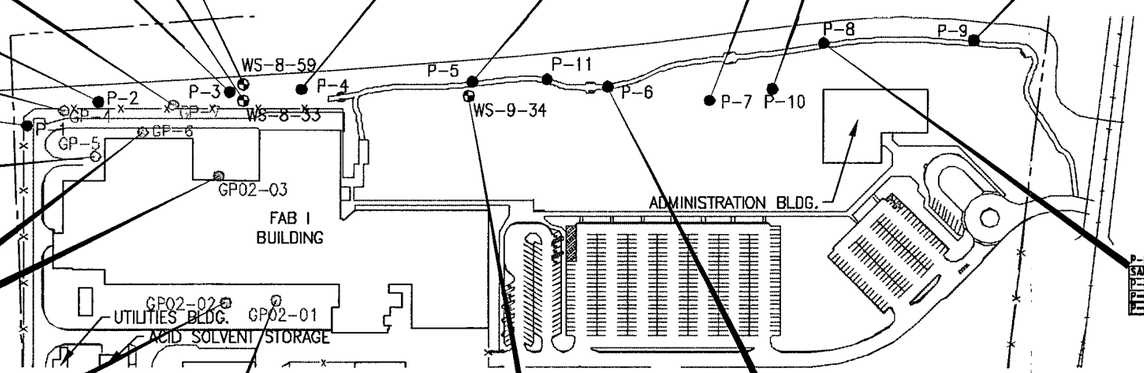
SAMPLE	MEDIA	DEPTH	UNITS	PCE	TCE	CIS-1,2 DCE	VC
P-8	WATER	30	ug/L	NA	1U	1U	1.2U
P-8	WATER	52	ug/L	NA	1U	1U	1.2U
P-8	WATER	82	ug/L	NA	10U	10U	21.1

P-6

SAMPLE	MEDIA	DEPTH	UNITS	PCE	TCE	CIS-1,2 DCE	VC
P-6	WATER	34	ug/L	NA	1U	1U	1.2U
P-6	WATER	48	ug/L	NA	1U	1U	1.2U

WS-9

SAMPLE	DATE	MEDIA	DEPTH	UNITS	PCE	TCE	CIS-1,2 DCE	VC
WS-9-34	10/09/01	WATER	29	ug/L	NA	1U	1U	1.2U
WS-9-34	12/12/01	WATER	29	ug/L	NA	1U	1U	1.2U
WS-9-34	04/02/02	WATER	29	ug/L	NA	1U	1U	1.2U
WS-9-34	07/10/02	WATER	29	ug/L	NA	1U	1U	1.2U



LEGEND:

- PROPERTY BOUNDARY
- MONITORING WELL LOCATION
- GEOPROBE BORING LOCATION
- PCE = TETRACHLOROETHENE
- TCE = TRICHLOROETHENE
- CIS-1,2 DCE = CIS-1,2 DCE-DICHOROETHENE
- VC = VINYL CHLORIDE
- VOCs = VOLATILE ORGANIC COMPOUNDS
- NA = NOT ANALYZED
- U = THE COMPOUND WAS ANALYZED FOR BUT WAS NOT DETECTED AT OR ABOVE THE METHOD REPORTING LIMIT
- J = THE RESULT IS AN ESTIMATED CONCENTRATION THAT IS LESS THAN THE METHOD REPORTING LIMIT BUT GREATER THAN THE METHOD DETECTION LIMIT
- E = THE RESULT IS AN ESTIMATED AMOUNT BECAUSE OF THE INSTRUMENTS CALIBRATION RANGE

NOTES:

DEPTH IN FEET BELOW GROUND SURFACE

WORK DONE BY MFA TO SUPPLEMENT FOCUSED RI/FS
WORK DONE BY HAHN FOR FOCUSED RI/FS
WORK DONE BY LIMNO-TECH TO SUPPLEMENT FOCUSED RI/FS

0 150 300
SCALE IN FEET

LOCATIONS OF ALL EXPLORATORY BORINGS AND MONITORING WELLS ARE APPROXIMATE.

REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

DATE OF ISSUE 11/26/02 DWN BY A. YOUNG CHK BY _____ DES BY T. SILVA APP BY _____

Vancouver: (360) 694-2691
Edmonds: (425) 744-1489
Portland: (971) 544-2139
MAUL FOSTER ALONGI

WACKER SILTRONIC CORPORATION
PORTLAND, OREGON

DETECTED CONCENTRATIONS OF SELECT VOCs

DRAWING NO. 3
PROJECT NO. 8128.01.04

File: G:\8200\8128-01_WACKER SILTRONIC\GIS\MXD\8128-01-VOCS.DWG Last edited: DEC. 04, 2002 @ 1:43 p.m. by: cerauno Xrefs: SITE-BASE WELL-BASE 100%Color

VICTOR ATIYEH
GOVERNOR

Department of Environmental Quality

522 S.W. FIFTH AVENUE, BOX 1760, PORTLAND, OREGON 97207 PHONE (503) 229-5696

January 28, 1985

RECEIVED
JAN 29 1985
HUMAN RESOURCES

Greg Carr
Jim Harper
Wacker Siltronic Corporation
P.O. Box 03180
Portland, Oregon 97203

Re: HW - Wacker Siltronic Corporation
ORD #090253737
Multnomah County

Gentlemen:

For future reference, the portion of our rules where reporting of spills to our Department through the state's Emergency Management Division is found, is in Oregon Administrative Rule 108-020(2)(c)(A).

Please continue to call upon us as you need guidance or assistance in coming into compliance with that portion of our hazardous waste rules which affect you as a generator, or in cleaning up the spill.

Sincerely,

Janet A. Gillaspie
Regional Manager
Northwest Region

JAG/emc
cc: Hazardous Waste Division, DEQ
Regional Operations, DEQ

DEQ-1

Subdivision C: Required Action

Emergency action, reporting.

340-108-020 In the event of a spill or other incident, the person having the care, custody, or control of the hazardous waste or hazardous substance shall take the following actions, as appropriate:

(1) Immediately implement the site modified SPCC plan or other applicable contingency plan.

(Comment: Generators storing hazardous waste for less than 90 days are required to have a contingency plan prepared in accordance with rule 340-102-034.)

(2) If a contingency plan is not required or available, immediately take the following actions in the order listed:

(a) Activate alarms or otherwise warn persons in the immediate area;

(b) Undertake every reasonable method to contain the hazardous substance or hazardous waste;

(c)(A) Report the spill or other incident to the Oregon Emergency Management Division (telephone 800-452-0311) if the amount of hazardous waste or hazardous substance exceeds the following reportable quantity (in the event a substance or waste falls into more than one category, the lower quantity shall be reported):

Substance or Waste Type	Reportable Quantity (pounds)
Ignitable, rule 340-101-021	200
Corrosive, rule 340-101-022	200
Reactive, rule 340-101-023	200
EP Toxic, rule 340-101-024	10
Listed, rule 340-101-031 and -032	10
Listed, rule 340-101-033(1)(a) and (2)(a)	2
Listed, rule 340-101-033(1)(b), (2)(b) and (3)(a)	10
Pesticide, rule 340-101-034	10
PCB, rule 340-110-001(2)	10

(Comment: "Ignitable" includes the DOT classifications "Flammable," "Oxidizer," and some "Combustible.")

(B) Transporters must report spills of any quantity that occur during transportation. Transporters must also report spills or other incidents to the National Response Center (800-424-8802) as required by 49 CFR 171.15, and, if a water transporter, as required by 33 CFR 153.203;

(C) The spill or other incident need not be reported if:

(i) It occurs on private property and is known to the owner of the property (or his representative);

(ii) It occurs on an impervious surface where it is fully contained; and

(iii) It is completely cleaned up without further incident.

(Comment: For reporting purposes, quantity calculation involving hazardous waste shall be made independent of the concentrations of the hazardous components. For example, the table in this rule requires reporting a 10 pound spill of acrolein (a rule 340-101-033(3)(a) waste). This shall be interpreted as requiring reporting a 10 pound spill of a waste containing acrolein whether the concentration of acrolein is 3, 30 or 100%.)

SCOEPA00055006

Wacker begins cleanup of 2 solvent spills

By STAN FEDERMAN
of The Oregonian staff

Wacker Siltronic Corp. this week began to clean up two major spills involving a toxic chemical solvent used in its silicon-wafer manufacturing process. The spills occurred last month in a plant waste-treatment area.

The two spills took place Dec. 3 and Dec. 31 but did not involve any safety to the public health, according to Janet Gillaspie, Northwest region manager for the state Department of Environmental Quality.

Gillaspie said Tuesday, however, that Wacker was slow in reporting the spills, and DEQ was still evaluating any possible penalties against the West German-based company. The company's plant is located at 7200 N.W. Front Ave.

"We're considering censuring the company through a legal notification for its slow reporting procedures and perhaps even a fine," Gillaspie said.

She said DEQ did not provide any public information on the spills when they happened because "we have various-type spills around the state almost every day, and if they are not a safety hazard to the public we do not issue any news release."

Gillaspie noted that because Wacker is a generator of hazardous wastes, it is supposed to have on file with DEQ a prevention-contingency plan for dealing with spills. She said the company at present does not have such a plan on file with the agency.

James Harper, Wacker's director of human resources, said the company had such a plan, although he did not know if it was on file at DEQ. He also said it was the company's understanding that there was a 24-hour report period — "and we believe we were in the DEQ time frame regarding these two spills."

Gillaspie said the first spill occurred around noon Dec. 1, but DEQ did not learn about it until 11:15 a.m. the next day. "Apparently the company didn't know it had to be reported under DEQ regulations, but when they found out differently, they did so," she said.

She said the spill involved some 700 gallons or less of trichloroethylene, a chemical solvent known as TCE. The spill occurred, Gillispie said, when a pump switch that normally is on was inadvertently switched off, causing a tank containing some of the solvent to overflow and spill out on the ground.

TCE is a common solvent used in many manufacturing processes for removing oils and is considered toxic, said Ralph Rodia of the Accident Prevention Division of the state Worker Compensation Department. He added that TCE is believed to be a cancer-potential chemical in any major concentrations.

The Dec. 1 spill involved a 1 percent TCE concentration, Harper said, while the Dec. 31 spill involved a 2 percent concentration. "A concentration of 10 percent or more would be considered hazardous," Harper said.

The Dec. 31 spill occurred in the same area as the Dec. 1 spill and involved 500 to 700 gallons of TCE. A small amount of the spillage apparently leaked into a storm drain and ended up in the Willamette River where it quickly dissolved, Gillaspie said.

Gillaspie said the Dec. 31 spill happened at 11:30 p.m. and was reported to the state Emergency Management Division of the state Executive Department, which handles spill reports after hours. The DEQ was notified of the spill at 7 p.m. the next day.

Gillaspie said DEQ lab reports showed concentrations of TCE in the soil around the spills and that Wacker would be required to clean up the area to zero levels as required by DEQ regulations.

The cleanup work began Monday by crews of the Environmental Emergency Services Co., a division of Riedel International Inc. A company spokesman estimated the cleanup work would take about two weeks.

Harper said Wacker's cleanup actions would take care of both spills and "we plan to build a special cement floor base in this waste treatment area so such spills cannot occur again in the soil." He said the area contains some concrete pads now for treatment tanks, but they are surrounded by soil.

He said the company still was investigating the causes of the second spill, but he said it was believed to have been caused by equipment malfunction. Until exact causes are determined, he added, the company plans to operate the waste treatment facility under constant supervision until the cement floor base is completed.

SCOEPA00055007

SEE ALSO: Haz Waste Spills - TCE

VICTOR ATIYEH
GOVERNOR

Department of Environmental Quality

522 S.W. FIFTH AVENUE, BOX 1760, PORTLAND, OREGON 97207 PHONE (503) 229-5696

January 16, 1985

Greg Carr
James Harper
Wacker Siltronic Corporation
P.O. Box 03180
Portland, Oregon 97203

Re: HW - Wacker Siltronic Corporation
ORD #090253737
Multnomah County

Gentlemen:

In following up a spill of trichloroethylene (TCE) which occurred at your plant site on December 31, 1984, we wanted to outline the spill requirements of our hazardous waste rules for you and your cleanup contractor, Environmental Emergency Services. Since hazardous waste rules have been substantially modified during the past year, our spill cleanup procedures have also changed.

Trichloroethylene is listed as F001 - - a hazardous waste under OAR 340-101-031. All spill residue materials are considered a hazardous waste until levels are at background concentrations, OAR 340-101-003(4)(b). The background concentration should be selected as an area away from the spill site, or plant site that would reflect normal, usually naturally occurring concentrations of the chemical.

If cleanup cannot be accomplished to background levels, you may want to examine the delisting portions of the rules, OAR 340-100-020 and 022.

As the cleanup is progressing, you must comply with all regulations applicable to a generator of hazardous waste, including Subdivisions A, B, C, D, and possibly E of Division 102, along with Subdivisions C and D of Division 104.

If cleanup to background concentrations will take longer than 90 days, you will also need to comply with Subdivision F and Subdivision G of Division 104. Also, if cleanup will take longer than 90 days, the Department will need to come to agreement on cleanup schedule to be included in a compliance order between the company and the Department.

In addition to the cleanup requirements, our Department will be sending the company a legal Notice of Violation because of the delay in reporting of the spill, and the lack of Emergency Preparedness and Prevention plans (Subdivision C, Division 102) and Contingency and Emergency Procedures

SCOEPA00055008

plans (Subdivision D, Division 102) as is required by hazardous waste generators.

The rules are complex, and please call me or Renato Dulay at 229-5393, should you have questions about these procedures.

Sincerely,

Janet A. Gillaspie

Janet A. Gillaspie
Regional Manager
Northwest Region

JAG/emc
cc: Enforcement Section, DEQ
Hazardous Waste Section, DEQ
EPA-000

To: John Pittman

From: Murray Tilson

Subj: Waste Minimization Program Status

Date: 1/21/88

The following will serve as a brief update of our hazardous waste minimization efforts to date:

1. Freon:

   a. We presently recycle approx. 600 gal/month of Freon TE.

      Net Savings = $9.20/gal x 600 gal/mo. x 12 mo./yr
                  = $66,240/yr

   b. We presently ship out approx. 600 gal/quarter of Freon TMC, TP and contaminated TE to McClary Columbia for recycling and processing.

2. TCE:

   a. We presently collect and ship to VW&R for recycling approx. 4,000 gal/mo. of TCE solvent.

   b. By May, 1988 we should be able to discontinue the use of TCE at the plant and result in a net savings of approx. $142,500/yr.

      This is based on the following:

      Present cost of Recycle TCE = $0.280/lb
      plus Disposal Cost = 0.078
      less Disposal Credit = (0.109)

      Net Cost = $0.249/lb

      Present Cost of TCE = $0.249/lb x 4,000 gal/mo x 1.43 x 8.34 lb/gal
                          = $11,880/mo

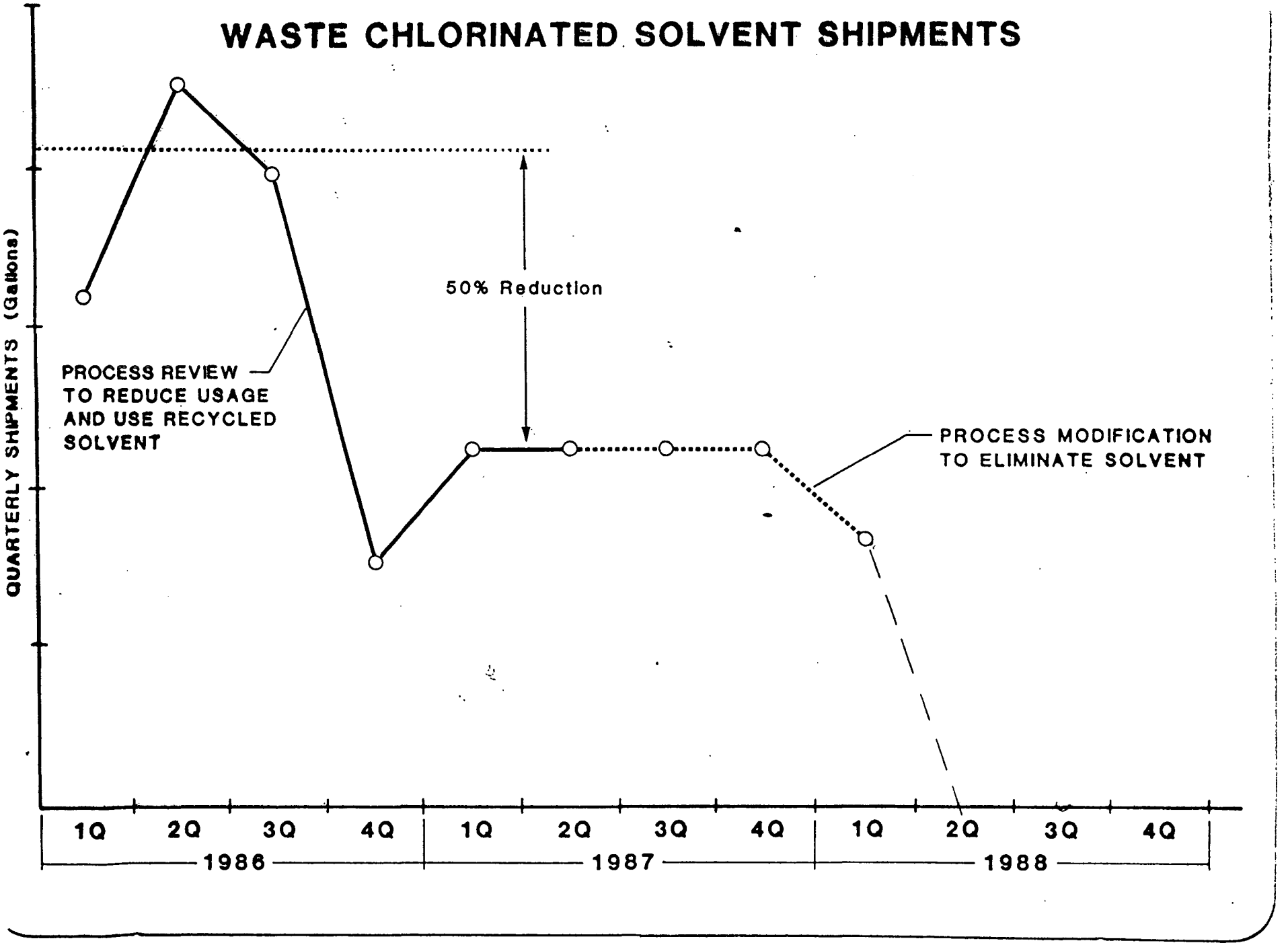
                          = $142,500/yr.

3. Chromic Waste:

   a. We presently chemically reduce approx. 800 gal/mo of Chrome IV liquid waste to Chrome III solid waste and ship to Arlington 1 to 2 drums per qtr.

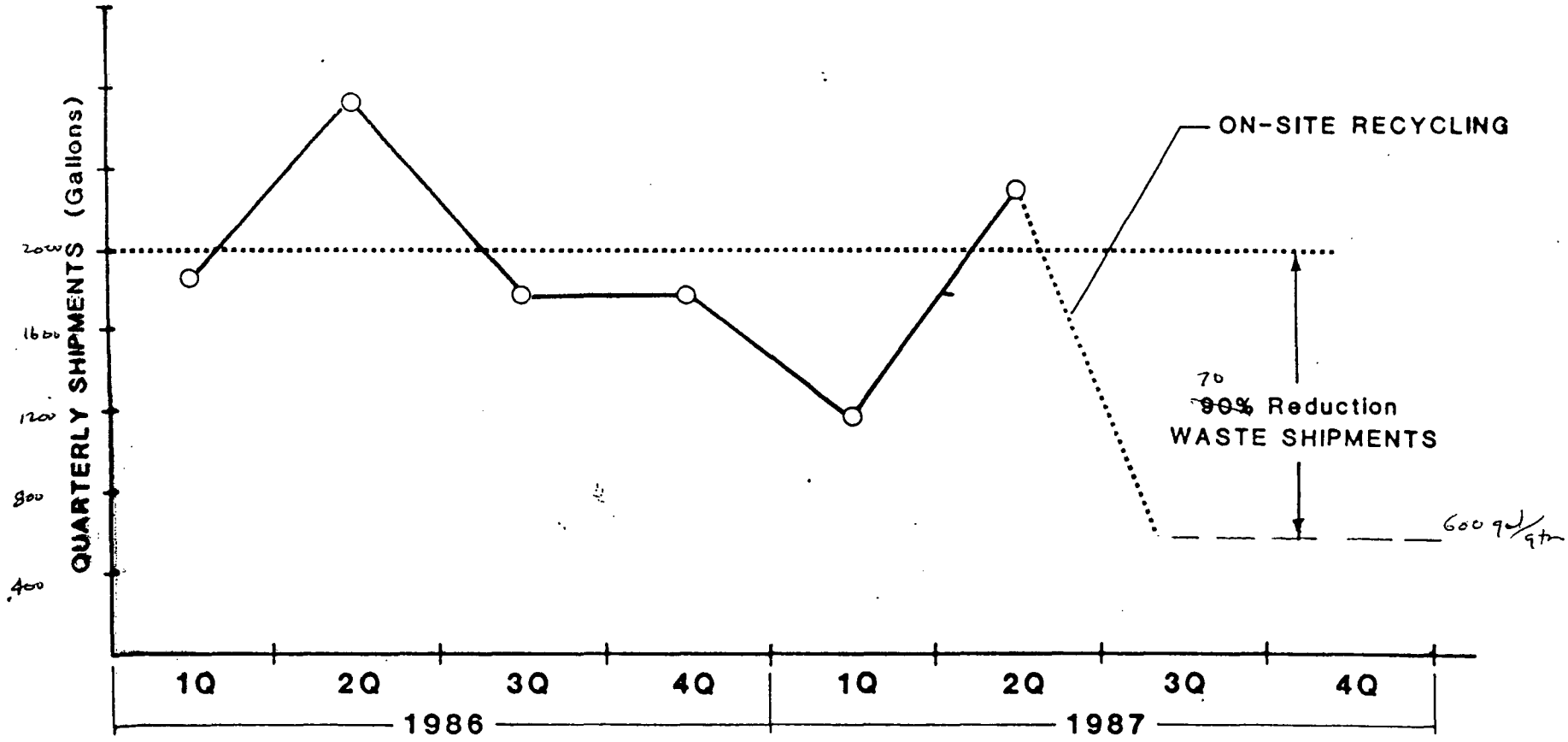
   b. Present Disposal cost = $200 to $400 per qtr.

   c. If the Sopori etch process is successful and replaces the current chromic process in Acid Etch this 800 gal/mo. volume of chromic waste could be reduced to less than 5 gal/mo.



SCOEPA00055011

WASTE FREON SHIPMENTS



CHROMIC WASTE SHIPMENTS

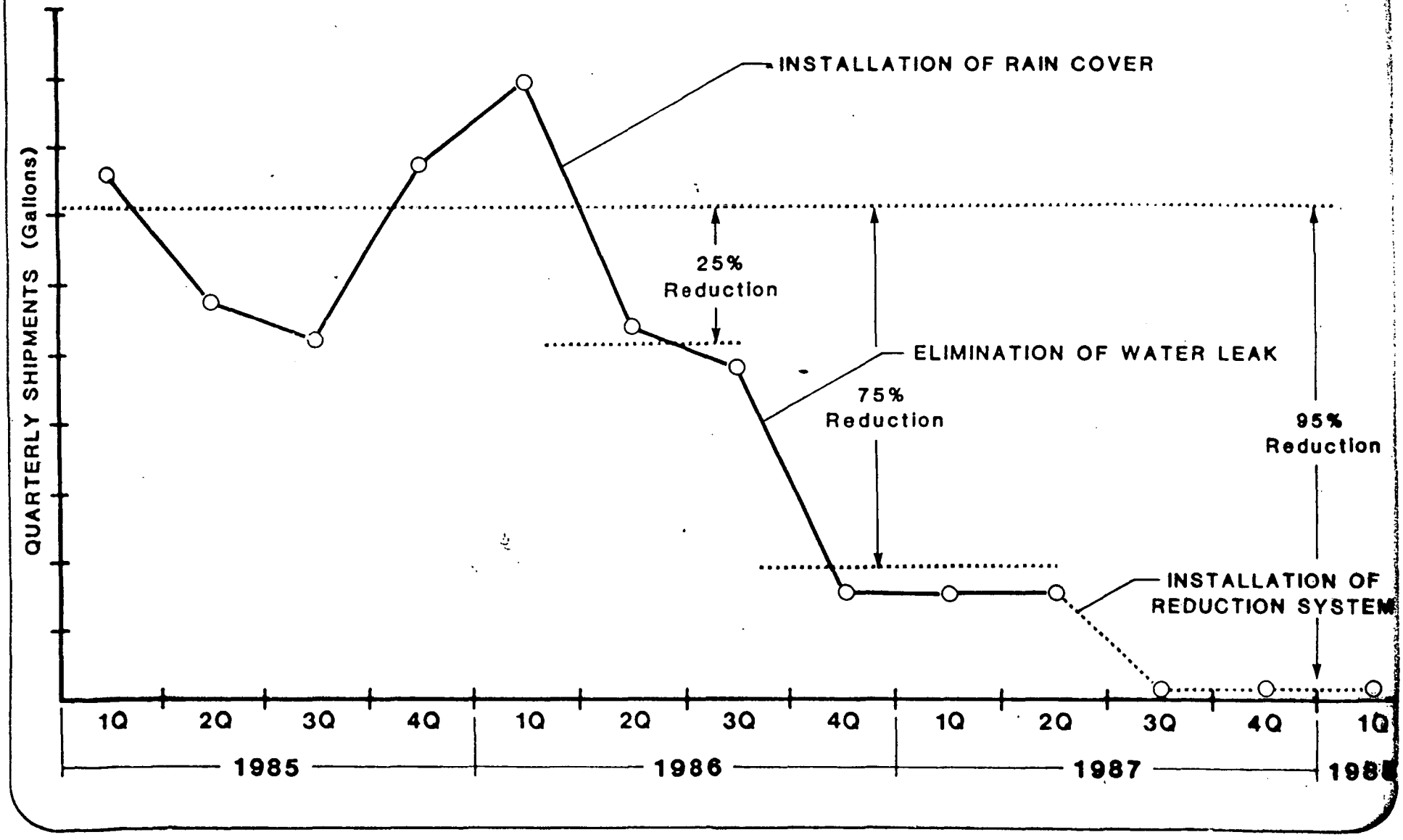


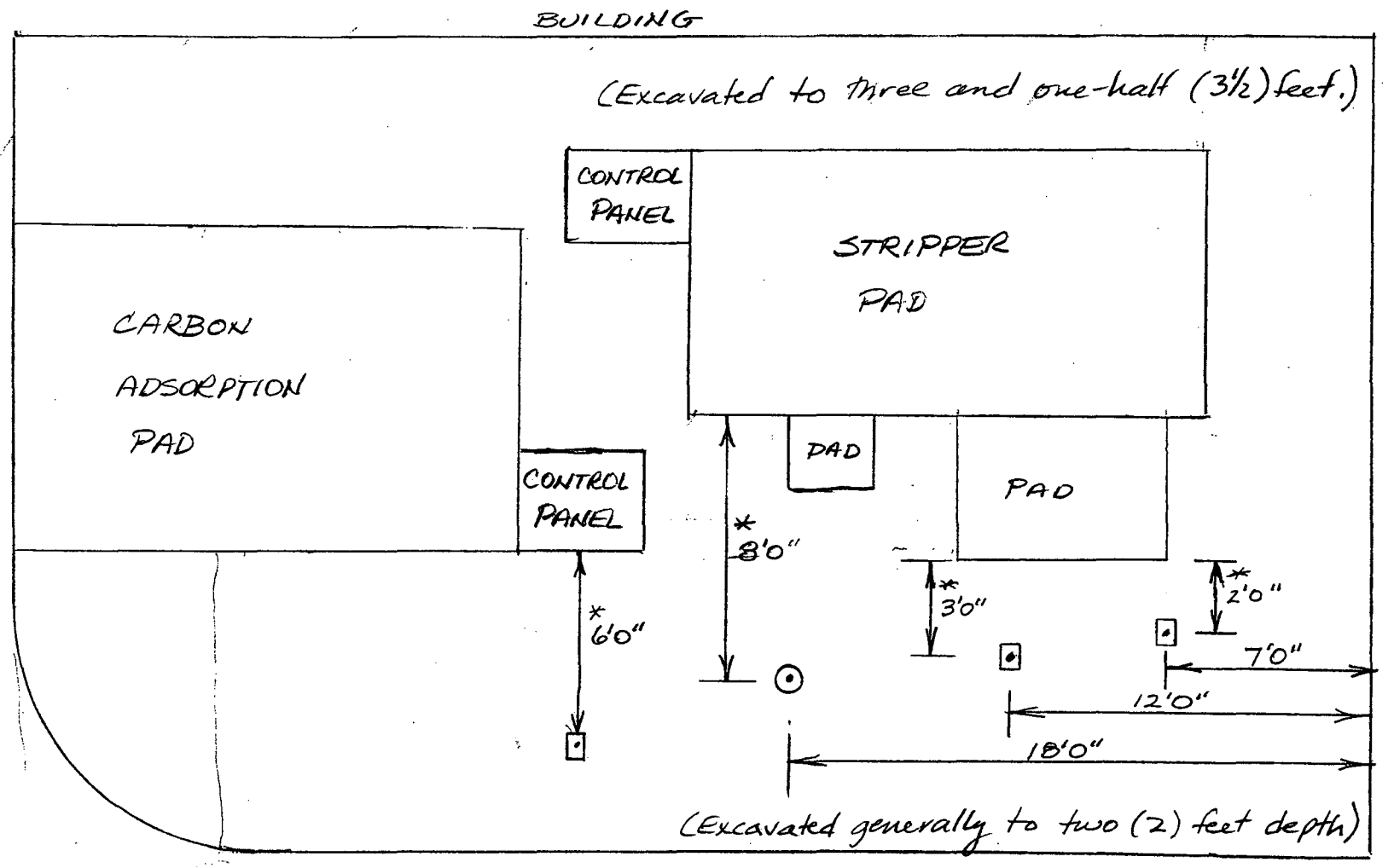
FIGURE NO. 1

NORTH SIDE
AREA 1

TCE - CONTAMINATED WATER SPILLS

DRILLING / SAMPLING PLAN

⊙ 2" CORE SAMPLE DRILLING ⊡ SURFACE SAMPLE



* ALL MEASUREMENTS FROM EDGE OF PAD AT SURFACE

SCALE: 1" = 5'0"

JRE
3-11-85

SCOEPA00055014

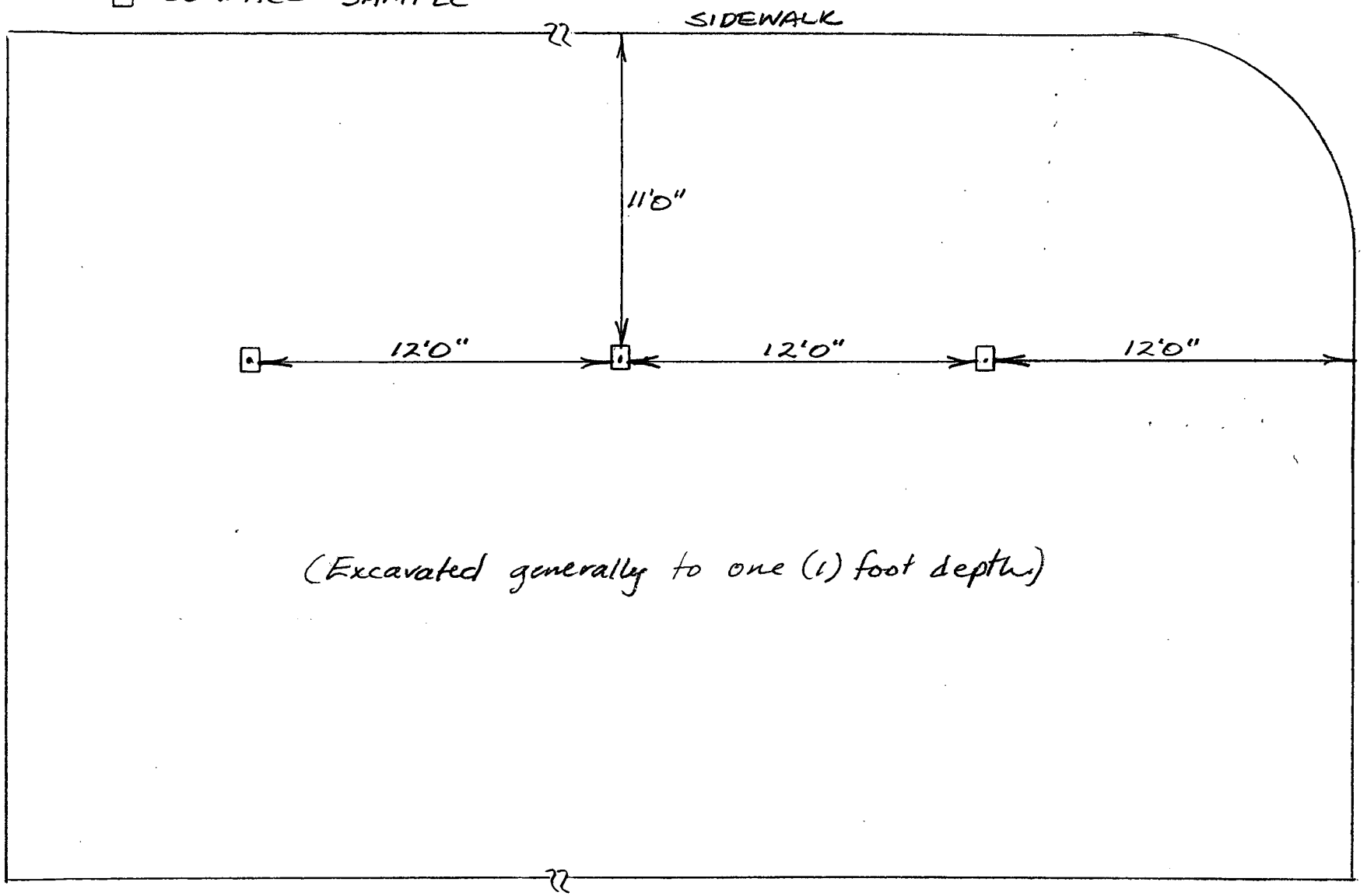
FIGURE NO. 2

TCE-CONTAMINATED WATER SPILLS

SOUTH SIDE

DRILLING/SAMPLING PLAN

⊡ SURFACE SAMPLE

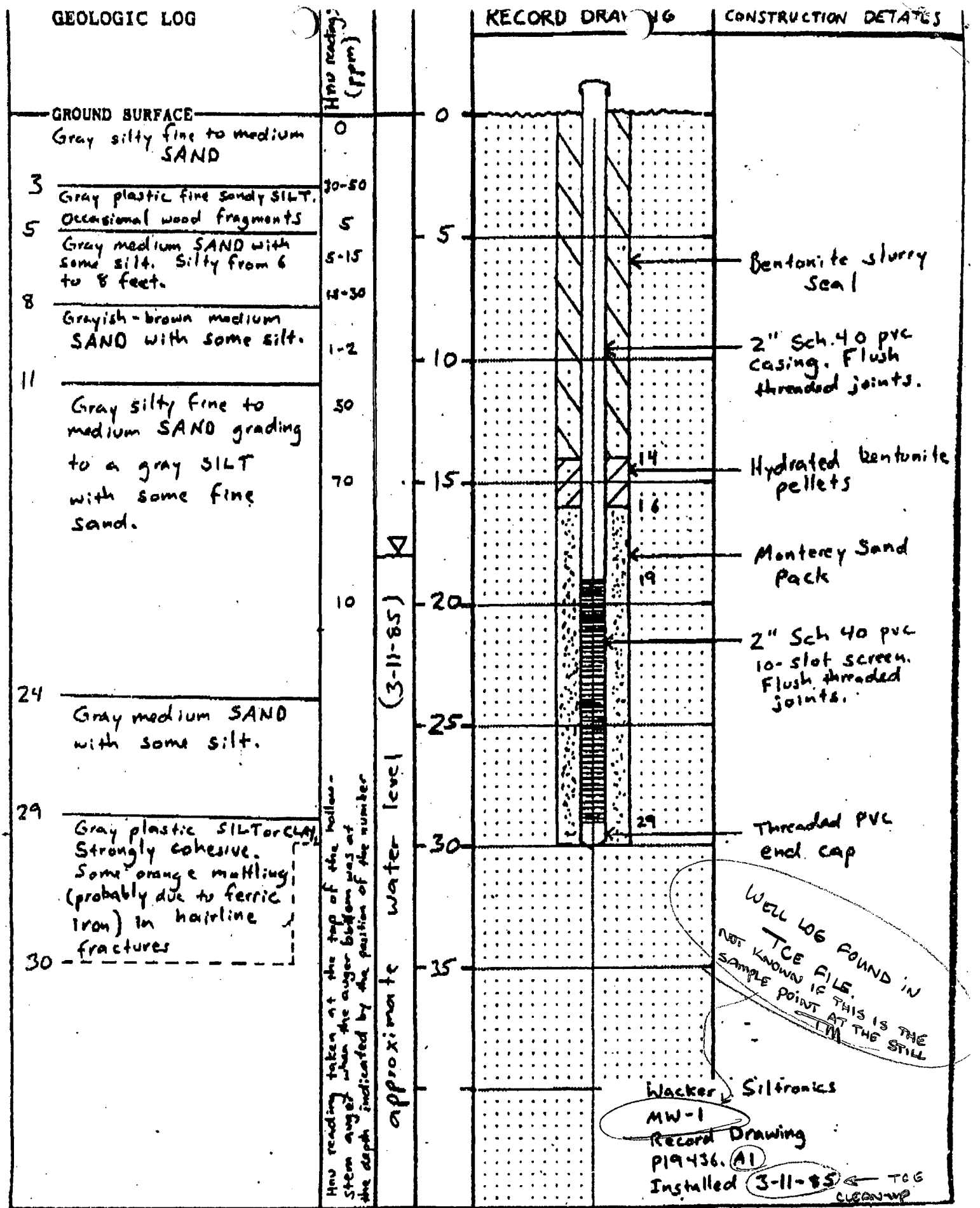


SCALE: 1" = 5'0"

JRE

3-11-85

SCOEPA00055015



TO: S. Payne/PDV

from: K. Shump/SEA

SCOEPA00055016

TCE (History)
Use & Management
Support Docs.

SCOEPA00055017

Wacker Siltronic Corporation
P.O. Box 03180
Portland, OR 97203
7200 N.W. Front Ave.
Portland, OR 97229
Phone (503) 243-2020
TWX 910-464-4777
FAX 503 226-0052

March 19, 1985

Ms. Janet A. Gillaspie
Regional Manager
Northwest Region
Department of Environmental Quality
Post Office Box 1760, Portland 97207
522 S.W. Fifth Avenue
Portland, Oregon 97204

Dear Ms. Gillaspie:

Receipt of your letter of March 11, 1985 is acknowledged. Enclosed is a summary of TCE Stripper Operations setting forth the data upon which our response is based.

On the basis of your oral advice regarding the contents of your letter, Wacker Siltronic Corporation embarked on a testing program which included drilling on the site over the weekend of March 9 and 10, 1985. As you may know, we coordinated our sampling program with Renato Dulay. Attachment (O) to the enclosed summary includes a diagram of the sampling program which was approved by Mr. Dulay. We have now completed the sampling as outlined in our letter of March 11, 1985, to Mr. Dulay. Attachment (Q) shows the results of our sampling program. You will note that very little TCE remains on the surface and that the levels are less than one part per million at a relatively shallow depth.

We have determined the maximum amount of TCE which could have been spilled on our property from April, 1984, the effective date of the current regulations. Attachment (G) sets forth our computations and is based upon a worst-case analysis. Promptly after the December 31, 1984 spill occurred we took steps to deal with the situation. There is a chronology of events related to the December spills included in the enclosed summary. Attachment (I) is the report and recommendation of Environmental Emergency Services Company, a copy of which has previously been provided to you.

We have removed substantially more material than was recommended by Environmental Emergency Services Company. Attachment (J) shows the extent of our removal program. Based upon concentrations of TCE in Environmental Emergency Services soil samples, and more recent soil samples, Attachment (Q), we have determined that removal of the soil in January would have accomplished the removal of all waste material spilled since April 1984, Attachment (R). Therefore, we believe that we have completed removal of the waste as required by OAR 340-108-010 (2).

Your letter refers to removal of spill residue to background levels. We assume that when you wrote your letter you did not have in mind that the present facility, which was constructed in late 1982, replaced equipment which had been subject to corrosion and had experienced leaks on occasion. Therefore, there was undoubtedly some TCE in the ground at the effective date of the current DEQ regulations.

We are confident that the remaining amounts of TCE disclosed by our sampling are a result of prior incidents. This view is supported not only by the amount of TCE which has been removed from the site, but also by the fact that the ground was frozen when the December 31 spill occurred and there was a minimal amount of rainfall between the date of that spill and our removal of the affected material.

As noted above, we have removed the spill residue as required by DEQ regulations. We interpret the regulations to justify additional requirements only when there is a demonstrated hazard to the environment. In view of the small amounts of TCE remaining from these prior spills, it is apparent that there is no hazard to the environment.

Attachment (D) shows our containment plan to prevent any damage from future spills. As noted on the chronology of events, we already have received bids for these improvements and are ready to proceed with construction. We request your consent to filling the excavated areas and construction of the containment improvements as soon as possible so that we can put our facility back into operation.

Yours very truly,

WACKER SILTRONIC CORPORATION

James R. Ellis
Acting Facilities Manager

JE:jsm

Enclosures

Van Waters & Rogers
division of Univar

RECEIVED
FEB 22 1985
WACKER SILTRONIC
ENGINEERING

BOX 10287
PORTLAND, OR 97210
PHONE (503) 222-1721

February 18, 1985

Ms. Joyce Nunley, Sales Rep.
Chem-Security Systems, Inc.
P.O. Box 1269
Portland, OR 97207-1269

Re: Permit No. D64722
Water Solution with Trichloroethylene

Dear Joyce:

We wish to apply to increase the maximum disposal volume of the subject waste. Currently we are authorized a maximum of 100 drums.

Due to an emergency situation that exists at Wacker Siltronics, we expect an additional volume of 10,000-20,000 gallons of waste to be generated. Wacker Siltronics experienced a chemical spill and is under DEQ direction to clean up the area. Excavation of the spill area has immobilized their chemical separator. With the separator shut down their chemical waste by-passes this important process that reduces water content in the waste. Until they are allowed by the DEQ to refill the excavated site the plant will be inoperable. They expect approval by February 20th.

Due to the large volume involved, we further request we be allowed to deliver in bulk rather than drums.

Once the situation is resolved we expect the routine to return to normal.

Sincerely,

VAN WATERS & ROGERS

Stanley A. West
Area Operations Manager

SAW:ac

cc: Jim Ellis - Wacker Siltronics

Rec'd: 7/9/01

Report Date: July 5, 2001
Job Number: A10621BI
PO Number: 4500075102
Project No: 01-71-72
Project Name: None Provided

Tom Rothschild
Wacker Siltronic
7200 NW Front Avenue
Portland, OR 97210-3676

Analytical Narrative

The sample was received on 06/21/01 by Coffey Laboratories, Inc. (CLI) Sample Reception personnel under strict chain of custody protocol. The following information was provided at the time of sample reception:

Laboratory Sample ID	Field Identification	Matrix	Collection Date	Collection Time
A10621BI-1	01-71a CDA CATCH BASIN	Soil	06/19/01	1400
A10621BI-2	01-71b Chrome shed catch Basin	Soil	06/19/01	1400
A10621BI-3	CLI Composite 1-2	Soil	06/19/01	COMP
A10621BI-4	01-72 Field sample	Water	06/19/01	1400

The recommended holding time for each batch of analyses was in accordance with the data quality objectives as specified in the CLI Quality Assurance Plan unless otherwise noted.

Acceptable precision and accuracy were achieved for all analyses associated with this work order as demonstrated by the recoveries of the quality control samples analyzed concurrently with each batch.

The data submitted in this report is for the sole and exclusive use of the above-named client. All samples associated with the work order will be retained a maximum of 15 days from the report date or until the maximum holding time expires. All results pertain only to samples submitted.

Thank you for allowing Coffey Laboratories to be of service to you. If you have questions or need further assistance, please do not hesitate to call our Customer Services Department.

Sincerely,

Rapheda Kovacs

Technical Services

TS /atc

Coffey Laboratories, Inc.
12423 N.E. Whitaker Way • Portland, OR • 97230 • (503) 254-1794 • FAX (503) 254-1452

Analytical Data

Wacker Siltronic

Job Number: A10621BI

Lab Sample ID: A10621BI-3
Field ID: CLI Composite 1-2
Date/Time: 06/19/01 COMP
Matrix: Soil

EPA Category: Conventional Parameters

Parameter	Method	Detection Limit	Analytical Result	Units
Total Organic Carbon	EPA 415.1	0.8	13000. E	mg/Kg
Total Cyanide	EPA 9010	0.25	0.4	mg/Kg

E means Estimated Concentration

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SCOEPA00055022

Analytical Data

Wacker Siltronic

Job Number: A10621BI
Page Number: 3 of 21

Lab Sample ID: A10621BI-3
Field ID: CLI Composite 1-2
Date/Time: 06/19/01 COMP
Matrix: Soil

EPA Category: Metals

Parameter	Method	Detection Limit	Analytical Result	Units
Antimony	EPA 6020	0.5	ND	mg/Kg
Arsenic	EPA 6020	0.25	1.1	mg/Kg
Barium	EPA 6020	0.05	46.	mg/Kg
Cadmium	EPA 6020	0.1	0.55	mg/Kg
Chromium	EPA 6020	0.5	13.	mg/Kg
Cobalt	EPA 6020	0.05	4.4	mg/Kg
Copper	EPA 6020	0.25	32.	mg/Kg
Iron	EPA 6010	25	10000.	mg/Kg
Lead	EPA 6020	0.1	16.	mg/Kg
Magnesium	EPA 6010	2.5	1400.	mg/Kg
Manganese	EPA 6010	5.0	110.	mg/Kg
Mercury	EPA 7471	0.01	0.02	mg/Kg
Nickel	EPA 6020	0.25	8.3	mg/Kg
Selenium	EPA 6020	0.5	ND	mg/Kg
Silver	EPA 6020	0.1	1.3	mg/Kg
Thallium	EPA 6020	0.05	ND	mg/Kg
Titanium	EPA 6020	10.	430.	mg/Kg
Vanadium	EPA 6020	0.05	25.	mg/Kg
Zinc	EPA 6020	5.	360.	mg/Kg

ND means none detected at or above the detection limit listed.

Analytical Data

Wacker Siltronic

Job Number: A10621BI

Lab Sample ID: A10621BI-3
Field ID: CLI Composite 1-2
Date/Time: 06/19/01 COMP
Matrix: Soil

EPA Category: Volatile Organics
Analysis Performed: EPA 8260; Volatile Organics by GC/MS.
Analysis Date: 06/26/01
Analyst: MRD

Parameter	Detection Limit	Laboratory Blank	Analytical Result
Acetone	5.22	ND	ND
Benzene	1.74	ND	ND
Bromobenzene	1.74	ND	ND
Bromochloromethane	1.74	ND	ND
Bromodichloromethane	1.74	ND	ND
Bromoform	1.74	ND	ND
Bromomethane	1.74	ND	ND
2-Butanone (MEK)	1.74	ND	ND
n-Butylbenzene	1.74	ND	ND
sec-Butylbenzene	1.74	ND	ND
tert-Butylbenzene	1.74	ND	ND
Carbon Disulfide	1.74	ND	ND
Carbon tetrachloride	1.74	ND	ND
Chlorobenzene	1.74	ND	ND
Chloroethane	1.74	ND	ND
2-Chloroethylvinyl ether	1.74	ND	ND
Chloroform	1.74	ND	ND
Chloromethane	1.74	ND	ND
2-Chlorotoluene	1.74	ND	ND
4-Chlorotoluene	1.74	ND	ND
1,2-Dibromo-3-chloropropane	1.74	ND	ND
Dibromochloromethane	1.74	ND	ND
1,2-Dibromoethane	1.74	ND	ND
Dibromomethane	1.74	ND	ND
1,2-Dichlorobenzene	1.74	ND	ND
1,3-Dichlorobenzene	1.74	ND	ND
1,4-Dichlorobenzene	1.74	ND	ND
Dichlorodifluoromethane	1.74	ND	ND
1,1-Dichloroethane	1.74	ND	ND
1,2-Dichloroethane	1.74	ND	ND

Results expressed as mg/kg unless otherwise noted.
ND means none detected at or above the detection limit listed.

Analytical Data

Wacker Siltronic

Job Number: A10621BI

Lab Sample ID: A10621BI-3
Field ID: CLI Composite 1-2
Date/Time: 06/19/01 COMP
Matrix: Soil

EPA Category: Volatile Organics
Analysis Performed: EPA 8260; Volatile Organics by GC/MS.
Analysis Date: 06/26/01
Analyst: MRD

Parameter	Detection Limit	Laboratory Blank	Analytical Result
1,1-Dichloroethene	1.74	ND	ND
cis-1,2-Dichloroethene	1.74	ND	ND
trans-1,2-Dichloroethene	1.74	ND	ND
1,2-Dichloropropane	1.74	ND	ND
1,3-Dichloropropane	1.74	ND	ND
2,2-Dichloropropane	1.74	ND	ND
1,1-Dichloropropene	1.74	ND	ND
cis-1,3-Dichloropropene	1.74	ND	ND
trans-1,3-Dichloropropene	1.74	ND	ND
Ethylbenzene	1.74	ND	ND
Hexachlorobutadiene	1.74	ND	ND
2-Hexanone	1.74	ND	ND
Iodomethane	1.74	ND	ND
Isopropylbenzene	1.74	ND	ND
4-Isopropyltoluene	1.74	ND	ND
4-Methyl-2-pentanone	1.74	ND	ND
Methylene chloride	1.74	ND	ND
Naphthalene	1.74	ND	ND
n-Propylbenzene	1.74	ND	ND
Styrene	1.74	ND	ND
1,1,1,2-Tetrachloroethane	1.74	ND	ND
1,1,2,2-Tetrachloroethane	1.74	ND	ND
Tetrachloroethene	1.74	ND	ND
Toluene	1.74	ND	10.
1,2,3-Trichlorobenzene	1.74	ND	ND
1,2,4-Trichlorobenzene	1.74	ND	ND
1,1,1-Trichloroethane	1.74	ND	ND
1,1,2-Trichloroethane	1.74	ND	ND
Trichloroethene	1.74	ND	ND
Trichlorofluoromethane	1.74	ND	ND

Results expressed as mg/kg unless otherwise noted.
ND means none detected at or above the detection limit listed.

SCOEPA00055025

Analytical Data

Wacker Siltronic

Job Number: A10621BI

Lab Sample ID: A10621BI-3
Field ID: CLI Composite 1-2
Date/Time: 06/19/01 COMP
Matrix: Soil

EPA Category: Volatile Organics
Analysis Performed: EPA 8260; Volatile Organics by GC/MS.
Analysis Date: 06/26/01
Analyst: MRD

Parameter	Detection Limit	Laboratory Blank	Analytical Result
1,2,3-Trichloropropane	1.74	ND	ND
1,2,4-Trimethylbenzene	1.74	ND	ND
1,3,5-Trimethylbenzene	1.74	ND	ND
Vinyl acetate	1.74	ND	ND
Vinyl chloride	1.74	ND	ND
m,p-Xylene	3.48	ND	ND
o-Xylene	1.74	ND	ND
4-Bromofluorobenzene (Surr.)	---	---	99%
Dibromofluoromethane (Surr.)	---	---	100%
Toluene-d8 (Surr.)	---	---	102%

Results expressed as mg/kg unless otherwise noted.
ND means none detected at or above the detection limit listed.

Analytical Data

Wacker Siltronic

Lab Sample ID: A10621BI-3
Field ID: CLI Composite 1-2
Date/Time: 06/19/01 COMP
Matrix: Soil

EPA Category: Extractable Organics
Analysis Performed: EPA 8270; Semivolatile Organics by GC/MS.
Analysis Date: 06/30/01
Analyst: AB

Parameter	Detection Limit	Laboratory Blank	Analytical Result
Acenaphthene	69.	ND	ND
Acenaphthylene	69.	ND	ND
Aldrin	69.	ND	ND
Anthracene	69.	ND	ND
Azobenzene	58.	ND	ND
1,2-Diphenylhydrazine	58.	ND	ND
Benzo(a)anthracene	69.	ND	ND
Benzo(a)pyrene	69.	ND	ND
Benzo(b)fluoranthene	69.	ND	ND
Benzo(g,h,i)perylene	69.	ND	ND
Benzo(k)fluoranthene	69.	ND	ND
beta-BHC	69.	ND	ND
delta-BHC	69.	ND	ND
bis(2-Chloroethoxy)methane	69.	ND	ND
bis(2-Chloroethyl)ether	69.	ND	ND
bis(2-Chloroisopropyl)ether	69.	ND	ND
Bis(2-ethylhexyl)phthalate	69.	ND	ND
4-Bromophenyl phenyl ether	69.	ND	ND
Butyl benzyl phthalate	69.	ND	ND
4-Chloro-3-methylphenol	69.	ND	ND
2-Chloronaphthalene	69.	ND	ND
2-Chlorophenol	69.	ND	ND
4-Chlorophenyl phenyl ether	69.	ND	ND
Chrysene	69.	ND	ND
4,4-DDD	69.	ND	ND
4,4-DDE	69.	ND	ND
4,4-DDT	69.	ND	ND
Di-n-butylphthalate	69.	ND	ND
Di-n-octylphthalate	69.	ND	ND
Dibenzo(a,h)anthracene	69.	ND	ND

Results expressed as mg/kg unless otherwise noted.
ND means none detected at or above the detection limit listed.

Analytical Data

Wacker Siltronic

Job Number: A10621BI

Lab Sample ID: A10621BI-3
Field ID: CLI Composite 1-2
Date/Time: 06/19/01 COMP
Matrix: Soil

EPA Category: Extractable Organics
Analysis Performed: EPA 8270; Semivolatile Organics by GC/MS.
Analysis Date: 06/30/01
Analyst: AB

Parameter	Detection Limit	Laboratory Blank	Analytical Result
1,2-Dichlorobenzene	69.	ND	ND
1,4-Dichlorobenzene	69.	ND	ND
1,3-Dichlorobenzene	69.	ND	ND
2,4-Dichlorophenol	69.	ND	ND
Dieldrin	69.	ND	ND
Diethyl phthalate	69.	ND	ND
2,4-Dimethylphenol	69.	ND	ND
Dimethylphthalate	69.	ND	ND
2,4-Dinitrophenol	138.	ND	ND
2,4-Dinitrotoluene	69.	ND	ND
2,6-Dinitrotoluene	69.	ND	ND
Endosulfan sulfate	69.	ND	ND
Endrin Aldehyde	69.	ND	ND
Fluoranthene	69.	ND	ND
Fluorene	69.	ND	ND
Heptachlor	69.	ND	ND
Heptachlor epoxide	69.	ND	ND
Hexachlorobenzene	69.	ND	ND
Hexachlorobutadiene	69.	ND	ND
Hexachloroethane	69.	ND	ND
Indeno(1,2,3-cd)pyrene	69.	ND	ND
Isophorone	69.	ND	ND
2-Methyl-4,6-dinitrophenol	69.	ND	ND
N-Nitrosodi-n-propylamine	69.	ND	ND
Naphthalene	69.	ND	ND
Nitrobenzene	69.	ND	ND
4-Nitrophenol	69.	ND	ND
2-Nitrophenol	69.	ND	ND
Pentachlorophenol	69.	ND	ND
Phenanthrene	69.	ND	ND

Results expressed as mg/kg unless otherwise noted.
ND means none detected at or above the detection limit listed.

SCOEPA00055028

Analytical Data

Wacker Siltronic

Job Number: A10621BI

Lab Sample ID: A10621BI-3
Field ID: CLI Composite 1-2
Date/Time: 06/19/01 COMP
Matrix: Soil

EPA Category: Extractable Organics
Analysis Performed: EPA 8270; Semivolatile Organics by GC/MS.
Analysis Date: 06/30/01
Analyst: AB

Parameter	Detection Limit	Laboratory Blank	Analytical Result
Phenol	69.	ND	ND
Pyrene	69.	ND	ND
1,2,4-Trichlorobenzene	69.	ND	ND
2,4,6-Trichlorophenol	69.	ND	ND
2-Fluorobiphenyl (Surr.)	---	---	Diluted out of range
2-Fluorophenol (Surr.)	---	---	Diluted out of range
Nitrobenzene-d5 (Surr.)	---	---	Diluted out of range
Phenol-d6 (Surr.)	---	---	Diluted out of range
Terphenyl-d14 (Surr.)	---	---	Diluted out of range
2,4,6-Tribromophenol (Surr.)	---	---	Diluted out of range

Results expressed as mg/kg unless otherwise noted.
ND means none detected at or above the detection limit listed.

SCOEPA00055029

Analytical Data

Wacker Siltronic

Job Number: A10621BI

Lab Sample ID: A10621BI-3
Field ID: CLI Composite 1-2
Date/Time: 06/19/01 COMP
Matrix: Soil

EPA Category: Extractable Organics
Analysis Performed: EPA 8270 SIM; Polynuclear Aromatic Hydrocarbons by SIM GC/MS
Analysis Date: 06/29/01
Analyst: AB

Parameter	Detection Limit	Laboratory Blank	Analytical Result
Acenaphthene	0.17	ND	ND
Acenaphthylene	0.17	ND	ND
Anthracene	0.17	ND	ND
Benzo(a)anthracene	0.17	ND	0.2
Benzo(a)pyrene	0.17	ND	0.2
Benzo(b)fluoranthene	0.17	ND	0.3
Benzo(g,h,i)perylene	0.17	ND	0.2
Benzo(k)fluoranthene	0.17	ND	0.2
Chrysene	0.17	ND	0.3
Dibenzo(a,h)anthracene	0.17	ND	ND
Fluoranthene	0.17	ND	0.4
Fluorene	0.17	ND	ND
Indeno(1,2,3-cd)pyrene	0.17	ND	0.2
Naphthalene	0.17	ND	ND
Phenanthrene	0.17	ND	0.2
Pyrene	0.17	ND	0.4
Decafluorobiphenol (Surr.)	---	---	Diluted out of range

Results expressed as mg/kg unless otherwise noted.
ND means none detected at or above the detection limit listed.

Analytical Data

Wacker Siltronic

Job Number: A10621BI

Lab Sample ID: A10621BI-3
Field ID: CLI Composite 1-2
Date/Time: 06/19/01 COMP
Matrix: Soil

EPA Category: Extractable Organics
Analysis Performed: NW TPH-Dx; TPH quantitative semi-volatile petroleum products
Analysis Date: 06/27/01
Analyst: MKM

Parameter	Detection Limit	Laboratory Blank	Analytical Result
Diesel	2200.	ND	ND
Hydrocarbons heavier than C24	2200.	ND	9000.
o-Terphenyl (Surr.)	---	---	Diluted out of range

Results expressed as mg/kg unless otherwise noted.
ND means none detected at or above the detection limit listed.

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Analytical Data

Wacker Siltronic

Job Number: A10621BI

Lab Sample ID: A10621BI-4
Field ID: 01-72
Date/Time: 06/19/01 1400
Matrix: Water

EPA Category: Conventional Parameters

Parameter	Method	Detection Limit	Analytical Result	Units
Total Cyanide	EPA 335.2	0.1	ND	mg/L
Total Organic Carbon	EPA 415.1	0.8	ND	mg/L

ND means none detected at or above the detection limit listed.

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Analytical Data

Wacker Siltronic

Job Number: A10621BI

Lab Sample ID: A10621BI-4
Field ID: 01-72
Date/Time: 06/19/01 1400
Matrix: Water

EPA Category: Metals

Parameter	Method	Detection Limit	Analytical Result	Units
Antimony	EPA 200.8	0.01	ND	mg/L
Arsenic	EPA 200.8	0.005	ND	mg/L
Barium	EPA 200.8	0.001	ND	mg/L
Cadmium	EPA 200.8	0.002	ND	mg/L
Chromium	EPA 200.8	0.01	ND	mg/L
Cobalt	EPA 200.8	0.001	ND	mg/L
Copper	EPA 200.8	0.005	ND	mg/L
Iron	EPA 200.7	0.5	ND	mg/L
Lead	EPA 200.8	0.002	ND	mg/L
Magnesium	EPA 200.7	0.05	ND	mg/L
Manganese	EPA 200.7	0.1	ND	mg/L
Mercury	EPA 245.1	0.005	ND	mg/L
Nickel	EPA 200.8	0.005	ND	mg/L
Selenium	EPA 200.8	0.05	ND	mg/L
Silver	EPA 200.8	0.005	ND	mg/L
Thallium	EPA 200.8	0.001	ND	mg/L
Titanium	EPA 200.8	0.02	ND	mg/L
Vanadium	EPA 200.8	0.001	ND	mg/L
Zinc	EPA 200.8	0.01	ND	mg/L

ND means none detected at or above the detection limit listed.

Analytical Data

Wacker Siltronic

Job Number: A10621BI

Lab Sample ID: A10621BI-4
Field ID: 01-72
Date/Time: 06/19/01 1400
Matrix: Water

EPA Category: Volatile Organics
Analysis Performed: EPA 8260; Volatile Organics by GC/MS.
Analysis Date: 06/26/01
Analyst: MRD

Parameter	Detection Limit	Laboratory Blank	Analytical Result
Acetone	15.	ND	ND
Benzene	5.	ND	ND
Bromobenzene	5.	ND	ND
Bromochloromethane	5.	ND	ND
Bromodichloromethane	5.	ND	ND
Bromoform	5.	ND	ND
Bromomethane	5.	ND	ND
2-Butanone (MEK)	5.	ND	ND
n-Butylbenzene	5.	ND	ND
sec-Butylbenzene	5.	ND	ND
tert-Butylbenzene	5.	ND	ND
Carbon Disulfide	5.	ND	ND
Carbon tetrachloride	5.	ND	ND
Chlorobenzene	5.	ND	ND
Chloroethane	5.	ND	ND
2-Chloroethylvinyl ether	5.	ND	ND
Chloroform	5.	ND	ND
Chloromethane	5.	ND	ND
2-Chlorotoluene	5.	ND	ND
4-Chlorotoluene	5.	ND	ND
1,2-Dibromo-3-chloropropane	5.	ND	ND
Dibromochloromethane	5.	ND	ND
1,2-Dibromoethane	5.	ND	ND
Dibromomethane	5.	ND	ND
1,2-Dichlorobenzene	5.	ND	ND
1,3-Dichlorobenzene	5.	ND	ND
1,4-Dichlorobenzene	5.	ND	ND
Dichlorodifluoromethane	5.	ND	ND
1,1-Dichloroethane	5.	ND	ND
1,2-Dichloroethane	5.	ND	ND

Results expressed as μg/L unless otherwise noted.
ND means none detected at or above the detection limit listed.

Analytical Data

Wacker Siltronic

Job Number: A10621BI

Lab Sample ID: A10621BI-4
Field ID: 01-72
Date/Time: 06/19/01 1400
Matrix: Water

EPA Category: Volatile Organics
Analysis Performed: EPA 8260; Volatile Organics by GC/MS.
Analysis Date: 06/26/01
Analyst: MRD

Parameter	Detection Limit	Laboratory Blank	Analytical Result
1,1-Dichloroethene	5.	ND	ND
cis-1,2-Dichloroethene	5.	ND	ND
trans-1,2-Dichloroethene	5.	ND	ND
1,2-Dichloropropane	5.	ND	ND
1,3-Dichloropropane	5.	ND	ND
2,2-Dichloropropane	5.	ND	ND
1,1-Dichloropropene	5.	ND	ND
cis-1,3-Dichloropropene	5.	ND	ND
trans-1,3-Dichloropropene	5.	ND	ND
Ethylbenzene	5.	ND	ND
Hexachlorobutadiene	5.	ND	ND
2-Hexanone	5.	ND	ND
Iodomethane	5.	ND	ND
Isopropylbenzene	5.	ND	ND
4-Isopropyltoluene	5.	ND	ND
4-Methyl-2-pentanone	5.	ND	ND
Methylene chloride	5.	ND	12.
Naphthalene	5.	ND	ND
n-Propylbenzene	5.	ND	ND
Styrene	5.	ND	ND
1,1,1,2-Tetrachloroethane	5.	ND	ND
1,1,2,2-Tetrachloroethane	5.	ND	ND
Tetrachloroethene	5.	ND	ND
Toluene	5.	ND	ND
1,2,3-Trichlorobenzene	5.	ND	ND
1,2,4-Trichlorobenzene	5.	ND	ND
1,1,1-Trichloroethane	5.	ND	ND
1,1,2-Trichloroethane	5.	ND	ND
Trichloroethene	5.	ND	ND
Trichlorofluoromethane	5.	ND	ND

Results expressed as μg/L unless otherwise noted.
ND means none detected at or above the detection limit listed.

Analytical Data

Wacker Siltronic

Job Number: A10621BI

Lab Sample ID: A10621BI-4
Field ID: 01-72
Date/Time: 06/19/01 1400
Matrix: Water

EPA Category: Volatile Organics
Analysis Performed: EPA 8260; Volatile Organics by GC/MS.
Analysis Date: 06/26/01
Analyst: MRD

Parameter	Detection Limit	Laboratory Blank	Analytical Result
1,2,3-Trichloropropane	5.	ND	ND
1,2,4-Trimethylbenzene	5.	ND	ND
1,3,5-Trimethylbenzene	5.	ND	ND
Vinyl acetate	5.	ND	ND
Vinyl chloride	5.	ND	ND
m,p-Xylene	10.	ND	ND
o-Xylene	5.	ND	ND
4-Bromofluorobenzene (Surr.)	---	---	99%
Dibromofluoromethane (Surr.)	---.	---	102%
Toluene-d8 (Surr.)	---.	---	102%

Results expressed as µg/L unless otherwise noted.
ND means none detected at or above the detection limit listed.

Note: The sample was not in a preserved zero head space vial. The Methylene chloride could possibly be due to laboratory contaminations the sample was shared for other analytical methods.

Analytical Data

Wacker Siltronic

Job Number: A10621BI

Lab Sample ID: A10621BI-4
Field ID: 01-72
Date/Time: 06/19/01 1400
Matrix: Water

EPA Category: Extractable Organics
Analysis Performed: EPA 8270; Semivolatile Organics by GC/MS.
Analysis Date: 06/27/01
Analyst: AB

Parameter	Detection Limit	Laboratory Blank	Analytical Result
Acenaphthene	0.12	ND	ND
Acenaphthylene	0.12	ND	ND
Aldrin	0.12	ND	ND
Anthracene	0.12	ND	ND
Benzo(a)anthracene	0.12	ND	ND
Benzo(a)pyrene	0.12	ND	ND
Benzo(b)fluoranthene	0.12	ND	ND
Benzo(g,h,i)perylene	0.12	ND	ND
Benzo(k)fluoranthene	0.12	ND	ND
beta-BHC	0.12	ND	ND
delta-BHC	0.12	ND	ND
bis(2-Chloroethoxy)methane	0.12	ND	ND
bis(2-Chloroethyl)ether	0.12	ND	ND
bis(2-Chloroisopropyl)ether	0.12	ND	ND
Bis(2-ethylhexyl)phthalate	0.12	ND	ND
4-Bromophenyl phenyl ether	0.12	ND	ND
Butyl benzyl phthalate	0.12	ND	ND
4-Chloro-3-methylphenol	0.12	ND	ND
2-Chloronaphthalene	0.12	ND	ND
2-Chlorophenol	0.12	ND	ND
4-Chlorophenyl phenyl ether	0.12	ND	ND
Chrysene	0.12	ND	ND
4,4-DDD	0.12	ND	ND
4,4-DDE	0.12	ND	ND
4,4-DDT	0.12	ND	ND
Di-n-butylphthalate	0.12	ND	ND
Di-n-octylphthalate	0.12	ND	ND
Dibenzo(a,h)anthracene	0.12	ND	ND
1,2-Dichlorobenzene	0.12	ND	ND
1,4-Dichlorobenzene	0.12	ND	ND

Results expressed as mg/L unless otherwise noted.
ND means none detected at or above the detection limit listed.

Analytical Data

Wacker Siltronic

Job Number: A10621BI

Lab Sample ID: A10621BI-4
Field ID: 01-72
Date/Time: 06/19/01 1400
Matrix: Water

EPA Category: Extractable Organics
Analysis Performed: EPA 8270; Semivolatile Organics by GC/MS.
Analysis Date: 06/27/01
Analyst: AB

Parameter	Detection Limit	Laboratory Blank	Analytical Result
1,3-Dichlorobenzene	0.12	ND	ND
2,4-Dichlorophenol	0.12	ND	ND
Dieldrin	0.12	ND	ND
Diethyl phthalate	0.12	ND	ND
2,4-Dimethylphenol	0.12	ND	ND
Dimethylphthalate	0.12	ND	ND
2,4-Dinitrophenol	0.24	ND	ND
2,4-Dinitrotoluene	0.12	ND	ND
2,6-Dinitrotoluene	0.12	ND	ND
Endosulfan sulfate	0.12	ND	ND
Endrin Aldehyde	0.12	ND	ND
Fluoranthene	0.12	ND	ND
Fluorene	0.12	ND	ND
Heptachlor	0.12	ND	ND
Heptachlor epoxide	0.12	ND	ND
Hexachlorobenzene	0.12	ND	ND
Hexachlorobutadiene	0.12	ND	ND
Hexachloroethane	0.12	ND	ND
Indeno(1,2,3-cd)pyrene	0.12	ND	ND
Isophorone	0.12	ND	ND
2-Methyl-4,6-dinitrophenol	0.12	ND	ND
N-Nitrosodi-n-propylamine	0.12	ND	ND
Naphthalene	0.12	ND	ND
Nitrobenzene	0.12	ND	ND
4-Nitrophenol	0.12	ND	ND
2-Nitrophenol	0.12	ND	ND
Pentachlorophenol	0.12	ND	ND
Phenanthrene	0.12	ND	ND
Phenol	0.12	ND	ND
Pyrene	0.12	ND	ND

Results expressed as mg/L unless otherwise noted.
ND means none detected at or above the detection limit listed.

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Analytical Data

Wacker Siltronic

Job Number: A10621BI

Lab Sample ID: A10621BI-4
Field ID: 01-72
Date/Time: 06/19/01 1400
Matrix: Water

EPA Category: Extractable Organics
Analysis Performed: EPA 8270; Semivolatile Organics by GC/MS.
Analysis Date: 06/27/01
Analyst: AB

Parameter	Detection Limit	Laboratory Blank	Analytical Result
1,2,4-Trichlorobenzene	0.12	ND	ND
2,4,6-Trichlorophenol	0.12	ND	ND
2-Fluorobiphenyl (Surr.)	---	---	95%
2-Fluorophenol (Surr.)	---	---	60%
Nitrobenzene-d5 (Surr.)	---	---	90%
Phenol-d6 (Surr.)	---	---	39%
Terphenyl-d14 (Surr.)	---	---	115%
2,4,6-Tribromophenol (Surr.)	---	---	80%

Results expressed as mg/L unless otherwise noted.
ND means none detected at or above the detection limit listed.

Analytical Data

Wacker Siltronic

Job Number: A10621BI

Lab Sample ID: A10621BI-4
Field ID: 01-72
Date/Time: 06/19/01 1400
Matrix: Water

EPA Category: Extractable Organics
Analysis Performed: EPA 8270 SIM; Polynuclear Aromatic Hydrocarbons by SIM GC/MS
Analysis Date: 06/29/01
Analyst: AB

Parameter	Detection Limit	Laboratory Blank	Analytical Result
Acenaphthene	2.	ND	ND
Acenaphthylene	2.	ND	ND
Anthracene	2.	ND	ND
Benzo(a)anthracene	2.	ND	ND
Benzo(a)pyrene	2.	ND	ND
Benzo(b)fluoranthene	2.	ND	ND
Benzo(g,h,i)perylene	2.	ND	ND
Benzo(k)fluoranthene	2.	ND	ND
Chrysene	2.	ND	ND
Dibenzo(a,h)anthracene	2.	ND	ND
Fluoranthene	2.	ND	ND
Fluorene	2.	ND	ND
Indeno(1,2,3-cd)pyrene	2.	ND	ND
Naphthalene	2.	ND	ND
Phenanthrene	2.	ND	ND
Pyrene	2.	ND	ND
Decafluorobiphenol (Surr.)	---	---	70%

Results expressed as μg/L unless otherwise noted.
ND means none detected at or above the detection limit listed.

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Analytical Data

Wacker Siltronic

Job Number: A10621BI

Lab Sample ID: A10621BI-4
Field ID: 01-72
Date/Time: 06/19/01 1400
Matrix: Water

EPA Category: Extractable Organics
Analysis Performed: NW TPH-Dx; TPH quantitative semi-volatile petroleum products
Analysis Date: 06/27/01
Analyst: MKM

Parameter	Detection Limit	Laboratory Blank	Analytical Result
Diesel	2.5	ND	ND
Hydrocarbons heavier than C24	5.	ND	ND
o-Terphenyl (Surr.)	---	---	120%

Results expressed as mg/l unless otherwise noted.
ND means none detected at or above the detection limit listed.

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COFFEY LABORATORIES, INC.
CHAIN OF CUSTODY AGREEMENT

CENTRAL OREGON BRANCH
827 SW 7th
Redmond, OR 97756
PHONE/FAX (541) 548-0972

CORPORATE HEADQUARTERS
12423 NE Whitaker Way
Portland, OR 97230
(503) 254-1794 FAX: (503) 254-1452

EASTERN OREGON BRANCH
419 SW 5th
Pendleton, OR 97801
PHONE/FAX (541) 276-0385

Report Attention: Tom Rothschild
Company Name: Wacker Siltronic
Mailing Address: 7200 N.W. Front Ave
Portland, OR
Phone: (503) 219-7374 FAX: (503) 417-4144

Report Instructions (Special - Additional- Job Specific):

PO Number: 4500075102
Project Number: 01-71-72
Project Name:
EPA Protocol Containers: (Y)/N Other:

Sample Turnaround
- [x] Standard
- [ ] Priority (Additonal Fee)
- [ ] Rush (Additional Fee)
- [ ] Emergency (Additional Fee)

Initials: Di

Reporting Request
- [ ] State Compliance Format
- [ ] FAX Results - Preliminary
- [x] FAX Results-Final
- [ ] Verbals Results
- [ ] Extra Report Copy (Fees Associated)

FOR LABORATORY USE ONLY Page ____ of ____
Job Number:
Custabbr: ☐NEW
☐ VISA ☐ M/C Cardholder:
Card #: Exp: / /
Cash / Check / CC:$ #:
Billing Code: 1 2 3 4
QC LEVEL: 1 2 3 4
FEDX BUS COURIERS UPS LAB CLIENT MAIL AIR

Sample ID	Loc.	ID	#	Collection Date	Collection Time	Media	Analysis Requested	Test/ Profile
01-71-a-b-c Di			2 ~~3~~	6.19.01	1400	Soil	NW-TPH Dx, EPA: 8021B, 8260B	
							8270C, 8270 SIM, 6010/200.7	
							7470.A, 415.1 and 9010.	
01-72			1	6.19.01	1400	liquid	NW-TPH Dx, EPA: 8021B, 8260B	
							8270C, 8270 SIM, 6010/200.7	
							7470A, 415.1 and 9010.	

Sampled By: Tom McCoe / Jim Claxton
AUTHORIZED CUSTOMER SIGNATURE Dianne Irish DATE: June 19 - 01

Sample Comments	Relinquished by: (Please Sign)	Date	Time	Received by: (Sign)	Date	Time
* see attached sheet for method detail. Please call for needed Clarification	Jim Claxton	6/19/01	2:23	Dianne Irish	6/19/01	2:23
	[signature]	6/19/01	2:23	LAB [signature]	6/21/01	1015

White Copy-Laboratory Yellow Copy - Customer

COMPLETE THIS FORM PER INSTRUCTIONS ON REVERSE SIDE

SUBMISSION OF SAMPLES WITH TESTING REQUIREMENTS TO CLI WILL BE UNDERSTOOD TO BE AN AGREEMENT FOR SERVICES IN ACCORDANCE WITH THE CONDITIONS LISTED ON THE BACK OF THE CLIENT COPY.

[redacted]

Waste Responsibility Table

Area	Department	Process	Wastestream	Responsible Person
Corporate Site Services				
	Corporate Engineering			
		Machine Shop		
			Batteries - Alkaline	Jay Zuiderveld
			Batteries - Ni Cad	Jay Zuiderveld
			Recycled materials (*)	Jay Zuiderveld
			Safety Kleen Solvent	Jay Zuiderveld
			Used oil	Jay Zuiderveld
			Aerosol Containers (partially full)	Jay Zuiderveld
	Facility Maintenance			
		Electrical		
			Aerosol Containers (partially full)	Mike Iannantuano
			Batteries - Alkaline	Mike Iannantuano
			Batteries - Lead Acid	Mike Iannantuano
			Lights/Bulbs (fluorescent/mercury)	Mike Iannantuano
			Lights/Bulbs (incandescent)	Mike Iannantuano
			Recycled materials (*)	Mike Iannantuano
		HVAC Maintenance		
			Batteries - Alkaline	Mike Iannantuano
			Empty Drums	Mike Iannantuano
		Instrumentation		
			Aerosol Containers (partially full)	Mike Iannantuano
			Batteries - Alkaline	Mike Iannantuano
			Recycled materials (*)	Mike Iannantuano
		Mechanical		
			Aerosol Containers (partially full)	Mike Iannantuano
			Batteries - Alkaline	Mike Iannantuano
			Recycled materials (*)	Mike Iannantuano
			Used oil	Mike Iannantuano
			Used Oil Filters	Mike Iannantuano
	Facility Operations			
		Facilities Lab		
			Batteries - Alkaline	Tom Rothschild
			Chromic Acid Waste	Tom Rothschild
			Recycled materials (*)	Tom Rothschild
		RODI/UPW		
			Empty Drums	Justin Darr
			Lights/Bulbs (fluorescent/mercury)	Mike Iannantuano
			Recycled materials (*)	Justin Darr
		Scrubbers		
			Empty Drums	Justin Darr

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WWTP

Batteries - Alkaline	Justin Darr
Batteries - Ni Cad	Justin Darr
Chrome Debris	Justin Darr
Chrome Sludge	Justin Darr
Chromic Acid Waste	Justin Darr
Empty Drums	Justin Darr
Particulates/Slurry	Justin Darr
Recycled materials (*)	Justin Darr
Sludge -Silicon/Calcium Fluoride (WWTP)	Justin Darr
Spill clean up materials/ Absorbents/ Pigs	Justin Darr

Labs

Analytical Labs

Batteries - Alkaline	All
Lab Packs (contains chemicals for disposal)	Shipping
Mercury and DI water	Jim Claxton
Particulates/Slurry	Jim Claxton
Recycled materials (*)	All
Used oil	Jim Glenn
Used Oil Filters	Jim Glenn
Wafers - scrap	Rudie Salvador/Nancy Lao

MC Lab

Chrome Debris	Walt Socha
Chromic Acid Waste	Walt Socha
Recycled materials (*)	Erik Grann
Wafers - scrap	Rico Delapaz

Measurement Systems

Batteries - Alkaline	Phil White
Lights/Bulbs (fluorescent/mercury)	Phil White
Mercury and DI water	Phil White
Mercury contaminated debris	Phil White
Recycled materials (*)	Phil White
Wafers - scrap	Phil White

Incoming Inspection

Batteries - Alkaline	All
Recycled materials (*)	All

Warehouse

Recycled materials (*)	Dave McNinch

Shipping

Lab Packs (contains chemicals for disposal)	Mark Heintz

Support Areas

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All Office Areas

Aluminum Cans	Pac West
Batteries - Alkaline	All
Batteries - Ni Cad	All
Recycled materials (*)	Pac West
Spill clean up materials/ Absorbents/ Pigs	Pac West

Nurse's Station, ERT

Medical Waste	Linda Canham

Area	Department	Process	Wastestream	Responsible Person	
Fab 1					
	Fab 1 Equipment Maintenance				
		Team A, B, C			
			Aerosol Containers (partially full)	Tom Cates	Equip/Engineering T/L
			Batteries - Alkaline	Tom Cates	Equip/Engineering T/L
			Batteries - Lead Acid	Tom Cates	Equip/Engineering T/L
			Empty Drums	Tom Cates	Equip/Engineering T/L
			Lights/Bulbs (fluorescent/mercury)	Tom Cates	Equip/Engineering T/L
			Lights/Bulbs (incandescent)	Tom Cates	Equip/Engineering T/L
			Recycled materials (*)	Tom Cates	Equip/Engineering T/L
			Used oil	Tom Cates	Equip/Engineering T/L
			Used Oil Filters	Tom Cates	Equip/Engineering T/L
		Team D, E/FC			
			Aerosol Containers (partially full)	Tom Cates	Equip/Engineering T/L
			Batteries - Alkaline	Tom Cates	Equip/Engineering T/L
	Team A, Growing				
		Cropping, Cutting & Testing			
			Recycled materials (*)	Jeff Jones	Mfg Team Leader - Team A
			Silicon	Jeff Jones	Mfg Team Leader - Team A
			Sludge - Silicon	Jeff Jones	Mfg Team Leader - Team A
		Crystal Growing			
			Antimony Dust	Jeff Jones	Mfg Team Leader - Team A
			Batteries - Alkaline	Jeff Jones	Mfg Team Leader - Team A
			Batteries - Lead Acid	Jeff Jones	Mfg Team Leader - Team A
			Empty Drums	Jeff Jones	Mfg Team Leader - Team A
			Recycled materials (*)	Jeff Jones	Mfg Team Leader - Team A
			Silicon	Jeff Jones	Mfg Team Leader - Team A
			Spill clean up materials/ Absorbents/ Pigs	Jeff Jones	Mfg Team Leader - Team A
			Used oil	Jeff Jones	Mfg Team Leader - Team A
			Used Oil Filters	Jeff Jones	Mfg Team Leader - Team A
		Grinding			

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Particulates/Slurry	Jeff Jones	Mfg Team Leader - Team A
Recycled materials (*)	Jeff Jones	Mfg Team Leader - Team A
Silicon	Jeff Jones	Mfg Team Leader - Team A

Ingot Annealing

Recycled materials (*)	Jeff Jones	Mfg Team Leader - Team A
Silicon	Jeff Jones	Mfg Team Leader - Team A

Team B/C Wafer Shaping

Annealing

Lights/Bulbs (incandescent)	Carlos Ferrer	Mfg Team Leader - Team B/C
Recycled materials (*)	Carlos Ferrer	Mfg Team Leader - Team B/C
Silicon	Carlos Ferrer	Mfg Team Leader - Team B/C
Wafers - scrap	Carlos Ferrer	Mfg Team Leader - Team B/C

Clean Wafer Inspection

Lights/Bulbs (incandescent)	Carlos Ferrer	Mfg Team Leader - Team B/C
Recycled materials (*)	Carlos Ferrer	Mfg Team Leader - Team B/C

D-125, Solution Storage

Empty Drums	Carlos Ferrer	Mfg Team Leader - Team B/C
Recycled materials (*)	Carlos Ferrer	Mfg Team Leader - Team B/C

Edge Rounding

Particulates/Slurry	Carlos Ferrer	Mfg Team Leader - Team B/C
Recycled materials (*)	Carlos Ferrer	Mfg Team Leader - Team B/C

Etching

Batteries - Alkaline	Carlos Ferrer	Mfg Team Leader - Team B/C
Lights/Bulbs (incandescent)	Carlos Ferrer	Mfg Team Leader - Team B/C
Recycled materials (*)	Carlos Ferrer	Mfg Team Leader - Team B/C
Spill clean up materials/ Absorbents/ Pigs	Carlos Ferrer	Mfg Team Leader - Team B/C
Wafers - scrap	Carlos Ferrer	Mfg Team Leader - Team B/C

Lasermark

Lights/Bulbs (incandescent)	Carlos Ferrer	Mfg Team Leader - Team B/C
Recycled materials (*)	Carlos Ferrer	Mfg Team Leader - Team B/C

Slicing

Aluminum - scrap	Carlos Ferrer	Mfg Team Leader - Team B/C
Empty Drums	Carlos Ferrer	Mfg Team Leader - Team B/C
Lights/Bulbs (fluorescent/mercury)	Carlos Ferrer	Mfg Team Leader - Team B/C
Recycled materials (*)	Carlos Ferrer	Mfg Team Leader - Team B/C
Silicon	Carlos Ferrer	Mfg Team Leader - Team B/C
Sludge - Silicon	Carlos Ferrer	Mfg Team Leader - Team B/C
Spill clean up materials/ Absorbents/ Pigs	Carlos Ferrer	Mfg Team Leader - Team B/C
Wafers - scrap	Carlos Ferrer	Mfg Team Leader - Team B/C

Wet Blast

Particulates/Slurry	Carlos Ferrer	Mfg Team Leader - Team B/C
Recycled materials (*)	Carlos Ferrer	Mfg Team Leader - Team B/C

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Silicon	Carlos Ferrer	Mfg Team Leader - Team B/C
Wafers - scrap	Carlos Ferrer	Mfg Team Leader - Team B/C

ADE Measurement

Recycled materials (*)	Carlos Ferrer	Mfg Team Leader - Team B/C
Silicon	Carlos Ferrer	Mfg Team Leader - Team B/C

Cleaning/ Inspection

Empty Drums	Carlos Ferrer	Mfg Team Leader - Team B/C
Recycled materials (*)	Carlos Ferrer	Mfg Team Leader - Team B/C
Silicon	Carlos Ferrer	Mfg Team Leader - Team B/C
Wafers - scrap	Carlos Ferrer	Mfg Team Leader - Team B/C

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Area	Department	Process	Wastestream	Responsible Person	
	Team D Polishing\Final Cleaning	*Polishing*			
			Aluminum - scrap	Randy Rigby	Mfg Team Leader - Team D
			Empty Drums	Randy Rigby	Mfg Team Leader - Team D
			Particulates/Slurry	Randy Rigby	Mfg Team Leader - Team D
			Recycled materials (*)	Randy Rigby	Mfg Team Leader - Team D
			Silicon	Randy Rigby	Mfg Team Leader - Team D
			Wafers - scrap	Randy Rigby	Mfg Team Leader - Team D
			Wax from Enya	Randy Rigby	Mfg Team Leader - Team D
		ADE Measurement			
			Recycled materials (*)	Randy Rigby	Mfg Team Leader - Team D
			Silicon	Randy Rigby	Mfg Team Leader - Team D
		Cleaning/ Inspection			
			Empty Drums	Randy Rigby	Mfg Team Leader - Team D
			Recycled materials (*)	Randy Rigby	Mfg Team Leader - Team D
			Silicon	Randy Rigby	Mfg Team Leader - Team D
			Wafers - scrap	Randy Rigby	Mfg Team Leader - Team D
	Team E Epi/CVD/Final Cleaning				
		Epi			
			Batteries - Alkaline	Jake Ebrahimi	Mfg Team Leader - Team E
			Batteries - Ni Cad	Jake Ebrahimi	Mfg Team Leader - Team E
			Empty Drums	Jake Ebrahimi	Mfg Team Leader - Team E
			Lights/Bulbs (fluorescent/mercury)	Jake Ebrahimi	Mfg Team Leader - Team E
			Lights/Bulbs (incandescent)	Jake Ebrahimi	Mfg Team Leader - Team E
			Recycled materials (*)	Jake Ebrahimi	Mfg Team Leader - Team E
			Spill clean up materials/ Absorbents/ Pigs	Jake Ebrahimi	Mfg Team Leader - Team E
			Wafers - scrap	Jake Ebrahimi	Mfg Team Leader - Team E
		LTO			
			Recycled materials (*)	Jake Ebrahimi	Mfg Team Leader - Team E
			Wafers - scrap	Jake Ebrahimi	Mfg Team Leader - Team E

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Fab 2

Fab 2 Maintenance

Building Maintenance

Batteries - Lead Acid	Blue Linden	Building Maintenance Tech
Lights/Bulbs (fluorescent/mercury)	Blue Linden	Building Maintenance Tech
Paints	Blue Linden	Building Maintenance Tech

Equipment Maintenance

Aluminum - scrap	Don Leliefeld	Equip/Engineering T/L - Team 2
Batteries - Alkaline	Don Leliefeld	Equip/Engineering T/L - Team 2
Batteries - Lead Acid	Don Leliefeld	Equip/Engineering T/L - Team 2
Batteries - Ni Cad	Don Leliefeld	Equip/Engineering T/L - Team 2
Lights/Bulbs (fluorescent/mercury)	Don Leliefeld	Equip/Engineering T/L - Team 2
Lights/Bulbs (incandescent)	Don Leliefeld	Equip/Engineering T/L - Team 2
Recycled materials (*)	Don Leliefeld	Equip/Engineering T/L - Team 2
Used oil	Don Leliefeld	Equip/Engineering T/L - Team 2
Waste solvent	Don Leliefeld	Equip/Engineering T/L - Team 2

Team 1

Work Cell 1 (Wire Saws)

Recycled materials (*)	Stan Meek	Mfg Team Leader - Team 1
Sludge - Silicon	Stan Meek	Mfg Team Leader - Team 1
Wafers - scrap	Stan Meek	Mfg Team Leader - Team 1

Work Cell 2 (EdgeRnd/Grind1)

Recycled materials (*)	Stan Meek	Mfg Team Leader - Team 1
Wafers - scrap	Stan Meek	Mfg Team Leader - Team 1

Work Cell 3 (Lapping/Lasrmark)

Particulates/Slurry	Stan Meek	Mfg Team Leader - Team 1

Work Cell 4 (Acid Etch)

Recycled materials (*)	Stan Meek	Mfg Team Leader - Team 1
Silicon	Stan Meek	Mfg Team Leader - Team 1

Team 2

Work Cell 10 (Mfg Support)

Batteries - Alkaline	Karsen King	Mfg Team Leader - Team 2
Empty Drums	Karsen King	Mfg Team Leader - Team 2
Particulates/Slurry	Karsen King	Mfg Team Leader - Team 2
Recycled materials (*)	Karsen King	Mfg Team Leader - Team 2
Used oil	Karsen King	Mfg Team Leader - Team 2
Wafers - scrap	Karsen King	Mfg Team Leader - Team 2
Wax from Enya	Karsen King	Mfg Team Leader - Team 2

Work Cell 6 (CWI/Edge Polish)

Batteries - Alkaline	Karsen King	Mfg Team Leader - Team 2
Particulates/Slurry	Karsen King	Mfg Team Leader - Team 2
Recycled materials (*)	Karsen King	Mfg Team Leader - Team 2

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	Work Cell 7 (Polishing)	Wafers - scrap	Karsen King	Mfg Team Leader - Team 2
		Wax from Enya	Karsen King	Mfg Team Leader - Team 2
Team 3	*Work Cell 5 (Heat Treat)*	Recycled materials (*)	Mark Chase	Mfg Team Leader - Team 3
	Work Cell 8 (Final Cleaning)	Recycled materials (*)	Mark Chase	Mfg Team Leader - Team 3
	Work Cell 9 (Epi)	Recycled materials (*)	Mark Chase	Mfg Team Leader - Team 3

(*) Recycled Materials include: Aluminum Cans, Cardboard, Circuit Boards, Glass Bottles, Mixed Metals, Nitrile Gloves, Office Paper, Packaging Materials, Plastic Bags, Plastic Bottles, Quartz, Scrap Aluminum, Scrap Graphite, Scrap Poly Rods, Silicon, Three Ring Binders, Tin Cans, Toner Cartridges, Transparencies, Wood

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OLD WASTE RECORDS

SCOEPA00055052

hazardous waste produced	lbs	GROSS REDUCTIONS	ANNUAL REDUCTIONS	
1985	1326800			
1986	1087805	18 %	18 %	
1987	594975	55 %	45 %	
1988	304183	77 %	49 %	
1989	125885	90 %	59 %	
1990	77041	94 %	39 %	
1991	86074	94 %	(12%)	
1992	14198	99 %	84%	← SEE
1993	9841	99 %	31%	
GOAL				
1994	4500	99.7%	60%	← [redacted]

NEW CHEMICAL USE, 1988 - 1991 = SARA 313 CHEMICALS

CHEMICAL	PART NO.	1991 UNITS - TYPE	% SOLN	SP. GR.	1988 LBS	1989 LBS	1990 LBS	1991 LBS	90-91
Acetone	4439001	24 - 55 gal DM	100%	6.49 #/gal	12,138	12,852	10,003	8,575	-14%
Ammonium Hydroxide	4406008	281 - 55 gal DM	28-30%	2.18 #/gal	22,330	26,684	27,578	33,692	+22%
Butyl Alcohol	4436501	46 - 55 gal DM	100%	6.80 #/gal	20,944	18,700	22,066	17,204	-22%
Dichloromethane	4406005	19,376 - LBS BULK	49.5%	5.86 #/gal	20,342	18,734	28,377	9,591	
(Methylene chloride)	4406005D	5 - 55 gal DM	49.5%	5.86 #/gal	0	0	0	1,612	
				dChMe. =	20,342	18,734	28,377	11,203	-60%
Ethylene Glycol	4405025	13 - 55 gal DM	100%	9.16 #/gal	8,064	5,544	10,080	6,549	-35%
Freon TE (4% ethanol)	4406003	51,412 - LBS BULK	96%	12.06 #/gal	168,954	181,454	181,485	49,355	
	4406003D	4 - 55 gal DM	96%	12.06 #/gal	0	0	0	2,653	
Freon TF	4406004	1 - 55 gal DM	100%	12.56 #/gal	19,348	15,893	3,455	691	
Freon TMC (49.5%MC)	4406005	19,376 - LBS BULK	50.5%	5.98 #/gal	20,342	18,734	28,377	9,785	
	4406005D	5 - 55 gal DM	50.5%	5.98 #/gal	0	0	0	1,645	
Freon TP (3% IPA)	4405009	26 - 55 gal DM	97%	12.18 #/gal	53,622	63,005	77,751	17,417	
				Freon =	262,266	279,086	291,068	81,546	-72%
Hydrochloric Acid	4419001	25 - 55 gal DM	36.5-38%	3.69 #/gal	7,932	5,898	4,068	5,074	
	4419003	1,021 - 6# Bottle	36.5-38%	2.23 #/btl	268	586	373	2,277	
	4476210	917 - 60# Cyl	100% gas	60#/cyl	20,460	53,160	58,200	55,020	
				HCl =	28,660	59,644	62,641	62,371	NC
Hydrofluoric Acid	4419000	88,259 - LBS BULK	50%	4.97 #/gal	84,989	70,488	66,488	44,130	
	4419004	7 - 55 gal DM	49%	4.87 #/gal	0	3,276	2,184	1,875	
				HF =	84,989	73,764	68,672	46,005	-33%
Nitric Acid	4419002	218,968 - LB BULK	70%	11.68 #/gal	326,491	222,979	208,792	153,278	-27%
Sulfuric Acid	P.O.	139,307 - LB BULK	100%	15.25 #/gal	143,854	165,042	182,550	139,307	
	4439466	133 - Bottles	50%	3.02 #/btl	0	0	12	402	
				H_2SO_4 =	143,854	165,042	182,562	139,709	-23%
TriChloroEthylene	P.O.	0 - LBS	100%	12.09 #/gal	249,850	0	0	0	NA
				TOTAL LB=	1,179,928	883,029	911,839	560,132	= -39%

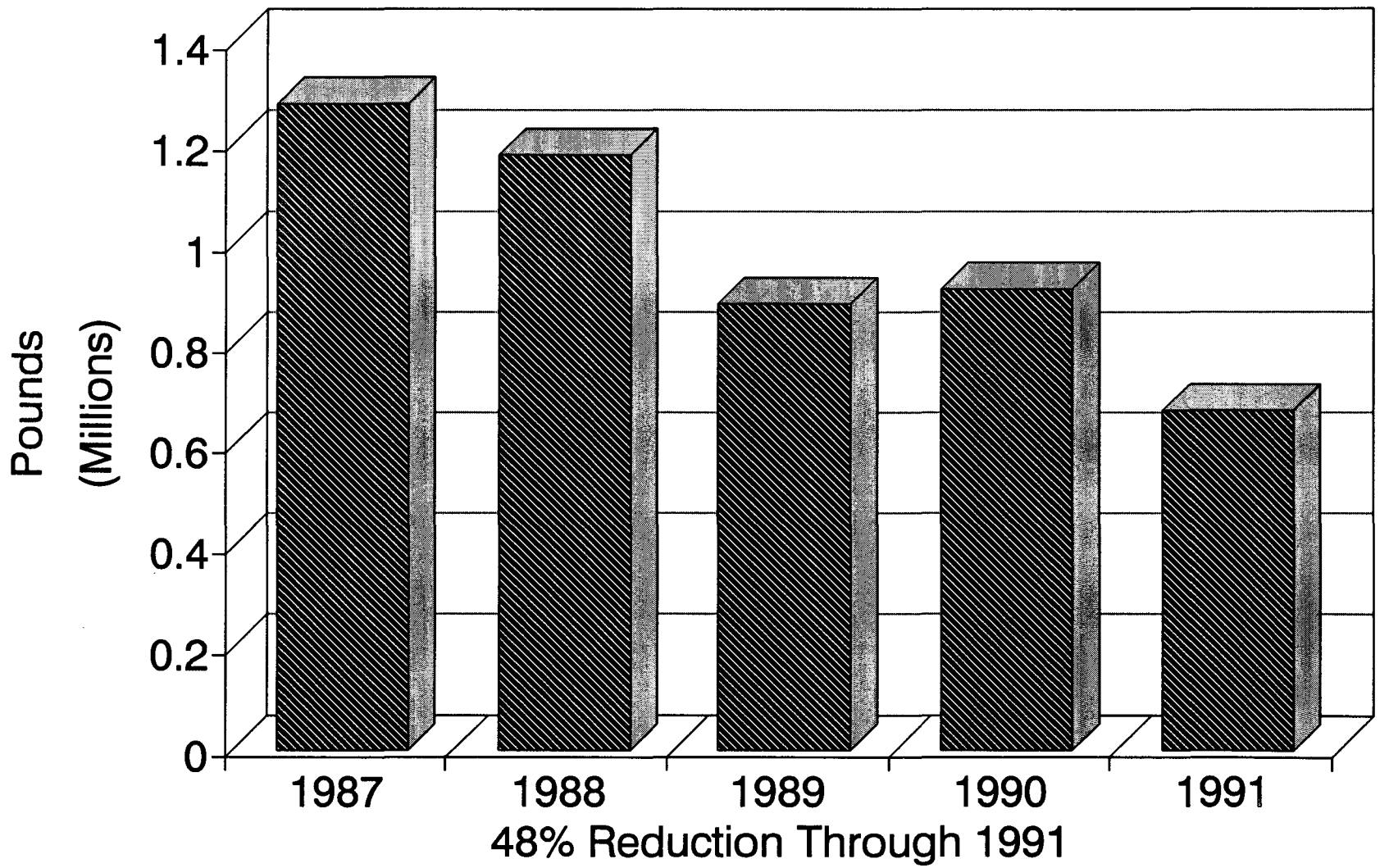
CHEMUSE/KCM/5-92

SCOEPA00055054

WASTE GENERATION SUMMARY

Waste Stream	1992	1993
Chrome Sludge	4,644	~~3,266~~
Chrome Solids	246	~~150~~
Chrome Wastewater	53,085	73,100
Mixed Alcohols	2,913	5,452
Mercury Debris	0	150
Oil/IPA	547	~~222~~
Oil/Freon	1,369	~~457~~
Freon Stillbottoms	3,480	0
Solvent Based Paint	107	20
TCE (old pipe sys.)	0	~~109~~
Used Circuit Boards	108	0
Labpack Chemicals	484	15
Chemicals Treated/on-site	273	0
Totals	14,198	9,841

Total Use Reduction



SCOEPA00055056

SARA 313 CHEMICAL USE, 1988 - 1991

CHEMICAL	% SOLN.	PART NO.	CONTAINER	1991 UNIT	SP. GR.	1988 LBS	1989 LBS	1990 LBS	1991 LBS	90-91 CHG
Acetone	100%	4439001	55 gal DM	24 +	6.49 #/gal	12,138	12,852	10,003	8,575	- 14%
Ammonium Hydroxide	28 - 30%	4406008	55 gal DM	281	2.18 #/gal	22,330	26,684	27,578	33,691	+ 22%
Butyl Alcohol	100%	4436501	55 gal DM	46	6.80 #/gal	20,944	18,700	22,066	17,204	- 22%
Methylene Chloride	50%	4406005	BULK	BULK	5.92 #/gal	20,342	18,734	28,377	9,688	
(Dichloromethane)		4406005D	55 gal DM	5		---	---	---	1,628	
					Me.Chl. T.=	20,342	18,734	28,377	11,316	- 60%
Ethylene Glycol	100%	4405025	55 gal DM	13	9.16 #/gal	8,064	5,544	10,080	6,549	- 35%
Freon TE (4% ethanol)	96%	4406003	BULK	BULK	12.06 #/gal	168,954	181,454	181,485	49,355	
		4406003D	55 gal DM	4		---	---	---	2,652	
Freon TF	100%	4406004	55 gal DM	1	12.56 #/gal	19,348	15,893	3,455	691	
Freon TMC (50% MC)	50%	4406005	BULK	BULK	5.92 #/gal	20,342	18,734	28,377	9,688	
		4406005D	55 gal DM	5		---	---	---	1628	
Freon TMS	100%	4489007	16ozSpCan	24	12.4 #/gal	NA	NA	NA	24	
Freon TP (3% IPA)	97%	4405009	55 gal DM	26	12.18 #/gal	53,622	63,005	77,751	17,417	
					Freon T.=	262,266	279,086	291,068	81,455	- 72%
Hydrochloric Acid	36.5 - 38%	4419001	55 gal DM	25	3.69 #/gal	7,932	5,898	4,068	5,072	
	36.5 - 38%	4419003	Bottles	1,021	2.23 #/btl	268	586	373	2,274	
	100% (gas)	4476210	Cyl (636 cf)	917	60#/cyl	20,460	53,160	58,200	55,020	
					HCl T.=	28,660	59,644	62,641	62,366	NC
Hydrofluoric Acid	50%	4419000	BULK	BULK	4.97 #/gal	84,989	70,488	66,488	88,259	
	100%	4419004	55 gal DM	7	9.93 #/gal	---	3,276	2,184	3,822	
					HF T.=	84,989	73,764	68,672	92,081	+ 34%
Nitric Acid	70%	4419002	BULK	BULK	11.67 #/gal	326,491	222,979	208,792	218,968	+ 5%
Sulfuric Acid	98%	P.O.	BULK	BULK	15.25 #/gal	143,854	165,042	182,550	139,307	
	50%	4439466	Bottles	133	3.02 #/btl	---	---	12	401	
					H_2SO_4 T.=	143,854	165,042	182,562	139,708	- 23.5%
TriChloroEthylene	100%	P.O.	BULK	BULK	12.09 #/gal	249,850	0	0	0	NA
CHEMUSE/KCM/1-13-91					TOTAL SARA 313 POUNDS =	1,179,928	883,029	911,839	671,913 =	- 26.3%

SCOEPA00055057

1-6-91 KCM

SARA 313 CHEMICAL USE, 1988 - 1991

CHEMICAL	CONCEN. %	PART NO.	CONTAINER	1991 UNITS	CHEMICAL WT. IN SOLUTION	1988 POUNDS	1989 POUNDS	1990 POUNDS	1991 POUNDS	1990-91 Change
Acetone	100%	4439001	55 gal DM	24 +	6.49 #/gal	12,138	12,852	10,003	8,575	- 14%
Ammonium Hydroxide	28 - 30%	4406008	55 gal DM	281	2.18 #/gal	22,330	26,684	27,578	33,641	+ 22%
Butyl Alcohol	100%	4436501	55 gal DM	46	6.80 #/gal	20,944	18,700	22,066	17,204	- 22%
Methylene Chloride (Dichloromethane)	50%	4406005	BULK	BULK	5.92 #/gal	20,342	18,734	28,377	9,688	
		4406005D	55 gal DM	5		---	---	---	1,628	
					Me.Chl.Tot.=	20,342	18,734	28,377	11,316	- 60%
Ethylene Glycol	100%	4405025	55 gal DM	13	9.16 #/gal	8,064	5,544	10,080	6,549	- 35%
Freon TE -(4% ethanol)	96%	4406003	BULK	BULK	12.06 #/gal	168,954	181,454	181,485	49,355	
		4406003D	55 gal DM	4		---	---	---	2,652	
Freon TF	100%	4406004	55 gal DM	1	12.56 #/gal	19,348	15,893	3,455	691	
Freon TMC -(50% MC)	50%	4406005	BULK	BULK	5.92 #/gal	20,342	18,734	28,377	9,688	
		4406005D	55 gal DM	5		---	---	---	1628	
Freon TMS	100%	4489007	16ozSpCan	24	12.4 #/gal	NA	NA	NA	24	
Freon TP (3% IPA)	97%	4405009	55 gal DM	26	12.18 #/gal	53,622	63,005	77,751	17,417	
					Freon Total=	262,266	279,086	291,068	81,455	- 72%
Hydrochloric Acid	36.5 - 38%	4419001	55 gal DM	25	3.69 #/gal	7,932	5,898	4,068	5,074	
	36.5 - 38%	4419003	Bottles	1,021	2.23 #/btl	268	586	373	2,277	
	100% (gas)	4476210	Cyl (636 cf)	917	60#/cyl	20,460	53,160	58,200	55,020	
					HCl Total=	28,660	59,644	62,641	62,371	NC
Hydrofluoric Acid	50%	4419000	BULK	BULK	4.97 #/gal	84,989	70,488	66,488	88,459	
	100%	4419004	55 gal DM	7	9.93 #/gal	---	3,276	2,184	3,823	
					HF Total=	84,989	73,764	68,672	92,282	+ 34%
Nitric Acid	70%	4419002	BULK	BULK	11.67 #/gal	326,491	222,979	208,792	218,968	+ 5%
Sulfuric Acid	98%	P.O.	BULK	BULK	15.25 #/gal	143,854	165,042	182,550	137,330	
	50%	4439466	Bottles	133	3.02 #/btl	---	---	12	401	
					H_2SO_4 Total=	143,854	165,042	182,562	137,731	- 24%
					TOTAL POUNDS =	930,078	883,029	911,839	670,092	= - 26.5%

SCOEPA00055058

1988 MANIFEST LOG

Chrome Sludge 7 Drums
Freon TE 16 Drums
Freon TMC 20/55gal - 1/30gal

MANIFEST No.	DATE	HAZARDOUS WASTE	COMMENTS
88001	1/6/88	TCE.	4,000 gal to VW#2
88002	2/22/88	TCE	4,000 gal to VW#2
88003	2/25	Freon	5 Drums TMC 4 Drum TE
88004	3/28	TCE	4,000 gal to VW#2
88005	4/14	Chromic waste	2 Drums to CSSL
88006	5/10	TCE	4,000 gal to VW#2
88007	6/6	Chrome Waste	3 Drums to CSSL.
88008	6/17	Freon	2 Drum TMC / 9 Drum TE/FF
88009	8/8	TCE	4000 gal. to VW#2
88010	9/1/88	Freon	2 - TE, 5 - TMC To McClung Col.
88011	9/7	Freon	1 - TE, 1 - TMC To McClung Col
88012	9/7	TCE	4000 gal. to VW#2
88013	10/12	Chrome sludge	2 Drums Cr(OH)3 to CSSL
88014	10/25	Oil - w/Freon	WESTcamp - 2 Drums.
88015	12/21	From TMC	McClung-Columbus .7-55gal / 1-30gal

SCOEPA00055059

TURA/313 List chemical Data

11 chemicals represent 98% of the TURA 313 chemicals we use.

USE	1987	1988	1989	1990		% 1987-90 CHG
Total =	1,281,514	1,179,928	883,029	911,839	Lbs	-28.8%
TCE =	511,322 (40%)	249,850 (21%)	⊖ (-)	⊖		-100%
Freon =	246,109 (19%)	262,266 (22%)	279,086 (31½%)	291,068 (32%)		+18

Freon - 1991 est. = 83,377 Lbs = -66%

Haz. Waste Shipped						
Total =	594,975	304,183	125,885	77,041	Lbs	-87% Total
TCE =	482,440 (81%)	273,516 (90%)	81,025 (64½%)	388 (½%)		-99.92 TCE
Freon =	65,526 (11%)	25,717 (9%)	31,759 (26%)	66,154 (89%)		+1% Freon
Cr+ =	44,909 (7½%)	3,850	3,586	5,820 (7½%)		-87% Cr.

SCOEPA00055060

1990

Freons TE, TF, TMC, TP Still Bottoms	Oil w/	Cr+ / st	Solid	Steam stripper	Hg	TCE
2,605	550	1,718	279	1,430	28	
9,695	1,100	2,388		715		
8,310	550	1,741				
5,540						
7,163						
692						
651						
2,424						
6,925						
4,558						
5,540						
2,605						
1,385						
3,907						388
2,077						
2,077						
66,154 Lbs.	2,200	5,847	279	2,145	388	28
= 86 %	3 %	7½ %	-	3 %	½ %	-

Haz. Waste 1990 Total Lbs shipped = 77,041 Lbs Haz. waste 1990

Note: 89 % from Freon-related shipments

TCE ≈ ½ % (388 Lbs)

SCOEPA00055061

Efficiency

Chemicals used Vs. Haz. Waste Generated.

	1987	1988	1989	1990	1987-1990
Use =	1,281,514	1,179,928	883,029	911,839	-
Waste =	594,975	304,183	125,885	77,041	-
Waste to Use =	46.4 %	25.8 %	14.3 %	8.5 %	= +546 % Improvement 1987-1990
Ratio = Approx.	2:1 (2.2)	4:1	7:1	12:1 (11.8)	

OR

We use about 6 x more chemical product per

1987 313 chemical usage

1987	Actual Amount	comments	Lbs	%
Acetone =	12,000	(@ 100 %)	12,000	1
Ammonia =	Est.	(½ of '88-89 Diff.)	≈ 20,153	1½
Butyl Alc. =	20,000	(@ 100 %)	20,000	1½
Dichloromethane =	21,933	(43,900 # purchased @ 50 %)(✓✓ by Gariepy)	21,933	1½
Ethanol =	Est.	(-½ of '88-'89 diff)	≈ 6,804	½
Freon, TE =	157,291	(163,400 Bulk Soln. purchased)(@ 96.0 %)		
TF =	18,652	(27 dr)(@ 100 %)		
TMC =	21,933	(see above)		
TP =	48,233	(72 Dr.)(@ 97%)	= 246,109	19
HCL =	Est.	(½)	≈ 14,330	1
HF =	74,528		74,528	6
Nitric =	182,000	(70% (not 50))	182,000	14
Sulfuric =	172,325	(98%)	172,325	13½
TCE =	Fresh 188,362 +	Recycle 322,970 (12.09 #/gal)	511,332	40

Est. Total = 1,281,514 Lbs-1987

SCOEPA00055063

1987

Freons TE, F, MC, P Still Bottoms	oil w/	Cr+ Sludge	Steam Stripper / Extra solvs	TCE
14,541		17,191	⊖ ⊖	43,620
10,387	2,100	26,000		44,830
20,081		1,718		50,500
9,767 (TMC)				48,120 (manifests)
5,540				47,280
5,210				44,080
				44,110
				39,530
				42,630
				40,310
				37,430
65,526 Lbs	2,100	44,909	—	482,440
= 11 %	½ %	7½ %		81%

1987 Total Lbs shipped = 594,975 Haz. Waste 1987

(81 % TCE)

(11 % Freon)

SCOEPA00055064

Freons TE, F, MC, P Still Bot.	Oil W	Cr+ 1989 Sl.	Sol.	Steam Stripper	Extra Solv.	TCE
1,954	1,100	750	191	—	2,363	42,554
2,077		471			5,861	34,622
5,540		750				692
3,256		640				2,077
3,907		975				388
1,382						692
3,256						
10,387						
31,759 Lbs.	1,100	3,586	191	—	8,224	81,025 Lbs
=25% Freon	1%	3%	—	—	6½%	=64½% TCE

Haz. waste 1989 Total Lbs. shipped = 125,885 Lbs.

Haz. Waste 1989

(26 % Freon Related)

Freons

Cr+ 1988

TE, F, MC, P Still Bot.	Oil w/	Sl.	Sol.	steam Stripper	Extra Solv.	TCE
3,256	1,100	1,100				47,930
2,770		1,650				51,480
1,954		1,100				44,830
5,540						40,060
1,382						43,630
3,256						45,586
692						
651						
6,216						
25,717 Lbs.	1,100	3,850	–	–	–	273,516 Lbs.
= 8½ %	½%	1%	–	–	–	= 90 % TCE

1988 Total Lbs. shipped = 304,183 Lbs.

Haz. Waste

Haz. Waste 1988

(9 % Freon-related)

Efficiency

1987		1990
1,298,208	use	911,839
594,975	waste	77,041
= 45.83 %		= 8.45 %
≈ 2:1	Ratio	12:1

= +542% improved

SCOEPA00055067

TURA/313 List chemical Data

11 chemicals represent 98% of the TURA 313 chemicals we use

USE	1987	1988	1989	1990	% 1987-90 CHG
Total =	~~1,281,514~~ 1,298,208	1,179,928	883,029	911,839 Lbs	~~-28.8%~~ -29.76
TCE =	511,322 (40%)	249,850 (21%)	⊖ (-)	⊖	-100%
Freon =	246,109 (19%)	262,266 (22%)	279,086 (31½%)	291,068 (32%)	+18

Freon - 1991 Est. = 83,377 Lbs = -66%

Haz. Waste Shipped

Total =	594,975 (incl. Recycle)	304,183	125,885	~~77,~~ 041 Lbs	-87% Tot
TCE =	482,440 (81%)	273,516 (90%)	81,025 (64½%)	388 (½%)	-99.92 TCE
Freon =	65,526 (11%)	25,717 (9%)	31,759 (26%)	66,154 (89%)	+1% Freon
Cr+ =	44,909 (7½%)	3,850	3,586	5,820 (7½%)	-87% Cr

SCOEPA00055068

CHROME TREATED /

	1989	1990	1991
JAN		300	620
FEB		600	600
MAR		300	600
APRIL		600	600
MAY		1200	300
JUNE		900	610
JULY		600	
AUG		660	
SEPT		325	
OCT		900	
NOV		300	
DEC		300	

SOD WASTE STRIPPED

	1989	1990	1991
JAN		8040	0
FEB		8880	0
MAR		2640	0
APRIL		3840	0
MAY		4680	0
JUNE		5040	5880
JULY		3600	
AUG		600	
SEPT		0	
OCT		2400	
NOV		6360	
DEC		3600	

FREON

RECYCLED (GALS)

	1989	1990	1991	
JAN	605	2222	647	
FEB	253	1946	343	
MAR	587	1729	197	
APRIL	420	1735	193	
MAY	441	1796	115	
JUNE	627	1474	99	
JULY	581	1624		1495
AUG	255	700		
SEPT	615	518		
OCT	2878	447		
NOV	3246	218		
DEC	3262	257		
	13,770 GAL = 165,240 lbs	14,655 GAL = 175,860 lbs		

1988

8520 x .9 = 7670 GAL
= 92,040 lbs

1987

8520 - 5280 = 3340 GAL
= 40,080 lbs

WACKER SILTRONIC CORPORATION

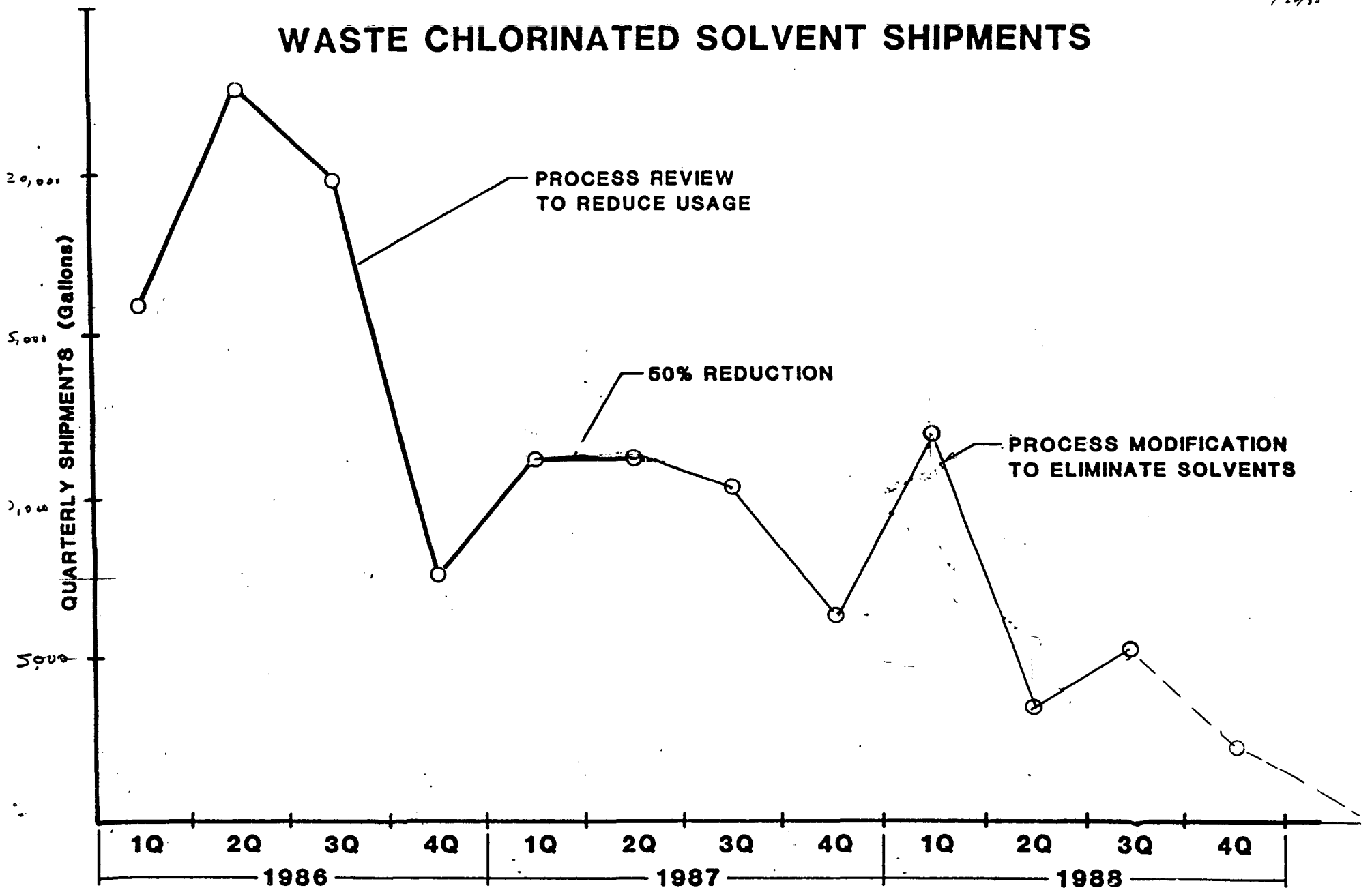
SUMMARY OF HAZARDOUS WASTE SHIPMENTS

Qtr/Yr:	TCE:(lb)	Freon:(gal)	Chromic:(gal)	Total
1985 Total:	970,000	10,180	25,500	= 1,326,800 lb
1/86	191,500	1,925	9,047	
2/86	273,900	2,860	5,412	
3/86	235,280	1,870	4,800	
4/86	93,440	1,870	1,575	
1986 Total:	794,120	8,525 x 12.2 #/GAL	20,844 x 9.1 #/GAL	= 1,087,805 lbs
1/87	138,950	1,155	1,500	
2/87	139,480	2,420	2,500	
3/87	126,140	825	---	
4/87	77,740	880	165	
1987 Total:	362,810	5,280	4,165	
1/88	144,260	495	---	
2/88	40,600	605	165	
3/88	63,000	495	---	
4/88				
1988 Total:				
1989 Est. 1st Qtr.	—	500	50	— 5,800 lb/qtr

Est. 98+ % Reduction when comparing 1985 to 1989.

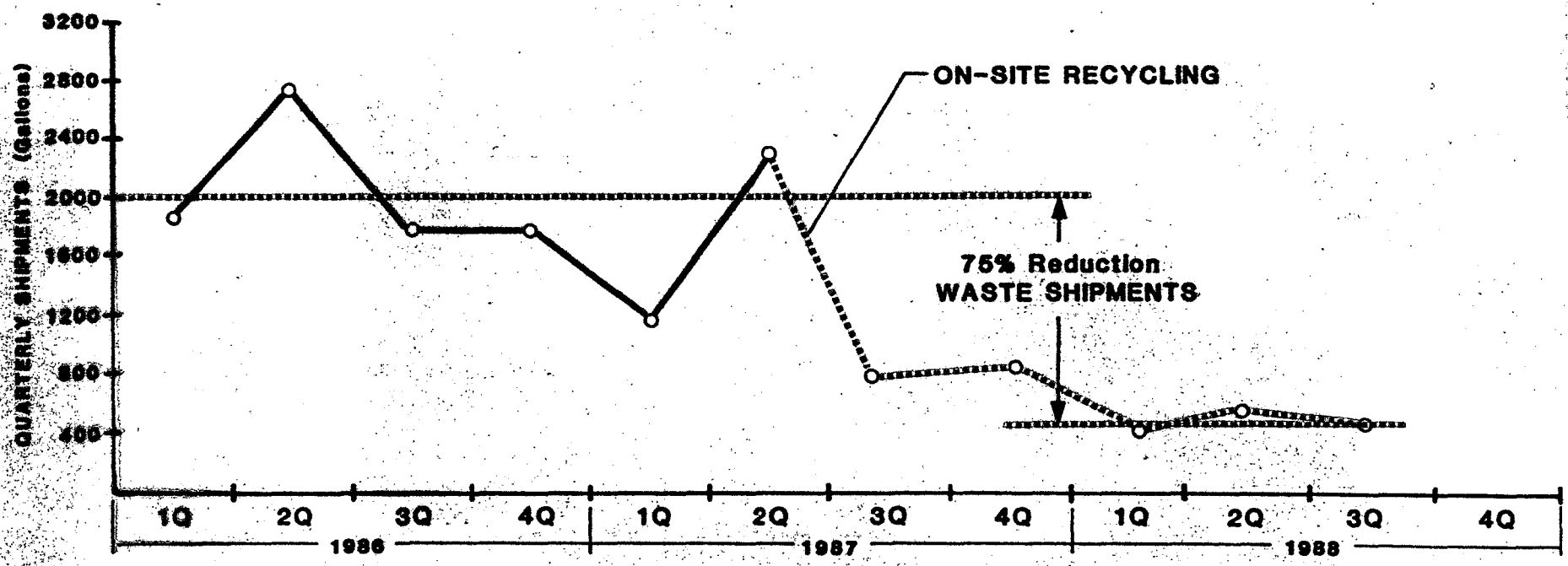
- Est. - $300,000/yr Savings

WASTE CHLORINATED SOLVENT SHIPMENTS

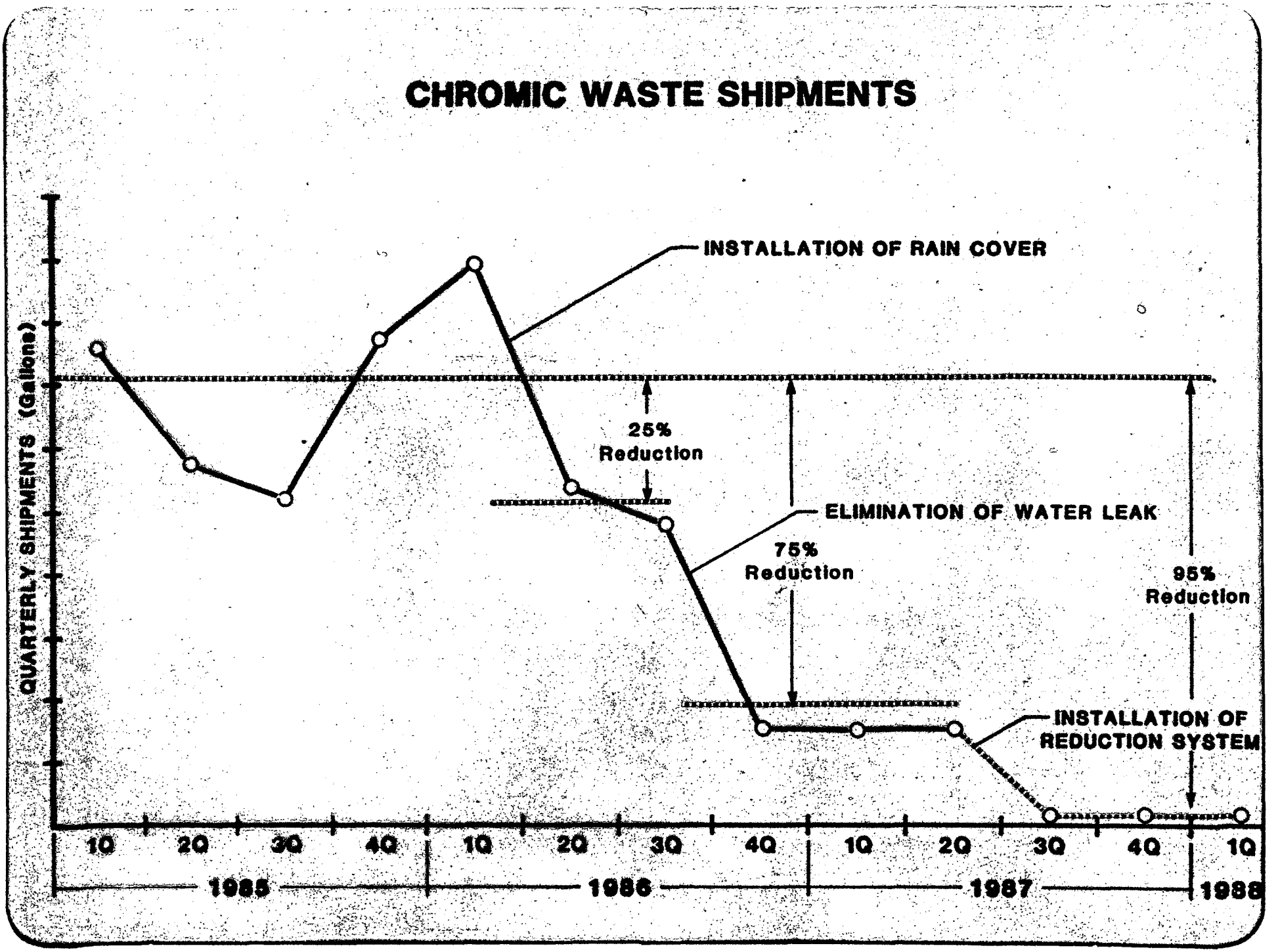


SCOEPA00055073

WASTE FREON SHIPMENTS



CHROMIC WASTE SHIPMENTS



HAZ WASTE SHIPMENTS

	TCE (lbs)	FREON est	Cr est
1985	970,000	10,180	25,500
1986	794,120	8,525	20,844
1987	362,810	5,280	4,165
1988	~	~	~
1989	(500) ~~56,257~~	(490) 2,585	440
1990	~	5,528	660
1991	~	2,695	440
	100%		98%

98%

1989 MANIFEST LOG
(LAST REVISED 12-29-89)

MANIFEST NO.	DATE	HAZARDOUS WASTE	PROFILE SHT. NO.	CONTENT	DESTINATION	MANIFEST* RETURN DATE
89001	3-15-89	FREON TMC	7904	3 - 55 GAL DRUMS	McClary Columbia	---
		FREON TF, TP 2-EP1 1-S Oil Bottoms	7903	3 - 55 GAL DRUMS		
		FLOOR COATING WASTE	16915	5 - 55 GAL DRUMS		
		FLOOR COATING WASTE	16918	1 - 5 GAL PAIL		
89002	3-20-89	TCE - SOD W	000364	BULK - 3380 GAL	ROMIC	---
89003	3-23-89	TCE - SOD W	000364	BULK - 2750 GAL	ROMIC	---
89004	3-16-89	CHROME SLUDGE 750#	H10143PDX	2 - 55 GAL DRUMS	CSSI ARLINGTON	---
		ANTIMONY DUST (NH)	H58893	1 - 55 GAL DRUM		
89005	3-30-89	CHROME SOLIDS 191#	D43767	2 - 55 GAL DRUMS	CSSI ARLINGTON	---
		CHROME SLUDGE 471#	H10143PDX	1 - 55 GAL DRUM		
89006	6-13-89	Freon TF, TP, TE	07903	8 - 55 GAL ST DM	McClary Columbia	---
		Freon TMC	07904	5 - 55 GAL ST DM		
		SOD-W Solvent Mix	56258	9 - 55 GAL ST DM		
		Oil/Freon TF	56256	2 - 55 GAL ST DM		
	—	TCE	56257	1 - 55 GAL ST DM		
89007	7-24-89	CHROME SLUDGE 750#	H10143PDX	2 - 55 GAL ST DM	CSSI ARLINGTON	8-4-89
		ANTIMONY DUST (NH)	H58893	1 - 55 GAL ST DM		
89008	9-8-89	Freon TMC	07904	6 - 55 GAL ST DM	McClary Columbia	9-22-89
		Freon Still Bottoms	07903	2 - 55 GAL ST DM		
	—	TCE - from abandoned pipe	56257	3 - 55 GAL ST DM		
89009	9-27-89	CHROME SLUDGE 640#	H10143PDX	1 - 55 GAL ST DM	CSSI	10-11-89
89010	11-28-89	CHROME SLUDGE 915#	H10143PDX	2 - 55 GAL ST DM	CSSI ARLINGTON	12-7-89
		SOIL CONT. W/ TCE 388#	J81269	1 - 55 GAL ST DM		
		SOLIDS CONT. W/ TCE(NH)	V71799	1 - 55 GAL ST DM		
89011	12-8-89	Freon TMC	07904	5 - 55 GAL ST DM	McClary Columbia	12-18-89
		Freon Still Bottoms	07903	15 - 55 GAL ST DM		
	—	TCE	56257	1 - 55 GAL ST DM		

* - NOTE: Original return date tracking documentation initiated with manifest number 89007
(NH) - Non-regulated material per 40 CFR 172.101

misc\chemuse\manilog.wk1

Chrome Sludge Totals: 8 Drums, 3,586#
From TE 26 Drums (6 Drums were Steam Stripper Bottoms)
From TMC 19 Drums
Oil/Freon 2 Drums
Freon TF/TP from EP1 2 Drums
TCE (56257) 5 Drums

1991

Freons TE, F, MC, P still Bottoms	oil w/	Cr^+ Sl.	Sol.	Steam Stripper	Hg.
2,770	6,600	1,659	—	—	—
5,540	550	2,732			
2,605	3,850				
4,847					
3,907					
4,558					
9,002					
33,229	11,000	4,391	Note:		
68 %	23 %	9 %	91 % Freon-Related		1st 6 months 1991

1st 6 mo. 1991 (48,620 Lbs shipped)

2nd 6 mo. ADD

+ 33,229 (Same as 1st 6 mo.)	+ 2,200 (10.56 #/gal 1x shipments 1x contam. → Back to normal 2nd 6 mo. ≈ 4 drums @ 550 #/drum (drums/mo generate)	+ 4,391 (Same as 1st 6 mo.)	+235 (1x yr. ave.)	+ 1,430 (est. # runs # drums @ 2 = 13.0 #/gal.)	+ 28 (See last yr. est. # on-site as of 8-1-91)
66,458 Lbs	2,200	4,391	235	1,430	28
= 89 %	3 %	5½ %	—	2 %	—

Freon-1991/yr.

Estimated 1991 Haz. waste shipped = 74,742 Lbs 1991

≈ 92 % Freon-Related

SCOEPA00055078

FINAL 1990 MANIFEST LOG
(LAST REVISED 1-16-91)

MANIFEST NO.	DATE	HAZARDOUS WASTE	PROFILE SHT. NO.	CONTENT	DESTINATION	MANIFEST RETURN DATE
90001	2-26-90	FREON TMC (2 from 1989) FREON TF,TP(5 from 1989 OIL/FREON TF (from 1989	07904 07903 56256	4 - 55 GAL ST DM 14 - 55 GAL ST DM 1 - 55 GAL ST DM	CHEMPRO WASHOUGAL	3-7-90
90002	4-24-90	SOLIDS CONTAMINATED WITH TCE (NH)	V71799	11 CY -DUMP TRUCK (actual 23.5 CY)	CSSI ARLINGTON	5-2-90
90003	4-27-90	CHROME SLUDGE ANTIMONY (NH) CHROME SOLIDS NH SOD-W SLUDGE(TO TWI)	H10143PDX H58893 D43767 J81365	3 - 55 GAL ST DM 1 - 55 GAL ST DM 2 - 55 GAL ST DM 1 - 55 GAL ST DM	CSSI ARLINGTON	5-7-90
90004	5-23-90	FREON STILL BOTTOMS FREON TP FROM SEC 7 FREON TMC	017067 017067 017069	12 - 55 GAL ST DM 8 - 55 GAL ST DM 11 - 55 GAL ST DM	ROMIC CHEMICAL	6-12-90
90005	7-24-90	FREON STILL BOTTOMS STEAM STRIPPER BOTTOMS OIL\FREON TF FREON TMC	07903 07903 56256 07904	1 - 55 GAL ST DM 2 - 55 GAL ST DM 2 - 55 GAL ST DM 1 - 55 GAL ST DM	CHEMPRO WASHOUGAL	8-14-90
50409	8-3-90	WASTE MERCURY	56469	1 LAB PACK	CHEMPRO WASHOUGAL	8-16-90
90006	8-8-90	FREON TP FROM SEC 7 FREON STILL BOTTOMS FREON TMC	017067 017067 017069	3 1/2-55 GAL DM 10 - 55 GAL ST DM 7 - 55 GAL ST DM	ROMIC CHEMICAL	8-31-90
90007	9-12-90	CHROME SLUDGE FAB 2 DRILLING MUDS(NH)	J81268 J82851	4 - 55 GAL ST DM 17 - 55 GAL ST DM	CSSI ARLINGTON	10-5-90
90008	9-27-90	FREON STILL BOTTOMS FREON TMC FREON TP FROM SEC 7	017067 017069 017067	8 - 55 GAL ST DM 4 - 55 GAL ST DM 2 - 55 GAL ST DM	ROMIC CHEMICAL	10-25-90
90009	10-30-90	OIL/FREON TF STEAM STRIPPER BOTTOMS	56256 07903	1 - 55 GAL ST DM 1 - 55 GAL ST DM	CHEMPRO WASHOUGAL	11-9-90
90010	12-3-90	FREON TMC FREON STILL BOTTOMS FREON TP FROM SEC 7	07904 07903 07903	6 - 55 GAL ST DM 3 - 55 GAL ST DM 3 - 55 GAL ST DM	CHEMPRO WASHOUGAL	12-7-90
90011	12-5-90	CHROME SLUDGE	J81268	3 - 55 GAL ST DM	CSSI ARLINGTON	12-21-90

(NH) - Non-regulated material per 40 CFR 172.101

C:\lotus2\chemuse\manilog.wk1

#2 By Pass open Part of the time due to high flows
#3 meter not working - Parts on order
#1 meter out of service for repairs (est 20 mil)

1989 FACILITIES OPERATIONS DATA

SYSTEMS	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
BOILERS:												
MG USEAE (MIL. C.F.)	3.507	3.883	3.5764	2.9815	2.791	2.9425	2.5168	2.9175	2.7538	3.1708	3.4365	3.7978
BOILER #1 MAKEUP (1000 GAL)	1184	1828	2368	1974	1621	1440	914	1577	1113	943	1298	1097
BOILER #2 MAKEUP (1000 GAL)	413	725	1229	892	1078	1229	727	0	0	414	1195	519
COOLING LOOPS:												
LOOP #1 MAKEUP (1000 GAL)	16.2	57.5	0.0	112.0	0.0	2.1	0.2	10.5	0.0	592.4	0.0	0.9
LOOP #2 MAKEUP (1000 GAL)	507	1778	662	728	549	428	451	539	363	339	238	227
LOOP #3 MAKEUP (1000 GAL)	1569	1272	1406	1509	1550	1651	1563	1597	1492	1667	1710	1630
LOOP #4 MAKEUP (1000 GAL)	0.7	6.6	12.7	12.0	10.3	13.8	17.8	24.0	23.5	20.9	25.6	18.3
COOLING TOWERS:												
5-CEL MAKEUP (1000 GAL)	608.4	573.1	137.6	144.2	179.3	233.6	168.6	333.7	319.6	206.7	160.2	95.2
3-CEL MAKEUP (1000 GAL)	68.7	48.3	63.4	77.3	97.5	400.5	263.9	65.8	66.4	65.9	42.5	38.9
HVAC TOWER MAKEUP (1000 GAL)	133.5	116.8	189.7	656.4	1824.3	395.5	361.0	443.9	403.0	760.0	360.5	341.5
CHILLER 10 MAKEUP (1000 GAL)	539.8	442.3	537.0	619.2	590.0	720.9	687.8	812.5	736.2	702.5	560.5	528.1
RODI PRODUCTION:												
RO #1 (MIL. GAL)	3.641	3.693	3.426	3.452	6.041	5.965	5.674	6.012	4.104	5.497	4.269	2.280
RO #2 (MIL. GAL)	1.378	1.000	0.553	0.483	0.768	0.644	2.554	0.875	0.991	0.261	0.023	97.339
TOTAL	5.019	4.693	3.979	3.935	6.809	6.609	8.227	6.887	5.095	5.758	4.292	99.619
REGENERATIONS:												
MIXED BED "A"	0	0	0	1	0	0	1	0	1	0	0	0
MIXED BED "B"	0	2	0	0	1	0	1	0	0	1	0	0
MIXED BED "C"	0	1	0	0	0	0	1	0	1	0	0	0
ANION BED	2	1	3	3	2	2	3	3	3	2	3	1
CARBON BED CHANGEOUT	0	0	0	2	0	0	0	0	0	2	0	0
WASTE TREATMENT:										#2		
COMB. EFF. (MIL. GAL)	3.15	11.08	6.04	14.48	5.69	#1 15.21	6.10	4.98	2.93	72.05	9.49	9.99
OWW (MIL. GAL)	3.12	2.92	3.24	3.67	4.02	-15.85	3.61	0.13	7.97	6.52	3.38	3.51
MV-3 (MIL. GAL)	0.18	0.32	0.29	0.30	0.35	0.01	0.67	0.37	0.33	#3 0.30	27.91	0.56
SANITARY/MV-2 (MIL. GAL)	1.02	1.21	0.54	0.31	0.29	0.36	0.39	1.03	0.38	0.43	0.46	1.38
WASTE CHROME SHIP. (SOLID/GAL)	0	0	330	0	0	0	110	0	55	0	110	0
WASTE FREON SHIP. (GAL)	0	0	330	0	0	715	0	0	440	0	0	1100
WASTE FREON RECYCLE (GAL)	605	253	587	420	441	627	581	255	615	2878	3246	3262
~~WASTE TCE SHIP.~~ (GAL)	0	0	6130	0	0	55	0	0	165	0	0	55
WASTE SOLVENT MIX (GAL) Stripped Bottoms	0	0	0	0	0	495	0	0	0	0	0	0
OIL/FREON MIX (GROWING) (GAL)	0	0	0	0	0	110	0	0	0	0	0	0
MISC (GAL)	0	0	335	0	0	0	55	0	0	0	110	0
MISCELLANEOUS:										#4		
CITY H2O (MIL. GAL)	15.8793	17.8256	19.5034	20.0135	23.5740	20.8789	20.5012	20.3336	4.9174	21.4392	18.2430	17.9602

~~SOD waste Stripped~~
~~Chrome treated~~
~~Stripper Bottoms~~

SCOEPA00055080

FYI 1/8/81

Attached is as result of inspection for R.C.R.A by.

Fred Bromfield – DEQ
Steve Carter – DEQ
Bob Stamnes – EPA

on 12/29/80.

If you spot any gross errors, let me know ____

Route: J. Pittman JLP
D. Dunning ____
S. Beiswenger ____
R. Gaston ____
M. Borrevik ____
V. Baker ____
F. Wale ____

Return to J.R. Ellis

DEPARTMENT OF ENVIRONMENTAL
SITE INSPECTION REPORT
HAZARDOUS WASTE GENERAT

FRED BROMFELD
Sr. Environmental Engineer
SOLID WASTE DIVISION
Hazardous Waste Section

Department of Environmental Quality
522 S.W. 5th, Box 1760 Portland 97207 Phone 229-6210
In Oregon Call Toll Free 1-800-452-7813

Facility Name: Wacker Siltronic Corp

Address: 7200 NW Front Ave
Portland, OR 97210

Phone: 241-7524 I.D. No.: ORD 096253737

Company Contact: Jim Ellis
John Pittman

Visited on: 12/29/80 pm

By: F. Bromfeld/S. Carter - DEQ
R. Stamnes - EPA

BACKGROUND

1. Is generator familiar with DEQ and EPA hazardous waste rules? Are rules available? Yes

2. Type of business? Principal products/amount produced? Facility employment? An inorganic chemical plant which grows and processes single crystals of silicon from high purity polycrystalline silicon (presently obtained from Germany). The plant's main product is wafers (approx 3" or 4" dia x 1/32" thick) produced at a rate of about $3(10^6)$ in²/mo. A amount goes toward the production of integrated circuits. Employment: 700

3. How registered with DEQ? EPA?
Orgnally registered as Generator and TSD facility but now plan to withdraw latter registry. Believe they are only generator.

4. Are following plans and procedures adequate (if TSD facility)?

   a. Waste analysis procedures

   b. Site security

   c. Inspection plan and records

   d. Preparedness and prevention

   e. Contingency plan and emergency procedures

   f. Personnel training procedures and records

   g. Closure plan

   h. Post-closure plan

NOT REQUIRED. However, They have begun to work on several such as Contingency Plan, etc.

5. Fill out WASTE GENERATION AND MANAGEMENT sheet for each hazardous or suspected hazardous waste generated. Similar wastes may be combined onto a single sheet. See attached - 2 hazardous wastes.

Have wastewater treatment plant with hookup to Portland sewer system.

AB 1/6/81

SCOEPA00055082

HAZARDOUS WASTE GENERATION AND MANAGEMENT

Waste No. 1

1. Waste name: Spent etching soln: 13% chromic acid
   6% HF
   81% water

2. Hazard classification:
   Corrosive, Toxic

3. Process producing waste: Reference etching of wafers - quality control checks on a small number of wafers. Also on a few ingots and special products. Run 2 shifts x 5 days

4. Rate of waste production: About 14,600 gal/mo

5. Waste handling prior to disposal: Store in 5800 gal PVDF lined fibreglas tank - above ground

6. Waste disposal practice and manifest: Empty tank 2-3 times/mo. Waste taken to CSSI Arlington - generally by Widing in double rig bulk tanker @ 2500 gal/ng

7. Reporting and recordkeeping: Satisfactory. Reports in DEQ file.

SCOEPA00055083

HAZARDOUS WASTE GENERATION AND MANAGEMENT

Waste No. 2

1. Waste name: Spent degreasing solvent: 8-20% trichloroethylene
   2% isopropanol
   1% Freon
   Rem water

2. Hazard classification: Toxic

3. Process producing waste: Wafer production - see Fig 1

4. Rate of waste production: 10,000 gal/mo

5. Waste handling prior to disposal: Carbon steel tanks - underground - See Fig. 1

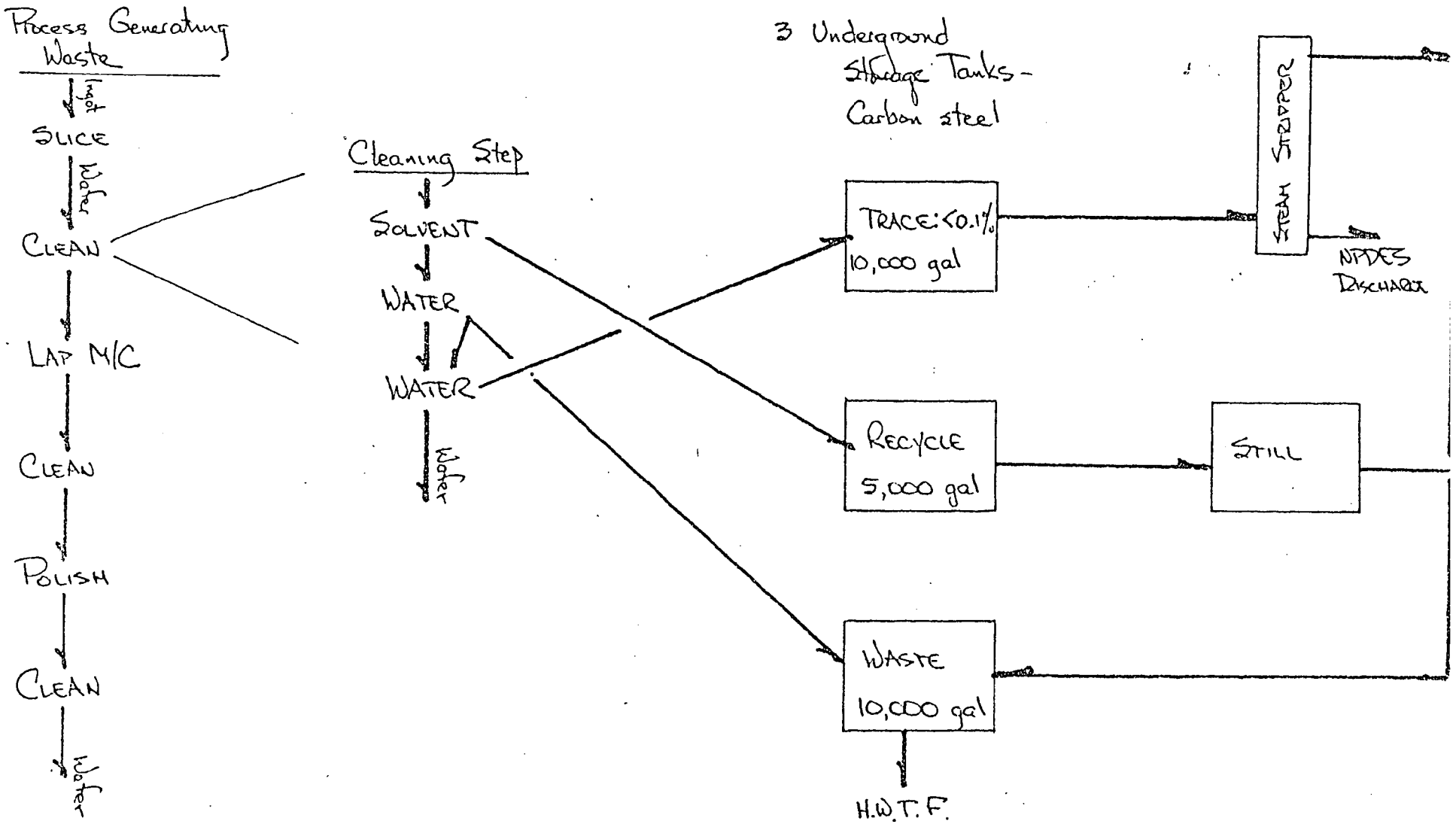
6. Waste disposal practice and manifest: Recycled Thru Van Waters & Rogers (also have OK to Arlington if not acceptable by VWR) Generally taken by Widing in double rig bulk tanker @ 2500 gal/rig

7. Reporting and recordkeeping: Satisfactory. Reports in DEQ file

SCOEPA00055084

FIG. 1

WASTE NO. 2



123

SCOEPA00055085

WACKER

WACKER SILTRONIC CORPORATION

P.O. BOX 03180 • PORTLAND, OREGON 97203
7200 N.W. FRONT AVENUE • PORTLAND, OREGON 97229 (503) 243-2020

November 19, 1980

Regional Administrator
EPA Region X
M/S 530-A
1200 Sixth Avenue
Seattle, WA 98101

Dear Sirs:

Enclosed please find Part A (Forms 1 and 3) of the RCRA Permit Application. In addition to making application as a generator of hazardous waste, we have also applied as a Treatment Facility due to three waste streams (showing the characteristics of corrosivity) which we neutralize in open concrete tanks. These tanks were designed to continuously neutralize and discharge via gravity overflow into a pipe without releasing any hazardous wastes into the environment.

We believe that this process may fall within the intent of the totally enclosed treatment facility (TETF) definition, and therefore, we wish to reserve the right to modify our interim permit, at a later date, to exclude these continuous neutralization processes.

Respectfully,

WACKER SILTRONIC CORPORATION

Dirk Dunning

SCOEPA00055086

Please print or type in the unshaded areas only
(f,l—in areas are spaced for elite type, i.e., 12 characters/inch).

Form Approved OMB No. 158-R0175

FORM 1 GENERAL

U.S. ENVIRONMENTAL PROTECTION AGENCY

GENERAL INFORMATION

Consolidated Permits Program
(Read the "General Instructions" before starting.)

I. EPA I.D. NUMBER

1	2	3	4	5	6	7	8	9	10	11	12	13	14
F	O	R	D	0	9	6	2	5	3	7	3	7	

LABEL ITEMS

I. EPA I.D. NUMBER

III. FACILITY NAME

V. FACILITY MAILING ADDRESS

VI. FACILITY LOCATION

PLEASE PLACE LABEL IN THIS SPACE

GENERAL INSTRUCTIONS

If a preprinted label has been provided, affix it in the designated space. Review the information carefully; if any of it is incorrect, cross through it and enter the correct data in the appropriate fill—in area below. Also, if any of the preprinted data is absent *(the area to the left of the label space lists the information that should appear)*, please provide it in the proper fill—in area(s) below. If the label is complete and correct, you need not complete Items I, III, V, and VI *(except VI-B which must be completed regardless)*. Complete all items if no label has been provided. Refer to the instructions for detailed item descriptions and for the legal authorizations under which this data is collected.

II. POLLUTANT CHARACTERISTICS

INSTRUCTIONS: Complete A through J to determine whether you need to submit any permit application forms to the EPA. If you answer "yes" to any questions, you must submit this form and the supplemental form listed in the parenthesis following the question. Mark "X" in the box in the third column if the supplemental form is attached. If you answer "no" to each question, you need not submit any of these forms. You may answer "no" if your activity is excluded from permit requirements; see Section C of the instructions. See also, Section D of the instructions for definitions of bold—faced terms.

SPECIFIC QUESTIONS	MARK 'X' YES	NO	FORM ATTACHED
A. Is this facility a **publicly owned treatment works** which results in a discharge to waters of the U.S.? (FORM 2A)		X	
C. Is this a facility which currently results in **discharges** to waters of the U.S. other than those described in A or B above? (FORM 2C)	X		
E. Does or will this facility treat, store, or dispose of **hazardous wastes**? (FORM 3)	X		X
G. Do you or will you inject at this facility any produced water or other fluids which are brought to the surface in connection with conventional oil or natural gas production, inject fluids used for enhanced recovery of oil or natural gas, or inject fluids for storage of liquid hydrocarbons? (FORM 4)		X	
I. Is this facility a proposed **stationary source** which is one of the 28 industrial categories listed in the instructions and which will potentially emit 100 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)		X	

SPECIFIC QUESTIONS	MARK 'X' YES	NO	FORM ATTACHED
B. Does or will this facility *(either existing or proposed)* include a **concentrated animal feeding operation** or **aquatic animal production facility** which results in a discharge to waters of the U.S.? (FORM 2B)		X	
D. Is this a proposed facility *(other than those described in A or B above)* which will result in a **discharge** to waters of the U.S.? (FORM 2D)		X	
F. Do you or will you inject at this facility industrial or municipal effluent below the lowermost stratum containing, within one quarter mile of the well bore, underground sources of drinking water? (FORM 4)		X	
H. Do you or will you inject at this facility fluids for special processes such as mining of sulfur by the Frasch process, solution mining of minerals, in situ combustion of fossil fuel, or recovery of geothermal energy? (FORM 4)		X	
J. Is this facility a proposed **stationary source** which is NOT one of the 28 industrial categories listed in the instructions and which will potentially emit 250 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)		X	

III. NAME OF FACILITY

1 SKIP: WACKER SILTRONIC CORPORATION

IV. FACILITY CONTACT

A. NAME & TITLE *(last, first, & title)*	B. PHONE *(area code & no.)*
2 DUNNING DIRK ENVIRONMENTAL ENG	503 243 2020

V. FACILITY MAILING ADDRESS

A. STREET OR P.O. BOX

3 PO Box 03180

B. CITY OR TOWN	C. STATE	D. ZIP CODE
4 PORTLAND	OR	97203

VI. FACILITY LOCATION

A. STREET, ROUTE NO. OR OTHER SPECIFIC IDENTIFIER

5 7200 NW Front Avenue

B. COUNTY NAME

Multnomah

C. CITY OR TOWN	D. STATE	E. ZIP CODE	F. COUNTY CODE *(if known)*
6 Portland	OR	97229	

CONTINUE ON REVERSE

SCOEPA00055087

CONTINUED FROM THE FRONT

VII. SIC CODES (4-digit, in order of priority)

A. FIRST	B. SECOND
3679 (specify) Electronic Components	3339 (specify) Primary Nonferrous Metal

C. THIRD	D. FOURTH
(specify)	(specify)

VIII. OPERATOR INFORMATION

A. NAME: WACKER SILTRONIC CORPORATION

B. Is the name listed in Item VIII-A also the owner? [X] YES [ ] NO

C. STATUS OF OPERATOR (Enter the appropriate letter into the answer box; if "Other", specify.)
F = FEDERAL, M = PUBLIC (other than federal or state), S = STATE, O = OTHER (specify), P = PRIVATE
P (specify)

D. PHONE (area code & no.): A 503 243 2020

E. STREET OR P.O. BOX: PO BOX 03180

F. CITY OR TOWN: PORTLAND

G. STATE: OR

H. ZIP CODE: 97203

IX. INDIAN LAND

Is the facility located on Indian lands? [ ] YES [X] NO

X. EXISTING ENVIRONMENTAL PERMITS

A. NPDES (Discharges to Surface Water)	D. PSD (Air Emissions from Proposed Sources)
9 N 2834-J	9 P 26-3002
B. UIC (Underground Injection of Fluids)	**E. OTHER (specify)**
9 U	9 (specify)
C. RCRA (Hazardous Wastes)	**E. OTHER (specify)**
9 R	9 (specify)

XI. MAP

Attach to this application a topographic map of the area extending to at least one mile beyond property bounderies. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers and other surface water bodies in the map area. See instructions for precise requirements.

XII. NATURE OF BUSINESS (provide a brief description)

Wacker Siltronic is an Inorganic Chemical Industry which grows and processes single crystals of high purity silicon from polycrystalline Raw Materials. These single crystals have unique structure and electronic properties that have wide application in the Microelectronic Industry. Wacker's primary product is silicon semiconducting crystals which are sold to microelectronic device manufacturers as either entire single crystal or cut into thin "Wafers."

XIII. CERTIFICATION (see instructions)

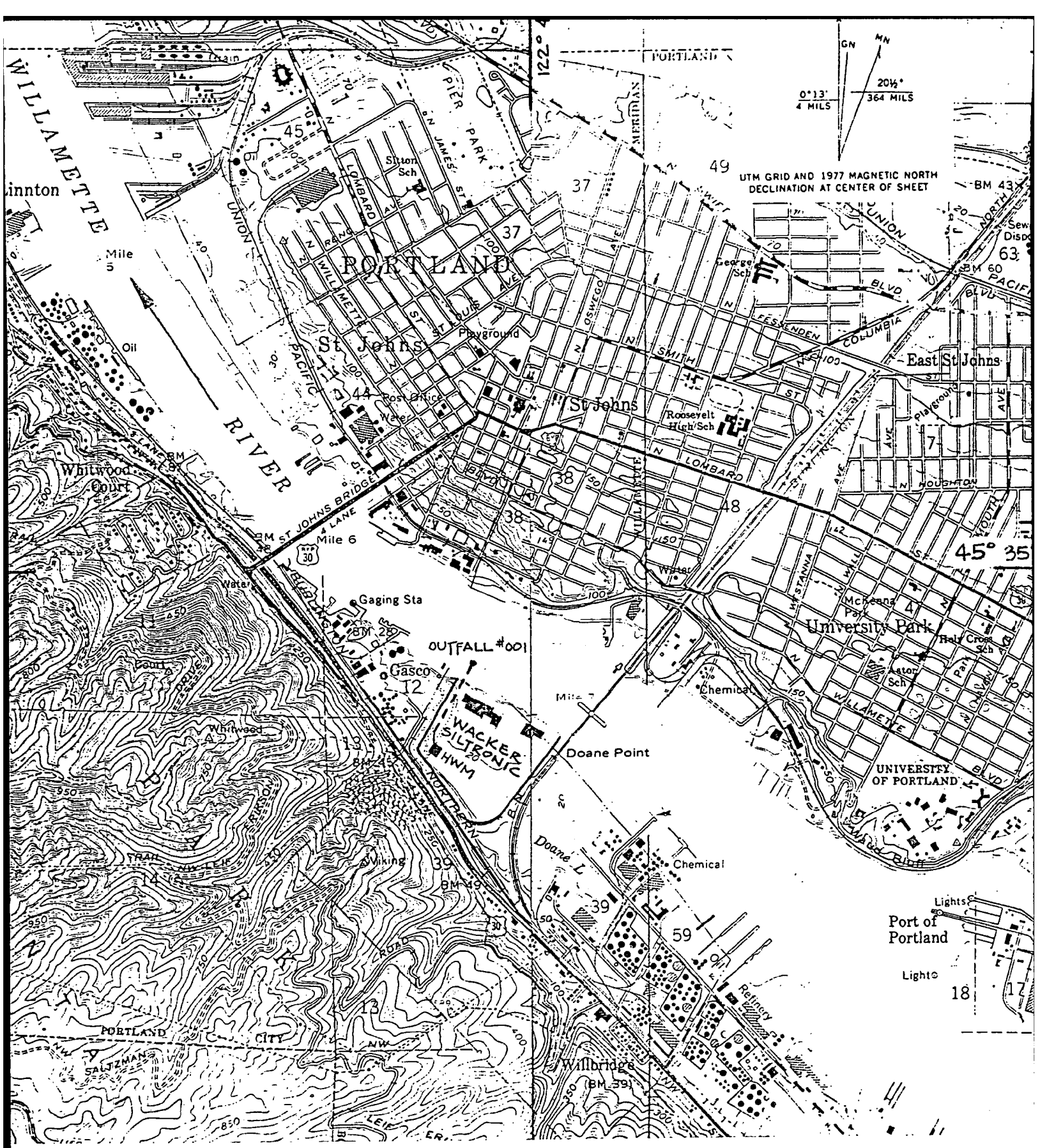
I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME & OFFICIAL TITLE (type or print)	B. SIGNATURE	C. DATE SIGNED
Malcolm J. Russ Vice President of Operations	Malcolm Russ	11-19-80

COMMENTS FOR OFFICIAL USE ONLY

C

SCOEPA00055088



WACKER SILTRONIC CORPORATION

Portland, Oregon

SCOEPA00055089

Please print or type in the unshaded areas only
(fill—in areas are spaced for elite type, i.e., 12 characters/inch).

Form Approved OMB No. 158-S80004

FORM 3 RCRA

EPA

U.S. ENVIRONMENTAL PROTECTION AGENCY

HAZARDOUS WASTE PERMIT APPLICATION

Consolidated Permits Program

(This information is required under Section 3005 of RCRA.)

I. EPA I.D. NUMBER: F O R D 0 9 6 2 5 3 7 3 7

FOR OFFICIAL USE ONLY

APPLICATION APPROVED	DATE RECEIVED (yr., mo., & day)	COMMENTS

II. FIRST OR REVISED APPLICATION

Place an "X" in the appropriate box in A or B below *(mark one box only)* to indicate whether this is the first application you are submitting for your facility or a revised application. If this is your first application and you already know your facility's EPA I.D. Number, or if this is a revised application, enter your facility's EPA I.D. Number in Item I above.

A. FIRST APPLICATION *(place an "X" below and provide the appropriate date)*

[X] 1. EXISTING FACILITY *(See instructions for definition of "existing" facility. Complete item below.)*

[ ] 2. NEW FACILITY *(Complete item below.)*

FOR EXISTING FACILITIES, PROVIDE THE DATE (yr., mo., & day) OPERATION BEGAN OR THE DATE CONSTRUCTION COMMENCED *(use the boxes to the left)*: C 8 | YR. 7 8 | MO. 0 9 | DAY 0 1

FOR NEW FACILITIES, PROVIDE THE DATE *(yr., mo., & day)* OPERATION BEGAN OR IS EXPECTED TO BEGIN: YR. | MO. | DAY

B. REVISED APPLICATION *(place an "X" below and complete Item I above)*

[ ] 1. FACILITY HAS INTERIM STATUS

[ ] 2. FACILITY HAS A RCRA PERMIT

III. PROCESSES – CODES AND DESIGN CAPACITIES

A. **PROCESS CODE** – Enter the code from the list of process codes below that best describes each process to be used at the facility. Ten lines are provided for entering codes. If more lines are needed, enter the code(s) in the space provided. If a process will be used that is not included in the list of codes below, then describe the process *(including its design capacity)* in the space provided on the form *(Item III-C)*.

B. **PROCESS DESIGN CAPACITY** – For each code entered in column A enter the capacity of the process.
1. AMOUNT – Enter the amount.
2. UNIT OF MEASURE – For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Storage:		
CONTAINER *(barrel, drum, etc.)*	S01	GALLONS OR LITERS
TANK	S02	GALLONS OR LITERS
WASTE PILE	S03	CUBIC YARDS OR CUBIC METERS
SURFACE IMPOUNDMENT	S04	GALLONS OR LITERS
Disposal:		
INJECTION WELL	D79	GALLONS OR LITERS
LANDFILL	D80	ACRE-FEET *(the volume that would cover one acre to a depth of one foot)* OR HECTARE-METER
LAND APPLICATION	D81	ACRES OR HECTARES
OCEAN DISPOSAL	D82	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	D83	GALLONS OR LITERS
Treatment:		
TANK	T01	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	T02	GALLONS PER DAY OR LITERS PER DAY
INCINERATOR	T03	TONS PER HOUR OR METRIC TONS PER HOUR; GALLONS PER HOUR OR LITERS PER HOUR
OTHER *(Use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundments or incinerators. Describe the processes in the space provided; Item III-C.)*	T04	GALLONS PER DAY OR LITERS PER DAY

UNIT OF MEASURE	UNIT OF MEASURE CODE	UNIT OF MEASURE	UNIT OF MEASURE CODE	UNIT OF MEASURE	UNIT OF MEASURE CODE
GALLONS	G	LITERS PER DAY	V	ACRE-FEET	A
LITERS	L	TONS PER HOUR	D	HECTARE-METER	F
CUBIC YARDS	Y	METRIC TONS PER HOUR	W	ACRES	B
CUBIC METERS	C	GALLONS PER HOUR	E	HECTARES	Q
GALLONS PER DAY	U	LITERS PER HOUR	H		

EXAMPLE FOR COMPLETING ITEM III *(shown in line numbers X-1 and X-2 below)*: A facility has two storage tanks, one tank can hold 200 gallons and the other can hold 400 gallons. The facility also has an incinerator that can burn up to 20 gallons per hour.

C DUP 1

LINE NUMBER	A. PROCESS CODE (from list above)	B. PROCESS DESIGN CAPACITY 1. AMOUNT (specify)	B. PROCESS DESIGN CAPACITY 2. UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY	LINE NUMBER	A. PROCESS CODE (from list above)	B. PROCESS DESIGN CAPACITY 1. AMOUNT	B. PROCESS DESIGN CAPACITY 2. UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY
X-1	S02	600	G		5	S02	1,000	U	
X-2	T03	20	E		6	T01	400,000	U	
1	T01	75,000	U		7				
2	T01	150,000	U		8				
3	T01	1,200	U		9				
4	S02	25,000	U		10				

SCOEPA00055090

Continued from the front.

III. PROCESSES *(continued)*

C. SPACE FOR ADDITIONAL PROCESS CODES OR FOR DESCRIBING OTHER PROCESSES *(code "T04")*. FOR EACH PROCESS ENTERED HERE INCLUDE DESIGN CAPACITY.

IV. DESCRIPTION OF HAZARDOUS WASTES

A. **EPA HAZARDOUS WASTE NUMBER** – Enter the four–digit number from 40 CFR, Subpart D for each listed hazardous waste you will handle. If you handle hazardous wastes which are not listed in 40 CFR, Subpart D, enter the four–digit number*(s)* from 40 CFR, Subpart C that describes the characteristics and/or the toxic contaminants of those hazardous wastes.

B. **ESTIMATED ANNUAL QUANTITY** – For each **listed waste** entered in column A estimate the quantity of that waste that will be handled on an annual basis. For each **characteristic** or **toxic contaminant** entered in column A estimate the total annual quantity of all the non–listed waste*(s)* that will be handled which possess that characteristic or contaminant.

C. **UNIT OF MEASURE** – For each quantity entered in column B enter the unit of measure code. Units of measure which must be used and the appropriate codes are:

ENGLISH UNIT OF MEASURE	CODE	METRIC UNIT OF MEASURE	CODE
POUNDS	P	KILOGRAMS	K
TONS	T	METRIC TONS	M

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure taking into account the appropriate density or specific gravity of the waste.

D. **PROCESSES**

1. PROCESS CODES:
   For listed hazardous waste: For each **listed** hazardous waste entered in column A select the code*(s)* from the list of process codes contained in Item III to indicate how the waste will be stored, treated, and/or disposed of at the facility.
   For non–listed hazardous wastes: For each characteristic or toxic contaminant entered in column A, select the code*(s)* from the list of process codes contained in Item III to indicate **all** the processes that will be used to store, treat, and/or dispose of all the non–listed hazardous wastes that possess that characteristic or toxic contaminant.
   Note: Four spaces are provided for entering process codes. If more are needed: (1) Enter the first three as described above; (2) Enter "000" in the extreme right box of Item IV-D(1); and (3) Enter in the space provided on page 4, the line number and the additional code*(s)*.
2. PROCESS DESCRIPTION: If a code is not listed for a process that will be used, describe the process in the space provided on the form.

NOTE: HAZARDOUS WASTES DESCRIBED BY MORE THAN ONE EPA HAZARDOUS WASTE NUMBER – Hazardous wastes that can be described by more than one EPA Hazardous Waste Number shall be described on the form as follows:

1. Select one of the EPA Hazardous Waste Numbers and enter it in column A. On the same line complete columns B,C, and D by estimating the total annual quantity of the waste and describing all the processes to be used to treat, store, and/or dispose of the waste.
2. In column A of the next line enter the other EPA Hazardous Waste Number that can be used to describe the waste. In column D(2) on that line enter "included with above" and make no other entries on that line.
3. Repeat step 2 for each other EPA Hazardous Waste Number that can be used to describe the hazardous waste.

EXAMPLE FOR COMPLETING ITEM IV *(shown in line numbers X-1, X-2, X-3, and X-4 below)* – A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operation. In addition, the facility will treat and dispose of three non–listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

LINE NO.	A. EPA HAZARD. WASTE NO *(enter code)*	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE *(enter code)*	D. PROCESSES 1. PROCESS CODES *(enter)*	D. PROCESSES 2. PROCESS DESCRIPTION *(if a code is not entered in D(1))*
X-1	K 0 5 4	900	P	T 0 3 D 8 0	
X-2	D 0 0 2	400	P	T 0 3 D 8 0	
X-3	D 0 0 1	100	P	T 0 3 D 8 0	
X-4	D 0 0 2				*included with above*

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Continued from page 2.

NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

Form Approved OMB No. 158-S80004

EPA I.D. NUMBER (enter from page 1): W | O | R | D | 0 | 9 | 6 | 2 | 5 | 3 | 7 | 3 | 7 | T/A: | C: 1

FOR OFFICIAL USE ONLY: W | DUP | T/A: | C: 2 | DUP

IV. DESCRIPTION OF HAZARDOUS WASTES (continued)

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D(1))
1	F001	55,000	T	S02	Stored for recycling
2	F002				Included with above
3	D002	120,000	T	T01 S02	Continuosly neutralized
4	U134				Included with above
5	F003	70	T	T01 S02	Aqueous solution continuously neutralized
6	U002				and discharged to POTW. Included with above
7	U031				Included with above
8	D002	600,000	T	T01 S02	To be continuously neutralized in tank.
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					

SCOEPA00055092

Continued from the front.

IV. DESCRIPTION OF HAZARDOUS WASTES *(continued)*

E. USE THIS SPACE TO LIST ADDITIONAL PROCESS CODES FROM ITEM D(1) ON PAGE 3.

EPA I.D. NO. *(enter from page 1)*

													T/A	C
F	O	R	D	0	9	6	2	5	3	7	3	7		6

V. FACILITY DRAWING

All existing facilities must include in the space provided on page 5 a scale drawing of the facility *(see instructions for more detail).*

VI. PHOTOGRAPHS

All existing facilities must include photographs *(aerial or ground–level)* that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas *(see instructions for more detail).*

VII. FACILITY GEOGRAPHIC LOCATION

LATITUDE *(degrees, minutes, & seconds)*	LONGITUDE *(degrees, minutes, & seconds)*
45 34 20	122 45 15

VIII. FACILITY OWNER

☒ A. If the facility owner is also the facility operator as listed in Section VIII on Form 1, "General Information", place an "X" in the box to the left and skip to Section IX below.

B. If the facility owner is not the facility operator as listed in Section VIII on Form 1, complete the following items:

1. NAME OF FACILITY'S LEGAL OWNER	2. PHONE NO. *(area code & no.)*
E	

3. STREET OR P.O. BOX	4. CITY OR TOWN	5. ST.	6. ZIP CODE
F	G		

IX. OWNER CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME *(print or type)*	B. SIGNATURE	C. DATE SIGNED
Malcolm J. Russ Vice President of Operations	Malcolm J. Russ	11-19-80

X. OPERATOR CERTIFICATION

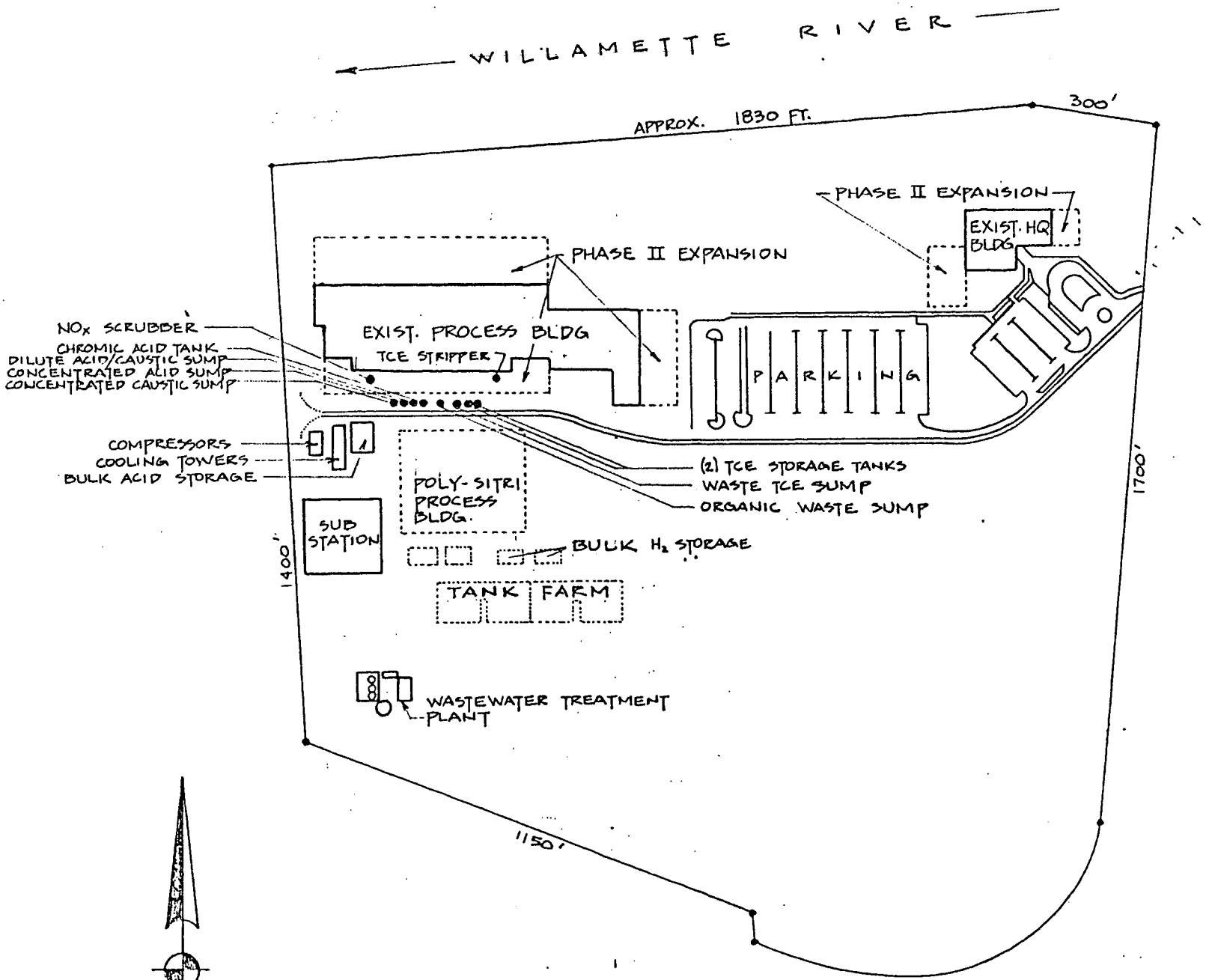
I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME *(print or type)*	B. SIGNATURE	C. DATE SIGNED
Malcolm J. Russ Vice President of Operations	Malcolm J. Russ	11-19-80

SCOEPA00055093

Continued from page 4.

V. FACILITY DRAWING *(see page 4)*



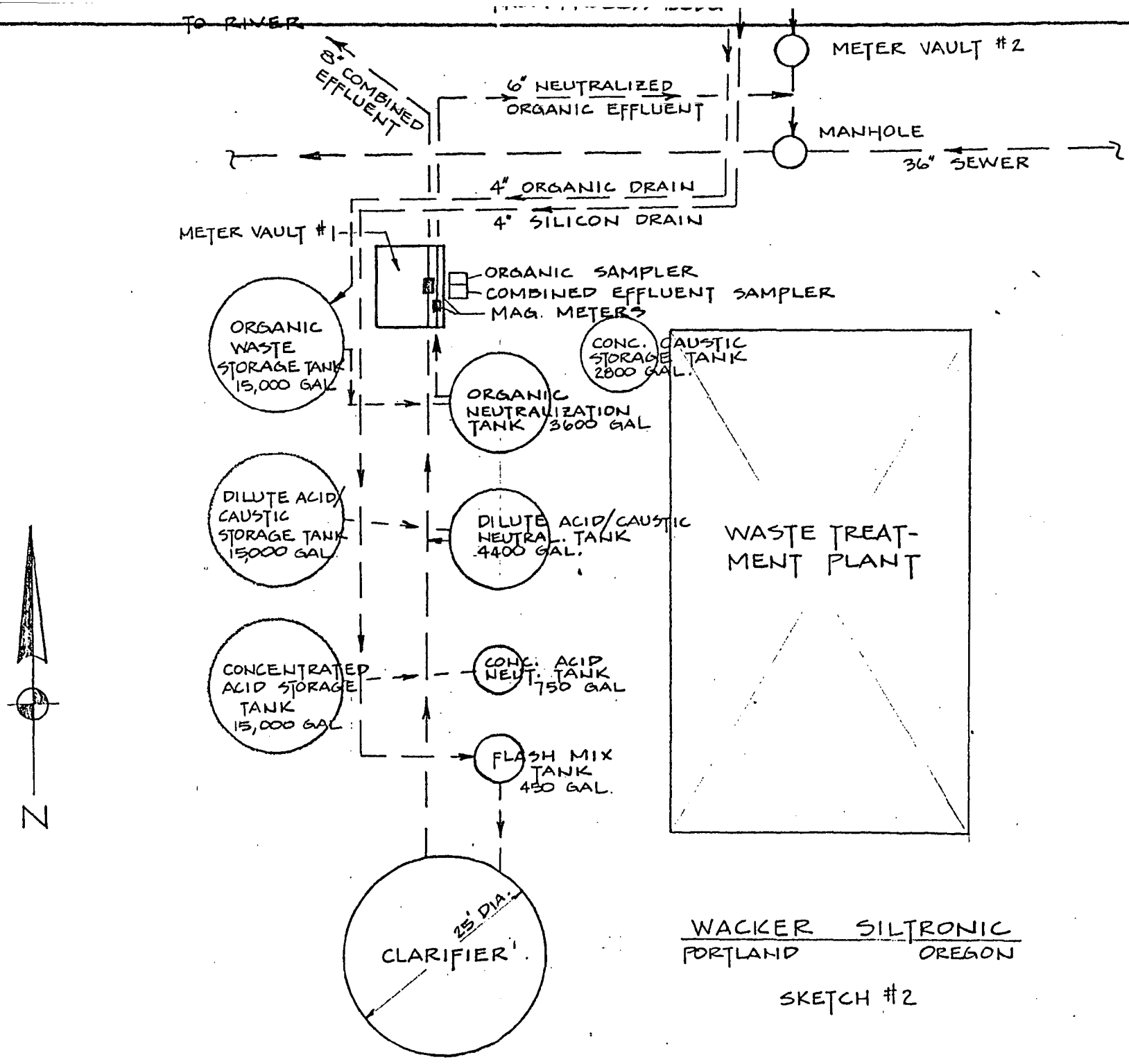
WACKER SILTRONIC
PORTLAND OREGON

SKETCH #1

SCOEPA00055094

Continued from page 4.

V. FACILITY DRAWING *(see page 4)*



WACKER SILTRONIC
PORTLAND OREGON

SKETCH #2

Form Approved OMB No. 158-S80004

SCOEPA00055095

SCOEPA00055096

NOTES TO FILE ON RCRA Application.

Original Application for TSD status was made on the basis of neutralization being a treatment operation. As this has now been termed an "elementary neutralization unit" operation, this no longer applies. Status of plant systems in this regard are as follows:

1) SOD-W — not TSD — due to waste being shipped within 90 days (generally @ 30 days)

2) SOD-T — not TSD — due to not "hazardous" waste.
A) - not ignitable per 261.21
B) - not corrosive per 261.22 pH < 12.5 & protects iron
C) - not reactive per 261.23
D) - not EP toxic per 261.24
E) - not a listed waste per 261.30 (subpart D)

3) SOD-R — not TSD — material never intended for discard and system designed to prevent this. - totally enclosed. Part of internal plant operations. Also, <90 days storage of material - due to continual reuse. (Tank "turned" over in <2 mo's)

4) OWW, WAD, CAD, CCD, SSW — not TSD — due to new definition of "elementary neutralization unit" which is not regulated. CaF_2, TSS removal also not regulated. Also, CaF_2 removal occurs strictly as a by-product of neutralization and hence should not be covered in any event.

5) ~~Bldg~~ Polyplant. — ? — insufficient information on waste, design, operation.

probable hazardous waste —
A) - HCl, H_2 gas.
B) - $SiCl_xH_y$ gases
C) - $FeCl_3$ solid
D) - $AlCl_3$ solid

probable treatment operations.
A) - HCl neutralization - probably exempted.
B) - $SiCl_xH_y$ scrubbing - unknown status, depends on whether it is "hazardous."
C) - $FeCl_3$ solid - reacts violently with water to produce toxic fumes.
D) - $AlCl_3$ solid - same as C)

Due to methods of construction, operation and design, it is possible that no treatment, storage, or disposal will occur as per RCRA. It is also possible that it will.

Also, other aspects of the plant over which we (I) have no information may present a problem.

SCOEPA00055097

NOTE TO R.C.R.A. FILE

TELEPHONE CONVERSATION 9/3/81 Duke

LINDA DAWSON, EPA, SEATTLE 1-206-442-1260

Reference: Letter from Linda Dawson dated 7/21/81 regarding withdrawal of R.C.R.A. application because Walker's process qualifies as "elementary neutralization unit" and/or "waste treatment unit".

Questions:

1. Is the administration of R.C.R.A now totally in hands of Oregon?

Ans: no, only a Phase I approval has been given. Basically, Oregon rules now apply but E.P.A. still reserves the right to issues the permits.

2. How much time is left before a decision has to be made for R.C.R.A. application withdrawal?

Ans: Have given most companies deadlines, but have "slipped up" on Walker. Will not assign formal deadline but would like to know one way or another "pretty soon".

3. What would be required if we decided to install an emergency containment basin, which is empty except when an emergency waste diversion must occur to remain within the N.P.D.E.S permit?

Ans: If we qualify for R.C.R.A suspension, would only have to check w/ Oregon D.E.Q. EPA would require nothing and the D.E.Q. probably would not either. Only building permits.

4. How would withdrawal of R.C.R.A. application (suspension) affect future changes in process which would call for a modification of waste treatment?

Ans: If under a suspension (or withdrawal of R.C.R.A. application) we would have 30 days to resubmit a R.C.R.A. application for status or permit approval.

Jim Ellis

SCOEPA00055098

NEIL GOLDSCHMIDT
GOVERNOR

Department of Environmental Quality

811 SW SIXTH AVENUE, PORTLAND, OREGON 97204-1390 PHONE (503) 229-5696

August 29, 1990

Mr. Gary Fisher
Chemical Waste Management
of the Northwest, Inc.
Star Route
Arlington, OR 97812-9709

Re: Waste Identification Codes

Dear Gary:

In a letter to you dated January 25, 1988, I listed the "X" waste codes that are used in Oregon. These codes (with the exception of X001) are not included in the state hazardous waste rules, and are primarily designed for identification of miscellaneous waste streams. We have added and deleted some "X" codes since 1988, so this serves as an update to my previous letter.

Code	Description	Comments
X001	DEQ Regulated Pesticides	Hazardous waste pursuant to OAR 340-101-033(5).
X002	Polychlorinated Biphenyls	PCB waste regulated under OAR 340-100 and 40 CFR § 761.
X004	Industrial Waste, NOS	Industrial waste that is not hazardous by definition.
X006	Lab Packs	May contain a combination of wastes in small containers.
X007	Out-of-State Hazardous Waste.	Waste not defined as hazardous in Oregon, but regulated as hazardous waste in other states.
X009	Household Hazardous Waste	Waste exempt from regulation pursuant to 40 CFR § 261.4(b)(1).

SCOEPA00055100

ACKROYD Photography Inc.

C-9229-1

Oregon DEQ

Search

About DEQ | Regulations | News & Info | Programs | Contact Us

Enforcement Database Search Results

Data is current as of: 10/6/2005 at 10:23:28 AM PST.

The following 1 records match your search criteria. They are sorted alphabetically by legal name and inspector name and are presented in two tables (The first table displays 1 enforcement action records after 1997. The second table displays 0 enforcement action records prior to 1997).

TIP -- Change page orientation to landscape before printing this report.

Search Again

Enforcement Actions Initiated By Inspector and Issued to Source, 1998 to present								
Enforcement Number	**Program/Region**	**Source Name and Location**	**Inspector**	**Enforcement Staff**	**Enforcement Type**	**Violations**	**Issued**	**Penalty Paid**
1999-111	Waste Mgmt, Hazardous Waste Northwest Region	WACKER SILTRONIC CORPORATION @ PORTLAND	SHEWCZYK	LEBRUN	Notice of Civil Penalty Assessment and Compliance Order	HW Generator Rules	11/16/1999	$7,200
Total Records: 1								

No historical Enforcement action records (prior to 1998) match your search criteria.

Click here to view the CSV file as a spreadsheet.

Search again

For more information, please contact Deborah Nesbit at (503) 229-5340.

DEQ Online is the official Web site for the Oregon Department of Environmental Quality.
If you have questions or comments, please contact us.

Last updated: 10/06/2005 10:23:34

Notice of NonCompliance (NON) Database Search Results

The following 4 records match your search criteria. They are sorted alphabetically by legal name and inspector name and are presented in two tables (The first table displays 1 Notice of NonCompliance records issued from 1998 to the present. The second table displays 3 historical Notice of NonCompliance records issued prior to 1998.)

TIP -- Change page orientation to landscape before printing this screen.

Search Again

Notices of NonCompliance issued 1998 to present

Program/Region	Source Name	Staff Initials	Violation Date	NON Date	County	Location	Description	NON Class	Permit #
WASTE MGMT, HAZARDOUS WASTE NORTHWEST REGION	WACKER SILTRONIC CORP	SJS	5/11/1999	5/24/1999	MULTNOMAH	7200 NW FRONT AVE	FAILURE TO PERFORM HW DETER +8	Class 1	

Total Records: 1

The following historical records match your search criteria for Notice of NonCompliance records issued prior to 1998.

Notices of NonCompliance issued prior to 1998

Program/Region	Source Name	Staff Initials	Violation Date	NON Date	County	Location	Description	NON Class	Permit #
WASTE MGMT NORTHWEST REGION	WACKER SILTRONIC	CRC	8/27/1996	9/9/1996	MULTNOMAH CO.		FAILURE TO PREPARE MANIFEST	Class 1	
AIR QUALITY NORTHWEST REGION	WACKER SILTRONIC CORP.	DBS	1/9/1996	1/29/1996	MULTNOMAH CO		FAILURE TO MEET TESTING REQUIREMENT		26-3002
AIR QUALITY NORTHWEST	WACKER SILTRONICS CORP.	DBS	2/28/1996	2/28/1996	MULTNOMAH CO		NOT SUBMITTING REQ'D REPORTS		26-3002

REGION
Total Records: 3

Search Again

For more information, please contact Deborah Nesbit at (503) 229-5340.

DEQ Online is the official Web site for the Oregon Department of Environmental Quality.
If you have questions or comments, please contact us.

Last updated: 10/06/2005 10:26:15

SCOEPA00055104

U.S. Environmental Protection Agency

Enforcement & Compliance History Online (ECHO)

Search Results (All Programs)

Help

1 Facility Returned

◄ New Search

Information on the enforcement process is available on the FAQ page.
Please note that only larger facilities are shown unless you select "Include Minor Facilities", which is located at the bottom of the advanced search forms.

▽ **Download** (a comma delimited text file)

Facility Information *Select Name to Read Report*	Program ID#	Inspections (3 yrs)	Qtrs in Alleged Non Compliance (3 yrs)	Alleged Current Significant Violations	Informal Enforcement Actions/NOVs (3 yrs)	Formal Enforcement Actions (3 yrs)
WACKER SILTRONIC CORPORATION 7200 NORTHWEST FRONT AVENUE PORTLAND, OR 97210 FRS ID: 110000487456	AFS: 4105103002	1	n/a	n/a		1
	PCS: OR0030589	1	2	yes		1
	RCR: ORD096253737	1		no		1

▽ **Download** (a comma delimited text file)

Report Generated on 10/6/2005

Search Criteria

Facility Characteristics

Active/Operating: Y | AFS:FedRep or PCS:Major or RCRA:TSD/LQG : Y | SIC Code: 3674 | Facility Name: wacker siltronic

Geographic Location

County: Any | State/City: OR/PORTLAND

Restrict by Media

Restrictions By Media: ANY

return to top

Notes:
-Chemical releases reported by TRI are not associated with non-compliance for that facility.
-The Demographics data (Percent Minority and Population Density) are displayed on the first row in each facilities data table.
This data is not specific to that permit but to the whole facility.

Definitions:

AFS- Air Facility System for Clean Air Act programs.
FRS- Facility Registry System.
PCS- Permit Compliance System for Clean Water Act programs monitoring National Pollutant Discharge Elimination System (NPDES) permits.
RCRA- Resource Conservation and Recovery Act waste handler database (RCRAInfo).
TRI- Toxics Release Inventory for Emergency Planning and Community Right-to-Know Act, Section 313 submissions.
ICIS- Integrated Compliance Information System

U.S. Environmental Protection Agency

Water Discharge Permits (PCS)

PCS

Detailed Reports

Report an Error

This page was created on OCT-06-2005
Results are based on data extracted on SEP-16-2005

Facility Information

FACILITY NAME(1) : SILTRONIC CORPORATION **NPDES :** OR0030589
FACILITY NAME(2) :

Select from the reports listed below *(Defaults to All Reports):*

- ☑ Facility
- ☑ Permit Documents
- ☑ Permit Tracking
- ☑ Inspections
- ☑ Outfalls/Pipe Schedules
- ☑ Limits ◉ Short Format ○ Long Format
- ☑ Measurements and Violations
- ☑ Compliance Schedules and Violations
- ☑ Evidentiary Hearings
- ☑ Pretreatment Inspections/Audits
- ☑ Pretreatment Performance Summary

Search Clear

SCOEPA00055107

Last updated on Thursday, October 6th, 2005
http://oaspub.epa.gov/enviro/pcs_det_reports.detail_report

U.S. Environmental Protection Agency

Water Discharge Permits (PCS)

PCS

Detailed Reports

Report an Error

Results are based on data extracted on SEP-16-2005

Facility

FACILITY NAME (1) :	SILTRONIC CORPORATION	**NPDES :**	OR0030589
FACILITY NAME (2) :			
STREET 1 :	7200 NW FRONT AVENUE	**SIC CODE :**	3674 = SEMICONDUCTORS & RELATED DEVIC
CITY :	PORTLAND	**MAJOR / MINOR :**	M = Major
COUNTY NAME :	MULTNOMAH	**TYPE OF OWNERSHIP :**	PRI = PRIVATE
STATE :	OR	**INDUSTRY CLASS :**	P
ZIP CODE :	972103676	**ACTIVITY STATUS :**	A = Active
REGION :	10	**INACTIVE DATE :**	
LATITUDE :	+4534360		
LONGITUDE :	-12245020	**TYPE OF PERMIT ISSUED :**	S = STATE
LAT/LON CODE OF ACCURACY :		**PERMIT ISSUED DATE :**	20-MAY-2004
LAT/LON METHOD :		**PERMIT EXPIRED DATE :**	30-APR-2009
LAT/LON SCALE :		**ORIGINAL PERMIT ISSUE DATE :**	28-SEP-1978
LAT/LON DATUM :			
LAT/LON DESCRIPTION :			
USGS HYDRO BASIN CODE :		**STREAM SEGMENT :**	
FLOW :		**MILEAGE IND :**	

SCOEPA00055109

RECEIVING STREAM CLASS CODE :		**FEDERAL_GRANT_IND :**	
RECEIVING WATERS :	WILLAMETTE RIVER	**FINAL LIMITS IND :**	F = FINAL
PRETREATMENT CODE :			
SLUDGE INDICATOR :		**SLUDGE CLASS FAC IND :**	
SLUDGE RELATED PERMIT NUM :		**ANNUAL DRY SLUDGE PROD :**	
MAILING NAME :	SILTRONIC CORPORATION		
MAILING STREET (1) :	7200 NW FRONT AVENUE	**MAILING STREET (2) :**	
MAILING CITY :	PORTLAND	**MAILING STATE :**	OR
MAILING ZIP CODE :	972103676		
SLUDGE COMMERCIAL HANDLER :			
SLUDGE HANDLER STREET (1) :		**SLUDGE HANDLER STREET (2) :**	
SLUDGE HANDLER CITY :		**SLUDGE HANDLER STATE :**	
SLUDGE HANDLER ZIP CODE :			
COGNIZANT OFFICIAL :	THOMAS MCCUE, ENVIRON MANAGER	**COGNIZANT OFFICIAL TEL :**	503-241-7532

Permit Documents

FACILITY NAME (1) : SILTRONIC CORPORATION **NPDES :** OR0030589

FACILITY NAME (2) :

No Permit Documents Found.

Permit Tracking

FACILITY NAME (1) :	SILTRONIC CORPORATION	**NPDES :**	OR0030589
FACILITY NAME (2) :		**PERMIT ISSUED BY :**	S = STATE

PERMIT ISSUED DATE : 20-MAY-2004 **ORIGINAL DATE OF ISSUE :** 28-SEP-1978
PERMIT EXPIRED DATE : 30-APR-2009

Permit Tracking Events:

EVENT CODE	EVENT DESCRIPTION	ACTUAL DATE
P5099	PERMIT EXPIRED	30-APR-2009
P4099	PERMIT ISSUED	20-MAY-2004
P1099	APPLICATION RECEIVED	20-OCT-1997
30099	PERMIT MODIFIED	18-MAR-1996
P3099	DRAFT PERMIT/PUBLIC NOTICE	19-JUL-1994

Inspections

FACILITY NAME (1) : SILTRONIC CORPORATION **NPDES :** OR0030589
FACILITY NAME (2) :

INSPECTION TYPE	DATE OF INSPECTION	INSPECTION PERFORMED BY
S = COMPLIANCE SAMPLING	29-OCT-2003	S = STATE
S = COMPLIANCE SAMPLING	15-FEB-2000	T = JOINT EPA & ST (ST LEAD)
S = COMPLIANCE SAMPLING	20-MAY-1992	S = STATE
S = COMPLIANCE SAMPLING	21-AUG-1990	S = STATE
C = COMPLIANCE EVAL (NON-SAMPLING)	11-AUG-1989	S = STATE
C = COMPLIANCE EVAL (NON-SAMPLING)	22-JUN-1988	S = STATE

Outfalls/Pipe Schedules

FACILITY NAME (1) :	SILTRONIC CORPORATION	**NPDES :**	OR0030589
FACILITY NAME (2) :		**OUTFALL TYPE :**	
PIPE NUMBER :	001	**ACTIVITY STATUS:**	A = ACTIVE
REPORT DESIGNATOR :	A	**LATITUDE:**	
PIPE SET QUALIFIER :	9	**LONGITUDE :**	

SCOEPA00055111

INACTIVE DATE :		LAT/LON ACCURACY :	
INIT LIMITS START DATE :		LAT/LON METHOD :	
INIT LIMITS END DATE :		LAT/LON SCALE :	
INTERIM LIMITS START DATE :		LAT/LON DATUM :	
INTERIM LIMITS END DATE :		LAT/LON DESCRIPTION :	
FINAL LIMITS START DATE :	01-JUN-2004	USGS HYDRO BASIN CODE :	
FINAL LIMITS END DATE :	30-APR-2009	PIPE STREAM SEGMENT :	
INIT SUBM. DATE(EPA) :	15-SEP-2004	RECEIVING STREAM CLASS CD :	
SUBMISSION UNITS (EPA) :	M = MONTHS	MILEAGE INDICATOR :	
UNITS IN EPA SUBM. PERIOD :	1	PIPE DESCRIPTION :	TREATED PROCESS WASTEWATER
INIT SUBM. DATE (STATE) :	15-SEP-2004		
SUBMISSION UNITS (STATE) :	M = MONTHS		
UNITS IN STATE SUBM. PERIOD :	1		
INIT REPORTING DATE :	01-AUG-2004		
REPORTING UNITS :	M = MONTHS		
UNITS IN REPORTING PERIOD :	1		

FACILITY NAME (1) :	SILTRONIC CORPORATION	NPDES :	OR0030589
FACILITY NAME (2) :		OUTFALL TYPE :	
PIPE NUMBER :	002	ACTIVITY STATUS:	A = ACTIVE
REPORT DESIGNATOR :	A	LATITUDE:	
PIPE SET QUALIFIER :	9	LONGITUDE :	
INACTIVE DATE :		LAT/LON ACCURACY :	
INIT LIMITS START DATE :		LAT/LON METHOD :	
INIT LIMITS END DATE :		LAT/LON SCALE :	
INTERIM LIMITS START DATE :		LAT/LON DATUM :	
INTERIM LIMITS END DATE :		LAT/LON DESCRIPTION :	
FINAL LIMITS START DATE :	01-JUN-2004	USGS HYDRO BASIN CODE :	
FINAL LIMITS END DATE :	30-APR-2009	PIPE STREAM SEGMENT :	
INIT SUBM. DATE(EPA) :	15-SEP-2004	RECEIVING STREAM CLASS CD :	
SUBMISSION UNITS (EPA) :	M = MONTHS	MILEAGE INDICATOR :	
UNITS IN EPA SUBM. PERIOD :	1	PIPE DESCRIPTION :	COOLING WATER & BOILER BLOWDWN

SCOEPA00055112

INIT SUBM. DATE (STATE) :	15-SEP-2004
SUBMISSION UNITS (STATE) :	M = MONTHS
UNITS IN STATE SUBM. PERIOD :	1
INIT REPORTING DATE :	01-AUG-2004
REPORTING UNITS :	M = MONTHS
UNITS IN REPORTING PERIOD :	1

FACILITY NAME (1) :	SILTRONIC CORPORATION	**NPDES :**	OR0030589
FACILITY NAME (2) :		**OUTFALL TYPE :**	
PIPE NUMBER :	003	**ACTIVITY STATUS:**	A = ACTIVE
REPORT DESIGNATOR :	A	**LATITUDE:**	
PIPE SET QUALIFIER :	9	**LONGITUDE :**	
INACTIVE DATE :		**LAT/LON ACCURACY :**	
INIT LIMITS START DATE :		**LAT/LON METHOD :**	
INIT LIMITS END DATE :		**LAT/LON SCALE :**	
INTERIM LIMITS START DATE :		**LAT/LON DATUM :**	
INTERIM LIMITS END DATE :		**LAT/LON DESCRIPTION :**	
FINAL LIMITS START DATE :	01-JUN-2004	**USGS HYDRO BASIN CODE :**	
FINAL LIMITS END DATE :	30-APR-2009	**PIPE STREAM SEGMENT :**	
INIT SUBM. DATE(EPA) :	15-SEP-2004	**RECEIVING STREAM CLASS CD :**	
SUBMISSION UNITS (EPA) :	M = MONTHS	**MILEAGE INDICATOR :**	
UNITS IN EPA SUBM. PERIOD :	1	**PIPE DESCRIPTION :**	COMBINED OUTFALL
INIT SUBM. DATE (STATE) :	15-SEP-2004		
SUBMISSION UNITS (STATE) :	M = MONTHS		
UNITS IN STATE SUBM. PERIOD :	1		
INIT REPORTING DATE :	01-AUG-2004		
REPORTING UNITS :	M = MONTHS		
UNITS IN REPORTING PERIOD :	1		

FACILITY NAME (1) :	SILTRONIC CORPORATION	**NPDES :**	OR0030589
FACILITY NAME (2) :		**OUTFALL TYPE :**	
PIPE NUMBER :	003	**ACTIVITY STATUS:**	A = ACTIVE

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REPORT DESIGNATOR :	Y	**LATITUDE:**	
PIPE SET QUALIFIER :	9	**LONGITUDE :**	
INACTIVE DATE :		**LAT/LON ACCURACY :**	
INIT LIMITS START DATE :		**LAT/LON METHOD :**	
INIT LIMITS END DATE :		**LAT/LON SCALE :**	
INTERIM LIMITS START DATE :		**LAT/LON DATUM :**	
INTERIM LIMITS END DATE :		**LAT/LON DESCRIPTION :**	
FINAL LIMITS START DATE :	01-JUN-2004	**USGS HYDRO BASIN CODE :**	
FINAL LIMITS END DATE :	30-APR-2009	**PIPE STREAM SEGMENT :**	
INIT SUBM. DATE(EPA) :	15-SEP-2004	**RECEIVING STREAM CLASS CD :**	
SUBMISSION UNITS (EPA) :	M = MONTHS	**MILEAGE INDICATOR :**	
UNITS IN EPA SUBM. PERIOD :	12	**PIPE DESCRIPTION :**	YEARLY BIOASSAY
INIT SUBM. DATE (STATE) :	15-SEP-2004		
SUBMISSION UNITS (STATE) :	M = MONTHS		
UNITS IN STATE SUBM. PERIOD :	12		
INIT REPORTING DATE :	01-AUG-2003		
REPORTING UNITS :	M = MONTHS		
UNITS IN REPORTING PERIOD :	12		

Limits Report

FACILITY NAME (1) :	SILTRONIC CORPORATION	**NPDES :**	OR0030589
FACILITY NAME (2) :		**PIPE NUMBER :**	001
REPORT DESIGNATOR :	A	**PIPE SET QUALIFIER :**	9

LIMIT TYPE	PARAMETER CODE	MONITORING LOCATION	SEASON NUM	MODIFICATION NUM	MOD. PERIOD START DATE	MOD. PERIOD END DATE	CHANGE OF LIMIT STATUS	CONTESTED PARAMETER INDICATOR	DOCKET NUMBER	LONG FORMAT
5 = FINAL	TURBIDITY	1 = EFFLUENT GROSS VALUE	0	0	01-JUN-2004	30-APR-2009				YES
5 =	BOD, 5-DAY (20	1 = EFFLUENT			01-JUN-	30-APR-				

FINAL	DEG. C)	GROSS VALUE	0	0	2004	2009				YES
5 = FINAL	PH	1 = EFFLUENT GROSS VALUE	0	0	01-JUN-2004	30-APR-2009				YES
5 = FINAL	SOLIDS, TOTAL SUSPENDED	1 = EFFLUENT GROSS VALUE	0	0	01-JUN-2004	30-APR-2009				YES
5 = FINAL	FLUORIDE, TOTAL (AS F)	1 = EFFLUENT GROSS VALUE	0	0	01-JUN-2004	30-APR-2009				YES
5 = FINAL	CHROMIUM, TOTAL (AS CR)	1 = EFFLUENT GROSS VALUE	0	0	01-JUN-2004	30-APR-2009				YES
5 = FINAL	FLOW, IN CONDUIT OR THRU TREATMENT PLANT	1 = EFFLUENT GROSS VALUE	0	0	01-JUN-2004	30-APR-2009				YES
5 = FINAL	PHOSPHATE, TOTAL COLOR. METHOD (AS P)	1 = EFFLUENT GROSS VALUE	0	0	01-JUN-2004	30-APR-2009				YES
5 = FINAL	ORGANICS, TOTAL TOXIC (TTO)	1 = EFFLUENT GROSS VALUE	0	0	01-JUN-2004	30-APR-2009				YES

FACILITY NAME (1) : SILTRONIC CORPORATION **NPDES :** OR0030589
FACILITY NAME (2) : **PIPE NUMBER :** 002
REPORT DESIGNATOR : A **PIPE SET QUALIFIER :** 9

LIMIT TYPE	PARAMETER CODE	MONITORING LOCATION	SEASON NUM	MODIFICATION NUM	MOD. PERIOD START DATE	MOD. PERIOD END DATE	CHANGE OF LIMIT STATUS	CONTESTED PARAMETER INDICATOR	DOCKET NUMBER	LONG FORMAT
5 = FINAL	FLOW, IN CONDUIT OR THRU TREATMENT PLANT	1 = EFFLUENT GROSS VALUE	0	0	01-JUN-2004	30-APR-2009				YES

SCOEPA00055115

5 = FINAL	PHOSPHATE, TOTAL COLOR. METHOD (AS P)	1 = EFFLUENT GROSS VALUE	0	0	01-JUN-2004	30-APR-2009				YES

FACILITY NAME (1) : SILTRONIC CORPORATION **NPDES :** OR0030589
FACILITY NAME (2) : **PIPE NUMBER :** 003
REPORT DESIGNATOR : A **PIPE SET QUALIFIER :** 9

LIMIT TYPE	PARAMETER CODE	MONITORING LOCATION	SEASON NUM	MODIFICATION NUM	MOD. PERIOD START DATE	MOD. PERIOD END DATE	CHANGE OF LIMIT STATUS	CONTESTED PARAMETER INDICATOR	DOCKET NUMBER	LONG FORMAT
5 = FINAL	TEMPERATURE, WATER DEG. FAHRENHEIT	1 = EFFLUENT GROSS VALUE	0	0	01-JUN-2004	30-APR-2009				YES
5 = FINAL	PH	1 = EFFLUENT GROSS VALUE	0	0	01-JUN-2004	30-APR-2009				YES
5 = FINAL	CHLORINE, FREE AVAILABLE	1 = EFFLUENT GROSS VALUE	0	0	01-JUN-2004	30-APR-2009				YES
5 = FINAL	PH RANGE EXCURSIONS, > 60 MINUTES	1 = EFFLUENT GROSS VALUE	0	0	01-JUN-2004	30-APR-2009				YES
5 = FINAL	PH RANGE EXCURSIONS, MONTHLY TOTAL ACCUM	1 = EFFLUENT GROSS VALUE	0	0	01-JUN-2004	30-APR-2009				YES

FACILITY NAME (1) : SILTRONIC CORPORATION **NPDES :** OR0030589
FACILITY NAME (2) : **PIPE NUMBER :** 003
REPORT DESIGNATOR : Y **PIPE SET QUALIFIER :** 9

LIMIT	PARAMETER	MONITORING	SEASON	MODIFICATION	MOD. PERIOD	MOD. PERIOD	CHANGE OF LIMIT	CONTESTED PARAMETER	DOCKET	LONG

SCOEPA00055116

TYPE	CODE	LOCATION	NUM	NUM	START DATE	END DATE	STATUS	INDICATOR	NUMBER	FORMAT
5 = FINAL	TOXICITY, CERIODAPHNIA ACUTE	1 = EFFLUENT GROSS VALUE	0	0	01-JUN-2004	30-APR-2009				YES
5 = FINAL	TOXICITY, CERIODAPHNIA CHRONIC	1 = EFFLUENT GROSS VALUE	0	0	01-JUN-2004	30-APR-2009				YES
5 = FINAL	TOXICITY, PIMEPHALES ACUTE	1 = EFFLUENT GROSS VALUE	0	0	01-JUN-2004	30-APR-2009				YES
5 = FINAL	TOXICITY, PIMEPHALES CHRONIC	1 = EFFLUENT GROSS VALUE	0	0	01-JUN-2004	30-APR-2009				YES

Measurements and Violations

FACILITY NAME (1): SILTRONIC CORPORATION **NPDES :** OR0030589
FACILITY NAME (2): **LIMIT TYPE :** 5 = FINAL
PIPE NUMBER : 001 **SEASON NUM :** 0
REPORT DESIGNATOR : A **PARAMETER CODE:** 00070 = TURBIDITY
PIPE SET QUALIFIER : 9 **MONITORING LOCATION :** 1 = EFFLUENT GROSS VALUE
MODIFICATION NUM : 0

MONITORING PERIOD END DATE	DISCHARGE IND	QTY MAXIMUM	QTY AVERAGE	CONC MAXIMUM	CONC AVERAGE	CONC MINIMUM	RNC DETECTION CODE	RNC DETECTION DATE	RNC RESOLUTION CODE	RNC RESOLUTION DATE	M
31-MAY-2005							N = RPT-NONRECEIPT OF DMR/CS RPT	15-JUL-2005	1 = NC-UNRESOLVED RNC		
30-APR-2005							N = RPT-NONRECEIPT OF DMR/CS RPT	14-JUN-2005	1 = NC-UNRESOLVED RNC		
28-FEB-2005							N = RPT-NONRECEIPT	14-APR-	1 = NC-UNRESOLVED		

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							OF DMR/CS RPT	2005	RNC	
31-DEC-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	14-FEB-2005	1 = NC-UNRESOLVED RNC	
30-NOV-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	14-JAN-2005	1 = NC-UNRESOLVED RNC	
31-OCT-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	15-DEC-2004	1 = NC-UNRESOLVED RNC	
30-SEP-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	14-NOV-2004	1 = NC-UNRESOLVED RNC	
31-AUG-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	15-OCT-2004	1 = NC-UNRESOLVED RNC	

FACILITY NAME (1): SILTRONIC CORPORATION **NPDES :** OR0030589
FACILITY NAME (2): **LIMIT TYPE :** 5 = FINAL
PIPE NUMBER : 001 **SEASON NUM :** 0
REPORT DESIGNATOR : A **PARAMETER CODE:** 00310 = BOD, 5-DAY (20 DEG. C)
PIPE SET QUALIFIER : 9 **MONITORING LOCATION :** 1 = EFFLUENT GROSS VALUE
MODIFICATION NUM : 0

MONITORING PERIOD END DATE	DISCHARGE IND	QTY MAXIMUM	QTY AVERAGE	CONC MAXIMUM	CONC AVERAGE	CONC MINIMUM	RNC DETECTION CODE	RNC DETECTION DATE	RNC RESOLUTION CODE	RNC RESOLUTION DATE	M
31-MAY-2005							N = RPT-NONRECEIPT OF DMR/CS RPT	15-JUL-2005	1 = NC-UNRESOLVED RNC		
30-APR-2005							N = RPT-NONRECEIPT OF DMR/CS RPT	14-JUN-2005	1 = NC-UNRESOLVED RNC		

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28-FEB-2005							N = RPT-NONRECEIPT OF DMR/CS RPT	14-APR-2005	1 = NC-UNRESOLVED RNC		
31-DEC-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	14-FEB-2005	1 = NC-UNRESOLVED RNC		
30-NOV-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	14-JAN-2005	1 = NC-UNRESOLVED RNC		
31-OCT-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	15-DEC-2004	1 = NC-UNRESOLVED RNC		
30-SEP-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	14-NOV-2004	1 = NC-UNRESOLVED RNC		
31-AUG-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	15-OCT-2004	1 = NC-UNRESOLVED RNC		

FACILITY NAME (1): SILTRONIC CORPORATION **NPDES :** OR0030589
FACILITY NAME (2): **LIMIT TYPE :** 5 = FINAL
PIPE NUMBER : 001 **SEASON NUM :** 0
REPORT DESIGNATOR : A **PARAMETER CODE:** 00400 = PH
PIPE SET QUALIFIER : 9 **MONITORING LOCATION :** 1 = EFFLUENT GROSS VALUE
MODIFICATION NUM : 0

MONITORING PERIOD END DATE	DISCHARGE IND	QTY MAXIMUM	QTY AVERAGE	CONC MAXIMUM	CONC AVERAGE	CONC MINIMUM	RNC DETECTION CODE	RNC DETECTION DATE	RNC RESOLUTION CODE	RNC RESOLUTION DATE	M
31-MAY-2005							N = RPT-NONRECEIPT OF DMR/CS RPT	15-JUL-2005	1 = NC-UNRESOLVED RNC		
							N = RPT-NONRECEIPT	14-JUN-	1 = NC-		

SCOEPA00055119

30-APR-2005							OF DMR/CS RPT	2005	UNRESOLVED RNC	
28-FEB-2005							N = RPT-NONRECEIPT OF DMR/CS RPT	14-APR-2005	1 = NC-UNRESOLVED RNC	
31-DEC-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	14-FEB-2005	1 = NC-UNRESOLVED RNC	
30-NOV-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	14-JAN-2005	1 = NC-UNRESOLVED RNC	
31-OCT-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	15-DEC-2004	1 = NC-UNRESOLVED RNC	
30-SEP-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	14-NOV-2004	1 = NC-UNRESOLVED RNC	
31-AUG-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	15-OCT-2004	1 = NC-UNRESOLVED RNC	

FACILITY NAME (1): SILTRONIC CORPORATION **NPDES :** OR0030589
FACILITY NAME (2): **LIMIT TYPE :** 5 = FINAL
PIPE NUMBER : 001 **SEASON NUM :** 0
REPORT DESIGNATOR : A **PARAMETER CODE:** 00530 = SOLIDS, TOTAL SUSPENDED
PIPE SET QUALIFIER : 9 **MONITORING LOCATION :** 1 = EFFLUENT GROSS VALUE
MODIFICATION NUM : 0

MONITORING PERIOD END DATE	DISCHARGE IND	QTY MAXIMUM	QTY AVERAGE	CONC MAXIMUM	CONC AVERAGE	CONC MINIMUM	RNC DETECTION CODE	RNC DETECTION DATE	RNC RESOLUTION CODE	RNC RESOLUTION DATE	M
31-MAY-2005							N = RPT-NONRECEIPT OF DMR/CS RPT	15-JUL-2005	1 = NC-UNRESOLVED RNC		

30-APR-2005							N = RPT-NONRECEIPT OF DMR/CS RPT	14-JUN-2005	1 = NC-UNRESOLVED RNC	
28-FEB-2005							N = RPT-NONRECEIPT OF DMR/CS RPT	14-APR-2005	1 = NC-UNRESOLVED RNC	
31-DEC-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	14-FEB-2005	1 = NC-UNRESOLVED RNC	
30-NOV-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	14-JAN-2005	1 = NC-UNRESOLVED RNC	
31-OCT-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	15-DEC-2004	1 = NC-UNRESOLVED RNC	
30-SEP-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	14-NOV-2004	1 = NC-UNRESOLVED RNC	
31-AUG-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	15-OCT-2004	1 = NC-UNRESOLVED RNC	

FACILITY NAME (1): SILTRONIC CORPORATION **NPDES :** OR0030589
FACILITY NAME (2): **LIMIT TYPE :** 5 = FINAL
PIPE NUMBER : 001 **SEASON NUM :** 0
REPORT DESIGNATOR : A **PARAMETER CODE:** 00951 = FLUORIDE, TOTAL (AS F)
PIPE SET QUALIFIER : 9 **MONITORING LOCATION :** 1 = EFFLUENT GROSS VALUE
MODIFICATION NUM : 0

MONITORING PERIOD END DATE	DISCHARGE IND	QTY MAXIMUM	QTY AVERAGE	CONC MAXIMUM	CONC AVERAGE	CONC MINIMUM	RNC DETECTION CODE	RNC DETECTION DATE	RNC RESOLUTION CODE	RNC RESOLUTION DATE	N
							N = RPT-NONRECEIPT	15-JUL-	1 = NC-		

SCOEPA00055121

31-MAY-2005							OF DMR/CS RPT	2005	UNRESOLVED RNC	
30-APR-2005							N = RPT-NONRECEIPT OF DMR/CS RPT	14-JUN-2005	1 = NC-UNRESOLVED RNC	
28-FEB-2005							N = RPT-NONRECEIPT OF DMR/CS RPT	14-APR-2005	1 = NC-UNRESOLVED RNC	
31-DEC-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	14-FEB-2005	1 = NC-UNRESOLVED RNC	
30-NOV-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	14-JAN-2005	1 = NC-UNRESOLVED RNC	
31-OCT-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	15-DEC-2004	1 = NC-UNRESOLVED RNC	
30-SEP-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	14-NOV-2004	1 = NC-UNRESOLVED RNC	
31-AUG-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	15-OCT-2004	1 = NC-UNRESOLVED RNC	

FACILITY NAME (1): SILTRONIC CORPORATION **NPDES :** OR0030589
FACILITY NAME (2): **LIMIT TYPE :** 5 = FINAL
PIPE NUMBER : 001 **SEASON NUM :** 0
REPORT DESIGNATOR : A **PARAMETER CODE:** 01034 = CHROMIUM, TOTAL (AS CR)
PIPE SET QUALIFIER : 9 **MONITORING LOCATION :** 1 = EFFLUENT GROSS VALUE
MODIFICATION NUM : 0

MONITORING PERIOD END DATE	DISCHARGE IND	QTY MAXIMUM	QTY AVERAGE	CONC MAXIMUM	CONC AVERAGE	CONC MINIMUM	RNC DETECTION CODE	RNC DETECTION DATE	RNC RESOLUTION CODE	RNC RESOLUTION DATE	M

SCOEPA00055122

31-MAY-2005							N = RPT-NONRECEIPT OF DMR/CS RPT	15-JUL-2005	1 = NC-UNRESOLVED RNC		
30-APR-2005							N = RPT-NONRECEIPT OF DMR/CS RPT	14-JUN-2005	1 = NC-UNRESOLVED RNC		
28-FEB-2005							N = RPT-NONRECEIPT OF DMR/CS RPT	14-APR-2005	1 = NC-UNRESOLVED RNC		
31-DEC-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	14-FEB-2005	1 = NC-UNRESOLVED RNC		
30-NOV-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	14-JAN-2005	1 = NC-UNRESOLVED RNC		
31-OCT-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	15-DEC-2004	1 = NC-UNRESOLVED RNC		
30-SEP-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	14-NOV-2004	1 = NC-UNRESOLVED RNC		
31-AUG-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	15-OCT-2004	1 = NC-UNRESOLVED RNC		

FACILITY NAME (1): SILTRONIC CORPORATION **NPDES :** OR0030589
FACILITY NAME (2): **LIMIT TYPE :** 5 = FINAL
PIPE NUMBER : 001 **SEASON NUM :** 0
REPORT DESIGNATOR : A **PARAMETER CODE:** 50050 = FLOW, IN CONDUIT OR THRU TREATMENT PLANT
PIPE SET QUALIFIER : 9 **MONITORING LOCATION :** 1 = EFFLUENT GROSS VALUE
MODIFICATION NUM : 0

MONITORING							RNC	RNC	RNC	RNC	M

SCOEPA00055123

PERIOD END DATE	DISCHARGE IND	QTY MAXIMUM	QTY AVERAGE	CONC MAXIMUM	CONC AVERAGE	CONC MINIMUM	DETECTION CODE	DETECTION DATE	RESOLUTION CODE	RESOLUTION DATE
31-MAY-2005							N = RPT-NONRECEIPT OF DMR/CS RPT	15-JUL-2005	1 = NC-UNRESOLVED RNC	
30-APR-2005							N = RPT-NONRECEIPT OF DMR/CS RPT	14-JUN-2005	1 = NC-UNRESOLVED RNC	
28-FEB-2005							N = RPT-NONRECEIPT OF DMR/CS RPT	14-APR-2005	1 = NC-UNRESOLVED RNC	
31-DEC-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	14-FEB-2005	1 = NC-UNRESOLVED RNC	
30-NOV-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	14-JAN-2005	1 = NC-UNRESOLVED RNC	
31-OCT-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	15-DEC-2004	1 = NC-UNRESOLVED RNC	
30-SEP-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	14-NOV-2004	1 = NC-UNRESOLVED RNC	
31-AUG-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	15-OCT-2004	1 = NC-UNRESOLVED RNC	

FACILITY NAME (1): SILTRONIC CORPORATION **NPDES :** OR0030589
FACILITY NAME (2): **LIMIT TYPE :** 5 = FINAL
PIPE NUMBER : 001 **SEASON NUM :** 0
REPORT DESIGNATOR : A **PARAMETER CODE:** 70505 = PHOSPHATE, TOTAL COLOR. METHOD (AS P)
PIPE SET QUALIFIER : 9 **MONITORING LOCATION :** 1 = EFFLUENT GROSS VALUE

MODIFICATION NUM : 0

MONITORING PERIOD END DATE	DISCHARGE IND	QTY MAXIMUM	QTY AVERAGE	CONC MAXIMUM	CONC AVERAGE	CONC MINIMUM	RNC DETECTION CODE	RNC DETECTION DATE	RNC RESOLUTION CODE	RNC RESOLUTION DATE	M
31-MAY-2005							N = RPT-NONRECEIPT OF DMR/CS RPT	15-JUL-2005	1 = NC-UNRESOLVED RNC		
30-APR-2005							N = RPT-NONRECEIPT OF DMR/CS RPT	14-JUN-2005	1 = NC-UNRESOLVED RNC		
28-FEB-2005							N = RPT-NONRECEIPT OF DMR/CS RPT	14-APR-2005	1 = NC-UNRESOLVED RNC		
31-DEC-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	14-FEB-2005	1 = NC-UNRESOLVED RNC		
30-NOV-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	14-JAN-2005	1 = NC-UNRESOLVED RNC		
31-OCT-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	15-DEC-2004	1 = NC-UNRESOLVED RNC		
30-SEP-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	14-NOV-2004	1 = NC-UNRESOLVED RNC		
31-AUG-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	15-OCT-2004	1 = NC-UNRESOLVED RNC		

FACILITY NAME (1): SILTRONIC CORPORATION **NPDES :** OR0030589
FACILITY NAME (2): **LIMIT TYPE :** 5 = FINAL
PIPE NUMBER : 001 **SEASON NUM :** 0

REPORT DESIGNATOR : A
PIPE SET QUALIFIER : 9
MODIFICATION NUM : 0

PARAMETER CODE: 78141 = ORGANICS, TOTAL TOXIC (TTO)
MONITORING LOCATION : 1 = EFFLUENT GROSS VALUE

MONITORING PERIOD END DATE	DISCHARGE IND	QTY MAXIMUM	QTY AVERAGE	CONC MAXIMUM	CONC AVERAGE	CONC MINIMUM	RNC DETECTION CODE	RNC DETECTION DATE	RNC RESOLUTION CODE	RNC RESOLUTION DATE	M
31-MAY-2005							N = RPT-NONRECEIPT OF DMR/CS RPT	15-JUL-2005	1 = NC-UNRESOLVED RNC		
30-APR-2005							N = RPT-NONRECEIPT OF DMR/CS RPT	14-JUN-2005	1 = NC-UNRESOLVED RNC		
28-FEB-2005							N = RPT-NONRECEIPT OF DMR/CS RPT	14-APR-2005	1 = NC-UNRESOLVED RNC		
31-DEC-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	14-FEB-2005	1 = NC-UNRESOLVED RNC		
30-NOV-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	14-JAN-2005	1 = NC-UNRESOLVED RNC		
31-OCT-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	15-DEC-2004	1 = NC-UNRESOLVED RNC		
30-SEP-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	14-NOV-2004	1 = NC-UNRESOLVED RNC		
31-AUG-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	15-OCT-2004	1 = NC-UNRESOLVED RNC		

FACILITY NAME (1): SILTRONIC CORPORATION **NPDES :** OR0030589

FACILITY NAME (2):
PIPE NUMBER : 002
REPORT DESIGNATOR : A
PIPE SET QUALIFIER : 9
MODIFICATION NUM : 0

LIMIT TYPE : 5 = FINAL
SEASON NUM : 0
PARAMETER CODE: 50050 = FLOW, IN CONDUIT OR THRU TREATMENT PLANT
MONITORING LOCATION : 1 = EFFLUENT GROSS VALUE

MONITORING PERIOD END DATE	DISCHARGE IND	QTY MAXIMUM	QTY AVERAGE	CONC MAXIMUM	CONC AVERAGE	CONC MINIMUM	RNC DETECTION CODE	RNC DETECTION DATE	RNC RESOLUTION CODE	RNC RESOLUTION DATE	M
31-MAY-2005							N = RPT-NONRECEIPT OF DMR/CS RPT	15-JUL-2005	1 = NC-UNRESOLVED RNC		
30-APR-2005							N = RPT-NONRECEIPT OF DMR/CS RPT	14-JUN-2005	1 = NC-UNRESOLVED RNC		
28-FEB-2005							N = RPT-NONRECEIPT OF DMR/CS RPT	14-APR-2005	1 = NC-UNRESOLVED RNC		
31-DEC-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	14-FEB-2005	1 = NC-UNRESOLVED RNC		
30-NOV-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	14-JAN-2005	1 = NC-UNRESOLVED RNC		
31-OCT-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	15-DEC-2004	1 = NC-UNRESOLVED RNC		
30-SEP-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	14-NOV-2004	1 = NC-UNRESOLVED RNC		
31-AUG-2004							N = RPT-NONRECEIPT OF DMR/CS	15-OCT-2004	1 = NC-UNRESOLVED RNC		

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							RPT				

FACILITY NAME (1): SILTRONIC CORPORATION **NPDES :** OR0030589
FACILITY NAME (2): **LIMIT TYPE :** 5 = FINAL
PIPE NUMBER : 002 **SEASON NUM :** 0
REPORT DESIGNATOR : A **PARAMETER CODE:** 70505 = PHOSPHATE, TOTAL COLOR. METHOD (AS P)
PIPE SET QUALIFIER : 9 **MONITORING LOCATION :** 1 = EFFLUENT GROSS VALUE
MODIFICATION NUM : 0

MONITORING PERIOD END DATE	DISCHARGE IND	QTY MAXIMUM	QTY AVERAGE	CONC MAXIMUM	CONC AVERAGE	CONC MINIMUM	RNC DETECTION CODE	RNC DETECTION DATE	RNC RESOLUTION CODE	RNC RESOLUTION DATE	M
31-MAY-2005							N = RPT-NONRECEIPT OF DMR/CS RPT	15-JUL-2005	1 = NC-UNRESOLVED RNC		
30-APR-2005							N = RPT-NONRECEIPT OF DMR/CS RPT	14-JUN-2005	1 = NC-UNRESOLVED RNC		
28-FEB-2005							N = RPT-NONRECEIPT OF DMR/CS RPT	14-APR-2005	1 = NC-UNRESOLVED RNC		
31-DEC-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	14-FEB-2005	1 = NC-UNRESOLVED RNC		
30-NOV-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	14-JAN-2005	1 = NC-UNRESOLVED RNC		
31-OCT-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	15-DEC-2004	1 = NC-UNRESOLVED RNC		
30-SEP-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	14-NOV-2004	1 = NC-UNRESOLVED RNC		

31-AUG-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	15-OCT-2004	1 = NC-UNRESOLVED RNC	

FACILITY NAME (1): SILTRONIC CORPORATION **NPDES :** OR0030589
FACILITY NAME (2): **LIMIT TYPE :** 5 = FINAL
PIPE NUMBER : 003 **SEASON NUM :** 0
REPORT DESIGNATOR : A **PARAMETER CODE:** 00011 = TEMPERATURE, WATER DEG. FAHRENHEIT
PIPE SET QUALIFIER : 9 **MONITORING LOCATION :** 1 = EFFLUENT GROSS VALUE
MODIFICATION NUM : 0

MONITORING PERIOD END DATE	DISCHARGE IND	QTY MAXIMUM	QTY AVERAGE	CONC MAXIMUM	CONC AVERAGE	CONC MINIMUM	RNC DETECTION CODE	RNC DETECTION DATE	RNC RESOLUTION CODE	RNC RESOLUTION DATE	M
31-MAY-2005							N = RPT-NONRECEIPT OF DMR/CS RPT	15-JUL-2005	1 = NC-UNRESOLVED RNC		
30-APR-2005							N = RPT-NONRECEIPT OF DMR/CS RPT	14-JUN-2005	1 = NC-UNRESOLVED RNC		
28-FEB-2005							N = RPT-NONRECEIPT OF DMR/CS RPT	14-APR-2005	1 = NC-UNRESOLVED RNC		
31-DEC-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	14-FEB-2005	1 = NC-UNRESOLVED RNC		
30-NOV-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	14-JAN-2005	1 = NC-UNRESOLVED RNC		
31-OCT-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	15-DEC-2004	1 = NC-UNRESOLVED RNC		
							N = RPT-NONRECEIPT	14-NOV-	1 = NC-		

31-OCT-2004							OF DMR/CS RPT	2004	UNRESOLVED RNC	
30-SEP-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	14-NOV-2004	1 = NC-UNRESOLVED RNC	
31-AUG-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	15-OCT-2004	1 = NC-UNRESOLVED RNC	

FACILITY NAME (1): SILTRONIC CORPORATION **NPDES :** OR0030589
FACILITY NAME (2): **LIMIT TYPE :** 5 = FINAL
PIPE NUMBER : 003 **SEASON NUM :** 0
REPORT DESIGNATOR : A **PARAMETER CODE:** 82581 = PH RANGE EXCURSIONS, > 60 MINUTES
PIPE SET QUALIFIER : 9 **MONITORING LOCATION :** 1 = EFFLUENT GROSS VALUE
MODIFICATION NUM : 0

MONITORING PERIOD END DATE	DISCHARGE IND	QTY MAXIMUM	QTY AVERAGE	CONC MAXIMUM	CONC AVERAGE	CONC MINIMUM	RNC DETECTION CODE	RNC DETECTION DATE	RNC RESOLUTION CODE	RNC RESOLUTION DATE	M
31-MAY-2005							N = RPT-NONRECEIPT OF DMR/CS RPT	15-JUL-2005	1 = NC-UNRESOLVED RNC		
30-APR-2005							N = RPT-NONRECEIPT OF DMR/CS RPT	14-JUN-2005	1 = NC-UNRESOLVED RNC		
28-FEB-2005							N = RPT-NONRECEIPT OF DMR/CS RPT	14-APR-2005	1 = NC-UNRESOLVED RNC		
31-DEC-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	14-FEB-2005	1 = NC-UNRESOLVED RNC		
30-NOV-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	14-JAN-2005	1 = NC-UNRESOLVED RNC		

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31-OCT-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	15-DEC-2004	1 = NC-UNRESOLVED RNC	
30-SEP-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	14-NOV-2004	1 = NC-UNRESOLVED RNC	
31-AUG-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	15-OCT-2004	1 = NC-UNRESOLVED RNC	

FACILITY NAME (1): SILTRONIC CORPORATION **NPDES :** OR0030589
FACILITY NAME (2): **LIMIT TYPE :** 5 = FINAL
PIPE NUMBER : 003 **SEASON NUM :** 0
REPORT DESIGNATOR : A **PARAMETER CODE:** 82582 = PH RANGE EXCURSIONS, MONTHLY TOTAL ACCUM
PIPE SET QUALIFIER : 9 **MONITORING LOCATION :** 1 = EFFLUENT GROSS VALUE
MODIFICATION NUM : 0

MONITORING PERIOD END DATE	DISCHARGE IND	QTY MAXIMUM	QTY AVERAGE	CONC MAXIMUM	CONC AVERAGE	CONC MINIMUM	RNC DETECTION CODE	RNC DETECTION DATE	RNC RESOLUTION CODE	RNC RESOLUTION DATE	M
31-MAY-2005							N = RPT-NONRECEIPT OF DMR/CS RPT	15-JUL-2005	1 = NC-UNRESOLVED RNC		
30-APR-2005							N = RPT-NONRECEIPT OF DMR/CS RPT	14-JUN-2005	1 = NC-UNRESOLVED RNC		
28-FEB-2005							N = RPT-NONRECEIPT OF DMR/CS RPT	14-APR-2005	1 = NC-UNRESOLVED RNC		
31-DEC-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	14-FEB-2005	1 = NC-UNRESOLVED RNC		
							N = RPT-NONRECEIPT	14-JAN-	1 = NC-		

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30-NOV-2004							OF DMR/CS RPT	2005	UNRESOLVED RNC		
31-OCT-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	15-DEC-2004	1 = NC-UNRESOLVED RNC		
30-SEP-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	14-NOV-2004	1 = NC-UNRESOLVED RNC		
31-AUG-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	15-OCT-2004	1 = NC-UNRESOLVED RNC		

FACILITY NAME (1): SILTRONIC CORPORATION **NPDES :** OR0030589
FACILITY NAME (2): **LIMIT TYPE :** 5 = FINAL
PIPE NUMBER : 003 **SEASON NUM :** 0
REPORT DESIGNATOR : Y **PARAMETER CODE:** 61425 = TOXICITY, CERIODAPHNIA ACUTE
PIPE SET QUALIFIER : 9 **MONITORING LOCATION :** 1 = EFFLUENT GROSS VALUE
MODIFICATION NUM : 0

MONITORING PERIOD END DATE	DISCHARGE IND	QTY MAXIMUM	QTY AVERAGE	CONC MAXIMUM	CONC AVERAGE	CONC MINIMUM	RNC DETECTION CODE	RNC DETECTION DATE	RNC RESOLUTION CODE	RNC RESOLUTION DATE	M
31-JUL-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	15-OCT-2004	1 = NC-UNRESOLVED RNC		

FACILITY NAME (1): SILTRONIC CORPORATION **NPDES :** OR0030589
FACILITY NAME (2): **LIMIT TYPE :** 5 = FINAL
PIPE NUMBER : 003 **SEASON NUM :** 0
REPORT DESIGNATOR : Y **PARAMETER CODE:** 61426 = TOXICITY, CERIODAPHNIA CHRONIC
PIPE SET QUALIFIER : 9 **MONITORING LOCATION :** 1 = EFFLUENT GROSS VALUE
MODIFICATION NUM : 0

MONITORING PERIOD END DATE	DISCHARGE IND	QTY MAXIMUM	QTY AVERAGE	CONC MAXIMUM	CONC AVERAGE	CONC MINIMUM	RNC DETECTION CODE	RNC DETECTION DATE	RNC RESOLUTION CODE	RNC RESOLUTION DATE	M
							N = RPT-		1 = NC-		

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31-JUL-2004							NONRECEIPT OF DMR/CS RPT	15-OCT-2004	UNRESOLVED RNC	

FACILITY NAME (1): SILTRONIC CORPORATION **NPDES :** OR0030589
FACILITY NAME (2): **LIMIT TYPE :** 5 = FINAL
PIPE NUMBER : 003 **SEASON NUM :** 0
REPORT DESIGNATOR : Y **PARAMETER CODE:** 61427 = TOXICITY, PIMEPHALES ACUTE
PIPE SET QUALIFIER : 9 **MONITORING LOCATION :** 1 = EFFLUENT GROSS VALUE
MODIFICATION NUM : 0

MONITORING PERIOD END DATE	DISCHARGE IND	QTY MAXIMUM	QTY AVERAGE	CONC MAXIMUM	CONC AVERAGE	CONC MINIMUM	RNC DETECTION CODE	RNC DETECTION DATE	RNC RESOLUTION CODE	RNC RESOLUTION DATE	M
31-JUL-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	15-OCT-2004	1 = NC-UNRESOLVED RNC		

FACILITY NAME (1): SILTRONIC CORPORATION **NPDES :** OR0030589
FACILITY NAME (2): **LIMIT TYPE :** 5 = FINAL
PIPE NUMBER : 003 **SEASON NUM :** 0
REPORT DESIGNATOR : Y **PARAMETER CODE:** 61428 = TOXICITY, PIMEPHALES CHRONIC
PIPE SET QUALIFIER : 9 **MONITORING LOCATION :** 1 = EFFLUENT GROSS VALUE
MODIFICATION NUM : 0

MONITORING PERIOD END DATE	DISCHARGE IND	QTY MAXIMUM	QTY AVERAGE	CONC MAXIMUM	CONC AVERAGE	CONC MINIMUM	RNC DETECTION CODE	RNC DETECTION DATE	RNC RESOLUTION CODE	RNC RESOLUTION DATE	M
31-JUL-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	15-OCT-2004	1 = NC-UNRESOLVED RNC		

FACILITY NAME (1): SILTRONIC CORPORATION **NPDES :** OR0030589
FACILITY NAME (2): **LIMIT TYPE :** 5 = FINAL
PIPE NUMBER : 003 **SEASON NUM :** 0
REPORT DESIGNATOR : Y **PARAMETER CODE:** TTC1E = TUC STAT 4DAY CHR RAPHIDOCE. SUBCAPITA
PIPE SET QUALIFIER : 9 **MONITORING LOCATION :** 1 = EFFLUENT GROSS VALUE
MODIFICATION NUM : 0

MONITORING							RNC	RNC	RNC	RNC	M

PERIOD END DATE	DISCHARGE IND	QTY MAXIMUM	QTY AVERAGE	CONC MAXIMUM	CONC AVERAGE	CONC MINIMUM	DETECTION CODE	DETECTION DATE	RESOLUTION CODE	RESOLUTION DATE
31-JUL-2004							N = RPT-NONRECEIPT OF DMR/CS RPT	15-OCT-2004	1 = NC-UNRESOLVED RNC	

Compliance Schedules and Violations

FACILITY NAME (1) : SILTRONIC CORPORATION **NPDES :** OR0030589
FACILITY NAME (2):

No Compliance Schedules Found.

Evidentiary Hearings

FACILITY NAME (1) : SILTRONIC CORPORATION **NPDES :** OR0030589
FACILITY NAME (2) :

No PCS Evidentiary Hearing Information Found.

Pretreatment Inspections/Audits

FACILITY NAME (1) : SILTRONIC CORPORATION **NPDES :** OR0030589
FACILITY NAME (2) :

No PCS Pretreatment Inspections Found.

SCOEPA00055134

Pretreatment Performance Summary

FACILITY NAME (1) : SILTRONIC CORPORATION **NPDES :** OR0030589

FACILITY NAME (2) :

No PCS Pretreatment Performance Summary Information Found.

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Last updated on Thursday, October 6th, 2005
http://oaspub.epa.gov/enviro/pcs_det_reports.pcs_tst

U.S. Environmental Protection Agency

Water Discharge Permits (PCS)

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PCS

Table Name: PCS_DMR_MEASUREMENT

Description: Measurements of effluents reported on the Discharge Monitoring Report (DMR). The violations are detected by comparing the measurement values against the corresponding effluent limit.

Relationships:

- No relationship information available at this time.

Columns:

- CONCENTRATION_UNIT_CODE
- CONCENTR_AVG
- CONCENTR_MAX
- CONCENTR_MIN
- DISCHARGE_NUM
- LIMIT_TYPE
- MEAS_VIOL_CODE
- MODIF_NUM
- MONITORING_LOC
- MONITORING_PERIOD_END_DATE
- NO_DISCHARGE_IND
- NPDES
- PARAM_CODE
- PIPE_SET_QUALIFIER
- QNCR_MV_DET_CODE
- QNCR_MV_DET_DATE
- QNCR_MV_RESOL_CODE
- QNCR_MV_RESOL_DATE
- QTY_AVG
- QTY_MAX
- QUANTITY_UNIT_CODE
- REPORT_DESIG

- SEASON_NUM

Definition Source: Envirofacts Development Team

Return To:

- PCS Table & Column Information
- Envirofacts Overview

U.S. Environmental Protection Agency

Water Discharge Permits (PCS)

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PCS

Column Name: MEAS_VIOL_CODE

Description: The effluent violation code describing the worst violation detected for this report parameter's measurements.

Envirofacts Table Name(s):

- PCS_DMR_MEASUREMENT

Data Source:

- **Data Element:** MEASUREMENT/VIOLATION CODE
- **PCS Acronym:** MVIO
- **Data Type:** Measurement/Violation
- **WENDB:** No

Properties:

- **Type:** Character
- **Length:** 3
- **Optional**

Definition Source: Permit Compliance System Data Element Dictionary, June 2, 1997 Remarks: Refer to table PCS_CODE_DESC, TABLE_ID 210, for codes and descriptions.

Return To:

- PCS Table & Column Information
- Envirofacts Overview

Last updated on Wednesday, September 18th, 2002
URL: http://www.epa.gov/enviro/html/pcs/meas_viol_code.html

NEIL GOLDSCHMIDT
GOVERNOR

Department of Environmental Quality

811 SW SIXTH AVENUE, PORTLAND, OREGON 97204-1390 PHONE (503) 229-5696

cc: John P. Hamm
Mike Pillsbury

RECEIVED
AUG 5 1988
[illegible]

August 2, 1988

RECEIVED
AUG 5 1988
[redacted]

Murray M. Tilson
Environmental Manager
Wacker Siltronic Corporation
P.O. Box 03180
Portland, OR 97203

Re: HW-Multnomah County
Wacker Siltronic
ORD 096253737
NWR-HW-88-86
NOTICE OF VIOLATION

Dear Mr. Tilson:

On June 6, 1988 I conducted an inspection of the Wacker Siltronic Corporation facility, Portland, to determine its compliance status with the Department's hazardous waste management regulations. I have completed my inspection report and have enclosed a copy for your records. Mr. Bruce Long, EPA, Oregon Operations, was also present for his own inspection. His report, if submitted, will be sent under different cover.

During my inspection, nine(9) violations of the Department's hazardous waste regulations applicable to small quantity generators were observed. These violations were:

1. 40 CFR 265.52(c), in that the company's contingency plan on file did not describe arrangements made with external emergency response organizations.

2. 40 CFR 265.53(b), in that the company could not document that copies of the contingency plan had been sent to local emergency response agencies.

3. 40 CFR 265.52(d), in that the company's contingency plan did not list all the emergency coordinators, in the order in which they will assume responsibility as alternates, and their addresses, and phone numbers (office and home).

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4. 40 CFR 265.52(e), in that the company's contingency plan did not include the location and a physical description of each item on the emergency equipment list, and a brief outline of its capabilities.

5. 40 CFR 265.173(a), in that a container of hazardous waste was not covered during storage, except when it is necessary to add or remove wastes.

6. 40 CFR 262.34(a)(3), in that two containers of hazardous waste were not labeled clearly with the words "Hazardous Waste".

7. 40 CFR 262.34(a)(2), in that a container of hazardous waste was not marked with an accumulation date.

8. OAR 340-102-060(1), in that a manifest included improper EPA waste codes.

9. OAR 340-102-065(3),in that the company did not include the trivalent chrome sludge solution in their hazardous waste total generation.

To bring your facility into compliance, you are required to:

A. With respect to Violations Nos. 1 and 2, the company has demonstrated, since the inspection, that arrangements have been made with external outside emergency organizations. Copies of documentation of these arrangements should be included in the revised contingency plan.

B. With respect to Violation No. 3, the company must include in the contingency plan, all of the alternate emergency coordinators, their addresses and telephone numbers, and the order in which they assume emergency responsibilities.

C. With respect to Violation No. 4, the company must include in the contingency plan, the physical location of all of the emergency equipment on the equipment list. Sometimes identifying these locations on a plant layout map is beneficial.

D. With respect to Violation No. 5, the company resealed the open drum containing solid chrome waste during the inspection.

E. With respect to Violation No. 6, the company must mount appropriate hazardous waste labels on the two tanks containing waste TCE, which are located in the tank farm which also includes the waste freon tank which is labeled.

F. With respect to Violation No. 7, the company must include the accumulation date on the label of all drums in the "90 day" storage area. On the day of the inspection, one out of the ten drums containing waste freon did not have the required date.

G. With respect to Violation No. 8, the company must use the EPA code F002 for their waste freon, and not F001, since this freon is not used for degreasing.

H. With respect to Violation No. 9, the company must include in the monthly generation and quarterly reporting, the entire trivalent chrome waste sludge solution as it is accumulated from the tanks in the treatment process. Drums used to contain this solution before drying must be appropriately labeled and dated. The dried sludge originating from this trivalent solutions need not be counted twice.

A Notice of Violation is the Department's initial formal enforcement action. Failure to comply with the terms of a Notice of Violation can result in additional enforcement action including the assessment of civil penalties.

You have until September 1, 1988 to accomplish the above required corrective actions and to bring your facility into compliance. You are requested to verify in writing when the corrections have been completed.

Should you have any questions, please call me at 229-5296.

Sincerely,

Don L. Peters
Sr. Environmental Analyst
Northwest Region

Enclosure
cc: City of Portland, BES, Industrial Waste Section
Hazardous Waste Section, DEQ
Enforcement Section, DEQ
Environmental Protection Agency, Oregon Operations

STATE OF OREGON

DEPARTMENT OF ENVIRONMENTAL QUALITY INTEROFFICE MEMORANDUM

DATE: July 1, 1988

TO: File

FROM: DLPeters-NWR DLP

SUBJECT: HW-Multnomah County
Wacker Siltronic Corporation
ORD 096253737

INTRODUCTION

On June 6, 1988 I conducted an inspection of the Wacker Siltronic Corporation facility located at 7200 NW Front Avenue, Portland, Or. The purpose of the inspection was to determine Wacker's compliance status with the Department's hazardous waste (HW) management regulations. Mr. Murray Tilson, Environmental Manager, and Mr. Gregory Carr, Environmental Engineer, represented the company during the inspection. Mr. Bruce Long, EPA Oregon Operations, was also present for this oversite inspection.

FACILITY INSPECTION AND WASTE GENERATION

Wacker Siltronic Corporation is a member of the inorganic chemical industry. The company grows and processes single crystals of high purity silicon polycrystalline raw materials. Their primary product is silicon semi conducting crystals and wafers sold to microelectronic device manufacturers. The company employs approximately 900 people, covering four overlapping work shifts. Attached is a plant layout diagram showing hazardous materials storage locations, and noted areas visited on this inspection.

The company has three(3) basic HW waste streams:

Chromic from the HF etching process
Trichloroethylene (TCE) from "cleaning processes"
Freon from electronic cleaning and degreasing

On the day of the inspection, Wacker claimed to generate approximately one(1) 55 gallon drum per month of chrome waste, disposed of to CSSI, Arlington, Or.; 300-400 gallons per month of TCE, disposed of to VWR, Portland, Or.; approximately one(1) 55 gallon drum of still bottoms of Freon, and 5-10 drums per month of Freon mixture wastes disposed of to McClary Columbia, Washougal,

Wa. The Freon mixtures are comprised of Freon with small amounts of isopropanol (TP), or Freon with ethyl alcohol (TE), or Freon with methylene chloride (TMC).

The company claims to have undergone a very significant waste minimization program. Attached is a summary of HW shipments for each waste stream for the last three years. If the HW amounts are accurate, Wacker has indeed diminished their HW generation (by an estimated two thirds). Tilson stated that they expect to replace TCE with a water-based wax, and that the TCE generation should be zero within a month. Wacker is currently the only customer for VWR's recycling unit.

Also attached is a section of the company's Contingency Plan which itemizes the hazardous materials within the production facility and their associated drains. A requested copy of the complete revised Plan was recently received and is in the NWR files.

Three representative manifests were reviewed:

88005	D007	110G	CSSI	4-14-88	Chromic
88006	F001	40,060p	VWR	5-10-88	TCE
88001	F001	47,930p	VWR	1-5-88	TCE

Wacker uses TCE as a cleaning solvent and not in degreasing operations, even though these could be interpreted as being similar operations. Waste TCE should have the EPA Code of F002, not F001. No other discrepancies in the manifest records were observed. Tilson claimed they never had to file an Exception Report, and that they do not import or export HW.

The company's Contingency Plan and Emergency Procedures on file were reviewed. The Plan did not describe arrangements made with external emergency response organizations.The Plan did not list those qualified to act as emergency coordinator, including their name, address, and home phone number. The location of all emergency equipment available was not included in the Plan. During the inspection, Wacker could not produce documentation that copies of the Plan had been sent to local emergency response organizations. Subsequent the inspection, on June 20, 1988, Wacker submitted correspondence of "Notice of Receipt" forms for the delivery of their contingency plan, in 1985, to appropriate outside agencies. Since the inspection, the company has sent copies of a revised plan to outside agencies.

RCRA regulations require that the Emergency Coordinator must be "available to respond to an emergency by reaching the facility within a short period of time with the responsibility for coordinating all emergency response measures." Wacker's emergency plan involves a policy whereby all emergencies are called in to a central security guard. The company uses sixteen(16) FM radios and approximately one hundred(100) "beepers" throughout the facility. The security guard has the authority for calling in outside emergency organizations, for closing down the facility, etc. in the case of emergencies. The security guard has ready access to a listing for the entire Wacker Emergency Response Team (ERT). The ERT includes all appropriate RCRA-type emergency coordinators. This ERT includes approximately forty(40) Wacker day time employees, and an off hour response team. The ERT receives 40 hours of training, attends monthly meetings, receives annual training classes of 24-40 hours, carry the beepers, and conduct quarterly drills.

One satellite accumulation waste drum was not completely closed upon inspection. HW was not being added or removed from this drum at the time of inspection. The drum was labeled, and contained solid chromium (Cr+6) waste materials. When acknowledged that the drum was not completely covered, a Wacker representative then properly covered the container.

A HW storage tank area was inspected. Two tanks contained water contaminated with TCE, and a third contained waste freon. Only the freon tank was labeled. The company is in violation for not properly labeling two containers. The tanks' discharge control equipment and contents level are inspected at least twice per day. The tanks have an automatic feed cut-off system, but its operational status is not tested daily due to so-called safety considerations. Attached are copies of Wacker's hazardous chemical systems checklist policy, and copies of examples of actual checklist completed.

The central "90 day" storage area was inspected. Ten(10) drums containing HW were noted. All were freon wastes and labeled as F001, with accumulation dates ranging from 4-12 to 5-20-88. These freon compounds are used in cleaning, but not degreasing. Therefore they should have been labeled as F002 wastes. One drum of the ten did not have an accumulation date.

Wacker has an on-site chromic solution waste treatment system. This solution originates from the etching facility, and also contains hydrofluoric acid. Hexavalent chrome is chemically reduced to trivalent chrome and the solution is stored in nearby tanks. The waste sludge is drawn off from the bottom of these tanks, and into four designated drums all located in the treatment works building. In a batch process the sludge solution from the

drums goes to a small nearby dryer. The dried sludge also goes to one of the nearby drums, which is labeled as a HW container. Approximately one 55 gallon drum of dried sludge per month, is manifested to CSSI, Arlington, Oregon. Historically, only this dried sludge has been counted in their total monthly generation. Wacker is in violation for not counting the original trivalent chrome solution in the drums before drying.

Wacker has a waste freon distillation system which was inspected. Waste freon is plumbed to the treatment area arriving in one of two holding tanks. Both of these tanks were properly labeled. One tank, the white one shown in the photographs, was uncovered. As such, this system does not meet the EPA definition of being "totally enclosed." The inventory of waste freon in their distillation system has to counted in their monthly generation rate. As Wacker continues to diminish their HW waste streams, and approaches the status of small quantity generator, the freon waste could be a significant contributor.

Enclosures
cc: Hazardous Waste Section, DEQ
City of Portland, BES
Enforcement Section, DEQ

Wacker Siltronic Corporation

WACKER

ENV OK-DEQ Haz waste - compliance file

RECEIVED
ENGINEERING
AUG 12 1988
John L. Pittman
Wacker Siltronic

To: John Pittman

From: Murray Tilson MT FILE

Subj: DEQ Hazardous Waste Inspection of 6/6/88

Date: 8/8/88

The following will serve as a status update and action plan to address the discrepancies noted in the DEQ inspection letter dated 8/2/88.

Item No. 1 & 2:

Contingency plan arrangements with external emergency response organizations. There was no formal documentation showing that the spill plan had actually been received by the local external emergency response agencies.

Action Completed/Planned:

We have obtained Spill Plan Receipt forms signed off by each outside agency in receipt of our plan. These receipt forms will be included in the upcoming revision to our plan (to be completed by 8/31/88).

Item No. 3:

The Contingency Plan does not list all the emergency coordinators, in the order in which they will assume responsibilities as alternates, and their addresses and phone numbers (office and home).

Action Planned:

I reviewed this with Don Peters on 8/8/88. I will explain our procedure for stand-by Directors and Managers to act as Emergency Coordinators on off-shift coverage in our letter of reply to him.

Item No. 4:

The Spill Plan did not include the location and a physical description of each item on the emergency equipment list and a brief outline of its capabilities.

Action Taken/Planned:

I reviewed this with Don Peters on 8/8/88. I told him that room numbers are shown in the Spill Plan on Table 4 for all Fire Extinguishers. Mark Rowsell will provide a brief inventory of all items located in the ERT room. Mark will modify page 73 of the Spill Plan and I will distribute a revision to all plan holders.

Item No. 5:

A container of hazardous waste was not completely covered during the inspection. A 55 gallon drum of Chromic waste materials located in the Chromic storage room (A131) was found with its cover not completely covering the entire top of the drum.

Action Taken:

At the time of the inspection the items in the drum were pushed down so the drum lid could be easily fitted over the entire drum opening.

Item No. 6:

Two TCE storage tanks were found not to contain hazardous waste signs.

Action Planned/Comments:

DEQ is referring to the SOD-T and SOD-C tank located in the waste TCE containment area. These were never labeled as they were considered to be part of process tankage, i.e., in that the material
will be processed through a steam stripper prior to being discharged into a waste TCE collection tank. This practice of not labeling these two (2) tanks was considered acceptable to past DEQ inspectors.

I reviewed this with Don Peters on 8/8/88 and he said that he misunderstood the system and that he was wrong in requesting signs and that I should outline the system to him in my letter to DEQ.

Item No. 7:

A container of waste freon was not marked with an accumulation date.

Action Taken:

We have met with production personnel regarding the need for the correct completion of the hazardous waste labels at the time the drums are filled. Mike Pilkington and John from Shipping continuously monitor these drums in the outside Solvent Storage area.

Item No. 8: The Freon Manifests

The waste freon waste code used has been F001. Since this material is not used in a degreaser application but rather in a cleaning application it should be considered a F002.

Action Planned:

I will notify McClary Columbia of this change in the profile sheet and make the appropriate changes on future manifests.

Item No. 9: We do not include the generation of liquid chromic III waste in our quarterly reporting.

Action Planned:

I discussed this in detail with Don Peters and he said it was EPA's interpretation that the entire volume of liquid chrome III solution should be counted as hazardous waste generated at the plant site. I would like to formally object to their interpretation as it would mean that we would have to account for an additional 1,000 lbs plus per month of water that we currently evaporate.

Don Peters will send me all the background information that EPA has on this subject in which they are making their inpertretation from.

General Comment:

I plan to submit a formal written response on all items during the last week of August.

Enclosures:

(1) DEQ Notice of Violation Letter dated 8/2/88
(2) DEQ Interoffice Memorandum dated 7/1/88

WACKER
Wacker Siltronic Corporation

6 November 1996

ER50:MS

Mr. Chuck Clinton
Northwest Region
Department of Environmental Quality
2020 S.W. 4th Avenue, Suite 400
Portland, Oregon 97201

Dear Mr. Clinton:

This is in response to your letter dated September 9, 1996 which asked me to report the changes that will be made at Wacker Siltronic Corporation to ensure that mercury and other hazardous wastes are managed properly.

We have reviewed our practices and procedures that relate to the handling and management of mercury, solid waste, and hazardous waste. As a result of this review we have taken the following actions:

- Given additional waste management training to environmental engineering technicians and personnel responsible for moving materials within the facility. Special attention was given to the recognition of hazardous waste and potential hazardous waste.
- Given additional waste management training to personnel that are responsible for handling mercury and maintaining equipment containing mercury.
- Additional secondary containment is being built and installed at locations where mercury is stored and/or used. The installation will be complete by the end of November.
- Lockable cabinets are have been ordered for the storage of liquid mercury. Only security and the personnel responsible for the mercury will have keys to these cabinets. These cabinets will be installed and in use as soon as they arrive.

Please call me at (503) 243-2020 extension 4572 if you have any questions or would like additional information.

Sincerely yours,

Michael Sutton

Michael Sutton
Environmental Engineer
Wacker Siltronic Corporation

cc: Mr. Tom McCue

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180
Phone (503) 243-2020
TDD (503) 241-7519

SCOEPA00055150

WACKER
Wacker Siltronic Corporation

27 August 1996 ER34:MS

Mr. Chuck Clinton
Northwest Region
Department of Environmental Quality
2020 S.W. 4th Avenue, Suite 400
Portland, Oregon 97201

Dear Mr. Clinton:

Enclosed are the memoranda, written by Mr. Tom McCue (Environmental Manager) and myself, that you and I discussed on 27 August 1996. These memoranda describe the loss of mercury waste at Wacker Siltronic Corporation (Wacker) and our immediate actions on 21-22 August 1996 after the loss was discovered.

To ensure that mercury and other hazardous wastes are managed properly at Wacker in the future we are:

- Providing all personnel that enter the hazardous waste storage area with additional training related to the identification, labeling, handling, and management of wastes that are hazardous or potentially hazardous.
- Reviewing the storage, handling, and disposal of mercury throughout the facility and revising practices where appropriate.
- Providing all personnel that use or handle mercury with additional training related to the labeling, handling, and management of mercury and mercury wastes.
- Reviewing, and revising where appropriate, the procedures for the placement and segregation of solid wastes, potentially hazardous wastes, and hazardous wastes within the hazardous waste storage area.

Please call me at (503) 243-2020 extension 4572 if you have any questions or would like additional information.

Sincerely yours,

Michael Sutton

Michael Sutton
Environmental Engineer
Wacker Siltronic Corporation

encl: McCue Memorandum to File, 21 August 1996
Sutton Memorandum to File, 22 August 1996

cc: Mr. Tom McCue

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180
Phone (503) 243-2020
TDD (503) 241-7519

An ISO 9001 Certified Corporation

SCOEPA00055151

ENCLOSURE(1)

TO: File

From: Tom McCue

Subject: Report of Missing Mercury Waste

Date: August 21, 1996

At 4 pm, August 21, 1996 I reported to Anne Price, Hazardous Waste Program Manager for Oregon DEQ, that we are missing a plastic bag containing several glass and plastic viles of mercury and that the missing waste was likely in or on its way to a municipal landfill.

Weekly inspection of the Hazardous Waste Storage area conducted on August 21, 1996 found that a plastic bag containing approximately 150 ml. of mercury contained in several small vials and approximately 250 g. of an unused mercury absorbent called Cinnasorb (sulphamic acid crystals). After investigation we surmise that the plastic bag containing the mercury was picked up along with other solid waste and disposed into a two yard solid waste container.

Ms. Price asked if it was possible that an employee took the mercury. I stated that employees have asked for liquid mercury a few times in the past few years but none has ever been allowed to be taken offsite in this manner to my knowledge.

We discussed who needed to be notified and I told her that we have notified the solid waste hauler (Oregon Paper Fiber) and the Metro North Transfer Station of the likelihood that a plastic bag containing approximately 150 ml. of mercury was in the waste stream and to look for it. These efforts have been unsuccessful thus far.

Ms. Price said she would notify Mr. Chuck Clinton, Hazardous Waste Manager for North West Region, DEQ of the incident on Monday when he returns.

In an unrelated discussion with Tom Bispham, Northwest Region Manager, DEQ, on August 22, 1996 I took the opportunity to informed him of the incident and our efforts to retrieve the missing mercury waste. He told me that it appeared we had taken the appropriate steps.

TO: File

ENCLOSURE (2)

FROM: Michael Sutton

SUBJECT: Potential Improper Disposal of Hazardous Material

DATE: 22 August 1996

Approximately 150 milliliters of mercury metal and 250 grams of unused Cinnasorb (i.e., sulphamic acid crystals normally used to absorb spilled mercury) are missing. The materials were being stored in the hazardous waste storage area while we obtained disposal bids from waste management companies. The mercury and sulphamic acid containers were in a clear plastic bag labeled as hazardous waste with a red and yellow label. Most of the mercury was in 1 milliliter glass vials packed in foam and the some was in a small plastic bottle.

Also in the hazardous waste storage area were three plastic bags containing soil and absorbent material contaminated with a non-hazardous glycol. Facility operators had been directed to move the bags containing absorbent material and soil to a solid waste drop box. It is likely that the bag containing mercury and sulphamic acid was mistakenly also taken to the solid waste drop box after being put inside two more plastic bags.

I discovered that mercury and sulphamic acid crystals were missing on 21 August 1996 during an inspection of the hazardous waste storage area. After a brief investigation to determine the probable fate of the mercury and sulphamic acid the following actions were performed:

- I informed Oregon Paper Fiber (John Haller - (503) 257-1331) that one of the drop boxes they service may have contained 150 milliliters of mercury and 250 grams of sulphamic acid. John Haller reported that the drop boxes were emptied on 20 August 1996 and the wastes were unloaded at Bay 1 of the Metro North Transfer Station between 11:30 and 11:45 a.m. He said that the Metro North Transfer Station plant manager (Tom Wyatt) could be reached at (503) 226-6161.

- I attempted to call the Metro North Transfer Station plant manager but was told by the receptionist that Tom Wyatt was unavailable until Friday morning and that no one else was available to speak with.

- Tom McCue reported the incident to the hazardous waste program manager of Oregon DEQ (Anne Price).

- Tom McCue and I went to the Metro North Transfer Station at about 5:30 p.m. and spoke with the Operations Supervisor (Kelly Herrod). We determined that none of their inspectors had noticed the bag of mercury and sulphamic acid; that approximately 1,100 tons of waste were processed on Tuesday; that the shipment of waste would have gone to the Columbia Ridge landfill; and that it should have arrived at the landfill no later than Wednesday afternoon. We asked Kelly Herrod to try and identify which trailer(s) might have taken the waste to Columbia Ridge landfill.

- I contacted Columbia Ridge landfill ((541) 454-2030) at about 6:30 p.m. and informed Francie Bailey that they had probably received solid waste containing 150 milliliters of mercury and 250 grams of sulphamic acid on 21 August 1996. Francie Bailey said that she would contact

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the appropriate people. I received a call from Jeff Wilkins at about 8:00 p.m. and he said that the waste probably went into the landfill by 2:30 p.m. on 21 August 1996. I told him that we would contact him as soon as we had information about what trailer(s) the waste may have been transported in.

- Kelly Herrod reviewed the operation records of the Metro North Transfer Station for 20 August 1996 and determined that the Wacker waste could have been in any of the trailers listed below. I called Paul Stevens at Columbia Ridge Landfill and provided him this information on the afternoon of 22 August 1996.

Departure Time	Trailer Number
12:00	141
13:30	188
14:00	296
14:30	122
15:00	267
15:20	127
15:55	258
16:25	264
16:45	112
17:20	130

SCOEPA00055154

Mercury Loss Letter

M Sutton MS30

Is your RETURN ADDRESS completed on the reverse side?

SENDER:
- Complete items 1 and/or 2 for additional services.
- Complete items 3, 4a, and 4b.
- 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:
MR. CHUCK CLINTON
DEQ-NW REGION
2020 S.W. 4TH AVE-STE 400
PORTLAND, OR. 97201

4a. Article Number
P354.822.589

4b. Service Type
☐ Registered ☒ Certified
☐ Express Mail ☐ Insured
☐ Return Receipt for Merchandise ☐ COD

7. Date of Delivery

5. Received By: *(Print Name)*

6. Signature: *(Addressee or Agent)*
X

8. Addressee's Address *(Only if requested and fee is paid)*

PS Form 3811, December 1994 Domestic Return Receipt

Thank you for using Return Receipt Service.

M. SUTTON — MS30
P 354 822 589

US Postal Service
Receipt for Certified Mail
No Insurance Coverage Provided.
Do not use for International Mail *(See reverse)*

Mercury
Loss Letter

Sent to DEQ - MR CHUCK CLINTON	
Street & Number 2020 S.W. 4th AVE - STE 400	
Post Office, State, & ZIP Code PORTLAND, OR. 97201	
Postage	$ .55
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, & Addressee's Address	
TOTAL Postage & Fees	$ 2.75
Postmark or Date	AUG 28 1996

PS Form **3800**, April 1995

PORTLAND OR SAINT JOHNS STA
USPS

Oregon

DEPARTMENT OF
ENVIRONMENTAL
QUALITY

NORTHWEST REGION

May 21, 1996

THOMAS MCCUE
WACKER SILTRONIC CORPORATION
PO BOX 83180
PORTLAND OR 97283

RE: AQ/Multnomah County
ACDP No. 26-3002

Dear Mr. McCue:

Based on information you presented at our meeting on March 28, 1996, the Department has determined that Wacker Siltronics Corporation has taken steps to resolve the permit monitoring violations described in Notices of Noncompliance dated January 29, 1996, and March 11, 1996. The Department will take no further enforcement action in this matter.

As your March 28, 1996, letter points out your proposal to drop the condition requiring compliance with the Department's Continuous Monitoring Manual is acceptable to the Department. Instead the permit can be modified to require source specific monitoring requirements which would continue using the CEM as the compliance determination method, and include the following system requirements:

- operation of the monitor per manufacturer's specifications.
- log of system maintenance and audits.
- quarterly cylinder gas audits.
- initial Relative Accuracy Test Audit (accomplished February 28, 1996).
- a Relative Accuracy Audit (RAA) or Relative Accuaracy Test Audit (RATA) to be performed three years from the initial RATA. A RAA is similar to a RATA, comparing the CEM measurements to a stack test, but requires only three test runs instead of nine.

I have attached permit application materials for the modification. You will need to submit two copies of administrative form, a description of the modification, and a permit fee of $3925 ($75 filing fee and $3850 processing fee for category 61b. sources).

John A. Kitzhaber
Governor

2020 SW Fourth Avenue
Suite 400
Portland, OR 97201-4987
(503) 229-5263 Voice
TTY (503) 229-5471
DEQ-1

Thank you for your cooperation in resolving this matter. If you have any questions on this please contact me at 229-6991.

Sincerely,

David Sellers
Environmental Specialist

Enclosure
Cc: Terri Sylvester - DEQ
Enforcement Section - DEQ

Oregon

March 11, 1996

DEPARTMENT OF
ENVIRONMENTAL
QUALITY

NORTHWEST REGION

THOMAS MCCUE
WACKER SILTRONIC CORPORATION
PO BOX 83180
PORTLAND OR 97283

RE: AQ/Multnomah County
Wacker Siltronic Corporation
AQ-NWR-96-018
NOTICE OF NONCOMPLIANCE

Dear Mr. McCue:

On February 28, 1996, the Department conducted an inspection during the Relative Accuracy Testing Audit (RATA) of the nitrogen oxide continuous monitoring system. (CMS). The purpose of the inspection was to review compliance with Monitoring and Reporting requirements in the plant's Air Contaminant Discharge Permit No. 26-3002. A copy of the report is enclosed. The inspection found that a number of permit conditions were not being met. Specifically Wacker was not in compliance with the following permit conditions:

1. Condition 12.g. requires that Wacker maintain records of the sulfur content of each shipment of distillate oil received at the plant. The purpose of this condition is to demonstrate compliance with Condition 4. which limits distillate oil burned at the plant to a sulfur content less than 0.3% by weight.

2. Condition 12.l. requires that Wacker determine each month's VOC emission on a monthly basis based on a mass balance of cleaning solvent VOC used minus VOC waste collected. This condition is required to show compliance with the monthly VOC Plant Site Emission Limit of 10,000 pounds per month in Condition 6.a.

3. Condition 13.a. requires that Wacker submit a determination of annual criteria pollutant emissions from the burning of natural gas and diesel oil in the annual report. This information can then be compared to fuel burning Plant Site Emission Limits to show compliance.

We also learned that a (RATA) begun on February 21, 1996, was not completed because the CMS was not operating properly. It was discovered, as a result of disparities during the test between stack test data and the CMS data, that the nitrogen dioxide to nitrogen oxide converter had failed. Because of the converter

John A. Kitzhaber
Governor

2020 SW Fourth Avenue
Suite 400
Portland, OR 97201-4987
(503) 229-5263 Voice
TTY (503) 229-5471
DEQ-1

SCOEPA00055159

failure the monitor was not measuring nitrogen dioxide. Emission measurements by the CMS during the period of converter failure are not valid, undercounting nitrogen oxide emissions. This failure has resulted in a loss of continuous nitrogen oxide emission data.

Together the violations cited in this letter, and the continous monitoring violation cited in the previous January 29, 1996, Notice of Noncompliance, are Class I violations in Oregon Administrative Rule 340-12-050, and are considered to be significant violations of Oregon environmental law. This matter may be referred to the Department's Enforcement Section with recommendation to initiate a formal enforcement action including a civil penalty.

The previous Notice of Noncompliance requested Wacker to complete and submit initial RATA results and certify system compliance with the Department's Continuous Monitoring Manual within 60 days of the date of this letter. Based on the additional problems identified in this letter I request that we meet the week of March 25, 1996, to discuss the status of the plant monitoring and recordkeeping.

Please be prepared to discuss estimates of monitor downtime; estimates of emissions during downtime based on available data including the aborted February 21, 1996, RATA test; a revised 1995 nitrogen oxide emission report; and the effect of the monitor failure on nitrogen oxide control efficiency. Also be prepared to discuss alternate compliance determination methods if Wacker wishes to modify the Air Contaminant Discharge Permit.

My phone number for questions and to set up a meeting is (503)229-6991.

Sincerely,

David Sellers

David Sellers
Environmental Specialist

Enclosure
Cc: Air Quality Division - DEQ

DEPARTMENT OF ENVIRONMENTAL QUALITY
SOURCE INSPECTION FORM

☐ WQ ☐ SW ☐ AQ ☐ NC

COUNTY: MULTNOMAH NWR-P

SOURCE NAME: Wacker Siltronic Corporat #916

SOURCE ADDRESS: 7200 NW FRONT AVE PORTLAND 97210

Chip Bloomer
503 243 2020

OFFICIAL CONTACTED:

PERMIT NUMBER		POINT	ACTION			DATE SCHEDULED	DATE ACHIEVED	RESULT	INSPEC. NO.
CO.	SOURCE		NO.		TYPE	MO. DAY YR.	MO. DAY YR.		
26	3002	000	55	7	07	02 01 96	02 28 96	X	B48

TABLE A PARA	PREP. TIME	TRANS TIME	INSPECTION TIME	PAPER TIME
61b	1.60	1.0	4.0	8.0
58b	0.5		0.2	0.2

8.1
8.2
8.3
8.4

COMPLIANCE STATUS *(RESULT CODE)*

	IN COMP.	NOT IN COMPLIANCE	ON SCHEDULE
All permit conditions	Q		
Permit emission limits	R	A	X
Emission standards	S	B	J
Performance reqts.	T	C	K
Monitoring & Reporting	U	X	X
Open burning limits	V	E	M
Procedural Reqts.	W	F	N
Fugitive emissions	X	G	O
Other	Y	H	P

TREATMENT/PROCESS EQUIPMENT – ADDITIONAL REMARKS – OPERATING CONDITIONS

See attached memo.

SOURCES IN VIOLATION & LIMITS VIOLATED

Not in compliance with ACDP monitoring conditions 11, 12g, 12l and recordkeeping 13a.

Daniel Sellers 2/1/96
SIGNATURE OF INSPECTOR AND DATE

[redacted]
SIGNATURE OF PERSON INTERVIEWED AND DATE

SCOEPA00055161

State of Oregon
Department of Environmental Quality Memorandum

Date: March 1, 1996

To: Files/AQ-Multnomah County #26-3002

From: David Sellers - NWR DS

Subject: Wacker Siltronic Corp., Portland - Annual Air Quality Inspection

Facility Information
Wacker Siltronic Corp
P.O. Box 83180
7200 NW Front Ave
Portland, OR 97210

Permit Information
ACDP No. 26-3002,
Issued 10/11/1995
Expires 9/1/2000

Facility Contact
Thomas McCue, Env. Manager
(503)243-2020

Inspection Date
February 28, 1996

Inspection Summary

This inspection was performed during Relative Accuracy Testing of the NOx CEM system. The inspection focused on a review of monitoring and recordkeeping as required by the Air Contaminant Discharge Permit issued on October 11, 1995.

The inspection found a number of violations of monitoring and recordkeeping requirements in addition to the previous Continuous Monitoring violation cited in the January 29, 1996, Notice of Noncompliance.

A notice of noncompliance will be sent to Wacker for the additional violations identified in this inspection. The violations identified by this inspection, with the exception of the CEM violation, are mainly procedural and can be corrected with no loss of emission data. The CEM malfunction discovered during an attempted RATA test on February 21, 1996, has resulted in a loss of NOx emission data.

The facility was in compliance with fuel burning criteria pollutant Plant Site Emission Limits and Wafer Manufacturing VOC Plant Site Emission Limits. Additional information is necessary to determine compliance with the Wafer Manufacturing NOx PSEL and the distillate oil sulfur content limits.

notice of noncompliance will be sent to Wacker for violations of these permit conditions.

	Parameter	Minimum Monitoring Frequency
a.	A description of any physical repair to the air contaminant control systems.	On Occurrence
b.	Excess emission records defined in OAR 340-28-1400 through OAR 340-28-1440.	On Occurrence
c.	NO_x continuous emission monitor records as defined in 5.1 of the Continuous Monitoring Manual, January 1992	On Occurrence
d.	Three stage NO_x scrubber NO_x emission in ppmv, pounds per hour, and pounds per day.	Continuous
e.	Three stage NO_x scrubber exhaust gas flow rate and temperature.	Continuous
f.	The amount of distillate oil burned.	Annually
g.	The distillate oil sulfur content on a weight basis.	Each Shipment
h.	The amount of natural gas burned in the boilers.	Annual for all natural gas burned. Daily for natural gas burned in the NSPS boilers
i.	The number of hours of emergency diesel generator operation.	On Occurrence
j.	The amount and type of VOC cleaning solvent used by weight.	Monthly
k.	The amount of VOC waste collected and VOC sent to the waste water treatment plant	Monthly
l.	Determine VOC emissions for each month based on mass balance of VOC used and VOC waste collected (j. - k).	Monthly

b. Fuel Burning Equipment Annual PSELSs

	NO_x tons/yr	VOC tons/yr	SO2 tons/yr	PM tons/yr	CO tons/yr
PSEL	49	1	61	7	24
1995	**8**	**0.2**	**0.8**	**0.8**	**2**

1995 fuel use was 115.2 million cubic feet of natural gas, 6351 gallons of diesel oil, and 32.6 gallons of kerosene. 1995 emissions are shown in bold above, below the PSELs. The facility was in compliance with fuel burning PSELs.

cc: Air Quality Division - DEQ
Thomas McCue, Wacker Siltronics, PO BOX 83180, Portland 97283-0180

SCOEPA00055164

Oregon

January 29, 1996

DEPARTMENT OF
ENVIRONMENTAL
QUALITY

NORTHWEST REGION

THOMAS MCCUE
WACKER SILTRONIC CORPORATION
PO BOX 83180
PORTLAND OR 97283

RE: AQ/Multnomah County
Wacker Siltronic Corporation
AQ-NWR-96-004
NOTICE OF NONCOMPLIANCE

Dear Mr. McCue:

This letter is to inform you that the Wacker Siltronic Corporation silicon wafer plant located at 7200 NW Front Avenue in Portland is operating in violation of monitoring conditions in Air Contaminant Discharge Permit (ACDP) No. 26-3002 issued October 11, 1995.

Specifically Condition 11 of the ACDP requires Wacker to install, calibrate, maintain, and operate a continuos monitoring system (CMS) for measuring nitrogen oxide emissions from the three stage nitrogen oxide scrubber to demonstrate compliance with the Plant Site Emission Limit. The Completion of performance tests of the equipment and monitoring and recordkeeping was to begin within 90 days of permit issuance. The results of the initial Relative Accuracy Test Audit was to be submitted within 90 days of permit issuance. Wacker has not performed the Relative Accuracy Test Audit.

To correct this violation Wacker Siltronics will complete and submit the initial RATA results and certify system compliance with the Department's Continuous Monitoring Manual within 60 days of the date of this letter.

This is a Class I violation and is considered to be a significant violation of Oregon environmental law. Should you fail to correct the violation in accordance with the schedule set forth above, we will refer your file to the Department's Enforcement Section with a recommendation to proceed with a formal enforcement action which may result in a civil penalty assessment. Civil penalties can be assessed for each day of violation.

John A. Kitzhaber
Governor

2020 SW Fourth Avenue
Suite 400
Portland, OR 97201-4987
(503) 229-5263 Voice
TTY (503) 229-5471
DEQ-1

SCOEPA00055165

If you have any questions on this matter please contact me at (503)229-6991.

Sincerely,

David Sellers
Environmental Specialist

Cc: Air Quality Division - DEQ

PSI Information To Build On
Engineering • Consulting • Testing

July 9, 2001

Project 689-16356
Report 689-16356-1

Ms. Petra Hoy
Environmental Engineer
Wacker Siltronics Corp.
P.O. Box 83180
Portland, Oregon 97283-0180

Dear Ms. Hoy:

RE: Visual Inspection conducted on two (2) polyethylene (PE) tanks at your facility on June 19, 2001, by Professional Service Industries, Inc. (PSI) representative Mr. Paul Irish. The tanks and system was empty at the time of inspection, PO #4500130332.

Items:	1,000 gallon Polyethylene Waste Treatment and Batch Tanks, Piping, Pumping and Containment Systems
Waste Name:	Chromic Acid
Waste Description:	Chromic Acid/Nitric Acid, pH<2, Liquid
Quantity Processed:	600 gal/year
Ref:	CFR Title 40, Protection of Environment, Part 265, Subpart J Professional Service Industries, Inc. initial inspection Report Number 689-06175-1, dated March 21, 2000.

Tank Descriptions

Treatment Tanks (2):	Open top, conical bottom, polyethylene, supported by a steel stand. This tank was equipped with an externally mounted mixer, 1,000 gallon capacity, Chem-Tainer Industries.
Batch Tank:	Ryan Herco 7353-100, Polyethylene bulk storage tank, flat bottom, 16" threaded manway, 1,000 gallon capacity.

Note: Treatment tank #1 is not used in the waste processing.

Both tanks are approximately 65" diameter by 80" height and are rated for liquids with a specific gravity up to 1.75 and 140°F continuous operating temperature.

The tanks are supported on an open steel grate, which flows to a containment and sump. This containment is designed to collect any leakage, spillage and wash down liquids. Liquids collected in the sump are pumped into the treatment tank for processing.

Summary Results of the Inspection

The waste processing, storage and transfer system, including tanks, piping and pumps were found to be structurally sound and in good operating condition. No signs of active leaks were detected.

SCOEPA00055167

Inspection Check List

Polyethylene Tanks:

Internal: No evidence of surface loss (thickness), cracks, crazing, or other deterioration was detected.

External: No sign of cracks, physical damage or leakage was found.

Piping System: No signs of leakage, cracks, or damage was found at connections to the tanks, pumps, or valving.

Support Structure:

Treatment PE tank steel support stand .....satisfactory

All steel fittings and valve hangers and supports .....satisfactory

Pump support structures .....satisfactory

Steel floor and sump grating .....satisfactory

Ladders, walkways and guard rails .....satisfactory

General

There has been no change in the system integrity since the initial inspection conducted in March of 2000. A plastic guard or housing had been installed around the primary pump for protection.

Polyethylene has good to excellent resistance to both strong and diluted inorganic acids. The high-density polyethylene (HDPE) used in these tanks exhibits good dimensional stability and physical properties. Continuous service temperature is 140-190°F.

The secondary containment system in place is capable of containing minor spills, leakage and wash-down fluids. It is not capable of containing 100% of the capacity of either tank and therefore must be inspected annually in accordance to CFR Title 40, Part 265.191.

Services performed for this project have been conducted with that level of care and skill ordinarily exercised by members of the profession currently practicing in this area under similar budget and time restraints. No warranty, expressed or implied, is made.

We appreciate the opportunity to be of service to you. Should you have any questions regarding the contents of the report or if we may be of further assistance in any way, please contact us at (503) 978-4714 or (800) 783-6985, e-mail paul.irish@psiusa.com.

Sincerely,

Paul Irish
Technical Director
Mechanical Testing Department

pi:sdd

PSI Information To Build On
Engineering • Consulting • Testing

March 21, 2000

Project 689-06175
Report 689-06175-1

Mr. Tim L. Kirk, P.E.
Facilities Engineer
Wacker Siltronics Corp.
P.O. Box 83180
Portland, Oregon 97283-0180

Dear Mr. Kirk:

RE: Visual Inspection conducted on two (2) polyethylene (PE) tanks at your facility on February 25, 2000, by Professional Service Industries, Inc. (PSI) representative Mr. Paul Irish. The tanks and system was empty at the time of inspection, PO #4500080411.

Items:	1,000 gallon Polyethylene Waste Treatment and Batch Tanks, Piping, Pumping and Containment Systems
Waste Name:	Chromic Acid
Waste Description:	Chromic Acid/Nitric Acid, pH<2, Liquid
Quantity Processed:	600 gal/year MONTH
Ref:	CFR Title 40, Protection of Environment, Part 265, Subpart J

Tank Descriptions

Treatment Tanks (2):	Open top, conical bottom, polyethylene, supported by a steel stand. This tank was equipped with an externally mounted mixer, 1,000 gallon capacity, Chem-Tainer Industries.
Batch Tank:	Ryan Herco 7353-100, Polyethylene bulk storage tank, flat bottom, 16" threaded manway, 1,000 gallon capacity.

Note: Treatment tank #1 is not used in the waste processing.

Both tanks are approximately 65" diameter by 80" height and are rated for liquids with a specific gravity up to 1.75 and 140°F continuous operating temperature.

The tanks are supported on an open steel grate, which flows to a containment and sump. This containment is designed to collect any leakage, spillage and wash down liquids. Liquids collected in the sump are pumped into the treatment tank for processing.

Summary Results of the Inspection

The waste processing, storage and transfer system, including tanks, piping and pumps were found to be structurally sound and in good operating condition. No signs of active leaks were detected.

Inspection Check List

Polyethylene Tanks:

Internal: No evidence of surface loss (thickness), cracks, crazing, or other deterioration was detected.

External: No sign of cracks, physical damage or leakage was found.

Piping System: No signs of leakage, cracks, or damage was found at connections to the tanks, pumps, or valving.

Support Structure:

Treatment PE tank steel support stand .....satisfactory

All steel fittings and valve hangers and supports .....satisfactory

Pump support structures .....satisfactory

Steel floor and sump grating .....satisfactory

Ladders, walkways and guard rails .....satisfactory

General

Polyethylene has good to excellent resistance to both strong and diluted inorganic acids. The high-density polyethylene (HDPE) used in these tanks exhibits good dimensional stability and physical properties. Continuous service temperature is 140-190°F.

The secondary containment system in place is capable of containing minor spills, leakage and wash-down fluids. It is not capable of containing 100% of the capacity of either tank and therefore must be inspected annually in accordance to CFR Title 40, Part 265.191.

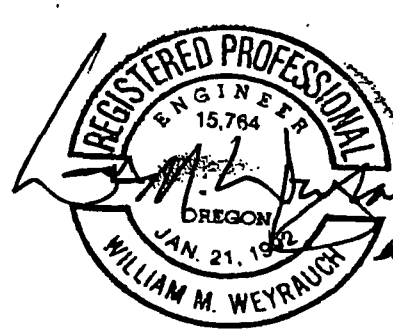
Services performed for this project have been conducted with that level of care and skill ordinarily exercised by members of the profession currently practicing in this area under similar budget and time restraints. No warranty, expressed or implied, is made.

We appreciate the opportunity to be of service to you. Should you have any questions regarding the contents of the report or if we may be of further assistance in any way, please contact us at (503) 978-4714 or (800) 783-6985, e-mail paul.irish@psiusa.com.

Sincerely,

Paul Irish
Technical Director
Mechanical Testing Department

pi:sdd



William M. Weyrauch, P.E.
Vice President

Expires 6-30-2000

SCOEPA00055170

VICTOR ATIYEH
Governor

Department of Environmental Quality

522 S.W. FIFTH AVENUE, BOX 1760, PORTLAND, OREGON 97207 PHONE: (503) 229-5696

June 24, 1986

Mr. Greg Carr
Wacker Siltronic Corp.
PO Box 03180
Portland, OR 97203

Re: HW - Wacker Siltronic
Multnomah Co.
ORD 096 253 737

Dear Mr. Carr:

Thank you for your letter of May 27, 1986 requesting guidance regarding a possible modification of hazardous waste management procedures at Wacker Siltronic. As we understand your request, rinse water that is now added to the concentrated waste forwarding tank will be diverted to a separate treatment process to remove chromium contamination and then will receive additional treatment in your existing process waste water treatment system. At issue is the necessity for obtaining a Part B-Treatment, Storage and Disposal Facility permit for management of the hand rinse wash water waste stream.

The responsibility for determining the hazardous nature of a waste lies with the generator (40 CFR 262.11). However, on the basis of our telephone conversation of June 9, 1986, I believe that the predominant nature of the waste, as described, would not meet the criteria of a characteristic hazardous waste nor would it be a listed waste. As such, additional treatment for the hand rinse wash water would not fall within the scope of a system required to be permitted under 40 CFR 270.1.

Appropriate water quality analysis should be completed to characterize the rinse water prior to system modification. Should the hand rinse wash water be determined to be a hazardous waste, the permit status of the treatment system itself becomes the principal issue. Fundamental to the TSDF permitting analysis is the proper description of the treatment equipment. Based on the information provided, the carbon adsorption process may constitute a waste water treatment unit (WWTU) as defined at 40 CFR 260.10. To meet this definition, the WWTU must meet three tests:

1. The WWTU must be part of a waste water treatment facility whose discharge is regulated under the NPDES permit program.
2. The WWTU treats a hazardous waste.
3. The WWTU is a tank, e.g., a stationary device made of non-earthen materials which contain a hazardous waste.

SCOEPA00055172

40 CFR 270.1 lists exclusions to the requirements for RCRA permits and specifically excluded from regulation are waste water treatment units (WWTU's). This exclusion may apply to the carbon adsorption process that you intend to use at Wacker Siltronic. A similar exclusion also exempts waste water treatment units from regulation under 40 CFR parts 264 and 265.

Should you need additional clarification, please contact either myself or Gary Calaba.

Sincerely,

Dennis Adamczyk

Dennis L. Adamczyk
Senior Environmental Analyst
Northwest Region

DLA:y
RY2854
cc: Hazardous and Solid Waste Division, DEQ
Regional Operations, DEQ
Water Quality Division, DEQ

Greg.

Wacker Siltronic Corporation
P.O. Box 03180
Portland, OR 97203
7200 N.W. Front Ave.
Portland, OR 97229
Phone (503) 243-2020
TWX 910-464-4777
FAX 503 226-0052

May 27, 1986

Ms. Janet A. Gillaspie
Regional Manager
Northwest Region
Department of Environmental Quality
P. O. Box 1760
Portland, OR 97202

Dear Ms. Gillaspie:

Subject: Waste Minimization-On-Site Treatment of Hazardous Waste Streams

Our engineering staff has been evaluating alternatives for on-site processing of hazardous waste streams. This activity has prompted us to write this letter requesting clarification regarding the extent of on-site hazardous waste processing allowed without application for a Part B permit.

Specifically, Wacker Siltronic is evaluating the feasibility of separating the waste streams which feed our chromic acid/hydrofluoric acid waste system. Currently this total hazardous waste volume is collected and shipped to CSSI in Arlington, Oregon for disposal in their acid evaporation pond, with no prior on-site treatment by Wacker. The first phase of the system under consideration would remove the chromium from the rinse wastewater stream by adsorption, allowing for further processing and discharge through the Wastewater Treatment Plant with other wastes. (See Figure No. 1 attached). Calculations indicate that the N.P.D.E.S discharge requirements would not be violated if this plan was implemented. A future proposal would also include further processing of the concentrated chromic acid waste.

Our question is: Would the installation of such a system on our site require us to file for a Part B permit and become a TSD facility? On-site processing appears to be encouraged by Congress with the intent to minimize hazardous waste toxicity and volume before disposal. If economically feasible, these projects would not only help us to conform with these waste minimization laws but would also reduce our risk in transporting the raw waste.

SCOEPA00055174

We feel that we must clarify this issue before proceding beyond the conceptual stage of these projects. In this regard, please provide us with your clarification so that we can define the point at which a Part B is required. If necessary, we could come down to the DEQ office and meet with you on this topic. Please call me at Ext. 132 if there are any questions.

Very truly yours,

WACKER SILTRONIC CORPORATION

Greg Carr

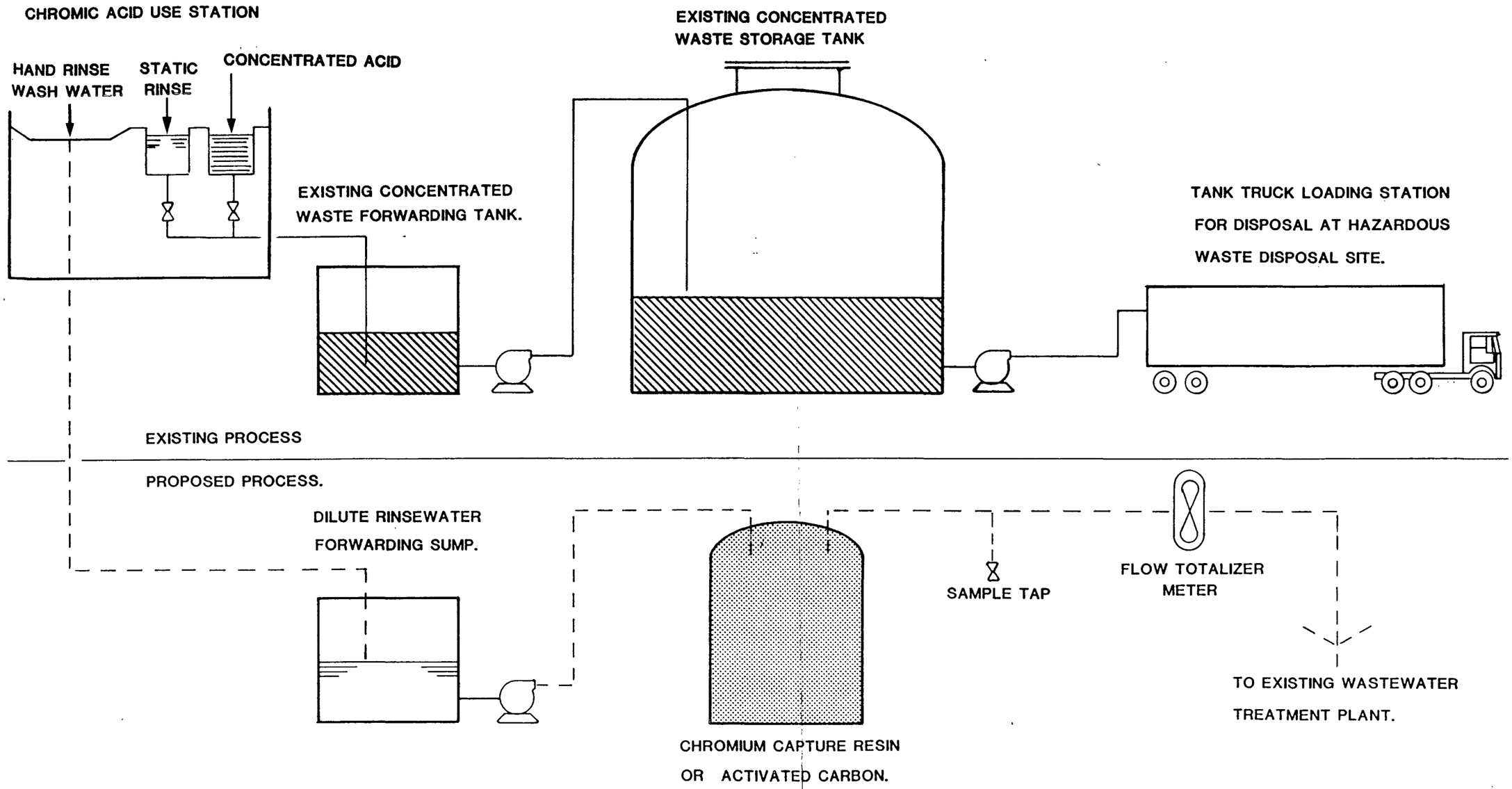
Greg Carr
Environmental Engineer

GC:ll

Attachment

cc: John Pittman
Jerry Schaeffer
Murray Tilson
File

FIGURE No. 1



WASTE CHROMIC ACID DISPOSAL SYSTEM

FIRST PHASE REVISIONS

SCOEPA00055176

WACKER
Wacker Siltronic Corporation

ENGINEERING WORK REQUEST

E 20534

DEPARTMENT Acid Etch BLDG. Fab 1 ROOM: COST CENTER: 13430 S.T.N.

REQUEST: Please verify Regulatory Impact of using 60% HF (vs 50% present) From Bulk Tanks To End users - primarily Acid Etch. We would like to have a preliminary response by July 15, 1998

CHARGE TO PROJECT NO.:

ITEM CODE, MAT'L:

ITEM CODE, LABOR:

DESCRIPTION OF JUSTIFICATION: Some Savings From use of 60% are being claimed. We would like To verify That Conversion does not present any Regulatory Issues which may be Expensive To overcome.

TYPE OF WORK (Check One)

- ☐ 0 Safety
- ☒ 1 Legal/Environmental
- ☐ 2 Quality Improvement
- ☐ 3 Future Product
- ☐ 4 Increased Productivity
- ☐ 5 Increased Yields
- ☐ 6 Cost Savings
- ☐ 7 Capacity Adjustment
- ☐ 8 Replacement
- ☐ 9 Special

PRIORITY REQUEST (circle the most appropriate priority):

1 Critical scheduling for projects that are immediate / to personnel safety, and/or environmental regulatory status, and/or / to alleviate current production problems (capacity/quality).

2 Scheduling for projects that / meet production plans / are associated with quality and/or capability, and/or effect environmental regulatory status.

3 Routine scheduling for projects that do not directly effect production quality and/or quantity

DATE REQUIRED: July 15 1998

FOR ENGINEERING ONLY

PROJECT TITLE: WOT-60 HF

ENGINEERING PROPOSAL:

SUMMARY

ESTIMATED	DOLLARS	WEEKS
Eng. Labor		
Equip./Labor ...		
Other Labor		
Other		
Project Total		

REVIEWED BY FINANCIAL ANALYST _____ DATE: _____

☐ CAPITAL ☐ EXPENSE

REQUIRED APPROVALS AND ROUTING

AUTHORIZATIONS PROVIDED BY REQUESTOR

Requested by: T. Potter Ext. 4276 Date: 6/25/98

User Mgr./Team Leader: R. Gagnier Date:

AS APPROPRIATE:

Process Engineering: K. Dickman Date:

Equipment Engineering Mgr.: [signature] Date: 6/25/98

Mfg. Team Leader: Date:

Fac. Engineering Mgr. Date:

X Environmental Mgr. [signature] Date: 6/25/98

Safety Mgr. Date:

ENGINEERING SUSAN MULHOLLAND 6/26/98

Assigned Eng. Mgr.: CCC:

Assigned Project Engr.: Date:

Computer Entry By: Date:

DESIGN & COST APPROVALS

User Mgr./Team Leader: Date:

Requestor's Mgr./Team Leader: Date:

FINAL ACCEPTANCE & CLOSURE

Requestor: Date:

User Mgr./Team Leader: Date:

AS APPROPRIATE:

Process Engineering: Date:

Equipment Engineering Mgr.: Date:

Mfg. Team Leader: Date:

Fac. Engineering Mgr. Date:

Environmental Mgr. Date:

Safety Mgr. Date:

Closed in Computer Date:

This form complies with Engineering Work Request Procedure No. C15.99.2/0004

FORM NO. 54075

PLEASE USE PEN OR TYPEWRITER ONLY

White: Project Engineer Canary: Engineering Doc. Coordinator Pink: Fac. Mgr. Mgmnt Goldenrod: Originator

SCOEPA00055177

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180
Phone (503) 243-2020
TDD (503) 241-7519

February 26, 1996 ER:09:TM

Mr. Elliot Zais
Northwest Region,
Department of Environmental Quality
2020 SW Fourth Ave., Suite 400
Portland, Oregon 97201

RE: Reduction in Chromium Load Limits
NPDES Permit 93450

Dear Mr. Zais:

After a review of the Chromium discharge data submitted to the Department of Environmental Quality on monthly monitoring reports over the past five years we find that there is excess capacity within the existing permit limitations. Our treatment performance has been enhanced by a number of waste minimization projects installed over the last permit period and the ability to calculate more accurately what is actually discharged.

Based on this performance, we request no increases in concentration or loading for the current NPDES Permit renewal and we request that the loading is reduced.

	Existing Limits	Requested Limits
Cr (total)	1.6 lbs/day average	0.2 lbs/day average
Cr (hex)	0.11 lbs/day average	0.02 lbs/day average

These reductions are possible due to pollution prevention activities conducted voluntarily by Wacker Siltronic based on strong management commitment and support for environmental programs. We hope you approve of the results.

Sincerely,

Wacker Siltronic Corporation

Thomas C. McCue
Environmental Manager

SCOEPA00055178

NEIL GOLDSCHMIDT
GOVERNOR

Department of Environmental Quality

FILE

cc: John Pittman
Green Card

811 S.W. SIXTH AVENUE, PORTLAND, OREGON 97204 PHONE: (503) 229-5696

RECEIVED
APR 10 1987
WACKER SILTRONIC ENGINEERING

April 7, 1987

Dan McCaskill
Van Waters & Rogers
Box 5932
San Mateo, CA 94402

RECEIVED
ENGINEERING
APR 10 1987

Re: Van Waters & Rogers
HW - Multnomah County

John L. Pittman
Wacker Siltronic

Dear Mr. McCaskill:

At your request, the Department has reviewed its interpretation of 40 CFR 261.6(c)(2) as stated in my letter to you dated December 16, 1986. This regulation exempts recycling facilities from permit and other requirements if the waste is not stored prior to recycling.

In applying this regulation to your specific operation, the definition of "storage" is a key issue. Storage is defined in 40 CFR 260.10 as "the holding of hazardous waste for a temporary period . . .". It is the Department's decision that storage does not occur during your current operation because the recycling takes place on consecutive work days and the truck containing the material to be recycled does not arrive before you are prepared to recycle. Therefore, you may continue your current operation under the exemption provided by 40 CFR 261.6(c)(2). Changes in your operation may require a reassessment of the applicability of this regulation.

Should you decide to discontinue your operation, you must "close" your facility in accordance with 40 CFR 265.197 and 265.111. 40 CFR 265.115 requires a certification of closure by a registered professional engineer to insure that the tanks and related equipment are properly decontaminated before being scrapped or used for another purpose.

Thank you for your patience and for working with us to accomplish our common goal of environmental protection. If you have any questions on this interpretation or any other matters, please contact me at (503) 229-5296.

Sincerely,

Edward Woods

Edward G. Woods
Senior Environmental Analyst
Northwest Region

EGW:p
RP469
cc: Murray Tilson, Wacker Siltronics
Hazardous & Solid Waste Division, DEQ

Q-1A (2-86)

SCOEPA00055179

WACKER

FROM: Greg Carr

Greg Carr

TO: Jim Ellis, Scott Gallentine, Jeff Jones
Jerrie Mitchell, John Pittman, Bob Shaw

SUB: BOD of Slicing Fluids

OUR REF:

YOUR REF:

DATE: January 1, 1984

RECEIVED
ENGINEERING
FEB 2 1984
John L. Pittman
Wacker Siltronic

As you know I have been concerned about the possible BOD contribution from the propose "Siloxan" cutting fluid. Our existing cutting fluid contributes BOD(1) into the wastewater streams that discharge to the Willamette River. We cannot now meet our BOD standard. I will have to do work this summer to improve this situation. Increasing the BOD will only make matters worse.

According to Sam's BOD figures, things look like this.

Material	BOD Straight	Dilution Ratio	BOD as diluted
Luntensol	414,000 mg/ℓ	10,000:1	41 mg/ℓ
Siloxan	33,000 mg/ℓ	500:(2)	66 mg/ℓ

If we must use a Siloxan, a dilution of 800:1 (.12%) will give us the same BOD loading as now. A greater dilution (say 2000:1) will be a positive benefit to our problems with BOD.

Please get back to me if anything definite arises.

(1) Biological Oxygen Demand - Organic materials that decompose and remove oxygen from the river, hurting fish.

(2) Telex from Langsdorf Dec 2, 1983.

GC/md

cc: File

WACKER-CHEMITRONIC GMBH
BURGHAUSEN/OBB.

12-2-83 Ellis file

FAX-No. 5297/83

Date: December 2. 1983

To: Siltronic, Portland

From: K.-H. Langsdorf

Attn: Mr. Greg Carr

cc: Mr. Jim Ellis / Mr. Scott Gallentine

Sub.: Cutting water - Your fax of 11-30-83

In your current pilotproduction we use 0,2 % LO3 in the cutting water.
By 26 liters pro minute thats 1560 liters per hour, you need 3,12 liter LO3 per hour.

26 liters per min = 7 GPM

Best regards

(Karl-Heinz Langsdorf)

Wacker Siltronic Corporation
P.O. Box 03180
Portland, OR 97203
7200 N.W. Front Ave.
Portland, OR 97229
Phone (503) 243-2020
TWX 910-464-4777
FAX 503 226-0052

RECEIVED
ENGINEERING
FEB 27 1985

February 22, 1985

John L. Pittman
Wacker Siltronic

Department of Environmental Quality
Post Office Box 1760
(Air Quality Division)
Portland, Oregon 97207

Your Reference: Permit Number 26-3002

Dear Sirs:

Fuels Usage and Contaminant Discharge

The attached tables show the reporting requirements of Item 16 of the Air Contaminant Discharge Permit Number 26-3002. The period covered by this letter is from January 1, 1984 to January 1, 1985. During this period two steam boilers, two small HVAC boilers, the nitrous oxide scrubber and solvent handling equipment were operated. The itemized emissions from the boilers and the nitrous oxide system are attached.

Sincerely,

WACKER SILTRONIC CORPORATION

Gregory E. Carr

Greg Carr
Facilities Engineer

GC:jm

Attachments

cc: Jim Harper
John Pittman
Mal Russ
Murray Tilson
File

February 19, 1985

SOURCE EMISSION SUMMARY

BOILERS

Product Emission = (Natural Gas Used) x (Product Factor)

LB. = FT^3 x LB./10^6FT^3

Month	10^6FT^3 Used	Part	SOx	CO	HC	NOX	Units
1	4.38	66	2.6	88	35	526	LBS
2	3.93	59	2.4	79	31	471	LBS
3	5.40	81	3.2	108	43	649	LBS
4	5.06	76	3.0	101	40	607	LBS
5	3.62	54	2.2	72	29	435	LBS
6	3.77	57	2.3	75	30	452	LBS
7	3.83	57	2.3	77	31	460	LBS
8	4.07	61	2.4	81	33	489	LBS
9	4.10	61	2.4	81	33	492	LBS
10	4.23	63	2.5	85	34	508	LBS
11	6.14	92	3.7	123	49	737	LBS
12	5.84	88	3.5	117	47	701	LBS
	54.4	815	33.0	1090	436	6590	LBS
NITROUS OXIDE SCRUBBER						5760	LBS
CARBON ADSORPTION UNIT					6200		LBS
TOTAL		815	33.0	1,090	6,635	12,350	LBS
Product* Factor	-	5-15	0.6	20	8	120	LBS/10^6FT^3
Limit	-	30,400	187,400	---	28,000	97,000	LBS

* - Product Factors taken from EPA Publication 999-AP-4Z
Compilation of Air Pollution Factors
Section 1.4
Dated 5/74

SOURCE EMISSION SUMMARY
February 19, 1985

NITROUS OXIDE SCRUBBER

Month	Lbs. NOX
1	483
2	442
3	448
4	455
5	529
6	524
7	504
8	524
9	497
10	484
11	439
12	433
TOTAL	5760 Lbs

Basis 1) Air flow rate 4600 CFM
operations Jan. 1 - July 1
24hours/day 5 days/week, 35ppm
NOx July 2 - Dec. 31 12 hours/day,
7 days/week, 50ppm NOx
(35ppm NOx) x (.128#/Ft^3NOx) x
(4600 CFM) x (1440 min/day) =
22.8#/day NOx
Maximum emissions rate was 80ppm
for 1 hour or 2.2# NOx

Carbon Adsorption Unit

Month	Lbs. VOC
1	420
2	420
3	440
4	420
5	461
6	420
7	560
8	621
9	601
10	621
11	601
12	621
TOTAL	6200 Lbs

Basis 1) Air flow 3410 CFM
2) Average 12ppm TCE
(3410 CFM) x (1440 min/day) x
(12ppm) x (.3391bs TCE/CFT
20.01bs TCE/day
Jan 1 - July 1 5 days/week operation
July 2 - Dec. 31 7 days/week operation
Maximum emissions were about 130 ppm
for a rate of 9.5#/hour.

SCOEPA00055184

Guidelines for Using Emission Factors

The DEQ has compiled some of the more commonly used emission factors to assist the applicant with estimating pollutant emissions related to their processes. However, in doing so, the Department does not guarantee the accuracy of the emission factors. Source-specific emissions data from continuous emissions monitoring systems (CEMS), material balances, or source testing (stack tests) should always be used instead of generic emission factors; unless it has been determined that the actual emissions data is not representative of current or future source operations. When actual emissions data are not available, emission factors can be used to estimate the emissions keeping in mind the limitations of the emission factor and possible repercussions of inaccurate estimations.

What is an emission factor?

An emission factor is a representative value that attempts to relate the quantity of a pollutant released to the atmosphere with an activity associated with the release of that pollutant. These factors are usually expressed as the weight of pollutant divided by a unit weight, volume, distance, or duration of the activity emitting the pollutant (e.g., pounds of particulate matter emitted per ton of rock crushed). Such factors facilitate estimation of emissions from various sources of air pollution. In most cases, these factors are simply averages of all available data of acceptable quality, and are generally assumed to be representative of long-term averages for all facilities in the source category (i.e., a population average). The general equation for emission estimation is:

$$E = A \times EF \times (1-ER/100)$$

where:

E = emissions,
A = activity rate,
EF = emission factor, and
ER = overal emission reduction efficiency, %

In most cases, emission factors are based on some actual emission data representative of the source category as a whole. However, emission factors can also be based on engineering estimates, extrapolation from similar processes, material balances, very limited data, and various other techniques. As such, not all emission factors provide the same level of confidence for the final emission estimation. Even in situations where there may be considerable data available, the emission factor still only represents the average emissions for the process and may not provide a very good estimate of actual emissions over a short period of time; especially if there are any process variations that significantly affect the emissions rate.

For significant sources of pollutant emissions, the Department will usually require that a stack test be performed during the permit term to verify that the emission factor used to establish the PSEL is reasonable. If it is shown that actual emissions are considerably higher than estimated, it may be necessary to modify the permit. Of particular concern would be a new or modified source in which the estimated emissions increase using an emission factor was only slightly below the significant emission rate for a pollutant and it is later discovered that the emissions increase is greater than the significant emission rate. In this case, the source should have performed a New Source Review (NSR) or Prevention of Significant Deterioration (PSD) analysis prior to beginning operations. Failure to do the proper analysis up front could result in enforcement action.

For smaller sources of emissions (e.g., most rock crushers, ready-mix concrete plants, feed, grain, and seed facilities), the recognized emission factors are probably sufficient for estimating emissions and establishing Plant Site Emission Limits.

For a more complete discussion of emission factors, refer to the Introduction of EPA's AP-42.

SCOEPA00055185

COMMON EMISSION FACTORS

Emission factors can be obtained from EPA's AP-42 and Factor Information Retrieval (FIRE) System on the internet at www.epa.gov/ttn/chief. Many industry groups also provide technical assistance for determining appropriate emissions factors. Some of the more common emission factors are provided in the following forms:

Form Number	Description
AQ-EF01	Feed and Seed Processes
AQ-EF02	Wood products
AQ-EF03	Wood products PM_{10} fractions
AQ-EF04	Oil fired boilers
AQ-EF05	Gas fired boilers
AQ-EF06	Asphalt and aggregate industries
AQ-EF07	Portable power generators

SCOEPA00055186

Natural Gas:

Combustor Type	Controls	Pounds of pollutant per million cubic feet of natural gas burned[1]					
		PM[2]	PM_{10}	SO_2[3]	NO_x	CO	VOC
Large Wall-Fired Boilers (>100 million Btu/hr)	Uncontrolled (pre-NSPS)	2.5	2.5	1.7/2.6	280	84	5.5
	Uncontrolled (post-NSPS)	2.5	2.5	1.7/2.6	190	84	5.5
	Controlled-low NO_x burners	2.5	2.5	1.7/2.6	140	84	5.5
	Controlled-flue gas recirculation	2.5	2.5	1.7/2.6	100	84	5.5
Medium Boilers (<100 million Btu/hr)	Uncontrolled	2.5	2.5	1.7/2.6	100	84	5.5
	Controlled-low NO_x burners	2.5	2.5	1.7/2.6	50	84	5.5
	Controlled-flue gas recirculation	2.5	2.5	1.7/2.6	32	84	5.5
Tangential-Fired Boilers (all sizes)	Uncontrolled	2.5	2.5	1.7/2.6	170	24	5.5
	Controlled-flue gas recirculation	2.5	2.5	1.7/2.6	76	98	5.5
Residential Furnaces	Uncontrolled	2.5	2.5	1.7/2.6	94	40	5.5

Propane:

Combustor Type	Pounds of pollutant per 1000 gallons of propane burned[4]					
	PM	PM_{10}	SO_2[5]	NO_x	CO	VOC
Industrial Boilers (>10 million Btu/hr)	0.6	0.6	0.10S	19	3.2	0.5
Commercial Boilers (<10 million Btu/hr)	0.4	0.4	0.10S	14	1.9	0.5

Butane:

Combustor Type	Pounds of pollutant per 1000 gallons of butane burned[6]					
	PM	PM_{10}	SO_2	NO_x	CO	VOC
Industrial Boilers (>10 million Btu/hr)	0.6	0.6	0.09S	21	3.6	0.6
Commercial Boilers (<10 million Btu/hr)	0.5	0.5	0.09S	15	2.1	0.6

[1] All emission factors are from AP-42, Tables 1.4-1 and 1.4-2, except the PM/PM_{10} and SO_2 factors.
[2] The PM/PM_{10} emissions factor is a DEQ factor based on local testing.
[3] The SO_2 emissions factor is a DEQ factor based on local sulfur content of natural gas (short term maximum = 9,100 grains/million cubic feet and long term average = 6,000 grains/million cubic feet). Short term emissions factor = 9,100 grains S/million cubic feet x 1 pound/7,000 grains x 2 pounds SO_2/pound of S = 2.6 lb/million cubic of natural gas. Long term emissions factor = 6,000 grains S/million cubic feet x 1 pound/7,000 grains x 2 pounds SO_2/pound of S = 1.7 lb/million cubic of natural gas
[4] All emission factors are from AP-42, Table 1.5-1.
[5] S equals the sulfur content expressed in gr/100 ft^3 gas vapor. For example, if the propane sulfur content is 0.18 gr/100 ft^3, the emission factor would be (0.10 x 0.18) = 0.016 lb of $SO_2/10^3$ gallons of propane burned.
[6] All emission factors are from AP-42, Table 1.5-1.

SCOEPA00055187

siltronic
perfect silicon solutions

Myron Burr
Environmental Engineer

Siltronic Corporation
7200 NW Front Avenue, MS
Portland OR 97210-3676, USA
Tel. 503-219-7832
Fax 503-219-7599
myron.burr@siltronic.com

Ms. Kathy Amidon
Oregon Department of Environmental Quality
2020 SW Fourth, Suite 400
Portland, OR 97201-4987

2004-04-19

RE: Permit 26-3002 NOx Baseline

Dear Ms. Amidon:

Per our telephone conversation today, in reviewing our Baseline for NOx we noticed that the original permit application for the Siltronic Corporation facility (filed July 13, 1978) indicated emissions for the boilers firing on both fuel oil and natural gas (please see attached chart from the original application). In comparing these emissions to the limits for NOx in the original permit, it appears that the emissions for fuel oil burning were used for the permit. However, we have never burned fuel oil in our boilers; just natural gas.

Therefore, we request that the netting basis adjusted NOx Baseline be corrected from 34 tons to 44.1 tons in order to reflect the operation of the boilers on natural gas (both of these numbers reflect removal of the 300 hp process boiler for the polysilicon operation). Please see attached calculations for details.

If you have any questions regarding this request, please feel free to call me. Thank you for your consideration.

Best regards,

Siltronic Corporation

Myron Burr
Environmental Engineer

Cc: Tom McCue

Fuel Oil	Nat. Gas
26	36
6.4	6.4
10.6	12.6
1.4	1.7
44.4	56.7
-10.6	-12.6
33.8	→ 44.1

EMISSIONS - TONS/YEAR

Emission Point	Part.	SO_x	HC	NO_x	CO	Other Inorganics
#1 - Ferrosilicon Storage Bin Vent	0.10	--	--	--	--	--
#2 - Ferrosilicon Storage Silo Vents	1.0	--	--	--	--	--
#3 - Two 15,000 lb/hr Steam Boilers Using:						
a) Natural Gas	2.5	0.1	0.6	36	3	--
or						
b) #2 Fuel Oil	2.5	34	1.2	26	6	--
#4 - HC1 Scrubber	--	--	--	--	--	Unknown amounts of HC
#5 - Sandblasing	0.5	--	--	--	--	--
#6 - NO_x Scrubber	--	--	--	6.4(as NO_2)	--	--
#7 - 300 hp Process Boiler Using:						
a) Natural Gas	0.8	0.04	0.20	12.6	1.0	--
or						
b) #2 Fuel Oil	0.96	20.8	0.48	10.6	2.4	--
#8 - 40 hp HVAC Boiler Using:						
a) Natural Gas	0.1	0.006	0.03	1.7	0.14	--
or						
b) #2 Fuel Oil	0.13	2.8	0.06	1.4	0.32	
#9 - Solvent Loss	--	--	14	--	--	--

SCOEPA00055190

Siltronic Corporation		
	NOx Emissions	
	(tons per year)	
	Fuel Oil	Natural Gas
Two 15,000 lb/hr Steam Boilers	26	36
NOx scrubber	6.4	6.4
300 hp Process Boiler	10.6	12.6
40 hp HVAC Boiler	1.4	1.7
	44.4	56.7
less 300 hp Process Boiler	10.6	12.6
	33.8	44.1

Burr, Myron

From: AMIDON Kathy [AMIDON.Kathy@deq.state.or.us]
Sent: Friday, May 28, 2004 10:22 AM
To: Myron.Burr@siltronic.com
Subject: FW: ACDP - Adjustment to Baseline/Netting Basis

Any progess as regards the generators? Tom: end of July.

-----Original Message-----
From: AMIDON Kathy
Sent: Thursday, April 22, 2004 10:08 AM
To: Myron Burr (Myron.Burr@siltronic.com)
Subject: ACDP - Adjustment to Baseline/Netting Basis

Your letter was received yesterday. Ichecked our file and found a memo that confirms oil was expected to be the fuel of choice. The Baseline and Netting Basis have been changed. The proposed Nox PSEL is now 83 tons/12-month period.

Re: generators. EF for generators vary widely. Please include the EF for generators from the manufacturer in your comments on the draft ACDP.

Thanks!

5/28/04

NOx Scrubber Chemical Tank Levels and DA Trending

Month: Year: 2004

Day/Time	Sodium Hydroxide NaOH	Sodium Sulfide Na_2S	Sulfuric Acid H_2SO_4	Sodium Chlorite $NaClO_2$	Tank-3 ORP/pH	DA Trending	Oper Inits	Time	Sodium Hydroxide NaOH	Sodium Sulfide Na_2S	Sulfuric Acid H_2SO_4	Sodium Chlorite $NaClO_2$	Tank-3 ORP/pH	DA Trending	Oper Inits
1 / 0800								2000							
2 / 0800								2000							
3 / 0800								2000							
4 / 0800								2000							
5 / 0800								2000							
6 / 0800								2000							
7 / 0800								2000							
8 / 0800								2000							
9 / 0800								2000							
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24 / 0800								2000							
25 / 0800								2000							
26 / 0800								2000							
27 / 0800								2000							
28 / 0800								2000							
29/0800								2000							
30/0800								2000							
31 / 0800								2000							

Burr, Myron

From: Burr, Myron
Sent: Friday, December 19, 2003 5:13
To: 'WIND Cory Ann'
Cc: McCue, Tom
Subject: RE: Permit Renewal

Cory-Ann,

Attached please find the results of our HF and HCL testing. If you see the need to develop an emission factor for these chemicals, we could do it based on the number of reactors in operation in any given month.

I am still working on the inventory of emission sources and hope to have it to you before 12/24/03.

Thank you,
Myron

-----Original Message-----
From: WIND Cory Ann [mailto:WIND.Cory@deq.state.or.us]
Sent: Wednesday, December 10, 2003 9:57 AM
To: Burr, Myron
Subject: Permit Renewal

Don't you still owe me a few things? Inventory of emission sources. New information about HF?

Cory-Ann Wind
NWR Air Quality
ph: 503-229-5567
fax: 503-229-5265
wind.cory@deq.state.or.us

HF Air Emissions Testing 3/31/03-5/9/03		F		HF			
Fab 1		**ug/m3**	**cfm**	**lbs/yr**			
Section 8 Acid Scrubber		0.6	18000	0.37			
Acid Etch Fume Scrubber		226	13000	101.41			
Epi Fume Scrubber		0.21	21000	0.15			
NOx Scrubber	<	2.5	15000	1.29			
Furnace Center Exhaust (F123)		543	1250	23.43			
			subtotal	126.66	**lbs/yr**		
Fab 2							
HPM Scrubber		124.87	26000	112.06			
General Exhaust		39.5	88500	120.66			
			subtotal	232.73	**lbs/yr**		
					HF*	**HF****	
		F	**sample rate**	**exhaust rate**	**avg**	**max**	
Fab 1 Epi		**ug**	**l/min**	**l/min**	**lbs/yr**	**lbs/yr**	
AMT Reactors (based on Reactor 7)		3	1.204	250	0.006	0.012	
ASM Reactors (based on Reactor 27)		20	1.131	220	0.056	0.072	
G3 Reactors (based on Reactor 46)		21	1.097	330	0.044	0.060	
Fab 2 Epi							
ASM Reactor Scrubbers (based on Reactor 6)		2.3	1.118	80	0.0004	0.001	
Centura Reactor Scrubbers (based on Reactor 9A)		2.2	1.121	80	0.002	0.002	
				subtotals	0.108	0.147	**lbs/yr**
					avg	**max**	
			Annual HF Emissions		359.49	359.53	**lbs/yr**
					avg	**max**	
* Based on average production rates.							
** Based on maximum production rates.							

HCL Air Emissions Testing 3/31/03-5/9/03		Cl		HCl			
Fab 1		**ug/m3**	**cfm**	**lbs/yr**			
Section 8 Acid Scrubber		2.55	18000	1.55			
Acid Etch Fume Scrubber		41.3	13000	18.10			
Epi Fume Scrubber		1.36	21000	0.96			
NOx Scrubber	<	2.5	15000	1.26			
Furnace Center Exhaust (F123)		59.5	1250	2.51			
			subtotal	24.38	**lbs/yr**		
Fab 2							
HPM Scrubber		24.14	26000	21.16			
General Exhaust		1.37	88500	4.09			
			subtotal	25.24	**lbs/yr**		
					HCl*	**HCl****	
		Cl	**sample rate**	**exhaust rate**	**avg**	**max**	
Fab 1		**ug**	**l/min**	**l/min**	**lbs/yr**	**lbs/yr**	
AMT Reactors (based on Reactor 7)		20	1.204	250	0.037	0.078	
ASM Reactors (based on Reactor 27)		64	1.131	220	0.174	0.224	
G3 Reactors (based on Reactor 46)		75	1.097	330	0.153	0.211	
Fab 2							
ASM Reactor Scrubbers (based on Reactor 6)		5.2	1.118	80	0.001	0.002	
Centura Reactor Scrubbers (based on Reactor 9A)		4.2	1.121	80	0.004	0.004	
				subtotals	0.369	0.519	**lbs/yr**
					avg	**max**	
			Annual HCL Emissions		50.00	50.15	**lbs/yr**
					avg	**max**	
* Based on average production rates.							
** Based on maximum production rates.							

TO: Murray Tilson

FROM: Greg Carr

SUBJECT: Solids in Slicing Waste

DATE: March 18, 1985

I have figured the solids generated by slicing. This is the kerf loss (300 microns) times the area cut times a yield factor. I figure a 25% yield loss between slicing and material out the door. The figures are as follows:

PRODUCTION - MILLIONS of cm^2/Mo.	SOLIDS/DAY TOTAL	SOLIDS to CITY SEWER (with 16 hours Settling)
25	160	110
30 Current Rate	190	130
40	250	170
50 Installed Capacity	320	220
65 (12/85)	415	285
75 (12/86)	480	330
85 (12/87)	545	376
100 (12/88)	640	440
110 (12/89)	704	490

Greg Carr

GC/md

cc: Jim Ellis
John Pittman
File

PROCESS DESCRIPTIONS		LINE: H-P-HVL	
Process-Designation	**Wax Mounting**	**Date:**	July-06
Operation Procedure Number:	PA05.30.02/0010 PA05.30.02/0012	**Revised by:**	Volker Todt
Contained in Module	6010	Polishing	**HP-HVL**

Purpose:	Mounting silicon wafers to ceramic polishing plate
Process in Detail (containing process parametes, process-control)	**Wafer Cleaning:** Automation Technology Inc Wafer Scruber. Single wafer cleaning with PVA roller box. Cleaning solution identical to final cleaning solution; Flow: 6-8 L/min. Spin rinse drying. **Plate Cleaning** A: 10:1 DI water/Devel-A cleaning solution is used to remove wax residue from the ceramic mounting plates prior to mounting new wafers for polishing. Cleaning procedure: Brush: 100 sec. brushing with 3-5 L/min. 10:1 Devel-A solution and plastic brushes. Rinse: 4 sec. DI-water. Dry: 1 pass N_2-blowing **Wax Application** Transfer from the wafer scrubber to the wax application station by the ATI wafer handler with Gencobot robot arm. Wax application spin station rotation speeds: Thick & thin wax: 2000/2000/4000 rpm. Intermediate wax: 4000/4000/4000 rpm. wax: Nikka Seiko HF4011 (Thick & Intermediate). Nikka Seiko KN25449 (Thin). Resin based waxes with IPA & Toluene; filtered at 0.1 µm at point of use; Wax amount dispensed: 2.1 +/- 0.3 mll Wax thickness 1.5 to 4 µm; Wax Viscoscity 6.2 +/- 1.0 cP **Bake** Purpose of bake is to remove solvents from the wax; T_{bake} = 185 deg. c; t_{bake}: 30 sec. (thick & intermediate); T_{bake} +150 deg. C; t_{bake}: 30 sec. (Thin). **Mounting** Five 200 mm wafers are mounted onto a 576 mm ceramic plate from Kyorcera; no center wafers. Flip chuck drops wafer into three footed rail onto ceramic plate; T_{plate}: 104 deg. C (thick & intermediate), 92 deg. c (thin); P_{plate}: 0.2 +/- 0.02 kgf/cm2 for 3 seconds. Notch alignment: SSP: Notch In, SSP Rework: Notch Out, SDSP: Notch Out, SDSP Rework: Notch In

Machinery	Type	Cap * 200 mm	Number
	MT811 W ENYA Wafer Mounting System	53,000 wafers/month	4
(Processes which must precede or follow / other conditions)	Thickness Sorting Rough Polishing		
Remarks	Standard process		

PROCESS DESCRIPTIONS		LINE: H-P-HVL	
Process-Designation	**Rough-Polish-SF59**	**Date:**	July-06
Operation Procedure Number:	PA05.30.02/0012 and PA 05.30.02.0013	**Revised by:**	Volker Todt
Contained in Module	6010	Polishing	**HP-HVL**

Purpose:	Remove ~10 µm of damaged silicon from wafer surface and create flat wafer geometry.
Process in Detail (containing process parametes, process-control)	• Plates are robotically loaded onto the rough polishing machine, alternating between the two rough polisher of each polishing cell. • Program is selected for proper material type: Program 1: Normal first pass recipe: P-, P+, N-, N+ Program 2: Normal rework recipe: P-, P+, N-, N+ Program 3: Ultra low resistivity first pass recipe Program 4: Ultra low resistivity rework recipe • Process parameters in process order: PC1, PC2, PC3, Rinse - Pressure (kg): 50, 470, 470, 50 - Platen speed (rpm): 30, 46, 46, 30 - Cylinder speed (rpm): 30, 46, 46, 30 - Fluid: Slurry, Slurry, DI, DI - Flow rates (1/min): 12, 18, 18, 12 - Time (min:sec): 0:10, 8:00 to 12:30 (Prog. 1 & 3) or 3:35 (Prog. 2 & 4), 0:05 to 2:00, 0:05 to 0:25 • Polishing Supplies: - Cloth: Rodel Suba 1250: Filwel KS001; Rohm&Haas 800M2; pad life depending on removal rate - Slurry: 19:1 mix of DI-water and Glanzox 1101; Turbidity: 260 +/- 10 NTU; pH buffered to 10.4 +/- 0.2 with TMAH, 320 runs/batch • Taper control: Primary: Cooling water temperature, secondary: Force ring diameter

Machinery	Type	Cap *200 mm	Number
	SpeedFam 59 Rough Polishing machines	48, 000 wafers/month and cell (3-step) 62,000 wafers/month and cell (4-step) 62,000 wafers/month & cell (dual 3-step)	Type 1 (cells 1 and 2): 4 Type 2 (cells 3 and 4):4

(Processes which must precede or follow / other conditions)	Wax Mounting Intermediate Polishing
Remarks	

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PROCESS DESCRIPTIONS		LINE: H-P-HVL	
Process-Designation	**Intermediate-Polish-SF59**	**Date:**	July-06
Operation Procedure Number:	PA05.30.02/0012 and PA05.30.02/0013	**Revised by:**	Volker Todt
Contained in Module	6010	Polishing	**HP-HVL**

Purpose: Remove rough polishing damage from wafer surface and create flat wafer geometry

Process in Detail (containing process parametes, process-control)

- Plates are robotically loaded from the rough polishing machine to the intermediate polishing machine

- Program is selected for proper material type (prior to rough polish)
  - Program 1: Normal first pass recipe: P-, P+, N-, N+
  - Program 2: Normal rework recipe: P-, P+, N-, N+
  - Program 3: Ultra low resistivity first pass recipe
  - Program 4: Ultra low resistivity rework recipe

- Process parameters in process order: PC1, PC2, PC3, Rinse
  - Pressure (kg): 50, 200, 50, 35
  - Platen speed (rpm): 30, 50, 50, 50
  - Cylinder speed (rpm): 30, 50, 50, 50
  - Fluid: Slurry, Slurry, Slurry, DI
  - Flow rates (1/min): 15, 15, 15, 18
  - Time (min:sec): 0:10, 3:45 (Prog. 1 and 2) or 4:45 (Prog. 3 and 4), 1:20, 0:45

- Polishing Supplies:
  - Cloth: Rodel Suba 1600; pad life: 640 runs
  - Slurry: 39:1 mix of DI-water and Glanzox 2101; Turbidity: 160 +/- 10 NTU; 40 runs/batch

Type	Capacity 200 mm	Number
SpeedFam 59 Rough Polishing Machines	48, 000 wafers/month and cell (3-step) 62,000 wafers/month and cell (4-step) 62,000 wafers/month & cell (dual 3-step)	Type 1 (cells 1 and 2): 4 Type 2 (cells 3 and 4):4

(Processes which must

Rough Polishing
Final Polishing

Remarks

SCOEPA0055200

PROCESS DESCRIPTIONS		LINE: H-P-HVL	
Process-Designation	**Final Polishing**	**Date:**	July-06
Operation Procedure Number:	PA05.30.02/0012 and PA05.30.02/0013	**Revised by:**	Volker Todt
Contained in Module	6010	Polishing	**HP-HVL**

Purpose:	Remove intermediate polishing defects from wafer surface and create defect free wafer surface
Process in Detail (containing process parametes, process-control)	• Plates are robotically loaded from the intermediate polishing machine to the final polishing machine • Program is selected for proper material type (prior to rough polish) Program 1: Normal first pass recipe: P-, P+, N-, N+ Program 2: Normal rework recipe: P-, P+, N-, N+ Program 3: Ultra low resistivity first pass recipe Program 4: Ultra low resistivity rework recipe • Recipes 1 and 2 process parameters in order: PC1, PC2, PC3, Rinse - Pressure (kg): 35, 160, 80, 35 - Platen speed (rpm): 30, 50, 40, 40 - Cylinder speed (rpm): 30, 50, 40, 40 - Fluid: Slurry, Slurry, Slurry, DI - Flow rates (1/min): 2, 2, 2, 18 - Time (min:sec): 0:10, 3:00 (Cell 1:3:45), 0:30, 1:00 Cell 1 and 2: 2:00) • Recipes 3 and 4 process parameters in order: PC1, PC2, PC3, Rinse - Pressure (kg): 35, 190, 80, 35 - Platen speed (rpm): 30, 50, 40, 40 - Cylinder speed (rpm): 30, 50, 40, 40 - Fluid: Slurry, Slurry, Slurry, DI - Flow rates (1/min): 2, 2 2, 18 - Time (min:sec): 0:10, 4:00, 0:30, 1:00 (Cell 1 and 2: 2:00) • Polishing Supplies: - Cloth: Surfin 000; pad life: 200 runs, with lifted rinse 300 runs - Slurry: 39:1 mix of DI-water and Glanzox 3900; Turbidity: 260 +/- 10 NTU; not recycled

Machinery	Type	Capacity 200 mm	Number
	SpeedFam 59 Rough Polishing Machines	48, 000 wafers/month and cell (3-step) 62,000 wafers/month and cell (4-step) 62,000 wafers/month & cell (dual 3-step)	Type 1 (cells 1 and 2): 4 Type 2 (cells 3 and 4):4

(Processes which must	Intermediate Polishing Wafer Demounting
Remarks	

PROCESS DESCRIPTIONS		LINE: H-P-HVL	
Process-Designation	**Geometry Measurement**	**Date:**	March-06
Operation Procedure Number:		**Revised by:**	Scott Hill
Contained in Module	6050	ADE Measurement	**HP-HVL**

Purpose:	Geometry measurement for polishing machine control and measurement for customer C of C parameters
Process in Detail (containing process parametes, process-control)	• All productions are 100% measured. • Load measurement setups using barcode.

Machinery	Type	Cap * 200 mm	Number
	ADE 9700		1
	ADE 9900		1

(Processes which must precede or follow / other conditions)	100% measurement for all prime wafers (exception: CV wafers). Recipes are set up to include Warp measurement for most products.
Remarks	Standard process

SCOEPA0005520

Copy John Pittman

Department of Environmental Quality

VICTOR ATIYEH
Governor

522 S.W. FIFTH AVENUE, BOX 1760, PORTLAND, OREGON 97207 PHONE: (503) 229-5696

January 3, 1985

Chuck Findley
Environmental Protection Agency
1200 Sixth Avenue
Seattle, WA 98101

RECEIVED
JAN 9 1985
WACKER SILTRONIC
ENGINEERING

Dear Chuck:

Our staff has been reviewing with EPA staff the possible environmental impacts from past practice activities at the northern end of an industrial district in northwest Portland known as Doane's Lake. The southern end of the district includes Gould Battery, which is listed on the National Priorities List.

Wacker Siltronics owns property adjacent to the railroad bridge, on the northern side. They are planning on building an expansion of their facility between their existing plant near the River and the highway. Some initial screening of soil and groundwater sampling conducted by their consultant showed coal tar and cresote contamination in the soil, and some lesser contamination in the groundwater. Wacker has placed its plans for the expansion of the Portland facility on hold, in part due to this contamination, and in part due to the world semiconductor market.

The extent of pollution caused by past practice activities in the Doane's Lake district has always been of concern to the Department. Now that the Rhone Poulenc facility is on a long-term groundwater cleanup program, and with EPA's work at Gould, it seems the appropriate time to tackle the northern end of the district. Our timetable is, of course, speeded up by Wacker's desire to have a clean bill of health, or at least better understandi g of the risks, for the property where their plant expansion would be built.

Because of the interweaving of state and federal roles and responsibilities in this area, we believe it would be best to lay out what the federal and state responsibilities should be in addressing this Doane's Lake district. Our staff have met together several times to discuss their various ideas about the work which might need to be done. It seems to me that it would be best to finalize these discussions into written form so that both your staff and mine, along with the affected companies and property owners, know what to expect.

SCOEPA00055203

Because, as I mentioned, we want to get an answer to Wacker, and due to our own desire to better understand the possible environmental problems in the areas, I would appreciate your thoughts on this as soon as possible. We might wish to discuss at our January meeting scheduled in Seattle.

Should you have questions, please call me at (503) 229-5356.

Sincerely,

Michael J. Downs
Administrator
Hazardous and Solid Waste Division

JAG:f
RF662
cc: Wacker Siltronics
EPA, Oregon Operations
EPA, Superfund
Director's Office, DEQ
Water Quality Division, DEQ

SCOEPA00055204

MATERIAL SAFETY DATA SHEET

AND SAFE HANDLING AND DISPOSAL INFORMATION

ZEP MANUFACTURING COMPANY
FIRST IN MAINTENANCE PRODUCTS

DATE : 07/24/87 ZEP FORMULA 50
SUPERSEDES: 09/27/86 PRODUCT NUMBER: 0859

SECTION I - E M E R G E N C Y C O N T A C T S

ZEP MANUFACTURING COMPANY
P.O. BOX 2015
ATLANTA, GEORGIA 30301
TELEPHONE (404)352-1680
BETWEEN 8:00A.M.-5:00P.M.
(EASTERN TIME ZONE)

NON-OFFICE HOURS, WEEKENDS, AND HOLIDAYS:AREA CODE 404
435-2973, 996-0899, 252-1587, 351-2952, 445-9226
LOCAL POISON CONTROL CENTER .....
TRANSPORTATION EMERGENCY
CHEMTREC: TOLL FREE 1-800-424-9300 ALL CALLS RECORDED
DISTRICT OF COLUMBIA (202)483-7616 ALL CALLS RECORDED

SECTION II - H A Z A R D O U S I N G R E D I E N T S

DESIGNATIONS	TLV (PPM)	EFFECTS (SEE REVERSE)	% IN PROD.
** ETHYLENE GLYCOL MONOBUTYL ETHER ** 2-BUTOXYETHANOL; BUTYL CELLOSOLVE; CAS# 111-76-2; RTECS# KJ8575000; OSHA PEL (SKIN)-50 PPM.	25	TOX IRR CBL	< 5
** SODIUM METASILICATE ** SILICIC ACID (H2-SI-03) DI-SODIUM SALT; WATER GLASS; CAS# 6834-92-0; RTECS# VV9275000; OSHA DUST LIMIT-2MG/M3 (FOR POWDERS ONLY).	N/D	COR	< 5
** SODIUM DODECYLBENZENE SULFONATE ** LINEAR ALKYL ARYL SODIUM SULFONATE; CAS# 25155-30-0; RTECS# DB6825000; OSHA PEL N/D	N/D	IRR	< 5

Sent To
city
See John Johnson

Growing Basements Add
Domestic Drain

SPECIAL NOTE: ADVERSE HEALTH EFFECTS WOULD NOT BE EXPECTED UNDER RECOMMENDED CONDITIONS OF USE SO LONG AS PRESCRIBED SAFETY PRECAUTIONS ARE PRACTICED.

SECTION III - H E A L T H H A Z A R D D A T A

ACUTE EFFECTS OF OVEREXPOSURE:
PRODUCT IN CONCENTRATED FORM IS A SEVERE EYE IRRITANT. OVER-EXPOSURE MAY LEAD TO EYE TISSUE DAMAGE WHICH CAN BE PERMANENT. SKIN CONTACT MAY PRODUCE IRRITATION. OVER-EXPOSURE BY INHALATION MAY CAUSE RESPIRATORY IRRITATION.
INGREDIENTS IN THIS PRODUCT MAY AGGRAVATE EXISTING SKIN, EYE, OR RESPIRATORY DISORDERS.

MATERIAL SAFETY DATA SHEET

AND SAFE HANDLING AND DISPOSAL INFORMATION

DATE : 07/24/87 ZEP FORMULA 50
SUPERSEDES: 09/27/86 PRODUCT NUMBER: 0859

SECTION III - H E A L T H H A Z A R D D A T A (CONTINUED)

CHRONIC EFFECTS OF OVEREXPOSURE:
REPEATED OR PROLONGED SKIN CONTACT MAY PRODUCE CHRONIC INFLAMMATION OR DERMATITIS, CHARACTERIZED BY REDNESS, SCALING, OR ITCHING. REPEATED EYE EXPOSURE MAY PRODUCE CHRONIC INFLAMMATION OF THE EYE OR CORNEAL DAMAGE.
ANIMAL STUDIES INDICATE A POTENTIAL FOR LIVER, KIDNEY, OR RED BLOOD CELL DAMAGE. RELEVANCE OF THESE STUDIES OR EXPOSURE LEVELS WHICH MIGHT PRODUCE THESE EFFECTS IN HUMANS HAS NOT BEEN ESTABLISHED.
NONE OF THE INGREDIENTS ARE LISTED AS CARCINOGENS BY IARC, NTP, OR OSHA.

EST'D PEL/TLV: NOT ESTABLISHED PRIMARY ROUTES OF ENTRY: INH, SKIN.

HMIS CODES: HEALTH 2;FLAM. 0;REACT. 0;PERS. PROTECT. B ;CHRONIC HAZ. YES

FIRST AID PROCEDURES:
SKIN : IMMEDIATELY FLUSH CONTAMINATED SKIN WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES. GET MEDICAL ATTENTION IF IRRITATION DEVELOPS.
EYES : IMMEDIATELY FLUSH EYES WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES, OCCASIONALLY LIFTING UPPER AND LOWER LIDS. GET MEDICAL ATTENTION AT ONCE.
INHALE: MOVE EXPOSED PERSON TO FRESH AIR. IF IRRITATION PERSISTS, GET MEDICAL ATTENTION PROMPTLY.
INGEST: IF THIS PRODUCT IS SWALLOWED, DO NOT INDUCE VOMITING. IF VICTIM IS CONSCIOUS GIVE PLENTY OF WATER TO DRINK. GET MEDICAL ATTENTION AT ONCE.

SECTION IV - S P E C I A L P R O T E C T I O N I N F O R M A T I O N

PROTECTIVE CLOTHING : WEAR NITRILE GLOVES OR USE GLOVES WITH DEMONSTRATED RESISTANCE TO THE INGREDIENTS IN THIS PRODUCT.
EYE PROTECTION : WEAR TIGHT-FITTING SPLASH-PROOF SAFETY GLASSES ESPECIALLY IF CONTACT LENSES ARE WORN.
RESPIRATORY PROTECTION: KEEP FACE AWAY FROM SPRAY MIST AND DO NOT BREATHE VAPORS.
VENTILATION : IF VAPORS ARE DETECTED, VENTILATE WORK AREA BY OPENING WINDOWS AND USING EXHAUST FANS.

SECTION V - P H Y S I C A L D A T A

BOILING POINT (F)	: APPROX.220F	SPECIFIC GRAVITY	: 1.05
VAPOR PRESSURE(MMHG)	: N/D	PERCENT VOLATILE BY VOLUME (%)	: 85%
VAPOR DENSITY(AIR=1)	: N/D	EVAPORATION RATE(WATER =1)	: 1.0
SOLUBILITY IN WATER	: COMPLETE	PH(CONCENTRATE)	: 12.5-13.0
		PH(USE DILUTION OF 1% SOLUTION)	: 11.0-11.5

APPEARANCE AND ODOR :A THIN, DARK BLUE LIQUID WITH SLIGHT "BUTYL" ODOR.

SECTION VI - F I R E A N D E X P L O S I O N D A T A

FLASH POINT(F) (METHOD USED): N/D ( )
FLAMMABLE LIMITS LEL N/A UEL N/A
EXTINGUISHING MEDIA : NON-COMBUSTIBLE
SPECIAL FIRE FIGHTING: WEAR SELF-CONTAINED POSITIVE PRES. BREATHING APPARATUS.
UNUSUAL FIRE HAZARDS : NONE

SECTION VII - R E A C T I V I T Y D A T A

STABILITY : STABLE
INCOMPATIBILITY(AVOID) : STRONG ACIDS AND OXIDIZING AGENTS
POLYMERIZATION : WILL NOT OCCUR
HAZARDOUS DECOMPOSITION: CARBON DIOXIDE, CARBON MONOXIDE, AND OTHER UNIDENTIFIED ORGANIC COMPOUNDS.

SECTION VIII - S P I L L A N D D I S P O S A L P R O C E D U R E S

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
OBSERVE SAFETY PRECAUTIONS IN SECTIONS 4 & 9 DURING CLEAN-UP. ABSORB SPILL ON AN INERT ABSORBENT MATERIAL (EG ZEP-O-ZORB); PICK UP AND PLACE IN A CLEAN D.O.T. SPECIFICATION CONTAINER FOR DISPOSAL. WASH AREA THOROUGHLY WITH A DETERGENT SOLUTION AND THEN RINSE WELL WITH WATER.

WASTE DISPOSAL METHOD:
LIQUIDS CANNOT BE SENT TO LANDFILLS UNLESS SOLIDIFIED. UNUSABLE PRODUCT AND SOME COLLECTED, SPENT USE-DILUTIONS MAY REQUIRE DISPOSAL AS A HAZARDOUS WASTE AT A PERMITTED TREATMENT/STORAGE/DISPOSAL FACILITY. IN MOST STATES HAZARDOUS WASTES IN TOTAL AMOUNTS OF 220 LBS. OR LESS PER MONTH MAY BE DISPOSED OF IN A CHEMICAL OR INDUSTRIAL WASTE LANDFILL. IF COMPANY EFFLUENT IS ULTIMATELY TREATED BY A PUBLICLY OWNED TREATMENT WORKS, NEUTRALIZATION OF SPENT TANK-SOLUTIONS WITH SUBSEQUENT DISCHARGE TO THE SEWER MAY BE POSSIBLE. CONSULT LOCAL, STATE AND FEDERAL AGENCIES FOR PROPER DISPOSAL METHOD IN YOUR AREA.

RCRA HAZ. WASTE NOS.: D002 (SEE ABOVE)

SECTION IX - S P E C I A L P R E C A U T I O N S

PRECAUTIONS TO BE TAKEN WHEN HANDLING AND STORING:
STORE TIGHTLY CLOSED CONTAINER IN A DRY AREA AT TEMPERATURES BETWEEN 40 - 120 F. DEGREES.
KEEP PRODUCT AWAY FROM SKIN AND EYES.
DO NOT BREATHE SPRAY MISTS OR VAPORS.
CLOTHING OR SHOES WHICH BECOME CONTAMINATED WITH SUBSTANCE SHOULD BE REMOVED PROMPTLY AND NOT REWORN UNTIL THOROUGHLY CLEANED.
KEEP OUT OF THE REACH OF CHILDREN.

SECTION X - T R A N S P O R T A T I O N D A T A

DOT PROPER SHIPPING NAME
NONE
DOT HAZARD CLASS: N/A
DOT I.D. NUMBER : N/A DOT LABEL/PLACARD: NONE
EPA TSCA CHEMICAL INVENTORY - ALL INGREDIENTS ARE LISTED
EPA CWA 40CFR PART 117 SUBSTANCE(RQ IN A SINGLE CONTAINER): SODIUM DODECYL-BENZENE SULFONATE, 1000#

MATERIAL SAFETY DATA SHEET
COATINGS AND RESINS GROUP

SECTION I - PRODUCT INFORMATION

MANUFACTURER'S NAME: **PPG INDUSTRIES, INC.**
PRODUCT CODE/IDENTITY: **97-606 (010692E)**
CUSTOMER PART#/NAME: **97-606**
PRODUCT TRADE NAME: **VISTA GREEN FAST DRY INDUSTRIAL EN.**
CHEMICAL FAMILY: **ALKYD**

* *

SHIPPING INFORMATION

US-DOT: SHIPPING NAME/HAZARD CLASS: **PAINT, FLAMMABLE LIQUID**
UN NUMBER: **UN1263**

PPG SAFETY AND HEALTH INDEX IN-PLANT HAZARD RATINGS

HEALTH= **3***
FLAMMABILITY= **3**
REACTIVITY= **0**

0=MINIMAL 1=SLIGHT 2=MODERATE 3=SERIOUS 4=SEVERE

*=CONTAINS INGREDIENT(S) WHICH MAY CAUSE CHRONIC (LONG-TERM) HEALTH EFFECTS

EMERGENCY MEDICAL/SPILL INFO: **(304) 843-1300**

TECHNICAL INFO: AUTO REFINISH: **(216) 572-6111**
PITTSBURGH PAINTS: **(800) 441-9695**

PRODUCT SAFETY INFO: **4325 ROSANNA DRIVE, P.O. BOX 9**
ALLISON PARK, PA 15101
(412) 492-5555

DATE OF MSDS PREPARATION: **11/25/92**

* *

THIS MATERIAL SAFETY DATA SHEET HAS BEEN PREPARED IN ACCORDANCE WITH THE OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200), THE SUPPLIER NOTIFICATION REQUIREMENTS OF SARA TITLE III,SECTION 313, AND OTHER APPLICABLE RIGHT-TO-KNOW REGULATIONS. ABBREVIATIONS AND OTHER DESIGNATIONS USED ON THIS MATERIAL SAFETY DATA SHEETS INCLUDE THE FOLLOWING:

U/I = UNKNOWN INFORMATION; N/A = NOT APPLICABLE; NOT ESTAB. = NOT ESTABLISHED; CERT. LTR. = CHEMICAL O.K. ON TSCA INVENTORY; CAS NO. NOT AVAILABLE

(CUSTOMER NO.) LOCATION : 9297/606////1125

SCOEPA00055208

CONTINUATION OF MANUFACTURER'S CODE: **97-606** DATE OF PREP: 11/25/92 PAGE 2

SECTION II - INGREDIENTS AND REGULATORY INFORMATION

INGREDIENTS	CAS NUMBER	% WEIGHT	...SARA TITLE III & CERCLA CLASSIFICATIONS.... HS (102)	EHS (302)	TC+ (313)	RQ (LBS)	TPQ (LBS)	SARA 311/312 AC	CH	FL	PR	RE
IRON OXIDE	51274-00-1	2- 5	N	N	N	N/A	N/A	N	N	N	N	N
TITANIUM DIOXIDE #	13463-67-7	2- 5	N	N	N	N/A	N/A	N	Y	N	N	N
SECONDARY BUTYL ALCOHOL	78-92-2	5-10	N	N	Y	N/A	N/A	Y	N	Y	N	N
HYDROTREATED HEAVY NAPHTHA	64742-48-9	15-20	N	N	N	N/A	N/A	Y	N	Y	N	N
XYLENE	1330-20-7	1- 2	Y	N	Y	1000	N/A	Y	N	Y	N	N
TOLUENE	108-88-3	2- 5	Y	N	Y	1000	N/A	Y	N	Y	N	N
1-METHOXY-2-PROPANOL	107-98-2	10-15	N	N	N	N/A	N/A	Y	N	Y	N	N
ETHYLENE GLYCOL MONOPROPYL ETHER	2807-30-9	2- 5	N	N	Y	1	N/A	Y	Y	Y	N	N
MINERAL SPIRITS	64741-92-0	5-10	N	N	N	N/A	N/A	Y	N	Y	N	N
FILM FORMERS, RESINS, AND ADDITIVES	NOT ESTAB.	30-35	N	N	N	N/A	N/A	Y	N	N	N	N

*** THE FOLLOWING HAZARDOUS MATERIALS ARE COMPONENTS OF ONE OR MORE OF THE ABOVE INGREDIENTS ***

HEAVY METALS (% WV)	NOT ESTAB.	<1	N	N	N	N/A	N/A	N	N	N	N	N

*** THE FOLLOWING INGREDIENTS ARE REPORTABLE AS SARA SECTION 313 CHEMICAL CATEGORIES ***

GLYCOL ETHERS NOT ESTAB. 2- 5

*** OCCUPATIONAL EXPOSURE LIMITS HAVE BEEN ESTABLISHED FOR THE FOLLOWING MATERIALS ***

INGREDIENTS	.....ACGIH..... TLV-TWA	TLV-STEL	.....OSHA..... PEL-TWA	PEL-STEL	.....PPG-IPEL..... IPEL-TWA	IPEL-STEL
IRON OXIDE	5 mg/m3	NOT ESTAB	10 mg/m3	NOT ESTAB	5 mg/m3	NOT ESTAB
TITANIUM DIOXIDE #	10 mg/m3	NOT ESTAB	10 mg/m3	NOT ESTAB	10 mg/m3	NOT ESTAB
SECONDARY BUTYL ALCOHOL	100 ppm	NOT ESTAB	100 ppm	NOT ESTAB	100 ppm	150 ppm
XYLENE	100 ppm	150 ppm	100 ppm	150 ppm	100 ppm	150 ppm
TOLUENE	50 ppm - S	NOT ESTAB	100 ppm	150 ppm	50 ppm - S	NOT ESTAB
1-METHOXY-2-PROPANOL	100 ppm	150 ppm	100 ppm	150 ppm	100 ppm	150 ppm

*** SARA 311/312 CATEGORIES FOR THIS PRODUCT ***
ACUTE=Y CHRONIC=Y FLAM=Y PRESS=N REAC=N

*** PRODUCT STATUS RELATIVE TO THE US EPA TOXIC SUBSTANCES CONTROL ACT ***
ALL CHEMICAL SUBSTANCES IN THIS PRODUCT ARE LISTED ON THE TSCA INVENTORY.

*** FOOTNOTES FOR SECTION II ***

CARCINOGENIC ACCORDING TO CRITERIA ESTABLISHED BY: *=NTP **=IARC @=OSHA #=OTHER
ORAL= LD50 ORAL (RAT), (g/kg) DERM= LD50 DERMAL (RABBIT), (g/kg) INHL= LC50 INHALATION (RAT), (Mg/L)
+ INGREDIENTS IN THE TC COLUMN ARE SUBJECT TO THE REPORTING REQUIREMENTS OF SARA TITLE III. SEE 40 CFR PART 372.
C-DESIGNATES CEILING LIMIT; S-ABSORBED THROUGH INTACT SKIN; RD-VALUE IS FOR RESPIRABLE DUST

CONTINUED ON PAGE 3

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SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS

[FORMULA VALUES, NOT SALES SPECIFICATIONS]

BOILING RANGE: 98 - 242 DEG. C
VAPOR PRESSURE: 8.2mmHg
VAPOR DENSITY: HEAVIER THAN AIR
% VOL/VOLUME: 68.40
EVAP RATE(BuOAc=100): 61
SOLUBILITY IN WATER: 18.4%
WT/GAL (LBS): 8.11 (U.S.)
pH: U/I
% SOLID BY WEIGHT: 42.92
SPECIFIC GRAVITY: .97
ODOR/APPEARANCE: VISCOUS LIQUID WITH AN ODOR CHARACTERISTIC OF THE SOLVENTS LISTED IN SECTION II.

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

US-DOT CATEGORY: FLAMMABLE
FLASHPOINT: 73 DEG. F PMCC FLAMMABLE LIMITS: LEL 1.4 UEL U/I

EXTINGUISHING MEDIA:

USE NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) CLASS B EXTINGUISHERS (CARBON DIOXIDE, DRY CHEMICAL, OR UNIVERSAL AQUEOUS FILM FORMING FOAM) DESIGNED TO EXTINGUISH NFPA CLASS IB FLAMMABLE LIQUID FIRES.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

KEEP CONTAINERS TIGHTLY CLOSED. ISOLATE FROM HEAT, ELECTRICAL EQUIPMENT, SPARKS, AND OPEN FLAMES. CLOSED CONTAINERS MAY EXPLODE WHEN EXPOSED TO EXTREME HEAT. DO NOT APPLY ON HOT SURFACES. TOXIC GASES MAY FORM WHEN PRODUCT IS CONTACTED BY FLAME OR HOT SURFACES.

SPECIAL FIRE FIGHTING PROCEDURES:

WATER SPRAY MAY BE INEFFECTIVE. WATER SPRAY MAY BE USED TO COOL CLOSED CONTAINERS TO PREVENT PRESSURE BUILD-UP AND POSSIBLE AUTOIGNITION OR EXPLOSION WHEN EXPOSED TO EXTREME HEAT. IF WATER IS USED, FOG NOZZLES ARE PREFERABLE. FIRE-FIGHTERS SHOULD WEAR SELF-CONTAINED BREATHING APPARATUS.

SECTION V - REACTIVITY DATA

STABILITY: STABLE HAZARDOUS POLYMERIZATION: NOT EXPECTED TO OCCUR

INCOMPATIBILITY (MATERIALS AND CONDITIONS TO AVOID):

AVOID CONTACT WITH STRONG ALKALIES, STRONG MINERAL ACIDS, OR STRONG OXIDIZING AGENTS.

HAZARDOUS DECOMPOSITION PRODUCTS:

MAY PRODUCE HAZARDOUS DECOMPOSITION PRODUCTS WHEN HEATED. WELDING, BRAZING, OR FLAME-CUTTING MAY PRODUCE FUMES INCLUDING:

Carbon Monoxide,

SECTION VI - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

PROVIDE MAXIMUM VENTILATION. ONLY PERSONNEL EQUIPPED WITH PROPER RESPIRATORY AND SKIN AND EYE PROTECTION SHOULD BE PERMITTED IN THE AREA. REMOVE ALL SOURCES OF IGNITION. TAKE UP SPILLED MATERIAL WITH SAWDUST, VERMICULITE, OR OTHER ABSORBENT MATERIAL AND PLACE INTO CONTAINERS FOR DISPOSAL.

WASTE DISPOSAL METHOD:

WASTE MATERIAL MUST BE DISPOSED OF IN ACCORDANCE WITH FEDERAL, STATE, PROVINCIAL, AND LOCAL ENVIRONMENTAL CONTROL REGULATIONS. EMPTY CONTAINERS SHOULD BE RECYCLED OR DISPOSED OF THROUGH AN APPROVED WASTE MANAGEMENT FACILITY.

SECTION VII - HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE FROM:

INGESTION:
-HARMFUL OR FATAL IF SWALLOWED.
-DRIED FILM OF THIS PAINT MAY BE HARMFUL IF CHEWED OR SWALLOWED.

EYE CONTACT:
-CAUSES SEVERE EYE IRRITATION.

SKIN CONTACT:
-MAY CAUSE MODERATE SKIN IRRITATION.
-MAY BE ABSORBED THROUGH THE SKIN.

INHALATION:
-VAPOR AND SPRAY MIST HARMFUL IF INHALED.
-VAPOR IRRITATES EYES, NOSE, AND THROAT.
-SANDING AND GRINDING DUSTS MAY BE HARMFUL IF INHALED.
-REPEATED EXPOSURE TO HIGH VAPOR CONCENTRATIONS MAY CAUSE IRRITATION OF THE RESPIRATORY SYSTEM AND PERMANENT BRAIN AND NERVOUS SYSTEM DAMAGE.
-INTENTIONAL MISUSE BY DELIBERATELY CONCENTRATING AND INHALING THE CONTENTS CAN BE HARMFUL OR FATAL.

CHRONIC OVEREXPOSURE:

AVOID LONG TERM AND REPEATED CONTACT.
-THIS PRODUCT CONTAINS TITANIUM DIOXIDE. ANIMALS INHALING MASSIVE QUANTITIES OF TITANIUM DIOXIDE DUST IN A LONG-TERM STUDY DEVELOPED LUNG TUMORS. STUDIES WITH HUMANS INVOLVED IN MANUFACTURE OF THIS PIGMENT INDICATE NO INCREASED RISK OF CANCER FROM EXPOSURE. POTENTIAL

CONTINUED ON PAGE 4

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FOR INHALATION OF TITANIUM DIOXIDE DUSTS FROM COATINGS IS VERY LIMITED. SINCE OVEREXPOSURES ARE NOT EXPECTED, THERE IS NO SIGNIFICANT HAZARD FOR MAN.
-THIS PRODUCT CONTAINS AN ETHYLENE SERIES GLYCOL ETHER AND/OR ACETATE WHICH HAS BEEN SHOWN TO CAUSE ADVERSE EFFECTS ON THE KIDNEYS, LIVER, BLOOD AND/OR BLOOD-FORMING TISSUE. THERE IS NO CONCLUSIVE EVIDENCE OF THESE EFFECTS IN HUMANS.

SIGNS AND SYMPTOMS OF OVEREXPOSURE:
-EYE WATERING, HEADACHES, NAUSEA, DIZZINESS, AND LOSS OF COORDINATION ARE INDICATIONS THAT SOLVENT LEVELS ARE TOO HIGH.
-REDNESS, ITCHING, BURNING SENSATION AND VISUAL DISTURBANCES MAY INDICATE EXCESSIVE EYE CONTACT.
-DRYNESS, ITCHING, CRACKING, BURNING, REDNESS, AND SWELLING ARE CONDITIONS ASSOCIATED WITH EXCESSIVE SKIN CONTACT.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: NOT APPLICABLE

SECTION VIII - FIRST AID PROCEDURES

INGESTION:
IF SWALLOWED, DO NOT INDUCE VOMITING.

EYE CONTACT:
IN CASE OF EYE CONTACT, FLUSH EYES IMMEDIATELY WITH PLENTY OF WATER FOR AT LEAST 30 MINUTES.

SKIN CONTACT:
IN CASE OF SKIN CONTACT, FLUSH IMMEDIATELY WITH PLENTY OF WATER, FOLLOWED BY WATERLESS HAND CLEANER AND SOAP AND WATER IF THE MATERIAL APPEARS TO ADHERE TO SKIN.

INHALATION:
IF AFFECTED BY INHALATION OF VAPOR OR SPRAY MIST, REMOVE TO FRESH AIR. APPLY ARTIFICIAL RESPIRATION AND OTHER SUPPORTIVE MEASURES AS REQUIRED.

OTHER:
IF INGESTION, ANY TYPE OF OVEREXPOSURE OR SYMPTOMS OF OVEREXPOSURE OCCUR DURING OR FOLLOWING THE USE OF THIS PRODUCT, CONTACT A POISON CONTROL CENTER, EMERGENCY ROOM OR PHYSICIAN IMMEDIATELY; HAVE MATERIAL SAFETY DATA SHEET INFORMATION AVAILABLE.

SECTION IX - PROTECTION INFORMATION

PERSONAL PROTECTIVE EQUIPMENT FOR:

EYE PROTECTION:
WEAR CHEMICAL-TYPE SPLASH GOGGLES OR FULL FACE SHIELD WHEN POSSIBILITY EXISTS FOR EYE CONTACT DUE TO SPLASHING OR SPRAYING LIQUID, AIRBORNE PARTICLES, OR VAPORS.

SKIN PROTECTION:
WEAR PROTECTIVE CLOTHING, INCLUDING IMPERMEABLE APRON AND GLOVES CONSTRUCTED OF:
NITRILE RUBBER OR NEOPRENE RUBBER

RESPIRATORY PROTECTION:
OVEREXPOSURE TO VAPORS MAY BE PREVENTED BY ENSURING VENTILATION CONTROLS, VAPOR EXHAUST OR FRESH AIR ENTRY. NIOSH/MSHA-APPROVED (TC-23C-) AIR PURIFYING OR AIR SUPPLIED (TC-19C-) RESPIRATORS MAY ALSO REDUCE EXPOSURE. READ RESPIRATOR MANUFACTURER'S INSTRUCTIONS AND LITERATURE CAREFULLY TO DETERMINE THE TYPE OF AIRBORNE CONTAMINANTS AGAINST WHICH THE RESPIRATOR IS EFFECTIVE AND HOW IT IS TO BE PROPERLY FITTED.

OTHER EQUIPMENT:
CLEAN OR DISCARD CONTAMINATED CLOTHING AND SHOES.

VENTILATION REQUIREMENTS:
PROVIDE GENERAL DILUTION OR LOCAL EXHAUST VENTILATION IN VOLUME AND PATTERN TO KEEP THE CONCENTRATION OF INGREDIENTS LISTED IN SECTION II BELOW THE LOWEST SUGGESTED EXPOSURE LIMITS, THE LEL IN SECTION IV BELOW THE STATED LIMIT, AND TO REMOVE DECOMPOSITION PRODUCTS DURING WELDING OR FLAME CUTTING.

SECTION X - SPECIAL PRECAUTIONS

HANDLING AND STORAGE PRECAUTIONS:
DO NOT STORE ABOVE 120 DEGREES F. STORE LARGE QUANTITIES IN BUILDINGS DESIGNED AND PROTECTED FOR STORAGE OF NFPA CLASS IB FLAMMABLE LIQUIDS.

OTHER PRECAUTIONS:
IF THIS MATERIAL IS PART OF A MULTIPLE COMPONENT SYSTEM, READ THE MATERIAL SAFETY DATA SHEET(S) FOR THE OTHER COMPONENT OR COMPONENTS BEFORE BLENDING AS THE RESULTING MIXTURE MAY HAVE THE HAZARDS OF ALL OF ITS PARTS.
CONTAINERS SHOULD BE GROUNDED WHEN POURING. AVOID FREE FALL OF LIQUIDS IN EXCESS OF A FEW INCHES.

MILLER PAINT COMPANY, INC.

MANUFACTURING PLANT

12730 N.E. WHITAKER • Phone 255-0190 • PORTLAND, OREGON 97230

FAX TRANSMITTAL SHEET (Fax (503) 255-0192)

FAX # 241-7599

DATE: 12-19-91

TO: WACKER Siltronics
Kent Mayer

FROM: Cathy Hatfield
FACTORY

COMMENTS:
Kent this MSDS covers both products White 2510 Safety yellow 2523

TOTAL NUMBER OF PAGES SENT, INCLUDING THIS COVER SHEET: 4

If you do not receive all copies of this transmission please call us at 503-255-0190.

PRODUCT NAME: SPAR ENA
PRODUCT CODE: 2239 - 2[illegible]5
(OIL)

HMIS CODES: H F R P
2 2 0

SECTION I - MANUFACTURER IDENTIFICATION

MANUFACTURER'S NAME: MILLER PAINT CO., INC.
ADDRESS: 12730 N.E. Whitaker Way, Portland, OR 97230
EMERGENCY PHONE: 1-800-424-9300 INFORMATION PHONE: (503) 255-0190
DATE REVISED : 03-25-91 NAME OF PREPARER : Buckinger/Serra

SECTION II - HAZARDOUS INGREDIENTS/SARA III INFORMATION

HAZARDOUS COMPONENTS	CAS NUMBER	OCCUPATIONAL EXPOSURE LIMITS OSHA TWA	ACGIH TWA	OSHA STEL	VAPOR PRESSURE mm Hg @ TEMP		WEIGHT PERCENT
Mineral Thinner (comparable to Stoddard Solvent)	64741-41-9	100 ppm	100 ppm	none	5.0	77F	45

*** No toxic chemical(s) subject to the reporting requirements of section 313 of Title III and of 40 CFR 372 are present. ***

SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS

BOILING POINT: 335 Deg F
SPECIFIC GRAVITY (H2O=1): 1.0
VAPOR DENSITY: HEAVIER THAN AIR
EVAPORATION RATE: SLOWER THAN ETHER
SOLUBILITY IN WATER: N/A
APPEARANCE AND ODOR: N/A

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: 112 Deg F
METHOD USED: SETA
FLAMMABLE LIMITS IN AIR BY VOLUME- LOWER: 1.0% UPPER: 6.0%

EXTINGUISHING MEDIA: FOAM, ALCOHOL FOAM, CO2, DRY CHEMICAL

SPECIAL FIREFIGHTING PROCEDURES

Keep people away. Do not enter confined fire space without proper protective equipment including a NIOSH approved self-contained breathing apparatus. Cool closed containers with water. Avoid spreading burning liquid with water.

UNUSUAL FIRE AND EXPLOSION HAZARDS

Closed containers may explode when exposed to heat. Isolate from heat, sparks and electrical equip. Application to hot surfaces requires special precautions. Solvent vapors can travel to an ignition source and flash. Mists may be combustible at temp. below normal flash point. During emergency conditions, decomposition products may cause a health hazard.

SCOEPA00055213

SECTION V - REACTIVITY DATA

STABILITY: STABLE

CONDITIONS TO AVOID
Oxidizing materials, high temperatures or extreme heat.

INCOMPATIBILITY (MATERIALS TO AVOID)
May react with oxidizing materials. Avoid hot surfaces, sparks and open flame.

HAZARDOUS DECOMPOSITION OR BYPRODUCTS
Oxides of carbon, possible low molecular weight hydrocarbons, hydrogen cyanide, toluene diisocyanate or acrolein gas.

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

SECTION VI - HEALTH HAZARD DATA

INHALATION HEALTH RISKS AND SYMPTOMS OF EXPOSURE
Excessive inhalation of vapors or spray mists can cause nasal and respiratory irritation, dizziness, incoordination, dizziness, weakness, fatigue, nausea & headache. High concentrations may result in central nervous system depression.

SKIN AND EYE CONTACT HEALTH RISKS AND SYMPTOMS OF EXPOSURE
Skin: Prolonged or repeated exposure can cause moderate irritation, defatting and dermatitis.
Eyes: Severe irritation, redness, tearing and blurred vision.

SKIN ABSORPTION HEALTH RISKS AND SYMPTOMS OF EXPOSURE
May cause irritation, drying or defatting of the skin.

INGESTION HEALTH RISKS AND SYMPTOMS OF EXPOSURE
Can cause gastrointestinal irritation, nausea, vomiting and diarrhea. Aspiration of material into lungs can cause chemical pneumonitis which can be fatal.

HEALTH HAZARDS (ACUTE AND CHRONIC)
Chronic exposure may cause damage to the central nervous system, respiratory system, lungs, eyes, skin, gastrointestinal tract, liver, spleen and kidneys.

CARCINOGENICITY: NTP? NO IARC MONOGRAPHS? NO OSHA REGULATED? NO

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE
Any respiratory or skin condition may be aggravated.

EMERGENCY AND FIRST AID PROCEDURES
Inhalation: Remove to fresh air. Apply artificial respiration or administer oxygen if necessary. Consult a physician.
Splash (eyes): Flush immediately with large amounts of water for at least 15 minutes. Take to physician for treatment.
Splash (skin): Wash with soap and water. Remove contaminated clothing. Consult physician if irritation persists.
Ingestion: Keep person warm, quiet and get immediate medical attention. DO NOT induce vomiting because aspiration of material into the lungs can cause chemical pneumonitis which can be fatal.

3/25/91

======== SECTION VII PRECAUTIONS FOR SAFE HAI ING AND USE ==========

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Keep unnecessary people away. Clean up spills as soon as possible. Eliminate all sources of ignition. Use non-sparking tools. Ventilate area and wear proper protective equipment. Dike and contain spill with inert material (clay, sand etc).

WASTE DISPOSAL METHOD
Place in non-leaking containers, seal tightly and label properly for disposal. A fire or health hazard may still exist since absorbant materials will only absorb liquid; they will not absorb vapors. Observe all federal, state and local regulations concerning disposal of hazardous waste.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
Keep containers closed when not in use. Store and use only in well ventilated areas. Do not store or use near heat, spark, open flame or oxidizers. Avoid breathing vapors or spray mist. Avoid eye or skin contact. Wash thoroughly after handling. Never transfer material to an unlabeled container.

OTHER PRECAUTIONS
Read and observe precautions on product label and this sheet. Keep out of reach of children. 'Empty' containers may be hazardous from residues of product and vapor and all cautions of this sheet apply to them. Drums of this material should be grounded and bonded when pouring.

================== SECTION VIII - CONTROL MEASURES ====================

RESPIRATORY PROTECTION
Use self-contained breathing apparatus where vapor concentration may be above Threshhold Limit Value (TLV) or for spray application. Below the TLV limits, use a NIOSH-approved vapor respirator or an air line respirator with escape bottle provisions. If exposure data is lacking, assume TLV is exceeded.

VENTILATION
Local exhaust must be sufficient to keep airborne vapor concentrations below the TLV limit. Provide adequate ventilation (with explosion proof equipment) to maintain exposure below TLV.

PROTECTIVE GLOVES
Use solvent resistant gloves to prevent contact.

EYE PROTECTION
Safety eyewear including splash guards, chemical goggles of face shields recommended (required for spray application).

OTHER PROTECTIVE CLOTHING OR EQUIPMENT
Remove contaminated clothing and allow solvent to evaporate before re-use.

WORK/HYGIENIC PRACTICES
Wash hands after handling material and before eating, drinking, smoking or using the washroom.

==================== SECTION IX - DISCLAIMER ===

DISCLAIMER
The information contained in this Material Safety Data Sheet is based on the data available to us and is correct. However, we assume no responsibility for any inaccuracies that may subsequently be proven. P all risk in his use of the material even when recommended safety procedures are followed.

SECTION V - REACTIVITY DATA

STABILITY: STABLE

CONDITIONS TO AVOID

EXCESS HEAT, POOR VENTILATION, CORROSIVE ATMOSPHERES, EXCESSIVE AGING.

INCOMPATIBILITY (MATERIALS TO AVOID)

STRONG OXIDIZING MATERIALS.

HAZARDOUS DECOMPOSITION OR BYPRODUCTS

CARBON MONOXIDE,CARBON DIOXIDE,OXIDES OF NITROGEN AND POSSIBLY ACROLEIN GAS.

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

SECTION VI - HEALTH HAZARD DATA

INHALATION HEALTH RISKS AND SYMPTOMS OF EXPOSURE

DIZZINESS, NAUSEA, HEADACHE, IRRITATION AND/OR RESPIRATORY PARALYSIS.

SKIN AND EYE CONTACT HEALTH RISKS AND SYMPTOMS OF EXPOSURE

CAN DRY AND DEFAT SKIN, CAUSING CRACKS, IRRITATION AND/OR DERMATITIS. EYE CONTACT WILL CAUSE SEVERE IRRITATION, REDNESS, TEARING AND/OR BLURRED VISION.

SKIN ABSORPTION HEALTH RISKS AND SYMPTOMS OF EXPOSURE

CAN DRY AND DEFAT SKIN, CAUSING CRACKS, IRRITATION AND/OR DERMATITIS.

INGESTION HEALTH RISKS AND SYMPTOMS OF EXPOSURE

CAN CAUSE GASTROINTESTINAL IRRITATION, VOMITING, NAUSEA AND/OR DIARRHEA.

HEALTH HAZARDS (ACUTE AND CHRONIC)

INHALATION: DIZZINESS,NAUSEA,HEADACHE,IRRITATION,RESPIRATORY PARALYSIS.
EYE CONTACT: SEVERE IRRITATION, REDNESS, TEARING, AND BLURRED VISION.
SKIN CONTACT: CAN DRY AND DEFAT SKIN,CAUSING CRACKS,IRRITATION,AND DERMATITIS.
INGESTION: CAN CAUSE GASTROINTESTINAL IRRITATION,VOMITING,NAUSEA,AND DIARRHEA.

CARCINOGENICITY: NTP? NO IARC MONOGRAPHS? NO OSHA REGULATED? YES

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE

ALLERGY,RESPIRATORY IRRITATION,DERMATITIS, AND SENSITIZATION.

EMERGENCY AND FIRST AID PROCEDURES

INHALATION:REMOVE TO FRESH AIR,IF NECESSARY GIVE ARTIFICAL RESPIRATION.
EYE CONTACT: FLUSH WITH LARGE AMOUNTS OF WATER. GET MEDICAL ATTENTION.
SKIN CONTACT: WASH AFFECTED AREAS WITH SOAP AND WATER.
INGESTION: DO NOT INDUCE VOMITING. CALL FOR MEDICAL HELP IMMEDIATLY. KEEP PERSON WARM & QUIET. ASPIRATION INTO LUNGS CAN CAUSE CHEMICAL PNEUMONITIS.

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SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

REMOVE SOURCES OF IGNITION,USE RESPIRATORY PROTECTION,WEAR PROTECTIVE CLOTHING PREVENT ESCAPE OF MATERIAL FROM IMMEDIATE AREA BY USING ABSORBENT OR DIKES. .

WASTE DISPOSAL METHOD

NOTICE: THIS MATERIAL HAS CHEMICALS IN IT THAT ARE CONCIDERED TO BE HAZARDOUS BY SECTION 313 OF THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 (SARA TITLE III). DISPOSE OF WASTE IN STRICT ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REGULATIONS.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

KEEP CONTAINERS CLOSED WHEN NOT IN USE. DO NOT STORE OR HANDLE NEAR IGNITION SOURCES. FREE FALLING STREAMS OF LIQUID MAY CAUSE STATIC BUILDUP. GROUND AND ELECTRICALLY INTERCONNECT CONTAINERS WHEN TRANSFERRING. USE SPARKPROOF TOOLS.

OTHER PRECAUTIONS

SINCE CONTAINERS OF THIS MATERIAL MAY CONTAIN RESIDUES (VAPOR,LIQUID,OR SOLID) WHEN "EMPTY", ALL HAZARD PRECAUTIONS GIVEN IN THIS DATA SHEET MUST BE OBSERVED.DO NOT TAKE INTERNALLY. AVOID PROLONGED CONTACT WITH SKIN. STORE LARGE QUANTITES ONLY IN BUILDINGS DESIGNED TO COMPLY WITH OSHA 1910.106. READ AND UNDERSTAND SAFETY PRECAUTIONS BEFORE USING THIS PRODUCT.

SECTION VIII - CONTROL MEASURES

RESPIRATORY PROTECTION

IF TLV OF PRODUCT OR ANY COMPONENT IS EXCEEDED, A NIOSH APPROVED RESPIRATOR IS ADVISED IN ABSENCE OF PROPER ENVIRONMENTAL CONTROL. (SEE YOUR LOCAL SAFETY EQUIPMENT SUPPLIER).

VENTILATION

PROVIDE SUFFICIENT MECHANICAL VENTILATION TO MAINTAIN EXPOSURE BELOW TLV(S)

PROTECTIVE GLOVES

GLOVES WHICH ARE IMPERMABLE TO AROMATIC & ALIPHATIC SOLVENTS.

EYE PROTECTION

USE CHEMICAL SAFETY GLASSES,GOGGLES,AND FACESHIELDS FOR PROTECTION.

OTHER PROTECTIVE CLOTHING OR EQUIPMENT

TO PREVENT REPEATED OR PROLONGED SKIN CONTACT, WEAR IMPERVIOUS CLOTHING AND BOOTS.

WORK/HYGIENIC PRACTICES

WASH THOROUGHLY AFTER HANDLING. IF CLOTHING IS CONTAMINATED, DISCARD OR LAUNDER

SECTION IX - DISCLAIMER

DISCLAIMER

THE ABOVE INFORMATION IS BASED ON TECHNICAL DATA WHICH THE SELLER BELIEVES TO BE RELIABLE AND ARE INTENDED FOR USE BY PERSONS HAVING SKILL AND KNOWHOW, AT THEIR DISCRETION AND RISK. SELLER ASSUMES NO RESPONSIBILITY FOR RESULTS OBTAINED OR DAMAGES INCURRED FROM THEIR USE BY BUYER WHETHER AS RECOMMENDED HEREIN OR OTHERWISE.

MATERIAL SAFETY DATA SHEET

ODUCT NAME: 1925 SYNTHETIC REDUCER HMIS CODES: H F R P
ODUCT CODE: 1925 2 3 0 G

========== SECTION I - MANUFACTURER IDENTIFICATION ==========

NUFACTURER'S NAME: IMPERIAL PAINT COMPANY
DRESS: 2526 N.W. YEON AVENUE, PORTLAND, OR 97210
ERGENCY PHONE: CHEMTREC800-424-9300 INFORMATION PHONE: 503-228-0208
TE REVISED : 01-14-89 NAME OF PREPARER : RCR
ASON REVISED : UPDATE

======== SECTION II - HAZARDOUS INGREDIENTS/SARA III INFORMATION ========

DOUS COMPONENTS	CAS NUMBER	OCCUPATIONAL EXPOSURE LIMITS OSHA PEL	ACGIH TLV	VAPOR PRESSURE mm Hg @ TEMP		WEIGHT PERCENT
TYL ALCOHOL	71-36-3	100 ppm	50 ppm	4.4	68F	4
NE (mixed isomers)	1330-20-7	100 ppm	100 ppm	5.1	68F	41
ENE	108-88-3	200 ppm	100 ppm	22.0	68F	55

icates toxic chemical(s) subject to the reporting requirements of section 313 of Title III and of 40 CFR 372.
URE TO PAINT SOLVENTS WHOSE CONCENTRATION IS ABOVE THE EXPOSURE LIMITS MAY CAUSE NERVE, LIVER AND/OR KIDNEY DAMAGE.

========== SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS ==========

ING RANGE: 232 to 279 Deg F SPECIFIC GRAVITY (H2O=1): 0.9
R DENSITY: HEAVIER THAN AIR EVAPORATION RATE: SLOWER THAN ETHER
ING V.O.C. : 7.23 LB/GL (866 G/L)
RIAL V.O.C.: 7.23 LB/GL (866 G/L)
BILITY IN WATER: NOT SOLUBLE IN WATER
ARANCE AND ODOR: CLEAR LIQUID WITH SWEET XYLOL ODOR

========== SECTION IV - FIRE AND EXPLOSION HAZARD DATA ==========

H POINT: 45 Deg F METHOD USED: TCC
MABLE LIMITS IN AIR BY VOLUME- LOWER: 1.0% UPPER: 10.9%

GUISHING MEDIA: FOAM, ALCOHOL FOAM, CO2, DRY CHEMICAL, WATER FOG, OTHER

AL FIREFIGHTING PROCEDURES
-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE
NOT USE DIRECT WATER STREAM

AL FIRE AND EXPLOSION HAZARDS
ROM HEAT,SPARKS ELECTRICAL EQUIPMENT AND OPEN FLAMES. CLOSED CONTAINERS MAY EXPLODE WHEN EXPOSED TO EXTREME
ER FOG MAY BE USED TO COOL UNOPENED CONTAINERS

SCOEPA00055218

IMPERIAL PAINT COMPANY

Oregon Owned *Paint Manufacturers* *Since 1945*

MAIN OFFICE: 2526 N.W. Yeon, Portland, Oregon 97210-1895
Phone: (503) 228-0207 Fax: (503) 228-9683

FAX

DATE 12-1991 ___PAGES+COVER

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FROM _____

COMMENTS _____

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RECEIVER'S FAX NUMBER ( ) 241-7599

IMPERIAL PAINT

MATERIAL SAFETY DATA SHEET

COATINGS AND RESINS GROUP

SECTION I - PRODUCT INFORMATION

MANUFACTURER'S NAME: PPG INDUSTRIES, INC.
PRODUCT CODE/IDENTITY: 55 LINE (042390M)
CUSTOMER PART#/NAME:
PRODUCT TRADE NAME: QUICK DRY SPRAY ENAMELS
CHEMICAL FAMILY: ALKYD

SHIPPING INFORMATION
US-DOT-SHIP.NAME/HAZ.CLASS: COMPRESSED GAS, N.O.S.
UN NUMBER: N/A

IN-PLANT HAZARD RATINGS
HEALTH= 2
FLAMMABILITY= 2
REACTIVITY= 0

0=MINIMAL 1=SLIGHT 2=MODERATE 3=SERIOUS 4=SEVERE
*=CONTAINS INGREDIENT(S) WHICH MAY CAUSE (LONG-TERM) HEALTH EFFECTS

PRODUCT SAFETY INFO: 200 KAPPA DRIVE
: PITTSBURGH, PA. 15238
: (412) 492-5555
PGH. PAINTS INFO. OR MSDS: 1-800-441-9695
AUTO REFINISH INFO. OR MSDS: 1-800-245-2580, IN CH.(216) 671-0050
EMERGENCY MEDICAL INFO: (304) 843-1300
EMERGENCY SPILL INFO: (304) 843-1300
DATE OF MSDS PREPARATION: 6/01/90

THIS MATERIAL SAFETY DATA SHEET HAS BEEN PREPARED IN ACCORDANCE WITH THE OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200). THE SUPPLIER NOTIFICATION REQUIREMENTS OF SARA TITLE III, SECTION 313, AND OTHER APPLICABLE RIGHT-TO-KNOW REGULATIONS. ABBREVIATIONS AND OTHER DESIGNATIONS USED ON THIS MATERIAL SAFETY DATA SHEET INCLUDE THE FOLLOWING:

U/I = UNKNOWN INFORMATION; N/A = NOT APPLICABLE; NOT ESTAB. = NOT ESTABLISHED; CERT. LTR. = CHEMICAL O.K. ON TSCA INVENTORY; CAS NO. NOT AVAILABLE

SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS

[FORMULA VALUES, NOT SALES SPECIFICATIONS]

BOILING RANGE: -56 - 205 DEG. C
SOLUBILITY IN WATER: 0-35%
VAPOR PRESSURE: 60 mmHg
WT/GAL (LBS): 6- 8 (U.S.)
VAPOR DENSITY: HEAVIER THAN AIR
pH: U/I
% VOL/VOLUME: 84-88
% SOLID BY WEIGHT: 7-23
EVAP RATE(BuOAc=100): U/I
SPECIFIC GRAVITY: .7 - 1.0
ODOR/APPEARANCE: PRESSURIZED CAN CONTAINING PAINT AND PROPELLANTS WITH ODOR CHARACTERISTICS OF THE SOLVENTS LISTED IN SECTION II.

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

US-DOT CATEGORY: FLAMMABLE GAS
FLASHPOINT: <0 DEG. F PMCC
FLAMMABLE LIMITS: LEL 1.0 UEL U/I

EXTINGUISHING MEDIA:
USE NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) CLASS B EXTINGUISHERS (CARBON DIOXIDE, DRY CHEMICAL, OR UNIVERSAL AQUEOUS FILM FORMING FOAM) DESIGNED TO EXTINGUISH NFPA CLASS IA FLAMMABLE LIQUID FIRES.

UNUSUAL FIRE AND EXPLOSION HAZARDS:
KEEP CONTAINERS TIGHTLY CLOSED. ISOLATE FROM HEAT, ELECTRICAL EQUIPMENT, SPARKS, AND OPEN FLAMES. CLOSED CONTAINERS MAY EXPLODE WHEN EXPOSED TO EXTREME HEAT. DO NOT APPLY ON HOT SURFACES. TOXIC GASES MAY FORM WHEN PRODUCT IS CONTACTED BY FLAME OR HOT SURFACES. AEROSOL-CONTAINERS HOLD EXTREMELY FLAMMABLE GAS AND FLAMMABLE LIQUID UNDER PRESSURE.

SPECIAL FIRE FIGHTING PROCEDURES:
WATER SPRAY MAY BE INEFFECTIVE. WATER SPRAY MAY BE USED TO COOL CLOSED CONTAINERS TO PREVENT PRESSURE BUILD-UP AND POSSIBLE AUTOIGNITION OR EXPLOSION WHEN EXPOSED TO EXTREME HEAT. IF WATER IS USED, FOG NOZZLES ARE PREFERABLE. FIRE-FIGHTERS SHOULD WEAR SELF CONTAINED BREATHING APPARATUS.

SECTION V - REACTIVITY DATA

STABILITY: STABLE
HAZARDOUS POLYMERIZATION: NOT EXPECTED TO OCCUR

INCOMPATIBILITY (MATERIALS AND CONDITIONS TO AVOID):
AVOID CONTACT WITH STRONG ALKALIES, STRONG MINERAL ACIDS, OR STRONG OXIDIZING AGENTS.

HAZARDOUS DECOMPOSITION PRODUCTS:
MAY PRODUCE HAZARDOUS DECOMPOSITION PRODUCTS WHEN HEATED. WELDING, BRAZING, OR FLAME-CUTTING ON SURFACES COATED WITH THIS PRODUCT MAY PRODUCE FUMES INCLUDING: Carbon Monoxide,

SECTION VI - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
PROVIDE MAXIMUM VENTILATION. ONLY PERSONNEL EQUIPPED WITH PROPER RESPIRATORY AND SKIN AND EYE PROTECTION SHOULD BE PERMITTED IN THE AREA. REMOVE ALL SOURCES OF IGNITION. TAKE UP SPILLED MATERIAL WITH SAWDUST, VERMICULITE, OR OTHER ABSORBENT MATERIAL AND PLACE INTO CONTAINERS FOR DISPOSAL.

WASTE DISPOSAL METHOD:
WASTE MATERIAL MUST BE DISPOSED OF IN ACCORDANCE WITH FEDERAL, STATE, PROVINCIAL, AND LOCAL ENVIRONMENTAL CONTROL REGULATIONS. EMPTY CONTAINERS SHOULD BE RECYCLED OR DISPOSED OF THROUGH AN APPROVED

SECTION VII - HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE FROM:

INGESTION:
-HARMFUL OR FATAL IF SWALLOWED.

EYE CONTACT:
-CAUSES SEVERE EYE IRRITATION.

SKIN CONTACT:
-MAY CAUSE MODERATE SKIN IRRITATION. -PROLONGED OR REPEATED CONTACT MAY CAUSE AN ALLERGIC SKIN REACTION.

INHALATION:
-VAPOR AND SPRAY MIST MAY BE HARMFUL IF INHALED. -VAPOR IRRITATES EYES, NOSE, AND THROAT. -REPEATED EXPOSURE TO HIGH VAPOR CONCENTRATIONS MAY CAUSE IRRITATION OF THE RESPIRATORY SYSTEM AND PERMANENT BRAIN AND NERVOUS SYSTEM DAMAGE. -INTENTIONAL MISUSE BY DELIBERATELY CONCENTRATING AND INHALING THE CONTENTS CAN BE HARMFUL OR FATAL.

CHRONIC OVEREXPOSURE:
AVOID LONG TERM AND REPEATED CONTACT. -THIS PRODUCT CONTAINS TITANIUM DIOXIDE. ANIMALS INHALING MASSIVE QUANTITIES OF TITANIUM DIOXIDE DUST IN A LONG-TERM STUDY DEVELOPED LUNG TUMORS. STUDIES WITH HUMANS INVOLVED IN MANUFACTURE OF THIS PIGMENT INDICATE NO INCREASED RISK OF CANCER FROM EXPOSURE. POTENTIAL FOR INHALATION OF TITANIUM DIOXIDE DUSTS FROM COATINGS IS VERY LIMITED. SINCE OVEREXPOSURES ARE NOT EXPECTED, THERE IS NO SIGNIFICANT HAZARD FOR MAN.

SIGNS AND SYMPTOMS OF OVEREXPOSURE:
-EYE WATERING, HEADACHES, NAUSEA, DIZZINESS, AND LOSS OF COORDINATION ARE INDICATIONS THAT SOLVENT LEVELS ARE TOO HIGH. -REDNESS, ITCHING, BURNING SENSATION AND VISUAL DISTURBANCES MAY INDICATE EXCESSIVE EYE CONTACT. -DRYNESS, ITCHING, CRACKING, BURNING, REDNESS, AND SWELLING ARE CONDITIONS ASSOCIATED WITH EXCESSIVE SKIN CONTACT.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:
NOT APPLICABLE

SECTION VIII - FIRST AID PROCEDURES

INGESTION:
IF SWALLOWED, DO NOT INDUCE VOMITING.

EYE CONTACT:
IN CASE OF EYE CONTACT, FLUSH EYES IMMEDIATELY WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES.

SKIN CONTACT:
IN CASE OF SKIN CONTACT, REMOVE PROMPTLY BY WIPING, FOLLOWED BY WATERLESS HAND CLEANER AND SOAP AND WATER.

INHALATION:
IF AFFECTED BY INHALATION OF VAPOR OR SPRAY MIST, REMOVE TO FRESH AIR. APPLY ARTIFICIAL RESPIRATION AND OTHER SUPPORTIVE MEASURES AS REQUIRED.

OTHER:
IF ANY OF THE FOLLOWING OCCUR DURING OR FOLLOWING USE OF THIS PRODUCT, CONTACT A POISON CONTROL CENTER, EMERGENCY ROOM OR PHYSICIAN IMMEDIATELY; HAVE MATERIAL SAFETY DATA SHEET INFORMATION AVAILABLE. *INGESTION *EXCESSIVE EXPOSURE TO A CORROSIVE MATERIAL. * PERSISTENT SKIN/EYE IRRITATION OR BREATHING DIFFICULTIES.

SECTION IX - PROTECTION INFORMATION

PERSONAL PROTECTIVE EQUIPMENT FOR:

EYE PROTECTION:
WEAR CHEMICAL TYPE SPLASH GOGGLES OR FULL FACE SHIELD.

SKIN PROTECTION:
WEAR PROTECTIVE CLOTHING, INCLUDING IMPERMEABLE APRON AND GLOVES CONSTRUCTED OF: POLYVINYL ALCOHOL, LATEX RUBBER OR NITRILE RUBBER

RESPIRATORY PROTECTION:
OVEREXPOSURE TO VAPORS MAY BE PREVENTED BY ENSURING VENTILATION CONTROLS, VAPOR EXHAUST OR FRESH AIR ENTRY. NIOSH/MSHA-APPROVED (TC-23C-) PAINT SPRAY OR AIR SUPPLIED (TC-19C-) RESPIRATORS MAY ALSO REDUCE EXPOSURE. READ RESPIRATOR MANUFACTURER'S INSTRUCTIONS AND LITERATURE CAREFULLY TO DETERMINE THE TYPE OF AIRBORNE CONTAMINANTS AGAINST WHICH THE RESPIRATOR IS EFFECTIVE AND HOW IT IS TO BE PROPERLY FITTED.

OTHER EQUIPMENT:
CLEAN OR DISCARD CONTAMINATED CLOTHING AND SHOES.

VENTILATION REQUIREMENTS:
PROVIDE GENERAL DILUTION OR LOCAL EXHAUST VENTILATION IN VOLUME AND PATTERN TO KEEP THE CONCENTRATION OF INGREDIENTS LISTED IN SECTION II BELOW THE LOWEST SUGGESTED EXPOSURE LIMITS, THE LEL IN SECTION IV BELOW THE STATED LIMIT, AND TO REMOVE DECOMPOSITION PRODUCTS DURING WELDING OR FLAME CUTTING ON SURFACES COATED WITH THIS PRODUCT.

SECTION X - SPECIAL PRECAUTIONS

HANDLING AND STORAGE PRECAUTIONS:
DO NOT STORE ABOVE 120 DEGREES F. STORE LARGE QUANTITIES IN BUILDINGS DESIGNED AND PROTECTED FOR STORAGE OF NFPA CLASS IA FLAMMABLE LIQUIDS.

OTHER PRECAUTIONS:
IF THIS MATERIAL IS PART OF A MULTIPLE COMPONENT COATING SYSTEM, READ THE MATERIAL SAFETY DATA SHEET(S) FOR THE OTHER COMPONENT OR COMPONENTS BEFORE BLENDING AS THE RESULTING MIXTURE MAY HAVE THE HAZARDS OF ALL OF ITS PARTS.

0809 9055/LINE////601

55 LINE

55-5	55-310	55-321
55-9	55-311	55-324
55-70	55-312	55-326
55-302	55-313	55-327
55-305	55-315	55-328
55-306	55-316	55-329
55-307	55-317	55-330
55-308	55-318	55-516
55-309	55-319	55-7165

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CONTINUATION OF MANUFACTURER'S CODE: 55 LINE DATE OF PREP: 6/01/90 PAGE 2

SECTION II - INGREDIENTS AND REGULATORY INFORMATION

INGREDIENTS	CAS NUMBER	MAX % WEIGHT	...SARA TITLE III & CERCLA CLASSIFICATIONS.... HS (102)	EHS (302)	TC+ (313)	RQ (LBS)	TPQ (LBS)	SARA 311/312 AC	CH	FL	PR	RE
BARIUM SULFATE	7727-43-7	5-10	N	N	Y	N/A	N/A	N	N	N	N	N
SILICA, AMORPHOUS-HYDRATED	7631-86-9	2- 5	N	N	N	N/A	N/A	N	N	N	N	N
MAGNESIUM SILICATE	14807-96-6	5-10	N	N	N	N/A	N/A	N	N	N	N	N
CALCIUM CARBONATE	1317-65-3	5-10	N	N	N	N/A	N/A	Y	N	N	N	N
TITANIUM DIOXIDE #	13463-67-7	10-15	N	N	N	N/A	N/A	N	Y	N	N	N
PIGMENTS	NOT ESTAB.	10-15	N	N	N	N/A	N/A	N	N	N	N	N
ISOPROPYL ALCOHOL, ANHYDROUS	67-63-0	10-15	N	N	Y	N/A	N/A	Y	N	Y	N	N
ACETONE	67-64-1	40-45	Y	N	Y	5000	N/A	Y	N	Y	N	N
METHYL ETHYL KETONE	78-93-3	30-35	Y	N	Y	5000	N/A	Y	N	Y	N	N
ISOBUTANE	75-28-5	15-20	N	N	N	N/A	N/A	Y	N	Y	N	N
PROPANE	74-98-6	15-20	N	N	N	N/A	N/A	Y	N	Y	N	N
MEDIUM ALIPHATIC SOLVENT NAPHTHA	64742-88-7	5-10	N	N	N	N/A	N/A	Y	N	Y	N	N
LIGHT AROMATIC SOLVENT NAPHTHA	64742-95-6	40-45	N	N	N	N/A	N/A	Y	N	Y	N	N
ISOPROPYL ACETATE	108-21-4	2- 5	N	N	N	N/A	N/A	Y	N	Y	N	N
AMYL ACETATE	628-63-7	10-15	Y	N	N	5000	N/A	Y	N	Y	N	N
FILM FORMERS, RESINS, AND ADDITIVES	NOT ESTAB.	20-25	N	N	N	N/A	N/A	Y	N	N	N	N

*** THE FOLLOWING INGREDIENTS ARE REPORTABLE AS SARA SECTION 313 CHEMICAL CATEGORIES ***

BARIUM COMPOUNDS	NOT ESTAB.	5-10

*** OCCUPATIONAL EXPOSURE LIMITS HAVE BEEN ESTABLISHED FOR THE FOLLOWING MATERIALS ***

INGREDIENTS	...ACGIH... TLV-TWA	TLV-STEL	...OSHA... PEL-TWA	PEL-STEL	...PPG-IPEL... IPEL-TWA	IPEL-STEL
LICA, AMORPHOUS-HYDRATED	10 mg/m3	NOT ESTAB	6 mg/m3	NOT ESTAB	5 mg/m3	NOT ESTAB
LCIUM CARBONATE	10 mg/m3	NOT ESTAB	15 mg/m3	NOT ESTAB	10 mg/m3	NOT ESTAB
TANIUM DIOXIDE #	10 mg/m3	NOT ESTAB	15 mg/m3	NOT ESTAB	10 mg/m3	NOT ESTAB
OPROPYL ALCOHOL, ANHYDROUS	400 ppm	500 ppm	400 ppm	NOT ESTAB	400 ppm	500 ppm
ETONE	750 ppm	1,000ppm	1,000ppm	NOT ESTAB	750 ppm	1,000ppm
THYL ETHYL KETONE	200 ppm	300 ppm	200 ppm	NOT ESTAB	200 ppm	250 PPM
OPANE	NOT ESTAB	NOT ESTAB	1,000ppm	NOT ESTAB	1,000ppm	NOT ESTAB
OPROPYL ACETATE	250 ppm	310 ppm	250 ppm	NOT ESTAB	250 ppm	310 ppm
YL ACETATE	100 ppm	NOT ESTAB	100 ppm	NOT ESTAB	100 ppm	NOT ESTAB

*** SARA 311/312 CATEGORIES FOR THIS PRODUCT ***
ACUTE=Y CHRONIC=Y FLAM=Y PRESS=N REAC=N

*** PRODUCT STATUS RELATIVE TO THE US EPA TOXIC SUBSTANCES CONTROL ACT ***
ALL CHEMICAL SUBSTANCES IN THIS PRODUCT COMPLY WITH ALL APPLICABLE RULES OR ORDERS UNDER THE ENVIRONMENTAL PROTECTION AGENCY'S TOXIC SUBSTANCES CONTROL ACT.

*** FOOTNOTES FOR SECTION II ***

CARCINOGENIC ACCORDING TO CRITERIA ESTABLISHED BY: *=NTP **=IARC @=OSHA #=OTHER
ORAL= LD50 ORAL (RAT), (g/kg) DERM= LD50 DERMAL (RABBIT), (g/kg) INHL= LC50 INHALATION (RAT), (Mg/L)
+ INGREDIENTS IN THE TC COLUMN ARE SUBJECT TO THE REPORTING REQUIREMENTS OF SARA TITLE III. SEE 40 CFR PART 372.

MATERIAL SAFETY DATA SHEET

PRODUCT NAME: 1925 SYNTHETIC REDUCER
PRODUCT CODE: 1925

HMIS CODES: H F R P
2 3 0 G

SECTION I - MANUFACTURER IDENTIFICATION

MANUFACTURER'S NAME: IMPERIAL PAINT COMPANY
ADDRESS: 2526 N.W. YEON AVENUE, PORTLAND, OR 97210
EMERGENCY PHONE: CHEMTREC800-424-9300 INFORMATION PHONE: 503-228-0208
DATE REVISED : 01-14-89 NAME OF PREPARER : RCR
REASON REVISED : UPDATE

SECTION II - HAZARDOUS INGREDIENTS/SARA III INFORMATION

HAZARDOUS COMPONENTS	CAS NUMBER	OCCUPATIONAL EXPOSURE LIMITS OSHA PEL	OCCUPATIONAL EXPOSURE LIMITS ACGIH TLV	VAPOR PRESSURE mm Hg @ TEMP		WEIGHT PERCENT
*n-BUTYL ALCOHOL	71-36-3	100 ppm	50 ppm	4.4	68F	4
*XYLENE (mixed isomers)	1330-20-7	100 ppm	100 ppm	5.1	68F	41
*TOLUENE	108-88-3	200 ppm	100 ppm	22.0	68F	55

* Indicates toxic chemical(s) subject to the reporting requirements of section 313 of Title III and of 40 CFR 372.
EXPOSURE TO PAINT SOLVENTS WHOSE CONCENTRATION IS ABOVE THE EXPOSURE LIMITS MAY CAUSE NERVE, LIVER AND/OR KIDNEY DAMAGE.

SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS

BOILING RANGE: 232 to 279 Deg F SPECIFIC GRAVITY (H2O=1): 0.9
VAPOR DENSITY: HEAVIER THAN AIR EVAPORATION RATE: SLOWER THAN ETHER
COATING V.O.C. : 7.23 LB/GL (866 G/L)
MATERIAL V.O.C.: 7.23 LB/GL (866 G/L)
SOLUBILITY IN WATER: NOT SOLUBLE IN WATER
APPEARANCE AND ODOR: CLEAR LIQUID WITH SWEET XYLOL ODOR

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: 45 Deg F METHOD USED: TCC
FLAMMABLE LIMITS IN AIR BY VOLUME- LOWER: 1.0% UPPER: 10.9%

EXTINGUISHING MEDIA: FOAM, ALCOHOL FOAM, CO2, DRY CHEMICAL, WATER FOG, OTHER

SPECIAL FIREFIGHTING PROCEDURES
USE SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE. DO NOT USE DIRECT WATER STREAM

UNUSUAL FIRE AND EXPLOSION HAZARDS
ISOLATE FROM HEAT,SPARKS ELECTRICAL EQUIPMENT AND OPEN FLAMES. CLOSED CONTAINERS MAY EXPLODE WHEN EXPOSED TO EXTREME HEAT. WATER FOG MAY BE USED TO COOL UNRUPTURED CONTAINERS.

SECTION V - REACTIVITY DATA

STABILITY: STABLE

CONDITIONS TO AVOID

EXCESS HEAT, POOR VENTILATION, CORROSIVE ATMOSPHERES, EXCESSIVE AGING.

INCOMPATIBILITY (MATERIALS TO AVOID)

STRONG OXIDIZING MATERIALS.

HAZARDOUS DECOMPOSITION OR BYPRODUCTS

CARBON MONOXIDE,CARBON DIOXIDE,OXIDES OF NITROGEN AND POSSIBLY ACROLEIN GAS.

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

SECTION VI - HEALTH HAZARD DATA

INHALATION HEALTH RISKS AND SYMPTOMS OF EXPOSURE

DIZZINESS, NAUSEA, HEADACHE, IRRITATION AND/OR RESPIRATORY PARALYSIS.

SKIN AND EYE CONTACT HEALTH RISKS AND SYMPTOMS OF EXPOSURE

CAN DRY AND DEFAT SKIN, CAUSING CRACKS, IRRITATION AND/OR DERMATITIS. EYE CONTACT WILL CAUSE SEVERE IRRITATION, REDNESS, TEARING AND/OR BLURRED VISION.

SKIN ABSORPTION HEALTH RISKS AND SYMPTOMS OF EXPOSURE

CAN DRY AND DEFAT SKIN, CAUSING CRACKS, IRRITATION AND/OR DERMATITIS.

INGESTION HEALTH RISKS AND SYMPTOMS OF EXPOSURE

CAN CAUSE GASTROINTESTINAL IRRITATION, VOMITING, NAUSEA AND/OR DIARRHEA.

HEALTH HAZARDS (ACUTE AND CHRONIC)

INHALATION: DIZZINESS,NAUSEA,HEADACHE,IRRITATION,RESPIRATORY PARALYSIS.
EYE CONTACT: SEVERE IRRITATION, REDNESS, TEARING, AND BLURRED VISION.
SKIN CONTACT: CAN DRY AND DEFAT SKIN,CAUSING CRACKS,IRRITATION,AND DERMATITIS.
INGESTION: CAN CAUSE GASTROINTESTINAL IRRITATION,VOMITING,NAUSEA,AND DIARRHEA.

CARCINOGENICITY: NTP? NO IARC MONOGRAPHS? NO OSHA REGULATED? YES

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE

ALLERGY,RESPIRATORY IRRITATION,DERMATITIS, AND SENSITIZATION.

EMERGENCY AND FIRST AID PROCEDURES

INHALATION:REMOVE TO FRESH AIR,IF NECESSARY GIVE ARTIFICAL RESPIRATION.
EYE CONTACT: FLUSH WITH LARGE AMOUNTS OF WATER. GET MEDICAL ATTENTION.
SKIN CONTACT: WASH AFFECTED AREAS WITH SOAP AND WATER.
INGESTION: DO NOT INDUCE VOMITING. CALL FOR MEDICAL HELP IMMEDIATLY. KEEP PERSON WARM & QUIET. ASPIRATION INTO LUNGS CAN CAUSE CHEMICAL PNEUMONITIS.

========== SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE ==========

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

REMOVE SOURCES OF IGNITION,USE RESPIRATORY PROTECTION,WEAR PROTECTIVE CLOTHING PREVENT ESCAPE OF MATERIAL FROM IMMEDIATE AREA BY USING ABSORBENT OR DIKES.

WASTE DISPOSAL METHOD

*NOTICE: THIS MATERIAL HAS CHEMICALS IN IT THAT ARE CONCIDERED TO BE HAZARDOUS BY SECTION 313 OF THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 (SARA TITLE III). DISPOSE OF WASTE IN STRICT ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REGULATIONS.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

KEEP CONTAINERS CLOSED WHEN NOT IN USE. DO NOT STORE OR HANDLE NEAR IGNITION SOURCES. FREE FALLING STREAMS OF LIQUID MAY CAUSE STATIC BUILDUP. GROUND AND ELECTRICALLY INTERCONNECT CONTAINERS WHEN TRANSFERRING. USE SPARKPROOF TOOLS.

OTHER PRECAUTIONS

SINCE CONTAINERS OF THIS MATERIAL MAY CONTAIN RESIDUES (VAPOR,LIQUID,OR SOLID) WHEN "EMPTY", ALL HAZARD PRECAUTIONS GIVEN IN THIS DATA SHEET MUST BE OBSERVED.DO NOT TAKE INTERNALLY. AVOID PROLONGED CONTACT WITH SKIN. STORE LARGE QUANTITES ONLY IN BUILDINGS DESIGNED TO COMPLY WITH OSHA 1910.106. READ AND UNDERSTAND SAFETY PRECAUTIONS BEFORE USING THIS PRODUCT.

========== SECTION VIII - CONTROL MEASURES ==========

RESPIRATORY PROTECTION

IF TLV OF PRODUCT OR ANY COMPONENT IS EXCEEDED, A NIOSH APPROVED RESPIRATOR IS ADVISED IN ABSENCE OF PROPER ENVIRONMENTAL CONTROL. (SEE YOUR LOCAL SAFETY EQUIPMENT SUPPLIER).

VENTILATION

PROVIDE SUFFICIENT MECHANICAL VENTILATION TO MAINTAIN EXPOSURE BELOW TLV(S)

PROTECTIVE GLOVES

GLOVES WHICH ARE IMPERMABLE TO AROMATIC & ALIPHATIC SOLVENTS.

EYE PROTECTION

USE CHEMICAL SAFETY GLASSES,GOGGLES,AND FACESHIELDS FOR PROTECTION.

OTHER PROTECTIVE CLOTHING OR EQUIPMENT

TO PREVENT REPEATED OR PROLONGED SKIN CONTACT, WEAR IMPERVIOUS CLOTHING AND BOOTS.

WORK/HYGIENIC PRACTICES

WASH THOROUGHLY AFTER HANDLING. IF CLOTHING IS CONTAMINATED, DISCARD OR LAUNDER

========== SECTION IX - DISCLAIMER ==========

DISCLAIMER

THE ABOVE INFORMATION IS BASED ON TECHNICAL DATA WHICH THE SELLER BELIEVES TO BE RELIABLE AND ARE INTENDED FOR USE BY PERSONS HAVING SKILL AND KNOWHOW, AT THEIR DISCRETION AND RISK. SELLER ASSUMES NO RESPONSIBILITY FOR RESULTS OBTAINED OR DAMAGES INCURRED FROM THEIR USE BY BUYER WHETHER AS RECOMMENDED HEREIN OR OTHERWISE.

SCOEPA00055224

MATERIAL SA Y DATA SHEET

COATINGS AND RESINS GROUP

SECTION I - PRODUCT INFORMATION

MANUFACTURER'S NAME: PPG INDUSTRIES, INC.
PRODUCT CODE/IDENTITY: 55 LINE (042390M)
CUSTOMER PART#/NAME:
PRODUCT TRADE NAME: QUICK DRY SPRAY ENAMELS
CHEMICAL FAMILY: ALKYD

SHIPPING INFORMATION
US-DOT-SHIP.NAME\HAZ.CLASS: COMPRESSED GAS, N.O.S.
UN NUMBER: N/A

IN-PLANT HAZARD RATINGS
HEALTH= 2
FLAMMABILITY= 2
REACTIVITY= 0

0=MINIMAL 1=SLIGHT 2=MODERATE 3=SERIOUS 4=SEVERE
*=CONTAINS INGREDIENT(S) WHICH MAY CAUSE (LONG-TERM) HEALTH EFFECTS

PRODUCT SAFETY INFO: 3800 KAPPA DRIVE
: PITTSBURGH, PA. 15238
: (412) 492-5555
PGH. PAINTS INFO. OR MSDS: 1-800-441-9695
AUTO REFINISH INFO. OR MSDS: 1-800-248-2590, IN OH.(216) 671-0050
EMERGENCY MEDICAL INFO: (304) 843-1300
EMERGENCY SPILL INFO: (304) 843-1300
DATE OF MSDS PREPARATION: 6/01/90

THIS MATERIAL SAFETY DATA SHEET HAS BEEN PREPARED IN ACCORDANCE WITH THE OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200). THE SUPPLIER NOTIFICATION REQUIREMENTS OF SARA TITLE III, SECTION 313, AND OTHER APPLICABLE RIGHT-TO-KNOW REGULATIONS. ABBREVIATIONS AND OTHER DESIGNATIONS USED ON THIS MATERIAL SAFETY DATA SHEET INCLUDE THE FOLLOWING:

U/I = UNKNOWN INFORMATION; N/A = NOT APPLICABLE; NOT ESTAB. = NOT ESTABLISHED; CERT. LTR. = CHEMICAL O.K. ON TSCA INVENTORY; CAS NO. NOT AVAILABLE

SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS

(FORMULA VALUES, NOT SALES SPECIFICATIONS)

BOILING RANGE: -56 - 205 DEG. C
VAPOR PRESSURE: 80 mmHg
VAPOR DENSITY: HEAVIER THAN AIR
% VOL/VOLUME: 64-69
EVAP RATE(BuOAc=100): U/I
SOLUBILITY IN WATER: 0-35%
WT/GAL (LBS): 6- 8 (U.S.)
pH: U/I
% SOLID BY WEIGHT: 7-23
SPECIFIC GRAVITY: .7 - 1.0
ODOR/APPEARANCE: PRESSURIZED CAN CONTAINING PAINT AND PROPELLANTS WITH ODOR CHARACTERISTICS OF THE SOLVENTS LISTED IN SECTION II.

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

US-DOT CATEGORY: FLAMMABLE GAS
FLASHPOINT: <0 DEG. F PMCC
FLAMMABLE LIMITS: LEL 1.0 UEL U/I

EXTINGUISHING MEDIA:
USE NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) CLASS B EXTINGUISHERS (CARBON DIOXIDE, DRY CHEMICAL, OR UNIVERSAL AQUEOUS FILM FORMING FOAM) DESIGNED TO EXTINGUISH NFPA CLASS IA FLAMMABLE LIQUID FIRES.

UNUSUAL FIRE AND EXPLOSION HAZARDS:
KEEP CONTAINERS TIGHTLY CLOSED. ISOLATE FROM HEAT, ELECTRICAL EQUIPMENT, SPARKS, AND OPEN FLAMES. CLOSED CONTAINERS MAY EXPLODE WHEN EXPOSED TO EXTREME HEAT. DO NOT APPLY ON HOT SURFACES. TOXIC GASES MAY FORM WHEN PRODUCT IS CONTACTED BY FLAME OR HOT SURFACES. AEROSOL CONTAINERS HOLD EXTREMELY FLAMMABLE GAS AND FLAMMABLE LIQUID UNDER PRESSURE.

SPECIAL FIRE FIGHTING PROCEDURES:
WATER SPRAY MAY BE INEFFECTIVE. WATER SPRAY MAY BE USED TO COOL CLOSED CONTAINERS TO PREVENT PRESSURE BUILD-UP AND POSSIBLE AUTOIGNITION OR EXPLOSION WHEN EXPOSED TO EXTREME HEAT. IF WATER IS USED, FOG NOZZLES ARE PREFERABLE. FIRE-FIGHTERS SHOULD WEAR SELF CONTAINED BREATHING APPARATUS.

SECTION V - REACTIVITY DATA

STABILITY: STABLE
HAZARDOUS POLYMERIZATION: NOT EXPECTED TO OCCUR

INCOMPATIBILITY (MATERIALS AND CONDITIONS TO AVOID):
AVOID CONTACT WITH STRONG ALKALIES, STRONG MINERAL ACIDS, OR STRONG OXIDIZING AGENTS.

HAZARDOUS DECOMPOSITION PRODUCTS:
MAY PRODUCE HAZARDOUS DECOMPOSITION PRODUCTS WHEN HEATED. WELDING, BRAZING, OR FLAME-CUTTING ON SURFACES COATED WITH THIS PRODUCT MAY PRODUCE FUMES INCLUDING: Carbon Monoxide.

SECTION VI - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
PROVIDE MAXIMUM VENTILATION. ONLY PERSONNEL EQUIPPED WITH PROPER RESPIRATORY AND SKIN AND EYE PROTECTION SHOULD BE PERMITTED IN THE AREA. REMOVE ALL SOURCES OF IGNITION. TAKE UP SPILLED MATERIAL WITH SAWDUST, VERMICULITE, OR OTHER ABSORBENT MATERIAL AND PLACE INTO CONTAINERS FOR DISPOSAL.

WASTE DISPOSAL METHOD:
WASTE MATERIAL MUST BE DISPOSED OF IN ACCORDANCE WITH FEDERAL, STATE, PROVINCIAL, AND LOCAL ENVIRONMENTAL CONTROL REGULATIONS. EMPTY CONTAINERS SHOULD BE RECYCLED OR DISPOSED OF THROUGH AN APPROVED WASTE MANAGEMENT FACILITY.

SECTION VII - HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE FROM:

INGESTION:
-HARMFUL OR FATAL IF SWALLOWED.

EYE CONTACT:
-CAUSES SEVERE EYE IRRITATION.

SKIN CONTACT:
-MAY CAUSE MODERATE SKIN IRRITATION. -PROLONGED OR REPEATED CONTACT MAY AN ALLERGIC SKIN REACTION.

INHALATION:
-VAPOR AND SPRAY MIST MAY BE HARMFUL IF INHALED. -VAPOR IRRITATES EYES, NOS THROAT, -REPEATED EXPOSURE TO HIGH VAPOR CONCENTRATIONS MAY CAUSE IRRI OF THE RESPIRATORY SYSTEM AND PERMANENT BRAIN AND NERVOUS SYSTEM DA -INTENTIONAL MISUSE BY DELIBERATELY CONCENTRATING AND INHALING THE CONTE BE HARMFUL OR FATAL.

CHRONIC OVEREXPOSURE:
AVOID LONG TERM AND REPEATED CONTACT. -THIS PRODUCT CONTAINS TITANIUM DI ANIMALS INHALING MASSIVE QUANTITIES OF TITANIUM DIOXIDE DUST IN A LONG-TERM DEVELOPED LUNG TUMORS. STUDIES WITH HUMANS INVOLVED IN MANUFACTURE O PIGMENT INDICATE NO INCREASED RISK OF CANCER FROM EXPOSURE. POTENTIA INHALATION OF TITANIUM DIOXIDE DUSTS FROM COATINGS IS VERY LIMITED. OVEREXPOSURES ARE NOT EXPECTED, THERE IS NO SIGNIFICANT HAZARD FOR MAN.

SIGNS AND SYMPTOMS OF OVEREXPOSURE:
-EYE WATERING, HEADACHES, NAUSEA, DIZZINESS, AND LOSS OF COORDINATION INDICATIONS THAT SOLVENT LEVELS ARE TOO HIGH. -REDNESS, ITCHING, BURNING SENS AND VISUAL DISTURBANCES MAY INDICATE EXCESSIVE EYE CONTACT. -DRYNESS, ITC CRACKING, BURNING, REDNESS, AND SWELLING ARE CONDITIONS ASSOCIATED EXCESSIVE SKIN CONTACT.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:
NOT APPLICABLE

SECTION VIII - FIRST AID PROCEDURES

INGESTION:
IF SWALLOWED, DO NOT INDUCE VOMITING.

EYE CONTACT:
IN CASE OF EYE CONTACT, FLUSH EYES IMMEDIATELY WITH PLENTY OF WATER FO LEAST 15 MINUTES.

SKIN CONTACT:
IN CASE OF SKIN CONTACT, REMOVE PROMPTLY BY WIPING, FOLLOWED BY WATERLESS H CLEANER AND SOAP AND WATER.

INHALATION:
IF AFFECTED BY INHALATION OF VAPOR OR SPRAY MIST, REMOVE TO FRESH AIR. A ARTIFICIAL RESPIRATION AND OTHER SUPPORTIVE MEASURES AS REQUIRED.

OTHER:
IF ANY OF THE FOLLOWING OCCUR DURING OR FOLLOWING USE OF THIS PROD CONTACT A POISON CONTROL CENTER, EMERGENCY ROOM OR PHYSICIAN IMMEDIA HAVE MATERIAL SAFETY DATA SHEET INFORMATION AVAILABLE. *INGESTION *EXCES EXPOSURE TO A CORROSIVE MATERIAL. * PERSISTENT SKIN/EYE IRRITATION OR BREAT DIFFICULTIES.

SECTION IX - PROTECTION INFORMATION

PERSONAL PROTECTIVE EQUIPMENT FOR:

EYE PROTECTION:
WEAR CHEMICAL-TYPE SPLASH GOGGLES OR FULL FACE SHIELD.

SKIN PROTECTION:
WEAR PROTECTIVE CLOTHING, INCLUDING IMPERMEABLE APRON AND GLOVES CONSTRUC OF: POLYVINYL ALCOHOL, LATEX RUBBER OR NITRILE RUBBER

RESPIRATORY PROTECTION:
OVEREXPOSURE TO VAPORS MAY BE PREVENTED BY ENSURING VENTILATION CONTR VAPOR EXHAUST OR FRESH AIR ENTRY. NIOSH/MSHA-APPROVED (TC-23C-) PAINT SPRA AIR SUPPLIED (TC-19C-) RESPIRATORS MAY ALSO REDUCE EXPOSURE. READ RESPIRA MANUFACTURER'S INSTRUCTIONS AND LITERATURE CAREFULLY TO DETERMINE THE TYP AIRBORNE CONTAMINANTS AGAINST WHICH THE RESPIRATOR IS EFFECTIVE AND HOW TO BE PROPERLY FITTED.

OTHER EQUIPMENT:
CLEAN OR DISCARD CONTAMINATED CLOTHING AND SHOES.

VENTILATION REQUIREMENTS:
PROVIDE GENERAL DILUTION OR LOCAL EXHAUST VENTILATION IN VOLUME AND PATTERN KEEP THE CONCENTRATION OF INGREDIENTS LISTED IN SECTION II BELOW THE LOW SUGGESTED EXPOSURE LIMITS, THE LEL IN SECTION IV BELOW THE STATED LIMIT, AND REMOVE DECOMPOSITION PRODUCTS DURING WELDING OR FLAME CUTTING ON SURFA COATED WITH THIS PRODUCT.

SECTION X - SPECIAL PRECAUTIONS

HANDLING AND STORAGE PRECAUTIONS:
DO NOT STORE ABOVE 120 DEGREES F. STORE LARGE QUANTITIES IN BUILDINGS DESIGN AND PROTECTED FOR STORAGE OF NFPA CLASS IA FLAMMABLE LIQUIDS.

OTHER PRECAUTIONS:
IF THIS MATERIAL IS PART OF A MULTIPLE COMPONENT COATING SYSTEM, READ MATERIAL SAFETY DATA SHEET(S) FOR THE OTHER COMPONENT OR COMPONENTS BEF BLENDING AS THE RESULTING MIXTURE MAY HAVE THE HAZARDS OF ALL OF ITS PARTS

0809 8058/LINE///801

55 LINE

55-5	55-310	55-321
55-9	55-311	55-324
55-70	55-312	55-326
55-302	55-313	55-327
55-305	55-315	55-328
55-306	55-316	55-329
55-307	55-317	55-330
55-308	55-318	55-516
55-309	55-319	55-7165

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SECTION II - INGREDIENTS AND REGULATORY INFORMATION

INGREDIENTS	CAS NUMBER	MAX % WEIGHT	...SARA TITLE III & CERCLA CLASSIFICATIONS.... HS (102)	EHS (302)	TC+ (313)	RQ (LBS)	TPQ (LBS)	SARA 311/312 AC	CH	FL	PR	RE
BARIUM SULFATE	7727-43-7	5-10	N	N	Y	N/A	N/A	N	N	N	N	N
SILICA, AMORPHOUS-HYDRATED	7631-86-9	2- 5	N	N	N	N/A	N/A	N	N	N	N	N
MAGNESIUM SILICATE	14807-96-6	5-10	N	N	N	N/A	N/A	N	N	N	N	N
CALCIUM CARBONATE	1317-65-3	5-10	N	N	N	N/A	N/A	Y	N	N	N	N
TITANIUM DIOXIDE #	13463-67-7	10-15	N	N	N	N/A	N/A	N	Y	N	N	N
PIGMENTS	NOT ESTAB.	10-15	N	N	N	N/A	N/A	N	N	N	N	N
ISOPROPYL ALCOHOL, ANHYDROUS	67-63-0	10-15	N	N	Y	N/A	N/A	Y	N	Y	N	N
ACETONE	67-64-1	40-45	Y	N	Y	5000	N/A	Y	N	Y	N	N
METHYL ETHYL KETONE	78-93-3	30-35	Y	N	Y	5000	N/A	Y	N	Y	N	N
ISOBUTANE	75-28-5	15-20	N	N	N	N/A	N/A	Y	N	Y	N	N
PROPANE	74-98-6	15-20	N	N	N	N/A	N/A	Y	N	Y	N	N
MEDIUM ALIPHATIC SOLVENT NAPHTHA	64742-88-7	5-10	N	N	N	N/A	N/A	Y	N	Y	N	N
LIGHT AROMATIC SOLVENT NAPHTHA	64742-95-6	40-45	N	N	N*	N/A	N/A	Y	N	Y	N	N
ISOPROPYL ACETATE	108-21-4	2- 5	N	N	N	N/A	N/A	Y	N	Y	N	N
AMYL ACETATE	628-63-7	10-15	Y	N	N	5000	N/A	Y	N	Y	N	N
FILM FORMERS, RESINS, AND ADDITIVES	NOT ESTAB.	20-25	N	N	N	N/A	N/A	Y	N	N	N	N

*** THE FOLLOWING INGREDIENTS ARE REPORTABLE AS SARA SECTION 313 CHEMICAL CATEGORIES ***

BARIUM COMPOUNDS	NOT ESTAB.	5-10

*** OCCUPATIONAL EXPOSURE LIMITS HAVE BEEN ESTABLISHED FOR THE FOLLOWING MATERIALS ***

INGREDIENTS	.....ACGIH..... TLV-TWA	TLV-STEL	.....OSHA..... PEL-TWA	PEL-STEL	.....PPG-IPEL..... IPEL-TWA	IPEL-STEL
LICA, AMORPHOUS-HYDRATED	10 mg/m3	NOT ESTAB	6 mg/m3	NOT ESTAB	5 mg/m3	NOT ESTAB
LCIUM CARBONATE	10 mg/m3	NOT ESTAB	15 mg/m3	NOT ESTAB	10 mg/m3	NOT ESTAB
TANIUM DIOXIDE #	10 mg/m3	NOT ESTAB	15 mg/m3	NOT ESTAB	10 mg/m3	NOT ESTAB
OPROPYL ALCOHOL, ANHYDROUS	400 ppm	500 ppm	400 ppm	NOT ESTAB	400 ppm	500 ppm
ETONE	750 ppm	1,000ppm	1,000ppm	NOT ESTAB	750 ppm	1,000ppm
THYL ETHYL KETONE	200 ppm	300 ppm	200 ppm	NOT ESTAB	200 ppm	250 PPM
OPANE	NOT ESTAB	NOT ESTAB	1,000ppm	NOT ESTAB	1,000ppm	NOT ESTAB
OPROPYL ACETATE	250 ppm	310 ppm	250 ppm	NOT ESTAB	250 ppm	310 ppm
YL ACETATE	100 ppm	NOT ESTAB	100 ppm	NOT ESTAB	100 ppm	NOT ESTAB

*** SARA 311/312 CATEGORIES FOR THIS PRODUCT ***
ACUTE=Y CHRONIC=Y FLAM=Y PRESS=N REAC=N

*** PRODUCT STATUS RELATIVE TO THE US EPA TOXIC SUBSTANCES CONTROL ACT ***
ALL CHEMICAL SUBSTANCES IN THIS PRODUCT COMPLY WITH ALL APPLICABLE RULES OR ORDERS UNDER THE ENVIRONMENTAL PROTECTION AGENCY'S TOXIC SUBSTANCES CONTROL ACT.

*** FOOTNOTES FOR SECTION II ***
CARCINOGENIC ACCORDING TO CRITERIA ESTABLISHED BY: *=NTP **=IARC @=OSHA #=OTHER
ORAL= LD50 ORAL (RAT), (g/kg) DERM= LD50 DERMAL (RABBIT), (g/kg) INHL= LC50 INHALATION (RAT), (Mg/L)
+ INGREDIENTS IN THE TC COLUMN ARE SUBJECT TO THE REPORTING REQUIREMENTS OF SARA TITLE III. SEE 40 CFR PART 372.

COATINGS AND RESINS GROUP

SECTION I - PRODUCT INFORMATION

MANUFACTURER'S NAME: PPG INDUSTRIES, INC.
PRODUCT CODE/IDENTITY: 55 LINE (042390M)
CUSTOMER PART#/NAME:
PRODUCT TRADE NAME: [redacted]
CHEMICAL FAMILY: ALKYD

SHIPPING INFORMATION
US-DOT-SHIP.NAME/HAZ.CLASS: COMPRESSED GAS, N.O.S.
UN NUMBER: N/A

IN-PLANT HAZARD RATINGS
HEALTH= 2
FLAMMABILITY= 2
REACTIVITY= 0

0=MINIMAL 1=SLIGHT 2=MODERATE 3=SERIOUS 4=SEVERE
*=CONTAINS INGREDIENT(S) WHICH MAY CAUSE (LONG-TERM) HEALTH EFFECTS

PRODUCT SAFETY INFO: 260 KAPPA DRIVE
: PITTSBURGH, PA. 15238
: (412) 492-5555
PGH. PAINTS INFO. OR MSDS: 1-800-441-9695
AUTO REFINISH INFO. OR MSDS: 1-800-245-2590, IN OH.(216) 671-0050
EMERGENCY MEDICAL INFO: (304) 843-1300
EMERGENCY SPILL INFO: (304) 843-1300
DATE OF MSDS PREPARATION: 6/01/90

THIS MATERIAL SAFETY DATA SHEET HAS BEEN PREPARED IN ACCORDANCE WITH THE OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200). THE SUPPLIER NOTIFICATION REQUIREMENTS OF SARA TITLE III, SECTION 313, AND OTHER APPLICABLE RIGHT-TO-KNOW REGULATIONS. ABBREVIATIONS AND OTHER DESIGNATIONS USED ON THIS MATERIAL SAFETY DATA SHEET INCLUDE THE FOLLOWING:

U/I = UNKNOWN INFORMATION; N/A = NOT APPLICABLE; NOT ESTAB. = NOT ESTABLISHED; CERT. LTR. = CHEMICAL O.K. ON TSCA INVENTORY; CAS NO. NOT AVAILABLE

SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS

(FORMULA VALUES, NOT SALES SPECIFICATIONS)

BOILING RANGE: -56 - 205 DEG. C
VAPOR PRESSURE: 60 mmHg
VAPOR DENSITY: HEAVIER THAN AIR
% VOL/VOLUME: 84-95
EVAP. RATE(BuOAc=100): U/I
SOLUBILITY IN WATER: 0-35%
WT/GAL (LBS): 6-9 (U.S.)
pH: U/I
% SOLID BY WEIGHT: 7-23
SPECIFIC GRAVITY: 7 - 10
ODOR/APPEARANCE: PRESSURIZED CAN CONTAINING PAINT AND PROPELLANTS WITH ODOR CHARACTERISTICS OF THE SOLVENTS LISTED IN SECTION II.

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

US-DOT CATEGORY: FLAMMABLE GAS
FLASHPOINT: <0 DEG. F PMCC
FLAMMABLE LIMITS: LEL 1.0 UEL U/I

EXTINGUISHING MEDIA:
USE NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) CLASS B EXTINGUISHERS (CARBON DIOXIDE, DRY CHEMICAL OR UNIVERSAL AQUEOUS FILM FORMING FOAM) DESIGNED TO EXTINGUISH NFPA CLASS IA FLAMMABLE LIQUID FIRES.
UNUSUAL FIRE AND EXPLOSION HAZARDS:
KEEP CONTAINERS TIGHTLY CLOSED. ISOLATE FROM HEAT, ELECTRICAL EQUIPMENT, SPARKS, AND OPEN FLAMES. CLOSED CONTAINERS MAY EXPLODE WHEN EXPOSED TO EXTREME HEAT. DO NOT APPLY ON HOT SURFACES. TOXIC GASES MAY FORM WHEN PRODUCT IS CONTACTED BY FLAME OR HOT SURFACES. AEROSOL-CONTAINERS HOLD EXTREMELY FLAMMABLE GAS AND FLAMMABLE LIQUID UNDER PRESSURE.
SPECIAL FIRE FIGHTING PROCEDURES:
WATER SPRAY MAY BE INEFFECTIVE. WATER SPRAY MAY BE USED TO COOL CLOSED CONTAINERS TO PREVENT PRESSURE BUILD-UP AND POSSIBLE AUTOIGNITION OR EXPLOSION WHEN EXPOSED TO EXTREME HEAT. IF WATER IS USED, FOG NOZZLES ARE PREFERABLE. FIRE-FIGHTERS SHOULD WEAR SELF CONTAINED BREATHING APPARATUS.

SECTION V - REACTIVITY DATA

STABILITY: STABLE
HAZARDOUS POLYMERIZATION: NOT EXPECTED TO OCCUR
INCOMPATIBILITY (MATERIALS AND CONDITIONS TO AVOID):
AVOID CONTACT WITH STRONG ALKALIES, STRONG MINERAL ACIDS, OR STRONG OXIDIZING AGENTS.
HAZARDOUS DECOMPOSITION PRODUCTS:
MAY PRODUCE HAZARDOUS DECOMPOSITION PRODUCTS WHEN HEATED. WELDING, BRAZING, OR FLAME-CUTTING ON SURFACES COATED WITH THIS PRODUCT MAY PRODUCE FUMES INCLUDING: Carbon Monoxide.

SECTION VI - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
PROVIDE MAXIMUM VENTILATION. ONLY PERSONNEL EQUIPPED WITH PROPER RESPIRATORY AND SKIN AND EYE PROTECTION SHOULD BE PERMITTED IN THE AREA. REMOVE ALL SOURCES OF IGNITION. TAKE UP SPILLED MATERIAL WITH SAWDUST, VERMICULITE, OR OTHER ABSORBENT MATERIAL AND PLACE INTO CONTAINERS FOR DISPOSAL.
WASTE DISPOSAL METHOD:
WASTE MATERIAL MUST BE DISPOSED OF IN ACCORDANCE WITH FEDERAL, STATE, PROVINCIAL, AND LOCAL ENVIRONMENTAL CONTROL REGULATIONS. EMPTY CONTAINERS SHOULD BE RECYCLED OR DISPOSED OF THROUGH AN APPROVED WASTE MANAGEMENT FACILITY.

SECTION VII - HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE FROM:

INGESTION:
HARMFUL OR FATAL IF SWALLOWED.
EYE CONTACT:
CAUSES SEVERE EYE IRRITATION.
SKIN CONTACT:
MAY CAUSE MODERATE SKIN IRRITATION. PROLONGED OR REPEATED CONTACT MAY CAUSE AN ALLERGIC SKIN REACTION.
INHALATION:
VAPOR AND SPRAY MIST MAY BE HARMFUL IF INHALED. VAPOR IRRITATES EYES, NOSE, AND THROAT. REPEATED EXPOSURE TO HIGH VAPOR CONCENTRATIONS MAY CAUSE IRRITATION OF THE RESPIRATORY SYSTEM AND PERMANENT BRAIN AND NERVOUS SYSTEM DAMAGE. INTENTIONAL MISUSE BY DELIBERATELY CONCENTRATING AND INHALING THE CONTENTS CAN BE HARMFUL OR FATAL.
CHRONIC OVEREXPOSURE:
AVOID LONG TERM AND REPEATED CONTACT. THIS PRODUCT CONTAINS TITANIUM DIOXIDE. ANIMALS INHALING MASSIVE QUANTITIES OF TITANIUM DIOXIDE DUST IN A LONG-TERM STUDY DEVELOPED LUNG TUMORS. STUDIES WITH HUMANS INVOLVED IN MANUFACTURE OF THIS PIGMENT INDICATE NO INCREASED RISK OF CANCER FROM EXPOSURE. POTENTIAL FOR INHALATION OF TITANIUM DIOXIDE DUSTS FROM COATINGS IS VERY LIMITED. SINCE OVEREXPOSURES ARE NOT EXPECTED, THERE IS NO SIGNIFICANT HAZARD FOR MAN.
SIGNS AND SYMPTOMS OF OVEREXPOSURE:
EYE WATERING, HEADACHES, NAUSEA, DIZZINESS, AND LOSS OF COORDINATION ARE INDICATIONS THAT SOLVENT LEVELS ARE TOO HIGH. REDNESS, ITCHING, BURNING SENSATION AND VISUAL DISTURBANCES MAY INDICATE EXCESSIVE EYE CONTACT. DRYNESS, ITCHING, CRACKING, BURNING, REDNESS, AND SWELLING ARE CONDITIONS ASSOCIATED WITH EXCESSIVE SKIN CONTACT.
MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:
NOT APPLICABLE

SECTION VIII - FIRST AID PROCEDURES

INGESTION:
IF SWALLOWED, DO NOT INDUCE VOMITING.
EYE CONTACT:
IN CASE OF EYE CONTACT, FLUSH EYES IMMEDIATELY WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES.
SKIN CONTACT:
IN CASE OF SKIN CONTACT, REMOVE PROMPTLY BY WIPING, FOLLOWED BY WATERLESS HAND CLEANER AND SOAP AND WATER.
INHALATION:
IF AFFECTED BY INHALATION OF VAPOR OR SPRAY MIST, REMOVE TO FRESH AIR. APPLY ARTIFICIAL RESPIRATION AND OTHER SUPPORTIVE MEASURES AS REQUIRED.
OTHER:
IF ANY OF THE FOLLOWING OCCUR DURING OR FOLLOWING USE OF THIS PRODUCT, CONTACT A POISON CONTROL CENTER, EMERGENCY ROOM OR PHYSICIAN IMMEDIATELY. HAVE MATERIAL SAFETY DATA SHEET INFORMATION AVAILABLE. INGESTION OR EXCESSIVE EXPOSURE TO A CORROSIVE MATERIAL. PERSISTENT SKIN, EYE IRRITATION OR BREATHING DIFFICULTIES.

SECTION IX - PROTECTION INFORMATION

PERSONAL PROTECTIVE EQUIPMENT FOR:

EYE PROTECTION:
WEAR CHEMICAL TYPE SPLASH GOGGLES OR FULL FACE SHIELD.
SKIN PROTECTION:
WEAR PROTECTIVE CLOTHING, INCLUDING IMPERMEABLE APRON AND GLOVES CONSTRUCTED OF: POLYVINYL ALCOHOL, LATEX RUBBER OR NITRILE RUBBER.
RESPIRATORY PROTECTION:
OVEREXPOSURE TO VAPORS MAY BE PREVENTED BY ENSURING VENTILATION CONTROLS VAPOR EXHAUST OR FRESH AIR ENTRY. NIOSH/MSHA-APPROVED TC-23C PAINT SPRAY OR AIR SUPPLIED (TC-19C) RESPIRATORS MAY ALSO REDUCE EXPOSURE. READ RESPIRATOR MANUFACTURER'S INSTRUCTIONS AND LITERATURE CAREFULLY TO DETERMINE THE TYPE OF AIRBORNE CONTAMINANTS AGAINST WHICH THE RESPIRATOR IS EFFECTIVE AND HOW IT IS TO BE PROPERLY FITTED.
OTHER EQUIPMENT:
CLEAN OR DISCARD CONTAMINATED CLOTHING AND SHOES.
VENTILATION REQUIREMENTS:
PROVIDE GENERAL DILUTION OR LOCAL EXHAUST VENTILATION IN VOLUME AND PATTERN TO KEEP THE CONCENTRATION OF INGREDIENTS LISTED IN SECTION II BELOW THE LOWEST SUGGESTED EXPOSURE LIMITS, THE LEL IN SECTION V BELOW THE STATED LIMIT, AND TO REMOVE DECOMPOSITION PRODUCTS DURING WELDING OR FLAME CUTTING ON SURFACES COATED WITH THIS PRODUCT.

SECTION X - SPECIAL PRECAUTIONS

HANDLING AND STORAGE PRECAUTIONS:
DO NOT STORE ABOVE 120 DEGREES F. STORE LARGE QUANTITIES IN BUILDINGS DESIGNED AND PROTECTED FOR STORAGE OF NFPA CLASS IA FLAMMABLE LIQUIDS.
OTHER PRECAUTIONS:
IF THIS MATERIAL IS PART OF A MULTIPLE COMPONENT COATING SYSTEM, READ THE MATERIAL SAFETY DATA SHEET(S) FOR THE OTHER COMPONENT OR COMPONENTS BEFORE BLENDING AS THE RESULTING MIXTURE MAY HAVE THE HAZARDS OF ALL OF ITS PARTS.

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55 LINE		
55-5	55-310	55-321
55-9	55-311	55-324
55-70	55-312	55-326
55-302	55-313	55-327
55-305	55-315	55-328
55-306	55-316	55-329
55-307	55-317	55-330
55-308	55-318	55-516
55-309	55-319	55-7165

SCOEPA00055227

COATINGS AND RESINS GROUP

SECTION I - PRODUCT INFORMATION

MANUFACTURER'S NAME: PPG INDUSTRIES, INC.
PRODUCT CODE/IDENTITY: 55 LINE (042390M)
CUSTOMER PART#/NAME:
PRODUCT TRADE NAME: [redacted]
CHEMICAL FAMILY: ALKYD

SHIPPING INFORMATION
US-DOT-SHIP.NAME\HAZ.CLASS: COMPRESSED GAS, N.O.S.
UN NUMBER: N/A

IN-PLANT HAZARD RATINGS
HEALTH= 2
FLAMMABILITY= 2
REACTIVITY= 0

0=MINIMAL 1=SLIGHT 2=MODERATE 3=SERIOUS 4=SEVERE
*=CONTAINS INGREDIENT(S) WHICH MAY CAUSE (LONG-TERM) HEALTH EFFECTS

PRODUCT SAFETY INFO: 260 KAPPA DRIVE
: PITTSBURGH, PA. 15238
: (412) 492-5555
PGH. PAINTS INFO. OR MSDS: 1-800-441-9695
AUTO REFINISH INFO. OR MSDS: 1-800-245-2590, IN OH.(216) 671-0050
EMERGENCY MEDICAL INFO: (304) 843-1300
EMERGENCY SPILL INFO: (304) 843-1300
DATE OF MSDS PREPARATION: 6/01/90

THIS MATERIAL SAFETY DATA SHEET HAS BEEN PREPARED IN ACCORDANCE WITH THE OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200), THE SUPPLIER NOTIFICATION REQUIREMENTS OF SARA TITLE III, SECTION 313, AND OTHER APPLICABLE RIGHT-TO-KNOW REGULATIONS. ABBREVIATIONS AND OTHER DESIGNATIONS USED ON THIS MATERIAL SAFETY DATA SHEET INCLUDE THE FOLLOWING:

U/I = UNKNOWN INFORMATION; N/A = NOT APPLICABLE; NOT ESTAB. = NOT ESTABLISHED; CERT. LTR. = CHEMICAL O.K. ON TSCA INVENTORY; CAS NO. NOT AVAILABLE

SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS

(FORMULA VALUES, NOT SALES SPECIFICATIONS)

BOILING RANGE: -56 - 205 DEG. C
VAPOR PRESSURE: 80 mmHg
VAPOR DENSITY: HEAVIER THAN AIR
% VOL/VOLUME: 84-95
EVAP RATE(BuOAc=100): UI
SOLUBILITY IN WATER: 0-35%
WT/GAL (LBS): 6- 9 (U.S.)
pH: U/I
% SOLID BY WEIGHT: 7-23
SPECIFIC GRAVITY: 0.6 - 1.0
ODOR/APPEARANCE: PRESSURIZED CAN CONTAINING PAINT AND PROPELLANTS WITH ODOR CHARACTERISTICS OF THE SOLVENTS LISTED IN SECTION II.

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

US-DOT CATEGORY: FLAMMABLE GAS
FLASHPOINT: <0 DEG. F PMCC
FLAMMABLE LIMITS: LEL 1.0 UEL U/I

EXTINGUISHING MEDIA:
USE NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) CLASS B EXTINGUISHERS (CARBON DIOXIDE, DRY CHEMICAL, OR UNIVERSAL AQUEOUS FILM FORMING FOAM) DESIGNED TO EXTINGUISH NFPA CLASS IA FLAMMABLE LIQUID FIRES.

UNUSUAL FIRE AND EXPLOSION HAZARDS:
KEEP CONTAINERS TIGHTLY CLOSED. ISOLATE FROM HEAT, ELECTRICAL EQUIPMENT, SPARKS, AND OPEN FLAMES. CLOSED CONTAINERS MAY EXPLODE WHEN EXPOSED TO EXTREME HEAT. DO NOT APPLY ON HOT SURFACES. TOXIC GASES MAY FORM WHEN PRODUCT IS CONTACTED BY FLAME OR HOT SURFACES. AEROSOL CONTAINERS HOLD EXTREMELY FLAMMABLE GAS AND FLAMMABLE LIQUID UNDER PRESSURE.

SPECIAL FIRE FIGHTING PROCEDURES:
WATER SPRAY MAY BE INEFFECTIVE. WATER SPRAY MAY BE USED TO COOL CLOSED CONTAINERS TO PREVENT PRESSURE BUILD-UP AND POSSIBLE AUTOIGNITION OR EXPLOSION WHEN EXPOSED TO EXTREME HEAT. IF WATER IS USED, FOG NOZZLES ARE PREFERABLE. FIRE-FIGHTERS SHOULD WEAR SELF CONTAINED BREATHING APPARATUS.

SECTION V - REACTIVITY DATA

STABILITY: STABLE
HAZARDOUS POLYMERIZATION: NOT EXPECTED TO OCCUR
INCOMPATIBILITY (MATERIALS AND CONDITIONS TO AVOID):
AVOID CONTACT WITH STRONG ALKALIES, STRONG MINERAL ACIDS, OR STRONG OXIDIZING AGENTS.
HAZARDOUS DECOMPOSITION PRODUCTS:
MAY PRODUCE HAZARDOUS DECOMPOSITION PRODUCTS WHEN HEATED. WELDING BRAZING, OR FLAME-CUTTING ON SURFACES COATED WITH THIS PRODUCT MAY PRODUCE FUMES INCLUDING Carbon Monoxide

SECTION VI - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
PROVIDE MAXIMUM VENTILATION. ONLY PERSONNEL EQUIPPED WITH PROPER RESPIRATORY AND SKIN AND EYE PROTECTION SHOULD BE PERMITTED IN THE AREA. REMOVE ALL SOURCES OF IGNITION. TAKE UP SPILLED MATERIAL WITH SAWDUST, VERMICULITE, OR OTHER ABSORBENT MATERIAL AND PLACE INTO CONTAINERS FOR DISPOSAL.
WASTE DISPOSAL METHOD:
WASTE MATERIAL MUST BE DISPOSED OF IN ACCORDANCE WITH FEDERAL, STATE, PROVINCIAL, AND LOCAL ENVIRONMENTAL CONTROL REGULATIONS. EMPTY CONTAINERS SHOULD BE RECYCLED OR DISPOSED OF THROUGH AN APPROVED WASTE MANAGEMENT FACILITY.

EFFECTS OF OVEREXPOSURE FROM:

INGESTION:
HARMFUL OR FATAL IF SWALLOWED.
EYE CONTACT:
CAUSES SEVERE EYE IRRITATION.
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INHALATION:
VAPOR AND SPRAY MIST MAY BE HARMFUL IF INHALED. VAPOR IRRITATES EYES, NOSE, AND THROAT. REPEATED EXPOSURE TO HIGH VAPOR CONCENTRATIONS MAY CAUSE IRRITATION OF THE RESPIRATORY SYSTEM AND PERMANENT BRAIN AND NERVOUS SYSTEM DAMAGE. INTENTIONAL MISUSE BY DELIBERATELY CONCENTRATING AND INHALING THE CONTENTS CAN BE HARMFUL OR FATAL.
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MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:
NOT APPLICABLE

SECTION VIII - FIRST AID PROCEDURES

INGESTION:
IF SWALLOWED, DO NOT INDUCE VOMITING.
EYE CONTACT:
IN CASE OF EYE CONTACT, FLUSH EYES IMMEDIATELY WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES.
SKIN CONTACT:
IN CASE OF SKIN CONTACT, REMOVE PROMPTLY BY WIPING FOLLOWED BY WATERLESS HAND CLEANER AND SOAP AND WATER.
INHALATION:
IF AFFECTED BY INHALATION OF VAPOR OR SPRAY MIST, REMOVE TO FRESH AIR. APPLY ARTIFICIAL RESPIRATION AND OTHER SUPPORTIVE MEASURES AS REQUIRED.
OTHER:
IF ANY OF THE FOLLOWING OCCUR DURING OR FOLLOWING USE OF THIS PRODUCT, CONTACT A POISON CONTROL CENTER, EMERGENCY ROOM OR PHYSICIAN IMMEDIATELY. HAVE MATERIAL SAFETY DATA SHEET INFORMATION AVAILABLE. INGESTION, EXCESSIVE EXPOSURE TO A CORROSIVE MATERIAL, PERSISTENT SKIN/EYE IRRITATION OR BREATHING DIFFICULTIES.

SECTION IX - PROTECTION INFORMATION

PERSONAL PROTECTIVE EQUIPMENT FOR:

EYE PROTECTION:
WEAR CHEMICAL-TYPE SPLASH GOGGLES OR FULL FACE SHIELD.
SKIN PROTECTION:
WEAR PROTECTIVE CLOTHING, INCLUDING IMPERMEABLE APRON AND GLOVES CONSTRUCTED OF: POLYVINYL ALCOHOL, LATEX RUBBER OR NITRILE RUBBER.
RESPIRATORY PROTECTION:
OVEREXPOSURE TO VAPORS MAY BE PREVENTED BY ENSURING VENTILATION CONTROLS VAPOR EXHAUST OR FRESH AIR ENTRY. NIOSH/MSHA-APPROVED (TC-23C) PAINT SPRAY OR AIR SUPPLIED (TC-19C) RESPIRATORS MAY ALSO REDUCE EXPOSURE. READ RESPIRATOR MANUFACTURER'S INSTRUCTIONS AND LITERATURE CAREFULLY TO DETERMINE THE TYPE OF AIRBORNE CONTAMINANTS AGAINST WHICH THE RESPIRATOR IS EFFECTIVE AND HOW IT IS TO BE PROPERLY FITTED.
OTHER EQUIPMENT:
CLEAN OR DISCARD CONTAMINATED CLOTHING AND SHOES
VENTILATION REQUIREMENTS:
PROVIDE GENERAL DILUTION OR LOCAL EXHAUST VENTILATION IN VOLUME AND PATTERN TO KEEP THE CONCENTRATION OF INGREDIENTS LISTED IN SECTION II BELOW THE LOWEST SUGGESTED EXPOSURE LIMITS. THE LEL IN SECTION IV BELOW THE STATED LIMIT, AND TO REMOVE DECOMPOSITION PRODUCTS DURING WELDING OR FLAME CUTTING ON SURFACES COATED WITH THIS PRODUCT.

SECTION X - SPECIAL PRECAUTIONS

HANDLING AND STORAGE PRECAUTIONS:
DO NOT STORE ABOVE 120 DEGREES F. STORE LARGE QUANTITIES IN BUILDINGS DESIGNED AND PROTECTED FOR STORAGE OF NFPA CLASS IA FLAMMABLE LIQUIDS.
OTHER PRECAUTIONS:
IF THIS MATERIAL IS PART OF A MULTIPLE COMPONENT COATING SYSTEM, READ THE MATERIAL SAFETY DATA SHEET(S) FOR THE OTHER COMPONENT OR COMPONENTS BEFORE BLENDING AS THE RESULTING MIXTURE MAY HAVE THE HAZARDS OF ALL OF ITS PARTS.

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55-307	55-317	55-330
55-308	55-318	55-516
55-309	55-319	55-7165

CONTINUATION OF MANUFACTURER'S CC 55 LINE DATE OF PREP: 6/01/90 PAGE 2

SECTION II - INGREDIENTS AND REGULATORY INFORMATION

INGREDIENTS	CAS NUMBER	MAX % WEIGHT	...SARA TITLE III & CERCLA CLASSIFICATIONS.... HS (102)	EHS (302)	TC+ (313)	RQ (LBS)	TPQ (LBS)	SARA 311/312 AC	CH	FL	PR	RE
BARIUM SULFATE	7727-43-7	5-10	N	N	Y	N/A	N/A	N	N	N	N	N
SILICA, AMORPHOUS-HYDRATED	7631-86-9	2- 5	N	N	N	N/A	N/A	N	N	N	N	N
MAGNESIUM SILICATE	14807-96-6	5-10	N	N	N	N/A	N/A	N	N	N	N	N
CALCIUM CARBONATE	1317-65-3	5-10	N	N	N	N/A	N/A	Y	N	N	N	N
TITANIUM DIOXIDE #	13463-67-7	10-15	N	N	N	N/A	N/A	N	Y	N	N	N
PIGMENTS	NOT ESTAB.	10-15	N	N	N	N/A	N/A	N	N	N	N	N
ISOPROPYL ALCOHOL, ANHYDROUS	67-63-0	10-15	N	N	Y	N/A	N/A	Y	N	Y	N	N
ACETONE	67-64-1	40-45	Y	N	Y	5000	N/A	Y	N	Y	N	N
METHYL ETHYL KETONE	78-93-3	30-35	Y	N	Y	5000	N/A	Y	N	Y	N	N
ISOBUTANE	75-28-5	15-20	N	N	N	N/A	N/A	Y	N	Y	N	N
PROPANE	74-98-6	15-20	N	N	N	N/A	N/A	Y	N	Y	N	N
MEDIUM ALIPHATIC SOLVENT NAPHTHA	64742-88-7	5-10	N	N	N	N/A	N/A	Y	N	Y	N	N
LIGHT AROMATIC SOLVENT NAPHTHA	64742-95-6	40-45	N	N	N	N/A	N/A	Y	N	Y	N	N
ISOPROPYL ACETATE	108-21-4	2- 5	N	N	N	N/A	N/A	Y	N	Y	N	N
AMYL ACETATE	628-63-7	10-15	Y	N	N	5000	N/A	Y	N	Y	N	N
FILM FORMERS, RESINS, AND ADDITIVES	NOT ESTAB.	20-25	N	N	N	N/A	N/A	Y	N	N	N	N

*** THE FOLLOWING INGREDIENTS ARE REPORTABLE AS SARA SECTION 313 CHEMICAL CATEGORIES ***

BARIUM COMPOUNDS	NOT ESTAB.	5-10

*** OCCUPATIONAL EXPOSURE LIMITS HAVE BEEN ESTABLISHED FOR THE FOLLOWING MATERIALS ***

INGREDIENTS	.....ACGIH..... TLV-TWA	TLV-STEL	.....OSHA..... PEL-TWA	PEL-STEL	.....PPG-IPEL..... IPEL-TWA	IPEL-STEL
SILICA, AMORPHOUS-HYDRATED	10 mg/m3	NOT ESTAB	6 mg/m3	NOT ESTAB	5 mg/m3	NOT ESTAB
CALCIUM CARBONATE	10 mg/m3	NOT ESTAB	15 mg/m3	NOT ESTAB	10 mg/m3	NOT ESTAB
TITANIUM DIOXIDE #	10 mg/m3	NOT ESTAB	15 mg/m3	NOT ESTAB	10 mg/m3	NOT ESTAB
ISOPROPYL ALCOHOL, ANHYDROUS	400 ppm	500 ppm	400 ppm	NOT ESTAB	400 ppm	500 ppm
ACETONE	750 ppm	1,000ppm	1,000ppm	NOT ESTAB	750 ppm	1,000ppm
METHYL ETHYL KETONE	200 ppm	300 ppm	200 ppm	NOT ESTAB	200 ppm	250 PPM
PROPANE	NOT ESTAB	NOT ESTAB	1,000ppm	NOT ESTAB	1,000ppm	NOT ESTAB
ISOPROPYL ACETATE	250 ppm	310 ppm	250 ppm	NOT ESTAB	250 ppm	310 ppm
AMYL ACETATE	100 ppm	NOT ESTAB	100 ppm	NOT ESTAB	100 ppm	NOT ESTAB

*** SARA 311/312 CATEGORIES FOR THIS PRODUCT ***
ACUTE=Y CHRONIC=Y FLAM=Y PRESS=N REAC=N

*** PRODUCT STATUS RELATIVE TO THE US EPA TOXIC SUBSTANCES CONTROL ACT ***
ALL CHEMICAL SUBSTANCES IN THIS PRODUCT COMPLY WITH ALL APPLICABLE RULES OR ORDERS UNDER THE ENVIRONMENTAL PROTECTION AGENCY'S TOXIC SUBSTANCES CONTROL ACT.

*** FOOTNOTES FOR SECTION II ***
CARCINOGENIC ACCORDING TO CRITERIA ESTABLISHED BY: *=NTP **=IARC @=OSHA #=OTHER
ORAL= LD50 ORAL (RAT), (g/kg) DERM= LD50 DERMAL (RABBIT), (g/kg) INHL= LC50 INHALATION (RAT), (Mg/L)
+ INGREDIENTS IN THE TC COLUMN ARE SUBJECT TO THE REPORTING REQUIREMENTS OF SARA TITLE III. SEE 40 CFR PART 372.

ATTN: NEAL

Material Safety Data Sheet

May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200. Standard must be consulted for specific requirements.

HMIS®

HEALTH 1 REACTIVITY 0

FLAMMABILITY 0 PERSONAL PROTECTION A

IDENTITY (As Used on Label and List) EPA Reg. No. 11694-34
A-080 Type Foaming Cleaner

Note: Blank spaces are not permitted. If any item is not applicable, or information is available, the space must be marked to indicate it

Section I

Manufacturer's Name	Emergency Telephone Number
Dymon, Inc.	800-255-4564
Address (Number, Street, City, State, and ZIP Code)	Telephone Number for Information
3401 Kansas Ave.	800-255-4564
Kansas City, KS 66106	Date Prepared: January 28, 1991
	Signature of Preparer (optional): Regulatory Department

Section II — Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity; Common Name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommended	% (op
2-Methyl Propane CAS# 75-28-5	800ppm	800ppm(asphyxiant)		
Propane CAS# 74-98-6	1000ppm	(asphyxiant)		
Quaternary ammonium chloride CAS# 5197-80-8	None	None		
2-Butoxyethanol CAS# 111-76-2	25ppm	25ppm(skin)		1-
2-(2-ethoxyethoxy)-ethanol CAS# 111-90-0	None	None		1-
Sodium nitrite CAS# 7632-00-0	None	None		.09-
Sodium borate compound CAS# 1303-96-4	10mg/m³	1mg/m3		.45-

The last two entries above (ethanolic compounds), may require reporting under SARA Tit Sec. 313 as glycol ethers if used over threshhold quantities. Reference 40 CFR Part 37

Any substance listed as hazardous by the states of California, Massachusetts, New Jer and Pennsylvania are described above if known present in regulated concentrations.

Section III — Physical/Chemical Characteristics

Boiling Point conc.	212°F	Specific Gravity (H_2O = 1) conc.	1.01
Vapor Pressure (mm Hg.)	3100	Melting Point	N.D.
Vapor Density (AIR = 1)	N.D.	Evaporation Rate (Butyl Acetate = 1)	N.D.

Solubility in Water: Infinite

Appearance and Odor: Clear liquid dispensed as wet foam with lemon fragrance.

Section IV — Fire and Explosion Hazard Data

Flash Point (Method Used)	Flammable Limits	LEL	UEL
Concentrate: None to boil. pt.	N.D.	N.D.	N.D.

Extinguishing Media: Dry chemical, foam, CO2, water

Special Fire Fighting Procedures: Keep exposed containers cool with water spray to prevent container rupture.

Unusual Fire and Explosion Hazards

MATERIAL SAFETY DATA SHEET

TECH SPRAY

PO BOX 949 Amarillo, Texas 79105 Emergency Phone: 806-372-8523

Product Name: FREON TUS SOLVENT/Deluxer
Number: 1695 Aerosol

Hazardous Description: Compressed Gas N.O.S. Non-Flammable Gas UN1956 (For Shipping Purposes Only)

Hazard Rating Health: 1 Fire: 0 Reactivity: 1
0-Least 1-Slight 2-Moderate 3-High 4-Extreme

I - HAZARDOUS COMPONENTS

Ingredient	CAS No.	%	Hazard
Trichlorotrifluoroethane (Freon TF)	76-13-1	72	OSHA PEL 1000ppm ACGIH TLV 1000ppm (STEL 1250ppm)
Chlorodifluoroethane	75-45-6	18-19	ACGIH TLV 1000ppm
Carbon Dioxide	124-38-9	<2	OSHA PEL 10,000ppm ACGIH TLV 5000ppm
Methanol	67-56-1	3	OSHA PEL 200ppm ACGIH TLV 200ppm
Nitromethane		2	TLV 100ppm

II - PHYSICAL DATA

Boiling Point: 40 C 104 F
Specific Gravity: 1.47
Solubility in Water: 0
Vapor Density (Air = 1): > 1
pH: NA
% Volatile: 100
% Solids: 0
Evaporation Rate (H_2O = 1): NIF
Appearance: Clear water-white mobile liquid with slight ethereal odor.

III - FIRE AND EXPLOSION HAZARD DATA

Flash Point: Greater than boiling point

Explosion Limits
LEL: NA UEL: NA

Extinguishing Media: Water, foam, dry chemical, carbon dioxide.

Special Fire Fighting Procedures:

Fire fighters should wear self contained, positive-pressure breathing apparatus and avoid skin contact.

Unusual Fire and Explosion Hazards:

Aerosol cans may erupt with force at temperatures above 120 degrees F.

GLOSSARY OF TERMS

■	Temporary total enclosure means a total enclosure that is constructed for the sole purpose of measuring fugitive emissions from an affected facility.
■	Total enclosure means a structure that completely surrounds a source of emissions so that all VOC emissions are contained for discharge. With a total enclosure, there will be no fugitive emissions, only stack emissions. The only openings in a total enclosure are forced makeup air and exhaust ducts and any NDO's, such as those that allow raw materials to enter and exit the enclosure for processing. All access doors or windows are closed during routine operation of the enclosed source.
■	Volatile organic compound (VOC) means any organic compound that participates in atmosphere photochemical reactions. This includes any organic compound other than the following compounds: methane, ethane, methyl chloroform (1,1,1-trichloroethane), CFC-113 (1,1,2-trichloro-1,2,2-trifluorethane), methylene chloride, CFC-11 (trichlorofluoromethane), CFC-12 (dichlorodifluoromethane), CFC-22 (chlorodifluoromethane), FC-23 (trifluoromethane), CFC-114 (1,2-dichloro-1,1,2,2-tetrafluoroethane), CFC-115 (chloropentafluoroethane), HCFC-123 (1,1-dichloro-2,2,2-trifluoroethane), HFC-134a (1,1,1,2-tetrafluoroethane), HCFC-141b (1,1-dichloro-1-fluoroethane), and HCFC-142b (1-chloro-1,1-difluoroethane). These compounds have been determined to have negligible photochemical reactivity. For purposes of determining compliance with emission limits, VOC will be measured by the approved test methods. Where such a method also inadvertently measures compounds with negligible photochemical reactivity, an owner or operator may exclude these negligibly reactive compounds when determining compliance with an emissions standard. (The following compounds and classes of compounds have been proposed in the Federal Register [56 FR 11387, March 18, 1991] for addition to the list of negligibly photochemically reactive compounds: HCFC-124 (2-chloro-1,1,1,2-tetrafluoroethane; HFC-125 (pentafluoroethane); HFC-134 (1,1,2,2-tetrafluoroethane); HFC-143a (1,1,1-trifluoroethane); HFC-152a (1,1-difluoroethane); cyclic, branched, or linear, completely fluorinated alkanes; cyclic, branched, or linear, completely fluorinated ethers with no unsaturations; cyclic, branched, or linear, completely fluorinated tertiary amines with no unsaturations; and sulfur-containing perfluorocarbons with no unsaturations and with sulfur bonds only to carbon and fluorine.)

EPA document published this year.

OAR 340-22-102 (73)

(71) ~~[(47)]~~"Vapor balance system" means a combination of pipes or hoses which create a closed system between the vapor spaces of an unloading tank and a receiving tank such that vapors displaced from the receiving tank are transferred to the tank being unloaded.

(72) "Vapor-mounted means a primary seal mounted so there is an annular vapor space underneath the seal. The annular vapor space is bounded by the primary seal, the tank shell, the liquid surface, and the floating roof.

(73) ~~[(48)]~~"Volatile Organic Compound", ~~[(VOC)]~~or "VOC", means any organic compound which participates in atmospheric photochemical reactions to form ozone; that is, any precursor organic compound which would be emitted during use, application, curing or drying of a surface coating, solvent, or other material. ~~[of carbon that is photochemically reactive.]~~ Excluded from ~~[the]~~ this category ~~[of Volatile Organic Compounds]~~ are ~~[carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, ammonium carbonate, and]~~ those compounds which the U.S. Environmental Protection Agency classifies as being of negligible photochemical reactivity which includes ~~[are]~~ methane, ethane, ~~[methyl chloroform,]~~ methylene chloride, 1,1,1-trichloroethane (methyl chloroform), trichlorofluoromethane (CFC-11), dichlorodifluoromethane (CFC-12), chlorodifluoromethane (CFC-22), trifluoromethane (FC-23), trichlorotrifluoroethane (CFC-113), dichlorotetrafluoroethane (CFC-114), and chloropentafluoroethane (CFC-115). ~~[and trichlorotrifluoroethane.]~~

Stat. Auth.: ORS Ch. 468
Hist.: DEQ 21-1978, f, & ef, 12-28-78; DEQ 17-1979, f. & ef. 6-22-79; DEQ 23-1980, f. & ef. 9-26-80; DEQ 3-1986, f. & ef. 2-12-86

Limitations and Requirements

General Requirements for New and Existing Sources

340-22-104 (1) Notwithstanding the emission limitations in these rules, all new major sources or major modifications at existing sources ~~[or modified stationary sources]~~, located within the areas cited in section (2) of this rule, shall comply with OAR 340-20-220 through 340-20-276 (New Source Review) ~~[with allowable VOC emission increases in excess of 90,720 kilograms (100 tons) per year, shall meet the Lowest Achievable Emission Rate (LAER)]~~.

(2) All new and existing sources inside the following areas shall comply with the General Emission Standards for Volatile Organic Compounds:

(a) Portland-Vancouver Air Quality Maintenance Area;
(b) Medford-Ashland Air Quality Maintenance Area;
(c) Salem Area Transportation Study (SATS) Area.

SCOEPA00055233

STATE OF OREGON
DEPARTMENT OF ENVIRONMENTAL QUALITY
811 SW SIXTH AVENUE
PORTLAND, OR 97204
FAX No. (503) 229-5675

Facsimile Cover Sheet

AIR QUALITY DIVISION

TO: WACKER
KENT MAYER

OFFICE/PHONE:

DATE: 12-13-91

FROM: (Contact person in case of transmission problems)
RAY POTTS

OFFICE/PHONE: 229-6093

NUMBER OF PAGES INCLUDING THIS COVER SHEET: (NOTE: Number all pages consecutively including this cover sheet.) 3

COMMENTS:

over 50 Lbs

VOC

Janitorial

chemicals

3M General ces
3M Center
St. Paul, Minnesota 55144-1000
612/733-1110
Duns No.: 00-617-3082

MATERIAL SAFETY
DATA SHEET

3M

DIVISION: Building Service & Cleaning Products
TRADE NAME:
3M Brand A101 Spray Cleaner
3M I.D. NUMBER: 61-5000-0314-2 61-5000-6128-0

example

ISSUED: OCTOBER 5, 1990
SUPERSEDES: APRIL 6, 1989
DOCUMENT: 10-2815-8

1. INGREDIENT	C.A.S. NO.	PERCENT	EXPOSURE LIMITS -- VALUE	UNIT	TYPE	AU
Water	7732-18-5	75.0 - 85.0	NONE	NONE	NONE	NON
Isobutane	75-28-5	< 10.0	NONE	NONE	NONE	NON
Acrylic polymer	NONE	< 5.0	NONE	NONE	NONE	NON
Ethylene-acrylic acid copolymer	9010-77-9	< 5.0	NONE	NONE	NONE	NON
Ethoxylated secondary alcohols	68131-40-8	< 5.0	NONE	NONE	NONE	NON
2-(2-Methoxyethoxy)Ethanol	111-77-3	< 5.0	30	ppm	TWA	CMR

SOURCE OF EXPOSURE LIMIT DATA:
- CMRG: Chemical Manufacture Recommended Guidelines
- NONE: None Established

THIS PRODUCT CONTAINS THE FOLLOWING TOXIC CHEMICAL OR CHEMICALS SUBJECT TO THE REPORTI REQUIREMENTS OF SECTION 313 OF TITLE III OF THE SUPERFUND AMENDMENTS AND REAUTHORIZATI ACT OF 1986 AND 40 CFR PART 372:
2-(2-Methoxyethoxy)Ethanol

2. PHYSICAL DATA

BOILING POINT:..... ca. 212.00 F
VAPOR PRESSURE:..... N/D
VAPOR DENSITY: ..... N/D
EVAPORATION RATE:..... N/D
SOLUBILITY IN WATER: ..... complete
SP. GRAVITY:..... 1.000 Water = 1
PERCENT VOLATILE: ..... ca. 90.00 %
VOLATILE ORGANICS: ..... ca. 85.00 gm/l
pH: 9.50
VISCOSITY: ..... N/D
APPEARANCE AND ODOR: Opaque white, liquid, bland odor in an aerosol can.

3. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT:..... N/A
Above for liquid; propellant < 0 F
FLAMMABLE LIMITS - LEL: ..... N/D
FLAMMABLE LIMITS - UEL: ..... N/D
AUTOIGNITION TEMPERATURE: ... N/D
EXTINGUISHING MEDIA:
Carbon dioxide, foam, dry chemical
SPECIAL FIRE FIGHTING PROCEDURES:
Treat as a pressurized container
UNUSUAL FIRE AND EXPLOSION HAZARDS:
Treat as a pressurized container
NFPA-HAZARD-CODES: HEALTH 0 FIRE 1 REACTIVITY 1
UNUSUAL REACTION HAZARD: NONE

Abbreviations: N/D - Not Determined N/A - Not Applicable

Material Safety Data Sheet

Required under USDL Safety and Health Regulations for Shipyard Employment (29 CFR 1915)

U.S. Department of Labor

Occupational Safety and Health Administration

OMB No. 1218-0074
Expiration Date 05/31/86

Date Issued:	Supercedes:	Prepared by:
Nov. 25 85	Nov. 84	M. Shanti

Section I

Manufacturer's Name

KLIX CORPORATION

551 RAILROAD AVE. • SOUTH SAN FRANCISCO, CA 94080

Emergency Telephone Number
(415) 761-0622, 871-7386

Chemical Name and Synonyms: Paradichlorobenzene; 1,4

Trade Name and Synonyms: Deo Blocks — Dichlorobenzen (2039)

Chemical Family: ---

Formula: $C_6H_4Cl_2$

Section II - Hazardous Ingredients

	%	TLV (Units)		%	TLV (Units)
Paradichlorobenzene Ca* 106-46-7	99.5	C50PPM			
1,4 Dichlorobenzene Ca* 95-50-1	.5	C50PPM			

CARCINOGENIC INGREDIENTS — CHEMICAL AND COMMON NAME	%	TLV (Units)
No known carcinogenic ingredients present	---	-----

Section III - Physical Data

Boiling Point (°F)	174°C	Specific Gravity (H_2O=1)	1.46
Vapor Pressure (mm Hg.)	25°C/0.4	Percent Volatile by Volume (%)	Total
Vapor Density (AIR=1)	5.07	Evaporation Rate (_____=1)	----

Solubility in Water

Negligibile

Appearance and Odor

White crystalline solid with, pleasant, penetrating odor. (Mothball Odor)

Section IV - Fire and Explosion Hazard Data

Flash Point (Method Used)	Flammable Limits	Lel	Uel
Tag closed cup 64°C	N/A	---	---

Extinguishing Media

Water, Foam, CO or Dry chemical

Special Fire Fighting Procedures

Respiratory protection when fighting fires where exposure to vapors or gases is possible.

Unusual Fire and Explosion Hazards

Highly toxic gases (chlorides and chlorine) can be evolved in fires of this product. Wear full protective clothing and self contained breathing appartus.

SCOEPA00055237

MATERIAL SAFETY DATA SHEET
FOR PRESSURIZED PRODUCTS

MBL INDUSTRIES, INC.
3600 W. CARRIAGE DRIVE
SANTA ANA, CA 92704
714 557-6505 LOCAL
800 525-7890 NATIONWIDE
800 525-7891 IN CALIF.

SECTION I

Manufacturer's Name	Emergency Telephone No.
MBL Industries, Inc.	(714) 557-6505

Address *(Number, Street, City, State and ZIP Code)*: 3600 W. Carriage Dr., Santa Ana, CA 92704

Type of Product: Cleaner

Trade Name	Product Code
Baseboard Cleaner and Wax Stripper E-DAY Grime Shooter 2602	BBC026

SECTION II – HAZARDOUS INGREDIENTS

Ingredient Chemical Name	Type of Hazard(s)	Approximate Weight %	TLV	Other Toxicity Information
Ethylene Glycol Monobutyl Ether (CAS No. 111762)	Inhalation		50 ppm	
Sodium Hydroxide (CAS No. 1310732)	Ingestion & Corrosive		2mg/m3	
Ammonium Hydroxide (CAS NO. 1336216)	Inhalation & Corrosive		50 ppm	
Isobutane/ Propane (CAS No. 75285/74986)	Flammability		800 ppm	

SECTION III A – PHYSICAL DATA: CONTENTS WITHOUT PROPELLENT

Flash Point	N/A	Specific Gravity (H20 = 1)	> 1.0
pH	12.9-13.5	Percent Volatile By Wgt.	
Vapor Density (Air = 1)	greater (XX) less ( )	Evaporation Rate (H20 = 1)	greater ( ) less (XX)
Solubility in Water	Soluble		
Appearance and Odor	White/ ammonia odor		

SECTION III B – PHYSICAL DATA: PACKAGED PRODUCT WITH PROPELLANT

Vapor Pressure 70°F	41-51	psig	Vapor Pressure 130°F	104	psig
Flammability Class	Non-Flammable		Drum Test		positive ( ) negative (XX)
Flame Extension 70°F	None	inches	spray pattern	Stream type spray	
Flashback	None	yes ( ) no ( )			

SECTION IV – FIRE AND EXPLOSION HAZARD DATA

EXPOSURE TO TEMPERATURES OVER 120°F (49°C) MAY CAUSE BURSTING OR VENTING. Keep containers cool. Use equipment or shielding to protect personnel against bursting or venting containers. Do not puncture or incinerate container.

UNUSUAL FIRE & EXPLOSION HAZARDS

EXTINGUISHING MEDIA: ☒ Water Fog ☒ Standard Foam ☒ CO_2 ☒ Dry Chemical ☒ Halon

SPECIAL PRECAUTIONARY STATEMENTS. Please read and follow the directions on the product label.

Material Safety Data Sheet

Date Prepared: 6/11/91
By: Easterday

Chemtrec ---------- 1-800-424-9300
UCI Poison Control - (714) 634-5988

Section I — General Information

Product
Jubilation No Rinse Stripper

Manufacturer
Easterday Janitorial Supply Co
17050 So. Margay Ave.
Carson, CA. 90746
(213) 762-1100

Range: 0=Minimal 4=Severe

HEALTH 0
FIRE 0
REACT 0

Product Number
220095

Chemical Family
Floor Finish Stripper

DOT Classification
Cleaning Compounds,NOI

Special:

Section II — Hazardous Ingredients

Chemical	CAS Number	Percent By Volume	Exposure Limits In Air ACGIH(TLV)	OSHA(PEL)
Ethanolamine	141-43-5	7.5 %	3 ppm	3 ppm
Glycol Monobutyl Ether	111-76-2	15.0 %	25 ppm	25 ppm

COMBUSTION.

Unusual Fire & Explosion Hazards: NONE

Note: Under normal conditions hazardous polymerization will not occur.

Section VI — Physical Data

Boiling Point: 212
Vapor Pressure: 25mm
Vapor Density: 780m
Ph (concentrate): 12.5
Specific Gravity (water = 1): 1.01
Percentage Of Volatiles:
Evaporation Rate (water = 1): 1.05
Ph (1% solution): 12.0
Solubility In Water: Completely Soluable in water.
Appearance and Odor: Clear water white liquid with a bland odor.

Section VII — Special Protection Information

Respiratory Protection: NONE
Protective Gloves: NONE
Eye Protection: When handling this product and there is the possibility of splashing it is recommended that proper protection of the eyes be worn.
Other Equipment: NONE

Section VIII — Special Precautions

* Chemicals can be hazardous if not respected. The use of proper equipment and procedures for handling chemicals are not only of benefit for their obvious uses, but can reduce the possibility of serious injury and time loss accidents.
* Keep this material away from high heat and observe proper housekeeping procedures.
* DO NOT mix chemcials unless instructed by qualified personnel.

Note: This data is furnished gratuitously independent of sale of the product and only for your investigation and independent verification While data is believed to be correct, Easterday Janitorial Supply Co shall in no event be responsible for damages whatsoever, directly or indirectly, resulting from the publication or use of or reliance upon data contained herein. No warranty, either implied or expressed, of merchantability of fitness or of any nature with respect to the product or to the data is made herein. You are urged to obtain data sheets for all Easterday Janitorial Supply Co materials you buy, process, use, or distribute, and are encouraged to advise anyone working with or exposed to such materials of the information contained herein.

Sources: 1) Dangerous Properties of Industrial Material; Sax , 6th Ed
2) Hand of Toxic and Hazardous Chemicals and Carcinogens; Sittig,2nd ed

Material Safety Data Sheet

May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200. Standard must be consulted for specific requirements.

HMIS

HEALTH 1 REACTIVITY 0

FLAMMABILITY 3 PERSONAL PROTECTION B

IDENTITY (As Used on Label and List)	Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.
A-209 Stainless Steel Polish	

Section I STAINLESS STEEL CLEANER

Manufacturer's Name	Emergency Telephone Number
Dymon, Inc.	800-255-4564
Address (Number, Street, City, State, and ZIP Code)	Telephone Number for Information
3401 Kansas Ave.	800-255-4564
Kansas City, KS 66106	Date Prepared: August 10, 1990
	Signature of Preparer (optional): Regulatory Dept.

Section II — Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity; Common Name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommended	% (optional)
Propane (CAS No.74-98-6)	1,000ppm	Asphyxiant		
Mineral Spirits (CAS No.64742-88-7)	5mg/m3(mist)	5mg/m3(mist)		

None of the compounds known in this product are listing for reporting or present in concentrations requiring reporting under SARA Title III Sec. 313. Reference 40 CFR 372.

Any substance listed as hazardous by the states of California, Massachusetts, New Jersey and Pennsylvania are described above if known present in regulated concentrations.

Section III — Physical/Chemical Characteristics N.D.-No Data G.T.-Greater Than

Boiling Point: Concentrate-initial	346°F	Specific Gravity (H_2O = 1): Concentrate	0.78
Vapor Pressure (mm Hg.): at 70°F	37psi	Melting Point	N.D.
Vapor Density (AIR = 1)	G.T. 1	Evaporation Rate (Butyl Acetate = 1)	N.D.
Solubility in Water: Negligible		pH	N.A.

Appearance and Odor: Clear,colorless liquid with a lemon scent in an aerosol can.

Section IV — Fire and Explosion Hazard Data

Flash Point (Method Used)	Flammable Limits	LEL	UEL
125°F (TCC-est)	N.D.	N.D.	N.D.

Extinguishing Media: Treat as an oil fire. Use carbon dioxide,dry chemical or foam.

Special Fire Fighting Procedures: Use waterspray to keep containers cool and vapors down. Do not allow runoff to enter sewers or public watercourses. Wear SCBA in chemical fires.

Unusual Fire and Explosion Hazards: Aerosol container(pressurized)may burst if heated over 120°F. Combustible contents.

ATTN: NEAL

Material Safety Data Sheet

May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200. Standard must be consulted for specific requirements.

HMIS®

HEALTH 1 REACTIVITY 0

FLAMMABILITY 0 PERSONAL PROTECTION A

IDENTITY (As Used on Label and List) EPA Reg.No.11694-34
A-080 WYPE Foaming Cleaner

Note: Blank spaces are not permitted. If any item is not applicable, or information is available, the space must be marked to indicate it

Section I

Manufacturer's Name	Emergency Telephone Number
Dymon, Inc.	800-255-4564
Address (Number, Street, City, State, and ZIP Code)	Telephone Number for Information
3401 Kansas Ave.	800-255-4564
Kansas City, KS 66106	Date Prepared: January 28, 1991
	Signature of Preparer (optional): Regulatory Department

Section II — Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity; Common Name(s))		OSHA PEL	ACGIH TLV	Other Limits Recommended	% (op
2-Methyl Propane	CAS# 75-28-5	800ppm	800ppm(asphyxiant)		
Propane	CAS# 74-98-6	1000ppm	(asphyxiant)		
Quaternary ammonium chloride	CAS# 5197-80-8	None	None		
2-Butoxyethanol	CAS# 111-76-2	25ppm	25ppm(skin)		1-
2-(2-ethoxyethoxy)-ethanol	CAS# 111-90-0	None	None		1-
Sodium nitrite	CAS# 7632-00-0	None	None		.09-
Sodium borate compound	CAS# 1303-96-4	10mg/m³	1mg/m3		.45-

The last two entries above (ethanolic compounds), may require reporting under SARA Tit Sec. 313 as glycol ethers if used over threshhold quantities. Reference 40 CFR Part 37

Any substance listed as hazardous by the states of California, Massachusetts, New Jer and Pennsylvania are described above if known present in regulated concentrations.

Section III — Physical/Chemical Characteristics

Boiling Point		Specific Gravity (H_2O = 1)	
conc.	212°F	conc.	1.01
Vapor Pressure (mm Hg.)		Melting Point	
	3100		N.D.
Vapor Density (AIR = 1)		Evaporation Rate (Butyl Acetate = 1)	
	N.D.		N.D.

Solubility in Water

Infinite

Appearance and Odor

Clear liquid dispensed as wet foam with lemon fragrance.

Section IV — Fire and Explosion Hazard Data

Flash Point (Method Used)	Flammable Limits	LEL	UEL
Concentrate: None to boil. pt.	N.D.	N.D.	N.D.

Extinguishing Media

Dry chemical, foam, CO2, water

Special Fire Fighting Procedures

Keep exposed containers cool with water spray to prevent container rupture.

Unusual Fire and Explosion Hazards

NEUTRON INDUSTRIES, INC.

Quality Products Since 1911

Ne Marketing Headquarters
Phoenix, Arizona 85021-7619
1-800-421-8481

MATERIAL SAFETY DATA SHEET

I. IDENTIFICATION

Name: APPLESCENT NI-712 FAMILY
Type: A FORMULATED ODOR ELIMINATOR.
D.O.T

Shipping Name: NOT APPLICABLE (N/A)
Hazard Class: N/A
ID No.: N/A
Label: N/A

II. HAZARDOUS INGREDIENTS

Material	Weight	TLV
ALIPHATIC PETROLEUM DISTILLATES (CAS #64741-65-7)	80-90%	100 PPM

NO NTP, IARC, OR OSHA CARCINOGENS PRESENT

III. PHYSICAL DATA

Boiling Point (F°): 340°F.
Specific Gravity (Water=1): 0.777
Volatile By Weight (%): 100
Weight Per Gallon: 6.48 POUNDS
Solubility In Water: INSOLUBLE
pH: N/A
Appearance & Odor: CLEAR TO LIGHT AMBER LIQUID WITH A GREEN APPLE ODOR.

IV. FIRE & EXPLOSION HAZARD DATA

Flashpoint (Method Used): 137°F (T.C.C.)
Extinguishing Media: FOAM , DRY CHEMICAL OR CARBON DIOXIDE.
Special Fire Fighting Procedures: CONTAINS PETROLEUM DISTILLATE, WATER IS NOT EFFECTIVE IN FIRE-FIGHTING.
Unusual Fire & Explosion Hazards: NONE

V. HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE: HARMFUL OR FATAL IF SWALLOWED. MAY CAUSE MILD IRRITATION TO EYES AND SKIN. DO NOT TAKE INTERNALLY.

CHRONIC HEALTH EFFECTS: EXPOSURE TO PETROLEUM SOLVENTS MAY CAUSE EFFECTS TO CENTRAL NERVOUS SYSTEM, LIVER AND KIDNEY.

FIRST AID PROCEDURES:

If Swallowed: DO NOT INDUCE VOMITING. CALL A PHYSICIAN OR POISON CONTROL CENTER IMMEDIATELY.
If Inhaled: GET FRESH AIR IMMEDIATELY.
If In Eyes: FLUSH EYES IMMEDIATELY WITH PLENTY OF COOL WATER FOR AT LEAST 15 MINUTES. IF IRRITATION PERSISTS, CONTACT A PHYSICIAN.
If On Skin: WASH AREA WITH SOAP AND WATER.

VI. REACTIVITY \TA

Stability: STABLE
Conditions to Avoid: DO NOT MIX WITH ANY OTHER CHEMICALS
INCOMPATIBILITY (Materials to avoid): NONE
Hazardous Decomposition Products: CARBON MONOXIDE

HAZARDOUS POLYMERZATION WILL NOT OCCUR

VII. SPILL OR LEAK PROCEDURES

Steps To Be Taken If Material Is Released Or Spilled: VENTILATE AREA . REMOVE SOURCES OF HEAT, SPARKS AND OPEN FLAME. USE ABSORBENT MATERIAL TO ABSORB LIQUID, THEN SWEEP UP AND DISPOSE OF PROPERLY.

Waste Disposal Method: DISPOSE OF ABSORBENT MATERIAL IN CHEMICAL RECEPTACLE OR CONTAINER HEADED FOR LANDFILL. THIS PRODUCT AS FORMULATED IS AN UNSPECIFIED IGNITABLE WASTE (WASTE NO. D001).

Follow All Federal, State and Local Regulations Regarding Waste Disposal

VIII: SPECIAL PROTECTION INFORMATION:

Eye protection and protective gloves are recommended any time your work with any concentrated industrial strength cleaning products.

Respiratory Protection: NO SPECIAL PROTECTION REQUIRED.
Ventilation: NORMAL VENTILATION IS ADEQUATE.
Protective Gloves: RUBBER
Eye Protection: SAFETY GLASSES
Other Protective Equipment: SOURCE OF CLEAN WATER IN CASE OF ACCIDENTAL EYE CONTACT.

IX. SPECIAL PRECAUTIONS:

Precautions To Be Taken In Handling Storage: COMBUSTIBLE. KEEP AWAY FROM HEAT AND OPEN FLAME. KEEP LARGE CONTAINERS CLOSED WHEN NOT IN USE.
WARNING: COMBUSTIBLE. KEEP AWAY FROM HEAT AND OPEN FLAME. AVOID CONTACT WITH EYES. DO NOT TAKE INTERNALLY. AVOID OVERSPRAY ONTO FINISHED WOOD SURFACES OR CONTACT WITH PLASTIC AND OTHER SYNTHETIC SURFACES.

HMIS RATING: HEALTH 2 FLAMMABILITY 2
REACTIVITY 0 PERSONAL PROTECTION B

Read and follow all label directions and precautions before using the product. These products are intended for industrial and institutional use only. Not intended for household use or resale.

KEEP OUT OF THE REACH OF CHILDREN

While we believe that the data contained herein is factual and the opinions expressed are those of qualified experts, the data are not to be taken as a warranty or representation for which the company assumes legal responsibility. They are offered solely for your consideration, investigation, and verification. Any use of these data and information must be determined by the user to be in accordance with applicable Federal, State, and Local laws and regulations.

HEALTH AND SAFETY INFORMATION (216) 861-7114

JUNE 1990

SCOEPA00055242

VOC
chemicals
used
over 50 lbs

MATERIAL SAFETY DATA SHEET

EM SCIENCE
A DIVISION OF EM INDUSTRIES
P.O. BOX 70
480 DEMOCRAT RD.
GIBBSTOWN, N.J. 08027

PREPARATION DATE .....: FEB 13, '89

INFORMATION PHONE NUMBER :
(609) 354-9200
CHEMTREC EMERGENCY NUMBER:
1-800-424-9300

NFPA HAZARD RATINGS

HEALTH ....: 2 FLAMMABILITY ...: 2
REACTIVITY : 1 SPECIAL HAZARDS.:

SECTION I - GENERAL INFORMATION

CATALOG NUMBER(S): AX0071 AX0072 AX0073 AX0073I AX0073Y
AX0076 55 AX0073P 62
CHEMICAL NAME....: **ACETIC ACID**
TRADE NAME.....: ETHANOIC ACID; GLACIAL ACETIC ACID
C.A.S. NUMBER....: 64-19-7
CHEMICAL FAMILY..: ORGANIC ACID
FORMULA.....: CH.3.COOH
MOLECULAR WEIGHT.: 60.05
DOT SHIPPING NAME: ACETIC ACID, GLACIAL
DOT NUMBER.....: UN2789

SECTION II - HAZARDOUS INGREDIENTS

NONE OTHER THAN SPECIFIED PRODUCT

SECTION III- PHYSICAL DATA

BOILING POINT (C 760 MM HG).: 118.1C
MELTING POINT (C).....: 16.7C
SPECIFIC GRAVITY(H.2.O = 1)....: 1.049
VAPOR PRESSURE..(MM HG).....: 11.4 20C
PERCENT VOLATILE BY VOL (%)..: 100
VAPOR DENSITY (AIR=1).....: 2.07
EVAPORATION RATE (BUAC=1)....: 0.97
SOLUBILITY IN WATER (%).....: MISCIBLE
APPEARANCE AND ODOR.....: CLEAR, COLORLESS LIQUID, PUNGENT ODOR

SECTION IV - FIRE & EXPLOSION HAZARD DATA

FLASH POINT (F).....: 109F (CC)

SCOEPA00055244

AXEL PLASTICS RESEARCH LABORATORIES,INC.
P O BOX 855, 58-20 BROADWAY
WOODSIDE, NY 11377-0855 USA

HMIS RATING	
HEALTH	1
FLAMMABILITY	3
REACTIVITY	1
PROTECTION	A

M A T E R I A L S A F E T Y D A T A S H E E T

EMERGENCY PHONE NO. (718) 672-8300

SECTION I

PRODUCT NAME:MOLD WIZ# F-57 MOLD RELEASE AGENT

PROPER SHIPPING NAME (49 CFR 171.101):RESIN SOLUTION
D.O.T. HAZARD CLASS (49 CFR 171.101):FLAMMABLE LIQUID
D.O.T. ID NUMBER (49 CFR 171.101):UN-1866
D.O.T. HAZARD NAME (49 CFR 171.101):FLAMMABLE SOLVENTS, NOS

PRODUCT DESCRIPTION: A PROPRIETARY COMPLEX MIXTURE OF ORGANIC PHOSPHATE ESTERS AND CROSS LINKED POLYOLEFINS IN COMBINATION WITH A FLUOROCARBON DISPERSION.

SECTION II HAZARDOUS INGREDIENTS

Methyl Ethyl Ketone	5-10%	CAS #	78-93-3
Acetone	30-34%	CAS #	67-64-1
1,1,1-Trichloroethane	25-30%	CAS #	71-55-6
Petroleum Hydrocarbon Solv	15-20%	CAS #	64742-89-8
Polytetrafluoroethylene	<6%	CAS #	9002-84-0

TLV: 765 ppm

SECTION III HEALTH HAZARD DATA

EFFECTS OF OVER-EXPOSURE
INHALATION: HIGH VAPOR CONCENTRATION MAY CAUSE DIZZINESS OR HEADACHE

INGESTION : EFFECTS UNKNOWN TO AXEL
SKIN : MAY CAUSE DRYNESS
EYES : MAY CAUSE TEMPORARY IRRITATION OR PAIN.

EMERGENCY AND FIRST AID PROCEDURES
INHALATION: REMOVE TO FRESH AIR.IF NOT BREATHING,GIVE MOUTH-TO-MOUTH RESUSCITATION.IF BREATHING DIFFICULT,GIVE OXYGEN. CALL A PHYSICIAN.

INGESTION : DO NOT INDUCE VOMITING. CALL A PHYSICIAN.

SKIN : WASH WITH DETERGENT AND WATER.
EYES : IMMEDIATELY FLUSH WITH LIBERAL AMOUNTS OF WATER FOR AT LEAST 15 MINUTES.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASHPOINT (METHOD USED) 75 F / 24 C (C.O.C.)
FLAMMABLE LIMITS IN AIR, % BY VOLUME: LOWER: 1.0
UPPER: 5.0
EXTINGUISHING MEDIA: WATER FOG, FOAM, CO2, DRY CHEMICALS
UNUSUAL FIRE AND EXPLOSION HAZARDS: DO NOT MIX OR STORE WITH STRONG OXIDANTS.(liquid chlorine or concentrated oxygen)

SCOEPA00055245

PRODUCT NAME: MOLD WIZ# F-57 MOLD RELEASE AGENT

SECTION V PHYSICAL DATA

BOILING POINT : 198 F / 93 C
VAPOR DENSITY : 3.66
PERCENT VOLATILE BY VOLUME @25 C:94%
EVAPORATION RATE :(Acetone=1): 1.1
SPECIFIC GRAVITY @25 C: 0.95g/ml
SOLUBILITY IN WATER : INSOLUBLE
pH : MIN: MAX:
ODOR :ALIPHATIC
COLOR:MILKY WHITE

SECTION VI REACTIVITY DATA

STABILITY : STABLE
CONDITIONS TO AVOID : AVOID OPEN FLAME,WELDING ARCS AND OTHER HIGH TEMPERATURE SOURCES.
HAZARDOUS POLYMERIZATION: WILL NOT OCCUR
HAZARDOUS DECOMPOSITION : HYDROGEN CHLORIDE,SMALL AMTS OF PHOSGENE AND CHLORINE

SECTION VII SPILL OR LEAK PROCEDURES

ELIMINATE ALL SOURCES OF IGNITION. CONTAIN SPILL; IF CONTAINER IS DAMAGED TRANSFER TO CLOSED LINED METAL, GLASS OR PLASTIC CONTAINER. USE ABSORBANT MATERIAL TO COLLECT AND CONTAIN FOR SALVAGE OR DISPOSAL.

WASTE DISPOSAL METHOD:AXEL PLASTICS SUGGESTS THAT ALL LOCAL, STATE AND FEDERAL REGULATIONS CONCERNING HEALTH AND POLLUTION BE REVIEWED TO DETERMINE APPROVED DISPOSAL PROCEDURES. CONTACT AXEL PLASTICS IF THERE ARE ANY DISPOSAL QUESTIONS.

SECTION VIII SPECIAL PROTECTION INFORMATION

USE IN WELL VENTILATED AREA. RESPIRATORY MASK IS NOT REQUIRED, BUT IF USED, SHOULD BE TYPE FOR ORGANIC VAPORS.

VENTILATION
LOCAL EXHAUST: PREFERABLE
MECHANICAL : ACCEPTABLE
SPECIAL : NONE KNOWN TO AXEL PLASTICS

DO NOT CONSUME FOOD, DRINK OR TOBACCO IN AREAS WHERE THEY MAY BE CONTAMINATED BY THIS MATERIAL. WASH HANDS WELL BEFORE EATING/SMOKING

PROTECTIVE GLOVES : NOT REQUIRED, BUT IF USED SHOULD BE IMPERVIOUS RUBBER OR PLASTIC

EYE PROTECTION : USE SAFETY GLASSES OR CHEMICAL GOGGLES.EYE CONTACT MAY CAUSE PAIN BUT INJURY TO EYES IS UNLIKELY.

OTHER PROTECTIVE EQUIPMENT : AS REQUIRED BY YOUR COMPANY.

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: STORE IN COOL,DRY AREA. AVOID HIGH HEAT SOURCES, OPEN FLAME AND WELDING ARCS.

NOTE: THIS DATA IS OFFERED IN GOOD FAITH AS TYPICAL VALUES AND NOT AS A PRODUCT SPECIFICATION. NO WARRANTY, EITHER EXPRESSED OR IMPLIED, IS HEREBY MADE. THE RECOMMENDED INDUSTRIAL HYGIENE AND SAFE HANDLING PROCEDURES ARE BELIEVED TO BE GENERALLY APPLICABLE. HOWEVER, EACH USER SHOULD REVIEW RECOMMENDATIONS IN THE SPECIFIC CONTEXT OF THE INTENDED USE AND DETERMINE WHETHER THEY ARE APPROPRIATE.

PREPARED BY: F.AXEL rev. DATE: JUNE 15, 1989

FREON TP REVISION OF:01-13-89

new

MAIL TO:

02005857
WACKER SILTRONIC CORP
ATTN: MARK ORGSIL
7200 NW FRONT ST
PO BOX 03180
PORTLAND OR 97203

ORDER NO: 029533189
PROD NO: 04278359

VAN WATERS & ROGERS INC. 1600 NORTON BLDG. SEATTLE, WA 98104-1564

EMERGENCY ASSISTANCE

FOR EMERGENCY ASSISTANCE INVOLVING CHEMICALS CALL CHEMTREC (800) 424-9300.

FOR PRODUCT AND SALES INFORMATION

CONTACT YOUR LOCAL VAN WATERS & ROGERS BRANCH OFFICE

PRODUCT IDENTIFICATION

PRODUCT NAME: FREON (R) TP
COMMON NAMES/SYNONYMS: MIXTURE OF FREON (R) TF AND ISOPROPANOL

CAS NO.: MIXTURE
VW&R CODE: T2086

FORMULA: MIXTURE
HAZARD RATING (NFPA 704)
HEALTH: 1
FIRE: 1
REACTIVITY: 0
SPECIAL: NONE

DATE ISSUED: 12/88
SUPERCEDES: 06/86
HAZARD RATING SCALE:
0=MINIMAL 3=SERIOUS
1=SLIGHT 4=SEVERE
2=MODERATE

HAZARDOUS INGREDIENTS

COMPONENT	CAS NO.	%	EXPOSURE LIMITS, PPM OSHA PEL	ACGIH TLV	OTHER LIMIT	HAZARD
FREON (R) TF (TRICHLOROTRI-FLUOROETHANE)	76-13-1	97.0	1000	1000	NONE	OSHA/ACGIH LIST
ISOPROPANOL	67-63-0	3.0	400	400	NONE	FLAMMABLE

(R) TRADEMARK OF DUPONT FOR ITS FLUOROCARBON COMPOUNDS

PHYSICAL PROPERTIES

BOILING POINT, DEG F: 115.2
MELTING POINT, DEG F: N/A
SPECIFIC GRAVITY (WATER=1): 1.513
APPEARANCE AND ODOR: CLEAR, COLORLESS LIQUID; FAINT SOLVENT ODOR.

VAPOR PRESSURE, MM HG/25 DEG C: 308
VAPOR DENSITY (AIR=1): 6.4
WATER SOLUBILITY, %: NIL
EVAPORATION RATE (BUTYL ACETATE=1): >1

FIRST AID MEASURES

IF INHALED: REMOVE TO FRESH AIR. GIVE ARTIFICIAL RESPIRATION IF NOT BREATHING. GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF EYE CONTACT: IMMEDIATELY FLUSH EYES WITH LOTS OF RUNNING WATER FOR 15 MINUTES, LIFTING THE UPPER AND LOWER EYELIDS OCCASIONALLY. GET IMMEDIATE MEDICAL ATTENTION.

SCOEPA00055247

ISOPROPYL ALCOHOL MICROPROCESS REVISION OF: 09-27-89

MAIL TO:

02005857
. WACKER SILTRONIC CORP
ATTN: MARK ORGSIL
7200 NW FRONT ST
PO BOX 03180
PORTLAND OR 97203

ORDER NO: 020521871
PROD NO: 04326625

VAN WATERS & ROGERS INC., SUBSIDIARY OF UNIVAR
1600 NORTON BLDG. SEATTLE, WA 98104-1564 (408) 435-8700

EMERGENCY ASSISTANCE

FOR EMERGENCY ASSISTANCE INVOLVING CHEMICALS CALL CHEMTREC (800)424-9300

FOR PRODUCT AND SALES INFORMATION

CONTACT YOUR LOCAL VAN WATERS & ROGERS BRANCH OFFICE

PRODUCT IDENTIFICATION

PRODUCT NAME: ISOPROPYL ALCOHOL
COMMON NAMES/SYNONYMS: ISOPROPANOL; 2-PROPANOL; DIMETHYL CARBINOL; IPA

CAS NO.: 67-63-0
VW&R CODE: P1238

FORMULA: C3 H8 O
HAZARD RATING (MANUFACTURER)
HEALTH: 2
FIRE: 3
REACTIVITY: 0
SPECIAL: NONE

DATE ISSUED: 09/89
SUPERCEDES: 08/89
HAZARD RATING SCALE:
0=MINIMAL 3=SERIOUS
1=SLIGHT 4=SEVERE
2=MODERATE

HAZARDOUS INGREDIENTS

COMPONENT	%	EXPOSURE LIMITS, PPM OSHA PEL	ACGIH TLV	OTHER LIMIT	HAZARD
ISOPROPYL ALCOHOL	>99	400	400	500 (ACGIH STEL)	FLAMMABLE

PHYSICAL PROPERTIES

BOILING POINT, DEG F: 181
MELTING POINT, DEG F: -127
SPECIFIC GRAVITY (WATER=1): 0.79
APPEARANCE AND ODOR: CLEAR, COLORLESS LIQUID; MEDICINAL ALCOHOLIC ODOR
VAPOR PRESSURE, MM HG/20 DEG C: 33
VAPOR DENSITY (AIR=1): 2.07
WATER SOLUBILITY, %: 100
EVAPORATION RATE (BUTYL ACETATE=1): 3

FIRST AID MEASURES

IF INHALED: REMOVE TO FRESH AIR. GIVE ARTIFICIAL RESPIRATION IF NOT BREATHING. GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF EYE CONTACT: IMMEDIATELY FLUSH EYES WITH LOTS OF RUNNING WATER FOR 15 MINUTES, LIFTING THE UPPER AND LOWER EYELIDS OCCASIONALLY. GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF SKIN CONTACT: IMMEDIATELY WASH SKIN WITH LOTS OF SOAP AND WATER. REMOVE CONTAMINATED CLOTHING AND SHOES; WASH BEFORE REUSE. GET MEDICAL ATTENTION IF IRRITATION PERSISTS AFTER WASHING.

SCOEPA00055248

SHIP TO:

02005857
. WACKER SILTRONIC CORP
ATTN: MARK ORGSIL
7200 NW FRONT ST
PO BOX 03180
PORTLAND OR 97203

ORDER NO: 020507580
PROD NO: 04007250

VAN WATERS & ROGERS INC. 1600 NORTON BLDG. SEATTLE, WA 98104-1564

EMERGENCY ASSISTANCE

FOR EMERGENCY ASSISTANCE INVOLVING CHEMICALS CALL CHEMTREC (800) 424-9300.

FOR PRODUCT AND SALES INFORMATION

CONTACT YOUR LOCAL VAN WATERS & ROGERS BRANCH OFFICE

PRODUCT IDENTIFICATION

PRODUCT NAME: **ACETONE** CAS NO.:67-64-1
COMMON NAMES/SYNONYMS: ACETONE; VW&R CODE:T1018
2-PROPANONE
FORMULA: C3 H6 O DATE ISSUED: 12/88
HAZARD RATING (NFPA 704) SUPERCEDES: 08/87
HEALTH: 1 HAZARD RATING SCALE:
FIRE: 3 0=MINIMAL 3=SERIOUS
REACTIVITY: 0 1=SLIGHT 4=SEVERE
SPECIAL: NONE 2=MODERATE

HAZARDOUS INGREDIENTS

		EXPOSURE LIMITS, PPM			
		OSHA	ACGIH	OTHER	
COMPONENT	%	PEL	TLV	LIMIT	HAZARD
ACETONE	>99	1000	750	1000 (ACGIH STEL)	FLAMMABLE;IRRITANT

PHYSICAL/CHEMICAL CHARACTERISTICS

BOILING POINT, DEG F: 133 VAPOR PRESSURE, MM HG/20 DEG C:184
MELTING POINT, DEG F: -142 VAPOR DENSITY (AIR=1):2.0
SPECIFIC GRAVITY (WATER=1): 0.79 WATER SOLUBILITY, %:100
APPEARANCE AND ODOR: CLEAR, EVAPORATION RATE (BUTYL ACETATE=1):14
COLORLESS LIQUID; SWEET ODOR

FIRST AID MEASURES

IF INHALED: REMOVE TO FRESH AIR. GIVE ARTIFICIAL RESPIRATION IF NOT BREATHING. GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF EYE CONTACT: IMMEDIATELY FLUSH EYES WITH LOTS OF RUNNING WATER FOR 15 MINUTES, LIFTING THE UPPER AND LOWER EYELIDS OCCASIONALLY. GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF SKIN CONTACT: IMMEDIATELY WASH SKIN WITH LOTS OF SOAP AND WATER. REMOVE CONTAMINATED CLOTHING AND SHOES; WASH BEFORE REUSE. GET MEDICAL ATTENTION IF IRRITATION PERSISTS AFTER WASHING.

IF SWALLOWED: IF CONSCIOUS, IMMEDIATELY INDUCE VOMITING BY GIVING 2

SCOEPA00055249

CRC **MATERIAL SAFETY DATA SHEET**

PRODUCT NAME 3-36 (Bulk) #3006, 3009, 3011	# MSDS003006
MANUFACTURED BY: CRC CHEMICALS	Phone (215) 674-4300
885 LOUIS DRIVE, WARMINSTER, PA. 18974	

1. INGREDIENTS

	CAS #	ACGIH TLV	OSHA PEL	Other Limits	%
Petroleum Distillate	64742-47-8	NA	NA	200ppm (Est.)	70
*Inhibited Paraffinic Oil	NA		For Mist 5 mg/M3		30

*The oil and additives are not hazardous according to OSHA standards -
Additives are primarily fatty acids and fatty acid esters.

2. PHYSICAL DATA

Specific Gravity .8167	Vapor Pressure 0.23 mm	% Volatile 70
Boiling Point 380°F (initial)	Evaporation Rate Slow 0.01 (Toluene = 1)	
Freezing Point NA	Vapor Density Heavier than air	

Appearance and Odor: Blue liquid, pleasant odor

Solubility: Negligible in water - Dissolves in most organic solvents.

3. FIRE AND EXPLOSION DATA

Flashpoint 175°F	Method COC	Flammable Limits
Extinguishing Media CO_2, Dry Chemical or Foam		LEL NA / UEL NA

Unusual Hazards: Treat as typical oil fire

4. REACTIVITY AND STABILITY

Stability: Stable

Hazardous decomposition products: CO_2 & Carbon monoxide (Fire)

Materials to avoid: Strong oxidizing agents

5. PROTECTION INFORMATION

Ventilation: Adequate ventilation to maintain oil mist below PEL if sprayed.

Respiratory: Use NIOSH approved respirators for high mist concentration.

Gloves: Solvent resistant	Eye & Face: Safety glasses

Other Protective Equipment: Oil resistant aprons, boots, etc. should be worn if other parts of body are subject to exposure

CRC

MATERIAL SAFETY DATA SHEET

PRODUCT NAME 3-36 (Aerosol) #03004, 3005, 3005T	# MSDS003004
MANUFACTURED BY: CRC CHEMICALS	Phone (215) 674-4300
885 LOUIS DRIVE, WARMINSTER, PA. 18974	

1. INGREDIENTS

INGREDIENTS	CAS #	ACGIH TLV	OSHA PEL	Other Limits	%
Petroleum Distillate	64742-47-8	NA	NA	200ppm (Fst.)	67
*Inhibited Paraffinic Oil	NA		For Mist 5 mg/M3		29
Carbon Dioxide	124-38-9	5000	5000		4

*The oil and additives are not hazardous according to OSHA standards - Additives are primarily fatty acids and fatty acid esters.

2. PHYSICAL DATA (Without Propellent)

Specific Gravity .8167	Vapor Pressure 0.23 mm	% Volatile 70
Boiling Point 380°F (initial)	Evaporation Rate Slow 0.01 (Toluene = 1)	
Freezing Point NA	Vapor Density Heavier than air	

Appearance and Odor: Blue liquid, pleasant odor

Solubility: Negligible in water - Dissolves in most organic solvents.

3. FIRE AND EXPLOSION DATA

Flashpoint 175°F	Method COC	Flammable Limits	
Extinguishing Media CO_2, Dry Chemical or Foam		LEL NA	UEL NA

Unusual Hazards: Aerosol containers may explode when heated above 130°F.

4. REACTIVITY AND STABILITY

Stability: Stable

Hazardous decomposition products: CO_2 & Carbon monoxide (Fire)

Materials to avoid: Strong oxidizing agents

5. PROTECTION INFORMATION

Ventilation: Adequate ventilation to maintain oil mist below PEL when sprayed.

Respiratory: Use NIOSH approved respirators for high mist concentration.

Gloves Solvent resistant	Eye & Face Safety glasses

Other Protective Equipment: Not normally required for aerosol use.

SCOEPA00055251

Document: 8293A
Replaces

Cautionary Code: 80F

MATERIAL SAFETY DATA SHEET

SECTION 1. IDENTIFICATION OF PRODUCT

MANUFACTURER: Valtech Corporation
ADDRESS: P.O. Box 188, Eagle, PA 19480
EMERGENCY TELEPHONE NUMBER: (215) 458-0478
SALES NAME: VALTRON™ AD 1210 Ingot Mounting Adhesive Catalyst (Part B)
CHEMICAL DESCRIPTION: Contains 1,2-Ethanediamine, N-(2-aminoethyl)-
TOSCA CAS REGISTRY No.: 111-40-0
DOT HAZARD CLASS: Corrosive
DOT SHIPPING NAME: Corrosive liquid, n.o.s. UN 1760

SECTION 2. PHYSICAL DATA

APPEARANCE & ODOR: Green liquid. Slight odor.
SPECIFIC GRAVITY (liquids only): 1.1
SOLUBILITY IN WATER : Complete.
VAPOR PRESSURE (mm Hg at °F, nonaqueous liquids only): Data not available.
EVAPORATION RATE (Butyl acetate = 100, nonaqueous liquids only): Data not available.
SOLIDS CONTENT (solutions, dispersions, or pastes only): 40
BOILING POINT (°F, nonaqueous liquids only): 404.6°F @ 760mm Hg
VAPOR DENSITY (nonaqueous liquids only): Data not available.
pH (aqueous liquids only): N. A.

SECTION 3. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (°F): 230°
FLAMMABLE LIMITS (vapor in air, Vol.%): Data not available.
FIRE EXTINGUISHING MEDIA: Water, dry chemical, carbon dioxide, or foam.
SPECIAL FIRE FIGHTING PROCEDURES: Use supplied air breathing apparatus. Cool fire-exposed containers with water.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Emits acrid smoke and irritating fumes when heated to decomposition.

SECTION 4. REACTIVITY DATA

STABILITY: Stable.
CONDITIONS TO AVOID: N. A.
INCOMPATIBILITY (Materials to Avoid): Strong acids and oxidizers.
HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide, carbon dioxide, Nitrogen oxides.

N.A. = Not Applicable

SCOEPA00055252

SECTION 5. SPILL OR LEAK PROCEDURES

SPILLAGE: Dike and absorb spill with inert material (such as sand, vermiculite, or earth), and transfer to containers for disposal.

WASTE DISPOSAL METHOD: Incinerate or landfill according to local, state, and federal regulations.

SECTION 6. HEALTH HAZARD DATA

EYE CONTACT: Causes burns.
SKIN CONTACT: Causes irritation.
INHALATION: Causes irritation.
FIRST AID PROCEDURES: In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing or shoes. Call a physician. Wash contaminated clothing before reuse.

SECTION 7. SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: Use NIOSH approved respirator for organic vapor where vapors occur.

GLOVES: Rubber.
EYE PROTECTION: Chemical goggles or face shield.
OTHER PROTECTIVE EQUIPMENT: Safety shower and eyewash fountain should be within direct access.

PERSONAL HYGIENE: Do not get in eyes, on skin, on clothing. Wash thoroughly after handling.

ENGINEERING CONTROL: Use with adequate ventilation. Keep container closed.

SECTION 8. SUBSTANCES FOR WHICH STANDARDS HAVE BEEN SET

SINGLE CHEMICAL SUBSTANCE: N. A. COMPONENTS: Diethylenetriamine
Percent: N. A. Percent: 40%
OSHA Exposure Limit: N. A. OSHA Exposure Limit: N. A. - 1 ppm
ACGIH TLV® 1 ppm, 4 mg/m^3 - Skin
EXPOSURE ANALYSIS METHODS: Data not available.

SECTION 9. SOURCE OF INFORMATION

John G. Blumberg Product Safety Coordinator Date: 12/21/84

N.A. = Not Applicable

SCOEPA00055253

Olin Hunt

OLIN HUNT SPECIALTY PRODUCTS INC.
A SUBSIDIARY OF OLIN CORPORATION
5 GARRET MOUNTAIN PLAZA
WEST PATERSON, N.J. 07424

MATERIAL SAFETY DATA SHEET

EMERGENCY NO: 1-(800)-OLIN-911

SECTION-1 IDENTIFICATION

TRADE NAME: HYDROCHLORIC ACID

CHEMICAL NAME: HYDROCHLORIC ACID, 36.5-38% H0544

CHEMICAL FAMILY: INORGANIC ACID

CHEMICAL FORMULA: HCL

CHEMICAL DESCRIPTION: CLEAR COLORLESS LIQUID

CAS NO.: 7647-01-0

SECTION -2 NORMAL HANDLING PROCEDURE

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:
MAY BE FATAL IF SWALLOWED. AVOID CONTACT WITH EYES, SKIN OR CLOTHING. UPON CONTACT WITH SKIN OR EYES, IMMEDIATELY WASH OFF WITH WATER. AVOID BREATHING MIST OR VAPOR. SAFETY SHOWER AND EYE BATH. STORE IN A COOL, DRY, WELL-VENTILATED PLACE. KEEP TIGHTLY CLOSED. WATER SHOULD NOT BE ADDED TO ACIDS, VIGOROUS SPATTERING WITH A LIBERATION OF HEAT CAN RESULT.

PROTECTIVE EQUIPMENT:

EYES: GOGGLES, FACESHIELD

GLOVES: NEOPRENE OR NATURAL RUBBER

OTHER: SARANEX COVERALLS, NEOPRENE OR NATURAL RUBBER BOOTS, OSHA/MSHA APPROVED IRATOR.
VENTILATION REQUIRED:
AS REQUIRED TO KEEP AIRBORNE CONCENTRATIONS BELOW TLV.

SECTION -3 HAZARD INGREDIENTS

BASIC MATERIAL: HYDROCHLORIC ACID

CAS NO.: 7647-01-0 PERCENT: 36.5 - 38%

OSHA PEL: 5 PPM CEILING

SCOEPA00055254

J.T.BAKER INC. 222 RED SCHOOL LANE, PHILLIPSBURG, NJ 08865
M A T E R I A L S A F E T Y D A T A S H E E T
24-HOUR EMERGENCY TELEPHONE -- (201) 859-2151
CHEMTREC # (800) 424-9300 -- NATIONAL RESPONSE CENTER # (800) 424-8802

J.T.BAKER INC., 222 RED SCHOOL LANE, PHILLIPSBURG, NJ 08865

SECTION I - PRODUCT IDENTIFICATION

PRODUCT NAME: HYDROCHLORIC ACID
COMMON SYNONYMS: MURIATIC ACID; CHLOROHYDRIC ACID; HYDROGEN CHLORIDE, AQUEOUS
CHEMICAL FAMILY: INORGANIC ACIDS
FORMULA: HCL
FORMULA WT.: 36.46
CAS NO.: 7647-01-0
NIOSH/RTECS NO.: MW4025000
PRODUCT USE: LABORATORY REAGENT
PRODUCT CODES: 9530,9546,5537,9529,9543,4800,9539,9547,5367,9535,9549,9548 9537,9544,9540,9534,9542,6900

PRECAUTIONARY LABELING

BAKER SAF-T-DATA* SYSTEM

HEALTH	-	3	SEVERE (POISON)
FLAMMABILITY	-	0	NONE
REACTIVITY	-	2	MODERATE
CONTACT	-	3	SEVERE (CORROSIVE)

LABORATORY PROTECTIVE EQUIPMENT

GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES

U.S. PRECAUTIONARY LABELING

POISON DANGER
CAUSES SEVERE BURNS. MAY BE FATAL IF SWALLOWED OR INHALED.
DO NOT GET IN EYES, ON SKIN, ON CLOTHING. DO NOT BREATHE VAPOR. CAUSES DAMAGE TO RESPIRATORY SYSTEM (LUNGS), EYES AND SKIN. KEEP IN TIGHTLY CLOSED CONTAINER. LOOSEN CLOSURE CAUTIOUSLY. USE WITH ADEQUATE VENTILATION. WASH THOROUGHLY AFTER HANDLING. IN CASE OF SPILL NEUTRALIZE WITH SODA ASH OR LIME AND PLACE IN DRY CONTAINER.

CONTINUED ON PAGE: 2

PRECAUTIONARY LABELING (CONTINUED)

INTERNATIONAL LABELING

IRRITATING TO EYES AND SKIN.
KEEP OUT OF REACH OF CHILDREN. IN CASE OF CONTACT WITH EYES, RINSE IMMEDIATELY WITH PLENTY OF WATER AND SEEK MEDICAL ADVICE.

SAF-T-DATA* STORAGE COLOR CODE: WHITE (CORROSIVE)

SECTION II - COMPONENTS

COMPONENT	CAS NO.	WEIGHT %	OSHA/PEL	ACGIH/TLV
HYDROCHLORIC ACID	7647-01-0	33-40	5 PPM	5 PPM
WATER	7732-18-5	60-67	N/E	N/E

SECTION III - PHYSICAL DATA

BOILING POINT: 110 C (230 F)
(AT 760 MM HG)

VAPOR PRESSURE (MMHG): N/A

MELTING POINT: -25 C (-13 F)
(AT 760 MM HG)

VAPOR DENSITY (AIR=1): 1.3

SPECIFIC GRAVITY: 1.19
(H2O=1)

EVAPORATION RATE: N/A

SOLUBILITY(H2O): COMPLETE (100%)

% VOLATILES BY VOLUME: 100
(21 C)

PH: 1.0 (0.1M SOLUTION)

ODOR THRESHOLD (P.P.M.): N/A

PHYSICAL STATE: LIQUID

COEFFICIENT WATER/OIL DISTRIBUTION: N/A

APPEARANCE & ODOR: CLEAR, COLORLESS FUMING LIQUID. PUNGENT ODOR.

CONTINUED ON PAGE: 3

SCOEPA00055256

OLIN HUNT SPECIALTY PRODUCTS INC.
A SUBSIDIARY OF OLIN CORPORATION
5 GARRET MOUNTAIN PLAZA
WEST PATERSON, N.J. 07424

Olin Hunt

MATERIAL SAFETY DATA SHEET

EMERGENCY NO: 1-(800)-OLIN-911

LD 50: 900 MG/KG * LC 50: 2858 PPM/1 HR (RAT)
SIGNIFICANT EFFECTS: CORROSIVE TO ALL TISSUES CONTACTED
*(ORAL RABBIT)

SECTION -4 FIRE AND EXPLOSION HAZARD DATA

FLASH POINT METHOD: NOT COMBUSTIBLE

FLAMMABLE EXPLOSIVE LIMITS: - LOWER: NA UPPER: NA

OSHA CLASSIFICATION: NOT REGULATED

EXTINGUISHING MEDIA: USE EXTINGUISHING MEDIA SUITABLE FOR SURROUNDING MATERIALS
SPECIAL FIRE HAZARD & FIRE FIGHING PROCEDURE: USE NIOSH/MSHA APPROVED SELF-CONTAINED BREATHING APPARATUS WHERE THIS MATERIAL IS INVOLVED IN A FIRE. REACTS WITH MOST METALS FORMING HYDROGEN GAS.

SECTION-5 HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE: HYDROGEN CHLORIDE 5 PPM CEILING (ACGIH 1987-88)
SYMPTOMS OF OVER EXPOSURE: CORROSIVE TO ALL TISSUES CONTACTED, ULCERATION OF SKIN, CONJUNCTIVITIS, AND EYE DAMAGE, RESPIRATORY IRRITATION, AND POSSIBLE PULMONARY EDEMA, COUGHING, CHOKING.
EMERGENCY FIRST AID PROCEDURES
SKIN: IMMEDIATELY FLUSH WITH WATER FOR 15 MINUTES, CALL A PHYSICIAN.
EYES: IMMEDIATELY FLUSH WITH WATER FOR 15 MINUTES, CALL A PHYSICIAN.
INGESTION: IMMEDIATELY DRINK LARGE QUANTITIES OF WATER. DO NOT INDUCE VOMITING, CALL A PHYSICIAN.
INHALATION: IMMEIDATELY REMOVE VICTIM TO FRESH AIR, CALL A PHYSICIAN.

SECTION-6 TOXICOLOGY (PRODUCT)

ACUTE ORAL LD 50: 900 MG/KG (RABBIT) MAY BE FATAL IF SWALLOWED.

ACUTE DERMAL LD 50: NO DATA

ACUTE INHAL LC 50: 3124 PPM/1 HR (RAT), ACUTE LCLO 1300 PPM/30 MIN (HUMAN)

CARCINOGENIC: NOT KNOWN TO BE CARCINOGENIC

MUTAGENIC: NOT KNOWN TO BE MUTAGENIC

EYE IRRITATION: CORROSIVE

SKIN IRRITATION: CORROSIVE
PRINCIPAL ROUTES OF ABSORPTION: INHALATION, DERMAL

SCOEPA00055257

OLIN HUNT SPECIALTY PRODUCTS INC.
A SUBSIDIARY OF OLIN CORPORATION
5 GARRET MOUNTAIN PLAZA
WEST PATERSON, N.J. 07424

Olin Hunt

MATERIAL SAFETY DATA SHEET

EMERGENCY NO: 1-(800)-OLIN-911

EFFECTS OF ACUTE EXPOSURE: CORROSIVE TO TISSUES CONTACTED, EYE INJURY WITH CONJUNCTIVITIS, COUGHING AND RESPIRATORY IRRITATION
EFFECTS OF CHRONIC EXPOSURE: CHRONIC OVER-EXPOSURE MAY CAUSE EROSION OF TEETH WITH ASSOCIATED COMPLICATIONS, BRONCHIAL IRRITATION WITH COUGH, AND BLEEDING OF THE NOSE AND GUMS.

SECTION-7 SPILL OR LEAKAGE PROCEDURE (CONTROL PROCEDURES)

ACTION FOR MATERIAL RELEASE OR SPILL:
WEAR NIOSH/MSHA POSITIVE PRESSURE SUPPLIED AIR RESPIRATOR. FOLLOW OSHA REGULATIONS FOR RESPIRATOR USE. (SEE 29 CFR 1910.134). WEAR COVERALLS, BUNA N OR NEOPRENE GLOVES, AND NEOPRENE BOOTS. REMOVE ALL SOURCES OF IGNITION. ISOLATE AREA OF SPILL BY DIKING. STOP SOURCE OF LEAK. TRANSFER CONTENTS TO NON-LEAKING CONTAINER OR STORAGE VESSEL. STAY UPWIND. NEUTRALIZE WITH LIME OR SODA ASH. ADD NON-COMBUSTIBLE DRY ABSORBENT, SHOVEL OR SWEEP UP MATERIAL AND PLACE IN AN APPROVED DOT CONTAINER AND SEAL. WASH ALL CONTAMINATED CLOTHING BEFORE REUSE. IN THE EVENT OF A LARGE SPILL USE THE EMERGENCY TELEPHONE NUMBER SHOWN ON THE FRONT OF THIS SHEET.

SECTION-7A SPILL OR LEAKAGE PROCEDURE (WASTE)

WASTE DISPOSAL METHOD:
DISPOSE OF CONTAMINATED PRODUCT, EMPTY CONTAINERS AND MATERIALS USED IN CLEANING UP SPILLS OR LEAKS IN A MANNER APPROVED FOR THIS MATERIAL. CONSULT APPROPRIATE FEDERAL, STATE AND LOCAL REGULATORY AGENCIES TO ASCERTAIN PROPER DISPOSAL PROCEDURES.

SECTION-8 SHIPPING DATA

DOT CLASS:
HYDROCHLORIC ACID, CORROSIVE MATERIAL UN 1789
DOT STATEMENT: POISON

SECTION-9 REACTIVITY DATA

STABILITY STABLE: X UNSTABLE: AT: DEGREES CELSIUS, DEGREES FAHRENHEIT

HAZARDOUS POLYMERIZATION: MAY OCCUR: WILL NOT OCCUR: X

CONDITIONS TO AVOID: PRESSURE TRANSFER, HEAT, FULL SUN ON CONTAINERS
INCOMPATIBILITY: METALS, ALKALIS, OXIDIZERS
HAZARDOUS DECOMPOSITION PRODUCT: HYDROGEN CHLORIDE (GAS), HYDROGEN CHLORINE (WITH OXIDIZERS)

SCOEPA00055258

Olin Hunt

OLIN HUNT SPECIALTY PRODUCTS INC.
A SUBSIDIARY OF OLIN CORPORATION
5 GARRET MOUNTAIN PLAZA
WEST PATERSON, N.J. 07424

MATERIAL SAFETY DATA SHEET

EMERGENCY NO: 1-(800)-OLIN-911

SECTION-10 PHYSICAL DATA

MELTING POINT: -15 F

BOILING POINT:227 F

SPECIFIC GRAVITY: 1.2
(WATER = 1)

VAPOR PRESSURE: 23 MM HG @ 20 C

SOLUBILITY IN WATER: COMPLETE

PH FACTOR: (1 NORMAL SOL.) 0.1

VOLATILES: 100%

EVAPORATION RATE: NO DATA
(BUTYLACETATE = 1)

VAPOR DENSITY:1.3

(AIR = 1)

SECTION-11 CANADIAN ADDENDUM

PHYSICAL DATA

ODOR: NO DATA
ODOR THRESHOLD: NO DATA

FREEZING POINT: NO DATA

DENSITY: NO DATA
COEFFICIENT OF WATER/OIL DISTRIBUTION: NO DATA

FIRE OR EXPLOSION HAZARD

AUTO-IGNITION TEMPERATURE: NOT APPLICABLE
EXPLOSION DATA - SENSITIVITY TO MECHANICAL IMPACT: NOT APPLICABLE
EXPLOSION DATA - SENSITIVITY TO STATIC DISCHARGE: NOT APPLICABLE

TOXICOLOGICAL PROPERTIES

SENSITIZATION TO PRODUCT: NO DATA

REPRODUCTIVE TOXICITY: NO DATA

TERATOGENICITY: NO DATA

NAME OF TOXICOLOGICALLY SYNERGISTIC PRODUCT: NO DATA

INFORMATION FURNISHED BY: ENVIRONMENTAL HYGIENE AND TOXICOLOGY (203) 789-5436

DATE: FEBRUARY 5, 1988

SCOEPA00055259

AIRCO

Material Safety Data Sheet HYDROGEN CHLORIDE	Page: 1 Rev. Date 07/10/89

Airco, Division of The BOC Group, Inc. Telephone: (201)464-8100
575 Mountain Avenue
Murray Hill, NJ 07974

Emergency Contact: CHEMTREC
Emergency Phone Number: (800)424-9300

SECTION #1 - IDENTIFICATION

Product: HYDROGEN CHLORIDE

CAS Number: 7647-01-0
Product Code: MSDS CODE G-40
Chemical Family: Inorganic Acid Anhydride
Chemical Formula: HCl

Synonyms: G-40
HYDROCHLORIC ACID, ANHYDROUS – Epi

Hazard Rating - Health: 3 High
- Fire: 0 Negligible
- Reactivity: 0 Negligible

SECTION #2 - CHEMICAL COMPONENTS

Component: HYDROGEN CHLORIDE
CAS Number: 7647-01-0 Percent of Mixture: >99.0000
ACGIH TLV-Ceiling: 5 ppm
OSHA PEL-Ceiling: 5 ppm (Final)
IDLH: 100 ppm

SECTION #3 - PHYSICAL DATA

Boiling Point: - 120.9°F - 84.9°C
Melting Point: - 173°F - 114°C
Vapor Pressure: 627.7 psia @ 70°F
Vapor Density (Air=1): 1.27 @ 70°F
Solubility (H2O): Very soluble

Material Safety Data Sheet HYDROGEN CHLORIDE	Page: 2 Rev. Date 07/10/89

SECTION #3 - PHYSICAL DATA Continued...

Appearance

Colorless gas.

Odor

Sharp pungent odor.

SECTION #4 - FIRE FIGHTING & EXPLOSION DATA

Fire and Explosion Hazards

Electrical classification: Nonhazardous.

Reacts with most metals in a corrosive manner liberating flammable hydrogen gas. It reacts with many organic materials with liberation of heat.

Extinguishing Media

Nonflammable

SECTION #5 - EXPOSURE and EFFECTS - INHALATION

Routes of Exposure - Inhalation

Corrosive and irritating to the upper and lower respiratory tract and all mucosal tissue. Symptoms include lacrimation, cough, labored breathing, and excessive salivary and sputum formation. Excessive irritation of the lungs causes acute pneumonitis and pulmonary edema, which could be fatal. Residual pulmonary malfunction may also occur. Chemical pneumonitis and pulmonary edema may result from exposure to the lower respiratory tract and deep lung.

First Aid - Inhalation

PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE. RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS.

Conscious persons should be assisted to an uncontaminated area and inhale fresh air. Unconscious persons should be moved to an uncontaminated area and given artificial resuscitation and supplemental oxygen. Assure that mucous or vomited material does not obstruct the airway by use of positional drainage. Delayed pulmonary edema may occur. Keep the patient under medical observation for at least 24 hours.

SECTION #5 - EXPOSURE and EFFECTS - SKIN

Routes of Exposure - Skin

Corrosive and irritating to the skin and all living tissue. It hydrolyzes very rapidly yielding hydrochloric acid. Skin burns and mucosal irritation are like that from exposure to volatile inorganic acids. Hydrogen chloride burns exhibit severe pain, redness, possible swelling and early necrosis.

First Aid - Skin

Remove contaminated clothing as rapidly as possible. Flush affected area with copious quantities of water. Seek immediate medical attention.

SECTION #5 - EXPOSURE and EFFECTS - EYES

Routes of Exposure - Eyes

Corrosive and irritating to the eyes. Contact with the liquid or vapor causes painful burns and ulcerations. Burns to the eyes result in lesions and possible loss of vision.

First Aid - Eyes

PERSONS WITH POTENTIAL EXPOSURE SHOULD NOT WEAR CONTACT LENSES.

Flush contaminated eye(s) with copious quantities of water. Part eyelids to assure complete flushing. Continue for a minimum of 15 minutes. Seek immediate medical attention.

SECTION #5 - MISCELLANEOUS TOXICOLOGICAL INFORMATION

Carcinogenicity: NTP: No IARC: No OSHA: No

SECTION #6 - REACTIVITY & POLYMERIZATION

Stability: Stable

Incompatible Materials

Reacts with water or moisture in the air yielding dense, acrid HCl fumes. Reacts with fluorine, calcium carbide, cesium carbide, rubidium carbide and lithium silicide. Reacts with many organic materials with liberation of heat.

Material Safety Data Sheet HYDROGEN CHLORIDE	Page: 4 Rev. Date 07/10/89

SECTION #6 - REACTIVITY & POLYMERIZATION Continued...

Hazardous Decomposition Products

Hydrochloric Acid on hydrolysis.

Hazardous Polymerization: Will not occur

SECTION #7 - SPILL, LEAK, & DISPOSAL PROCEDURES

Steps to be Taken in The Event of Spills, Leaks, or Release

Evacuate all personnel from affected area. Use appropriate protective equipment. If leak is in user's equipment, be certain to purge piping with an inert gas prior to attempting repairs. If leak is in container or container valve, contact CHEMTREC for emergency assistance or call your closest Airco location.

Waste Disposal Methods

Do not attempt to dispose waste or unused quantities. Return in the shipping container PROPERLY LABELED, WITH ANY VALVE OUTLET PLUGS OR CAPS SECURED AND VALVE PROTECTION CAP IN PLACE to Airco for proper disposal.

SARA Hazard Classes: Acute Health Hazard
Sudden Release of Pressure Hazard
Reactivity Hazard

SECTION #8 - SPECIAL PROTECTIVE MEASURES

Ventilation

Hood with forced ventilation.

Use local ventilation to prevent accumulation above the exposure limit.

Eye Protection

Safety goggles or glasses.

Skin Protection

Kel-F (R) or Teflon (R).

SECTION #8 - SPECIAL PROTECTIVE MEASURES Continued...

Respiratory Protection

Positive pressure air line with mask or self-contained breathing apparatus should be available for emergency use.

Other Protection

Safety shoes, safety shower, eyewash "fountain", face shield.

SECTION #9 - SPECIAL PRECAUTIONS - STORAGE & HANDLING

Storage & Handling Conditions

Use only in well-ventilated areas. Valve protection caps must remain in place unless container is secured with valve outlet piped to use point. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Use a pressure reducing regulator when connecting cylinder to lower pressure (<1500 psig) piping or systems. Do not heat cylinder by any means to increase rate of product from the cylinder. Use a check valve or trap in the discharge line to prevent hazardous back flow into cylinder.

Protect cylinders from physical damage. Store in cool, dry, well-ventilated areas of non-combustible construction away from heavily trafficked areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 130°F. Cylinders should be stored upright and firmly secured to prevent falling or being knocked over. Full & empty cylinders should be segregatad. Use a "first in-first out" inventory system to prevent full cylinders from being stored for excessive periods of time.

For additional storage recommendations, consult Compressed Gas Association's Pamphlets P-1.

Never carry a compressed gas cylinder or a container of a gas in cryogenic liquid form in an enclosed space such as a car trunk, van or station wagon. A leak can result in a fire, explosion, asphyxiation or a toxic exposure.

SECTION #10 - SHIPPING INFORMATION

Proper Shipping Name: Hydrogen Chloride, Anhydrous (RQ-5000/2270)

Hazard Class: Nonflammable gas
DOT Identification Number: UN1050
DOT Shipping Label: Nonflammable Gas

Material Safety Data Sheet HYDROGEN CHLORIDE	Page: 6 Rev. Date 07/10/89

SECTION #11 - MISC COMMENTS & REFERENCE DOCUMENTATION

Most metals corrode rapidly with wet Hydrogen Chloride.

Compressed gas cylinders should not be refilled except by qualified producers of compressed gases. Shipment of a compressed gas cylinder which has not been filled by the owner or with their (written) consent is a violation of Federal Law (49CFR).

DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES

Although reasonable care has been taken in the preparation of this document, we extend no warranties and make no representations as to the accuracy or completeness of the information contained therein, and assume no responsibility regarding the suitability of this information for the user's intended purposes or for the consequences of its use. Each individual should make a determination as to the suitability of the information for their particular purpose(s).

MATERIAL SAFETY DATA SHEET

RHONE-POULENC BASIC CHEMICALS CO.
1 Corporate Drive Box 881 Shelton, CT. 06484 (203)925-3300
24-HOUR EMERGENCY TELEPHONE CHEMTREC 1-800-424-9300

PRODUCT NAME(S):

SULFURIC ACID - WWTP

Effective Date: OCTOBER 15, 1991
Supercedes: APRIL 4, 1991

I. IDENTIFICATION

CHEMICAL NAME OF PRIMARY COMPONENT(S): Sulfuric acid
FORMULA: H_2SO_4 MOLECULAR WEIGHT: 98.08
SYNONYMS: Oil of vitriol; hydrogen sulfate; battery acid
CAS # & NAME: 7664-93-9 Sulfuric acid

II. INGREDIENTS/SUMMARY OF HAZARDS

INGREDIENT(S)	CAS NUMBER	OSHA HAZARDOUS (H)/ NON-HAZARDOUS (NH)	PERCENT
(1) Sulfuric acid	7664-93-9	H	78-100
(2) Water	7732-18-5	NH	balance

WARNING STATEMENTS:
DANGER! CAUSES SEVERE BURNS · REACTS VIOLENTLY WITH WATER · CONTENTS MAY BE UNDER PRESSURE OF EXPLOSIVE HYDROGEN GAS · HIGHLY REACTIVE AND CAPABLE OF IGNITING COMBUSTIBLE MATERIAL ON CONTACT.

Do not get in eyes, on skin, on clothing. Do not breathe vapor or mists. Do not take internally. Use only with adequate ventilation. Wear goggles, face shield, rubber gloves and appropriate protective clothing when handling. Wash thoroughly after handling. Keep from contact with clothing and other combustible materials. Do not store near combustible materials. Do not allow water to get into container because of violent reaction. When diluting, add acid slowly to water with stirring to avoid spattering.

(See Section VI for complete Health Hazard Data)

NATIONAL FIRE PROTECTION ASSOCIATION RATING
HAZARDOUS MATERIALS IDENTIFICATION SYSTEM

(4=Extreme/Severe, 3=High/Serious, 2=Moderate, 1=Slight, 0=Minimum, ~~W~~= Water reactive)

	NFPA	HMIS
HEALTH	3	3
FIRE	0	0
REACTIVITY	2	2
SPECIAL	~~W~~	

SARA TITLE III HAZARD CLASSIFICATION

IMMEDIATE (ACUTE) HEALTH	YES
DELAYED (CHRONIC) HEALTH	NO
FIRE	NO
SUDDEN RELEASE OF PRESSURE	NO
REACTIVE	YES

SCOEPA00055266

III. PHYSICAL DATA

SPECIFIC GRAVITY:	78%:	1.7
	82-100:	1.8
BOILING POINT, 760 mm Hg, °C (°F):	78%:	193°C (380°F)
	93%:	276°C (529°F)
MELTING POINT, °C (°F):	78%:	-11.3°C (11.6°F)
	93%:	-28.9°C (-20°F)
VAPOR PRESSURE, mm Hg @ 37.8°C:	<1 mm Hg	
VAPOR DENSITY (AIR=1):	3.4	
SOLUBILITY IN WATER :	Miscible	
APPEARANCE AND ODOR:	Clear, colorless to cloudy, oily liquid; odorless.	

(For additional technical information call 1-800-642-4200)

IV. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT [degrees C (F)]: Not combustible

FLAMMABLE LIMITS IN AIR: Not applicable

AUTOIGNITION TEMPERATURE [degrees C (F)]: Not applicable

EXTINGUISHING MEDIA: Expect violent reaction with water. For small fires use dry chemical, carbon dioxide or halon. For large fires, flood fire area with water from a distance. Do not get solid stream of water on spilled material.

SPECIAL FIRE FIGHTING PROCEDURES:
Wear a NIOSH/MSHA approved self-contained breathing apparatus and full protective clothing. For fighting fires in close proximity to spill or vapors, use acid-resistant personal protective equipment. Evacuate residents who are downwind of fire. Prevent unauthorized entry to fire area. Dike area to prevent runoff and contamination of water sources. Cool containers that are exposed to flame with streams of water until fire is out.

Persons who may have been exposed to contaminated smoke should be immediately relieved from duty and checked for symptoms of poisoning. These should not be mistaken for heat exhaustion or smoke inhalation. See Section VI, Health Hazard Data for symptoms of poisoning, first aid procedures and notes to physician.

UNUSUAL FIRE AND EXPLOSION HAZARDS:
Thermal decomposition products may be hazardous. These may include sulfur oxides. Use care. Water applied directly to this acid results in evolution of heat, spattering and causes a violent reaction.
High concentrations may cause nearby combustible liquids and solids to ignite upon contact.
Contact with common metals will evolve flammable and potentially explosive hydrogen gas.

SCOEPA00055267

V. REACTIVITY DATA

STABILITY: **Stable at ambient temperature and pressure.**

CONDITIONS TO AVOID: **When diluting, acid should be added to diluent. DO NOT add diluent to acid.**

MATERIALS TO AVOID: **Organics, chlorates, carbides, fulminates, picrates, metals.**
Reacts exothermically with water.
Sulfuric acid in contact with metal surfaces can generate flammable and explosive hydrogen gas.
Fire risk on contact with organic materials and chemicals such as nitrates, carbides, and chlorates.

HAZARDOUS DECOMPOSITION PRODUCTS: Sulfur oxides

HAZARDOUS POLYMERIZATION: Will not occur.

VI. HEALTH HAZARD DATA/FIRST AID PROCEDURES

EXPOSURE LIMITS:

Chemical Name(s)	ACGIH (TLV)	OSHA (TWA)
Sulfuric acid	1 mg/m^3 (TWA) 3 mg/m^3 (STEL)	1 mg/m^3

TOXICOLOGY DATA:

Oral LD_{50} (rats):	2140 mg/kg body weight	(1)
Dermal LD_{50} (rabbit):	No information available	
Inhalation LC_{50} (rat - 4 hr exposure)	510 mg/m^3	(1)
Skin effects (rabbit)	Severe irritation	(1)
Eye effects (rabbit)	Severe irritation	(1)

* The estimated lethal dose for adult humans is between 1 tsp and 1/2 oz. of concentrated sulfuric acid.

CARCINOGENICITY:
This product does not contain any ingredient designated by IARC, NTP, ACGIH or OSHA as a probable human carcinogen. A few epidemiology studies have suggested a possible association between sulfuric acid exposure and laryngeal or lung cancer; however, in all these studies, workers were exposed to many other chemicals, some of which are recognized carcinogens, such as diethylsulfate and nickel. Considering the multiple chemical exposures and other limitations of the studies, it can be concluded that no cause and effect relationship between cancer and sulfuric acid exposure has been demonstrated.

EFFECTS OF SINGLE OVEREXPOSURE:

Swallowing: CORROSIVE. Causes burns of the mouth, throat, esophagus and stomach. May cause severe injury such as gastric perforation or peritonitis and death. (2)

Skin Absorption: No information available.

Inhalation: Corrosive to mucous membranes. Symptoms of exposure may include a burning sensation, tickling of the nose and throat, sneezing, coughing, wheezing, laryngitis, shortness of breath. (2) Breathing of mists or sprays may cause serious damage to lung tissue. (3)

VI. HEALTH HAZARD DATA/FIRST AID PROCEDURES (Continued)

Skin Contact: **CORROSIVE. Causes burning or charring of the skin as a result of the great affinity of sulfuric acid for, and strong exothermic reaction with water.**

Eye Contact: **CORROSIVE. Causes irreversible eye damage and possible blindness. Sprays and mists are severely irritating to the eyes. (2)**

EFFECTS OF REPEATED OVEREXPOSURE:
Repeated exposure may lead to contact dermatitis (4), may cause corrosion of dental enamel (5), can cause bronchitis with cough, phlegm, shortness of breath and emphysema, can cause chronic runny nose, tearing of the eyes, nosebleeds and stomach upsets.

OTHER EFFECTS OF OVEREXPOSURE: See Notes to Physician

VI. HEALTH HAZARD DATA/FIRST AID PROCEDURES (continued)

EXISTING MEDICAL CONDITIONS POSSIBLY AGGRAVATED BY EXPOSURE:

Skin irritation may be aggravated in individuals with existing skin lesions. Breathing of vapors or sprays (mists) may aggravate acute or chronic asthma and chronic pulmonary disease such as emphysema and bronchitis.

EMERGENCY AND FIRST AID PROCEDURES:

SPEED IN REMOVING THIS MATERIAL FROM CONTACT WITH THE BODY IS OF PRIMARY IMPORTANCE.
START FIRST AID AT ONCE!

PRECAUTION: Persons attending the victim should avoid direct contact with heavily contaminated clothing and vomitus. Wear impervious gloves while decontaminating skin and hair.
Remove the patient from immediate source of exposure and assure that the individual is breathing. If not breathing, use artificial respiration. GET MEDICAL ATTENTION.

Swallowing: If victim is conscious and alert, give two or more glasses of water or milk to drink. DO NOT INDUCE VOMITING! If vomiting occurs, give fluids again. Do not give anything by mouth to an unconscious or convulsing person. GET MEDICAL ATTENTION.

Skin: Immediately wipe away excess material from skin with a dry cloth. Wash all affected areas with plenty of soap and water while under a safety shower for at least 15 minutes, while removing contaminated clothing and shoes. Do not attempt to neutralize with chemical agents. Seek medical attention immediately. Discard heavily contaminated clothing and shoes in a manner which limits further exposure. Otherwise, wash clothing separately before reuse.

Inhalation: Remove patient to fresh air. If not breathing, administer cardiopulmonary resuscitation or artificial respiration. If breathing is difficult or irritation develops, GET MEDICAL ATTENTION.

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes using an eyewash fountain, if available. Lift upper and lower lids and rinse well under them. GET MEDICAL ATTENTION.

VI. HEALTH HAZARD DATA/FIRST AID PROCEDURES (Continued)

NOTES TO PHYSICIAN:

All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred.

EYE OR SKIN CONTACT

Continued washing of the affected area with cold or iced water will be helpful in removing the last traces of sulfuric acid. Creams or ointments should not be applied before or during the washing phase of treatment.

INGESTION

Treat asphyxia from glottal edema by maintaining an adequate airway.
Treat shock - Maintain normal blood pressure by transfusion and by the administration of 5% dextrose in saline. Circulatory shock is often the immediate cause of death.
If symptoms are severe and perforation of the stomach or esophagus is suspected, give nothing by mouth until endoscopic examination has been done.
Maintain nutrition by giving carbohydrate or hyperalimentary fluid intravenously.
Give prednisolone, 2 mg/kg/d in divided doses for 10 days, to reduce the possibility of progressive lung damage.
Esophageal stricture may require dilation.

INHALATION

Give artificial respiration, preferably mouth-to-mouth.
Treat shock. Treat pulmonary edema. Treat bacterial pneumonia with organism-specific chemotherapy. (2)

VII. PRECAUTIONS FOR SAFE HANDLING AND USE

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:

Personnel involved in cleaning up a spill or stopping a leak should wear appropriate protective clothing. Ventilate spill area.

Any leak occurring in pipelines or equipment should be considered an acid leak until proven otherwise. Adjust all appropriate valves to isolate the system and stop further leakage.

Small spills should be covered with sodium bicarbonate, soda ash, or lime, taking care to avoid foaming or spattering. Insure that all liquid is absorbed on dry material. Transfer absorbed spill material and any underlying soil to a suitable chemical waste container. Washing down spills with water is NOT recommended.

Large spills should be handled according to a predetermined plan. For assistance in developing a plan, contact the Technical Service Department, 1-800-642-4200.

Prevent sulfuric acid from getting into sewers.
Do not flush material to public sewer systems or any waterways.
Ensure adequate decontamination of tools and equipment following cleanup.

VII. PRECAUTIONS FOR SAFE HANDLING AND USE (continued)

WASTE DISPOSAL METHOD:
Dispose of in accordance with Local, State and Federal regulations.

NOTE: This material is RCRA Hazardous Waste D002, corrosive.
D003, reactive.
Spills are subject to CERCLA reporting requirements: RQ = 1000 lb.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:

Wear appropriate protective clothing.
Do not breathe sprays or mists. Do not ingest.
Do not get in eyes, on skin or on clothing.

Store in a cool, dry, well-ventilated place in tightly closed containers away from sunlight and in an area with an acid-resistant cement floor.

When diluting, always add the acid slowly to the water. Do not add water to the acid. Doing so will produce large amounts of heat and localized boiling and spattering may occur.

VIII. SPECIAL PROTECTION INFORMATION

PROTECTIVE EQUIPMENT SHOULD BE USED DURING THE FOLLOWING PROCEDURES:
- Manufacture or formulation of this product
- Repair and maintenance of contaminated equipment
- Clean up of leaks and spills
- Any other activity which may result in hazardous exposures.

RESPIRATORY PROTECTION:
Use NIOSH/MSHA approved mist filter, acid gas cartridge respirator. Use positive pressure self-contained breathing apparatus for emergency or other conditions requiring a higher level of protection.

VENTILATION: Use local exhaust ventilation.

PROTECTIVE CLOTHING: Full-body protective clothing, acid-resistant gloves and boots made of natural rubber, neoprene or nitrile.

EYE PROTECTION: Face shield with chemical worker goggles.

OTHER PROTECTIVE EQUIPMENT:
Maintain a sink, safety shower and eyewash fountain in the work area.
Have oxygen readily available.

IX. REGULATORY STATUS

TSCA Inventory Status: **This product is listed on the TSCA inventory.**

Transportation Status: **DOT:**

Proper shipping name:	**Sulfuric acid**
Hazard Class:	**Corrosive Material**
ID #	**UN 1830**
Label:	**Corrosive**

Reportable Quantity (RQ) under 49 CFR 172.101 appendix: 1000 lb

SARA Title III
Section 302 Extremely Hazardous Substance List: Sulfuric Acid
Section 313 Toxic Chemicals: Sulfuric acid

Reportable Quantity (RQ) under US EPA CERCLA: RQ=1000 lb

RCRA Hazardous Waste: D002 (Corrosive)
D003 (Reactive)

State/International Right-to-Know Regulations:

	Sulfuric Acid
California:	Not listed
Connecticut:	Survey
Florida:	Toxic Substances RTK
Illinois:	Toxic, Chem
Louisiana:	RTK, Spill RQ=1000 lb
Massachusetts:	RTK; EHS, 1 ppm threshold; Spill RQ=50 lb
New Jersey:	ID# 1761, RTK, Special Hazard: Corrosive, Reactive; TAX
New York:	Spill: Air RQ=1000 lb, L/W RQ=100 lb
Pennsylvania:	RTK, ENV.
Rhode Island:	RTK, Haz. Codes: Flammable,Toxic
Canada:	List, 1%, No.1485

X. REFERENCES

(1) RTECS, 4/91
(2) Sittig, Handbook of Toxic and Hazardous Chemicals and Carcinogens, 2nd Ed.
(3) Sax, Dangerous Properties of Industrial Materials, 6th Ed.
(4) Merck Index, 11th Ed.
(5) Documentation of TLVs and BEIs, ACGIH
(6) Sulfuric Acid Hazardous Substance Fact Sheet, New Jersey Department of Health.
(7) Driesbach, Handbook of Poisoning, 12th edition.

The information herein is given in good faith
but no warranty, expressed or implied, is made.

RICCA CHEMICAL COMPANY
P.O. BOX 13090
ARLINGTON, TEXAS 76013
Information/Emergency Telephone
(817) 461-5601

MATERIAL SAFETY DATA SHEET

(for compliance with 29CFR 1910.1200, OSHA Hazard Communication Standard)

PRODUCT IDENTITY	RICCA CHEMICAL COMPANY CATALOG NUMBER(S)
SULFURIC ACID, 5% (v/v) Thru 89% (w/w) and 0.25 Thru 10 Normal	8149 Thru 8195 and 8270 Thru 8340

Date Prepared/Revised	2-19-90	Information furnished applies to all sizes. N/A = Not Applicable N/D = Not Determined

HAZARDOUS INGREDIENTS/IDENTITY INFORMATION SECTION I

Hazardous Components (CAS No.)	Concentration In Product	OSHA PEL	ACGIH TL
Sulfuric Acid (7664-93-9)	7 ml.-900 ml./l.	1mg/M^3	1mg/M^3
Water (7732-18-5)	Approx. 100ml.-995ml./l.	N/A	N/A

Remainder of composition is either water or other non-hazardous substance(s) and/or hazardous ingredient(s) below reportable hazardous level(s).

PHYSICAL AND CHEMICAL DATA SECTION II

Melting Point, °C. Below 0
Boiling Point, °C., approx. 100-150
Specific Gravity, approx. 1.06-1.80
Solubility in Water Infinite
Description: Clear, colorless, odorless liquid.

FIRE AND EXPLOSION HAZARD DATA SECTION III

Flash Point, °C., approx. N/A

Extinguishing Media: N/A

Special Fire Fighting Procedures: N/A

Unusual Fire and/or Explosion Hazards: N/A

* For EPI titration Lab Procedure

REACTIVITY DATA SECTION IV

Conditions and/or Materials to Avoid: Stable under normal conditions of use and storage.
Avoid: Organics, Chlorates, Carbides, Fulminates, Picrates, Metals.

Hazardous Decomposition or Byproducts: Hazardous polymerization will not occur.

Calculation of Specific Gravity Sulfuric Acid

-10 0
-11 0
-12 0

Sp.gr. = 1.0 @ 5 %

< ? @ 50% > ← product

1.8 @ 89 %

1.84 @ 98 %

= .009 per 1 % (Ratio = .84 ; 93) = .009

(50 % ≈ 1.45)

× 8.337

Sp.gr = 12.09 Lbs/gal H_2SO_4 in a 50% Soln.

INQUIRY ACCOMPLISHED
END OF INQUIRY
KEYS: _____ _____ ___

Item Number
Warehouse
Forecasted Monthly
Forecast Method
Forecast Factor
Demand History:

warehouse Item

UOM = gal.

4 gal/case ($\frac{4}{12}$ = 3 cases)

50 % → = 1.45 sp.gr.

weight = 50 % H_2SO_4 = 12.09 Lbs/gal

$\frac{1}{2}$ = 6.04 Lbs H_2SO_4/Bottle

plus 50 % H_2O = 8.337 Lbs/gal

+ $\frac{1}{2}$ = 4.17 Lbs H_2O/Bottle

6.045 + 4.17 = 10.21 Lbs / 50% soln / Bottle
1:1

Total weight

Sulfuric =

SCOEPA00055274

8149 thru 8195 and
8270 thru 8340

HEALTH HAZARD DATA — SECTION V

Route(s) of Entry: Inhalation Yes Skin Yes Ingestion Yes

Carcinogenicity: NTP No IARC Monographs No OSHA Regulated No

Health Hazards

Hazards increase as concentration increases.
Sulfuric Acid Solutions are corrosive.
Target Organs are: Respiratory system, eyes, skin, teeth.
LD 50, Oral, Rat(H_2SO_4): 2140mg/kg.

Signs and Symptoms of Exposure

Irritation of eyes, nose, throat. Pulmonary Edema, Bronchial Emphysema, dental erosion. Burns of skin and eyes.

Medical Conditions Generally Aggravated by Exposure

Chronic Respiratory Disease. Pre-existing Eye Problems. Pre-existing Skin Disorders.

Emergency and First Aid Procedures In all cases seek qualified evaluation.

EYE CONTACT: Irrigate immediately with large quantities of running water.
SKIN CONTACT: Water flush immediately. Remove any contaminated clothing.
INHALATION: Remove to fresh air. Give artificial respiration if necessary.
INGESTION: Dilute immediately with water or milk. Do not induce vomiting. Get Medical Help.

PRECAUTIONS FOR SAFE HANDLING AND USE — SECTION VI

Steps to Be Taken In Case Material Is Released or Spilled

Cover the contaminated surface with Sodium Bicarbonate or a soda ash-slaked lime mixture (50-50). Mix and add water if necessary to form slurry. Scoop up slurry and wash down with excess of water. Wash site with soda ash solution.

Waste Disposal Method

Add slowly to agitated solution of soda ash and slaked lime. Flush neutralized solution to drain with excess of water.

Precautions to Be Taken in Handling and Storing

Store away from incompatible materials.

CONTROL MEASURES — SECTION VII

Ventilation/Respiratory Protection: Normal room ventilation is adequate.

Eye Protection: Safety glasses with side shields, or goggles.

Protective Gloves: Rubber.

Other Protective Clothing or Equipment: Lab Coat or Lab Apron.

Work/Hygienic Practices Wash hands after handling this or any other chemical before eating, drinking or smoking.

When handled properly by qualified personnel, the product described herein does not present a significant health or safety hazard, mainly because of the relatively low volumes of this product that will be dispensed or used at a time. Alteration of its characteristics by concentration, evaporation, addition of other substances, or other means may present hazards not specifically addressed herein and which must be evaluated by the user. The information furnished herein is believed to be accurate and represents the best data currently available to us. No warranty, expressed or implied, is made and RICCA CHEMICAL COMPANY assumes no legal responsibility or liability whatsoever resulting from its use.

MATERIAL SAFETY DATA SHEET

J. C. SCHUMACHER COMPANY

No. 103.01

Rev.Date Feb. 1985

I. MATERIAL IDENTIFICATION

CHEMICAL NAME: 1,1,1-Trichloroethane CAS #71-55-6

SYNONYMS: Methylchloroform CHEMICAL FAMILY: Halogenated Hydrocarbon

FORMULA: CH_3CCl_3 MOLECULAR WEIGHT: 133.41

TRADE NAME AND SYNONYMS: Methylchloroform, TCA

II. PHYSICAL DATA

BOILING POINT, 760 mm. Hg	74.1 °C	MELTING POINT	-33 °C
SPECIFIC GRAVITY (H_2O=1) @ 25 °C	1.33	VAPOR PRESSURE AT 20°C.	100 mmHg
VAPOR DENSITY (air=1)	4.55	SOLUBILITY IN WATER, % by wt.	0.07 g/100
PERCENT VOLATILES BY VOLUME	100	EVAPORATION RATE (CCl_4 =1)	1
APPEARANCE AND ODOR	Clear, colorless liquid with mild, ether-like odor which may be just perceptible at about 100 ppm in air.		

III. HAZARDOUS INGREDIENTS

MATERIAL	%	TLV (Units)
1,1,1-Trichloroethane	100	350 ppm(8 hr. TWA)

IV. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (test method)	None by T.O.C., T.C.C. & C.O.C.	AUTOIGNITION TEMPERATURE	998°F		
FLAMMABLE LIMITS IN AIR, % by volume (High energy ignition)		LOWER	7.5	UPPER	14.5

EXTINGUISHING MEDIA	Water fog, CO_2, dry chemical, or foam may be used to fight fires.
SPECIAL FIRE FIGHTING PROCEDURES	Fire fighters should use self-contained breathing apparatus for protection against suffocating vapors and toxic and corrosive decomposition products.
UNUSUAL FIRE AND EXPLOSION HAZARDS	This material is nearly nonflammable. High energy, such as electric arc, is need for ignition, and the flame tends to go out when ignition source is removed. Vapors concentrated in confined space or room may explode if contacted with high-energy ignition source. Decomposition or burning can produce toxic products.

EMERGENCY PHONE NUMBERS

8:00 AM to 5:00 PM PST Monday Thru Friday, Call (619) 931-9555

Hours Other Than 8:00 AM to 5:00 PM PST, Monday Thru Friday, Call (619) 439-2645

Legal responsibility is assumed only for the fact that all studies reported here and all opinions are those of qualified experts.

1969 Palomar Oaks Way / Carlsbad, CA 92009 / (619) 931-9555 / TWX (910) 322-1382

SCOEPA00055276

Schumacher

1969 Palomar Oaks Way, Carlsbad, CA 92009

CERTIFICATE OF ANALYSIS

1,1,1-Trichloroethane, Methylchloroform (TCA)

EXTREMA ® GRADE

Lot Number:	305MX1J18
Date of Manufacture:	7/25/91
Formula:	$C_2H_3Cl_3$
Formula Weight:	133.4 g mol^{-1}

ACTUAL LOT ANALYSIS

Assay (GC)	99.98%
Water (KF)	9 ug g^{-1} (ppm)
Acidity (HCl)	3 ug g^{-1} (ppm)
Residue after Evaporation	1 ug g^{-1} (ppm)
Color (APHA)	5
Purity (based on metals analyzed)	>99.999995%

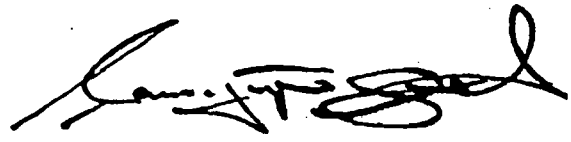
Impurities in ng g^{-1} (part per billion):

Aluminum	(Al)	<1	Lithium	(Li)	<1
Antimony	(Sb)	<1	Magnesium	(Mg)	<1
Arsenic	(As)	<1	Manganese	(Mn)	<1
Barium	(Ba)	<1	Mercury	(Hg)	<1
Bismuth	(Bi)	<1	Nickel	(Ni)	<1
Boron	(B)	<1	Phosphorus	(P)	<1
Cadmium	(Cd)	<1	Potassium	(K)	<1
Calcium	(Ca)	<1	Silicon	(Si)	<1
Chromium	(Cr)	<1	Silver	(Ag)	<1
Cobalt	(Co)	<1	Sodium	(Na)	<1
Copper	(Cu)	<1	Strontium	(Sr)	<1
Gallium	(Ga)	<1	Tin	(Sn)	<1
Gold	(Au)	<1	Titanium	(Ti)	<1
Iron	(Fe)	<1	Zinc	(Zn)	<1
Lead	(Pb)	<1			

The elemental analysis reported was performed by Graphite Furnace Atomic Absorption (GFAA), and/or Inductively Coupled Plasma Optical Emission Spectroscopy (ICP).

Respectfully submitted,

SCHUMACHER



Hans-Juergen Graf/Manager, Quality Assurance

MATERIAL SAFETY DATA SHEET
COPYRIGHT GENERAL ELECTRIC CO.

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MANUFACTURED BY:

GE SILICONES
260 HUDSON RIVER ROAD
WATERFORD, NY 12188

EMERGENCY PHONE (24 HRS)

(518) 237-3330 (24 HRS)

SUPPLIED BY:

GE SILICONES
260 HUDSON RIVER ROAD
WATERFORD, NY 12188

EMERGENCY PHONE (24 HRS)

(518) 237-3330 (24 HRS)

REVISED: 01/29/92
PREPARER: DA POLSINELLI

PRODUCT IDENTIFICATION: SS4004
CHEMICAL FAMILY: SILICONE PRIMER
FORMULA: MIXTURE
CHEMICAL NAME: SILICONE POLYMER IN SOLVENT

---

2. COMPOSITION/INFORMATION ON INGREDIENTS

PRODUCT COMPOSITION/ CAS REG NO.	APPROX. WGT. %	ACGIH TLV TWA	ACGIH TLV STEL	OSHA PEL TWA	OSHA PEL STEL	UNITS
A. HAZARDOUS						
TOLUENE 108-88-3	10-30	100	150	100	150	PPM
TRADE SECRET COMPONENT	1-5	10	NE	100	NE	PPM
ISOPROPYL ALCOHOL 67-63-0	10-30	400	500	400	500	PPM
ACETONE 67-64-1	30-60	750	1000	750	1000	PPM
N-BUTYL ALCOHOL 71-36-3	10-30	50	NE	50(C)	NE	PPM
BENZENE 71-43-2	<.09	10	NE	1	5	PPM
B. NON-HAZARDOUS						
SILANOL/STPD SILOXANE W/ME SILSQXNS 68554-67-6	10-30	NF	NE	NF	NE	NA

---

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:
This section not in use

POTENTIAL HEALTH EFFECTS:

INGESTION:
Harmful if swallowed.
Causes vomiting,nausea,and diarrhea
Irritation of the mouth, throat, and stomach

SKIN CONTACT:
Causes drying of the skin.
Harmful if absorbed thru the skin.

INHALATION:
Excessive inhalation causes headache,dizziness,nausea and incoordination.
Causes moderate respirartory irritation.
Harmful if inhaled.

EYE CONTACT:
Causes severe eye irritation may damage tissue.

MEDICAL CONDITIONS AGGRAVATED:
Respiratory
Liver, kidney

SUBCHRONIC (TARGET ORGAN) EFFECTS:
Dermatitis.
Respiratory ailments.
Central nervous system damage.
Liver and kidney damage.
Corneal damage.
Pulmonary edema.

CHRONIC EFFECTS/CARCINOGENICITY:
This product or one of its ingredients present 0.1% or more is not listed as a carcinogen or suspected carcinogen by NTP, IARC, OR OSHA

PRODUCTS/INGREDIENTS
This space reserved for special use.

PRINCIPLE ROUTES OF EXPOSURE:
Oral.
Dermal - skin.
Eyes.
Inhalation.
Absorption through skin.

OTHER:
None known.
This product contains a component that showed unexpected acute toxicity to pregnant rabbits in a gavage study conducted by the chemical manufacturers association. There were no unexpected toxic effects in pregnant rats exposed in the same study. No

developmental effects were noted in either study. Effect levels in rabbits were several times the maximum exposure which would occur at the TLV for this component.

---

4. FIRST AID MEASURES

INGESTION:

Do not induce vomiting. Slowly dilute with 1-2 glasses of water or milk and seek medical attention. Never give anything by mouth to an unconscious person.

SKIN:

Remove contaminated clothing and launder before reuse.
Wash with soap and water.
Get medical attention if irritation persists.

INHALATION:

If inhaled, remove to fresh air, if not breathing give artificial respiration, preferably mouth-to mouth. If breathing is difficult give oxygen. Get medical attention.

EYES:

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention.

NOTE TO PHYSICIAN:

None known.

---

5. FIRE FIGHTING MEASURES

FLASH POINT: 10 (F) -12 (C) BY PMCC IGNITION TEMP: 869 (F) 465 (C)
FLAMMABLE LIMITS IN AIR(%): LOWER 1 UPPER 12
SENSITIVITY TO MECHANICAL IMPACT (Y/N): NO
SENSITIVITY TO STATIC DISCHARGE:

Sensitivity to static discharge is expected; material has a flash point below 200 f.

EXTINGUISHING MEDIA:

Alcohol foam
Carbon dioxide
Dry chemical
Foam
Water mist

SPECIAL FIREFIGHTING PROCEDURES:

Extremely flammable.
Wear full protective clothing.

---

6. ACCIDENTAL RELEASE MEASURES

ACTION TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:

Wipe, scrape or soak up in an inert material and put in a container for disposal.
Wear proper protective equipment as specified in the protective equipment section.
Remove sources of ignition.
Warn other workers of spill.
Increase area ventilation.

---

7. HANDLING AND STORAGE

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

Use ground strap.
Store upright in a cool place below 30'c (85'f).
Keep container closed when not in use.
Avoid breathing vapors, if exposed to high vapor concentration, leave area at once.
Avoid contact with skin and eyes.
Use only in a well ventilated area.
Do not inhale vapors.
Danger! Extremely flammable.
Emptied containers may retain hazardous properties. Do not cut, puncture or weld on or near the container.

---

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS:

Exhaust ventilation
Showers.
Eyewash stations.
Use in a well ventilated area.

RESPIRATORY PROTECTION:

Use in a well ventilated area.
Use approved NIOSH respiratory protection if TLV exceeded.....
Or over exposure is likely.

PROTECTIVE GLOVES:

Rubber gloves.

EYE AND FACE PROTECTION:

Safety glasses.
Monogoggles.

OTHER PROTECTIVE EQUIPMENT:

Wear eye protection and protective clothing.
VENTILATION:
Use only in well ventilated area.
Mechanical ventilation.

---

9. PHYSICAL AND CHEMICAL PROPERTIES

TOLUENE
BOILING POINT : 231 (F) 110 (C)
VAPOR PRESSURE(20 C): 22 MM HG
VAPOR DENSITY(AIR=1): 3.2

TRADE SECRET COMPONENT
BOILING POINT : 334 (F) 168 (C)
VAPOR PRESSURE(20 C): 2.0 MM HG
VAPOR DENSITY(AIR=1): 7.2

ISOPROPYL ALCOHOL
BOILING POINT : 180 (F) 82 (C)
VAPOR PRESSURE(20 C): 30 MM HG
VAPOR DENSITY(AIR=1): 2.1

ACETONE
BOILING POINT : 133 (F) 56.1 (C)
VAPOR PRESSURE(20 C): 186 MM HG
VAPOR DENSITY(AIR=1): 2.0

N-BUTYL ALCOHOL
BOILING POINT : 243.9(F) 117.7(C)
VAPOR PRESSURE(20 C): 4.4 MM HG
VAPOR DENSITY(AIR=1): 2.55

BENZENE
BOILING POINT : 176 (F) 80.1 (C)
VAPOR PRESSURE(20 C): 75 MM HG
VAPOR DENSITY(AIR=1): 2.8

SILANOL/STPD SILOXANE W/ME SILSQXNS
BOILING POINT : >275 (F) >135 (C)
VAPOR PRESSURE(20 C): NEGL. MM HG
VAPOR DENSITY(AIR=1): NEGL.

**PRODUCT INFORMATION

BOILING POINT	: NA (F) NA (C)	% VOLATILE BY VOLUME:	~80
VAPOR PRESSURE(20 C):	NA MM HG	EVAPORATION RATE	:<1
VAPOR DENSITY(AIR=1):	NA	(BUTYL ACETATE=1)	
FREEZING POINT	: NA (F) NA (C)	SPECIFIC GRAVITY	:0.8
MELTING POINT	: NA (F) NA (C)	(WATER=1)	
PHYSICAL STATE	: LIQUID	DENSITY	:0.855 KG/M3
ODOR	: PUNGENT	ACID/ALKALINITY	:UNK MEG/G
COLOR	: PINK	PH	:NA
ODOR THRESHOLD	: 100 (PPM)	VOC (EPA METH.24)	: 690 G/L

SOLUBILITY IN WATER(20C): REACTS
SOLUBILITY IN ORGANIC SOLVENT: SOLUBLE, TOLUENE
(STATE SOLVENT)

---

10. STABILITY AND REACTIVITY

STABILITY:
X STABLE
UNSTABLE

HAZARDOUS:
POLYMERIZATION WILL NOT OCCUR

HAZARDOUS DECOMPOSITION/COMBUSTION PRODUCTS:
Carbon monoxide.
Carbon dioxide.
Silicon dioxide.
Oxides of nitrogen.

INCOMPATIBILITY (MATERIALS TO AVOID):
Contact with oxidizing agents.

CONDITIONS TO AVOID:
Keep away from heat,sparks and flame.
Avoid any source of ignition.

---

11. TOXICOLOGICAL INFORMATION

TOXICITY:	TOLUENE	
ACUTE ORAL LD50:	5000 (RAT)	MG/KG
ACUTE DERMAL LD50:	14,000 (RBT)	MG/KG
ACUTE INHALATION LC50:	5320 PPM /8HR(MUS)	
OTHER:	Tested for acute oral, dermal and inhalation.	
AMES TEST:	UNKNOWN	

TOXICITY:	TRADE SECRET COMPONENT	
ACUTE ORAL LD50:	1000 (RAT)	MG/KG
ACUTE DERMAL LD50:	NONE FOUND	MG/KG
ACUTE INHALATION LC50:	>700 PPM 4HR	
OTHER:	None.	

AMES TEST: UNKNOWN

TOXICITY:	ISOPROPYL ALCOHOL	
ACUTE ORAL LD50:	5840 (RAT)	MG/KG
ACUTE DERMAL LD50:	13,000 (RBT)	MG/KG
ACUTE INHALATION LC50:	12,000 PPM/8HR(RAT)	
OTHER:	Tested for acute oral, dermal and inhalation.	
AMES TEST:	UNKNOWN	

TOXICITY:	ACETONE	
ACUTE ORAL LD50:	NA	MG/KG
ACUTE DERMAL LD50:	NA	MG/KG
ACUTE INHALATION LC50:	NA	
OTHER:	None.	
AMES TEST:	UNKNOWN	

TOXICITY:	N-BUTYL ALCOHOL	
ACUTE ORAL LD50:	790 (RAT)	MG/KG
ACUTE DERMAL LD50:	4200 (RBT)	MG/KG
ACUTE INHALATION LC50:	8000 PPM/4HR (RAT)	
OTHER:	Tested for acute oral, dermal and inhalation.	
AMES TEST:	UNKNOWN	

TOXICITY:	BENZENE	
ACUTE ORAL LD50:	3,800 (RAT)	MG/KG
ACUTE DERMAL LD50:	NONE FOUND	MG/KG
ACUTE INHALATION LC50:	10,000 PPM/7HR(RAT)	
OTHER:	Tested for acute oral LD50 and LC50.	
AMES TEST:	UNKNOWN	

TOXICITY:	SILANOL/STPD SILOXANE W/ME SILSQXNS	
ACUTE ORAL LD50:	>40,000 RAT,ESTM.	MG/KG
ACUTE DERMAL LD50:	NONE FOUND	MG/KG
ACUTE INHALATION LC50:	>535 MG/L ESTM.	
OTHER:	None.	
AMES TEST:	UNKNOWN	

---

12. ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL INFORMATION:
No data at this time

CHEMICAL FATE INFORMATION:
No data at this time

---

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHOD:
Disposal should be made in accordance with federal, state and local regulations.

EPA HAZARD WASTE: U220, TOLUENE; U031, N-BUTYL ALCOHOL; U002, ACETONE

---

14. TRANSPORT INFORMATION

DOT SHIPPING NAME: FLAMMABLE LIQUID NOS (CONTAINS ACETONE AND TOLUENE)
DOT HAZARD CLASS: FLAMMABLE LIQUID
DOT LABEL(S): FLAMMABLE LIQUID
UN/NA NUMBER: UN1993
PLACARDS:
FLAMMABLE
IATA:
FLAMMABLE LIQUID N.O.S.(CONTAINS ACETONE AND TOLUENE), CLASS 3.2, FLAMMABLE LIQUID, UN1993, PACKAGING GROUP II, IMDG PAGE 3084.

IMO: FLAMMABLE LIQUID 3.2

EUROPEAN CLASS:
RID (OCTI): FLAMMABLE LIQUID
ADR (ECE) : 3,2301,1A FLAMMABLE LIQUID
RAR (IATA): FLAMMABLE LIQUID

---

15. REGULATORY INFORMATION

SARA SECTION 302:
NONE FOUND

SARA (311,312) HAZARD CLASS:
ACUTE HEALTH HAZARD
CHRONIC HEALTH HAZARD
FIRE HAZARD

SARA (313) CHEMICALS:
THIS PRODUCT CONTAINS TOXIC CHEMICAL(S) LISTED BELOW WHICH IS(ARE) SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 313 OF TITLE III OF THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 AND 40 CFR PART 372.

ACETONE

67-64-1
N-BUTANOL
71-36-3
TOLUENE
108-88-3

CPSC CLASSIFICATION: NA

WHMIS HAZARD CLASS:
B2 FLAMMABLE LIQUIDS
D2B TOXIC MATERIALS

WHMIS TRADE SECRET:
A trade secret component above is a alkoxy silane.
The Canadian WHMIS registry number is 1074-002.

EXPORT:

SCHDLE B/HTSUS:
3910.00.00003
ECCN:
1C96G

HAZARD RATING SYSTEMS

HMIS	FLAMMABILITY	3 ,	REACTIVITY	1 ,	HEALTH	2
NFPA	FLAMMABILITY	3 ,	REACTIVITY	1 ,	HEALTH	2

CALIFORNIA PROPOSITION 65:

THIS PRODUCT CONTAINS CALIFORNIA PROPOSITION 65 CHEMICALS
WHICH ARE LISTED BELOW.

BENZENE (71-43-2)
TOLUENE 108-88-3

---

16. OTHER INFORMATION

These data are offered in good faith as typical values and not as a product specification. No warranty, either expressed or implied, is made. The recommended handling procedures are believed to be generally applicable. However, each user should review these recommendations in the specific content of the intended use.....
.....
This product or its components are on the Australian inventory (ACOIN).....
.....

C =	ceiling limit	NEGL =	negligible
EST=	estimated	NF =	none found
NA =	not applicable	UNKN =	unknown

NE =	none established	REC =	recommended
ND =	none determined	V =	recomm. By vendor
By-product =	reaction by-product, TSCA inventory status not required under 40 CFR part 720.30(h-2)	SKN =	skin
		TS =	trade secret
		R =	recommended
		MST =	mist
STEL =	short term exposure limit		

.....

Califonia Proposition 65...
Warning! This product contains a chemical known to the State of California to cause cancer.

.....

Califonia Proposition 65...
Warning! This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

.....

Additional technical guidance for NYS bulk storage

- This product contains flammable/combustible solvents.

- Materials of construction/compatibility
  Stainless steel or glass lined steel piping and storage tanks (at ambient temperature) are the normal materials of construction for this product. Any other materials such as reinforce fiberglass, plastic and etc. Must be tested for compatibility before use.

- Condition for safe storage
  Bulk storage design factors to consider are venting, diking, separation distances between tanks and other structures. Storage requirements should be determined through consultation with qualified design and fire protection engineers and fire insurance carriers. Technical guidance may be found in pamphlet NFPA 30 or factory mutual handbook of industrial loss prevention. Recommended tank design: American Society of Mechanical Engineers (ASME) code, section viii, 50 psig minimum pressure and full vacuum. Relief valves: Flammable and combustible liquids code, NFPA no. 30 and 29 CFR 1910.106.

- Storage equipment
  Corrosion protection, leak detection, spill and overfill protection, installation and maintenance information may be found in EPA final rule: 40 CFR part 280 underground storage tanks. New York State regulates storage of this material in 6 NYCRR parts 595, 596, and 597.

- Inspection and maintenance

  API publication, guide for inspection of refinery equipment, is a source for inspection and maintenance information. (American Petroleum Institute, 1220 L. Street, Northwest, Washington, D.C. 20005)

- Safety precautions, warnings and procedures for handling and unloading bulk deliveries

  Only qualified, fully trained and experienced persons should sample, connect, load, unload, or disconect a tank car, portable tank or tank truck.

  When loading or unloading material in bulk, all DOT (Department of Transportation) regulations found in 49 CFR 172-178 must be followed when applicable. This will include grounding, braking, attendance, etc.

  The contents of the material to be unloaded should be verified before any transfer is made.

  Prior to unloading into a storage tank, a qualified person must check the storage tank level to be sure that the amount of material to be received will not overflow the storage tank. The proper unloading connection should be vented to a vapor removal, recovery or conservation system.

- Spill and emergency response

  Release reporting and corrective action are listed in 40 CFR part 280 underground storage tanks and 6 NYCRR part 595.

.....

GUIDE 26

POTENTIAL HAZARDS

FIRE OR EXPLOSION

Flammable/combustible material; may be ignited by heat, sparks or flames.
Vapors may travel to a source of ignition and flash back.
Container may explode in heat of fire.
Vapor explosion hazard indoors, outdoors or in sewers.
Runoff to sewer may create fire or explosion hazard.

HEALTH HAZARDS

May be poisonous if inhaled or absorbed through skin.
Vapors may cause dizziness or suffocation.
Contact may irritate or burn skin and eyes.
Fire may produce irritating or poisonous gases.
Runoff from fire control or dilution water may cause pollution.

EMERGENCY ACTION

Keep unnecessary people away; isolate hazard area and deny entry.
Stay upwind; keep out of low areas.
Positive pressure self-contained breathing apparatus (SCBA) and structural firefighters' protective clothing will provide limited protection.
Isolate for 1/2 mile in all directions if tank, rail car or tank truck is involved in fire.
CALL CHEMTREC AT 1-800-424-9300 FOR EMERGENCY ASSISTANCE.
If water pollution occurs, notify the appropriate authorities.

FIRE

Small Fires: Dry chemical, CO_2, water spray or alcohol-resistant foam.
Large Fires: Water spray, fog or alcohol-resistant foam.
Do not use dry chemical extinguishers to control fires involving nitromethane or nitroethane.
Move container from fire area if you can do it without risk.
Apply cooling water to sides of containers that are exposed to flames until well after fire is out. Stay away from ends of tanks.
For massive fire in cargo area, use unmanned hose holder or monitor nozzles; if this is impossible, withdraw from area and let fire burn.
Withdraw immediately in case of rising sound from venting safety device or any discoloration of tank due to fire.

SPILL OR LEAK

Shut off ignition sources; no flares, smoking or flames in hazard area.
Stop leak if you can do it without risk.
Water spray may reduce vapor; but it may not prevent ignition in closed spaces.
Small Spills: Take up with sand or other noncombustible absorbent material and place into containers for later disposal.
Large Spills: Dike far ahead of liquid spill for later disposal.

FIRST AID

Move victim to fresh air and call emergency medical care; if not breathing, give artificial respiration; if breathing is difficult, give oxygen.
In case of contact with material, immediately flush eyes with running water for at least 15 minutes. Wash skin with soap and water.
Remove and isolate contaminated clothing and shoes at the site.

SCOEPA00055289

RECEIVED 5-15-90

ROMIC CHEMICAL CORPORATION
1081 BAY ROAD
EAST PALO ALTO, CA 94303
(415) 324-1638 FAX 415-324-2965

ROMIC CHEMICAL SOUTHWEST
6760 WEST ALLISON ROAD
CHANDLER, AZ 85226
(602) 961-1040 FAX 602-961-7944

PROFILE NUMBER 017068
DATE RECEIVED IN LAB 5-8-90
LAB SAMPLE 90 - 577

ROMIC CHEMICAL SAMPLE PROFILE SHEET

A. GENERAL INFORMATION

GENERATOR EPA I.D. # ORD009623737

GENERATOR NAME Wacker Siltronic Corporation
FACILITY ADDRESS 7200 NW Front Avenue
Portland, Oregon 97210
BILLING ADDRESS P.O. Box 83180
Portland, Oregon 97283-0180

TRANSPORTER Romic Chemical Corporation
TRANSPORTER PHONE 415-324-1638
TRANSPORTER EPA I.D. CAD009452657
TECHNICAL CONTACT Richard Gariepy
TITLE Environ. Eng. PHONE 503-243-2020 x132

NAME OF WASTE Freon TE Still Bottoms
PROCESS GENERATING WASTE (Be Specific) Recycling of Freon TE and collection of Freon wastes

B. PHYSICAL CHARACTERISTICS
Clear with brown layer

PHYSICAL STATE @ 70°F: SOLID ___ LIQUID/SOLID MIXTURE ___ LIQUID X

LAYERS: MULTILAYERED X SINGLE PHASED ___ BI-LAYERED ___

FREE LIQUIDS: YES X NO ___ % VOLUME 100

pH: ≤2 ___ 2.1-3.9 (X) 4-6.9 (X) 7 ___ 7.1-10 ___ 10.1-12.5 ___ ≥12.5 ___ EXACT ___ N/A X

SPECIFIC GRAVITY: <0.8 ___ 0.8—1.0 (X) 1.1—1.2 ___ EXACT ___ 1.3-1.4 X 1.5-1.7 ___ >1.7 ___

FLASH POINT: <70°F ___ 70°F-100°F ___ 101°F-139°F ___ 140°F-200°F ___ >200°F X NO FLASH ___ EXACT ___ not tested
CLOSED CUP ☐ OPEN CUP ☐

C. CHEMICAL COMPOSITION
(List Hazardous as well as Non-Hazardous components and corresponding ranges.)

Trichlorotrifluoroethane	80 - 98 %
Ethanol (SDA-30)	2 - 5 %
Top brown layer is a mixture of	0 - 10 %
water, butyl acetate, butyl	___ - ___ %
alcohol, SDA-30, Freon TF,	___ - ___ %
acetone and dirt.	___ - ___ %
	___ - ___ %
	___ - ___ %
	___ - ___ %
	___ - ___ %

Total of Maximum concentration must be ≥ 100% 100

D. METALS ☐ TOTAL (PPM) ☐ EPA EXTRACTION PROCEDURE (MG/L)

	TOTAL NONE	TOTAL YES	EPA NONE	EPA YES
ARSENIC (As)	☒	☐	☒	☐
BARIUM (Ba)	☒	☐	☒	☐
CADMIUM (Cd)	☒	☐	☒	☐
CHROMIUM (Cr)	☒	☐	☒	☐
MERCURY (Hg)	☒	☐	☒	☐
LEAD (Pb)	☒	☐	☒	☐
CHROMIUM HEX (Cr + 6)	☒	☐		
SELENIUM (Se)			☒	☐
SILVER (Ag)			☒	☐
COPPER (Cu)			☒	☐
NICKEL (Ni)			☒	☐
ZINC (Zn)			☒	☐
THALLIUM (Ti)			☒	☐
OTHER			☐	☐

E. OTHER COMPONENTS

	TOTAL (PPM) NO	TOTAL (PPM) YES		NO	YES
CYANIDES	☒	☐	AMINES	☒	☐
SULFIDES	☒	☐	PCB'S	☒	☐
			PHENOLICS	☒	☐

F. SHIPPING INFORMATION

PROPER SHIPPING NAME: Waste ORM-A Mixture, N.O.S.,
HAZARD CLASS ORM-A ID # NA1693 R.Q. 5000#
METHOD OF SHIPMENT: ☐ BULK LIQUID ___ GALLONS
☒ DRUM (TYPE/SIZE) 17E/55 gal
ANTICIPATED VOLUME: ___ GALLONS
20-30/55 gal DRUMS
PER ☐ ONE TIME ☐ WEEK ☐ MONTH ☐ QUARTER ☒ YEAR ☐ ___

VOLUME TO SHIP NOW: 10 DRUMS
0 BULK (GALLONS)

G. HAZARDOUS PROPERTIES ☒ NONE

☐ WATER REACTIVE ☐ AIR REACTIVE ☐ EXPLOSIVE
☐ SHOCK SENSITIVE ☐ PYROPHORIC ☐ POLYMERIZABLE
☐ RADIOACTIVE ☐ PESTICIDE RESIDUALS ☐ PATHOGEN
☐ CORROSIVE ☐ ETIOLOGICAL ☐ BIOLOGICAL
☐ OTHER ___

USEPA HAZARDOUS WASTE? ☒ YES ☐ NO
USEPA HAZARDOUS CODE(S) F002, ___, ___, ___, ___
STATE HAZARDOUS WASTE? ☒ YES ☐ NO
STATE CODE F002 74

I HEREBY CERTIFY THAT ALL INFORMATION SUBMITTED IN THIS AND ALL ATTACHED DOCUMENTS IS COMPLETE AND ACCURATE AND THAT ALL KNOWN OR SUSPECTED HAZARDS HAVE BEEN DISCLOSED. I ALSO CERTIFY THAT THE OBTAINED SAMPLE IS REPRESENTATIVE OF THE WASTE MATERIAL DESCRIBED ABOVE.

AUTHORIZED SIGNATURE Richard A. Gariepy TITLE Environmental Engineer DATE 5/4/90

POTENTIAL HAZARDS

HEALTH HAZARDS

Inhalation of vapor or dust is **extremely irritating.**
May cause burning of eyes and flow of tears.
May cause coughing, difficult breathing and nausea.
Brief exposure effects last only a few minutes.
Exposure in an enclosed area may be very harmful.
Runoff from fire control or dilution water may cause pollution.

FIRE OR EXPLOSION

Some of these materials may burn, but none of them ignites readily.

EMERGENCY ACTION

Keep unnecessary people away; isolate hazard area and deny entry.
Stay upwind, out of low areas, and ventilate closed spaces before entering.
Positive pressure self-contained breathing apparatus (SCBA) and chemical protective clothing which is specifically recommended by the shipper or manufacturer may be worn. It may provide little or no thermal protection.
Structural firefighters' protective clothing is **not** effective for these materials.
CALL CHEMTREC AT 1-800-424-9300 FOR EMERGENCY ASSISTANCE.
If water pollution occurs, notify the appropriate authorities.

FIRE

Small Fires: Dry chemical, CO2, water spray or regular foam.
Large Fires: Water spray, fog or regular foam.

SPILL OR LEAK

Do not touch or walk through spilled material; stop leak if you can do it without risk.
Fully-encapsulating, vapor-protective clothing should be worn for spills and leaks with no fire.
Small Spills: Take up with sand or other noncombustible absorbent material and place into containers for later disposal.
Large Spills: Dike far ahead of liquid spill for later disposal.

FIRST AID

Move victim to fresh air and call emergency medical care; if not breathing, give artificial respiration; if breathing is difficult, give oxygen.
In case of contact with material, immediately flush skin or eyes with running water for at least 15 minutes.
Remove and isolate contaminated clothing and shoes at the site.
Effects should disappear after individual has been exposed to fresh air for approximately 10 minutes.

SCOEPA00055291

PROFILE SHEET No. 200333 Status: Approved By East Palo Alto facility

ROMIC CHEMICAL CORPORATION 2081 Bay Road, East Palo Alto, CA 94303 (415) 324-1638 FAX: (415) 324-2965
6760 W. Allison Rd., Chandler, AZ 85226 (602) 796-1040 FAX: (602) 796-7944

A. GENERATOR INFORMATION
WACKER SILTRONIC CORP
PO BOX 83180
PORTLAND OR 97283

EPA/CA HW ID#: ORD096253737
Contact: RICHARD G GARIEPY
Phone (503) 243-2020 X0000 Industrial SIC Code: None Listed

B. CUSTOMER INFORMATION:
WACKER SILTRONIC CORP
PO BOX 83180
PORTLAND OR 97283

Contact: No Contact Listed
Phone No Phone # Listed

C. TRANSPORTER INFORMATION
ROMIC CHEMICAL CORPORATION
2081 BAY ROAD
EAST PALO ALTO CA 94303

EPA ID#: CAD009452657
Hauler ID#(s): 160 for CA
Contact: RAY BOROWSKE
Phone (415) 324-1638 X0000

D. WASTE STREAM INFORMATION
Name of Waste: SOLVENT/OIL MIXTURE (OLD PROFILE #017071) ✓
Process Generating Waste (Be Specific): DEGREASING METAL PARTS

E. HAZARDOUS PROPERTIES
Properties which Romic cannot accept: None are present
US EPA Hazardous Waste Code(s): D001
CA State Hazardous Waste Code: 213 ✓

F. OTHER COMPONENTS -- Cyanides, Sulfides, Amines, PCBs, Phenolics, Chromium VI
NONE ARE PRESENT!!! Chromium VI 0000000 ppm

G. APPROVED PROPER SHIPPING DESCRIPTION BASED UPON AVAILABLE INFORMATION
WASTE PETROLEUM DISTILLATE
Combustible Liquid UN1268

H. PHYSICAL CHARACTERISTICS
Color: AMBER Free Liquids (% Volume): 100 Layer: Single
pH 4 - 6.9 Specific Gravity: 0.8 - 1.0 Flash Point: 100 - 139

I. CHEMICAL COMPOSITION
MINERAL SPIRITS ~100 %

J. TOTAL METALS (ppm)

Antimony	Sb	0	Lead	Pb	0
Arsenic	As	0	Mercury	Hg	0
Barium	Ba	0	Molybdenum	Mo	0
Beryllium	Be	0	Nickel	Ni	0
Cadmium	Cd	0	Selenium	Se	0
Chromium	Cr	0	Silver	Ag	0
Chromium VI	Cr6	0	Thallium	Tl	0
Cobalt	Co	0	Vanadium	V	0
Copper	Cu	0	Zinc	Zn	0

ACCEPT/REJECT DATE: 09-SEP-1991 Authorized Romic Signature:
Recertification required two years from this Date Kress Zink, Cecilia Duncan, or Stefani Hanson

SCOEPA00055292

POTENTIAL HAZARDS

FIRE OR EXPLOSION

Flammable/combustible material; may be ignited by heat, sparks or flames.
Vapors may travel to a source of ignition and flash back.
Container may explode in heat of fire.
Vapor explosion hazard indoors, outdoors or in sewers.
Runoff to sewer may create fire or explosion hazard.

HEALTH HAZARDS

May be poisonous if inhaled or absorbed through skin.
Vapors may cause dizziness or suffocation.
Contact may irritate or burn skin and eyes.
Fire may produce irritating or poisonous gases.
Runoff from fire control or dilution water may cause pollution.

EMERGENCY ACTION

Keep unnecessary people away; isolate hazard area and deny entry.
Stay upwind; keep out of low areas.
Positive pressure self-contained breathing apparatus (SCBA) and structural firefighters' protective clothing will provide limited protection.
Isolate for 1/2 mile in all directions if tank, rail car or tank truck is involved in fire.
CALL CHEMTREC AT 1-800-424-9300 FOR EMERGENCY ASSISTANCE.
If water pollution occurs, notify the appropriate authorities.

FIRE

Small Fires: Dry chemical, CO2, water spray or regular foam.
Large Fires: Water spray, fog or regular foam.
Move container from fire area if you can do it without risk.
Apply cooling water to sides of containers that are exposed to flames until well after fire is out. Stay away from ends of tanks.
For massive fire in cargo area, use unmanned hose holder or monitor nozzles; if this is impossible, withdraw from area and let fire burn.
Withdraw immediately in case of rising sound from venting safety device or any discoloration of tank due to fire.

SPILL OR LEAK

Shut off ignition sources; no flares, smoking or flames in hazard area.
Stop leak if you can do it without risk.
Water spray may reduce vapor; but it may not prevent ignition in closed spaces.
Small Spills: Take up with sand or other noncombustible absorbent material and place into containers for later disposal.
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FIRST AID

Move victim to fresh air and call emergency medical care; if not breathing, give artificial respiration; if breathing is difficult, give oxygen.
In case of contact with material, immediately flush eyes with running water for at least 15 minutes. Wash skin with soap and water.
Remove and isolate contaminated clothing and shoes at the site.

SCOEPA00055293

PROFILE SHEET No. 200337 Status: Approved By East Palo Alto facility

ROMIC CHEMICAL CORPORATION 2081 Bay Road, East Palo Alto, CA 94303 (415) 324-1638 FAX: (415) 324-2965
6760 W. Allison Rd., Chandler, AZ 85226 (602) 796-1040 FAX: (602) 796-7944

A. GENERATOR INFORMATION
WACKER SILTRONIC CORP
PO BOX 83180
PORTLAND OR 97283

EPA/CA HW ID#: ORD096253737
Contact: KENT MAYER
Phone (503) 243-2020 X0000 Industrial SIC Code: None Listed

B. CUSTOMER INFORMATION:
WACKER SILTRONIC CORP
PO BOX 83180
PORTLAND OR 97283

Contact: KENT MAYER
Phone (503) 243-2020 X0000

C. TRANSPORTER INFORMATION
ROMIC CHEMICAL CORP
2081 BAY ROAD
EAST PALO ALTO CA 94303

EPA ID#: CAD009452657
Hauler ID#(s): 160 for CA
Contact: RAY BOROWSKE
Phone (415) 324-1638 X0000

D. WASTE STREAM INFORMATION
Name of Waste: ALCOHOL MIXTURE
Process Generating Waste (Be Specific): EMPTYING LAST OF PRODUCT FROM ORIGINAL DRUMS

E. HAZARDOUS PROPERTIES
Properties noted by Generator: None are present
US EPA Hazardous Waste Code(s): D001 U002 U031 U154
CA State Hazardous Waste Code: 212

F. OTHER COMPONENTS -- Cyanides, Sulfides, Amines, PCBs, Phenolics, Chromium VI
NONE ARE PRESENT!!! Chromium VI 0000000 ppm

G. APPROVED PROPER SHIPPING DESCRIPTION BASED UPON AVAILABLE INFORMATION
WASTE FLAMMABLE LIQUID, NOS
Flammable Liquid UN1993
(ACETONE, ISOPROPANOL)

H. PHYSICAL CHARACTERISTICS
Color: CLEAR Free Liquids (% Volume): 100 Layer: Bi Laye
pH 7 - 7 Specific Gravity: 0.8 - 1.0 Flash Point: 74 - 99

I. CHEMICAL COMPOSITION

ISOPROPYL ALCOHOL	25 - 40%
BUTYL ALCOHOL (SAMPLE)	10 - 20%
ACETONE	10 - 20%
ETHYL ALCOHOL	5 - 15%
BUTYL ACETATE (SAMPLE)	3 - 10%
WATER	0 - 3%
METHANOL (SAMPLE)	0 - 1%

J. TOTAL METALS (ppm)

Antimony	Sb	0	Lead	Pb	0
Arsenic	As	0	Mercury	Hg	0
Barium	Ba	0	Molybdenum	Mo	0
Beryllium	Be	0	Nickel	Ni	0
Cadmium	Cd	0	Selenium	Se	0
Chromium	Cr	0	Silver	Ag	0
Chromium VI	Cr6	0	Thalium	Tl	0
Cobalt	Co	0	Vanadium	V	0
Copper	Cu	0	Zinc	Zn	0

ACCEPT/REJECT DATE: 09-SEP-1991 Authorized Romic Signature:
Recertification required two years from this Date Kress Zink or Cecilia Duncan

SCOEPA00055294

GUIDE 26

POTENTIAL HAZARDS

FIRE OR EXPLOSION

Flammable/combustible material; may be ignited by heat, sparks or flames.
Vapors may travel to a source of ignition and flash back.
Container may explode in heat of fire.
Vapor explosion hazard indoors, outdoors or in sewers.
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Move container from fire area if you can do it without risk.
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For massive fire in cargo area, use unmanned hose holder or monitor nozzles; if this is impossible, withdraw from area and let fire burn.
Withdraw immediately in case of rising sound from venting safety device or any discoloration of tank due to fire.

SPILL OR LEAK

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FIRST AID

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In case of contact with material, immediately flush eyes with running water for at least 15 minutes. Wash skin with soap and water.
Remove and isolate contaminated clothing and shoes at the site.

SCOEPA00055295

RQs

4-14-92

Substance	%	Lbs wt.	RQ.	
(a) (Alcohols w/ Primer)	100	425		
IPA	32.5	138		NA
Butyl Alcohol	15	64	5000	
Acetone	15	64	5,000	
Ethyl Alcohol	10	42		NA
Butyl Acetate	6.5	28	5,000	
Methanol	1	4	5,000	
plus (1% Silicon Primer)	1%	= 4 Lbs	Total	
Toluene	.002	1	1,000	
IPA	.002	1		NA
Acetone	.0045	2	5,000	
Butyl Alcohol	.002	1	5,000	
Benzene	9.0×10^{-6}	.0038	10	

(b) Freon Still Bottoms = 100% = 745 Lbs = 5,000 Lbs RQ. (F002)

(c) Solvent (Parts cleaner) = 100% = 375 Lbs = 100 Lb RQ (D001)

Note: No analysis of wastestream.
It is a Flammable (100-139 °F FP) waste.
Default to waste characteristic RQ,
based on no listed chemical substance,
but the entire waste-stream is D001.

(D) (Alcohols) = 100 % = 420 Lbs

Note: = w/o Primer.
See breakdown above.

SCOEPA00055296

MATERIAL SAFETY DATA SHEETS BY CHEMICAL

CHEMICAL NAME*	MANUFACTURER	DATE REVISED
12475	ZEP MANUFACTURING CO.	8/15/87
15282	ZEP MANUFACTURING CO.	8/15/87
7300 PAINT THINNER (SEE PAINT)	IMPERIAL PAINT CO.	1/01/91
9N9	VAN WATERS & ROGERS	1/10/89
A. OPTIC-PAD	TEXWIPE CO.	5/01/87
ABSORB-O-SOX	VAN WATERS & ROGERS	4/19/91
ACETIC ACID	EM SCIENCE	2/13/89
ACETONE PURE 99.5% ELECTRONIC GRADE	VAN WATERS & ROGERS	1/10/89
ACETOPHENEDIDIDE, 97%	ALDRICH CHEMICAL	1/23/92
ACETYLENE	AIRCO	5/09/89
ACRI-LITE CUSTOM	MILLER PAINT CO., INC.	3/25/91
ACRO LATEX ENAMEL	MILLER PAINT CO., INC.	3/25/91
ACRYL GREEN PUTTY PN-5960	3M	10/30/85
ACRYLIC RESIN	SILIKAL NORTH AMERICA INC	10/01/87
ACRYLIC RESIN & DISINFECTANT SEALER	SILIKAL NORTH AMERICA INC	10/01/87
ACTIVATED CARBON NORIT PK1-3	VAN WATERS & ROGERS	5/05/88
ADHESIVE 520	ARMSTRONG WORLD INDUSTRIE	10/09/85
AFS BOILER ANTIFOAM AGENT	BETZ INDUSTRIAL	10/31/88
AIR (NON-FLAMMABLE COMPRESSED GAS)	AIRCO INDUSTRIAL GASES	10/01/85
ALKALINE - IODIDE	RICCA CHEMICAL CO.	2/13/90
ALL PURPOSE TRIM & ADHESIVE	KAR PRODUCTS	3/09/90
ALUM LIQUID (ALUMINUM SULFATE)	VAN WATERS & ROGERS	1/10/89
ALUMINUM	VARIAN SPECIALTY METALS	5/12/86
ALUMINUM ALLOY	RELIANCE STEEL & ALUMINUM	3/01/88
ALUMINUM CASTINGS	WOODLAND FOUNDARY, INC.	9/01/85
ALUMINUM SILICON	VARIAN SPECIALTY METALS	5/12/86
ALVANIA EP GREASE 2	SHELL	9/13/85
AMBERLITE	ROHM & HAAS CO.	10/20/89
AMBERLITE IR-120	ROHM & HAAS	12/21/90
AMINO ACID F REAGENT	HACH CO.	10/14/87
AMMONIA ANHYDROUS	AIRCO INDUSTRIAL GASES	3/01/86
AMMONIUM CHLORIDE	J.T. BAKER INC.	5/16/89
AMMONIUM HYDROXIDE 28-30% MICRO PR	VAN WATERS & ROGERS	1/12/89
AMMONIUM MOLYBDATE, 4-HYDRATE	J.T. BAKER CHEMICAL CO.	1/23/86
AMMONIUM STANDARD	FISHER SCIENTIFIC	4/17/89
AMMONIUM SULFATE	J.T. BAKER CHEMICAL CO.	1/23/86
AMORPHOUS SILICA	HERAEUS AMERSIL, INC.	9/01/85
ANTI-SEIZE	KAR PRODUCTS	1/22/90
ANTIFOAM EMULSION SWS-211	VAN WATERS & ROGERS	8/27/89
ANTIMONY	COMINCO ELECTRONIC MATERI	5/11/88
APARMAFLEX AND ARMAFEX II	ARMSTRONG WORLD INDUSTRIE	9/09/85
APCD-AMMONIUM 1-PYRROLIDINECARBODIT	J.T. BAKER CHEMICAL CO.	5/08/86
APPLESCENT	NEUTRON INDUSTRIES	6/01/90
AQUASTAR (TM) COULOMAT A	EM SCIENCE	10/27/87
ARGON, LAR (LIQUID ONLY)	UNION CARBIDE	11/01/86

CHEMICAL NAME*	MANUFACTURER	DATE REVISED
ARMFLEX FINISH	ARMSTRONG WORLD INDUSTRIE	10/21/85
ARSINE	AIRCO INDUSTRIAL GASES	8/09/89
AUTOMET LAPPING OIL	BUEHLER, LTD.	
BARIUM ATOMIC	MALLINCKRODT	11/18/86
BARIUM CHLORIDE	J.T. BAKER CHEMICAL CO.	5/16/89
BATTERY ELECTROLYTE	EAST PENN MFG.	4/16/90
BELT DRESSING	KAR PRODUCTS	3/16/90
BENZOYL PEROXIDE (BPO)	SILIKAL NORTH AMERICA INC	10/01/87
BETZ 25K SERIES	BETZ INDUSTRIAL	10/31/88
BETZ 35A	BETZ INDUSTRIAL	10/31/88
BETZ AP IV	BETZ INDUSTRIAL	10/31/88
BLACK MAX	LOCTITE CORP.	3/19/91
BLAZER 851	TEMPLEX	11/13/90
BORON	EAGLE-PICHER INDUSTRIES,	1/16/87
BR 2 PLUS GREASE	DOW CORNING CORP.	1/19/89
BRASS	RELIANCE STEEL & ALUMINUM	3/01/88
BRONZE	RELIANCE STEEL & ALUMINUM	3/01/88
BUFFER SOLUTION pH 10	HIGH PURITY CHEMICAL, INC	10/28/91
BUFFER SOLUTION pH 4	EM SCIENCE	10/27/87
BUFFER SOLUTION pH 7	EM SCIENCE	10/27/87
BUFFERED EYELERT	NORTH HEALTH CARE	3/23/87
BUTYL ACETATE NORMAL ELECTRONIC GRD	VAN WATERS & ROGERS	7/21/87
BUTYL ALCOHOL	VAN WATERS & ROGERS	12/22/88
CADMINUM STANDARD	ANDERSON LABORATORIES	3/18/85
CALCIUM CHLORIDE 77-80% FLAKE	VAN WATERS & ROGERS	7/21/87
CALCIUM SILICATE	MANVILLE INTERNATIONAL	4/09/85
CALCIUM, 1000 PPM	J.T. BAKER CHEMICAL CO.	5/16/89
CASE & DEERE GREEN	KAR PRODUCTS	3/28/90
CAULKING LEAD	SEAFAB METAL CORP.	
CAUSTIC SODA 50% LIQUID	DOW CHEMICAL	3/06/90
CERA BLANKET	MANVILLE INTERNATIONAL	5/01/85
CHEMLOX	AMER CHEMICAL & FLUX PROD	5/01/87
CHEVROLET ORANGE ENGINE PAINT	KAR PRODUCTS	3/26/90
CHLOROFLUOROCARBON	SILICON TECHNOLOGY CORP.	2/24/87
CHROMATE TEST	E.M. SCIENCE	12/15/88
CHROMIC ACID	J.T. BAKER INC.	5/16/89
CHROMIUM STANDARD	RICCA CHEMICAL CO.	2/20/90
CHRYSLER BLUE ENGINE PAINT	KAR PRODUCTS	4/02/90
CIMSTAR 40F	CINCINNATI MILACRON	10/21/91
CIMSTAR 40SC	CINCINNATI MILACRON	1/01/88
CITRIC ACID USP ANHYD FINE GRANULAR	VAN WATERS & ROGERS	1/10/89
CLEAN ALL	PAULSEN & ROLES	1/01/90
CLEAN WIZ	AXEL PLASTIC RESEARCH	6/15/89
CMP ELITE GD A MECH PUMP FLUID	CAMBRIDGE MILL PRODUCTS I	5/20/87
CMP ELITE GD Z MECH PUMP FLUID	CAMBRIDGE MILL PRODUCTS,	5/20/87
COATED ABRASIVE PRODUCTS	STANDARD ABRASIVES, INC.	5/24/89

CHEMICAL NAME*	MANUFACTURER	DATE REVISED
COATINGS, RESINS & RELATED MATLS.	SYNKOLID COMPANY INC.	12/31/88
COBALT	J.T. BAKER	5/16/89
COLLOIDAL SILICA NALCO 2350	NALCO CHEMICAL CO.	
CONBEXTRA S	FOSROC PRECO	12/27/88
CONDUCTIVITY STD 575 MHOS CODE 905	BETZ LABORATORIES	10/31/88
CONDUCTIVITY STD SOLUTION CODE 345	BETZ LABORATORIES	10/31/88
CONDUCTIVITY STD, 1000 MHOS CODE 28	BETZ LABORATORIES	10/31/88
CONQ-R-DUST PRESSURIZED	S.C. JOHNSON WAX	6/29/90
CONVERT-A-RUST	KAR PRODUCTS	7/25/86
COOL TOOL	MONROE FLUID TECHNOLOGY	
COPPER, 1000 PPM	J.T. BAKER CHEMICAL CO.	5/16/89
COR-TROL 778P	BETZ INDUSTRIAL	10/31/88
CORR SHIELD 736	BETZ INDUSTRIAL	10/31/88
CORROGEN	BETZ INDUSTRIAL	10/31/88
CRC 3-36 AEROSOL	CRC CHEMICALS	4/01/88
CRC 3-36 BULK	CRC CHEMICALS	11/01/85
CRC CO CONTACT CLEANER AEROSOL	CRC CHEMICALS	11/01/85
CRYSTAL VIOLET	J.T. BAKER CHEMICAL CO.	5/16/89
CUPRIC NITRATE, N-HYDRATE	J.T. BAKER CHEMICAL CO.	10/27/87
CUSTOM COLORS GLOSS ENAMEL	MILLER PAINT CO., INC.	3/25/91
D-GREASE-IT	APPLIED RESEARCH INC.	4/01/88
DARINA EP GREASE 2	SHELL OIL CO.	3/16/81
DASCO GUARD 2336	D.A. STUART OIL CO. OF AM	
DERMASHIELD	BENCHMARK ENTERPRISES INC	1/02/91
DERUSTO	DAP INC.	10/12/88
DEXTROSE, ANHYDROUS	J.T. BAKER CHEMICAL CO.	5/05/86
DIATOMACEOUS EARTH, CALCINED	EAGLE-PICHER MINERALS, IN	6/21/88
DIATOMACEOUS EARTH, FLUX-CALCINED	EAGLE-PICHER MINERALS, IN	6/21/88
DIATOMACEOUS EARTH, FLUX-CALCINED	MANVILLE INTERNATIONAL	3/27/85
DIBORANE	AIR PRODUCTS	4/01/84
DICHROL	MALLINCRODT	4/06/89
DIPHENYLCARBOHYDRAZIDE	J.T. BAKER CHEMICAL CO.	11/27/85
DOP	EASTMAN CHEMICALS PRODUCT	11/20/85
DRIERITE	W.A. HAMMOND DRIERITE CO.	9/05/89
DRY MOLY LUBRICANT #6080	CROWN INDUSTRIAL PRODUCTS	10/24/89
DRY TEFLON LUBRICANT	KAR PRODUCTS	5/22/90
DUCTILE IRON	ASTM ALLOY DESIGNATION	10/21/85
DUST-OFF	DU PONT	7/01/88
EDGE MIST	TAPMATIC CORP.	
EDTA	J.T. BAKER CHEMICAL CO.	5/16/89
ELECTRIC CONTACT CLEANER	KAR PRODUCTS	3/08/90
ELECTRIC MOTOR CLEANER	KAR PRODUCTS	3/08/90
ELECTRO KLEAN	APPLIED RESEARCH INC.	11/05/90
ENAMEL, FAST DRY INDUSTRIAL ALKYD	PPG INDUSTRIES, INC.	2/26/86
EP-S CARTRIDGE (TONER)	CANON	10/30/87
ETHYL ALCOHOL DENATURED	GEORGIA-PACIFIC CORP.	3/17/86

CHEMICAL NAME*	MANUFACTURER	DATE REVISED
ETHYLENE GLYCOL	VAN WATERS & ROGERS	1/29/91
F-10 SHAKER	ZEP MANUFACTURING CO.	9/14/89
FERRIC CHLORIDE, 6-HYDRATE	J.T. BAKER CHEMICAL CO.	10/08/85
FERROUS ALLOYS	CLEVELAND TWIST DRILL CO.	11/01/85
FLUORIDE STANDARD	ANDERSON LABORATORIES	3/20/85
FLYING & CRAWLING BUG SPRAY	KAR PRODUCTS, INC.	4/09/90
FORD RED ENGINE PAINT	KAR PRODUCTS, INC.	3/28/90
FREON TE	E.I. DU PONT de NEMOURS	
FREON TE	VAN WATERS & ROGERS	1/13/88
FREON TE-35	VAN WATERS & ROGERS	8/27/89
FREON TF	VAN WATERS & ROGERS	1/13/89
FREON TMC	VAN WATERS & ROGERS	3/06/89
FREON TP	E.I. DU PONT de NEMOURS	9/01/87
FREON TP	VAN WATERS & ROGERS	1/13/89
~~FRON TF~~	E.I. DU PONT de NEMOURS	
GALLIUM ARSENIDE	WACKER SILTRONIC CORP.	10/03/90
GASKET REMOVER/PAINT & CARBON STRIP	KAR PRODUCTS, INC.	3/08/90
GEL ENGINE DEGREASER	KAR PRODUCTS	6/05/90
GENERAL PURPOSE EPOXY	KAR PRODUCTS	6/05/90
GLASS & PLASTIC CLEANER	TEXWIPE CO.	12/01/86
GLUTAMIC ACID	J.T. BAKER CHEMICAL CO.	3/13/86
GLYCERINE	VAN WATERS & ROGER	12/08/89
GOLDEN SPEED DETERGENT	PAULSEN & ROLES	5/01/86
GRAPHITE	AIRCO CARBON	11/01/85
GRAPHITE, SYNTHETIC	UNOCAL CORP.	9/20/91
GRAY IRON CASTING	ASTM ALLOY DESIGNATION	10/18/85
GREASE LIGHTNING	PAULSEN & ROLES	2/09/89
GRINDING WHEELS (DIAMOND/CUBIC BORO	NORTON COMPANY	4/17/90
GRINDING WHEELS (RESINOID BONDED)	NORTON COMPANY	4/30/90
GRINDING WHEELS (RUBBER & SHELLAC)	NORTON COMPANY	4/17/90
GRINDING WHEELS ORGANIC BONDED	NORTON COMPANY	6/01/87
HAND SOAP	JOHNSON WAX	4/30/87
HARD HAT AEROSOL PRODUCTS	RUST-OLEUM CORP.	1/08/87
HAVAFLEX	AMETEK, INC.	9/01/91
HELIUM	AIRCO	7/01/86
HELIUM GAS	AIRCO	7/07/89
HEXAMETHYLDISILAZANE	OLIN HUNT SPECIALTY PRODU	3/10/88
HEXONE, METHY ISOBUTYL, KETONE	EM SCIENCE	10/27/87
HF ELECTROLYTE	SENSIDYNE	9/01/85
HI TEMP INDUSTRIAL ANTI SEISE	KAR PRODUCTS	1/22/90
HI TEMP MOLY LUBRICANT	KAR PRODUCTS	3/21/90
HPC 20	HIGH PURITY CHEMICAL	9/01/86
HYDRAULIC FLUID	SILICON TECHNOLOGY CORP.	2/24/87
HYDRO ALCOHOLIC CLEANING SOLUTION	TEXWIPE CO.	5/01/87
HYDROCHLORIC ACID	J.T. BAKER INC.	5/16/89
HYDROFLUORIC ACID, ANHYDROUS	E.I. DU PONT de NEMOURS	2/01/88

CHEMICAL NAME*	MANUFACTURER	DATE REVISED
HYDROGEN	AIRCO	10/20/89
HYDROGEN CHLORIDE	UNION CARBIDE	8/08/85
HYDROGEN IN NITROGEN MIXTURE	AIRCO	7/13/89
HYDROGEN PEROXIDE 30% MICRO PROCESS	VAN WATERS & ROGERS	1/10/89
HYDROXY OXYESTER	OLIN HUNT SPECIALTY PRODU	5/07/86
HYDROXYLAMINE HYDROCHLORIDE	ALDRICH CHEMICAL CO.	11/17/89
INHIBITOR 753	BETZ INDUSTRIAL	7/15/87
INSECTICIDE	FMC CORPORATION	3/16/88
INSWOOL MODABLE	A.P. GREEN INDUSTRIES	
INVOIL -20	INLAND VACUUM INDS.	1/24/89
IRON, DILUT-IT ANALYTICAL CONC. STD	J.T. BAKER CHEMICAL CO.	5/16/89
ISOPROPYL ALCOHOL	VAN WATERS & ROGERS	9/27/89
KARL FISCHER REAGENT	J.T. BAKER INC.	5/15/91
KIT-BUBBLE METER 1000 ML	SUPELCO, INC.	11/30/87
KOLOR SAFE LIQUID ACID NEUTRALIZER	JV MFG.	9/17/90
KOLOR SAFE LIQUID BASE NEUTRALIZER	JV MFG.	9/17/90
KROIL	KANO LABORATORIES, INC.	11/28/89
LACQUER THINNER	MILLER PAINT CO., INC.	3/25/91
LEAD, 1000 PPM	J.T. BAKER CHEMICAL CO.	5/16/89
LEAK DETECTOR 80925	KAR PRODUCTS	5/23/90
LEMONIZE WATER SOLUABLE DEODORANT	PAULSEN & ROLES	1/01/90
LIME HYDRATED (CALCIUM HYDROXIDE)	VAN WATERS & ROGERS	7/21/87
LIQUEFIED PETROLEUM GAS	AMERI GAS PROPANE INC.	8/01/91
LIQUI-NOX	ALCONOX, INC.	7/01/87
LIQUIMINE VI	BETZ INDUSTRIAL	10/31/88
LPS 3 HEAVY DUTY RUST INHIBITOR	LPS LABORATORIES, INC.	3/01/89
LUDOX COLLOIDAL SILICA	E.I. DUPONT de NEMOURS	4/01/88
LUTENSOL	BASF	2/01/88
MAGAGNOUS SULFATE, MONOHYDRATE	J.T. BAKER CHEMICAL CO.	7/07/89
MAGNESE	J.T. BAKER	5/16/89
MAGNESIUM	RELIANCE STEEL & ALUMINUM	3/01/88
MARINITE	BNZ MATERIALS INC.	8/09/89
MEEHANITE GRAY IRON CASTINGS	G & L FOUNDRY	11/27/85
MERCONWIPE	EPS CHEMICALS	10/20/89
MERCURY	EM SCIENCE	10/27/87
METALITE K224 (ALUMINUM OXIDE)	NORTON COMPANY	5/01/86
METER MIST ACCELERATOR	KAR PRODUCTS	2/01/89
METHANOL	EM SCIENCE	3/14/89
METHYLENE CHLORIDE	BAXTER HEALTH CARE	7/01/89
MICROPOSIT MF-319 DEVELOPER	SHIPLEY COMPANY	5/15/86
MICROPOSIT PRIMER	SHIPLEY CO.	2/26/91
MICROPOSIT REMOVER 1165	SHIPLEY COMPANY	5/15/86
MICROPOSIT S1400 PHOTO RESIST	SHIPLEY COMPANY	5/15/86
MIF DEVELOPER	OLIN	2/19/91
MIRCRO-LOK	MANVILLE FIBER GLASS GROU	10/05/87
MOBIL GLYGOYLE 30	MOBIL	6/10/91

CHEMICAL NAME*	MANUFACTURER	DATE REVISED
MOLD WIZ F-57	AZEL PLASTICS RESEARCH LA	6/15/89
MOLYBDATE 3 REAGENT	HACH CO.	6/14/88
MOLYBDENUM STD.	J.T. BAKER INC	5/16/89
MOLYKOTE	DOWN CORNING CORP.	3/30/87
MOLYVER 1, MONYBDENUM REAGENT CODE	BETZ LABORATORIES	10/31/88
MOLYVER 2, MONYBDENUM REAGENT CODE	BETZ LABORATORIES	10/31/88
MOLYVER 3, MONYBDENUM REAGENT CODE	BETZ LABORATORIES	10/31/88
MONOSODIUM SALT HYDRATE	ALDRICH CHEMICAL CO.	10/05/87
MP GREASE	SHELL	6/23/82
NEUTRA FILM 463	BETZ INDUSTRIAL	10/31/88
NICKEL, 1000 PPM	J.T. BAKER CHEMICAL CO.	5/16/89
NITRIC ACID	VAN WATERS & ROGERS	10/31/91
NITROGEN	UNION CARBIDE	9/01/85
NITROGEN (CRYOGENIC LIQUID)	UNION CARBIDE	9/01/85
NITROGEN DIOXIDE	AIRCO SPECIAL GASES	
NON WHITE CEILING TILE PAINT	KAR PRODUCTS	6/13/88
NON-RUST NEUTRO-STAT AEROSOL	THE SIMCO COMPANY INC.	
OIL 22	TRANE CO.	3/26/87
OLD WHITE CEILING TILE PAINT	KAR PRODUCTS	6/13/88
OMI-1 INDICATOR TUBE	SUPELCO, INC.	12/09/91
OPEN CHAIN & SPROCKET LUBE	KAR PRODUCTS	3/08/90
ORANGE WATERLESS	PAULSEN & ROLES	12/26/90
ORGANIC BONDED GRINDING WHEELS	NORTON COMPANY	11/21/85
ORION APPLICATION SOLUTION	ORION RESEARCH INC.	7/13/88
OXALIC ACID	J.T. BAKER CHEMICAL CO.	1/24/86
OXYGEN	MATHESON GAS PRODUCTS	10/01/85
PAINT, GILMAN GREY AEROSOL	FASSE PAINT COMPANY	3/24/86
PAINT, GRAY PRIMER SURFACER	INMONT CORP.	12/20/84
PENTALYN 261	HERCULES INC.	9/22/89
PENTANE	BAXTER HEALTH CARE CORP.	
PEROXIDE TEST KIT	E.M. SCIENCE	1/12/88
PESTICIDE (SAFROTIN)	ZOECON CORP.	1/01/85
PETROLEUM SOLVENT	HAMAR & ASSOCIATES, INC.	10/19/90
PHENANTHROLINE MONOHYDROCHLORIDE	J.T. BAKER CHEMICAL CO.	5/17/89
PHENOLPHTHALEIN 0.5% ALCOHOL	ANDERSON LABORATORIES INC	1/28/85
PHONE-WIPE	TEXWIPE CO.	11/01/87
PHOSPHATE, DILUT-IT ANALYTICAL CON.	J.T. BAKER CHEMICAL CO.	6/26/86
PHOSPHINE	AIRCO	8/09/89
PHOSPHORIC ACID	J.T. BAKER CHEMICAL CO.	5/17/89
PHOSPHORIC ETCH	OLIN SPECIALTY PRODUCTS,	1/01/91
PHOTORESIST HPR 504	OLIN SPECIALTY PRODUCTS,	
PHOTORESIST POSITIVE	PHILIP A. HUNT CHEMICALS	11/11/85
PHOTORESIST STRIPPER POSITIVE	PHILIP A. HUNT CHEMICAL C	11/13/85
PHOTORESIST STRIPPER, MICROSTRIP 20	OLIN SPECIALTY PRODUCTS I	1/30/89
PHOTORESIST, POSITIVE HPR 504	OLIN HUNT SPECIALTY PRODU	7/25/88
PIG ABSORBENT SOCK	NEW PIG CORP.	8/30/87

CHEMICAL NAME*	MANUFACTURER	DATE REVISED
PLASTIC STEEL PUTTY RESIN (A)	DEVCON CORP.	8/30/87
PMA	PMA AUTOMOTIVE	6/06/86
POLONIUM 210 STATICMASTER	NUCLEAR PRODUCTS COMPANY	
POLYISOCYANATE PREPOLYMER	SILIKAL NORTH AMERICA INC	10/01/87
POLYMER 1120	BETZ INDUSTRIAL	5/01/84
POTASSIUM CARBONATE	J.T. BAKER CHEMICAL CO.	7/06/89
POTASSIUM CHLORIDE	J.T. BAKER CHEMICAL CO.	5/05/86
POTASSIUM DICHROMATE	MALLINCKRODT INC.	4/06/89
POTASSIUM HYDROXIDE PELLET	VAN WATERS & ROGERS	7/21/87
POTASSIUM IODIDE	ALDRICH CHEMICAL	1/23/92
POTASSIUM PERMANGANATE	J.T. BAKER INC.	9/28/89
POTASSIUM PERSULFATE	J.T. BAKER CHEMICAL CO.	5/17/89
POTASSIUM, 1000 PPM	J.T. BAKER CHEMICAL	5/17/89
PRO-JEX SATIN INTERIOR LATEX	MILLER PAINT CO., INC.	3/25/91
PROPANE	PETROLANE	4/01/88
PVC PRIMER	INDUSTRIAL POLYCHEMICAL	
PYRIDINE	EM SCIENCE	10/27/87
Q9		
QUARTZ TYPE STICKY WAX	CORNING RUBBER CO.	
QUICK DRY SPRAY ENAMELS	MILLER PAINT	6/01/90
QUICK DRY SPRAY ENAMELS	PPG INDUSTRIES, INC.	6/01/90
QUIXNAMEL	FORREST PAINT CO.	2/01/89
RACON 11	RACON INC.	4/07/89
RACON 12	RACON INC.	11/18/85
RACON 22	RACON INC.	11/18/85
RACON 500	RACON INC.	11/18/85
RACON 512	RACON INC.	11/18/85
RAINBOW ANTI-FOG & CLEANER	LENS CLEAN INC.	
RECTORSEAL T PLUS 2	RECTORSEAL CORPORATION	3/19/90
RED INSULATING VARNISH	KAR PRODUCTS	3/08/90
REF ELECTRODE FILL SOLUTION	ORION RESEARCH INC.	6/07/88
REMOVABLE THREADLOCKER 242	LOCTITE CORPORATION	1/01/90
RIGID DARK THREAD CUTTING OIL	RIDGE TOOL CO.	11/24/85
ROKRAMAR 1051	ROBERT KRAEMER BREMEN	
ROUNDUP HERBICIDE	MONSANTO CO.	3/01/82
RP TEAM	PROCESS RESEARCH PRODUCTS	10/16/90
RTV SILICONE RUBBER SEALANT	GENERAL ELECTRIC	12/07/88
RTV102	GENERAL ELECTRIC	12/07/88
RUST PREVENTIVE COMPOUND	PERCY HARMS CORP.	12/11/84
SAG 710 SILICONE ANTIFOAM EMULSION	VAN WATERS & ROGERS	4/28/88
SAIRSET	A.P. GREEN REFRACTORIES C	
SEI-102 (BOILER WATER TREATMENT)	STEAM ENGINEERING, INC.	1/05/90
SEI-111	STEAM ENGINEERING, INC.	8/02/88
SEI-113	STEAM ENGINEERING, INC.	1/04/88
SEI-115	STEAM ENGINEERING, INC.	11/28/88
SEI-154	STEAM ENGINEERING, INC.	6/03/88

CHEMICAL NAME*	MANUFACTURER	DATE REVISED
SEI-167	STEAM ENGINEERING, INC.	6/03/88
SEI-224	STEAM ENGINEERING, INC.	6/10/88
SELECTIFIX MW	EM INDUSTRIES	2/27/89
SEMI-GLOSS ENAMEL	MILLER PAINT CO., INC.	3/25/91
SFT-60RB DEVELOPER	SANYO ELECTRIC CO. LTD.	9/01/85
SHELL TELLUS OIL 46	SHELL	2/14/83
SHELL TONNA OIL T68	SHELL	5/24/83
SHELL TURBO OIL 100	SHELL OIL	4/30/82
SHELL TURBO OIL 220	SHELL	4/30/82
SILANE	LINDE	11/01/89
SILCOOL-X	PROCESS RESEARCH PROD.	5/08/90
SILICON (POLYSILICON)	WACKER SILTRONIC CORP.	
SILICON CARBIDE	GENERAL ABRASIVE DIVISION	1/30/84
SILICON DIOXIDE	EM SCIENCE	10/27/87
SILICON OXIDE POWDER	ALDRICH CHEMICAL CO.	11/17/89
SILICON WAFERS (N,P,EPI)	WACKER SILTRONIC CORP.	
SILICONE RUBBER SEALANT	GE SILICONES	1/27/92
SILVER NITRATE	EM SCIENCE	5/13/87
SLIMICIDE C71P	BETZ INDUSTRIAL	10/31/88
SLIMICIDE C77P	BETZ INDUSTRIAL	10/31/88
SODA ASH	VAN WATERS & ROGERS	1/16/90
SODIUM ACETATE TRIHYDRATE	EASTMAN KODAK COMPANY	9/01/83
SODIUM AZIDE	E M SCIENCE	10/27/87
SODIUM BISULFITE ANHYD FOOD GRADE	VAN WATERS & ROGERS	7/21/87
SODIUM CARBONATE, ANHYDROUS	J.T. BAKER CHEMICAL CO.	3/25/86
SODIUM HYDROXIDE	J.T. BAKER	5/17/89
SODIUM HYPOCHLORITE 12.5%	VAN WATERS & ROGERS	11/02/88
SODIUM HYPOCHLORITE SOLUTION	ATO CHEM	2/27/85
SODIUM ISA	ORION RESEARCH INC.	1/28/85
SODIUM METABISULFITE	ALLIED CORPORATION	5/01/85
SODIUM SULFIDE FLAKE 60-62%	VAN WATERS & ROGERS	7/21/87
SODIUM THIOSULFATE, ANHYDROUS	J.T. BAKER CHEMICAL CO.	5/17/89
SODIUM, 1000 PPM	J.T. BAKER CHEMICAL CO.	5/17/89
SODIUM, ATOMIC ABSOPRTION STD.	EM SCIENCE	12/01/86
SODIUM/ALUMINOSILICATE	VOP	5/01/89
SOIL SOLV	EASTERDAY SUPPLY CO	5/10/86
SOLID STEEL WELDING WIRE	BELL AIRE, INC.	4/01/88
SOLVENT MINERAL SPIRITS	ALBINA FUEL	
SPAR ENAMEL	MILLER PAINT CO., INC.	3/25/91
~~SPAR ENAMEL~~	~~MILLER PAINT CO., INC.~~	~~3/25/91~~
SPRAY AWAY	PAULSEN & ROLES	5/01/86
SPRAY CLEAN	AMERICAN JANITORIAL & PAP	9/29/86
SPRAY LUBRICANT	HILTI, INC.	12/30/88
STAINLESS STEEL	VALEX CORP.	3/01/88
STANDAPOL A	HENKEL CORP.	3/27/91
STARCH, SOLUBLE	J.T. BAKER CHEMICAL CO.	5/17/89

CHEMICAL NAME*	MANUFACTURER	DATE REVISED
STATICIDE TM WIPES	ACL INC.	6/11/86
STEEL	RYERSON	11/08/85
STEEL WELDING WIRE (SOLID)	L-TEC	4/01/88
STEEL, HOT/COLD ROLLED ALLOY	RELIANCE STEEL & ALUMINUM	3/01/88
STEEL, STAINLESS	RELIANCE STEEL & ALUMINUM	3/01/88
STEELS, TOOL	JESSOP STEEP COMPANY	11/11/85
STEPANOL AM	STEPAN COMPANY	12/08/87
SULFATE, DILUT-IT ANALYTICAL CONC,	J.T. BAKER CHEMICAL CO.	5/08/86
SULFUR DIOXIDE	LIQUID AIR	10/01/85
SULFURIC ACID	RHONE-POULENC	4/05/91
SUPER GLUE	PERMATEX IND. CORP.	5/29/90
SUPER RUST PENETRANT	KAR PRODUCTS	3/09/90
SUPERBONDER	KAR PRODUCTS	4/19/90
SUPERL-A-TIVE POLISH	MBL IND.	11/01/85
SURFACTANT REAGENT SOLUTION	HACH CO.	
SYLGARD SILICONE DIELEC GEL PART B	DOWN CORNING CORP.	9/27/85
SYNCOLUBE E.P. GREASE	SYNCO CHEMICAL CORP	
SYNTHETIC REDUCER	IMPERIAL PAINT CO.	4/14/89
SYNTHETIC RUBBER, RESIN CONTACT CEM	W.F. TAYLOR CO.	8/28/81
TAPMATIC #1 CUTTING FLUID	TAPMATIC CORPORATION	5/14/90
TAPMATIC #2 CUTTING FLUID	TAPMATIC CORPORATION	7/03/91
TEFLON LUBE	KAR PRODUCTS	3/15/90
TELLUS OIL 32	SHELL	1/31/83
TEN AND FORTY SAFETY DETERGENT	PAULSEN & ROLES	5/01/86
TERGITOL NONIONIC SUFACTAND NP-9	UNION CARBIDE	10/01/85
TETRABUTYLAMMONIUM HYDROXIDE	SOUTHWESTERN ANALYTICAL C	11/01/85
THERMOREGULATOR	M.K. JUCHHEIM GmbH & CO.	10/01/91
TIN, 1000 PPM	J.T. BAKER CHEMICAL CO.	5/17/89
TOLUENE	J.T. BAKER CHEMICAL CO.	9/20/85
TONER	COAT REPROGRAPHICS INC.	11/24/87
TOWER PACKING - 304SS	NORTON COMPANY	11/06/86
TPA SILICA STANDARD	HACH CO.	
TRICHLOROETHANE	VAN WATERS & ROGERS	8/27/89
TRICHLOROETHYLENE	VAN WATERS & ROGERS	7/21/87
TRICHLOROSILANE	SOLKATRONIC CHEMICALS, IN	6/26/87
TUFF-TREAD ACRYLIC FLOOR ENAMEL	MILLER PAINT CO., INC.	3/25/91
TUNGSTEN CARBIDE WITH COBALT BINDER	KENNAMETAL, INC.	3/01/90
TURCO CAVICLEAN #2	TURCO PRODUCTS, INC.	8/01/88
TYROSINE REAGENT	BETZ LABORATORIES	10/31/88
URANINE	ANDERSON LABORATORIES	3/21/85
VALTRON AD 1230 RESIN (PART A)	VALTECH CORP.	1/10/84
VALTRON AD1210 CATALYST (PART B)	VALTECH CORP.	12/21/84
VALTRON AD1230 PART B EPOXY	PQ CORP.	11/12/86
VANZOL A-1200 DENATURED ANHY ALCOHO	GEORGIA-PACIFIC CORP.	2/05/86
VARNISH	KAR PRODUCTS	3/17/89
VINY TOP & CARPET ADHESIVE	KAR PRODUCTS	4/26/89

CHEMICAL NAME*	MANUFACTURER	DATE REVISED
VITRIFIED BONDED-ABRASIVE PRODUCTS	NORTON COMPANY	12/16/88
WAYCOAT HPR 504	OLIN SPECIALTY PRODUCTS I	5/07/90
WAYCOAT IC RESIST DEVELOPING SOLVEN	OLIN SPECIALTY PRODUCTS I	7/15/88
WAYCOAT PF DEVELOPER	OLIN SPECIALTY PRODUCTS I	11/11/85
WAYCOAT SC RESIST 180	OLIN SPECIALTY PRODUCTS I	9/28/88
WAYCOAT WX-432 DEVELOPER	OLIN HUNT SPECIALTY PRODU	5/25/88
WET SEAL PLASTIC, HYDROTITE PLASTIC	REVERE PRODUCTS CORP.	11/16/85
ZEP 15282	ZEP MANUFACTURING CO.	
ZEP BIG ORANGE	ZEP MANUFACTURING CO.	10/08/86
ZEP CLINGTIME	ZEP MANUFACTURING CO.	11/13/89
ZEP CONCENTRATED GLASS CLEANER	ZEP MANUFACTURING CO.	1/07/89
ZEP DRILL CHILL	ZEP MANUFACTURING CO.	7/27/89
ZEP DYNA 1Y3	ZEP MANUFACTURING CO.	7/09/89
ZEP FLASH	ZEP MANUFACTURING CO.	11/11/85
ZEP FOAMATE	ZEP MANUFACTURING CO.	8/30/87
ZEP FORMULA 300	ZEP MANUFACTURING CO.	7/26/89
ZEP FORMULA 50	ZEP MANUFACTURING CO.	7/24/87
ZEP GROOVY	ZEP MANUFACTURING CO.	7/02/90
ZEP LUBEEZE 28	ZEP MANUFACTURING CO.	8/01/84
ZEP PAINTER'S PARTNER	ZEP MANUFACTURING CO.	6/11/90
~~ZEP PAINTER'S PARTNER~~	~~ZEP MANUFACTURING CO.~~	~~6/11/90~~
ZEP PENETRANT	ZEP MANUFACTURING CO.	9/13/90
~~ZEP SAFE SOLVE~~	~~ZEP MANUFACTURING CO.~~	~~3/03/90~~
ZEP SAFE/SOLV	ZEP MANUFACTURING CO.	3/03/90
ZEP STEP ONE	ZEP MANUFACTURING CO.	4/23/90
ZEP SUPER LUBRICANT	ZEP MANUFACTURING CO.	7/13/90
~~ZEP SUPER LUBRICANT~~	ZEP MANUFACTURING CO.	7/13/90
ZEP VELVET	ZEP MANUFACTURING CO.	12/17/88
ZEP VUE	ZEP MANUFACTURING CO.	4/21/89
~~ZEP VUE~~	~~ZEP MANUFACTURING CO.~~	~~4/21/89~~
ZEP X-3886	ZEP MANUFACTURING CO.	6/15/88
ZESTON 1000, FITTING COVERS	MANVILLE FIBERGLASS GROUP	4/07/87
ZINC, 1000 PPM	J.T. BAKER CHEMICAL CO.	5/17/89

SHIP TO:

02005857
WACKER SILTRONIC CORP
ATTN: MARK ORGSIL
7200 NW FRONT ST
PO BOX 03180
PORTLAND OR 97203

ORDER NO: 029536377
PROD NO: 04149550

VAN WATERS & ROGERS INC. 1600 NORTON BLDG. SEATTLE, WA 98104-1564

EMERGENCY ASSISTANCE

FOR EMERGENCY ASSISTANCE INVOLVING CHEMICALS CALL CHEMTREC (800) 424-9300.

FOR PRODUCT AND SALES INFORMATION

CONTACT YOUR LOCAL VAN WATERS & ROGERS BRANCH OFFICE

PRODUCT IDENTIFICATION

PRODUCT NAME: ACTIVATED CARBON
COMMON NAMES/SYNONYMS: CARBON; DARCO(*); HYDRODARCO(*); GRO-SAFE(*); NORIT(*); WATERCARB; V-CAG; GMS-70; SGL; GRC; LFX

CAS NO.: 7440-44-0
VW&R CODE: P1378

FORMULA: C
HAZARD RATING (NFPA 704 CRITERIA)
HEALTH: 0
FIRE: 1
REACTIVITY: 0
SPECIAL: NONE

DATE ISSUED: 04/88
SUPERCEDES: 10/87
HAZARD RATING SCALE:
0=MINIMAL 3=SERIOUS
1=SLIGHT 4=SEVERE
2=MODERATE

HAZARDOUS INGREDIENTS

COMPONENT	CAS NO.	%	EXPOSURE LIMITS, PPM OSHA PEL	ACGIH TLV	OTHER LIMIT	HAZARD
CARBON	7440-44-0	>99	NONE	NONE	NONE	NONE

(*) TRADEMARK OF AMERICAN NORIT COMPANY, INC.

PHYSICAL PROPERTIES

BOILING POINT, DEG F: NOT APPLICABLE
VAPOR PRESSURE, MM HG/20 DEG C: NOT APPLICABLE
MELTING POINT, DEG F: NOT APPLICABLE
VAPOR DENSITY (AIR=1): NOT APPLICABLE
SPECIFIC GRAVITY (WATER=1): 0.4 TO 0.7 WHEN PACKED
WATER SOLUBILITY, %: NIL
APPEARANCE AND ODOR: BLACK POWDER OR GRANULAR SOLID, NO ODOR
EVAPORATION RATE (BUTYL ACETATE=1): NIL

FIRST AID MEASURES

IF INHALED: REMOVE TO FRESH AIR. GIVE ARTIFICIAL RESPIRATION IF NOT BREATHING. GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF EYE CONTACT: IMMEDIATELY FLUSH EYES WITH LOTS OF RUNNING WATER FOR 15 MINUTES, LIFTING THE UPPER AND LOWER EYELIDS OCCASIONALLY. GET IMMEDIATE MEDICAL ATTENTION.

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IN CASE OF SKIN CONTACT: IMMEDIATELY WASH SKIN WITH LOTS OF SOAP AND WATER. REMOVE CONTAMINATED CLOTHING AND SHOES; WASH BEFORE REUSE. GET MEDICAL ATTENTION IF IRRITATION PERSISTS AFTER WASHING.

IF SWALLOWED: NO TREATMENT NORMALLY NEEDED.

HEALTH HAZARD INFORMATION

PRIMARY ROUTES OF EXPOSURE: INHALATION, EYE CONTACT.

SIGNS AND SYMPTOMS OF EXPOSURE
INHALATION: BREATHING DUST MAY IRRITATE THE NOSE AND THROAT AND CAUSE COUGHING AND CHEST DISCOMFORT.

EYE CONTACT: DUSTS MAY IRRITATE THE EYES.

SKIN CONTACT: NONE CURRENTLY KNOWN.

SWALLOWED: NONE CURRENTLY KNOWN.

CHRONIC EFFECTS OF EXPOSURE: NO SPECIFIC INFORMATION AVAILABLE.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: NONE REPORTED.

TOXICITY DATA

ORAL: RAT LD50 >10 G/KG

DERMAL: NO DATA FOUND

INHALATION: RAT LD50 > 64.4 MG/L

CARCINOGENICITY: THIS MATERIAL IS NOT CONSIDERED TO BE A CARCINOGEN BY THE NATIONAL TOXICOLOGY PROGRAM, THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER, OR THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

OTHER DATA: NONE

PERSONAL PROTECTION

VENTILATION: LOCAL MECHANICAL EXHAUST VENTILATION CAPABLE OF MINIMIZING DUST EMISSIONS AT THE POINT OF USE.

RESPIRATORY PROTECTION: IF USE CONDITIONS GENERATE DUSTS, WEAR A NIOSH-APPROVED RESPIRATOR APPROPRIATE FOR THOSE EMISSION LEVELS. APPROPRIATE RESPIRATORS MAY BE A FULL FACEPIECE OR A HALF MASK AIR-PURIFYING CARTRIDGE RESPIRATOR WITH PARTICULATE FILTERS, A SELF-CONTAINED BREATHING APPARATUS IN THE PRESSURE DEMAND MODE, OR A SUPPLIED-AIR RESPIRATOR.

EYE PROTECTION: CHEMICAL GOGGLES UNLESS A FULL FACEPIECE RESPIRATOR IS ALSO WORN. IT IS GENERALLY RECOGNIZED THAT CONTACT LENSES SHOULD NOT BE WORN WHEN WORKING WITH CHEMICALS BECAUSE CONTACT LENSES MAY CONTRIBUTE TO THE SEVERITY OF AN EYE INJURY.

PROTECTIVE CLOTHING: LONG-SLEEVED SHIRT, TROUSERS, SAFETY SHOES, AND GLOVES.

OTHER PROTECTIVE MEASURES: AN EYEWASH AND SAFETY SHOWER SHOULD BE NEARBY AND READY FOR USE.

FIRE AND EXPLOSION INFORMATION

FLASH POINT, DEG F: NOT APPLICABLE FLAMMABLE LIMITS IN AIR, %
METHOD USED: NOT APPLICABLE LOWER: N/D UPPER: N/D
EXTINGUISHING MEDIA: USE WATER SPRAY, DRY CHEMICAL, CO2, OR ALCOHOL FOAM. DO NOT USE A DIRECT WATER STREAM.

SPECIAL FIRE FIGHTING PROCEDURES: NONE.

UNUSUAL FIRE AND EXPLOSION HAZARDS: HANDLE DRY POWDER IN GROUNDED

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EQUIPMENT.

HAZARDOUS REACTIVITY

STABILITY: STABLE POLYMERIZATION: WILL NOT OCCUR
CONDITIONS TO AVOID: HEAT, SPARKS, AND OPEN FLAMES.

MATERIALS TO AVOID: OXIDIZING AGENTS.

HAZARDOUS DECOMPOSITION PRODUCTS: NONE

SPILL, LEAK, AND DISPOSAL PROCEDURES

ACTION TO TAKE FOR SPILLS OR LEAKS: WEAR PROTECTIVE EQUIPMENT INCLUDING RUBBER BOOTS, RUBBER GLOVES, RUBBER APRON, AND A FULL FACEPIECE OR A HALF MASK AIR-PURIFYING CARTRIDGE RESPIRATOR WITH PARTICULATE FILTERS. WEAR CHEMICAL GOGGLES IF A HALF MASK IS WORN. FOR SMALL SPILLS, SWEEP UP AND DISPOSE OF IN DOT-APPROVED WASTE CONTAINERS. FOR LARGE SPILLS, SHOVEL INTO DOT-APPROVED WASTE CONTAINERS. KEEP OUT OF SEWERS, STORM DRAINS, SURFACE WATERS, AND SOIL.
COMPLY WITH ALL APPLICABLE GOVERNMENTAL REGULATIONS ON SPILL REPORTING, AND HANDLING AND DISPOSAL OF WASTE.

DISPOSAL METHODS: DISPOSE OF CONTAMINATED PRODUCT AND MATERIALS USED IN CLEANING UP SPILLS OR LEAKS IN A MANNER APPROVED FOR THIS MATERIAL. CONSULT APPROPRIATE FEDERAL, STATE AND LOCAL REGULATORY AGENCIES TO ASCERTAIN PROPER DISPOSAL PROCEDURES.
NOTE: EMPTY CONTAINERS CAN HAVE RESIDUES, GASES AND MISTS AND ARE SUBJECT TO PROPER WASTE DISPOSAL, AS ABOVE.

SPECIAL PRECAUTIONS

STORAGE AND HANDLING PRECAUTIONS: STORE IN A COOL, DRY, WELL-VENTILATED PLACE AWAY FROM INCOMPATIBLE MATERIALS. KEEP BAGS OR FIBER DRUMS DRY AT ALL TIMES. WASH THOROUGHLY AFTER HANDLING. DO NOT GET IN EYES, ON SKIN, OR ON CLOTHING.

REPAIR AND MAINTENANCE PRECAUTIONS: WET ACTIVATED CARBON REMOVES OXYGEN FROM AIR CAUSING A SEVERE HAZARD TO WORKERS INSIDE CARBON VESSELS AND ENCLOSED OR CONFINED SPACES. BEFORE ENTERING SUCH AN AREA, SAMPLING AND WORK PROCEDURES FOR LOW OXYGEN LEVELS SHOULD BE TAKEN TO ENSURE AMPLE OXYGEN AVAILABILITY, OBSERVING ALL LOCAL, STATE, AND FEDERAL REGULATIONS.

OTHER PRECAUTIONS: NONE

FOR ADDITIONAL INFORMATION

CONTACT DOUGLAS EISNER, TECHNICAL DIRECTOR, VAN WATERS & ROGERS INC.
DURING BUSINESS HOURS, PACIFIC TIME (206)447-5911

NOTICE

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REVISION

SCOEPA00055309

GRACE Dearborn

Dearborn Division

W. R. Grace & Co. - Conn.
300 Genesee Street
Lake Zurich, IL 60047

(708) 438-1800

FAX 503/241-7599

September 22, 1992

Mr. Kent Mayer
Wacker Siltronics

Dear Mr. Mayer:

Per our phone conversation, I am sending you information regarding Dearborn 874.

Dearborn 874 is an aqueous solution of the following:

(1-Hydroxyethylidene) bisphosphonic	CAS #2809-21-4	<5%
Sodium polymethacrylate	CAS #54193-36-1	<10%
Potassium hydroxide	CAS #1310-58-3	<10%
Sodium benzoate*	CAS #532-32-1	<1%
water		Balance

*preservative

All the ingredients of Dearborn 874 are on the TSCA Inventory list.

Please contact me or Richard Ruthe if you need additional information.

Sincerely,

P. Gabris
Research Associate

REF:CORRES\LTRS\874

DEARBORN® 874

Cooling Water Sequestrant and Antifoulant

Cooling Water Treatment

Application: DEARBORN® 874 cooling water treatment combines Dearborn's effective polymeric antifoulants with a highly stable complexing and dispersing agent. Regular use of DEARBORN 874 helps to prevent deposits due to such troublesome foulants as metallic oxides, silt, dead microbiological growths and organic debris. This product is also suggested for systems which have fouled beyond the capabilities of conventional dispersants to restore normal water flow and heat transfer. DEARBORN 874 is designed for once-through and open recirculating cooling water systems such as those used in oil refineries, chemical plants, power generating stations, metal mining and refining installations, and general industry. U.S. Patent No. 3,890,228.

Advantages:

- **On-stream desludging**
- **Chemically stable**
- **Restores heat transfer**
- **Non-corrosive**

Directions For Use: For once through systems, maintain 5 to 15 ppm DEARBON 874 continuously, or apply intermittently at 10 to 50 ppm for $^1/_2$ hour to 8 hours per day. For open recirculating systems, maintain 20 to 50 ppm, DEARBORN 874 in the circulating water continuously; or for intermittent application to towers, obtain maximum retention time by closing the bleed-off and maintaining 20 to 50 ppm DEARBORN 874 for 24 hours. The severity and type of fouling will determine the optimum dosage to be used. There will be instances where higher dosages may be recommended for rapid removal of difficult deposits.

DEARBORN 874 may be pumped directly from the shipping container, or from chemical feed tanks, using equipment of standard construction. Apply to the cooling tower discharge or directly into the recirculating water lines on a continous or proportional basis. Avoid mixing DEARBORN 874 in feed solution with other chemicals.

Product Data:

- **Appearance: Colorless liquid**
- **Density: 9.2 lbs/gal (1.1 kg/L)**
- **Product pH: 9.7**
- **Freezing Point: 24°F (−4°C)**

Limitations and Handling: Harmful if swallowed. Do not use in potable water systems. Avoid contact with skin, eyes or clothing. Flush from skin with water. If eyes are affected, flush with water and get medical attention. Keep container closed when not in use.

Available Packaging: 55 Gallon Drums – Approximately 498 lbs. net (226 kg)
30 Gallon Drums – Approximately 272 lbs. (124 kg)

GRACE Dearborn

8056 **Dearborn Division** W. R. Grace & Co., 300 Genesee Street, Lake Zurich, IL 60047

SCOEPA00055311

Material Safety Data Sheet

Emergency Phone
708-438-1800

Section 1 Product Identification

TRADE NAME: DEARBORN 874 | PRODUCT TYPE: Cooling Water Treatment | CODE IDENT.: 11-506

DOT SHIPPING NAME: Compound Industrial Process Water Treating, Liquid

Section 2 Hazardous Ingredients

	CAS NUMBER	%	EXPOSURE CRITERIA

Does not contain hazardous constituents under 29 CFR 1910. 1200, d(3) & (4).

Solution < 45 % Potassium Hydroxide (KOH)
55% > water
HEDP = Organic phosphate
Acrylate = Polymers

HMIS 1-0-0 EPA REGISTRATION NO. NA

Section 3 Physical Data

BOILING POINT, 760 mm Hg	> 210F	MELTING POINT	NA
FREEZING POINT	24 F	VAPOR PRESSURE	ND
SPECIFIC GRAVITY (H_2O = 1)	1.10	SOLUBILITY IN H_2O	Appreciable
VAPOR DENSITY (AIR = 1)	ND	EVAPORATION RATE, (Bu Ac = 1)	< 1
% VOLATILES BY VOLUME	ND	pH	9.2 - 10.2

APPEARANCE & ODOR

Colorless liquid

Section 4 Fire & Explosion Hazard Data

FLASH POINT (& METHOD USED)	FLAMMABLE LIMITS IN AIR % BY VOLUME LOWER	UPPER	AUTO IGNITION TEMPERATURE
NA, water-based product	NA	NA	NA

EXTINGUISHING MEDIA: FOAM CO2 DRY CHEMICAL

SPECIAL FIRE FIGHTING PROCEDURES:

Firefighters should wear full protective gear including self contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARD:

None known

Section 5 Reactivity Data

STABILITY (NORMAL CONDITIONS)	CONDITIONS TO AVOID
Stable	Extreme heat

INCOMPATIBILITY (MATERIALS TO AVOID)

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

Thermal decompostion products may include carbon monoxide, carbon dioxide and oxides of nitrogen.

HAZARDOUS POLYMERIZATION	CONDITIONS TO AVOID
Will not occur	Not applicable

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Section 6 Health Hazard Information

TOXICITY INFORMATION:

Exposure level not established for product.

EFFECTS OF OVEREXPOSURE:

INHALATION: Prolonged inhalation of mist may irritate nasal passages.

INGESTION: May be harmful if swallowed.

SKIN CONTACT: Prolonged or frequent skin contact may cause irritation.

EYE CONTACT: May cause irritation.

EMERGENCY AND FIRST AID PROCEDURES

INHALATION: Remove affected persons to fresh air and treat symptoms.

INGESTION: If conscious, give water to dilute and contact physician immediately.

SKIN CONTACT: Wash with soap and water. Remove contaminated clothing and wash before reuse.

EYE CONTACT: Flush with water for 15 minutes and seek medical attention.

Section 7 Special Protection Information

VENTILATION REQUIREMENTS

Use adequate mechanical ventilation.

RESPIRATORY PROTECTION (SPECIFY TYPE)

None special

EYE PROTECTION

Chemical Goggles or safety glasses

GLOVES

Impervious

OTHER PROTECTIVE CLOTHING AND EQUIPMENT

Long sleeve work shirt and pants.

Section 8 Spill or Leak Procedures

STEPS TO TAKE IF MATERIAL IS RELEASED OR SPILLED

Wear protective clothing. Collect using absorbent, place in container for proper disposal. Flush area of spill with water.

WASTE DISPOSAL METHOD

Dispose of in accordance with federal, state and local regulations.

This product is not formulated with chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986 and of 40 CFR 372.

Product does not contain ingredients with CERCLA reportable quantities.

Section 9 Special Precautions

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Keep container closed when not in use. Keep from freezing.

OTHER PRECAUTIONS

FOR INDUSTRIAL USE ONLY. KEEP OUT OF REACH OF CHILDREN.

PREPARED BY: R. Ruthe DATE: 3/20/92

The data included herein are presented according to W. R. Grace & Co.'s practices current at the time of preparation hereof, are made available solely for the consideration, investigation and verification of the original recipients hereof and do not constitute a representation or warranty for which Grace assumes legal responsibility. It is the responsibility of a recipient of this data to remain currently informed on chemical hazard information, to design and update its own safety program and to comply with all national, federal, state, and local laws and regulations applicable to safety, occupational health, right to know and environmental protection.

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Replaced Halogene G

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3JR

BUCKMAN LABORATORIES, INC.

MATERIAL SAFETY DATA SHEET

#10585

GBCH

Distributed by:

Mt. Hood Chemical
503-227-3505

Revision date: 11/3/2006

Buckman Laboratories, Inc.
1256 North McLean Boulevard
Memphis, TN 38108

Phone 1-800-BUCKMAN

24 Hour Emergency Phone: (901) 767-2722

SECTION 1 *OSHA HAZARD CLASSIFICATIONS*

Oxidizer. Causes burns. May cause skin sensitization.

SECTION 2 *HAZARDOUS COMPONENTS*

Chemical Name	*CAS Number*	*% by Weight*	*TLV*
Bromo, chloro-5,5-dimethylhydantoin	32718-18-6	98	Not available.

Buckman Laboratories reports the component(s) listed above as known OSHA hazardous material(s) contained in this product.

SECTION 3 *FIRST AID INFORMATION*

Eye Exposure: **Flush immediately with copious amounts of tap water or normal saline (minimum of 15 minutes). Take exposed individual to a health care professional, preferably an ophthalmologist, for further evaluation.**

Skin Exposure: **Wash exposed area with plenty of water. Repeat washing. Remove contaminated clothing and wash thoroughly before reuse. If irritation persists consult a health care professional.**

Inhalation: **If exposure by inhalation is suspected, immediately move exposed individual to fresh air. If individual experiences nausea, headache, dizziness, has difficulty in breathing or is cyanotic, seek a health care professional immediately.**

Ingestion: **DO NOT INDUCE VOMITING. Rinse with copious amounts of water or milk, first. Irrigate the esophagus and dilute stomach contents by slowly giving one (1) to two (2) glasses of water or milk. Avoid giving alcohol or alcohol related products. In cases where the individual is semi-comatose, comatose or convulsing, DO NOT GIVE FLUIDS BY MOUTH. In case of intentional ingestion of the product seek medical assistance immediately; take individual to nearest medical facility.**

SECTION 4 *PRIMARY ROUTES OF EXPOSURE*

1. Effects from Acute Exposure:

Eye Exposure: **Hazardous in case of eye contact (irritant, corrosive). Eye contact can result in corneal damage or blindness.**

Skin Exposure: **Hazardous in case of skin contact (corrosive, irritant). The amount of tissue damage depends on length of contact. Skin contact can produce inflammation and blistering. Skin contact may produce burns. Prolonged exposure may result in skin burns and ulcerations. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.**

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Inhalation: **May be harmful if inhaled. Do not breathe spray mists of the undiluted product. Effects will depend upon solution strength and length of time of exposure.**

Ingestion: **Ingestion is not expected to be a primary route of exposure.**

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2. Effects from Chronic Exposure:

The effects from chronic exposure to this product have not been fully evaluated.

SECTION 5 *Toxicological Information*

Acute Effects:

Acute Oral (LD50) = 929 mg/kg Rat
Acute Inhalation (LC50) = 1.1 mg/l (4 hours) Rat

Irritant / Sensitization Effects:

Hazardous in case of eye contact (irritant, corrosive). Eye contact can result in corneal damage or blindness.
Hazardous in case of skin contact (corrosive, irritant). The amount of tissue damage depends on length of contact. Skin contact can produce inflammation and blistering. Skin contact may produce burns. Prolonged exposure may result in skin burns and ulcerations. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.
May be harmful if inhaled. Do not breathe spray mists of the undiluted product. Effects will depend upon solution strength and length of time of exposure.

Carcinogenic Potential:

Not tested by Buckman Laboratories. Not shown as a carcinogen by OSHA, IARC, or NTP.

Target Organs Effects:

May cause damage to the following organs: upper respiratory tract, skin, eyes.

Other Health Effects:

nhalation may cause irritation of the upper respiratory tract. Shortness of breath, headache and nausea may occur. Exposure to wet skin may cause severe irritation. Mutagenic by the Ames Test.

SECTION 6 *Environmental Toxicological Information*

LC50 = 0.75 mg/l 48 hours Daphnia magna (static conditions)
LC50 = 0.46 mg/l 96 hours Bluegill sunfish (static conditions)
LC50 = 0.4 mg/l 96 hours Rainbow trout (static conditions)
LC50 = 1.6 mg/l 96 hours Sheepshead minnow (flow-through conditions)
LC50 = 1.9 mg/l 96 hours Mysid shrimp (flow-through conditions)
LC50 = 1.2 mg/l 96 hours Eastern oyster (flow-through conditions)

SECTION 7 *Physical and Chemical Properties*

Appearance	**White to off-white granules solid**
Odor	**Faint halogen**
Density	**1.9 g/cm^3 at 25°C (77°F)**
Flash Point	**Not available.**
Melting/Freezing Point	**Not available.**
Boiling Point	**Not available.**
Solubility	**Solubility in Water: 0.2 g/100 ml at 25C** **Solubility in other Solvents: Benzen: 2.5 g/100 g at 25C**
pH (Neat)	**Not available.**
pH (100 ppm in water)	**Not available.**

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Vapor Pressure	9.35 X10(-3) Pa at 25C
o/w Partition Coefficient	Not available.
Oxidizing/Reducing Properties	Not available.
Viscosity	Not available.
Additional pH Information	

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NOTE: The physical data presented above are typical values and should not be construed as specifications.

SECTION 8 *Fire and Explosion Information*

Flammable Limits	Not available.
Extinguishing Media	Water fog, carbon dioxide, foam, dry chemical.
Special Firefighting Procedures	Fire-fighters should wear positive pressure self-contained breathing apparatus (SCBA) and full turnout gear.

SECTION 9 *Reactivity Information*

Stability	Stable under normal conditions of use and storage. Avoid temperatures above 160C / 320F.
Incompatibility	Oxidizing agents, combustible organic materials, bases.
Hazardous Decomposition Products	Hydrogen bromide, bromine, hydrogen chloride, chlorine

SECTION 10 *Handling Precautions*

Ventilation requirements: Use local exhaust as necessary, especially under dusty conditions.
Person Protective Equipment
Respiratory protection: Approved respirator
Hand protection: PVC gloves
Eye protection: Chemical safety goggles
Skin and body protection: Body covering protection: Body covering clothes and boots
Hygiene measures: Safety shower and eye bath should be provided. Do not eat, drink or smoke until after-work showering and changing clothes.

SECTION 11 *Satisfactory Materials of Construction*

Not available.

SECTION 12 *Spill, Leak, and Disposal Procedures*

SPILL AND LEAK RESPONSE GUIDELINES:

Important: Before responding to a spill or leak of this product, review each section of this MSDS. Follow the recommendations given in the Handling Precautions sections. Check the Fire and Explosion Data section to determine if the use of non-sparking tools is merited. Insure that spilled or leaked product does not come into contact with materials listed as incompatible. If irritating fumes are present, consider evacuation of affected areas.

Emergency Response Assistance: Emergency technical assistance is available at any time from Buckman Laboratories, Inc., by calling (901) 767-2722. Collect calls are accepted.

Initially minimize area affected by the spill or leak. Block any potential routes to water systems (e.g., sewers, streams, lakes, etc.). Based on the product's toxicological and chemical properties, and on the size and location of the spill or leak, assess the impact on contaminated environments (e.g. water systems, ground, air equipment, etc.). There are no methods available to completely eliminate any toxicity this product may have on aquatic environments. Minimize adverse effects on these environments. Buckman Laboratories, Inc. can be contacted for technical assistance. Determine if federal, state, and/or local release notification is required (see Regulatory Information section of this MSDS). Recover as much of the pure product as possible into appropriate containers. Later, determine if this recovered product can be used for its intended purpose. Address clean-up of contaminated environments. Spill or leak residuals may have to be collected and disposed of. Clay, soil, or commercially available absorbents

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may be used to recover any material that can not readily be recovered as pure product. Flushing residual material to an industrial sewer, if present at the site of a spill or leak incident, may be acceptable if authorized approval is obtained. If product and/or spill/leak residuals are flushed to an industrial sewer, insure that they do not come into contact with incompatible materials.

DISPOSAL GUIDELINES

Distributed by:

Mt. Hood Chemical
503-227-3505

Note: Follow federal, state, and local regulations governing the disposal of waste materials.

Neat Product: Contact your Buckman representative.

Contaminated Materials: Determine if waste containing this product can be handled by available industrial effluent system or other on-site waste management unit. If off-site management is required, contact a company experienced in industrial waste management.

Container Disposal: If assistance is needed, contact your Buckman sales representative.

SECTION 13 *Transportation and Shipping Information*

DOT Shipping Information:

UN1479 , OXIDIZING SOLID, N.O.S., (Bromo, chloro-5,5-dimethylhydantoin) , Class 5.1, P.G. II , (ERG Guide 140)

IMO/IMDG Shipping Information:

UN1479 , OXIDIZING SOLID, N.O.S., (Bromo, chloro-5,5-dimethylhydantoin) , Class 5.1, P.G. II , MARINE POLLUTANT, (EmS No. F-A, S-Q , ERG Guide 140, HazMat Code 4918761)

IATA Shipping Information:

UN1479 , OXIDIZING SOLID, N.O.S., (Bromo, chloro-5,5-dimethylhydantoin) , Class 5.1, P.G. II , (ERG Guide 140, ERG Code 5L)

DOT "RQ": NONE

Unless otherwise stated, the shipping information provided above applies only to non-bulk containers of this product. Proper shipping name and general shipping information may vary depending on packaging and mode of shipment. All products shipped from Buckman locations have been properly packaged and labeled according to appropriate hazardous materials shipping regulations. If any alteration of packaging, product, or mode of transportation is further intended, different shipping information, including but not limited to proper shipping name, RQ designation, and labeling may apply. For further information pertaining to the shipping requirements for this product, contact Buckman's Transportation Department or DOT Coordinator.

SECTION 14 *Regulatory Information*

The following Regulations are known to apply to the use and disposal of this product. Additional Federal, State and Local regulations may also be applicable.

SARA (Superfund Amendments and Reauthorization Act)

SARA 302 Extremely Hazardous Substances List ...

No components of this product are listed.

SARA 312 Hazard Category ...

Reactive, Immediate (Acute) Health Hazard, Delayed (Chronic) Health Hazard

SARA 313 Toxic Chemicals List ...

No components of this product are present above the *de minimus* levels.

CERCLA (Comprehensive Environmental Response, Compensation and Liability Act)

No components of this product are present above the *de minimus* levels.

RCRA (Resource Conversation and Recovery Act) Listed Hazardous Waste

No components of this product are listed.

CWA (Clean Water Act) Listed Substances

No components of this product are listed.

SCOEPA00055317

FDA (Food and Drug Administration)

This product is not approved for food contact uses.

TSCA (Toxic Substances Control Act) Applicability

All components may not be listed on the TSCA Inventory. Registered pesticides are exempt from the requirements of TSCA.

FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act)

This product is a registered pesticide. EPA Reg. No. 1448-428

Distributed by:

Mt. Hood Chemical
503-227-3505

HMIS/NPCA Rating ... Health 3 Flammability 0 Reactivity 1

NFPA Ratings ..... Health 3 Flammability 0 Reactivity 1

State Regulations

Various State Right To Know Acts ...

Non-proprietary hazardous chemicals are listed in Section 2 of this MSDS. Should you require further information on specific proprietary or inert ingredients please contact Buckman Laboratories' Regulatory Affairs Department.

The information on this Material Safety Data Sheet reflects the latest information and data that we have on hazards, properties, and handling of this product under the recommended conditions of use. Any use of this product or method of application which is not described in the Data Sheet is the responsibility of the user. This Material Data Safety Sheet was prepared to comply with the OSHA Hazard Communication regulations. While some components are claimed Trade Secret under OSHA Hazard Communication regulations, all known OSHA hazards associated with the Trade Secret component(s), if contained in this product, are fully disclosed.

Buckman Laboratories, Inc. warrants that this product conforms to its chemical description and is reasonably fit for the purpose referred to in the directions for use when used in accordance with the directions under normal conditions. Buyer assumes the risk of any use contrary to such directions.

Seller makes no other warranty or representation of any kind, express or implied, concerning the product, including NO IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS OF THE GOODS FOR ANY OTHER PARTICULAR PURPOSE. No such warranties shall be implied by law and no agent of seller is authorized to alter this warranty in any way except in writing with a specific reference to this warranty.

The exclusive remedy against seller shall be in a claim for damages not to exceed the purchase price of the product, without regard to whether such a claim is based upon breach of warranty or tort.

Any controversy or claim arising out or relating to this contract, or breach thereof, shall be settle by arbitration in accordance with the commercial arbitration rules of the American Arbitration Association, and judgement upon the rendered by the Arbitrator(s) may be entered in any court having jurisdiction thereof.

SAFETY DATA SHEET

1. CHEMICAL PRODUCTS & COMPANY IDENTIFICATION

CHEMICAL PRODUCT NAME	:	**DRYNON C**
NAME OF MANUFACTURER / SUPPLIER	:	**NIKKA SEIKO CO.,LTD.**
ADDRESS	:	1-41-9, Sangenjaya, Setagaya-ku, Tokyo 154-0024 Japan
TELEPHONE NO.	:	81-3-3424-1811
FAX	:	81-3-3424-2882

2. COMPOSITION / INFORMATION ON INGREDIENTS

SUBSTANCE / MIXTURE	:	Mixture
CHEMICAL NAME / GENERIC NAME	:	
INGREDIENTS AND COMPOSITION	:	Aliphatic polyhydric alcohol Glycol type solvent Pure water
UN CLASS	:	Not applicable
UN NO.	:	Not applicable

3. HAZARDS IDENTIFICATION

CLASS NAME OF HAZARDOUS CHEMICALS FOR SDS IN JAPAN	:	Not applicable
PHYSICAL AND CHEMICAL HAZARDS	:	After water is evaporated, it will be flammable liquid.
ADVERSE HUMAN HEALTH HAZARDS	:	If contacted, irritates to skin and eye. If vapor / mist is inhaled, irritates to respiratory organs. If ingested, may cause headache, nausea or vomit.
ENVIROMENTAL EFFECTS	:	Can be biodegraded well.

4. FIRST-AID MEASURES

EYE CONTACT : If contacted, immediately flush eyes with clean water for at least 15 min. If any pain is felt, get medical attention immediately. If using contact lenses, remove them before flushing eyes.

SKIN CONTACT : Immediately wash well with water and soap. Where there is evidence of any pain or problem, get medical attention immediately.

INHALATION : Remove the victim from the contamination to fresh air area immediately. Keep him / her warm and quiet. If breathing has stopped or is weak, loosen the clothes and administer artificial respiration. Get medical attention immediately.

INGESTION : Give the victim plenty of water or milk to vomit. Do not give an unconscious person anything to drink. Arrange for examination and treatment by a physician immediately.

5. FIRE-FIGHTING MEASURES

FIRE-FIGHTING MEASURES : Shut off fuel to fire. Use appropriate extinguishing media and fight fire from upwind position. Wear proper respiratory protective equipment as this may generate toxic gas with stimulating odor.

EXTINGUISHING MEDIA : Alcohol-resistant foam, dry chemical powder, carbon dioxide, dry sand, water spray.

6. ACCIDENTAL RELEASE MEASURES

Wear safety glasses and rubber-gloves.
In case of small spill, absorb spill with dry sand, paper or cloth.
In case of large spill, stop the spill by earth or dry sand and place in empty containers.

SCOEPA00055320

7. HANDLING AND STORAGE

HANDLING : Use in the well-ventilated area to prevent from inhaling the vapor or mist. Wear rubber-gloves and safety goggles to avoid contact with skin or eyes. Wash hands and face well with water and soap after use.

STORAGE : Keep container upright and tightly closed. Store in a cool, dark inside. Keep away from sunlight.

8. EXPOSURE CONTROL / PERSONAL PROTECTION

CONTROL PARAMETERS	:	Not established.
ENGINEERING MEASURES	:	Install local exhaust ventilation system for vapor / mist generation area. Make available emergency shower and eye wash in the work area.
PERSONAL PPRETECTIVE EQUIPMENT		
RESPIRATORY PROTECTION	:	Chemical cartridge respirator with an organic vapor cartridge if necessary.
EYE PROTECTION	:	Safety goggles or glasses.
HAND PROTECTION	:	Rubber gloves
BODY PROTECTION	:	Long-sleeved clothes, apron.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE, PHYSICAL STATE, FORM, COLOR, ODOR	:	Colorless clear liquid
BOILING POINT	:	around 100 ℃
MELTING POINT	:	No data
VAPOR PRESSURE	:	No data
VOLATILITY	:	None
SPECIFIC GRAVITY (H2O = 1)	:	1.14 (at 25℃)
SOLUBILITY IN WATER	:	Soluble well
PH	:	4 (Undiluted solution)

SCOEPA00055321

10. PHYSICAL HAZARD (STABILITY AND REACTIVITY)

FLASH POINT	:	None
AUTOIGNITION TEMP.	:	None
EXPLOSION LIMIT	:	Lower Explosion Limit : None Upper E. L. : None
FLAMMABILITY	:	None (Flammable after the water is evaporated.)
SPONTANEOUS COMBUSTIBILITY	:	None
REACTIVITY WITH WATER	:	None
OXIDIZIBILITY	:	None
SELF-REACTIVITY	:	None
STABILITY	:	Stable at normal handling condition.
OTHERS	:	

11. TOXICOLOGICAL INFORMATION

SKIN CORROSIVE PROPERTIES	:	None
IRRITANT PROPERTIES (SKIN & EYE)	:	If contacted, causes skin and eye irritation.
ACUTE TOXICITY	:	< Aliphatic polyhydric alcohol > Oral LD_{50} (rat) > 12g / kg Inhalation LC_{50} (rat) > 0.57g / m^3 / 1hr < Glycol type solvent > Oral LD_{50} (rat) 20 g / kg
CHRONIC TOXICITY	:	No data
MUTAGENIC EFFECTS	:	Negative in the Ames test.
OTHERS	:	If the vapor / mist is inhaled, irritates to respiratory organs. If ingested, may cause headache, nausea or vomit.

12. ECOLOGICAL INFORMATION

BIODEGRADABILITY	:	Can be biodegraded well.
BIOACCUMULATION	:	No data
FISH TOXICITY	:	No data
OTHER	:	BOD : 730g / L (Undiluted solution) COD : 550g / L (Undiluted solution)

SCOEPA00055322

13. DISPOSAL CONSIDERATION

Follow all regulations in your country.
Clean inside the container well before disposing.
Waste solution including rinsed solution should be neutralized by activated sludge process before disposing.

14. TRANSPORT INFORMATION

ICAO / IATA or IMDG Hazard Class	:	Not applicable
PACKING GRADE	:	Not applicable

15. REGULATORY INFORMATION

Follow all regulations in your country.

16. OTHER INFORMATION

The information herein is given in good faith, but no warranty, express or implied, is made.
Please consult NIKKA SEIKO CO.,LTD. for further information.

NIKKA SEIKO CO.,LTD.

SCOEPA00055323

Introduction of antidrying agent DrynonC

ICPTEK

DrynonC, which is already used in the semiconductor polishing industry, is sold to almost all customers.
In the glass polishing industry, it is also approved and sold to both customers of liquid crystal mask substrate and mask substrate. We would be happy if you test and evaluate this product.

Features

■Improvement of detergent properties

Prevents the adhesion of abrasive particle due to drying and improves the detergent properties. It is possible to omit dipping cleaning using chemicals and a cleaning process using detergent.

■Retention of antidrying and hydrophilic properties

Prevents drying during the polishing process and cleaning process and retains the hydrophilic properties.

■No acids used

Acid chemicals are not used, so it is recommended for coated films and chemically weak glass.

■Burn prevention

Prevents a burn which often occurs on a soda-lime glass by preventing the binding of water molecules.

■Improvement of evaporated-film adhesion

Prevents particle adhesion, emergence of water film and the metal ion contamination and improves the adhesion of evaporated film.

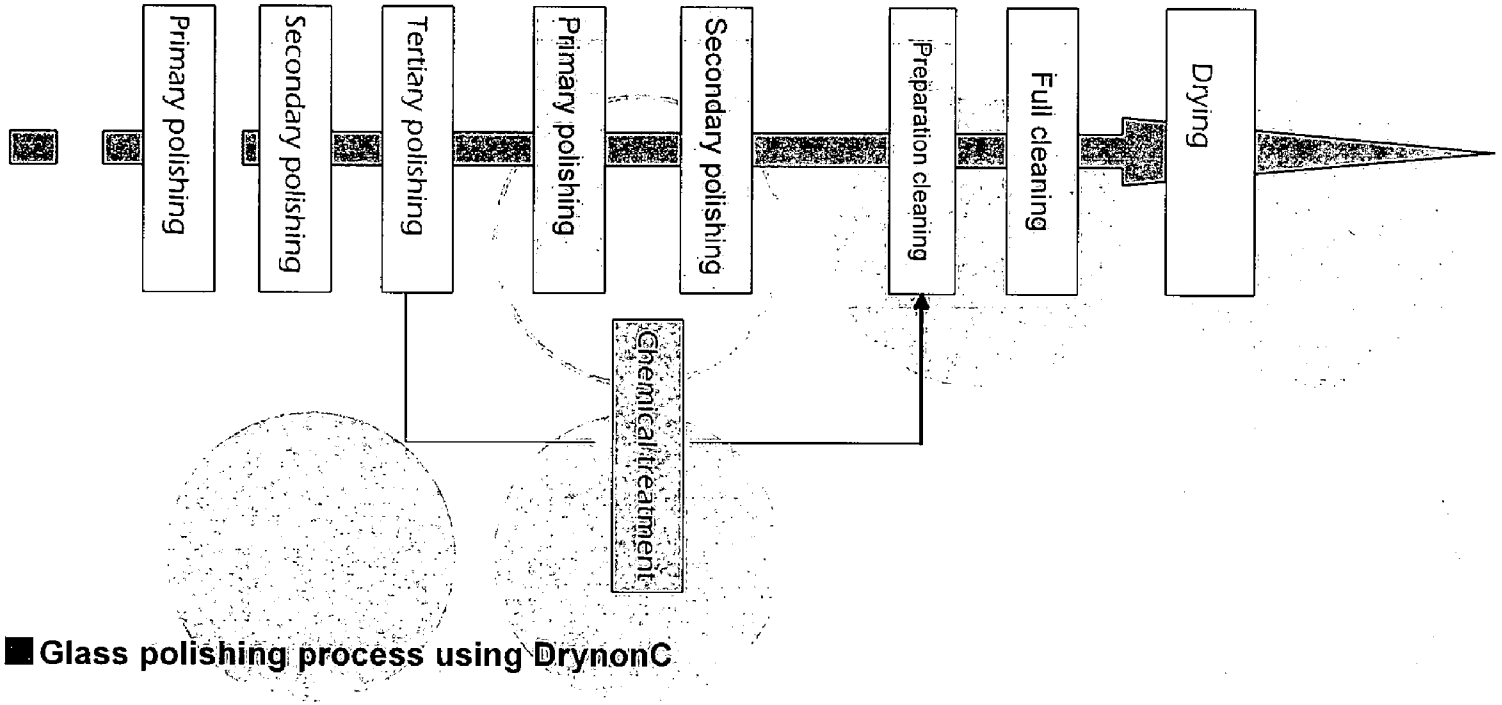
■No surfactants used

No surfactants are used.

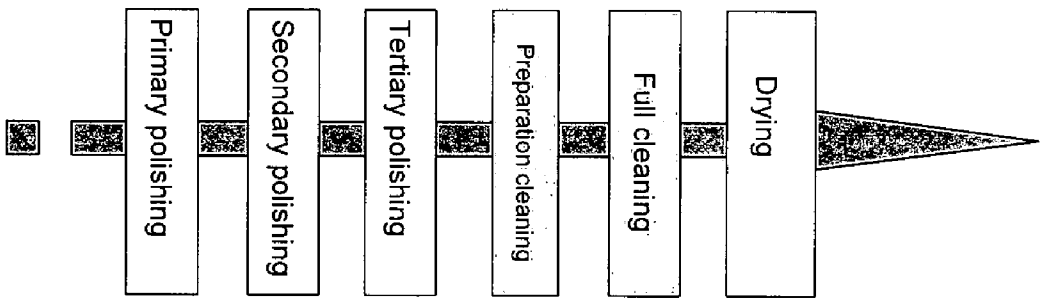
Example of process change using DrynonC

ICPTEK

Conventional process of polishing glass



Glass polishing process using DrynonC



Practical example of Antidrying agent DrynonC usage

ICPTEK

Example: Silicon wafer polishing process

Primary polishing

Secondary polishing

Tertiary polishing

Rinse with diluted DrynonC solution

If 100 times diluted DrynonC is used immediately after each polishing to rinse a glass, the removal efficiency of the abrasive agent is improved and scratch and haze are often prevented. You can remove DrynonC by rinsing it with water as required.

Rinse with diluted DrynonC solution (On the polishing machine)

Polish → Rinse → Re-rinse with 10-30 times Diluted DrynonC solution.
Rinsing time is 20-30 seconds.
Drying prevention, prevention of abrasive agent adhesion, suppression of oxides, retention of hydrophilic properties, suppressive effect of metal contamination

The dilution rate of DrynonC varies with the relative time to leave in the atmosphere, residual quantity of abrasive agent, metal ion and density etc. It is recommended to try with 10 times solution at first. In addition, the rinse time also varies with the same reasons. **Notes: 1. Dip the wafer before the substrate gets dried. 2. Make sure to stir before dipping the wafer. (Because the specific gravity of DrynonC is greater than water.)**

Preparation cleaning

Full cleaning

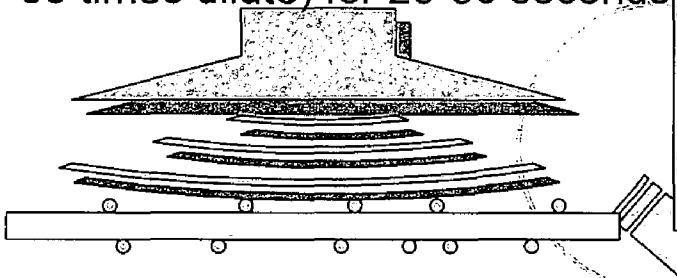
Drying

It is proved that when DrynonC is used in glass polishing, it prevents the adhesion of the abrasive agent, metal ion contamination and improves the adhesiveness of evaporated film.

Function of anti-drying agent DrynonC

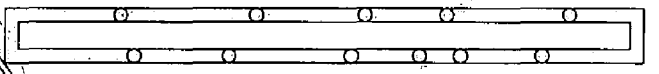
ICPTEK

① After rinsing, rinse again (on the machine) with DrynonC (10-30 times dilute) for 20-30 seconds



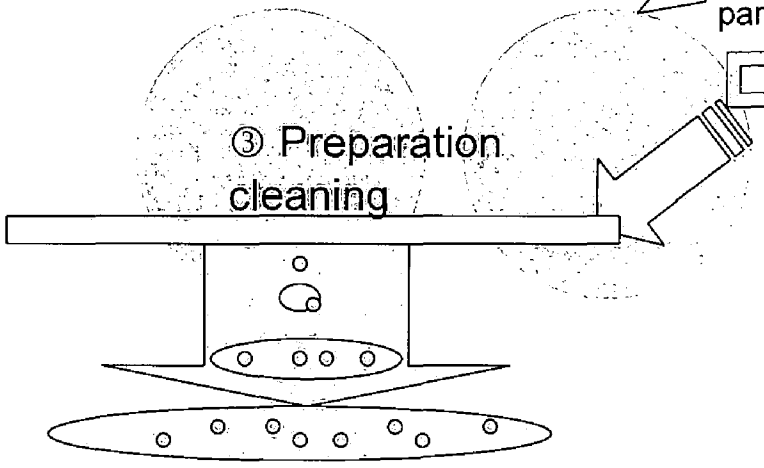
Prepare the tank and dip the wafer in the diluted DrynonC when the wafer cannot be rinsed on the polishing machine. At this time, ensure that the wafer is not dried. It is important to quickly dip the wafer before drying. Further, thoroughly stir the diluted DrynonC solution before dipping the wafer. (Because the specific gravity of DrynonC solution is more than water).

② Formation of film (packed with each remaining particle)



Wafer retains the hydrophilic property even in the atmosphere.

③ Preparation cleaning



DrynonC can easily be washed off together with water soluble remaining particles.

DrynonC Evaluation Example (1)

ICPTEK

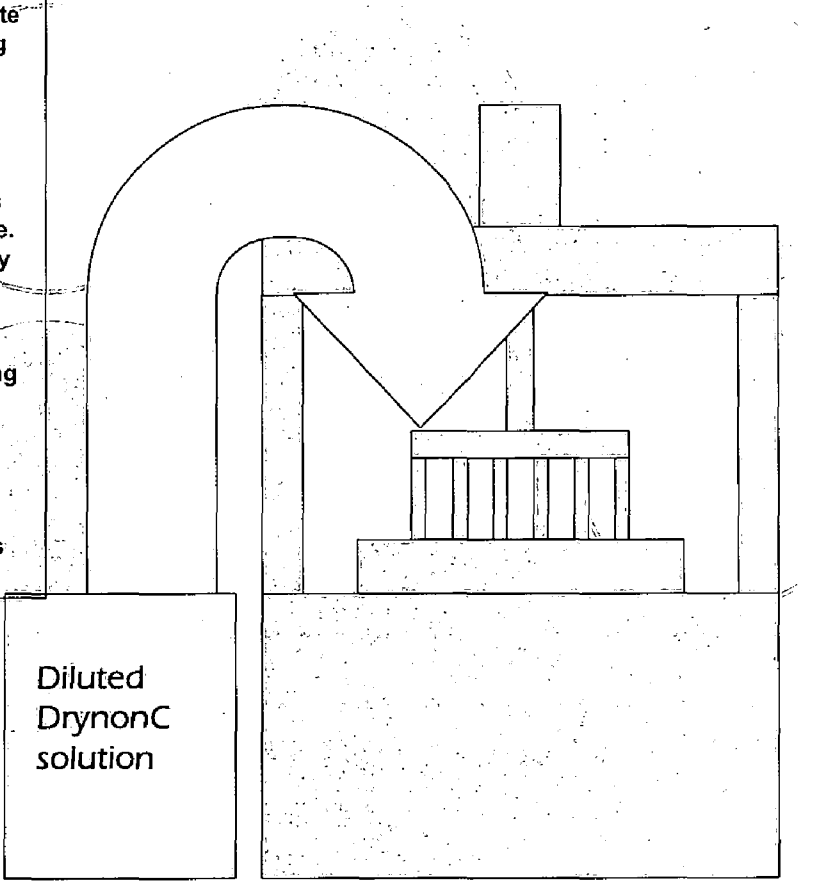
Supply of DrynonC to the polishing machine

It is recommended supply DrynonC to the polishing machine to maximize its effectiveness. This is because abrasive agent may adhere to the substrate when the substrate is pulled out from the polishing machine due to contact with air. In case of large substrate for liquid crystal, there is a greater possibility that the abrasive agent starts adhering while the substrate is being out from the machine.

In the actual evaluation method, prepare 10 times diluted DrynonC solution in a tank of adequate size. Then stir it for 30 seconds by using a pump, supply it to the machine and rinse. If you use a small polishing device, we can borrow you a bath pump for this purpose. DrynonC is supplied from the pump through a powder hose guide to the polishing plate.

At this time DrynonC is discharged from the drain and not used in cycles. (Disposable)

After rinsing, when dipped in DrynonC in rough (simple) cleaning process, the abrasive agent does not attach to or re-adhere to the substrate.

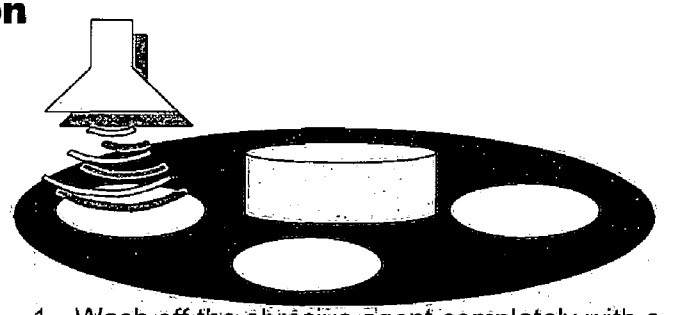


DrynonC Evaluation Example (2)

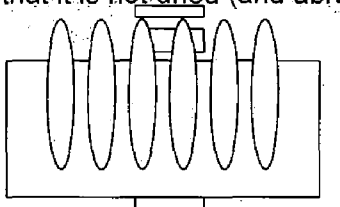
ICPTEK

■By using DrynonC and immersion

Dipping substrates in DrynonC solution is also effective when the supply of DrynonC to the machine is not possible inevitably, or the substrate is small in its diameter, and the number of substrates to be pulled out are less, and there is less possibility of the drying of the substrates while they are outside the machine.

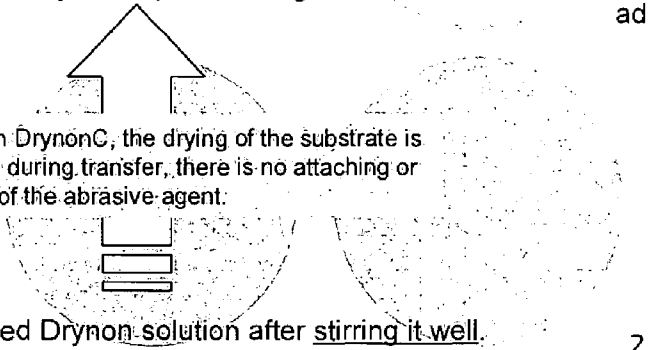


1. Wash off the abrasive agent completely with a shower. The substrate should be moved quickly into the cassette so that it is not dried (and abrasive is not adhered).



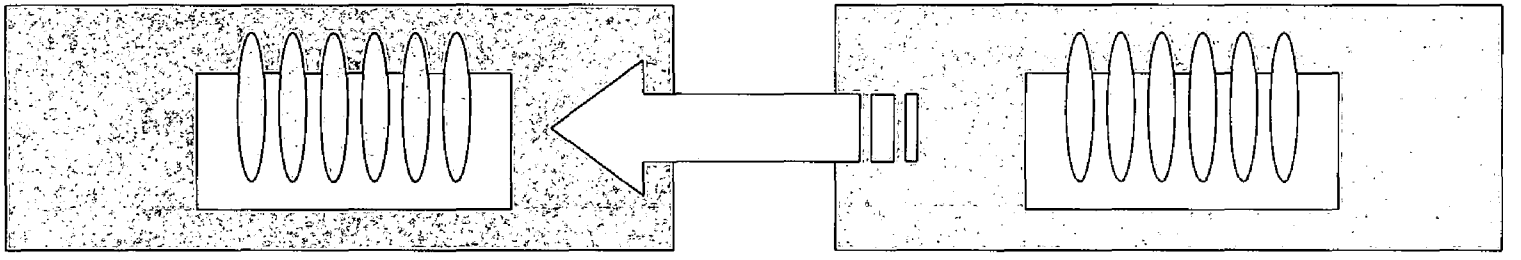
Preparation
(simplified) cleaning

After dipping in DrynonC, the drying of the substrate is prevented and during transfer, there is no attaching or re-adherence of the abrasive agent.



2. Wash off the abrasive agent again in a tank filled with tap water or the like.

3. Dip in the diluted Drynon solution after stirring it well. Immersion time: 20-30 seconds.



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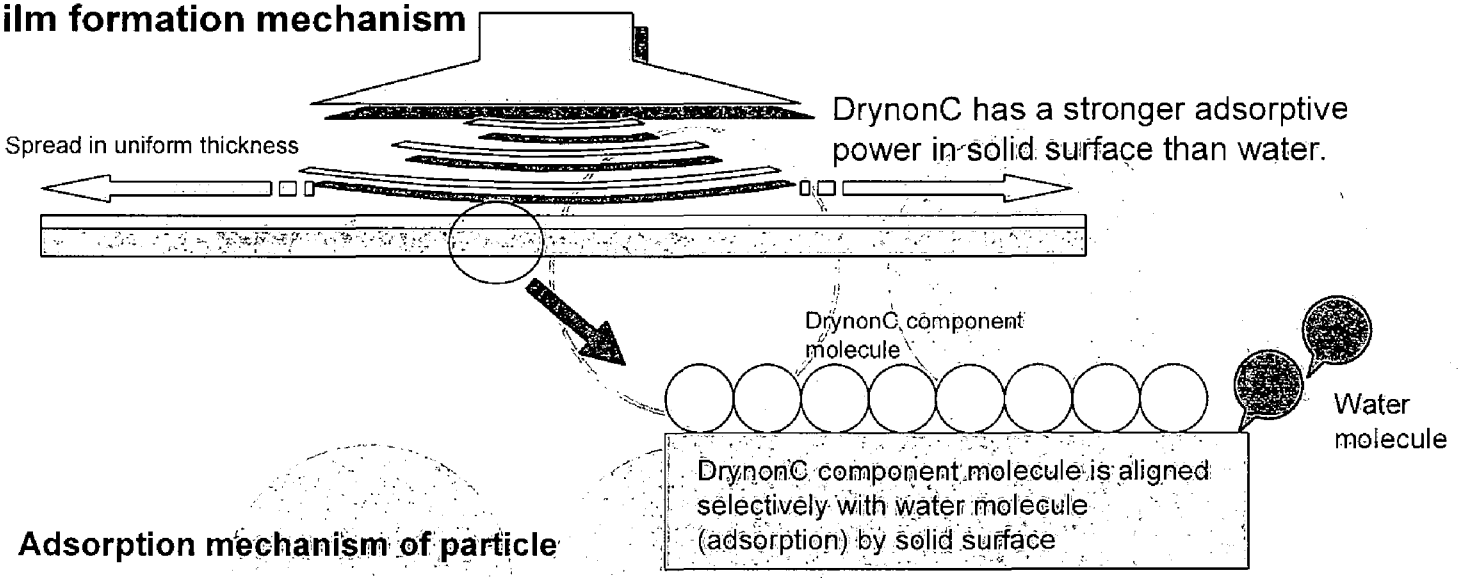
Mechanism of DrynonC

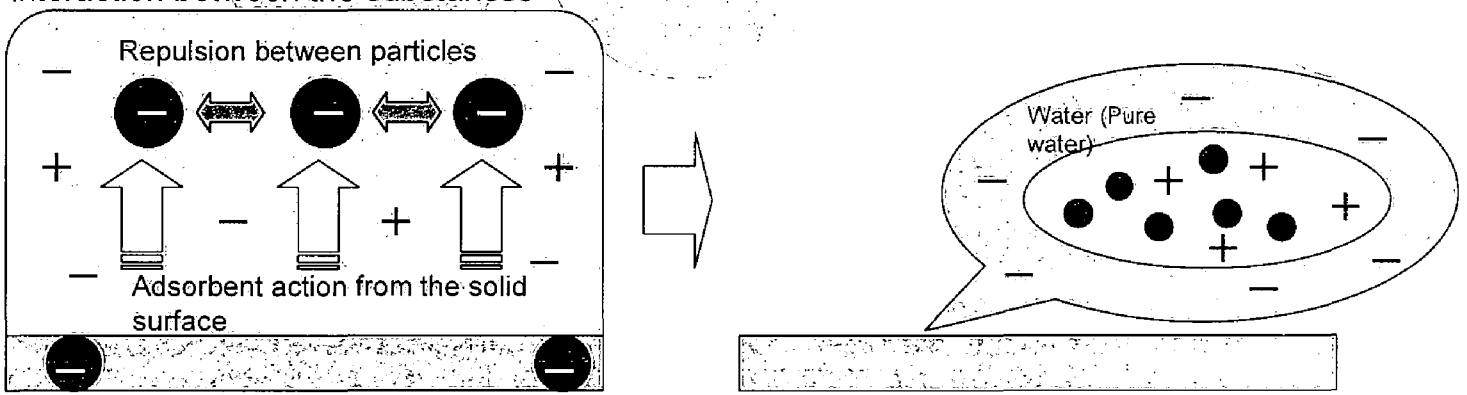
ICPTEK

Film formation mechanism



Adsorption mechanism of particle

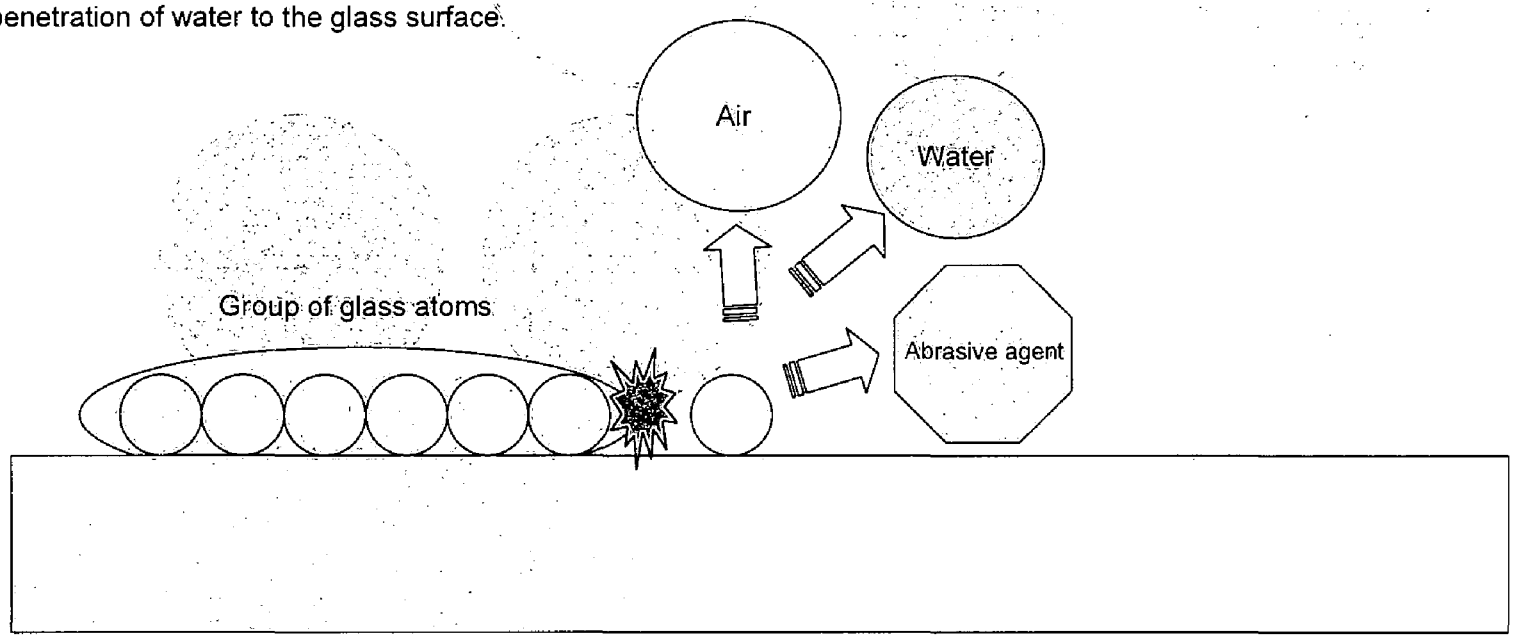
Designed on the basis of electronic interaction between the substances



Activity of DrynonC on the glass surface after polishing

ICPTEK

On the glass surface, usually the binding of group of glass atoms is broken due to polishing; the broken atoms make a new interface with water, air, and the particles. It is highly reactive and easily binds with the nearest molecules. It is considered to create the adhesion of the particle when bound with the ceria molecule. Further, when bound with water molecules, soda (one of glass components) dissolves out on the substrate surface, reacts chemically with the acids in the atmosphere and the structure of substrate surface is transformed (= incidence of a burn). The molecules contained in DrynonC adheres (adsorbs) to the glass surface and prevents the binding of the particle and glass molecule. Drynon also prevents penetration of water to the glass surface.



TUBE SIZE 200 CC

VALTECH

MSDS

Material Safety Data Sheet

VALTRON® AD1339-A Ingot Mounting Adhesive Resin

1. Chemical Product and Company Identification

Product Identity..... **VALTRON AD1339-A Ingot Mounting Adhesive Resin**
Manufacturer..... Valtech Corporation
Address..... 2113 Sanatoga Station Road, Pottstown, PA 19464 USA
Telephone Number 610-705-5900
IN CASE OF EMERGENCY CALL CHEMTREC 800-424-9300 24 hours everyday. Outside U.S., call collect 703-741-6009.

2. Composition/Information on Ingredients

Chemical and Common Name	CAS Registry Number	Percent	OSHA PEL	ACGIH TLV
Phenol, 4,4'-(1-methylethylidene)bis-, polymer with (chloromethyl)oxirane; Epoxy resin	25068-38-6	Trade secret	Not established	Not established
Bisphenol A Diglycidyl ether	1675-54-3	Trade secret	Not established	Not established
Titanium dioxide	13463-67-7	5.0%	15 mg/m^3 Total dust	10 mg/m^3

3. Hazards Identification

Emergency Overview.....White viscous liquid. Slight odor. Causes eye, skin and respiratory tract irritation. Reacts with strong oxidizers, acids, and bases.
Eye Contact.....Causes eye irritation.
Skin Contact.....Causes skin irritation. Prolonged or repeated skin contact may cause allergic skin reaction.
Inhalation.....Causes irritation to respiratory tract.
Ingestion.....May cause irritation to mouth and digestive tract.
Chronic Hazards.....Contains 5.0% titanium dioxide, a potential carcinogen to rats.
Signs and Symptoms

SCOEPA00055332

of Exposure .....Pain, redness and tearing (eye exposure). Redness, rash, or burning (skin exposure). Sneezing, coughing, difficult breathing, burning or itching in nose and throat (inhalation).

Medical Conditions
Aggravated by Exposure .....Pre-existing skin and eye conditions. Asthma.

4. First Aid Measures

Eyes.....In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses if worn. Get medical attention immediately.

Skin.....In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.

Ingestion.....If large quantities of this material are swallowed, call a physician immediately. Do NOT induce vomiting unless directed to do so by a physician. Never give anything by mouth to an unconscious person.

Inhalation.....If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.

5. Fire Fighting Measures

Flash Point.....490° F. (closed cup)

Flammable Limits.....Data not available

Fire Extinguishing Media.....Compatible with dry chemical, water spray, carbon dioxide, and regular foam.

Special Fire Fighting
Procedures.....Eye and skin protection and self contained breathing apparatus (SCBA) is required for all fire fighting personnel

Unusual Fire and Explosion
Hazards.....May release toxic decomposition and combustion products in a fire.

HMIS Ratings

Health	2
Flammability	1
Reactivity	0
Other	

6. Accidental Release Measures

Small Spill.....Absorb spill with an inert material (e.g., dry sand or earth), then place in a chemical waste container.

SCOEPA00055333

Large Spill.....Contain spilled liquid with sand or earth. Transfer absorbed material into drums. Prevent runoff from entering into storm sewers and ditches which lead to natural waterways.

7. HANDLING AND STORAGE

Handling.....Avoid contact with eyes, skin and clothing. Do not cut dry. Avoid breathing dust from this material. Keep container closed. Wash thoroughly after handling.

Storage.....Store in a cool, well ventilated place away from incompatible materials. (See Stability and Reactivity Section 10).

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls.....Local and general ventilation sufficient to maintain exposures below the permissible exposure limits when cutting or grinding this material. Eyewash and safety showers should be within direct access.

Eye Protection.....Use splash-proof chemical goggles. Contact lenses should not be worn when working with this material.

Skin Protection.....Use neoprene gloves, coveralls, and an apron. Remove contaminated gloves immediately. Material can penetrate gloves. Wash thoroughly after handling this material.

Respiratory Protection.....Use NIOSH-certified dust respirator where dust occurs. Observe OSHA regulations for respirator use (29 CFR 1910.134).

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance & Odor.....White viscous liquid; slight odor

Specific Gravity.....1.648

Vapor pressure

(mmHg at 20° C (68° F)).....<0.1

Evaporation rate

(Butyl acetate =100).....Data not available

Solubility in Water.....Negligible

pH (aqueous liquids only).....Not applicable

10. STABILITY AND REACTIVITY

Stability.....Stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

Conditions to Avoid.....Avoid contact with incompatible materials.

Incompatible Materials.....Reacts with strong oxidizers, acids, and bases.

SCOEPA00055334

Hazardous Decomposition
Products.....Carbon monoxide, carbon dioxide, aldehydes.
Hazardous Polymerization .....Will not occur.

11. TOXICOLOGICAL INFORMATION

Acute Data.....Acute oral LD_{50} (rat): >5000 mg/kg. Acute dermal LD_{50} (rabbit): >6000 mg/kg. Epoxy resins cause severe skin and eye irritation. Epoxy resins can cause sensitization and allergic skin reactions.
Chronic Data .....Contains 5.0% titanium dioxide a potential carcinogen to rats.

12. ECOLOGICAL INFORMATION

Ecotoxicity .....No known environmental hazards.
Environmental Fate.....No date available.

13. DISPOSAL CONSIDERATIONS

RCRA Status.....Not a RCRA hazardous waste.
Disposal.....Absorb on inert material and landfill in accordance with federal, state, and local regulations or permits.
Empty Containers .....Since empty containers retain product residue, follow label warnings even after the container is emptied.

14. TRANSPORTATION STATUS

DOT Status.....Not a DOT hazardous material.

15. REGULATORY INFORMATION

TSCA Status.....All ingredients of this product conform to the requirements of the Toxic Substances Control Act.
SARA Title III Status.....No ingredient of this product is listed as an Extremely Hazardous substance pursuant to §302. No ingredient of this product is listed as a toxic chemical pursuant to §313.
CERCLA Reportable
Quantities.....N.A.
Proposition 65 .....No ingredient is listed on the Proposition 65 list of substances.

16. OTHER INFORMATION

THE INFORMATION ON THIS MSDS IS BELIEVED TO BE ACCURATE AND THE BEST INFORMATION AVAILABLE TO VALTECH CORPORATION. THIS DOCUMENT IS INTENDED ONLY AS A GUIDE TO THE APPROPRIATE PRECAUTIONS FOR HANDLING A CHEMICAL BY A PERSON TRAINED IN CHEMICAL HANDLING.

SCOEPA00055335

VALTECH CORPORATION MAKES NO WARRANTY OF MERCHANTABILITY OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED, WITH RESPECT TO SUCH INFORMATION OR THE PRODUCT TO WHICH IT RELATES, AND WE ASSUME NO LIABILITY RESULTING FROM THE USE OR HANDLING OF THE PRODUCT TO WHICH THIS MSDS RELATES. USERS AND HANDLERS OF THIS PRODUCT SHOULD MAKE THEIR OWN INVESTIGATIONS TO DETERMINE THE SUITABILITY OF THE INFORMATION PROVIDED HEREIN FOR THEIR OWN PURPOSES.

SCOEPA00055336

TUBE SIZE 200 cc

VALTECH

MSDS

Material Safety Data Sheet

VALTRON® AD3939-B Ingot Mounting Adhesive Hardener

1. Chemical Product and Company Identification

Product Identity..... **VALTRON AD3939-B Ingot Mounting Adhesive Hardener**
Manufacturer..... Valtech Corporation
Address..... 2113 Sanatoga Station Road, Pottstown, PA 19464 USA
Telephone Number 610-705-5900
IN CASE OF EMERGENCY CALL CHEMTREC 800-424-9300 24 hours everyday. Outside U.S., call collect 703-741-6009.

2. Composition/Information on Ingredients

Chemical and Common Name	CAS Registry Number	Percent	OSHA PEL	ACGIH TLV
Mercaptan Amine blend	Trade secret	Trade secret	Not established	Not established
Tris-2,4,6-(dimethylaminomethyl) phenol	90-72-2	Trade secret	Not established	Not established
Propylene glycol methyl ether acetate	108-65-6	<1.0	Not established	Not established

3. Hazards Identification

Emergency Overview .....Blue viscous liquid. Strong mercaptan odor. Causes burns to eyes, skin, and digestive tract. Reacts with oxidizers, acids and bases.
Eye Contact .....CORROSIVE – Causes eye burns.
Skin Contact .....CORROSIVE – Causes skin burns.
Inhalation.....Inhalation may irritate nose and throat. Considered slightly toxic by inhalation.
Ingestion .....CORROSIVE - Ingestion causes burns to mouth and digestive tract.
Chronic Hazards.....Prolonged or repeated exposure may cause delayed lung injury or CNS abnormalities.

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Signs and Symptoms of Exposure ..... Pain, redness and tearing (eye exposure). Redness, rash, or burning (skin exposure). Sneezing, coughing, difficult breathing, burning or itching in nose and throat (inhalation).

Medical Conditions Aggravated by Exposure ..... Pre-existing skin and eye conditions. Asthma.

4. First Aid Measures

Eyes ..... In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses if worn. Get medical attention immediately.

Skin ..... In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.

Ingestion ..... If large quantities of this material are swallowed, call a physician immediately. Do NOT induce vomiting unless directed to do so by a physician. Never give anything by mouth to an unconscious person.

Inhalation ..... If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.

5. Fire Fighting Measures

Flash Point ..... >200° F. (closed cup)

Flammable Limits ..... Data not available

Fire Extinguishing Media ..... Compatible with dry chemical, water spray, carbon dioxide, and regular foam.

Special Fire Fighting Procedures ..... Eye and skin protection and self contained breathing apparatus (SCBA) is required for all fire fighting personnel.

Unusual Fire and Explosion Hazards ..... None known

HMIS Ratings

Health	3
Flammability	1
Reactivity	0
Other	

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6. ACCIDENTAL RELEASE MEASURES

Small Spill.....Absorb spill with an inert material (e.g., dry sand or earth), then place in a chemical waste container.

Large Spill.....Contain spilled liquid with sand or earth. Transfer absorbed material into drums. Prevent runoff from entering into storm sewers and ditches which lead to natural waterways.

7. HANDLING AND STORAGE

Handling.....Do not get in eyes, on skin, on clothing. Avoid breathing dust from this material. Keep container closed. Wash thoroughly after handling. Do not use hot or with hot epoxy resin due to exothermic reaction.

Storage.....Store in a cool, well ventilated place away from incompatible materials. (See Stability and Reactivity Section 10).

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls.....Use only with adequate ventilation. Eyewash and safety showers should be within direct access.

Eye Protection.....Use splash-proof chemical goggles. Contact lenses should not be worn when working with this material.

Skin Protection.....Use neoprene gloves, coveralls, and an apron. Remove contaminated gloves immediately. Wash thoroughly after handling this material.

Respiratory Protection.....Observe OSHA regulations for respirator use (29 CFR 1910.134). Use respirator with organic vapor cartridge.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance & Odor.....Blue viscous liquid; mercaptan odor

Specific Gravity.....1.478

Vapor Pressure.....Data not available

Evaporation Rate

(Butyl acetate =100).....Data not available

Solubility in Water.....Negligible

pH (aqueous liquids only).....Not applicable

10. STABILITY AND REACTIVITY

Stability.....Stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

Conditions to Avoid.....Avoid contact with incompatible materials.

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Incompatible Materials.....Reacts with strong oxidizers, acids and bases.

Hazardous Decomposition Products.....Carbon monoxide, carbon dioxide, aldehydes.

Hazardous Polymerization .....Will not occur.

11. TOXICOLOGICAL INFORMATION

Acute Data.....Cause severe skin and eye irritation. May cause sensitization and allergic skin reactions.

12. ECOLOGICAL INFORMATION

Ecotoxicity .....No known environmental hazards.

Environmental Fate.....No data available.

13. DISPOSAL CONSIDERATIONS

RCRA Status.....Not a RCRA hazardous waste.

Disposal.....Absorb on inert material and landfill in accordance with federal, state, and local regulations or permits.

Empty Containers .....Since empty containers retain product residue, follow label warnings even after the container is emptied.

14. TRANSPORTATION STATUS

DOT Status.....Not a DOT hazardous material.

15. REGULATORY INFORMATION

TSCA Status.....All ingredients of this product conform to the requirements of the Toxic Substances Control Act.

SARA Title III Status.....No ingredient of this product is listed as an Extremely Hazardous substance pursuant to §302. No ingredient of this product is listed as a toxic chemical pursuant to §313.

CERCLA Reportable Quantities.....N.A.

Proposition 65 .....No ingredient is listed on the Proposition 65 list of substances.

16. OTHER INFORMATION

THE INFORMATION ON THIS MSDS IS BELIEVED TO BE ACCURATE AND THE BEST INFORMATION AVAILABLE TO VALTECH CORPORATION. THIS DOCUMENT IS INTENDED ONLY AS A GUIDE TO THE APPROPRIATE PRECAUTIONS FOR HANDLING A CHEMICAL BY A PERSON TRAINED IN CHEMICAL HANDLING. VALTECH CORPORATION MAKES NO WARRANTY OF MERCHANTABILITY OR ANY

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OTHER WARRANTY, EXPRESS OR IMPLIED, WITH RESPECT TO SUCH INFORMATION OR THE PRODUCT TO WHICH IT RELATES, AND WE ASSUME NO LIABILITY RESULTING FROM THE USE OR HANDLING OF THE PRODUCT TO WHICH THIS MSDS RELATES. USERS AND HANDLERS OF THIS PRODUCT SHOULD MAKE THEIR OWN INVESTIGATIONS TO DETERMINE THE SUITABILITY OF THE INFORMATION PROVIDED HEREIN FOR THEIR OWN PURPOSES.

SCOEPA00055341

MSDS (photoresist)

39357-34705

wk 5494

EMERGENCY PHONE: 1-800-654-6911

THIS MATERIAL SAFETY DATA SHEET (MSDS) HAS BEEN PREPARED IN COMPLIANCE WITH THE FEDERAL OSHA HAZARD COMMUNICATION STANDARD,29 CFR 1910.1200.THIS PRODUCT MAY BE CONSIDERED TO BE A HAZARDOUS CHEMICAL UNDER THAT STANDARD.(REFER TO THE OSHA CLASSIFICATION IN SEC.I.)THIS INFORMATION IS REQUIRED TO BE DISCLOSED FOR SAFETY IN THE WORKPLACE.THE EXPOSURE TO THE COMMUNITY,IF ANY,IS QUITE DIFFERENT.

I. PRODUCT IDENTIFICATION

REVISION NO : 1
REVISION DATE : 1/11/99
PRODUCT CODE : HPE00257#
FILE NUMBER : HPE00532.0080
PRODUCT NAME: HPR 504

SYNONYMS: None
CHEMICAL FAMILY: Organic mixture
FORMULA: Not Applicable/mixture
USE DESCRIPTION: Positive photoresist
OSHA HAZARD CLASSIFICATION: Combustible liquid; skin, eye and respiratory irritant; nervous system toxin

II. COMPONENT DATA

FIAM/TOX

PRODUCT COMPOSITION

CAS or CHEMICAL NAME: Ethyl lactate
CAS NUMBER: 97-64-3
PERCENTAGE RANGE: 61-90%
HAZARDOUS PER 29 CFR 1910.1200: Yes
EXPOSURE STANDARDS: None Established

CAS or CHEMICAL NAME: Novolak resin
CAS NUMBER: 27029-76-1
PERCENTAGE RANGE: 10-29%
HAZARDOUS PER 29 CFR 1910.1200: Yes
EXPOSURE STANDARDS: None Established

CAS or CHEMICAL NAME: Naphthoquinone diazide esters
CAS NUMBER: 68510-93-0
PERCENTAGE RANGE: 1-11%
HAZARDOUS PER 29 CFR 1910.1200: Yes
EXPOSURE STANDARDS: None Established

III. PRECAUTIONS FOR SAFE HANDLING AND STORAGE

DO NOT TAKE INTERNALLY. AVOID CONTACT WITH SKIN, EYES AND CLOTHING. UPON CONTACT WITH SKIN OR EYES, WASH OFF WITH WATER.

STORAGE CONDITIONS:

- Store at temperatures between 40 and 50 Deg.F and away from all sources of ignition. Keep containers tightly closed when not in use.
- On extended storage, solutions containing naphthoquinone diazides may eventually release nitrogen leading to pressure buildup. (Exercise caution when opening containers.) The rate of nitrogen release increases with increase in temperature, but pressurization is normally minimal at or below normal room temperature. Do not allow out-of-date product to accumulate.

DO NOT EXPOSE TO DIRECT LIGHT.

PRODUCT STABILITY AND COMPATIBILITY

SHELF LIFE LIMITATIONS: 1 Year

INCOMPATIBLE MATERIALS FOR STORAGE OR TRANSPORT: See Section VII, "Incompatible Materials".

IV. PHYSICAL DATA

APPEARANCE: Yellow-red solution
FREEZING POINT: No Data
BOILING POINT: No Data
DECOMPOSITION TEMPERATURE: > 50 Deg.C (> 122 Deg.F)
SPECIFIC GRAVITY: 1.07-1.09
BULK DENSITY: Not Applicable
pH @ 25 DEG.C: Not Applicable
VAPOR PRESSURE @ 25 DEG.C: 1.5-2 mm Hg
SOLUBILITY IN WATER: Slight
VOLATILES, PERCENT BY VOLUME: 60-80%
EVAPORATION RATE: 0.20-0.29 (Butyl acetate = 1)
VAPOR DENSITY: 3.5-4.1 (Air=1)
MOLECULAR WEIGHT: Not Applicable/Mixture
ODOR: Fruity, ester odor
COEFFICIENT OF OIL/WATER DISTRIBUTION: No Data

V. PERSONAL PROTECTIVE EQUIPMENT REQUIREMENTS

PERSONAL PROTECTION FOR ROUTINE USE OF PRODUCT:

RESPIRATORY PROTECTION: Wear a NIOSH/MSHA approved respirator if any exposure occurs.

VENTILATION: Use explosion-proof local exhaust ventilation when hand ling this product.

SKIN AND EYE PROTECTIVE EQUIPMENT: Wear gloves, boots, apron and a face shield with safety glasses. A full impermeable suit is recommended if exposure is possible to large portion of body.

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EQUIPMENT SPECIFICATIONS (WHEN APPLICABLE):
RESPIRATOR TYPE: NIOSH/MSHA approved positive pressure supplied-air
PROTECTIVE CLOTHING TYPE (This includes: gloves, boots, apron, protective suit): Impervious

VI. FIRE AND EXPLOSION HAZARD INFORMATION

FLAMMABILITY DATA:
FLAMMABLE: No
COMBUSTIBLE: Yes
PYROPHORIC: No
FLASH POINT: 55 Deg.C (131 Deg.F) Test Method: Tag open cup
AUTOIGNITION TEMPERATURE: No Data
FLAMMABLE LIMITS AT NORMAL ATMOSPHERIC TEMPERATURE AND PRESSURE (PERCENT VOLUME IN AIR): LEL - No Data UEL - No Data
(LEL @ 190 Deg.F - 1.05)

NFPA RATINGS: Not Established

HMIS RATINGS:
Health: 1
Flammability: 2
Reactivity: 1

EXTINGUISHING MEDIA: Alcohol foam, carbon dioxide, dry chemical, water spray

FIRE FIGHTING TECHNIQUES AND COMMENTS: Use water to cool containers exposed to fire. See Section XI for protective equipment for fire fighting.

VII. REACTIVITY INFORMATION

CONDITIONS UNDER WHICH THIS PRODUCT MAY BE UNSTABLE:
TEMPERATURES ABOVE: See Section III
MECHANICAL SHOCK OR IMPACT: No (Dried residue may be sensitive.)
ELECTRICAL (STATIC) DISCHARGE: May cause ignition at temperatures at or above the flash point.
HAZARDOUS POLYMERIZATION: Will not occur

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INCOMPATIBLE MATERIALS: Strong oxidants such as chromic acid, liquid chlorine, high concentration of oxygen

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide, carbon dioxide, formaldehyde, nitrogen oxides, cresols

OTHER CONDITIONS TO AVOID: Excessive heat, ignition sources of any kind

SUMMARY OF REACTIVITY:

OXIDIZER:	No
PYROPHORIC:	No
ORGANIC PEROXIDE:	No
WATER REACTIVE:	No

VIII. FIRST AID

EYES: Immediately flush with large amounts of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. If eye irritation develops, call a physician.

SKIN: Immediately flush with water for 15 minutes. Wash the contaminated skin with soap and water. If irritation develops, call a physician. If clothing comes in contact with the product, the clothing should be laundered before re-use.

INGESTION: Immediately drink large quantities of water. Induce vomiting. Call a physician at once. DO NOT give anything by mouth if the person is unconscious or if having convulsions.

INHALATION: If person experiences nausea, headache or dizziness, person should stop work immediately and move to fresh air until these symptoms disappear. If breathing is difficult, administer oxygen, keep the person warm and at rest. Call a physician. In the event that an individual inhales enough vapor to lose consciousness, person should be moved to fresh air at once and a physician should be called immediately. If breathing has stopped, artificial respiration should be given immediately. In all cases, ensure adequate ventilation and provide respiratory protection before the person returns to work.

IX. TOXICOLOGY AND HEALTH INFORMATION

ROUTES OF ABSORPTION

Inhalation, ingestion, skin and eye contact

WARNING STATEMENTS AND WARNING PROPERTIES

DO NOT TAKE INTERNALLY. CAUSES SKIN, EYE AND MUCOUS MEMBRANE IRRITATION. DO NOT INHALE MIST OR VAPORS. INHALATION OF HIGH VAPOR CONCENTRATIONS MAY CAUSE CENTRAL NERVOUS SYSTEM DEPRESSION. MAY CAUSE RESPIRATORY IRRITATION.

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HUMAN THRESHOLD RESPONSE DATA

ODOR THRESHOLD: No data for product; ethyl lactate - 14 ppm

IRRITATION THRESHOLD: No Data

IMMEDIATELY DANGEROUS TO LIFE OR HEALTH: The IDLH concentration has not been established for this product.

SIGNS, SYMPTOMS, AND EFFECTS OF EXPOSURE

INHALATION

ACUTE:

If inhaled, irritation may result to the nose, throat and respiratory tract. Any irritation would be transient with no permanent damage expected. Inhalation of high concentrations may cause central nervous system depression.

CHRONIC:

No effects would be expected except for those listed under acute inhalation exposure.

SKIN

ACUTE:

Skin contact may cause irritation consisting of transient redness. This irritant effect would not result in permanent damage.

CHRONIC:

The only reported effect from repeated contact with the skin is a slight yellow discoloration if not properly washed off.

EYE

Contact with the eyes would be expected to cause irritation consisting of reversible redness, swelling and mucous discharge to the conjunctiva. No corneal involvement or visual impairment would be expected.

INGESTION

ACUTE:

Ingestion may cause irritation to the throat, esophagus and gastrointestinal discomfort with any or all of the following symptoms: nausea, vomiting, lethargy or diarrhea.

CHRONIC:

There are no known or reported effects from chronic exposure except for effects similar to those experienced from single exposure.

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MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE
None known or reported

INTERACTIONS WITH OTHER CHEMICALS WHICH ENHANCE TOXICITY
None known or reported

ANIMAL TOXICOLOGY

ACUTE TOXICITY:
Inhalation LC 50: No data
Dermal LD 50: Believed to be > 2 g/kg. (rabbit) based on constituents
Oral LD 50: Believed to be > 5 g/kg. (rat) based on constituents.
Irritation: Irritant to skin and eyes

ACUTE TARGET ORGAN TOXICITY:
Irritation to skin and eyes. May cause central nervous system depression.

CHRONIC TARGET ORGAN TOXICITY:
There are no known or reported effects from chronic exposure to this product except for a potential for yellow discoloration of the skin which has been reported from high dermal exposure to the ethyl lactate.

REPRODUCTIVE AND DEVELOPMENTAL TOXICITY:
This product is not known or reported to cause effects on reproductive function or fetal development. Ethyl lactate has been tested on pregnant rats and there were no teratogenic effects seen.

CARCINOGENICITY:
This product is not known or reported to be carcinogenic by any reference source including IARC, OSHA, NTP or EPA.

MUTAGENICITY:
This product is not known or reported to be mutagenic.

Ethyl lactate did not show mutagenic activity when tested in the Salmonella/Mammalian-Microsome Plate Incorporation Mutagenicity Assay. The naphthoquinone diazide esters did not show mutagenic activity when tested in a battery of mutagenicity assays.

AQUATIC TOXICITY:
There is no available data for this product.

Individual constituents are as follows:
Ethyl lactate - TLM 96 100-1000 ppm

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X. TRANSPORTATION INFORMATION

THIS MATERIAL IS REGULATED AS A DOT HAZARDOUS MATERIAL.

DOT DESCRIPTION FROM THE HAZARDOUS MATERIALS TABLE 49 CFR 172.101:
LAND (U.S. DOT): ETHYL LACTATE SOLUTION, COMBUSTIBLE LIQUID, UN1192, PG III

WATER (IMO): ETHYL LACTATE SOLUTION, 3.3, UN1192, PG III

AIR (IATA/ICAO): ETHYL LACTATE SOLUTION, 3, UN1192, PG III

HAZARD LABEL/PLACARD: Land - NONE
Air/Water - FLAMMABLE LIQUID
REPORTABLE QUANTITY: Not Applicable (Per 49 CFR 172.101, Appendix)
EMERGENCY GUIDE NO: 129

XI. SPILL AND LEAKAGE PROCEDURES

FOR ALL TRANSPORTATION ACCIDENTS, CALL CHEMTREC AT 800-424-9300.

REPORTABLE QUANTITY: Not Applicable

SPILL MITIGATION PROCEDURES:
Evacuate all non-essential personnel. Hazardous concentrations in air may be found in local spill area and immediately downwind. Utilize emergency response personal protective equipment prior to the start of any response. Remove all sources of ignition. Stop source of spill as soon as possible and notify appropriate personnel.

AIR RELEASE: Vapors may be suppressed by the use of water fog or spray. Contain all liquid for treatment and/or disposal as a (potential) hazardous waste.

WATER RELEASE: This material is heavier than and slightly soluble in water. Notify all downstream users of possible contamination. Divert water flow around spill if possible and safe to do so. If unable to divert, create an overflow dam to contain material. Continue to handle as described in land spill.

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LAND SPILL: Create a dike or trench to contain materials. Spill materials any absorbed using sand, clay, peat or non-combustible commercial absorbent. Do not place spill materials back in their original containers. Containerize and label all spill materials properly. Decontaminate all clothing and the spill area using soap solution and flush with large amounts of water.

SPILL RESIDUES:
Dispose of per guidelines under Section XII, WASTE DISPOSAL.

PERSONAL PROTECTION FOR EMERGENCY SPILL AND FIRE-FIGHTING SITUATIONS:
In case of fire, use normal fire-fighting equipment.

Additional protective clothing must be worn to prevent personal contact with this material. Those items include but are not limited to: boots, gloves and splash-proof goggles.

Compatible materials for response to this material are neoprene, polyvinyl chloride, viton, saranex, chlorinated polyethylene, butyl rubber and polyvinyl alcohol.

Protection concerns must also address the potential of the physical characteristic of this product as combustible.

XII. WASTE DISPOSAL

If this product becomes a waste, it meets the criteria of a hazardous waste as defined under 40 CFR 261 and would have the following EPA hazardous waste number: D001.

If this product becomes a waste, it will be a hazardous waste which is subject to the Land Disposal Restrictions under 40 CFR 268 and must be managed accordingly.

As a hazardous liquid waste, it must be disposed of in accordance with local, state and federal regulations in a permitted hazardous waste treatment, storage and disposal facility by incineration.

CARE MUST BE TAKEN TO PREVENT ENVIRONMENTAL CONTAMINATION FROM THE USE OF THIS MATERIAL. THE USER OF THIS MATERIAL HAS THE RESPONSIBILITY TO DISPOSE OF UNUSED MATERIAL, RESIDUES AND CONTAINERS IN COMPLIANCE WITH ALL RELEVANT LOCAL, STATE AND FEDERAL LAWS AND REGULATIONS REGARDING TREATMENT, STORAGE AND DISPOSAL FOR HAZARDOUS AND NONHAZARDOUS WASTES.

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XIII. ADDITIONAL REGULATORY STATUS INFORMATION

TOXIC SUBSTANCES CONTROL ACT:
The components of this product are listed on the Toxic Substance Control Act inventory.

SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT TITLE III:
HAZARD CATEGORIES, PER 40 CFR 370.2:
HEALTH:
Immediate (Acute)
PHYSICAL:
Fire

EMERGENCY PLANNING AND COMMUNITY RIGHT TO KNOW, PER 40 CFR 355, APP.A:
EXTREMELY HAZARDOUS SUBSTANCE - THRESHOLD PLANNING QUANTITY:
None Established
SUPPLIER NOTIFICATION REQUIREMENTS, PER 40 CFR 372.45:
None Established

XIV. ADDITIONAL INFORMATION

MSDS REVISION STATUS: Revision to Storage Conditions and Guide Number

XV. MAJOR REFERENCES

1. Curren, R.D. and Mecchi, M.S., Final Report, Salmonella/Mammalian-Microsome Plate Incorporation Mutagenicity Assay for Ethyl Lactate. MBA, T 8281.501, October 11, 1988.
2. Hoberman, A.M., Final Report, Developmental Toxicity Study of Ethyl Lactate Administered Percutaneously to Crl:CD (SD) BR Presumed Pregnant Rats. Argus Research Laboratories, Inc. September 8, 1989.
3. Final Report on CHO/HGPRT Mutation Assay for Naphthoquinone Diazide Esters. Microbiological Associates, Inc., Rockville, MD, Laboratory Study #T5420.332, September 21, 1987.
4. Report on Salmonella/Mammalian-Microsome Plate Incorporation Mutagenicity Assay (Ames Test) for Naphthoquinone Diazide Esters. Microbiological Associated, Inc., Rockville, M.D. Lot #E0102, September 23, 1986.
5. Final Report on Micronucleus Cytogenetic Assay in Mice for Naphthoquinone Diazide Esters, Microbiological Associates, Inc., Rockville, M.D. Laboratory Study #T5420.122, October 23, 1987.

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6. Final Report on Unscheduled DNA Synthesis in Rat Primary Hepatocytes for Naphthoquinone Diazide Esters. Microbiological Associates, Inc., Rockville, MD, Laboratory Study #T5420.380, September 30, 1987.
7. Report on Oral Toxicity in Rats, Naphthoquinone Diazide Esters. M.B. Research Laboratories, Inc., Spinnerstown, PA, Project #MB 86-8532A, March 20, 1987.
8. Report on Acute Dermal Toxicity in Rabbits, Naphthoquinone Diazide Esters. M.B. Research Laboratories, Inc., Spinnerstown, PA, Project #MB 86-8532B, March 20, 1987.
9. Report on Primary Dermal Irritation in Rabbits, Naphthoquinone Diazide Esters. M.B. Research Laboratories, Inc., Spinnerstown, PA Project #MB86-8532C, March 20, 1987.
10. Report on Eye Irritation in Rabbits, Naphthoquinone Diazide Esters. M.B. Research Laboratories, Inc., Spinnerstown, PA, Project #MB 86-8532D, March 20, 1987.

Other References are available upon request.

THE INFORMATION IN THIS MATERIAL SAFETY SHEET DATA SHOULD BE PROVIDED TO ALL WHO WILL USE, HANDLE, STORE, TRANSPORT, OR OTHERWISE BE EXPOSED TO THIS PRODUCT. THIS INFORMATION HAS BEEN PREPARED FOR THE GUIDANCE OF PLANT ENGINEERING, OPERATIONS AND MANAGEMENT AND FOR PERSONS WORKING WITH OR HANDLING THIS PRODUCT. OLIN BELIEVES THIS INFORMATION TO BE RELIABLE AND UP TO DATE AS OF THE DATE OF PUBLICATION, BUT MAKES NO WARRANTY THAT IT IS. ADDITIONALLY, IF THIS MATERIAL SAFETY DATA SHEET IS MORE THAN THREE YEARS OLD, YOU SHOULD CONTACT OLIN AT THE PHONE NUMBER LISTED BELOW TO MAKE CERTAIN THAT THIS SHEET IS CURRENT.

OLIN MSDS CONTROL GROUP
Olin Corporation
501 Merritt 7
P.O. Box 4500
Norwalk, CT 06856-4500
Phone Number: (800) 511-MSDS

SCOEPA00055351

****
*** TX REPORT ***
****

TRANSMISSION OK

TX/RX NO	3236
CONNECTION TEL	95037867877
CONNECTION ID	
ST. TIME	04/10 10:32
USAGE T	01'18
PGS. SENT	11
RESULT	OK

siltronic
perfect silicon solutions

Siltronic Corporation
7200 NW Front Avenue, MS
Portland, OR 97210-3676, USA
Tel.
Fax 503-219-7599

FAX

To: Carrie

From: Myron

Date: 4/10/06

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siltronic
perfect silicon solutions

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503-417-4121

FUJIMI AMERICA INC.

MATERIAL SAFETY DATA SHEET

FO ABRASIVES

SECTION I: MANUFACTURER / EMERGENCY NOTIFICATION

Manufacturer's Name and Address	FUJIMI AMERICA INC. 9949 S.W. Commerce Circle Wilsonville, OR 97070
Supplier's Name and Address	FUJIMI CORPORATION 747 Church Road, Suite F-3 Elmhurst, IL 60126-1420

Emergency Telephone Number
For Spills or Medical Emergency: CHEMTREC 800-424-9300
Information Telephone Number: (503) 682-7822/(708) 941-1400
Date Prepared: September 1996

SECTION II: HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

INGREDIENTS	ACGIH TLV TWA	% COMP
Aluminum Oxide: (Al_2O_3)	10mg/m³ *	45 min
Zirconium Oxide: (ZrO_2)	---	33 max
Silicon Oxide: (SiO_2*)	---	20 max

*SiO_2 is present as $ZrSiO_4$, and does not contain free silica.

SECTION III: PHYSICAL/CHEMICAL CHARACTERISTICS

Boiling Point: NONE
Specific Gravity: ~4.10
Vapor Pressure: NA
Evaporation Rate: NA
Vapor Density: NA
(n-Butyl Acetate = 1)
Melting Point: 1700°C
Solubility in Water: Insoluble (Dispersion)
Appearance and Odor: Light brown and none odor
pH: 8.5

SECTION IV: FIRE AND EXPLOSION HAZARD DATA

Flash Point (method): NONE
Extinguishing Media: NONE
Special Fire Fighting Procedures: NONE
Unusual Fire and Explosion Hazards: NONE

Flammable Limits:
LEL: NA
UEL: NA

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SECTION V: REACTIVITY DATA

Stability: STABLE **Conditions to Avoid:** NONE
Incompatibility: NONE
Hazardous Decomposition Products: NONE
Hazardous Polymerization: WILL NOT OCCUR

SECTION VI: HEALTH HAZARD DATA

Routes of Entry: Inhalation? YES Skin? YES Ingestion? YES
Health Hazards:
Chronic: NONE
Acute: NONE
Carcinogenicity: NTP? NO IARC Monographs? NO
OSHA Regulated? NO
Medical Conditions Generally Aggravated By Exposure: UNKNOWN

Signs and Symptoms of exposure:
EYES: May cause inflammation, so avoid eye contact.
SKIN: May cause skin roughness upon the repeated contact in case of some constitution.

EMERGENCY AND FIRST AID PROCEDURES:
EYES: Do not rub the eye(s). Wash with cool running water for at least 15 minutes. Consult with a doctor if irritation persists.
SKIN: Wash with Soap and Water.
INHALATION: Move to fresh air. Consult with a doctor for medical advice, if necessary.
SWALLOW: Induce vomiting if possible. Rinse mouth with water. Get medical attention, if necessary.

SECTION VII: PRECAUTIONS FOR SAFE HANDLING AND USE

In Case Material is Released or Spilled: SMALL SPILLS: use a vacuum with a filtered exhaust. LARGE SPILLS: cover area and return contents to drum for reuse or disposal.
Waste Disposal Method: Bury in the ground to prevent scattering in the air or dispose according to government regulations.
Precautions to be Taken in Handling and Storing:
Handling: Avoid inhaling dust using appropriate protection.
Storage: Keep indoors storage to avoid moisture absorption.
Other Precautions: NONE

SECTION VIII: CONTROL MEASURES

Respiratory Protection (specify type): Dust prevention mask
Ventilation: Local Exhaust: Required
Mechanical (general): NA Special: NA
Protective Gloves: Rubber gloves **Eye Protection:** GOGGLES
Other Protective Clothing or Equipment: NONE
Work/Hygiene Practices: Use apron if necessary.

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