CITY OF PORTLAND
ENVIRONMENTAL SERVICES

Water Pollution Control Laboratory
6543 N. Burlington Ave., Portland, Oregon 97203-5452
(503) 823-5600

September 11, 2001

Mr. Thomas C. McCue
Wacker Siltronic Corporation
7200 NW Front Avenue
P.O. Box 83180
Portland, OR 97283-0180

RE: Analytical Data.

Dear Mr. McCue;

Enclosed is the sampling data collected from your facility during the first half of 2001. Use this data to assist you in maintaining historical information for pollutants present in your facility's wastewater discharge. This information will also help to identify any compliance issues.

The Industrial Source Control Division maintains data from both City and self-monitoring. Please take this opportunity to compare self-monitoring results to City monitoring results, as well as to verify the analytical information contained within the report with your records.

As always if you have any questions about this report or your facility's wastewater discharge permit, contact me at (503) 823-5537. We thank you for doing your part to help protect water quality and the environment.

Respectfully,

Timothy P. Dean

Timothy P. Dean
Permit Manager.

To Tom McCue for Review

871453

SCOEPA00036063

Historical Analytical Report for 01/01/2001 - 07/01/2001

Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **1200Z**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
copper	=	0.05	mg/L	self	grab	04/20/2001 10:15 AM	01
copper	<	0.05	mg/L	self	grab	04/20/2001 10:30 AM	02
copper	<	0.03	mg/L	self	grab	04/20/2001 10:45 AM	03
copper		**Minimum**		**0.0150 mg/L**		**Count 3**	
		Average		**0.0300 mg/L**			
		Maximum		**0.0500 mg/L**			
lead	=	0.007	mg/L	self	grab	04/20/2001 10:15 AM	01
lead	<	0.005	mg/L	self	grab	04/20/2001 10:30 AM	02
lead	<	0.005	mg/L	self	grab	04/20/2001 10:45 AM	03
lead		**Minimum**		**0.0025 mg/L**		**Count 3**	
		Average		**0.0040 mg/L**			
		Maximum		**0.0070 mg/L**			
oil/grease - total	<	3	mg/L	self	grab	04/20/2001 10:15 AM	01
oil/grease - total	<	3	mg/L	self	grab	04/20/2001 10:30 AM	02
oil/grease - total	<	3	mg/L	self	grab	04/20/2001 10:45 AM	03
oil/grease - total		**Minimum**		**1.5000 mg/L**		**Count 3**	
		Average		**1.5000 mg/L**			
		Maximum		**1.5000 mg/L**			
pH	=	6.4	std units	self	grab	04/20/2001 10:15 AM	01
pH	=	6.3	std units	self	grab	04/20/2001 10:30 AM	02
pH	=	6.4	std units	self	grab	04/20/2001 10:45 AM	03
pH		**Minimum**		**6.3000 std units**		**Count 3**	
		Maximum		**6.4000 std units**			
solids - total suspended	=	207.25	mg/L	self	grab	04/20/2001 10:15 AM	01
solids - total suspended	=	57.5	mg/L	self	grab	04/30/2001	01
solids - total suspended	=	19	mg/L	self	grab	04/20/2001 10:30 AM	02
solids - total suspended	=	10	mg/L	self	grab	04/20/2001 10:45 AM	03
solids - total suspended		**Minimum**		**10.0000 mg/L**		**Count 4**	
		Average		**73.4375 mg/L**			
		Maximum		**207.2500 mg/L**			
zinc	=	0.39	mg/L	self	grab	04/20/2001 10:15 AM	01
zinc	=	0.29	mg/L	self	grab	04/20/2001 10:30 AM	02
zinc	=	0.26	mg/L	self	grab	04/20/2001 10:45 AM	03
zinc		**Minimum**		**0.2600 mg/L**		**Count 3**	
		Average		**0.3133 mg/L**			
		Maximum		**0.3900 mg/L**			

*** Note - those results which have an operator of '<' are divided in half to determine minimums, maximums, and averages

Historical Analytical Report for 01/01/2001 - 07/01/2001

Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
1,1,1,2-tetrachloroethane	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
1,1,1,2-tetrachloroethane	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
1,1,1,2-tetrachloroethane	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
1,1,1,2-tetrachloroethane	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
1,1,1,2-tetrachloroethane	<	0.002	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
1,1,1,2-tetrachloroethane			**Minimum**	**0.0010 mg/L**		**Count 5**	
			Average	**0.0042 mg/L**			
			Maximum	**0.0050 mg/L**			
1,1,1-trichloroethane	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
1,1,1-trichloroethane	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
1,1,1-trichloroethane	<	0.003	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
1,1,1-trichloroethane			**Minimum**	**0.0015 mg/L**		**Count 3**	
			Average	**0.0038 mg/L**			
			Maximum	**0.0050 mg/L**			
1,1,2,2-tetrachloroethane	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
1,1,2,2-tetrachloroethane	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
1,1,2,2-tetrachloroethane	<	0.002	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
1,1,2,2-tetrachloroethane			**Minimum**	**0.0010 mg/L**		**Count 3**	
			Average	**0.0037 mg/L**			
			Maximum	**0.0050 mg/L**			
1,1,2-trichloroethane	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
1,1,2-trichloroethane	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
1,1,2-trichloroethane	<	0.001	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
1,1,2-trichloroethane			**Minimum**	**0.0005 mg/L**		**Count 3**	
			Average	**0.0035 mg/L**			
			Maximum	**0.0050 mg/L**			
1,1-dichloroethane	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
1,1-dichloroethane	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
1,1-dichloroethane	<	0.004	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
1,1-dichloroethane			**Minimum**	**0.0020 mg/L**		**Count 3**	
			Average	**0.0040 mg/L**			
			Maximum	**0.0050 mg/L**			
1,1-dichloroethene	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
1,1-dichloroethene	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
1,1-dichloroethene	<	0.005	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
1,1-dichloroethene			**Minimum**	**0.0025 mg/L**		**Count 3**	
			Average	**0.0042 mg/L**			
			Maximum	**0.0050 mg/L**			
1,1-dichloropropene	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
1,1-dichloropropene	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
1,1-dichloropropene		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2,3-trichlorobenzene	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
1,2,3-trichlorobenzene	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
1,2,3-trichlorobenzene		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2,3-trichloropropane	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
1,2,3-trichloropropane	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
1,2,3-trichloropropane		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2,4-trichlorobenzene	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
1,2,4-trichlorobenzene	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
1,2,4-trichlorobenzene	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
1,2,4-trichlorobenzene		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2,4-trimethylbenzene	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
1,2,4-trimethylbenzene	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
1,2,4-trimethylbenzene		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2-dibromo-3-chloropropane	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
1,2-dibromo-3-chloropropane	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
1,2-dibromo-3-chloropropane		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2-dibromoethane	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
1,2-dibromoethane	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
1,2-dibromoethane		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2-dichlorobenzene	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
1,2-dichlorobenzene	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
1,2-dichlorobenzene	<	0.002	mg/L	city	grab/split	06/25/2001 11:30 AM	1B

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Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
1,2-dichlorobenzene	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
1,2-dichlorobenzene		**Minimum**		**0.0010 mg/L**		**Count 4**	
		Average		**0.0040 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2-dichloroethane	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
1,2-dichloroethane	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
1,2-dichloroethane	<	0.001	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
1,2-dichloroethane		**Minimum**		**0.0005 mg/L**		**Count 3**	
		Average		**0.0035 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2-dichloroethene (cis)	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
1,2-dichloroethene (cis)	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
1,2-dichloroethene (cis)		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2-dichloroethene (trans)	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
1,2-dichloroethene (trans)	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
1,2-dichloroethene (trans)	<	0.005	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
1,2-dichloroethene (trans)		**Minimum**		**0.0025 mg/L**		**Count 3**	
		Average		**0.0042 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2-dichloropropane	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
1,2-dichloropropane	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
1,2-dichloropropane	<	0.003	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
1,2-dichloropropane		**Minimum**		**0.0015 mg/L**		**Count 3**	
		Average		**0.0038 mg/L**			
		Maximum		**0.0050 mg/L**			
1,3,5-trimethylbenzene	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
1,3,5-trimethylbenzene	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
1,3,5-trimethylbenzene		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,3-dichlorobenzene	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
1,3-dichlorobenzene	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
1,3-dichlorobenzene	<	0.002	mg/L	city	grab/split	06/25/2001 11:30 AM	1B

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Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
1,3-dichlorobenzene	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
1,3-dichlorobenzene		**Minimum**		**0.0010 mg/L**		**Count 4**	
		Average		**0.0040 mg/L**			
		Maximum		**0.0050 mg/L**			
1,3-dichloropropane	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
1,3-dichloropropane	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
1,3-dichloropropane		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,3-dichloropropene (cis)	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
1,3-dichloropropene (cis)	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
1,3-dichloropropene (cis)	<	0.001	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
1,3-dichloropropene (cis)		**Minimum**		**0.0005 mg/L**		**Count 3**	
		Average		**0.0035 mg/L**			
		Maximum		**0.0050 mg/L**			
1,3-dichloropropene (trans)	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
1,3-dichloropropene (trans)	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
1,3-dichloropropene (trans)	<	0.001	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
1,3-dichloropropene (trans)		**Minimum**		**0.0005 mg/L**		**Count 3**	
		Average		**0.0035 mg/L**			
		Maximum		**0.0050 mg/L**			
1,4-dichloro-2-butene (cis)	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
1,4-dichloro-2-butene (cis)	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
1,4-dichloro-2-butene (cis)		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,4-dichloro-2-butene (trans)	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
1,4-dichloro-2-butene (trans)	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
1,4-dichloro-2-butene (trans)		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,4-dichlorobenzene	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
1,4-dichlorobenzene	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
1,4-dichlorobenzene	<	0.001	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
1,4-dichlorobenzene	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
1,4-dichlorobenzene		**Minimum**		**0.0005 mg/L**		**Count 4**	
		Average		**0.0039 mg/L**			
		Maximum		**0.0050 mg/L**			

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
2,2-dichloropropane	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
2,2-dichloropropane	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
2,2-dichloropropane		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
2,4,6-trichlorophenol	<	0.04	mg/L	city	composite	06/25/2001 11:31 AM	1B
2,4,6-trichlorophenol		**Minimum**		**0.0200 mg/L**		**Count 1**	
		Average		**0.0200 mg/L**			
		Maximum		**0.0200 mg/L**			
2,4-dichlorophenol	<	0.02	mg/L	city	composite	06/25/2001 11:31 AM	1B
2,4-dichlorophenol		**Minimum**		**0.0100 mg/L**		**Count 1**	
		Average		**0.0100 mg/L**			
		Maximum		**0.0100 mg/L**			
2,4-dimethylphenol	<	0.02	mg/L	city	composite	06/25/2001 11:31 AM	1B
2,4-dimethylphenol		**Minimum**		**0.0100 mg/L**		**Count 1**	
		Average		**0.0100 mg/L**			
		Maximum		**0.0100 mg/L**			
2,4-dinitrophenol	<	0.04	mg/L	city	composite	06/25/2001 11:31 AM	1B
2,4-dinitrophenol		**Minimum**		**0.0200 mg/L**		**Count 1**	
		Average		**0.0200 mg/L**			
		Maximum		**0.0200 mg/L**			
2,4-dinitrotoluene	<	0.02	mg/L	city	composite	06/25/2001 11:31 AM	1B
2,4-dinitrotoluene		**Minimum**		**0.0100 mg/L**		**Count 1**	
		Average		**0.0100 mg/L**			
		Maximum		**0.0100 mg/L**			
2,6-dinitrotoluene	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
2,6-dinitrotoluene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
2-butanone	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
2-butanone	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
2-butanone		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
2-chloroethylvinyl ether	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
2-chloroethylvinyl ether	<	0.025	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
2-chloroethylvinyl ether		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0088**	**mg/L**		
		Maximum		**0.0125**	**mg/L**		
2-chloronaphthalene	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
2-chloronaphthalene		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
2-chlorophenol	<	0.02	mg/L	city	composite	06/25/2001 11:31 AM	1B
2-chlorophenol		**Minimum**		**0.0100**	**mg/L**	**Count 1**	
		Average		**0.0100**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
2-chlorotoluene	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
2-chlorotoluene	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
2-chlorotoluene		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
2-hexanone	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
2-hexanone	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
2-hexanone		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
2-methyl-4,6-dinitrophenol	<	0.02	mg/L	city	composite	06/25/2001 11:31 AM	1B
2-methyl-4,6-dinitrophenol		**Minimum**		**0.0100**	**mg/L**	**Count 1**	
		Average		**0.0100**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
2-nitrophenol	<	0.02	mg/L	city	composite	06/25/2001 11:31 AM	1B
2-nitrophenol		**Minimum**		**0.0100**	**mg/L**	**Count 1**	
		Average		**0.0100**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
3,3'-dichlorobenzidine	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
3,3'-dichlorobenzidine		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
4-bromophenyl phenyl ether	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
4-bromophenyl phenyl ether		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
4-chloro-3-methylphenol	<	0.02	mg/L	city	composite	06/25/2001 11:31 AM	1B
4-chloro-3-methylphenol		**Minimum**		**0.0100 mg/L**		**Count 1**	
		Average		**0.0100 mg/L**			
		Maximum		**0.0100 mg/L**			
4-chlorophenyl phenyl ether	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
4-chlorophenyl phenyl ether		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
4-chlorotoluene	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
4-chlorotoluene	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
4-chlorotoluene		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
4-isopropyltoluene	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
4-isopropyltoluene	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
4-isopropyltoluene		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
4-methyl-2-pentanone	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
4-methyl-2-pentanone	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
4-methyl-2-pentanone		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
4-nitrophenol	<	0.04	mg/L	city	composite	06/25/2001 11:31 AM	1B
4-nitrophenol		**Minimum**		**0.0200 mg/L**		**Count 1**	
		Average		**0.0200 mg/L**			
		Maximum		**0.0200 mg/L**			
acenaphthene	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
acenaphthene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
acenaphthylene	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
acenaphthylene		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
acetone	=	2.9	mg/L	self	grab	03/01/2001 7:30 AM	1B
acetone	=	8.6	mg/L	self	grab	06/07/2001 7:40 AM	1B
acetone		**Minimum**		**2.9000**	**mg/L**	**Count 2**	
		Average		**5.7500**	**mg/L**		
		Maximum		**8.6000**	**mg/L**		
acetonitrile	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
acetonitrile	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
acetonitrile		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
acrolein	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
acrolein	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
acrolein	<	0.05	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
acrolein		**Minimum**		**0.0050**	**mg/L**	**Count 3**	
		Average		**0.0117**	**mg/L**		
		Maximum		**0.0250**	**mg/L**		
acrylonitrile	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
acrylonitrile	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
acrylonitrile	<	0.025	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
acrylonitrile		**Minimum**		**0.0050**	**mg/L**	**Count 3**	
		Average		**0.0075**	**mg/L**		
		Maximum		**0.0125**	**mg/L**		
anthracene	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
anthracene		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
arsenic	<	0.005	mg/L	self	comp/split	01/23/2001 9:34 AM	1B
arsenic	=	0.0013	mg/L	city	comp/split	01/23/2001 9:34 AM	1B
arsenic	<	0.005	mg/L	self	composite	03/01/2001 7:30 AM	1B
arsenic	<	0.05	mg/L	self	composite	06/07/2001 7:45 AM	1B
arsenic	<	0.001	mg/L	city	composite	06/25/2001 11:31 AM	1B
arsenic		**Minimum**		**0.0005**	**mg/L**	**Count 5**	
		Average		**0.0064**	**mg/L**		
		Maximum		**0.0250**	**mg/L**		

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
azobenzene	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
azobenzene		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
benzene	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
benzene	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
benzene	<	0.002	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
benzene		**Minimum**		**0.0010**	**mg/L**	**Count 3**	
		Average		**0.0037**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
benzidine	<	0.04	mg/L	city	composite	06/25/2001 11:31 AM	1B
benzidine		**Minimum**		**0.0200**	**mg/L**	**Count 1**	
		Average		**0.0200**	**mg/L**		
		Maximum		**0.0200**	**mg/L**		
benzo(a)anthracene	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
benzo(a)anthracene		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
benzo(a)pyrene	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
benzo(a)pyrene		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
benzo(b)fluoranthene	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
benzo(b)fluoranthene		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
benzo(g,h,i)perylene	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
benzo(g,h,i)perylene		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
benzo(k)fluoranthene	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
benzo(k)fluoranthene		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		

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Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
bis(2-chloroethoxy) methane	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
bis(2-chloroethoxy) methane		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
bis(2-chloroethyl) ether	<	0.04	mg/L	city	composite	06/25/2001 11:31 AM	1B
bis(2-chloroethyl) ether		**Minimum**		**0.0200**	**mg/L**	**Count 1**	
		Average		**0.0200**	**mg/L**		
		Maximum		**0.0200**	**mg/L**		
bis(2-chloroisopropyl) ether	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
bis(2-chloroisopropyl) ether		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
bis(2-ethylhexyl)phthalate	=	0.333	mg/L	city	composite	06/25/2001 11:31 AM	1B
bis(2-ethylhexyl)phthalate		**Minimum**		**0.3330**	**mg/L**	**Count 1**	
		Average		**0.3330**	**mg/L**		
		Maximum		**0.3330**	**mg/L**		
bromobenzene	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
bromobenzene	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
bromobenzene		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
bromochloromethane	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
bromochloromethane	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
bromochloromethane		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
bromodichloromethane	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
bromodichloromethane	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
bromodichloromethane	<	0.002	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
bromodichloromethane		**Minimum**		**0.0010**	**mg/L**	**Count 3**	
		Average		**0.0037**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
bromoform	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
bromoform	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B

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Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
bromoform	<	0.002	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
bromoform		**Minimum**		**0.0010 mg/L**		**Count 3**	
		Average		**0.0037 mg/L**			
		Maximum		**0.0050 mg/L**			
bromomethane	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
bromomethane	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
bromomethane	<	0.005	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
bromomethane		**Minimum**		**0.0025 mg/L**		**Count 3**	
		Average		**0.0042 mg/L**			
		Maximum		**0.0050 mg/L**			
butyl benzyl phthalate	<	0.04	mg/L	city	composite	06/25/2001 11:31 AM	1B
butyl benzyl phthalate		**Minimum**		**0.0200 mg/L**		**Count 1**	
		Average		**0.0200 mg/L**			
		Maximum		**0.0200 mg/L**			
carbon disulfide	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
carbon disulfide	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
carbon disulfide		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
carbon tetrachloride	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
carbon tetrachloride	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
carbon tetrachloride	<	0.003	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
carbon tetrachloride		**Minimum**		**0.0015 mg/L**		**Count 3**	
		Average		**0.0038 mg/L**			
		Maximum		**0.0050 mg/L**			
chlorobenzene	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
chlorobenzene	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
chlorobenzene	<	0.002	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
chlorobenzene		**Minimum**		**0.0010 mg/L**		**Count 3**	
		Average		**0.0037 mg/L**			
		Maximum		**0.0050 mg/L**			
chloroethane	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
chloroethane	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
chloroethane	<	0.005	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
chloroethane		**Minimum**		**0.0025 mg/L**		**Count 3**	
		Average		**0.0042 mg/L**			
		Maximum		**0.0050 mg/L**			
chloroform	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B

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Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
chloroform	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
chloroform	<	0.002	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
chloroform		**Minimum**		**0.0010 mg/L**		**Count 3**	
		Average		**0.0037 mg/L**			
		Maximum		**0.0050 mg/L**			
chloromethane	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
chloromethane	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
chloromethane	<	0.005	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
chloromethane		**Minimum**		**0.0025 mg/L**		**Count 3**	
		Average		**0.0042 mg/L**			
		Maximum		**0.0050 mg/L**			
chrysene	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
chrysene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
dibenzo(a,h)anthracene	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
dibenzo(a,h)anthracene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
dibromochloromethane	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
dibromochloromethane	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
dibromochloromethane	<	0.001	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
dibromochloromethane		**Minimum**		**0.0005 mg/L**		**Count 3**	
		Average		**0.0035 mg/L**			
		Maximum		**0.0050 mg/L**			
dibromomethane	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
dibromomethane	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
dibromomethane		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
dichlorodifluoromethane (freon-12)	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
dichlorodifluoromethane (freon-12)	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
dichlorodifluoromethane (freon-12)		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
diethyl phthalate	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
diethyl phthalate		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
dimethyl phthalate	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
dimethyl phthalate		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
di-n-butyl phthalate	<	0.05	mg/L	city	composite	06/25/2001 11:31 AM	1B
di-n-butyl phthalate		**Minimum**		**0.0250**	**mg/L**	**Count 1**	
		Average		**0.0250**	**mg/L**		
		Maximum		**0.0250**	**mg/L**		
di-n-octyl phthalate	<	0.02	mg/L	city	composite	06/25/2001 11:31 AM	1B
di-n-octyl phthalate		**Minimum**		**0.0100**	**mg/L**	**Count 1**	
		Average		**0.0100**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
ethyl benzene	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
ethyl benzene	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
ethyl benzene	<	0.003	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
ethyl benzene		**Minimum**		**0.0015**	**mg/L**	**Count 3**	
		Average		**0.0038**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
fluoranthene	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
fluoranthene		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
fluorene	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
fluorene		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
fluoride	<	1	mg/L	city	composite	06/25/2001 11:31 AM	1B
fluoride		**Minimum**		**0.5000**	**mg/L**	**Count 1**	
		Average		**0.5000**	**mg/L**		
		Maximum		**0.5000**	**mg/L**		

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
hexachlorobenzene	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
hexachlorobenzene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
hexachlorobutadiene	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
hexachlorobutadiene	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
hexachlorobutadiene	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
hexachlorobutadiene		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
hexachlorocyclopentadiene	<	0.02	mg/L	city	composite	06/25/2001 11:31 AM	1B
hexachlorocyclopentadiene		**Minimum**		**0.0100 mg/L**		**Count 1**	
		Average		**0.0100 mg/L**			
		Maximum		**0.0100 mg/L**			
hexachloroethane	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
hexachloroethane		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
indeno (1,2,3-cd) pyrene	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
indeno (1,2,3-cd) pyrene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
isophorone	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
isophorone		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
isopropylbenzene	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
isopropylbenzene	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
isopropylbenzene		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
methyl iodide	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
methyl iodide		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
methylene chloride	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
methylene chloride	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
methylene chloride	<	0.005	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
methylene chloride		**Minimum**		**0.0025 mg/L**		**Count 3**	
		Average		**0.0042 mg/L**			
		Maximum		**0.0050 mg/L**			
molybdenum	=	0.03	mg/L	self	comp/split	01/23/2001 9:34 AM	1B
molybdenum	<	0.2	mg/L	city	comp/split	01/23/2001 9:34 AM	1B
molybdenum	<	0.2	mg/L	city	composite	06/25/2001 11:31 AM	1B
molybdenum		**Minimum**		**0.0300 mg/L**		**Count 3**	
		Average		**0.0767 mg/L**			
		Maximum		**0.1000 mg/L**			
naphthalene	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
naphthalene	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
naphthalene	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
naphthalene		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
n-butylbenzene	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
n-butylbenzene	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
n-butylbenzene		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
nitrobenzene	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
nitrobenzene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
n-nitrosodimethylamine	<	0.04	mg/L	city	composite	06/25/2001 11:31 AM	1B
n-nitrosodimethylamine		**Minimum**		**0.0200 mg/L**		**Count 1**	
		Average		**0.0200 mg/L**			
		Maximum		**0.0200 mg/L**			
n-nitroso-di-n-propylamine	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
n-nitroso-di-n-propylamine		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
n-nitrosodiphenylamine	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
n-nitrosodiphenylamine		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
n-propylbenzene	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
n-propylbenzene	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
n-propylbenzene		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
o-xylene	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
o-xylene		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
pentachlorophenol	<	0.04	mg/L	city	composite	06/25/2001 11:31 AM	1B
pentachlorophenol		**Minimum**		**0.0200**	**mg/L**	**Count 1**	
		Average		**0.0200**	**mg/L**		
		Maximum		**0.0200**	**mg/L**		
pH	=	9.1	std units	city	grab	01/23/2001 9:32 AM	1B
pH	=		std units	self	continuous	01/31/2001	1B
pH	=		std units	self	continuous	02/28/2001	1B
pH	=		std units	self	continuous	03/30/2001	1B
pH	=		std units	self	continuous	03/30/2001	1B
pH	=		std units	self	continuous	04/30/2001	1B
pH	=	* 11.8	std units	self	grab	05/22/2001 5:45 PM	1B
pH	=		std units	self	continuous	05/31/2001	1B
pH	=	9.4	std units	city	grab/split	06/25/2001 11:30 AM	1B
pH	=		std units	self	continuous	06/30/2001	1B
pH		**Minimum**		**9.1000**	**std units**	**Count 10**	
* THIS WAS CAUSED BY START UP PROBLEMS AFTER PLANT WIDE SHUTDOWN. BES WAS NOTIFIED & NO FURTHER ACTION TAKEN BY BES		**Maximum**		**11.8000**	**std units**		
phenanthrene	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
phenanthrene		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
phenols - total (epa 420)	<	0.02	mg/L	city	composite	06/25/2001 11:31 AM	1B
phenols - total (epa 420)		**Minimum**		**0.0100**	**mg/L**	**Count 1**	
		Average		**0.0100**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
pyrene	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
pyrene		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
sec-butylbenzene	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
sec-butylbenzene	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
sec-butylbenzene		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
solids - total	=	459	mg/L	city	composite	06/25/2001 11:31 AM	1B
solids - total		**Minimum**		**459.0000 mg/L**		**Count 1**	
		Average		**459.0000 mg/L**			
		Maximum		**459.0000 mg/L**			
solids - total dissolved	=	380	mg/L	city	composite	06/25/2001 11:31 AM	1B
solids - total dissolved		**Minimum**		**380.0000 mg/L**		**Count 1**	
		Average		**380.0000 mg/L**			
		Maximum		**380.0000 mg/L**			
solids - total suspended	=	347	mg/L	city	comp/split	01/23/2001 9:34 AM	1B
solids - total suspended	=	135	mg/L	self	composite	03/01/2001 7:30 AM	1B
solids - total suspended	=	158	mg/L	self	composite	06/07/2001 7:45 AM	1B
solids - total suspended	=	77.6	mg/L	city	composite	06/25/2001 11:31 AM	1B
solids - total suspended		**Minimum**		**77.6000 mg/L**		**Count 4**	
		Average		**179.4000 mg/L**			
		Maximum		**347.0000 mg/L**			
styrene	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
styrene	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
styrene		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
tert-butylbenzene	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
tert-butylbenzene	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
tert-butylbenzene		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
tetrachloroethene	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
tetrachloroethene	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
tetrachloroethene	<	0.003	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
tetrachloroethene		**Minimum**		**0.0015 mg/L**		**Count 3**	
		Average		**0.0038 mg/L**			
		Maximum		**0.0050 mg/L**			
toluene	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
toluene	=	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
toluene	<	0.003	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
toluene		**Minimum**		**0.0015**	**mg/L**	**Count 3**	
		Average		**0.0055**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
trichloroethene (tce)	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
trichloroethene (tce)	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
trichloroethene (tce)	<	0.002	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
trichloroethene (tce)		**Minimum**		**0.0010**	**mg/L**	**Count 3**	
		Average		**0.0037**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
trichlorofluoromethane (freon-11)	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
trichlorofluoromethane (freon-11)	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
trichlorofluoromethane (freon-11)	<	0.005	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
trichlorofluoromethane (freon-11)		**Minimum**		**0.0025**	**mg/L**	**Count 3**	
		Average		**0.0042**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
vinyl acetate	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
vinyl acetate		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
vinyl chloride	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
vinyl chloride	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
vinyl chloride	<	0.005	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
vinyl chloride		**Minimum**		**0.0025**	**mg/L**	**Count 3**	
		Average		**0.0042**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
xylene, m-	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
xylene, m-	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
xylene, m-		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
xylene, o-	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
xylene, o-	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
xylene, o-		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
xylene, p-	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B

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Historical Analytical Report for 01/01/2001 - 07/01/2001

Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
xylene, p-	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
xylene, p-		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
xylenes, total	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
xylenes, total	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
xylenes, total		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		

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CITY OF PORTLAND
ENVIRONMENTAL SERVICES

Water Pollution Control Laboratory
6543 N. Burlington Ave., Portland, Oregon 97203-5452
(503) 823-5600

January 25, 2002

Mr. James Claxton
Wacker Siltronic Corporation
7200 NW Front Avenue
Mail Stop 30
Portland, OR 97283-0180

RE: 2001 Analytical Data.

Dear Mr. Claxton;

Enclosed is the sampling data collected from your facility during 2001. Use this data to assist you in maintaining historical information for pollutants present in your facility's wastewater discharge. This information will also help to identify any compliance issues.

The Industrial Source Control Division maintains data from both City and self-monitoring. Please take this opportunity to compare self-monitoring results to City monitoring results, as well as to verify the analytical information contained within the report with your records.

As always if you have any questions about this report or your facility's wastewater discharge permit, contact me at (503) 823-5537. We thank you for doing your part to help protect water quality and the environment.

Respectfully,

Timothy P. Dean
PPS/BES Permit Manager.

Historical Analytical Report for 01/01/2001 - 01/01/2002

Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **1200Z**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
copper	=	0.05	mg/L	self	grab	04/20/2001 10:15 AM	01
copper	<	0.05	mg/L	self	grab	04/20/2001 10:30 AM	02
copper	<	0.03	mg/L	self	grab	04/20/2001 10:45 AM	03
copper		**Minimum**		**0.0150 mg/L**		**Count 3**	
		Average		**0.0300 mg/L**			
		Maximum		**0.0500 mg/L**			
lead	=	0.007	mg/L	self	grab	04/20/2001 10:15 AM	01
lead	<	0.005	mg/L	self	grab	04/20/2001 10:30 AM	02
lead	<	0.005	mg/L	self	grab	04/20/2001 10:45 AM	03
lead		**Minimum**		**0.0025 mg/L**		**Count 3**	
		Average		**0.0040 mg/L**			
		Maximum		**0.0070 mg/L**			
oil/grease - total	<	3	mg/L	self	grab	04/20/2001 10:15 AM	01
oil/grease - total	<	3	mg/L	self	grab	04/20/2001 10:30 AM	02
oil/grease - total	<	3	mg/L	self	grab	04/20/2001 10:45 AM	03
oil/grease - total		**Minimum**		**1.5000 mg/L**		**Count 3**	
		Average		**1.5000 mg/L**			
		Maximum		**1.5000 mg/L**			
pH	=	6.4	std units	self	grab	04/20/2001 10:15 AM	01
pH	=	6.3	std units	self	grab	04/20/2001 10:30 AM	02
pH	=	6.4	std units	self	grab	04/20/2001 10:45 AM	03
pH		**Minimum**		**6.3000 std units**		**Count 3**	
		Maximum		**6.4000 std units**			
solids - total suspended	=	207.25	mg/L	self	grab	04/20/2001 10:15 AM	01
solids - total suspended	=	57.5	mg/L	self	grab	04/30/2001	01
solids - total suspended	=	19	mg/L	self	grab	04/20/2001 10:30 AM	02
solids - total suspended	=	10	mg/L	self	grab	04/20/2001 10:45 AM	03
solids - total suspended		**Minimum**		**10.0000 mg/L**		**Count 4**	
		Average		**73.4375 mg/L**			
		Maximum		**207.2500 mg/L**			
zinc	=	0.39	mg/L	self	grab	04/20/2001 10:15 AM	01
zinc	=	0.29	mg/L	self	grab	04/20/2001 10:30 AM	02
zinc	=	0.26	mg/L	self	grab	04/20/2001 10:45 AM	03
zinc		**Minimum**		**0.2600 mg/L**		**Count 3**	
		Average		**0.3133 mg/L**			
		Maximum		**0.3900 mg/L**			

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
0,0,0-triethylphosphorothioate	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
0,0,0-triethylphosphorothioate		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,1,1,2-tetrachloroethane	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
1,1,1,2-tetrachloroethane	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
1,1,1,2-tetrachloroethane	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
1,1,1,2-tetrachloroethane	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
1,1,1,2-tetrachloroethane	<	0.002	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
1,1,1,2-tetrachloroethane	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
1,1,1,2-tetrachloroethane	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
1,1,1,2-tetrachloroethane	<	0.004	mg/L	city	grab/split	09/24/2001 12:00 PM	1B
1,1,1,2-tetrachloroethane	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
1,1,1,2-tetrachloroethane	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
1,1,1,2-tetrachloroethane	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
1,1,1,2-tetrachloroethane		**Minimum**		**0.0010 mg/L**		**Count 11**	
		Average		**0.0044 mg/L**			
		Maximum		**0.0050 mg/L**			
1,1,1-trichloroethane	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
1,1,1-trichloroethane	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
1,1,1-trichloroethane	<	0.003	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
1,1,1-trichloroethane	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
1,1,1-trichloroethane	<	0.006	mg/L	city	grab/split	09/24/2001 12:00 PM	1B
1,1,1-trichloroethane	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
1,1,1-trichloroethane		**Minimum**		**0.0015 mg/L**		**Count 6**	
		Average		**0.0041 mg/L**			
		Maximum		**0.0050 mg/L**			
1,1,2,2-tetrachloroethane	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
1,1,2,2-tetrachloroethane	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
1,1,2,2-tetrachloroethane	<	0.002	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
1,1,2,2-tetrachloroethane	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
1,1,2,2-tetrachloroethane	<	0.004	mg/L	city	grab/split	09/24/2001 12:00 PM	1B
1,1,2,2-tetrachloroethane	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
1,1,2,2-tetrachloroethane		**Minimum**		**0.0010 mg/L**		**Count 6**	
		Average		**0.0038 mg/L**			
		Maximum		**0.0050 mg/L**			
1,1,2-trichloroethane	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
1,1,2-trichloroethane	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
1,1,2-trichloroethane	<	0.001	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
1,1,2-trichloroethane	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
1,1,2-trichloroethane	<	0.002	mg/L	city	grab/split	09/24/2001 12:00 PM	1B

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
1,1,2-trichloroethane	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
1,1,2-trichloroethane		**Minimum**		**0.0005 mg/L**		**Count 6**	
		Average		**0.0036 mg/L**			
		Maximum		**0.0050 mg/L**			
1,1-dichloroethane	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
1,1-dichloroethane	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
1,1-dichloroethane	<	0.004	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
1,1-dichloroethane	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
1,1-dichloroethane	<	0.008	mg/L	city	grab/split	09/24/2001 12:00 PM	1B
1,1-dichloroethane	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
1,1-dichloroethane		**Minimum**		**0.0020 mg/L**		**Count 6**	
		Average		**0.0043 mg/L**			
		Maximum		**0.0050 mg/L**			
1,1-dichloroethene	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
1,1-dichloroethene	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
1,1-dichloroethene	<	0.005	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
1,1-dichloroethene	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
1,1-dichloroethene	<	0.01	mg/L	city	grab/split	09/24/2001 12:00 PM	1B
1,1-dichloroethene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
1,1-dichloroethene		**Minimum**		**0.0025 mg/L**		**Count 6**	
		Average		**0.0046 mg/L**			
		Maximum		**0.0050 mg/L**			
1,1-dichloropropene	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
1,1-dichloropropene	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
1,1-dichloropropene	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
1,1-dichloropropene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
1,1-dichloropropene		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2,3-trichlorobenzene	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
1,2,3-trichlorobenzene	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
1,2,3-trichlorobenzene	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
1,2,3-trichlorobenzene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
1,2,3-trichlorobenzene		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2,3-trichloropropane	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
1,2,3-trichloropropane	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
1,2,3-trichloropropane	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
1,2,3-trichloropropane	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
1,2,3-trichloropropane		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2,4,5-tetrachlorobenzene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
1,2,4,5-tetrachlorobenzene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2,4-trichlorobenzene	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
1,2,4-trichlorobenzene	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
1,2,4-trichlorobenzene	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
1,2,4-trichlorobenzene	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
1,2,4-trichlorobenzene	<	0.01	mg/L	city	comp/split	11/26/2001 10:31 AM	1B
1,2,4-trichlorobenzene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
1,2,4-trichlorobenzene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
1,2,4-trichlorobenzene		**Minimum**		**0.0050 mg/L**		**Count 7**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2,4-trimethylbenzene	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
1,2,4-trimethylbenzene	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
1,2,4-trimethylbenzene	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
1,2,4-trimethylbenzene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
1,2,4-trimethylbenzene		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2-dibromo-3-chloropropane	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
1,2-dibromo-3-chloropropane	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
1,2-dibromo-3-chloropropane	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
1,2-dibromo-3-chloropropane	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
1,2-dibromo-3-chloropropane	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
1,2-dibromo-3-chloropropane		**Minimum**		**0.0050 mg/L**		**Count 5**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2-dibromoethane	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
1,2-dibromoethane	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
1,2-dibromoethane	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
1,2-dibromoethane	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B

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Org Id 1592

Org Name WACKER SILTRONIC CORP Permit Number 469.001

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
1,2-dibromoethane	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
1,2-dibromoethane		**Minimum**		**0.0050 mg/L**		**Count 5**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2-dichlorobenzene	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
1,2-dichlorobenzene	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
1,2-dichlorobenzene	<	0.002	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
1,2-dichlorobenzene	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
1,2-dichlorobenzene	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
1,2-dichlorobenzene	<	0.004	mg/L	city	grab/split	09/24/2001 12:00 PM	1B
1,2-dichlorobenzene	<	0.01	mg/L	city	comp/split	11/26/2001 10:31 AM	1B
1,2-dichlorobenzene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
1,2-dichlorobenzene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
1,2-dichlorobenzene		**Minimum**		**0.0010 mg/L**		**Count 9**	
		Average		**0.0042 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2-dichloroethane	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
1,2-dichloroethane	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
1,2-dichloroethane	<	0.001	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
1,2-dichloroethane	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
1,2-dichloroethane	<	0.002	mg/L	city	grab/split	09/24/2001 12:00 PM	1B
1,2-dichloroethane	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
1,2-dichloroethane		**Minimum**		**0.0005 mg/L**		**Count 6**	
		Average		**0.0036 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2-dichloroethene (cis)	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
1,2-dichloroethene (cis)	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
1,2-dichloroethene (cis)	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
1,2-dichloroethene (cis)	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
1,2-dichloroethene (cis)		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2-dichloroethene (trans)	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
1,2-dichloroethene (trans)	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
1,2-dichloroethene (trans)	<	0.005	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
1,2-dichloroethene (trans)	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
1,2-dichloroethene (trans)	<	0.01	mg/L	city	grab/split	09/24/2001 12:00 PM	1B

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Historical Analytical Report for 01/01/2001 - 01/01/2002

Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
1,2-dichloroethene (trans)	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
1,2-dichloroethene (trans)		**Minimum**		**0.0025 mg/L**		**Count 6**	
		Average		**0.0046 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2-dichloropropane	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
~~1,2-dichloropropane~~	~~<~~	~~0.01~~	~~mg/L~~	~~self~~	~~grab~~	~~06/07/2001 7:40 AM~~	~~1B~~
1,2-dichloropropane	<	0.003	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
1,2-dichloropropane	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
1,2-dichloropropane	<	0.006	mg/L	city	grab/split	09/24/2001 12:00 PM	1B
1,2-dichloropropane	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
1,2-dichloropropane		**Minimum**		**0.0015 mg/L**		**Count 6**	
		Average		**0.0041 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2-dinitrobenzene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
1,2-dinitrobenzene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2-diphenylhydrazine	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
1,2-diphenylhydrazine		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,3,5-trimethylbenzene	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
1,3,5-trimethylbenzene	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
1,3,5-trimethylbenzene	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
1,3,5-trimethylbenzene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
1,3,5-trimethylbenzene		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,3,5-trinitrobenzene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
1,3,5-trinitrobenzene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,3-dichlorobenzene	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
1,3-dichlorobenzene	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
1,3-dichlorobenzene	<	0.002	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
1,3-dichlorobenzene	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
1,3-dichlorobenzene	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
1,3-dichlorobenzene	<	0.004	mg/L	city	grab/split	09/24/2001 12:00 PM	1B
1,3-dichlorobenzene	<	0.01	mg/L	city	comp/split	11/26/2001 10:31 AM	1B

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Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
1,3-dichlorobenzene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
1,3-dichlorobenzene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
1,3-dichlorobenzene		**Minimum**		**0.0010 mg/L**		**Count 9**	
		Average		**0.0042 mg/L**			
		Maximum		**0.0050 mg/L**			
1,3-dichloropropane	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
1,3-dichloropropane	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
1,3-dichloropropane	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
1,3-dichloropropane	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
1,3-dichloropropane		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,3-dichloropropene (cis)	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
1,3-dichloropropene (cis)	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
1,3-dichloropropene (cis)	<	0.001	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
1,3-dichloropropene (cis)	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
1,3-dichloropropene (cis)	<	0.002	mg/L	city	grab/split	09/24/2001 12:00 PM	1B
1,3-dichloropropene (cis)	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
1,3-dichloropropene (cis)		**Minimum**		**0.0005 mg/L**		**Count 6**	
		Average		**0.0036 mg/L**			
		Maximum		**0.0050 mg/L**			
1,3-dichloropropene (trans)	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
1,3-dichloropropene (trans)	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
1,3-dichloropropene (trans)	<	0.001	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
1,3-dichloropropene (trans)	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
1,3-dichloropropene (trans)	<	0.002	mg/L	city	grab/split	09/24/2001 12:00 PM	1B
1,3-dichloropropene (trans)	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
1,3-dichloropropene (trans)		**Minimum**		**0.0005 mg/L**		**Count 6**	
		Average		**0.0036 mg/L**			
		Maximum		**0.0050 mg/L**			
1,3-dinitrobenzene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
1,3-dinitrobenzene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,4-dichloro-2-butene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
1,4-dichloro-2-butene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,4-dichloro-2-butene (cis)	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B

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Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
1,4-dichloro-2-butene (cis)	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
1,4-dichloro-2-butene (cis)	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
1,4-dichloro-2-butene (cis)	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
1,4-dichloro-2-butene (cis)		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,4-dichloro-2-butene (trans)	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
1,4-dichloro-2-butene (trans)	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
1,4-dichloro-2-butene (trans)	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
1,4-dichloro-2-butene (trans)	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
1,4-dichloro-2-butene (trans)		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,4-dichlorobenzene	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
1,4-dichlorobenzene	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
1,4-dichlorobenzene	<	0.001	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
1,4-dichlorobenzene	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
1,4-dichlorobenzene	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
1,4-dichlorobenzene	<	0.002	mg/L	city	grab/split	09/24/2001 12:00 PM	1B
1,4-dichlorobenzene	<	0.01	mg/L	city	comp/split	11/26/2001 10:31 AM	1B
1,4-dichlorobenzene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
1,4-dichlorobenzene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
1,4-dichlorobenzene		**Minimum**		**0.0005 mg/L**		**Count 9**	
		Average		**0.0041 mg/L**			
		Maximum		**0.0050 mg/L**			
1,4-dinitrobenzene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
1,4-dinitrobenzene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
1,4-dinitrobenzene		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,4-naphthoquinone	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
1,4-naphthoquinone		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,4-phenylenediamine	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
1,4-phenylenediamine		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			

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Org Id 1592

Org Name WACKER SILTRONIC CORP Permit Number 469.001

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
1-acetyl-2-thiourea	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
1-acetyl-2-thiourea		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
1-chloronaphthalene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
1-chloronaphthalene		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
1-naphthylamine	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
1-naphthylamine		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
2,2',3,3',4,4',6-heptachlorobiphenyl	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
2,2',3,3',4,4',6-heptachlorobiphenyl		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
2,2-dichloropropane	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
2,2-dichloropropane	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
2,2-dichloropropane	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
2,2-dichloropropane	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
2,2-dichloropropane		**Minimum**		**0.0050**	**mg/L**	**Count 4**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
2,3,4,6-tetrachlorophenol	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
2,3,4,6-tetrachlorophenol		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
2,4,5-t	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
2,4,5-t		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
2,4,5-tp (silvex)	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
2,4,5-tp (silvex)		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		

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Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
2,4,5-trichlorophenol	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
2,4,5-trichlorophenol		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
2,4,5-trimethylaniline	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
2,4,5-trimethylaniline		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
2,4,6-trichlorophenol	<	0.04	mg/L	city	composite	06/25/2001 11:31 AM	1B
2,4,6-trichlorophenol	<	0.04	mg/L	city	comp/split	11/26/2001 10:31 AM	1B
2,4,6-trichlorophenol	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
2,4,6-trichlorophenol		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0150 mg/L**			
		Maximum		**0.0200 mg/L**			
2,4-diaminotoluene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
2,4-diaminotoluene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
2,4-dichlorophenol	<	0.02	mg/L	city	composite	06/25/2001 11:31 AM	1B
2,4-dichlorophenol	<	0.02	mg/L	city	comp/split	11/26/2001 10:31 AM	1B
2,4-dichlorophenol	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
2,4-dichlorophenol		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0083 mg/L**			
		Maximum		**0.0100 mg/L**			
2,4-dimethylphenol	<	0.02	mg/L	city	composite	06/25/2001 11:31 AM	1B
2,4-dimethylphenol	<	0.02	mg/L	city	comp/split	11/26/2001 10:31 AM	1B
2,4-dimethylphenol	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
2,4-dimethylphenol		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0083 mg/L**			
		Maximum		**0.0100 mg/L**			
2,4-dinitrophenol	<	0.04	mg/L	city	composite	06/25/2001 11:31 AM	1B
2,4-dinitrophenol	<	0.04	mg/L	city	comp/split	11/26/2001 10:31 AM	1B
2,4-dinitrophenol	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
2,4-dinitrophenol		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0150 mg/L**			
		Maximum		**0.0200 mg/L**			
2,4-dinitrotoluene	<	0.02	mg/L	city	composite	06/25/2001 11:31 AM	1B
2,4-dinitrotoluene	<	0.02	mg/L	city	comp/split	11/26/2001 10:31 AM	1B

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Org Name WACKER SILTRONIC CORP Permit Number 469.001

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
2,4-dinitrotoluene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
2,4-dinitrotoluene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
2,4-dinitrotoluene		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0075 mg/L**			
		Maximum		**0.0100 mg/L**			
2,6-dichlorophenol	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
2,6-dichlorophenol	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
2,6-dichlorophenol		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
2,6-dinitrotoluene	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
2,6-dinitrotoluene	<	0.01	mg/L	city	comp/split	11/26/2001 10:31 AM	1B
2,6-dinitrotoluene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
2,6-dinitrotoluene		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
2-acetylaminofluorene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
2-acetylaminofluorene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
2-aminoanthraquinone	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
2-aminoanthraquinone		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
2-butanone	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
2-butanone	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
2-butanone	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
2-butanone	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
2-butanone		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
2-chloroethylvinyl ether	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
2-chloroethylvinyl ether	<	0.025	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
2-chloroethylvinyl ether	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
2-chloroethylvinyl ether	<	0.05	mg/L	city	grab/split	09/24/2001 12:00 PM	1B
2-chloroethylvinyl ether	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B

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Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
2-chloroethylvinyl ether	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
2-chloroethylvinyl ether		**Minimum**		**0.0050 mg/L**		**Count 6**	
		Average		**0.0096 mg/L**			
		Maximum		**0.0250 mg/L**			
2-chloronaphthalene	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
2-chloronaphthalene	<	0.01	mg/L	city	comp/split	11/26/2001 10:31 AM	1B
2-chloronaphthalene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
2-chloronaphthalene		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
2-chlorophenol	<	0.02	mg/L	city	composite	06/25/2001 11:31 AM	1B
2-chlorophenol	<	0.02	mg/L	city	comp/split	11/26/2001 10:31 AM	1B
2-chlorophenol	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
2-chlorophenol		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0083 mg/L**			
		Maximum		**0.0100 mg/L**			
2-chlorotoluene	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
2-chlorotoluene	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
2-chlorotoluene	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
2-chlorotoluene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
2-chlorotoluene		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
2-cyclohexyl-4,6-dinitrophenol	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
2-cyclohexyl-4,6-dinitrophenol		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
2-hexanone	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
2-hexanone	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
2-hexanone	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
2-hexanone	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
2-hexanone		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
2-methyl-4,6-dinitrophenol	<	0.02	mg/L	city	composite	06/25/2001 11:31 AM	1B
2-methyl-4,6-dinitrophenol	<	0.02	mg/L	city	comp/split	11/26/2001 10:31 AM	1B

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Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
2-methyl-4,6-dinitrophenol	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
2-methyl-4,6-dinitrophenol		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0083 mg/L**			
		Maximum		**0.0100 mg/L**			
2-methylnaphthalene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
2-methylnaphthalene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
2-methylphenol	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
2-methylphenol		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
2-naphthylamine	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
2-naphthylamine		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
2-nitroaniline	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
2-nitroaniline		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
2-nitrophenol	<	0.02	mg/L	city	composite	06/25/2001 11:31 AM	1B
2-nitrophenol	<	0.02	mg/L	city	comp/split	11/26/2001 10:31 AM	1B
2-nitrophenol	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
2-nitrophenol		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0083 mg/L**			
		Maximum		**0.0100 mg/L**			
2-picoline	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
2-picoline		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
3- & 4-methylphenol	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
3- & 4-methylphenol		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			

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Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
3-(chloromethyl) pyridine hydrochloride	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
3-(chloromethyl) pyridine hydrochloride		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
3,3'-dichlorobenzidine	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
3,3'-dichlorobenzidine	<	0.01	mg/L	city	comp/split	11/26/2001 10:31 AM	1B
3,3'-dichlorobenzidine	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
3,3'-dichlorobenzidine		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
3,3'-dimethoxybenzidine	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
3,3'-dimethoxybenzidine		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
3,3'-dimethylbenzidine	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
3,3'-dimethylbenzidine		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
3-methylcholanthrene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
3-methylcholanthrene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
3-methylphenol	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
3-methylphenol		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
3-nitroaniline	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
3-nitroaniline		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
4,4'-ddd (p,p'-tde)	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
4,4'-ddd (p,p'-tde)		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			

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Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
4,4'-dde (p,p'-ddx)	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
4,4'-dde (p,p'-ddx)		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
4,4'-ddt	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
4,4'-ddt		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
4,4'methylenebis(2-chloroaniline)	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
4,4'methylenebis(2-chloroaniline)		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
4,4'-oxydianiline	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
4,4'-oxydianiline		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
4,6-dinitro-2-methylphenol	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
4,6-dinitro-2-methylphenol		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
4-aminobiphenyl	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
4-aminobiphenyl		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
4-bromophenyl phenyl ether	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
4-bromophenyl phenyl ether	<	0.01	mg/L	city	comp/split	11/26/2001 10:31 AM	1B
4-bromophenyl phenyl ether	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
4-bromophenyl phenyl ether		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
4-chloro-3-methylphenol	<	0.02	mg/L	city	composite	06/25/2001 11:31 AM	1B
4-chloro-3-methylphenol	<	0.02	mg/L	city	comp/split	11/26/2001 10:31 AM	1B
4-chloro-3-methylphenol	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
4-chloro-3-methylphenol		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0083 mg/L**			
		Maximum		**0.0100 mg/L**			

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Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
4-chloroaniline	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
4-chloroaniline		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
4-chlorophenyl phenyl ether	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
4-chlorophenyl phenyl ether	<	0.01	mg/L	city	comp/split	11/26/2001 10:31 AM	1B
4-chlorophenyl phenyl ether	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
4-chlorophenyl phenyl ether		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
4-chlorotoluene	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
4-chlorotoluene	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
4-chlorotoluene	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
4-chlorotoluene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
4-chlorotoluene		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
4-isopropyltoluene	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
4-isopropyltoluene	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
4-isopropyltoluene	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
4-isopropyltoluene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
4-isopropyltoluene		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
4-methyl-2-pentanone	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
4-methyl-2-pentanone	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
4-methyl-2-pentanone	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
4-methyl-2-pentanone	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
4-methyl-2-pentanone		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
4-methylphenol	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
4-methylphenol		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			

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Org Id 1592

Org Name WACKER SILTRONIC CORP Permit Number 469.001

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
4-nitroaniline	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
4-nitroaniline		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
4-nitrobiphenyl	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
4-nitrobiphenyl		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
4-nitrophenol	<	0.04	mg/L	city	composite	06/25/2001 11:31 AM	1B
4-nitrophenol	<	0.04	mg/L	city	comp/split	11/26/2001 10:31 AM	1B
4-nitrophenol	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
4-nitrophenol		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0150 mg/L**			
		Maximum		**0.0200 mg/L**			
5,5-diphenylhydantoin	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
5,5-diphenylhydantoin		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
5-chloro-2-methylaniline	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
5-chloro-2-methylaniline		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
5-nitroacenaphthene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
5-nitroacenaphthene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
5-nitro-o-anisidine	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
5-nitro-o-anisidine		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
5-nitro-o-toluidine	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
5-nitro-o-toluidine		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
7,12-dimethylbenz[a]anthracene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
7,12-dimethylbenz[a]anthracene		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
acenaphthene	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
acenaphthene	<	0.01	mg/L	city	comp/split	11/26/2001 10:31 AM	1B
acenaphthene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
acenaphthene		**Minimum**		**0.0050**	**mg/L**	**Count 3**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
acenaphthylene	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
acenaphthylene	<	0.01	mg/L	city	comp/split	11/26/2001 10:31 AM	1B
acenaphthylene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
acenaphthylene		**Minimum**		**0.0050**	**mg/L**	**Count 3**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
acetone	=	2.9	mg/L	self	grab	03/01/2001 7:30 AM	1B
acetone	=	8.6	mg/L	self	grab	06/07/2001 7:40 AM	1B
acetone	=	3.6	mg/L	self	grab	09/06/2001 7:30 AM	1B
acetone	=	3.6	mg/L	self	grab	12/06/2001 7:30 AM	1B
acetone		**Minimum**		**2.9000**	**mg/L**	**Count 4**	
		Average		**4.6750**	**mg/L**		
		Maximum		**8.6000**	**mg/L**		
acetonitrile	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
acetonitrile	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
acetonitrile	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
acetonitrile	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
acetonitrile		**Minimum**		**0.0050**	**mg/L**	**Count 4**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
acetophenone	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
acetophenone		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
acrolein	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
acrolein	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
acrolein	<	0.05	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
acrolein	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
acrolein	<	0.1	mg/L	city	grab/split	09/24/2001 12:00 PM	1B

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Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
acrolein	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
acrolein		**Minimum**		**0.0050 mg/L**		**Count 6**	
		Average		**0.0158 mg/L**			
		Maximum		**0.0500 mg/L**			
acrylonitrile	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
acrylonitrile	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
acrylonitrile	<	0.025	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
acrylonitrile	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
acrylonitrile	<	0.05	mg/L	city	grab/split	09/24/2001 12:00 PM	1B
acrylonitrile	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
acrylonitrile		**Minimum**		**0.0050 mg/L**		**Count 6**	
		Average		**0.0096 mg/L**			
		Maximum		**0.0250 mg/L**			
alachlor	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
alachlor		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
aldrin	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
aldrin		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
allyl chloride	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
allyl chloride		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
alpha,alpha-dimethylphenethylamine	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
alpha,alpha-dimethylphenethylamine		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
aminoazobenzene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
aminoazobenzene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
anilazine	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
anilazine		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
aniline	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
aniline		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
anthracene	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
anthracene	<	0.01	mg/L	city	comp/split	11/26/2001 10:31 AM	1B
anthracene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
anthracene		**Minimum**		**0.0050**	**mg/L**	**Count 3**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
aramite	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
aramite	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
aramite		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
arsenic	<	0.005	mg/L	self	comp/split	01/23/2001 9:34 AM	1B
arsenic	=	0.0013	mg/L	city	comp/split	01/23/2001 9:34 AM	1B
arsenic	<	0.005	mg/L	self	composite	03/01/2001 7:30 AM	1B
arsenic	<	0.05	mg/L	self	composite	06/07/2001 7:45 AM	1B
arsenic	<	0.001	mg/L	city	composite	06/25/2001 11:31 AM	1B
arsenic	<	0.005	mg/L	self	composite	09/06/2001 7:30 AM	1B
arsenic	=	0.0017	mg/L	city	composite	09/24/2001 12:01 PM	1B
arsenic	=	0.0014	mg/L	city	comp/split	11/26/2001 10:31 AM	1B
arsenic	<		mg/L	self	composite	12/06/2001 7:30 AM	1B
arsenic		**Minimum**		**0.0005**	**mg/L**	**Count 9**	
		Average		**0.0047**	**mg/L**		
		Maximum		**0.0250**	**mg/L**		
azinphos methyl	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
azinphos methyl		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
azobenzene	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
azobenzene	<	0.01	mg/L	city	comp/split	11/26/2001 10:31 AM	1B
azobenzene		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		

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Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
barban	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
barban		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
benzene	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
benzene	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
benzene	<	0.002	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
benzene	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
benzene	<	0.004	mg/L	city	grab/split	09/24/2001 12:00 PM	1B
benzene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
benzene		**Minimum**		**0.0010**	**mg/L**	**Count 6**	
		Average		**0.0038**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
benzidine	<	0.04	mg/L	city	composite	06/25/2001 11:31 AM	1B
benzidine	<	0.04	mg/L	city	comp/split	11/26/2001 10:31 AM	1B
benzidine	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
benzidine		**Minimum**		**0.0050**	**mg/L**	**Count 3**	
		Average		**0.0150**	**mg/L**		
		Maximum		**0.0200**	**mg/L**		
benzo(a)anthracene	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
benzo(a)anthracene	<	0.01	mg/L	city	comp/split	11/26/2001 10:31 AM	1B
benzo(a)anthracene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
benzo(a)anthracene		**Minimum**		**0.0050**	**mg/L**	**Count 3**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
benzo(a)pyrene	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
benzo(a)pyrene	<	0.01	mg/L	city	comp/split	11/26/2001 10:31 AM	1B
benzo(a)pyrene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
benzo(a)pyrene		**Minimum**		**0.0050**	**mg/L**	**Count 3**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
benzo(b)fluoranthene	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
benzo(b)fluoranthene	<	0.01	mg/L	city	comp/split	11/26/2001 10:31 AM	1B
benzo(b)fluoranthene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
benzo(b)fluoranthene		**Minimum**		**0.0050**	**mg/L**	**Count 3**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
benzo(g,h,i)perylene	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
benzo(g,h,i)perylene	<	0.01	mg/L	city	comp/split	11/26/2001 10:31 AM	1B

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Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
benzo(g,h,i)perylene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
benzo(g,h,i)perylene		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
benzo(k)fluoranthene	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
benzo(k)fluoranthene	<	0.01	mg/L	city	comp/split	11/26/2001 10:31 AM	1B
benzo(k)fluoranthene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
benzo(k)fluoranthene		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
benzoic acid	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
benzoic acid		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
benzyl alcohol	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
benzyl alcohol	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
benzyl alcohol		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
benzyl butyl phthalate	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
benzyl butyl phthalate		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
bhc, alpha	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
bhc, alpha		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
bhc, beta	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
bhc, beta		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
bhc, delta	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
bhc, delta		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			

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Org Id 1592

Org Name WACKER SILTRONIC CORP Permit Number 469.001

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
bhc, gamma (lindane)	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
bhc, gamma (lindane)		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
bis(2-chloroethoxy) methane	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
bis(2-chloroethoxy) methane	<	0.01	mg/L	city	comp/split	11/26/2001 10:31 AM	1B
bis(2-chloroethoxy) methane	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
bis(2-chloroethoxy) methane		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
bis(2-chloroethyl) ether	<	0.04	mg/L	city	composite	06/25/2001 11:31 AM	1B
bis(2-chloroethyl) ether	<	0.04	mg/L	city	comp/split	11/26/2001 10:31 AM	1B
bis(2-chloroethyl) ether	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
bis(2-chloroethyl) ether		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0150 mg/L**			
		Maximum		**0.0200 mg/L**			
bis(2-chloroisopropyl) ether	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
bis(2-chloroisopropyl) ether	<	0.01	mg/L	city	comp/split	11/26/2001 10:31 AM	1B
bis(2-chloroisopropyl) ether	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
bis(2-chloroisopropyl) ether		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
bis(2-ethylhexyl)phthalate	=	0.333	mg/L	city	composite	06/25/2001 11:31 AM	1B
bis(2-ethylhexyl)phthalate	=	0.0458	mg/L	city	comp/split	11/26/2001 10:31 AM	1B
bis(2-ethylhexyl)phthalate	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
bis(2-ethylhexyl)phthalate		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.1279 mg/L**			
		Maximum		**0.3330 mg/L**			
bod - 5	=	79	mg/L	city	composite	09/24/2001 12:01 PM	1B
bod - 5	=	138	mg/L	city	composite	09/25/2001 9:30 AM	1B
bod - 5	=	123	mg/L	city	composite	09/26/2001 9:35 AM	1B
bod - 5	=	112	mg/L	city	composite	09/27/2001 9:35 AM	1B
bod - 5	=	178	mg/L	city	composite	09/28/2001 11:12 AM	1B
bod - 5	=	230	mg/L	city	composite	09/29/2001 10:04 AM	1B
bod - 5	=	207	mg/L	city	composite	09/30/2001 10:04 AM	1B
bod - 5		**Minimum**		**79.0000 mg/L**		**Count 7**	
		Average		**152.4286 mg/L**			
		Maximum		**230.0000 mg/L**			
bromobenzene	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
bromobenzene	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
bromobenzene	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
bromobenzene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
bromobenzene		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
bromochloromethane	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
bromochloromethane	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
bromochloromethane	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
bromochloromethane	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
bromochloromethane		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
bromodichloromethane	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
bromodichloromethane	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
bromodichloromethane	<	0.002	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
bromodichloromethane	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
bromodichloromethane	<	0.004	mg/L	city	grab/split	09/24/2001 12:00 PM	1B
bromodichloromethane	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
bromodichloromethane		**Minimum**		**0.0010 mg/L**		**Count 6**	
		Average		**0.0038 mg/L**			
		Maximum		**0.0050 mg/L**			
bromoform	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
bromoform	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
bromoform	<	0.002	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
bromoform	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
bromoform	<	0.004	mg/L	city	grab/split	09/24/2001 12:00 PM	1B
bromoform	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
bromoform		**Minimum**		**0.0010 mg/L**		**Count 6**	
		Average		**0.0038 mg/L**			
		Maximum		**0.0050 mg/L**			
bromomethane	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
bromomethane	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
bromomethane	<	0.005	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
bromomethane	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
bromomethane	<	0.01	mg/L	city	grab/split	09/24/2001 12:00 PM	1B
bromomethane	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
bromomethane		**Minimum**		**0.0025 mg/L**		**Count 6**	
		Average		**0.0046 mg/L**			
		Maximum		**0.0050 mg/L**			

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Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
bromoxynil	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
bromoxynil		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
butyl benzyl phthalate	<	0.04	mg/L	city	composite	06/25/2001 11:31 AM	1B
butyl benzyl phthalate	<	0.04	mg/L	city	comp/split	11/26/2001 10:31 AM	1B
butyl benzyl phthalate	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
butyl benzyl phthalate		**Minimum**		**0.0050**	**mg/L**	**Count 3**	
		Average		**0.0150**	**mg/L**		
		Maximum		**0.0200**	**mg/L**		
captafol	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
captafol		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
captan	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
captan		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
carbaryl	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
carbaryl		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
carbazole	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
carbazole		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
carbofuran	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
carbofuran		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
carbon disulfide	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
carbon disulfide	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
carbon disulfide	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
carbon disulfide	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
carbon disulfide		**Minimum**		**0.0050**	**mg/L**	**Count 4**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		

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Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
carbon tetrachloride	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
carbon tetrachloride	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
carbon tetrachloride	<	0.003	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
carbon tetrachloride	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
carbon tetrachloride	<	0.006	mg/L	city	grab/split	09/24/2001 12:00 PM	1B
carbon tetrachloride	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
carbon tetrachloride		**Minimum**		**0.0015 mg/L**		**Count 6**	
		Average		**0.0041 mg/L**			
		Maximum		**0.0050 mg/L**			
carbophenothion	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
carbophenothion		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
chlordane	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
chlordane		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
chlorfenvinphos	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
chlorfenvinphos		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
chlorobenzene	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
chlorobenzene	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
chlorobenzene	<	0.002	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
chlorobenzene	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
chlorobenzene	<	0.004	mg/L	city	grab/split	09/24/2001 12:00 PM	1B
chlorobenzene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
chlorobenzene		**Minimum**		**0.0010 mg/L**		**Count 6**	
		Average		**0.0038 mg/L**			
		Maximum		**0.0050 mg/L**			
chlorobenzilate	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
chlorobenzilate		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
chloroethane	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
chloroethane	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
chloroethane	<	0.005	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
chloroethane	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
chloroethane	<	0.01	mg/L	city	grab/split	09/24/2001 12:00 PM	1B

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Org Name WACKER SILTRONIC CORP Permit Number 469.001

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
chloroethane	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
chloroethane		**Minimum**		**0.0025 mg/L**		**Count 6**	
		Average		**0.0046 mg/L**			
		Maximum		**0.0050 mg/L**			
chloroform	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
chloroform	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
chloroform	<	0.002	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
chloroform	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
chloroform	<	0.004	mg/L	city	grab/split	09/24/2001 12:00 PM	1B
chloroform	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
chloroform		**Minimum**		**0.0010 mg/L**		**Count 6**	
		Average		**0.0038 mg/L**			
		Maximum		**0.0050 mg/L**			
chloromethane	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
chloromethane	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
chloromethane	<	0.005	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
chloromethane	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
chloromethane	<	0.01	mg/L	city	grab/split	09/24/2001 12:00 PM	1B
chloromethane	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
chloromethane		**Minimum**		**0.0025 mg/L**		**Count 6**	
		Average		**0.0046 mg/L**			
		Maximum		**0.0050 mg/L**			
chloroprene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
chloroprene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
chrysene	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
chrysene	<	0.01	mg/L	city	comp/split	11/26/2001 10:31 AM	1B
chrysene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
chrysene		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
cod	=	1300	mg/L	city	composite	09/24/2001 12:01 PM	1B
cod	=	1200	mg/L	city	composite	09/25/2001 9:30 AM	1B
cod	=	1100	mg/L	city	composite	09/26/2001 9:35 AM	1B
cod	=	880	mg/L	city	composite	09/27/2001 9:35 AM	1B
cod	=	1100	mg/L	city	composite	09/28/2001 11:12 AM	1B
cod	=	1900	mg/L	city	composite	09/29/2001 10:04 AM	1B

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Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
cod	=	1100	mg/L	city	composite	09/30/2001 10:04 AM	1B
cod		**Minimum**		**880.0000**	**mg/L**	**Count 7**	
		Average		**1,225.7143**	**mg/L**		
		Maximum		**1,900.0000**	**mg/L**		
coumaphos	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
coumaphos		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
crotoxyphos	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
crotoxyphos		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
dalapon	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
dalapon		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
demeton-o	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
demeton-o		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
demeton-s	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
demeton-s		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
di(2-ethylhexyl)adipate	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
di(2-ethylhexyl)adipate		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
diallate (trans or cis)	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
diallate (trans or cis)		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
dibenzo(a,e)pyrene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
dibenzo(a,e)pyrene		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		

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Org Name WACKER SILTRONIC CORP Permit Number 469.001

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
dibenzo(a,h)anthracene	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
dibenzo(a,h)anthracene	<	0.01	mg/L	city	comp/split	11/26/2001 10:31 AM	1B
dibenzo(a,h)anthracene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
dibenzo(a,h)anthracene		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
dibenzo(a,j)acridine	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
dibenzo(a,j)acridine		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
dibenzofuran	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
dibenzofuran		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
dibromochloromethane	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
dibromochloromethane	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
dibromochloromethane	<	0.001	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
dibromochloromethane	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
dibromochloromethane	<	0.002	mg/L	city	grab/split	09/24/2001 12:00 PM	1B
dibromochloromethane	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
dibromochloromethane		**Minimum**		**0.0005 mg/L**		**Count 6**	
		Average		**0.0036 mg/L**			
		Maximum		**0.0050 mg/L**			
dibromomethane	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
dibromomethane	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
dibromomethane	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
dibromomethane	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
dibromomethane	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
dibromomethane		**Minimum**		**0.0050 mg/L**		**Count 5**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
dicamba	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
dicamba		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			

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Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
dichlone	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
dichlone		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
dichlorodifluoromethane (freon-12)	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
dichlorodifluoromethane (freon-12)	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
dichlorodifluoromethane (freon-12)	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
dichlorodifluoromethane (freon-12)	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
dichlorodifluoromethane (freon-12)		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
dichlorovos	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
dichlorovos		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
dicrotophos	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
dicrotophos		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
dieldrin	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
dieldrin		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
diethyl phthalate	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
diethyl phthalate	<	0.01	mg/L	city	comp/split	11/26/2001 10:31 AM	1B
diethyl phthalate	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
diethyl phthalate		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
diethyl sulfate	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
diethyl sulfate	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
diethyl sulfate		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			

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Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
diethylstilbesterol	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
diethylstilbesterol		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
dimethoate	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
dimethoate		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
dimethyl phthalate	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
dimethyl phthalate	<	0.01	mg/L	city	comp/split	11/26/2001 10:31 AM	1B
dimethyl phthalate	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
dimethyl phthalate		**Minimum**		**0.0050**	**mg/L**	**Count 3**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
di-n-butyl phthalate	<	0.05	mg/L	city	composite	06/25/2001 11:31 AM	1B
di-n-butyl phthalate	<	0.05	mg/L	city	comp/split	11/26/2001 10:31 AM	1B
di-n-butyl phthalate	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
di-n-butyl phthalate		**Minimum**		**0.0050**	**mg/L**	**Count 3**	
		Average		**0.0183**	**mg/L**		
		Maximum		**0.0250**	**mg/L**		
dinocap	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
dinocap		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
di-n-octyl phthalate	<	0.02	mg/L	city	composite	06/25/2001 11:31 AM	1B
di-n-octyl phthalate	<	0.02	mg/L	city	comp/split	11/26/2001 10:31 AM	1B
di-n-octyl phthalate	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
di-n-octyl phthalate		**Minimum**		**0.0050**	**mg/L**	**Count 3**	
		Average		**0.0083**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
dinoseb	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
dinoseb		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		

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Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
diphenylamine	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
diphenylamine		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
disulfoton	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
disulfoton		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
endosulfan I	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
endosulfan I		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
endosulfan II	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
endosulfan II		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
endosulfan sulfate	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
endosulfan sulfate		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
endrin	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
endrin		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
endrin aldehyde	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
endrin aldehyde		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
endrin ketone	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
endrin ketone		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
epn	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
epn		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		

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Org Name WACKER SILTRONIC CORP Permit Number 469.001

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
ethion	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
ethion		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
ethyl benzene	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
ethyl benzene	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
ethyl benzene	<	0.003	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
ethyl benzene	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
ethyl benzene	<	0.006	mg/L	city	grab/split	09/24/2001 12:00 PM	1B
ethyl benzene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
ethyl benzene		**Minimum**		**0.0015 mg/L**		**Count 6**	
		Average		**0.0041 mg/L**			
		Maximum		**0.0050 mg/L**			
ethyl carbamate	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
ethyl carbamate		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
ethyl methacrylate	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
ethyl methacrylate		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
ethyl methanesulfonate	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
ethyl methanesulfonate		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
famphur	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
famphur		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
fensulfothion	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
fensulfothion		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
fenthion	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
fenthion		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			

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Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
fluchloralin	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
fluchloralin		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
fluoranthene	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
fluoranthene	<	0.01	mg/L	city	comp/split	11/26/2001 10:31 AM	1B
fluoranthene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
fluoranthene		**Minimum**		**0.0050**	**mg/L**	**Count 3**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
fluorene	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
fluorene	<	0.01	mg/L	city	comp/split	11/26/2001 10:31 AM	1B
fluorene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
fluorene		**Minimum**		**0.0050**	**mg/L**	**Count 3**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
fluoride	<	1	mg/L	city	composite	06/25/2001 11:31 AM	1B
fluoride	=	3	mg/L	city	composite	09/24/2001 12:01 PM	1B
fluoride	<	1	mg/L	city	comp/split	11/26/2001 10:31 AM	1B
fluoride		**Minimum**		**0.5000**	**mg/L**	**Count 3**	
		Average		**1.3333**	**mg/L**		
		Maximum		**3.0000**	**mg/L**		
heptachlor	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
heptachlor		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
heptachlor epoxide	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
heptachlor epoxide		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
hexachlorobenzene	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
hexachlorobenzene	<	0.01	mg/L	city	comp/split	11/26/2001 10:31 AM	1B
hexachlorobenzene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
hexachlorobenzene		**Minimum**		**0.0050**	**mg/L**	**Count 3**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
hexachlorobutadiene	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
hexachlorobutadiene	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B

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Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
hexachlorobutadiene	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
hexachlorobutadiene	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
hexachlorobutadiene	<	0.01	mg/L	city	comp/split	11/26/2001 10:31 AM	1B
hexachlorobutadiene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
hexachlorobutadiene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
hexachlorobutadiene		**Minimum**		**0.0050 mg/L**		**Count 7**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
hexachlorocyclopentadiene	<	0.02	mg/L	city	composite	06/25/2001 11:31 AM	1B
hexachlorocyclopentadiene	<	0.02	mg/L	city	comp/split	11/26/2001 10:31 AM	1B
hexachlorocyclopentadiene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
hexachlorocyclopentadiene		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0083 mg/L**			
		Maximum		**0.0100 mg/L**			
hexachloroethane	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
hexachloroethane	<	0.01	mg/L	city	comp/split	11/26/2001 10:31 AM	1B
hexachloroethane	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
hexachloroethane		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
hexachlorophene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
hexachlorophene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
hexachloropropene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
hexachloropropene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
hexamethyl phosphoramide	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
hexamethyl phosphoramide		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
hydroquinone	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
hydroquinone		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
indeno (1,2,3-cd) pyrene	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
indeno (1,2,3-cd) pyrene	<	0.01	mg/L	city	comp/split	11/26/2001 10:31 AM	1B

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Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
indeno (1,2,3-cd) pyrene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
indeno (1,2,3-cd) pyrene		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
isobutyl alcohol	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
isobutyl alcohol		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
isodrin	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
isodrin		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
isophorone	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
isophorone	<	0.01	mg/L	city	comp/split	11/26/2001 10:31 AM	1B
isophorone	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
isophorone		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
isopropylbenzene	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
isopropylbenzene	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
isopropylbenzene	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
isopropylbenzene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
isopropylbenzene		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
isosafrole	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
isosafrole		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
kepone	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
kepone		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
leptophos	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
leptophos		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			

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Org Name WACKER SILTRONIC CORP Permit Number 469.001

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
malathion	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
malathion		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
maleic anhydride	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
maleic anhydride		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
mcpa	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
mcpa		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
mcpp	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
mcpp		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
mestranol	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
mestranol		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
methapyrilene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
methapyrilene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
methoxychlor	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
methoxychlor		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
methyl iodide	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
methyl iodide	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
methyl iodide	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
methyl iodide	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
methyl iodide		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			

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Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
methyl parathion	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
methyl parathion		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
methylacrylonitrile	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
methylacrylonitrile		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
methylene chloride	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
methylene chloride	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
methylene chloride	<	0.005	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
methylene chloride	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
methylene chloride	<	0.01	mg/L	city	grab/split	09/24/2001 12:00 PM	1B
methylene chloride	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
methylene chloride		**Minimum**		**0.0025 mg/L**		**Count 6**	
		Average		**0.0046 mg/L**			
		Maximum		**0.0050 mg/L**			
methylmethanesulfonate	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
methylmethanesulfonate		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
mevinphos	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
mevinphos		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
mexacarbate	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
mexacarbate		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
mirex	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
mirex		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
molybdenum	<	0.2	mg/L	city	comp/split	01/23/2001 9:34 AM	1B
molybdenum	=	0.03	mg/L	self	comp/split	01/23/2001 9:34 AM	1B
molybdenum	<	0.2	mg/L	city	composite	06/25/2001 11:31 AM	1B
molybdenum	<	0.2	mg/L	city	composite	09/24/2001 12:01 PM	1B

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Org Id 1592

Org Name WACKER SILTRONIC CORP Permit Number 469.001

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
molybdenum	<	0.2	mg/L	city	comp/split	11/26/2001 10:31 AM	1B
molybdenum		**Minimum**		**0.0300**	**mg/L**	**Count 5**	
		Average		**0.0860**	**mg/L**		
		Maximum		**0.1000**	**mg/L**		
monocrotophos	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
monocrotophos		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
naled	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
naled		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
naphthalene	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
naphthalene	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
naphthalene	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
naphthalene	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
naphthalene	<	0.01	mg/L	city	comp/split	11/26/2001 10:31 AM	1B
naphthalene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
naphthalene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
naphthalene		**Minimum**		**0.0050**	**mg/L**	**Count 7**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
n-butylbenzene	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
n-butylbenzene	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
n-butylbenzene	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
n-butylbenzene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
n-butylbenzene		**Minimum**		**0.0050**	**mg/L**	**Count 4**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
nicotine	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
nicotine		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
nitrobenzene	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
nitrobenzene	<	0.01	mg/L	city	comp/split	11/26/2001 10:31 AM	1B

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
nitrobenzene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
nitrobenzene		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
nitrofen	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
nitrofen		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
nitroquinoline-1-oxide	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
nitroquinoline-1-oxide		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
n-ninitrosopiperidine	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
n-ninitrosopiperidine		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
n-nitrosodibutylamine	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
n-nitrosodibutylamine		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
n-nitrosodiethylamine	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
n-nitrosodiethylamine		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
n-nitrosodimethylamine	<	0.04	mg/L	city	composite	06/25/2001 11:31 AM	1B
n-nitrosodimethylamine	<	0.04	mg/L	city	comp/split	11/26/2001 10:31 AM	1B
n-nitrosodimethylamine	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
n-nitrosodimethylamine		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0150 mg/L**			
		Maximum		**0.0200 mg/L**			
n-nitroso-di-n-propylamine	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
n-nitroso-di-n-propylamine	<	0.01	mg/L	city	comp/split	11/26/2001 10:31 AM	1B
n-nitroso-di-n-propylamine	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
n-nitroso-di-n-propylamine		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
n-nitrosodiphenylamine	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B

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Org Id 1592

Org Name WACKER SILTRONIC CORP Permit Number 469.001

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
n-nitrosodiphenylamine	<	0.01	mg/L	city	comp/split	11/26/2001 10:31 AM	1B
n-nitrosodiphenylamine	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
n-nitrosodiphenylamine		**Minimum**		**0.0050**	**mg/L**	**Count 3**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
n-nitrosomethylethylamine	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
n-nitrosomethylethylamine	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
n-nitrosomethylethylamine		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
n-nitrosomorpholine	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
n-nitrosomorpholine		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
n-nitrosopyrrolidine	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
n-nitrosopyrrolidine		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
n-propylbenzene	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
n-propylbenzene	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
n-propylbenzene	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
n-propylbenzene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
n-propylbenzene		**Minimum**		**0.0050**	**mg/L**	**Count 4**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
o-anisidine	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
o-anisidine		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
octamethylpyrophosphoramide	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
octamethylpyrophosphoramide		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
o-toluidine	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
o-toluidine		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		

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Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
o-xylene	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
o-xylene	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
o-xylene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
o-xylene		**Minimum**		**0.0050**	**mg/L**	**Count 3**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
parathion	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
parathion		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
p-benzoquinone	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
p-benzoquinone	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
p-benzoquinone		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
pcb 1016	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
pcb 1016		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
pcb 1221	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
pcb 1221		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
pcb 1232	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
pcb 1232		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
pcb 1242	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
pcb 1242		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
pcb 1248	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
pcb 1248		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		

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Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
pcb 1254	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
pcb 1254		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
pcb 1260	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
pcb 1260		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
p-cresidine	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
p-cresidine		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
p-dimethylaminoazobenzene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
p-dimethylaminoazobenzene		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
pentachlorobenzene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
pentachlorobenzene		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
pentachloroethane	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
pentachloroethane		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
pentachloronitrobenzene (pcnb)	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
pentachloronitrobenzene (pcnb)		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
pentachlorophenol	<	0.04	mg/L	city	composite	06/25/2001 11:31 AM	1B
pentachlorophenol	<	0.04	mg/L	city	comp/split	11/26/2001 10:31 AM	1B
pentachlorophenol	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
pentachlorophenol		**Minimum**		**0.0050**	**mg/L**	**Count 3**	
		Average		**0.0150**	**mg/L**		
		Maximum		**0.0200**	**mg/L**		
pH	=	9.1	std units	city	grab	01/23/2001 9:32 AM	1B
pH	=		std units	self	continuous	01/31/2001	1B
pH	=		std units	self	continuous	02/28/2001	1B

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Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
pH	=		std units	self	continuous	03/30/2001	1B
pH	=		std units	self	continuous	03/30/2001	1B
pH	=		std units	self	continuous	04/30/2001	1B
pH	=	11.8	std units	self	grab	05/22/2001 5:45 PM	1B
pH	=		std units	self	continuous	05/31/2001	1B
pH	=	9.4	std units	city	grab/split	06/25/2001 11:30 AM	1B
pH	=		std units	self	continuous	06/30/2001	1B
pH	=		std units	self	continuous	07/31/2001	1B
pH	=	9.5	std units	city	grab/split	09/24/2001 12:00 PM	1B
pH	=		std units	self	continuous	09/30/2001	1B
pH	=		std units	self	continuous	10/31/2001	1B
pH	=	8.8	std units	city	grab/split	11/26/2001 10:30 AM	1B
pH	=		std units	self	continuous	11/30/2001	1B
pH	=		std units	self	continuous	12/31/2001	1B
pH			**Minimum**		**8.8000 std units**	**Count 17**	
			Maximum		**11.8000 std units**		
phenacetin	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
phenacetin			**Minimum**		**0.0050 mg/L**	**Count 1**	
			Average		**0.0050 mg/L**		
			Maximum		**0.0050 mg/L**		
phenanthrene	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
phenanthrene	<	0.01	mg/L	city	comp/split	11/26/2001 10:31 AM	1B
phenanthrene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
phenanthrene			**Minimum**		**0.0050 mg/L**	**Count 3**	
			Average		**0.0050 mg/L**		
			Maximum		**0.0050 mg/L**		
phenobarbital	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
phenobarbital			**Minimum**		**0.0050 mg/L**	**Count 1**	
			Average		**0.0050 mg/L**		
			Maximum		**0.0050 mg/L**		
phenol	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
phenol			**Minimum**		**0.0050 mg/L**	**Count 1**	
			Average		**0.0050 mg/L**		
			Maximum		**0.0050 mg/L**		
phenols - total (epa 420)	<	0.02	mg/L	city	composite	06/25/2001 11:31 AM	1B

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Org Name WACKER SILTRONIC CORP Permit Number 469.001

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
phenols - total (epa 420)	<	0.02	mg/L	city	comp/split	11/26/2001 10:31 AM	1B
phenols - total (epa 420)		**Minimum**		**0.0100 mg/L**		**Count 2**	
		Average		**0.0100 mg/L**			
		Maximum		**0.0100 mg/L**			
phorate	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
phorate		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
phosalone	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
phosalone		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
phosmet	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
phosmet		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
phosphamidon	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
phosphamidon		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
phthalic anhydride	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
phthalic anhydride		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
piperonyl sulfoxide	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
piperonyl sulfoxide		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
pronamide	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
pronamide		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
propionitrile	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
propionitrile		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			

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Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
propylthiouracil	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
propylthiouracil		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
pyrene	<	0.01	mg/L	city	composite	06/25/2001 11:31 AM	1B
pyrene	<	0.01	mg/L	city	comp/split	11/26/2001 10:31 AM	1B
pyrene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
pyrene		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
pyridine	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
pyridine		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
resorcinol	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
resorcinol		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
safrole	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
safrole		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
sec-butylbenzene	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
sec-butylbenzene	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
sec-butylbenzene	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
sec-butylbenzene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
sec-butylbenzene		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
solids - total	=	459	mg/L	city	composite	06/25/2001 11:31 AM	1B
solids - total	=	469	mg/L	city	composite	09/24/2001 12:01 PM	1B
solids - total	=	443	mg/L	city	composite	09/25/2001 9:30 AM	1B
solids - total	=	454	mg/L	city	composite	09/26/2001 9:35 AM	1B
solids - total	=	381	mg/L	city	composite	09/27/2001 9:35 AM	1B
solids - total	=	417	mg/L	city	composite	09/28/2001 11:12 AM	1B
solids - total	=	690	mg/L	city	composite	09/29/2001 10:04 AM	1B
solids - total	=	538	mg/L	city	composite	09/30/2001 10:04 AM	1B

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
solids - total	=	466	mg/L	city	comp/split	11/26/2001 10:31 AM	1B
solids - total		**Minimum**		**381.0000 mg/L**		**Count 9**	
		Average		**479.6667 mg/L**			
		Maximum		**690.0000 mg/L**			
solids - total dissolved	=	380	mg/L	city	composite	06/25/2001 11:31 AM	1B
solids - total dissolved	=	430	mg/L	city	composite	09/24/2001 12:01 PM	1B
solids - total dissolved	=	420	mg/L	city	composite	09/25/2001 9:30 AM	1B
solids - total dissolved	=	310	mg/L	city	composite	09/26/2001 9:35 AM	1B
solids - total dissolved	=	360	mg/L	city	composite	09/27/2001 9:35 AM	1B
solids - total dissolved	=	350	mg/L	city	composite	09/28/2001 11:12 AM	1B
solids - total dissolved	=	470	mg/L	city	composite	09/29/2001 10:04 AM	1B
solids - total dissolved	=	300	mg/L	city	composite	09/30/2001 10:04 AM	1B
solids - total dissolved	=	390	mg/L	city	comp/split	11/26/2001 10:31 AM	1B
solids - total dissolved		**Minimum**		**300.0000 mg/L**		**Count 9**	
		Average		**378.8889 mg/L**			
		Maximum		**470.0000 mg/L**			
solids - total suspended	=	347	mg/L	city	comp/split	01/23/2001 9:34 AM	1B
solids - total suspended	=	135	mg/L	self	composite	03/01/2001 7:30 AM	1B
solids - total suspended	=	158	mg/L	self	composite	06/07/2001 7:45 AM	1B
solids - total suspended	=	77.6	mg/L	city	composite	06/25/2001 11:31 AM	1B
solids - total suspended	=	225	mg/L	self	composite	09/06/2001 7:30 AM	1B
solids - total suspended	=	101	mg/L	self	composite	09/13/2001 9:00 AM	1B
solids - total suspended	=	41	mg/L	city	composite	09/24/2001 12:01 PM	1B
solids - total suspended	=	23	mg/L	city	composite	09/25/2001 9:30 AM	1B
solids - total suspended	=	140	mg/L	city	composite	09/26/2001 9:35 AM	1B
solids - total suspended	=	365	mg/L	self	composite	09/27/2001 9:00 AM	1B
solids - total suspended	=	25	mg/L	city	composite	09/27/2001 9:35 AM	1B
solids - total suspended	=	66	mg/L	city	composite	09/28/2001 11:12 AM	1B
solids - total suspended	=	217	mg/L	city	composite	09/29/2001 10:04 AM	1B
solids - total suspended	=	242	mg/L	city	composite	09/30/2001 10:04 AM	1B
solids - total suspended	=	78	mg/L	city	comp/split	11/26/2001 10:31 AM	1B
solids - total suspended	=	138	mg/L	self	composite	12/06/2001 7:30 AM	1B
solids - total suspended		**Minimum**		**23.0000 mg/L**		**Count 16**	
		Average		**148.6625 mg/L**			
		Maximum		**365.0000 mg/L**			
styrene	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
styrene	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
styrene	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
styrene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
styrene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
styrene		**Minimum**		**0.0050**	**mg/L**	**Count 5**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
sulfallate	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
sulfallate		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
terbufos	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
terbufos		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
tert-butylbenzene	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
tert-butylbenzene	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
tert-butylbenzene	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
tert-butylbenzene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
tert-butylbenzene		**Minimum**		**0.0050**	**mg/L**	**Count 4**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
tetrachloroethene	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
tetrachloroethene	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
tetrachloroethene	<	0.003	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
tetrachloroethene	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
tetrachloroethene	<	0.006	mg/L	city	grab/split	09/24/2001 12:00 PM	1B
tetrachloroethene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
tetrachloroethene		**Minimum**		**0.0015**	**mg/L**	**Count 6**	
		Average		**0.0041**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
tetrachlorvinphos	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
tetrachlorvinphos		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
tetraethyl pyrophosphate	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
tetraethyl pyrophosphate		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
thionazine	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
thionazine		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
thiophenol (benzenethiol)	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
thiophenol (benzenethiol)		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
toluene	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
toluene	=	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
toluene	<	0.003	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
toluene	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
toluene	<	0.006	mg/L	city	grab/split	09/24/2001 12:00 PM	1B
toluene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
toluene		**Minimum**		**0.0015**	**mg/L**	**Count 6**	
		Average		**0.0049**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
toluene diisocyanate	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
toluene diisocyanate		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
toxaphene	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
toxaphene		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
trichloroethene (tce)	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
trichloroethene (tce)	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
trichloroethene (tce)	<	0.002	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
trichloroethene (tce)	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
trichloroethene (tce)	<	0.004	mg/L	city	grab/split	09/24/2001 12:00 PM	1B
trichloroethene (tce)	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
trichloroethene (tce)		**Minimum**		**0.0010**	**mg/L**	**Count 6**	
		Average		**0.0038**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
trichlorofluoromethane (freon-11)	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
trichlorofluoromethane (freon-11)	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
trichlorofluoromethane (freon-11)	<	0.005	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
trichlorofluoromethane (freon-11)	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
trichlorofluoromethane (freon-11)	<	0.01	mg/L	city	grab/split	09/24/2001 12:00 PM	1B

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
trichlorofluoromethane (freon-11)	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
trichlorofluoromethane (freon-11)		**Minimum**		**0.0025 mg/L**		**Count 6**	
		Average		**0.0046 mg/L**			
		Maximum		**0.0050 mg/L**			
trifluraline	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
trifluraline		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
trimethyl phosphate	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
trimethyl phosphate		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
tri-p-tolyl phosphate(h)	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
tri-p-tolyl phosphate(h)		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
tris(2,3-dibromopropyl) phosphate	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
tris(2,3-dibromopropyl) phosphate		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
vinyl acetate	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
vinyl acetate	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
vinyl acetate	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
vinyl acetate		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
vinyl chloride	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
vinyl chloride	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
vinyl chloride	<	0.005	mg/L	city	grab/split	06/25/2001 11:30 AM	1B
vinyl chloride	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
vinyl chloride	<	0.01	mg/L	city	grab/split	09/24/2001 12:00 PM	1B
vinyl chloride	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
vinyl chloride		**Minimum**		**0.0025 mg/L**		**Count 6**	
		Average		**0.0046 mg/L**			
		Maximum		**0.0050 mg/L**			
xylene, m-	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
xylene, m-	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
xylene, m-	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B

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Org Id 1592

Org Name WACKER SILTRONIC CORP Permit Number 469.001

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
xylene, m-	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
xylene, m-		**Minimum**		**0.0050**	**mg/L**	**Count 4**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
xylene, o-	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
xylene, o-	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
xylene, o-	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
xylene, o-	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
xylene, o-		**Minimum**		**0.0050**	**mg/L**	**Count 4**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
xylene, p-	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
xylene, p-	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
xylene, p-	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
xylene, p-	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
xylene, p-		**Minimum**		**0.0050**	**mg/L**	**Count 4**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
xylenes, total	<	0.01	mg/L	self	grab	03/01/2001 7:30 AM	1B
xylenes, total	<	0.01	mg/L	self	grab	06/07/2001 7:40 AM	1B
xylenes, total	<	0.01	mg/L	self	grab	09/06/2001 7:30 AM	1B
xylenes, total	<	0.01	mg/L	self	grab	12/06/2001 7:30 AM	1B
xylenes, total		**Minimum**		**0.0050**	**mg/L**	**Count 4**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		

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Org Id 1592

Org Name WACKER SILTRONIC CORP Permit Number 1200Z

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
copper	=	0.0198	mg/L	self	grab	05/10/2000 11:20 AM	01
copper	=	0.00872	mg/L	self	grab	05/10/2000 11:30 AM	02
copper	=	0.00681	mg/L	self	grab	05/10/2000 11:45 AM	03
copper		**Minimum**		**0.0068 mg/L**		**Count 3**	
		Average		**0.0118 mg/L**			
		Maximum		**0.0198 mg/L**			
lead	=	0.00902	mg/L	self	grab	05/10/2000 11:20 AM	01
lead	=	0.00705	mg/L	self	grab	05/10/2000 11:30 AM	02
lead	=	0.00278	mg/L	self	grab	05/10/2000 11:45 AM	03
lead		**Minimum**		**0.0028 mg/L**		**Count 3**	
		Average		**0.0063 mg/L**			
		Maximum		**0.0090 mg/L**			
oil/grease - total	<	5	mg/L	self	grab	05/10/2000 11:20 AM	01
oil/grease - total	<	5	mg/L	self	grab	05/10/2000 11:30 AM	02
oil/grease - total	<	5	mg/L	self	grab	05/10/2000 11:45 AM	03
oil/grease - total		**Minimum**		**2.5000 mg/L**		**Count 3**	
		Average		**2.5000 mg/L**			
		Maximum		**2.5000 mg/L**			
pH	=	7	std units	self	grab	05/10/2000 11:20 AM	01
pH	=	6.7	std units	self	grab	05/10/2000 11:30 AM	02
pH	=	6.7	std units	self	grab	05/10/2000 11:45 AM	03
pH		**Minimum**		**6.7000 std units**		**Count 3**	
		Maximum		**7.0000 std units**			
solids - total suspended	=	151.5	mg/L	self	grab	05/10/2000 11:20 AM	01
solids - total suspended	=	14.75	mg/L	self	grab	07/03/2000 3:30 PM	01
solids - total suspended	=	27.5	mg/L	self	grab	05/10/2000 11:30 AM	02
solids - total suspended	=	19	mg/L	self	grab	05/10/2000 11:45 AM	03
solids - total suspended		**Minimum**		**14.7500 mg/L**		**Count 4**	
storm water		**Average**		**53.1875 mg/L**			
		Maximum		**151.5000 mg/L**			
zinc	=	0.347	mg/L	self	grab	05/10/2000 11:20 AM	01
zinc	=	0.143	mg/L	self	grab	05/10/2000 11:30 AM	02
zinc	=	0.202	mg/L	self	grab	05/10/2000 11:45 AM	03
zinc		**Minimum**		**0.1430 mg/L**		**Count 3**	
		Average		**0.2307 mg/L**			
		Maximum		**0.3470 mg/L**			

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Org Id 1592

Org Name WACKER SILTRONIC CORP

Permit Number 469.001

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
1,1-dichloroethane	<	0.002	mg/L	city	grab	09/28/2000 11:40 AM	1B
1,1-dichloroethane		**Minimum**		**0.0010 mg/L**		**Count 5**	
		Average		**0.0042 mg/L**			
		Maximum		**0.0050 mg/L**			
1,1-dichloroethene	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
1,1-dichloroethene	<	0.01	mg/L	self	certified	06/30/2000	1B
1,1-dichloroethene	<	0.015	mg/L	city	grab/split	07/21/2000 9:31 AM	1B
1,1-dichloroethene	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
1,1-dichloroethene	<	0.003	mg/L	city	grab	09/28/2000 11:40 AM	1B
1,1-dichloroethene		**Minimum**		**0.0015 mg/L**		**Count 5**	
		Average		**0.0048 mg/L**			
		Maximum		**0.0075 mg/L**			
1,1-dichloropropene	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
1,1-dichloropropene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2,3,4-diepoxybutane	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
1,2,3,4-diepoxybutane		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2,3-trichlorobenzene	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
1,2,3-trichlorobenzene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2,3-trichloropropane	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
1,2,3-trichloropropane	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
1,2,3-trichloropropane		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2,4-trichlorobenzene	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
1,2,4-trichlorobenzene	<	0.01	mg/L	self	certified	06/30/2000	1B
1,2,4-trichlorobenzene	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
1,2,4-trichlorobenzene	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
1,2,4-trichlorobenzene		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0063 mg/L**			
		Maximum		**0.0100 mg/L**			

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Org Id 1592

Org Name WACKER SILTRONIC CORP Permit Number 469.001

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
1,2-dichloroethene (trans)	<	0.01	mg/L	city	grab/split	07/21/2000 9:31 AM	1B
1,2-dichloroethene (trans)	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
1,2-dichloroethene (trans)	<	0.002	mg/L	city	grab	09/28/2000 11:40 AM	1B
1,2-dichloroethene (trans)		**Minimum**		**0.0010 mg/L**		**Count 5**	
		Average		**0.0042 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2-dichloropropane	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
1,2-dichloropropane	<	0.01	mg/L	self	certified	06/30/2000	1B
1,2-dichloropropane	<	0.015	mg/L	city	grab/split	07/21/2000 9:31 AM	1B
1,2-dichloropropane	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
1,2-dichloropropane	<	0.003	mg/L	city	grab	09/28/2000 11:40 AM	1B
1,2-dichloropropane		**Minimum**		**0.0015 mg/L**		**Count 5**	
		Average		**0.0048 mg/L**			
		Maximum		**0.0075 mg/L**			
1,3,5-trimethylbenzene	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
1,3,5-trimethylbenzene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,3-dichloro-2-propanol	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
1,3-dichloro-2-propanol		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,3-dichlorobenzene	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
1,3-dichlorobenzene	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
1,3-dichlorobenzene	<	0.01	mg/L	self	certified	06/30/2000	1B
1,3-dichlorobenzene	<	0.01	mg/L	self	certified	06/30/2000	1B
1,3-dichlorobenzene	<	0.01	mg/L	city	grab/split	07/21/2000 9:31 AM	1B
1,3-dichlorobenzene	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
1,3-dichlorobenzene	<	0.002	mg/L	city	grab	09/28/2000 11:40 AM	1B
1,3-dichlorobenzene	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
1,3-dichlorobenzene		**Minimum**		**0.0010 mg/L**		**Count 8**	
		Average		**0.0051 mg/L**			
		Maximum		**0.0100 mg/L**			
1,3-dichloropropane	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
1,3-dichloropropane		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,3-dichloropropene (cis)	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
1,3-dichloropropene (cis)	<	0.01	mg/L	self	certified	06/30/2000	1B

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Org Id 1592

Org Name WACKER SILTRONIC CORP Permit Number 469.001

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
1,4-dichlorobenzene	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
1,4-dichlorobenzene		**Minimum**		**0.0010 mg/L**		**Count 8**	
		Average		**0.0051 mg/L**			
		Maximum		**0.0100 mg/L**			
2,2-dichloropropane	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
2,2-dichloropropane		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
2,4,6-trichlorophenol	<	0.04	mg/L	city	composite	06/21/2000 11:12 AM	1B
2,4,6-trichlorophenol	<	0.01	mg/L	self	certified	06/30/2000	1B
2,4,6-trichlorophenol	<	0.02	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
2,4,6-trichlorophenol		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0117 mg/L**			
		Maximum		**0.0200 mg/L**			
2,4-dichlorophenol	<	0.04	mg/L	city	composite	06/21/2000 11:12 AM	1B
2,4-dichlorophenol	<	0.01	mg/L	self	certified	06/30/2000	1B
2,4-dichlorophenol	<	0.02	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
2,4-dichlorophenol		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0117 mg/L**			
		Maximum		**0.0200 mg/L**			
2,4-dimethylphenol	<	0.04	mg/L	city	composite	06/21/2000 11:12 AM	1B
2,4-dimethylphenol	<	0.01	mg/L	self	certified	06/30/2000	1B
2,4-dimethylphenol	<	0.02	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
2,4-dimethylphenol		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0117 mg/L**			
		Maximum		**0.0200 mg/L**			
2,4-dinitrophenol	<	0.08	mg/L	city	composite	06/21/2000 11:12 AM	1B
2,4-dinitrophenol	<	0.01	mg/L	self	certified	06/30/2000	1B
2,4-dinitrophenol	<	0.04	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
2,4-dinitrophenol		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0217 mg/L**			
		Maximum		**0.0400 mg/L**			
2,4-dinitrotoluene	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
2,4-dinitrotoluene	<	0.01	mg/L	self	certified	06/30/2000	1B
2,4-dinitrotoluene	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
2,4-dinitrotoluene		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0067 mg/L**			
		Maximum		**0.0100 mg/L**			

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Org Id 1592

Org Name WACKER SILTRONIC CORP Permit Number 469.001

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
2-chlorotoluene	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
2-chlorotoluene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
2-hexanone	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
2-hexanone	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
2-hexanone		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
2-hydroxypropionitrile	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
2-hydroxypropionitrile		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
2-methyl-4,6-dinitrophenol	<	0.04	mg/L	city	composite	06/21/2000 11:12 AM	1B
2-methyl-4,6-dinitrophenol	<	0.01	mg/L	self	certified	06/30/2000	1B
2-methyl-4,6-dinitrophenol	<	0.02	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
2-methyl-4,6-dinitrophenol		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0117 mg/L**			
		Maximum		**0.0200 mg/L**			
2-methylphenol	<	0.01	mg/L	self	certified	06/30/2000	1B
2-methylphenol		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
2-nitrophenol	<	0.04	mg/L	city	composite	06/21/2000 11:12 AM	1B
2-nitrophenol	<	0.01	mg/L	self	certified	06/30/2000	1B
2-nitrophenol	<	0.02	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
2-nitrophenol		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0117 mg/L**			
		Maximum		**0.0200 mg/L**			
2-picoline	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
2-picoline		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
3,3'-dichlorobenzidine	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
3,3'-dichlorobenzidine	<	0.01	mg/L	self	certified	06/30/2000	1B

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Org Id 1592

Org Name WACKER SILTRONIC CORP Permit Number 469.001

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
4-chlorophenyl phenyl ether	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
4-chlorophenyl phenyl ether		**Minimum**		**0.0050**	**mg/L**	**Count 3**	
		Average		**0.0067**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
4-chlorotoluene	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
4-chlorotoluene		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
4-isopropyltoluene	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
4-isopropyltoluene		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
4-methyl-2-pentanone	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
4-methyl-2-pentanone	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
4-methyl-2-pentanone		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
4-methylphenol	<	0.01	mg/L	self	certified	06/30/2000	1B
4-methylphenol		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
4-nitrophenol	<	0.08	mg/L	city	composite	06/21/2000 11:12 AM	1B
4-nitrophenol	<	0.01	mg/L	self	certified	06/30/2000	1B
4-nitrophenol	<	0.04	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
4-nitrophenol		**Minimum**		**0.0050**	**mg/L**	**Count 3**	
		Average		**0.0217**	**mg/L**		
		Maximum		**0.0400**	**mg/L**		
6-propiolactone	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
6-propiolactone		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
acenaphthene	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
acenaphthene	<	0.01	mg/L	self	certified	06/30/2000	1B
acenaphthene	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
acenaphthene		**Minimum**		**0.0050**	**mg/L**	**Count 3**	
		Average		**0.0067**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		

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Org Name WACKER SILTRONIC CORP Permit Number 469.001

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
allyl chloride	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
allyl chloride		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
anthracene	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
anthracene	<	0.01	mg/L	self	certified	06/30/2000	1B
anthracene	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
anthracene		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0067 mg/L**			
		Maximum		**0.0100 mg/L**			
arsenic	<	0.001	mg/L	city	comp/split	01/13/2000 10:40 AM	1B
arsenic	=	0.001	mg/L	self	composite	03/09/2000 7:30 AM	1B
arsenic	=	0.021	mg/L	self	composite	06/01/2000 12:40 PM	1B
arsenic	=	0.0085	mg/L	city	composite	06/08/2000 10:06 AM	1B
arsenic	<	0.001	mg/L	self	composite	09/07/2000 7:45 AM	1B
arsenic	=	0.0011	mg/L	city	composite	09/28/2000 11:45 AM	1B
arsenic	=	0.0014	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
arsenic		**Minimum**		**0.0005 mg/L**		**Count 7**	
		Average		**0.0049 mg/L**			
		Maximum		**0.0210 mg/L**			
azobenzene	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
azobenzene	<	0.01	mg/L	self	certified	06/30/2000	1B
azobenzene	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
azobenzene		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0067 mg/L**			
		Maximum		**0.0100 mg/L**			
benzene	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
benzene	<	0.01	mg/L	self	certified	06/30/2000	1B
benzene	<	0.005	mg/L	city	grab/split	07/21/2000 9:31 AM	1B
benzene	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
benzene	<	0.001	mg/L	city	grab	09/28/2000 11:40 AM	1B
benzene		**Minimum**		**0.0005 mg/L**		**Count 5**	
		Average		**0.0036 mg/L**			
		Maximum		**0.0050 mg/L**			
benzidine	<	0.04	mg/L	city	composite	06/21/2000 11:12 AM	1B
benzidine	<	0.01	mg/L	self	certified	06/30/2000	1B
benzidine	<	0.01	mg/L	self	certified	06/30/2000	1B

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Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
benzyl chloride	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
benzyl chloride		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
bhc, alpha	<	0.01	mg/L	self	certified	06/30/2000	1B
bhc, alpha		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
bhc, beta	<	0.01	mg/L	self	certified	06/30/2000	1B
bhc, beta		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
bhc, delta	<	0.01	mg/L	self	certified	06/30/2000	1B
bhc, delta		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
bhc, gamma (lindane)	<	0.01	mg/L	self	certified	06/30/2000	1B
bhc, gamma (lindane)		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
bis(2-chloroethoxy) methane	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
bis(2-chloroethoxy) methane	<	0.01	mg/L	self	certified	06/30/2000	1B
bis(2-chloroethoxy) methane	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
bis(2-chloroethoxy) methane		**Minimum**		**0.0050**	**mg/L**	**Count 3**	
		Average		**0.0067**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
bis(2-chloroethyl) ether	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
bis(2-chloroethyl) ether	<	0.01	mg/L	self	certified	06/30/2000	1B
bis(2-chloroethyl) ether	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
bis(2-chloroethyl) ether		**Minimum**		**0.0050**	**mg/L**	**Count 3**	
		Average		**0.0067**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
bis(2-chloroisopropyl) ether	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
bis(2-chloroisopropyl) ether	<	0.01	mg/L	self	certified	06/30/2000	1B

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Org Name WACKER SILTRONIC CORP Permit Number 469.001

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bromomethane	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
bromomethane	<	0.01	mg/L	self	certified	06/30/2000	1B
bromomethane	<	0.05	mg/L	city	grab/split	07/21/2000 9:31 AM	1B
bromomethane	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
bromomethane	<	0.01	mg/L	city	grab	09/28/2000 11:40 AM	1B
bromomethane		**Minimum**	**0.0050 mg/L**			**Count 5**	
		Average	**0.0090 mg/L**				
		Maximum	**0.0250 mg/L**				
butyl benzyl phthalate	<	0.08	mg/L	city	composite	06/21/2000 11:12 AM	1B
butyl benzyl phthalate	<	0.01	mg/L	self	certified	06/30/2000	1B
butyl benzyl phthalate	<	0.04	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
butyl benzyl phthalate		**Minimum**	**0.0050 mg/L**			**Count 3**	
		Average	**0.0217 mg/L**				
		Maximum	**0.0400 mg/L**				
carbon disulfide	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
carbon disulfide	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
carbon disulfide		**Minimum**	**0.0050 mg/L**			**Count 2**	
		Average	**0.0050 mg/L**				
		Maximum	**0.0050 mg/L**				
carbon tetrachloride	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
carbon tetrachloride	<	0.01	mg/L	self	certified	06/30/2000	1B
carbon tetrachloride	<	0.015	mg/L	city	grab/split	07/21/2000 9:31 AM	1B
carbon tetrachloride	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
carbon tetrachloride	<	0.003	mg/L	city	grab	09/28/2000 11:40 AM	1B
carbon tetrachloride		**Minimum**	**0.0015 mg/L**			**Count 5**	
		Average	**0.0048 mg/L**				
		Maximum	**0.0075 mg/L**				
chlordane	<	0.01	mg/L	self	certified	06/30/2000	1B
chlordane		**Minimum**	**0.0050 mg/L**			**Count 1**	
		Average	**0.0050 mg/L**				
		Maximum	**0.0050 mg/L**				
chlorobenzene	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
chlorobenzene	<	0.01	mg/L	self	certified	06/30/2000	1B
chlorobenzene	<	0.005	mg/L	city	grab/split	07/21/2000 9:31 AM	1B
chlorobenzene	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
chlorobenzene	<	0.001	mg/L	city	grab	09/28/2000 11:40 AM	1B
chlorobenzene		**Minimum**	**0.0005 mg/L**			**Count 5**	
		Average	**0.0036 mg/L**				
		Maximum	**0.0050 mg/L**				

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Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
dibenzo(a,h)anthracene	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
dibenzo(a,h)anthracene		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0067 mg/L**			
		Maximum		**0.0100 mg/L**			
dibromochloromethane	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
dibromochloromethane	<	0.01	mg/L	self	certified	06/30/2000	1B
dibromochloromethane	<	0.025	mg/L	city	grab/split	07/21/2000 9:31 AM	1B
dibromochloromethane	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
dibromochloromethane	<	0.005	mg/L	city	grab	09/28/2000 11:40 AM	1B
dibromochloromethane		**Minimum**		**0.0025 mg/L**		**Count 5**	
		Average		**0.0060 mg/L**			
		Maximum		**0.0125 mg/L**			
dibromomethane	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
dibromomethane	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
dibromomethane		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
dichlorodifluoromethane (freon-12)	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
dichlorodifluoromethane (freon-12)	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
dichlorodifluoromethane (freon-12)		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
dieldrin	<	0.01	mg/L	self	certified	06/30/2000	1B
dieldrin		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
diethyl phthalate	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
diethyl phthalate	<	0.01	mg/L	self	certified	06/30/2000	1B
diethyl phthalate	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
diethyl phthalate		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0067 mg/L**			
		Maximum		**0.0100 mg/L**			
dimethyl phthalate	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
dimethyl phthalate	<	0.01	mg/L	self	certified	06/30/2000	1B
dimethyl phthalate	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
dimethyl phthalate		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0067 mg/L**			
		Maximum		**0.0100 mg/L**			

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Org Id 1592

Org Name WACKER SILTRONIC CORP Permit Number 469.001

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
ethanol	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
ethanol		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
ethyl benzene	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
ethyl benzene	<	0.01	mg/L	self	certified	06/30/2000	1B
ethyl benzene	<	0.015	mg/L	city	grab/split	07/21/2000 9:31 AM	1B
ethyl benzene	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
ethyl benzene	<	0.003	mg/L	city	grab	09/28/2000 11:40 AM	1B
ethyl benzene		**Minimum**		**0.0015 mg/L**		**Count 5**	
		Average		**0.0048 mg/L**			
		Maximum		**0.0075 mg/L**			
ethyl methacrylate	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
ethyl methacrylate		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
ethylene oxide	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
ethylene oxide		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
fluoranthene	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
fluoranthene	<	0.01	mg/L	self	certified	06/30/2000	1B
fluoranthene	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
fluoranthene		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0067 mg/L**			
		Maximum		**0.0100 mg/L**			
fluorene	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
fluorene	<	0.01	mg/L	self	certified	06/30/2000	1B
fluorene	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
fluorene		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0067 mg/L**			
		Maximum		**0.0100 mg/L**			
heptachlor	<	0.01	mg/L	self	certified	06/30/2000	1B
heptachlor		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			

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Org Id 1592

Org Name WACKER SILTRONIC CORP Permit Number 469.001

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
iodomethane	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
iodomethane		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
isobutyl alcohol	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
isobutyl alcohol		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
isophorone	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
isophorone	<	0.01	mg/L	self	certified	06/30/2000	1B
isophorone	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
isophorone		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0067 mg/L**			
		Maximum		**0.0100 mg/L**			
isopropylbenzene	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
isopropylbenzene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
methacrylonitrile	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
methacrylonitrile		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
methyl iodide	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
methyl iodide		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
methyl methacrylate	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
methyl methacrylate		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
methylacrylonitrile	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
methylacrylonitrile		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
methylene chloride	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
methylene chloride	<	0.01	mg/L	self	certified	06/30/2000	1B
methylene chloride	<	0.02	mg/L	city	grab/split	07/21/2000 9:31 AM	1B

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Org Id 1592

Org Name WACKER SILTRONIC CORP Permit Number 469.001

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
n-nitroso-di-n-propylamine	<	0.01	mg/L	self	certified	06/30/2000	1B
n-nitroso-di-n-propylamine	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
n-nitroso-di-n-propylamine		**Minimum**		**0.0050**	**mg/L**	**Count 3**	
		Average		**0.0067**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
n-nitrosodiphenylamine	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
n-nitrosodiphenylamine	<	0.01	mg/L	self	certified	06/30/2000	1B
n-nitrosodiphenylamine	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
n-nitrosodiphenylamine		**Minimum**		**0.0050**	**mg/L**	**Count 3**	
		Average		**0.0067**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
n-propylamine	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
n-propylamine		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
n-propylbenzene	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
n-propylbenzene		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
pcb 1016	<	0.01	mg/L	self	certified	06/30/2000	1B
pcb 1016		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
pcb 1221	<	0.01	mg/L	self	certified	06/30/2000	1B
pcb 1221		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
pcb 1232	<	0.01	mg/L	self	certified	06/30/2000	1B
pcb 1232		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
pcb 1242	<	0.01	mg/L	self	certified	06/30/2000	1B
pcb 1242		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		

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Org Id 1592

Org Name WACKER SILTRONIC CORP Permit Number 469.001

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
phenanthrene	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
phenanthrene	<	0.01	mg/L	self	certified	06/30/2000	1B
phenanthrene	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
phenanthrene		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0067 mg/L**			
		Maximum		**0.0100 mg/L**			
phenol	<	0.01	mg/L	self	certified	06/30/2000	1B
phenol		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
phenols - total (epa 420)	<	0.04	mg/L	city	composite	06/21/2000 11:12 AM	1B
phenols - total (epa 420)	<	0.02	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
phenols - total (epa 420)		**Minimum**		**0.0100 mg/L**		**Count 2**	
		Average		**0.0150 mg/L**			
		Maximum		**0.0200 mg/L**			
propargyl alcohol	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
propargyl alcohol		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
propionitrile	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
propionitrile		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
pyrene	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
pyrene	<	0.01	mg/L	self	certified	06/30/2000	1B
pyrene	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
pyrene		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0067 mg/L**			
		Maximum		**0.0100 mg/L**			
pyridine	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
pyridine		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
sec-butylbenzene	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
sec-butylbenzene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			

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Org Id 1592

Org Name WACKER SILTRONIC CORP Permit Number 469.001

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
trichloroethene (tce)	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
trichloroethene (tce)	<	0.01	mg/L	self	certified	06/30/2000	1B
trichloroethene (tce)	<	0.02	mg/L	city	grab/split	07/21/2000 9:31 AM	1B
trichloroethene (tce)	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
trichloroethene (tce)	<	0.004	mg/L	city	grab	09/28/2000 11:40 AM	1B
trichloroethene (tce)		**Minimum**		**0.0020 mg/L**		**Count 5**	
		Average		**0.0054 mg/L**			
		Maximum		**0.0100 mg/L**			
trichlorofluoromethane (freon-11)	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
trichlorofluoromethane (freon-11)	<	0.01	mg/L	self	certified	06/30/2000	1B
trichlorofluoromethane (freon-11)	<	0.02	mg/L	city	grab/split	07/21/2000 9:31 AM	1B
trichlorofluoromethane (freon-11)	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
trichlorofluoromethane (freon-11)	<	0.004	mg/L	city	grab	09/28/2000 11:40 AM	1B
trichlorofluoromethane (freon-11)		**Minimum**		**0.0020 mg/L**		**Count 5**	
		Average		**0.0054 mg/L**			
		Maximum		**0.0100 mg/L**			
vinyl acetate	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
vinyl acetate		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
vinyl chloride	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
vinyl chloride	<	0.01	mg/L	self	certified	06/30/2000	1B
vinyl chloride	<	0.25	mg/L	city	grab/split	07/21/2000 9:31 AM	1B
vinyl chloride	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
vinyl chloride	<	0.05	mg/L	city	grab	09/28/2000 11:40 AM	1B
vinyl chloride		**Minimum**		**0.0050 mg/L**		**Count 5**	
		Average		**0.0330 mg/L**			
		Maximum		**0.1250 mg/L**			
xylene, m-	<	0.01	mg/L	self	certified	06/30/2000	1B
xylene, m-	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
xylene, m-		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
xylene, o-	<	0.01	mg/L	self	certified	06/30/2000	1B
xylene, o-	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
xylene, o-		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
xylene, p-	<	0.01	mg/L	self	certified	06/30/2000	1B

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Historical Analytical Report for 01/01/2000 - 12/31/2000

Org Id **1592**

Org Name **SILTRONIC CORP** Permit Number **1200Z**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
copper	=	0.0198	mg/L	self	grab	05/10/2000 11:20 AM	01
copper	<	0.05	mg/L	self	grab	11/29/2000 8:15 AM	01
copper	=	0.00872	mg/L	self	grab	05/10/2000 11:30 AM	02
copper	<	0.05	mg/L	self	grab	11/29/2000 9:30 AM	02
copper	=	0.00681	mg/L	self	grab	05/10/2000 11:45 AM	03
copper	<	0.05	mg/L	self	grab	11/29/2000 9:45 AM	03
copper		**Minimum**		**0.0068 mg/L**		**Count 6**	
		Average		**0.0184 mg/L**			
		Maximum		**0.0250 mg/L**			
lead	=	0.00902	mg/L	self	grab	05/10/2000 11:20 AM	01
lead	<	0.005	mg/L	self	grab	11/29/2000 8:15 AM	01
lead	=	0.00705	mg/L	self	grab	05/10/2000 11:30 AM	02
lead	<	0.005	mg/L	self	grab	11/29/2000 9:30 AM	02
lead	=	0.00278	mg/L	self	grab	05/10/2000 11:45 AM	03
lead	<	0.005	mg/L	self	grab	11/29/2000 9:45 AM	03
lead		**Minimum**		**0.0025 mg/L**		**Count 6**	
		Average		**0.0044 mg/L**			
		Maximum		**0.0090 mg/L**			
oil/grease - total	<	5	mg/L	self	grab	05/10/2000 11:20 AM	01
oil/grease - total	<	3	mg/L	self	grab	11/29/2000 8:15 AM	01
oil/grease - total	<	5	mg/L	self	grab	05/10/2000 11:30 AM	02
oil/grease - total	<	3	mg/L	self	grab	11/29/2000 9:30 AM	02
oil/grease - total	<	5	mg/L	self	grab	05/10/2000 11:45 AM	03
oil/grease - total	<	3	mg/L	self	grab	11/29/2000 9:45 AM	03
oil/grease - total		**Minimum**		**1.5000 mg/L**		**Count 6**	
		Average		**2.0000 mg/L**			
		Maximum		**2.5000 mg/L**			
pH	=	7	std units	self	grab	05/10/2000 11:20 AM	01
pH	=	6.97	std units	self	grab	11/29/2000 8:15 AM	01
pH	=	6.7	std units	self	grab	05/10/2000 11:30 AM	02
pH	=	6.95	std units	self	grab	11/29/2000 9:30 AM	02
pH	=	6.7	std units	self	grab	05/10/2000 11:45 AM	03
pH	=	6.97	std units	self	grab	11/29/2000 9:45 AM	03
pH		**Minimum**		**6.7000 std units**		**Count 6**	
		Maximum		**7.0000 std units**			
solids - total suspended	=	151.5	mg/L	self	grab	05/10/2000 11:20 AM	01
solids - total suspended	=	14.75	mg/L	self	grab	07/03/2000 3:30 PM	01
solids - total suspended	=	6.88	mg/L	self	grab	11/29/2000 8:15 AM	01
solids - total suspended	=	27.5	mg/L	self	grab	05/10/2000 11:30 AM	02
solids - total suspended	=	4.38	mg/L	self	grab	11/29/2000 9:30 AM	02

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Historical Analytical Report for 01/01/2000 - 12/31/2000

Org Id **1592**

Org Name **SILTRONIC CORP** Permit Number **1200Z**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
solids - total suspended	=	19	mg/L	self	grab	05/10/2000 11:45 AM	03
solids - total suspended	=	3	mg/L	self	grab	11/29/2000 9:45 AM	03
solids - total suspended		**Minimum**		**3.0000**	**mg/L**	**Count 7**	
		Average		**32.4300**	**mg/L**		
		Maximum		**151.5000**	**mg/L**		
zinc	=	0.347	mg/L	self	grab	05/10/2000 11:20 AM	01
zinc	=	0.33	mg/L	self	grab	11/29/2000 8:15 AM	01
zinc	=	0.143	mg/L	self	grab	05/10/2000 11:30 AM	02
zinc	=	0.3	mg/L	self	grab	11/29/2000 9:30 AM	02
zinc	=	0.202	mg/L	self	grab	05/10/2000 11:45 AM	03
zinc	=	0.33	mg/L	self	grab	11/29/2000 9:45 AM	03
zinc		**Minimum**		**0.1430**	**mg/L**	**Count 6**	
		Average		**0.2753**	**mg/L**		
		Maximum		**0.3470**	**mg/L**		

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Org Id 1592

Org Name SILTRONIC CORP Permit Number 469.001

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
0,0,0-triethylphosphorothioate	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
0,0,0-triethylphosphorothioate		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,1,1,2-tetrachloroethane	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
1,1,1,2-tetrachloroethane	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
1,1,1,2-tetrachloroethane	<	0.025	mg/L	city	grab/split	07/21/2000 9:31 AM	1B
1,1,1,2-tetrachloroethane	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
1,1,1,2-tetrachloroethane	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
1,1,1,2-tetrachloroethane	<	0.005	mg/L	city	grab	09/28/2000 11:40 AM	1B
1,1,1,2-tetrachloroethane	<	0.002	mg/L	city	grab/split	11/07/2000 12:20 PM	1B
1,1,1,2-tetrachloroethane	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
1,1,1,2-tetrachloroethane	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
1,1,1,2-tetrachloroethane	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
1,1,1,2-tetrachloroethane		**Minimum**		**0.0010 mg/L**		**Count 10**	
		Average		**0.0051 mg/L**			
		Maximum		**0.0125 mg/L**			
1,1,1-trichloroethane	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
1,1,1-trichloroethane	<	0.01	mg/L	self	certified	06/30/2000	1B
1,1,1-trichloroethane	<	0.015	mg/L	city	grab/split	07/21/2000 9:31 AM	1B
1,1,1-trichloroethane	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
1,1,1-trichloroethane	<	0.003	mg/L	city	grab	09/28/2000 11:40 AM	1B
1,1,1-trichloroethane	<	0.003	mg/L	city	grab/split	11/07/2000 12:20 PM	1B
1,1,1-trichloroethane	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
1,1,1-trichloroethane		**Minimum**		**0.0015 mg/L**		**Count 7**	
		Average		**0.0044 mg/L**			
		Maximum		**0.0075 mg/L**			
1,1,2,2-tetrachloroethane	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
1,1,2,2-tetrachloroethane	<	0.01	mg/L	self	certified	06/30/2000	1B
1,1,2,2-tetrachloroethane	<	0.015	mg/L	city	grab/split	07/21/2000 9:31 AM	1B
1,1,2,2-tetrachloroethane	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
1,1,2,2-tetrachloroethane	<	0.003	mg/L	city	grab	09/28/2000 11:40 AM	1B
1,1,2,2-tetrachloroethane	<	0.002	mg/L	city	grab/split	11/07/2000 12:20 PM	1B
1,1,2,2-tetrachloroethane	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
1,1,2,2-tetrachloroethane		**Minimum**		**0.0010 mg/L**		**Count 7**	
		Average		**0.0043 mg/L**			
		Maximum		**0.0075 mg/L**			
1,1,2-trichloroethane	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
1,1,2-trichloroethane	<	0.01	mg/L	self	certified	06/30/2000	1B
1,1,2-trichloroethane	<	0.015	mg/L	city	grab/split	07/21/2000 9:31 AM	1B
1,1,2-trichloroethane	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B

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Org Id **1592**

Org Name **SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
1,1,2-trichloroethane	<	0.003	mg/L	city	grab	09/28/2000 11:40 AM	1B
1,1,2-trichloroethane	<	0.001	mg/L	city	grab/split	11/07/2000 12:20 PM	1B
1,1,2-trichloroethane	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
1,1,2-trichloroethane		**Minimum**		**0.0005 mg/L**		**Count 7**	
		Average		**0.0042 mg/L**			
		Maximum		**0.0075 mg/L**			
1,1-dichloroethane	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
1,1-dichloroethane	<	0.01	mg/L	self	certified	06/30/2000	1B
1,1-dichloroethane	<	0.01	mg/L	city	grab/split	07/21/2000 9:31 AM	1B
1,1-dichloroethane	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
1,1-dichloroethane	<	0.002	mg/L	city	grab	09/28/2000 11:40 AM	1B
1,1-dichloroethane	<	0.004	mg/L	city	grab/split	11/07/2000 12:20 PM	1B
1,1-dichloroethane	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
1,1-dichloroethane		**Minimum**		**0.0010 mg/L**		**Count 7**	
		Average		**0.0040 mg/L**			
		Maximum		**0.0050 mg/L**			
1,1-dichloroethene	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
1,1-dichloroethene	<	0.01	mg/L	self	certified	06/30/2000	1B
1,1-dichloroethene	<	0.015	mg/L	city	grab/split	07/21/2000 9:31 AM	1B
1,1-dichloroethene	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
1,1-dichloroethene	<	0.003	mg/L	city	grab	09/28/2000 11:40 AM	1B
1,1-dichloroethene	<	0.005	mg/L	city	grab/split	11/07/2000 12:20 PM	1B
1,1-dichloroethene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
1,1-dichloroethene		**Minimum**		**0.0015 mg/L**		**Count 7**	
		Average		**0.0045 mg/L**			
		Maximum		**0.0075 mg/L**			
1,1-dichloropropene	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
1,1-dichloropropene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
1,1-dichloropropene		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2,3,4-diepoxybutane	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
1,2,3,4-diepoxybutane		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2,3-trichlorobenzene	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B

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Org Name **SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
1,2,3-trichlorobenzene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
1,2,3-trichlorobenzene		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2,3-trichloropropane	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
1,2,3-trichloropropane	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
1,2,3-trichloropropane	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
1,2,3-trichloropropane		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2,4,5-tetrachlorobenzene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
1,2,4,5-tetrachlorobenzene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2,4-trichlorobenzene	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
1,2,4-trichlorobenzene	<	0.01	mg/L	self	certified	06/30/2000	1B
1,2,4-trichlorobenzene	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
1,2,4-trichlorobenzene	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
1,2,4-trichlorobenzene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
1,2,4-trichlorobenzene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
1,2,4-trichlorobenzene		**Minimum**		**0.0050 mg/L**		**Count 6**	
		Average		**0.0058 mg/L**			
		Maximum		**0.0100 mg/L**			
1,2,4-trimethylbenzene	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
1,2,4-trimethylbenzene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
1,2,4-trimethylbenzene		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2-dibromo-3-chloropropane	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
1,2-dibromo-3-chloropropane	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
1,2-dibromo-3-chloropropane	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
1,2-dibromo-3-chloropropane	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
1,2-dibromo-3-chloropropane		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2-dibromoethane	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
1,2-dibromoethane	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
1,2-dibromoethane	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B

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Org Id **1592**

Org Name **SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
1,2-dibromoethane	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
1,2-dibromoethane		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2-dichlorobenzene	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
1,2-dichlorobenzene	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
1,2-dichlorobenzene	<	0.01	mg/L	self	certified	06/30/2000	1B
1,2-dichlorobenzene	<	0.01	mg/L	self	certified	06/30/2000	1B
1,2-dichlorobenzene	<	0.015	mg/L	city	grab/split	07/21/2000 9:31 AM	1B
1,2-dichlorobenzene	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
1,2-dichlorobenzene	<	0.003	mg/L	city	grab	09/28/2000 11:40 AM	1B
1,2-dichlorobenzene	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
1,2-dichlorobenzene	<	0.002	mg/L	city	grab/split	11/07/2000 12:20 PM	1B
1,2-dichlorobenzene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
1,2-dichlorobenzene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
1,2-dichlorobenzene		**Minimum**		**0.0010 mg/L**		**Count 11**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0100 mg/L**			
1,2-dichloroethane	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
1,2-dichloroethane	<	0.01	mg/L	self	certified	06/30/2000	1B
1,2-dichloroethane	<	0.025	mg/L	city	grab/split	07/21/2000 9:31 AM	1B
1,2-dichloroethane	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
1,2-dichloroethane	<	0.005	mg/L	city	grab	09/28/2000 11:40 AM	1B
1,2-dichloroethane	<	0.001	mg/L	city	grab/split	11/07/2000 12:20 PM	1B
1,2-dichloroethane	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
1,2-dichloroethane		**Minimum**		**0.0005 mg/L**		**Count 7**	
		Average		**0.0051 mg/L**			
		Maximum		**0.0125 mg/L**			
1,2-dichloroethene (cis)	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
1,2-dichloroethene (cis)	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
1,2-dichloroethene (cis)		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2-dichloroethene (trans)	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
1,2-dichloroethene (trans)	<	0.01	mg/L	self	certified	06/30/2000	1B
1,2-dichloroethene (trans)	<	0.01	mg/L	city	grab/split	07/21/2000 9:31 AM	1B
1,2-dichloroethene (trans)	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
1,2-dichloroethene (trans)	<	0.002	mg/L	city	grab	09/28/2000 11:40 AM	1B
1,2-dichloroethene (trans)	<	0.005	mg/L	city	grab/split	11/07/2000 12:20 PM	1B

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Org Name **SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
1,2-dichloroethene (trans)	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
1,2-dichloroethene (trans)		**Minimum**		**0.0010 mg/L**		**Count 7**	
		Average		**0.0041 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2-dichloropropane	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
1,2-dichloropropane	<	0.01	mg/L	self	certified	06/30/2000	1B
1,2-dichloropropane	<	0.015	mg/L	city	grab/split	07/21/2000 9:31 AM	1B
1,2-dichloropropane	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
1,2-dichloropropane	<	0.003	mg/L	city	grab	09/28/2000 11:40 AM	1B
1,2-dichloropropane	<	0.003	mg/L	city	grab/split	11/07/2000 12:20 PM	1B
1,2-dichloropropane	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
1,2-dichloropropane		**Minimum**		**0.0015 mg/L**		**Count 7**	
		Average		**0.0044 mg/L**			
		Maximum		**0.0075 mg/L**			
1,2-dinitrobenzene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
1,2-dinitrobenzene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2-diphenylhydrazine	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
1,2-diphenylhydrazine		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,3,5-trimethylbenzene	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
1,3,5-trimethylbenzene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
1,3,5-trimethylbenzene		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,3,5-trinitrobenzene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
1,3,5-trinitrobenzene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,3-dichloro-2-propanol	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
1,3-dichloro-2-propanol		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,3-dichlorobenzene	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
1,3-dichlorobenzene	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
1,3-dichlorobenzene	<	0.01	mg/L	self	certified	06/30/2000	1B

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Org Name **SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
1,3-dichlorobenzene	<	0.01	mg/L	self	certified	06/30/2000	1B
1,3-dichlorobenzene	<	0.01	mg/L	city	grab/split	07/21/2000 9:31 AM	1B
1,3-dichlorobenzene	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
1,3-dichlorobenzene	<	0.002	mg/L	city	grab	09/28/2000 11:40 AM	1B
1,3-dichlorobenzene	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
1,3-dichlorobenzene	<	0.002	mg/L	city	grab/split	11/07/2000 12:20 PM	1B
1,3-dichlorobenzene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
1,3-dichlorobenzene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
1,3-dichlorobenzene		**Minimum**		**0.0010 mg/L**		**Count 11**	
		Average		**0.0047 mg/L**			
		Maximum		**0.0100 mg/L**			
1,3-dichloropropane	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
1,3-dichloropropane	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
1,3-dichloropropane		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,3-dichloropropene (cis)	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
1,3-dichloropropene (cis)	<	0.01	mg/L	self	certified	06/30/2000	1B
1,3-dichloropropene (cis)	<	0.02	mg/L	city	grab/split	07/21/2000 9:31 AM	1B
1,3-dichloropropene (cis)	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
1,3-dichloropropene (cis)	<	0.004	mg/L	city	grab	09/28/2000 11:40 AM	1B
1,3-dichloropropene (cis)	<	0.001	mg/L	city	grab/split	11/07/2000 12:20 PM	1B
1,3-dichloropropene (cis)	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
1,3-dichloropropene (cis)		**Minimum**		**0.0005 mg/L**		**Count 7**	
		Average		**0.0046 mg/L**			
		Maximum		**0.0100 mg/L**			
1,3-dichloropropene (trans)	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
1,3-dichloropropene (trans)	<	0.01	mg/L	self	certified	06/30/2000	1B
1,3-dichloropropene (trans)	<	0.015	mg/L	city	grab/split	07/21/2000 9:31 AM	1B
1,3-dichloropropene (trans)	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
1,3-dichloropropene (trans)	<	0.003	mg/L	city	grab	09/28/2000 11:40 AM	1B
1,3-dichloropropene (trans)	<	0.001	mg/L	city	grab/split	11/07/2000 12:20 PM	1B
1,3-dichloropropene (trans)	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
1,3-dichloropropene (trans)		**Minimum**		**0.0005 mg/L**		**Count 7**	
		Average		**0.0042 mg/L**			
		Maximum		**0.0075 mg/L**			
1,3-dichloropropene, total	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
1,3-dichloropropene, total		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			

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1,3-dinitrobenzene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
1,3-dinitrobenzene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,4-dichloro-2-butene	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
1,4-dichloro-2-butene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
1,4-dichloro-2-butene		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,4-dichloro-2-butene (cis)	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
1,4-dichloro-2-butene (cis)	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
1,4-dichloro-2-butene (cis)		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,4-dichloro-2-butene (trans)	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
1,4-dichloro-2-butene (trans)	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
1,4-dichloro-2-butene (trans)		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,4-dichlorobenzene	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
1,4-dichlorobenzene	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
1,4-dichlorobenzene	<	0.01	mg/L	self	certified	06/30/2000	1B
1,4-dichlorobenzene	<	0.01	mg/L	self	certified	06/30/2000	1B
1,4-dichlorobenzene	<	0.01	mg/L	city	grab/split	07/21/2000 9:31 AM	1B
1,4-dichlorobenzene	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
1,4-dichlorobenzene	<	0.002	mg/L	city	grab	09/28/2000 11:40 AM	1B
1,4-dichlorobenzene	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
1,4-dichlorobenzene	<	0.001	mg/L	city	grab/split	11/07/2000 12:20 PM	1B
1,4-dichlorobenzene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
1,4-dichlorobenzene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
1,4-dichlorobenzene		**Minimum**		**0.0005 mg/L**		**Count 11**	
		Average		**0.0047 mg/L**			
		Maximum		**0.0100 mg/L**			
1,4-dinitrobenzene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
1,4-dinitrobenzene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
1,4-dinitrobenzene		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			

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Org Id **1592**

Org Name **SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
1,4-naphthoquinone	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
1,4-naphthoquinone		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
1,4-phenylenediamine	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
1,4-phenylenediamine		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
1-acetyl-2-thiourea	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
1-acetyl-2-thiourea		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
1-chloronaphthalene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
1-chloronaphthalene		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
1-naphthylamine	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
1-naphthylamine		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
2,2',3,3',4,4',6-heptachlorobiphenyl	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
2,2',3,3',4,4',6-heptachlorobiphenyl		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
2,2-dichloropropane	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
2,2-dichloropropane	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
2,2-dichloropropane		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
2,3,4,6-tetrachlorophenol	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
2,3,4,6-tetrachlorophenol		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		

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Org Id **1592**

Org Name **SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
2,4,5-t	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
2,4,5-t		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
2,4,5-tp (silvex)	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
2,4,5-tp (silvex)		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
2,4,5-trichlorophenol	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
2,4,5-trichlorophenol		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
2,4,5-trimethylaniline	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
2,4,5-trimethylaniline		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
2,4,6-trichlorophenol	<	0.04	mg/L	city	composite	06/21/2000 11:12 AM	1B
2,4,6-trichlorophenol	<	0.01	mg/L	self	certified	06/30/2000	1B
2,4,6-trichlorophenol	<	0.02	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
2,4,6-trichlorophenol	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
2,4,6-trichlorophenol		**Minimum**		**0.0050**	**mg/L**	**Count 4**	
		Average		**0.0100**	**mg/L**		
		Maximum		**0.0200**	**mg/L**		
2,4-diaminotoluene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
2,4-diaminotoluene		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
2,4-dichlorophenol	<	0.04	mg/L	city	composite	06/21/2000 11:12 AM	1B
2,4-dichlorophenol	<	0.01	mg/L	self	certified	06/30/2000	1B
2,4-dichlorophenol	<	0.02	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
2,4-dichlorophenol	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
2,4-dichlorophenol		**Minimum**		**0.0050**	**mg/L**	**Count 4**	
		Average		**0.0100**	**mg/L**		
		Maximum		**0.0200**	**mg/L**		
2,4-dimethylphenol	<	0.04	mg/L	city	composite	06/21/2000 11:12 AM	1B
2,4-dimethylphenol	<	0.01	mg/L	self	certified	06/30/2000	1B
2,4-dimethylphenol	<	0.02	mg/L	city	comp/split	11/07/2000 10:10 AM	1B

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Org Id **1592**

Org Name **SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
2,4-dimethylphenol	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
2,4-dimethylphenol		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0100 mg/L**			
		Maximum		**0.0200 mg/L**			
2,4-dinitrophenol	<	0.08	mg/L	city	composite	06/21/2000 11:12 AM	1B
2,4-dinitrophenol	<	0.01	mg/L	self	certified	06/30/2000	1B
2,4-dinitrophenol	<	0.04	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
2,4-dinitrophenol	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
2,4-dinitrophenol		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0175 mg/L**			
		Maximum		**0.0400 mg/L**			
2,4-dinitrotoluene	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
2,4-dinitrotoluene	<	0.01	mg/L	self	certified	06/30/2000	1B
2,4-dinitrotoluene	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
2,4-dinitrotoluene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
2,4-dinitrotoluene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
2,4-dinitrotoluene		**Minimum**		**0.0050 mg/L**		**Count 5**	
		Average		**0.0060 mg/L**			
		Maximum		**0.0100 mg/L**			
2,6-dichlorophenol	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
2,6-dichlorophenol	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
2,6-dichlorophenol		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
2,6-dinitrotoluene	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
2,6-dinitrotoluene	<	0.01	mg/L	self	certified	06/30/2000	1B
2,6-dinitrotoluene	<	0.01	mg/L	self	certified	06/30/2000	1B
2,6-dinitrotoluene	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
2,6-dinitrotoluene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
2,6-dinitrotoluene		**Minimum**		**0.0050 mg/L**		**Count 5**	
		Average		**0.0060 mg/L**			
		Maximum		**0.0100 mg/L**			
2-acetylaminofluorene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
2-acetylaminofluorene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			

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Org Id **1592**

Org Name **SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
2-aminoanthraquinone	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
2-aminoanthraquinone		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
2-butanone	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
2-butanone	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
2-butanone	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
2-butanone		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
2-chloroethanol	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
2-chloroethanol		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
2-chloroethylvinyl ether	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
2-chloroethylvinyl ether	<	0.01	mg/L	self	certified	06/30/2000	1B
~~2-chloroethylvinyl ether~~	~~<~~	~~0.25~~	~~mg/L~~	~~city~~	~~grab/split~~	~~07/21/2000 9:31 AM~~	~~1B~~
~~2-chloroethylvinyl ether~~	~~<~~	~~0.05~~	~~mg/L~~	~~city~~	~~grab~~	~~09/28/2000 11:40 AM~~	~~1B~~
~~2-chloroethylvinyl ether~~	~~<~~	~~0.025~~	~~mg/L~~	~~city~~	~~grab/split~~	~~11/07/2000 12:20 PM~~	~~1B~~
2-chloroethylvinyl ether	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
2-chloroethylvinyl ether		**Minimum**		**0.0050 mg/L**		**Count 6**	
		Average		**0.0296 mg/L**			
		Maximum		**0.1250 mg/L**			
2-chloronaphthalene	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
2-chloronaphthalene	<	0.01	mg/L	self	certified	06/30/2000	1B
2-chloronaphthalene	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
2-chloronaphthalene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
2-chloronaphthalene		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0063 mg/L**			
		Maximum		**0.0100 mg/L**			
2-chlorophenol	<	0.04	mg/L	city	composite	06/21/2000 11:12 AM	1B
2-chlorophenol	<	0.01	mg/L	self	certified	06/30/2000	1B
2-chlorophenol	<	0.02	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
2-chlorophenol	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
2-chlorophenol		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0100 mg/L**			
		Maximum		**0.0200 mg/L**			
2-chlorotoluene	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B

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Org Name **SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
2-chlorotoluene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
2-chlorotoluene		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
2-cyclohexyl-4,6-dinitrophenol	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
2-cyclohexyl-4,6-dinitrophenol		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
2-hexanone	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
2-hexanone	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
2-hexanone	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
2-hexanone		**Minimum**		**0.0050**	**mg/L**	**Count 3**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
2-hydroxypropionitrile	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
2-hydroxypropionitrile		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
2-methyl-4,6-dinitrophenol	<	0.04	mg/L	city	composite	06/21/2000 11:12 AM	1B
2-methyl-4,6-dinitrophenol	<	0.01	mg/L	self	certified	06/30/2000	1B
2-methyl-4,6-dinitrophenol	<	0.02	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
2-methyl-4,6-dinitrophenol	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
2-methyl-4,6-dinitrophenol		**Minimum**		**0.0050**	**mg/L**	**Count 4**	
		Average		**0.0100**	**mg/L**		
		Maximum		**0.0200**	**mg/L**		
2-methylnaphthalene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
2-methylnaphthalene		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
2-methylphenol	<	0.01	mg/L	self	certified	06/30/2000	1B
2-methylphenol	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
2-methylphenol		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		

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Org Name **SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
2-naphthylamine	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
2-naphthylamine		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
2-nitroaniline	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
2-nitroaniline		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
2-nitrophenol	<	0.04	mg/L	city	composite	06/21/2000 11:12 AM	1B
2-nitrophenol	<	0.01	mg/L	self	certified	06/30/2000	1B
2-nitrophenol	<	0.02	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
2-nitrophenol	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
2-nitrophenol		**Minimum**		**0.0050**	**mg/L**	**Count 4**	
		Average		**0.0100**	**mg/L**		
		Maximum		**0.0200**	**mg/L**		
2-picoline	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
2-picoline	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
2-picoline		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
3-(chloromethyl) pyridine hydrochloride	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
3-(chloromethyl) pyridine hydrochloride		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
3,3'-dichlorobenzidine	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
3,3'-dichlorobenzidine	<	0.01	mg/L	self	certified	06/30/2000	1B
3,3'-dichlorobenzidine	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
3,3'-dichlorobenzidine	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
3,3'-dichlorobenzidine		**Minimum**		**0.0050**	**mg/L**	**Count 4**	
		Average		**0.0063**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
3,3'-dimethoxybenzidine	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
3,3'-dimethoxybenzidine		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		

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Org Name **SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
3,3'-dimethylbenzidine	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
3,3'-dimethylbenzidine		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
3,4-methylphenol	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
3,4-methylphenol		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
3-chloropropionitrile	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
3-chloropropionitrile		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
3-methylcholanthrene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
3-methylcholanthrene		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
3-methylphenol	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
3-methylphenol		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
3-nitroaniline	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
3-nitroaniline		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
4,4'-ddd (p,p'-tde)	<	0.01	mg/L	self	certified	06/30/2000	1B
4,4'-ddd (p,p'-tde)	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
4,4'-ddd (p,p'-tde)		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
4,4'-dde (p,p'-ddx)	<	0.01	mg/L	self	certified	06/30/2000	1B
4,4'-dde (p,p'-ddx)	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
4,4'-dde (p,p'-ddx)		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
4,4'-ddt	<	0.01	mg/L	self	certified	06/30/2000	1B

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Org Name SILTRONIC CORP Permit Number 469.001

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
4,4'-ddt	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
4,4'-ddt		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
4,4'methylenebis(2-chloroaniline)	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
4,4'methylenebis(2-chloroaniline)		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
4,4'-oxydianiline	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
4,4'-oxydianiline		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
4,6-dinitro-2-methylphenol	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
4,6-dinitro-2-methylphenol		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
4-aminobiphenyl	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
4-aminobiphenyl		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
4-bromophenyl phenyl ether	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
4-bromophenyl phenyl ether	<	0.01	mg/L	self	certified	06/30/2000	1B
4-bromophenyl phenyl ether	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
4-bromophenyl phenyl ether	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
4-bromophenyl phenyl ether		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0063 mg/L**			
		Maximum		**0.0100 mg/L**			
4-chloro-3-methylphenol	<	0.04	mg/L	city	composite	06/21/2000 11:12 AM	1B
4-chloro-3-methylphenol	<	0.01	mg/L	self	certified	06/30/2000	1B
4-chloro-3-methylphenol	<	0.02	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
4-chloro-3-methylphenol	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
4-chloro-3-methylphenol		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0100 mg/L**			
		Maximum		**0.0200 mg/L**			

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Org Name **SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
4-chloroaniline	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
4-chloroaniline		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
4-chlorophenyl phenyl ether	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
4-chlorophenyl phenyl ether	<	0.01	mg/L	self	certified	06/30/2000	1B
4-chlorophenyl phenyl ether	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
4-chlorophenyl phenyl ether	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
4-chlorophenyl phenyl ether		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0063 mg/L**			
		Maximum		**0.0100 mg/L**			
4-chlorotoluene	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
4-chlorotoluene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
4-chlorotoluene		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
4-isopropyltoluene	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
4-isopropyltoluene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
4-isopropyltoluene		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
4-methyl-2-pentanone	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
4-methyl-2-pentanone	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
4-methyl-2-pentanone	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
4-methyl-2-pentanone		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
4-methylphenol	<	0.01	mg/L	self	certified	06/30/2000	1B
4-methylphenol	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
4-methylphenol		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
4-nitroaniline	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
4-nitroaniline		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			

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Org Name **SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
4-nitrobiphenyl	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
4-nitrobiphenyl		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
4-nitrophenol	<	0.08	mg/L	city	composite	06/21/2000 11:12 AM	1B
4-nitrophenol	<	0.01	mg/L	self	certified	06/30/2000	1B
4-nitrophenol	<	0.04	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
4-nitrophenol	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
4-nitrophenol		**Minimum**		**0.0050**	**mg/L**	**Count 4**	
		Average		**0.0175**	**mg/L**		
		Maximum		**0.0400**	**mg/L**		
5,5-diphenylhydantoin	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
5,5-diphenylhydantoin		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
5-chloro-2-methylaniline	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
5-chloro-2-methylaniline		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
5-nitroacenaphthene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
5-nitroacenaphthene		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
5-nitro-o-anisidine	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
5-nitro-o-anisidine		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
5-nitro-o-toluidine	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
5-nitro-o-toluidine		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
6-propiolactone	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
6-propiolactone		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		

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Org Id **1592**

Org Name **SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
7,12-dimethylbenz[a]anthracene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
7,12-dimethylbenz[a]anthracene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
acenaphthene	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
acenaphthene	<	0.01	mg/L	self	certified	06/30/2000	1B
acenaphthene	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
acenaphthene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
acenaphthene		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0063 mg/L**			
		Maximum		**0.0100 mg/L**			
acenaphthylene	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
acenaphthylene	<	0.01	mg/L	self	certified	06/30/2000	1B
acenaphthylene	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
acenaphthylene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
acenaphthylene		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0063 mg/L**			
		Maximum		**0.0100 mg/L**			
acetone	=	1.09	mg/L	self	grab	03/09/2000 7:30 AM	1B
acetone	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
acetone	=	1.2	mg/L	self	grab	12/14/2000 7:30 AM	1B
acetone		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.7650 mg/L**			
		Maximum		**1.2000 mg/L**			
acetonitrile	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
acetonitrile	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
acetonitrile	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
acetonitrile		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
acetophenone	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
acetophenone		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
acrolein	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
acrolein	<	0.5	mg/L	city	grab/split	07/21/2000 9:31 AM	1B
acrolein	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
acrolein	<	0.1	mg/L	city	grab	09/28/2000 11:40 AM	1B
acrolein	<	0.05	mg/L	city	grab/split	11/07/2000 12:20 PM	1B

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Org Name **SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
acrolein	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
acrolein		**Minimum**		**0.0050**	**mg/L**	**Count 6**	
		Average		**0.0567**	**mg/L**		
		Maximum		**0.2500**	**mg/L**		
acrylonitrile	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
acrylonitrile	<	0.25	mg/L	city	grab/split	07/21/2000 9:31 AM	1B
acrylonitrile	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
acrylonitrile	<	0.05	mg/L	city	grab	09/28/2000 11:40 AM	1B
acrylonitrile	<	0.025	mg/L	city	grab/split	11/07/2000 12:20 PM	1B
acrylonitrile	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
acrylonitrile		**Minimum**		**0.0050**	**mg/L**	**Count 6**	
		Average		**0.0296**	**mg/L**		
		Maximum		**0.1250**	**mg/L**		
alachlor	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
alachlor		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
aldrin	<	0.01	mg/L	self	certified	06/30/2000	1B
aldrin	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
aldrin		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
allyl alcohol	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
allyl alcohol		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
allyl chloride	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
allyl chloride	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
allyl chloride		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
alpha,alpha-dimethylphenethylamine	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
alpha,alpha-dimethylphenethylamine		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		

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Org Name **SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
aminoazobenzene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
aminoazobenzene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
anilazine	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
anilazine		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
aniline	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
aniline		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
anthracene	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
anthracene	<	0.01	mg/L	self	certified	06/30/2000	1B
anthracene	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
anthracene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
anthracene		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0063 mg/L**			
		Maximum		**0.0100 mg/L**			
aramite	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
aramite	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
aramite		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
arsenic	<	0.001	mg/L	city	comp/split	01/13/2000 10:40 AM	1B
arsenic	=	0.001	mg/L	self	composite	03/09/2000 7:30 AM	1B
arsenic	=	0.021	mg/L	self	composite	06/01/2000 12:40 PM	1B
arsenic	=	0.0085	mg/L	city	composite	06/08/2000 10:06 AM	1B
arsenic	<	0.001	mg/L	self	composite	09/07/2000 7:45 AM	1B
arsenic	=	0.0011	mg/L	city	composite	09/28/2000 11:45 AM	1B
arsenic	=	0.0014	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
arsenic	<	0.02	mg/L	self	composite	12/14/2000 7:30 AM	1B
arsenic		**Minimum**		**0.0005 mg/L**		**Count 8**	
		Average		**0.0055 mg/L**			
		Maximum		**0.0210 mg/L**			

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Org Name **SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
azinophos methyl	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
azinophos methyl		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
azobenzene	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
azobenzene	<	0.01	mg/L	self	certified	06/30/2000	1B
azobenzene	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
azobenzene		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0067 mg/L**			
		Maximum		**0.0100 mg/L**			
barban	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
barban		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
benzene	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
benzene	<	0.01	mg/L	self	certified	06/30/2000	1B
benzene	<	0.005	mg/L	city	grab/split	07/21/2000 9:31 AM	1B
benzene	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
benzene	<	0.001	mg/L	city	grab	09/28/2000 11:40 AM	1B
benzene	<	0.002	mg/L	city	grab/split	11/07/2000 12:20 PM	1B
benzene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
benzene		**Minimum**		**0.0005 mg/L**		**Count 7**	
		Average		**0.0034 mg/L**			
		Maximum		**0.0050 mg/L**			
benzidine	<	0.04	mg/L	city	composite	06/21/2000 11:12 AM	1B
benzidine	<	0.01	mg/L	self	certified	06/30/2000	1B
benzidine	<	0.01	mg/L	self	certified	06/30/2000	1B
benzidine	<	0.02	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
benzidine	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
benzidine		**Minimum**		**0.0050 mg/L**		**Count 5**	
		Average		**0.0090 mg/L**			
		Maximum		**0.0200 mg/L**			
benzo(a)anthracene	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
benzo(a)anthracene	<	0.01	mg/L	self	certified	06/30/2000	1B
benzo(a)anthracene	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
benzo(a)anthracene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
benzo(a)anthracene		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0063 mg/L**			
		Maximum		**0.0100 mg/L**			

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Org Id **1592**

Org Name **SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
benzo(a)pyrene	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
benzo(a)pyrene	<	0.01	mg/L	self	certified	06/30/2000	1B
benzo(a)pyrene	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
benzo(a)pyrene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
benzo(a)pyrene		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0063 mg/L**			
		Maximum		**0.0100 mg/L**			
benzo(b)fluoranthene	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
benzo(b)fluoranthene	<	0.01	mg/L	self	certified	06/30/2000	1B
benzo(b)fluoranthene	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
benzo(b)fluoranthene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
benzo(b)fluoranthene		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0063 mg/L**			
		Maximum		**0.0100 mg/L**			
benzo(g,h,i)perylene	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
benzo(g,h,i)perylene	<	0.01	mg/L	self	certified	06/30/2000	1B
benzo(g,h,i)perylene	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
benzo(g,h,i)perylene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
benzo(g,h,i)perylene		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0063 mg/L**			
		Maximum		**0.0100 mg/L**			
benzo(k)fluoranthene	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
benzo(k)fluoranthene	<	0.01	mg/L	self	certified	06/30/2000	1B
benzo(k)fluoranthene	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
benzo(k)fluoranthene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
benzo(k)fluoranthene		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0063 mg/L**			
		Maximum		**0.0100 mg/L**			
benzoic acid	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
benzoic acid		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
benzyl alcohol	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
benzyl alcohol	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
benzyl alcohol		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
benzyl butyl phthalate	<	0.01	mg/L	self	certified	06/30/2000	1B

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Org Id **1592**

Org Name **SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
benzyl butyl phthalate	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
benzyl butyl phthalate		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
benzyl chloride	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
benzyl chloride		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
bhc, alpha	<	0.01	mg/L	self	certified	06/30/2000	1B
bhc, alpha	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
bhc, alpha		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
bhc, beta	<	0.01	mg/L	self	certified	06/30/2000	1B
bhc, beta	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
bhc, beta		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
bhc, delta	<	0.01	mg/L	self	certified	06/30/2000	1B
bhc, delta	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
bhc, delta		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
bhc, gamma (lindane)	<	0.01	mg/L	self	certified	06/30/2000	1B
bhc, gamma (lindane)	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
bhc, gamma (lindane)		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
bis(2-chloroethoxy) methane	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
bis(2-chloroethoxy) methane	<	0.01	mg/L	self	certified	06/30/2000	1B
bis(2-chloroethoxy) methane	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
bis(2-chloroethoxy) methane	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
bis(2-chloroethoxy) methane		**Minimum**		**0.0050**	**mg/L**	**Count 4**	
		Average		**0.0063**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
bis(2-chloroethyl) ether	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
bis(2-chloroethyl) ether	<	0.01	mg/L	self	certified	06/30/2000	1B
bis(2-chloroethyl) ether	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B

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Org Id **1592**

Org Name **SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
bis(2-chloroethyl) ether	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
bis(2-chloroethyl) ether		**Minimum**		**0.0050**	**mg/L**	**Count 4**	
		Average		**0.0063**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
bis(2-chloroisopropyl) ether	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
bis(2-chloroisopropyl) ether	<	0.01	mg/L	self	certified	06/30/2000	1B
bis(2-chloroisopropyl) ether	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
bis(2-chloroisopropyl) ether	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
bis(2-chloroisopropyl) ether		**Minimum**		**0.0050**	**mg/L**	**Count 4**	
		Average		**0.0063**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
bis(2-ethylhexyl)phthalate	=	0.044	mg/L	city	composite	06/21/2000 11:12 AM	1B
bis(2-ethylhexyl)phthalate	<	0.01	mg/L	self	certified	06/30/2000	1B
bis(2-ethylhexyl)phthalate	=	0.21	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
bis(2-ethylhexyl)phthalate	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
bis(2-ethylhexyl)phthalate		**Minimum**		**0.0050**	**mg/L**	**Count 4**	
		Average		**0.0660**	**mg/L**		
		Maximum		**0.2100**	**mg/L**		
bromoacetone	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
bromoacetone		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
bromobenzene	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
bromobenzene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
bromobenzene		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
bromochloromethane	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
bromochloromethane	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
bromochloromethane		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
bromodichloromethane	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
bromodichloromethane	<	0.01	mg/L	self	certified	06/30/2000	1B
bromodichloromethane	<	0.015	mg/L	city	grab/split	07/21/2000 9:31 AM	1B
bromodichloromethane	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
bromodichloromethane	<	0.003	mg/L	city	grab	09/28/2000 11:40 AM	1B
bromodichloromethane	<	0.002	mg/L	city	grab/split	11/07/2000 12:20 PM	1B

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Org Name **SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
bromodichloromethane	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
bromodichloromethane		**Minimum**		**0.0010 mg/L**		**Count 7**	
		Average		**0.0043 mg/L**			
		Maximum		**0.0075 mg/L**			
bromoform	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
bromoform	<	0.01	mg/L	self	certified	06/30/2000	1B
bromoform	<	0.015	mg/L	city	grab/split	07/21/2000 9:31 AM	1B
bromoform	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
bromoform	<	0.003	mg/L	city	grab	09/28/2000 11:40 AM	1B
bromoform	<	0.002	mg/L	city	grab/split	11/07/2000 12:20 PM	1B
bromoform	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
bromoform		**Minimum**		**0.0010 mg/L**		**Count 7**	
		Average		**0.0043 mg/L**			
		Maximum		**0.0075 mg/L**			
bromomethane	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
bromomethane	<	0.01	mg/L	self	certified	06/30/2000	1B
bromomethane	<	0.05	mg/L	city	grab/split	07/21/2000 9:31 AM	1B
bromomethane	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
bromomethane	<	0.01	mg/L	city	grab	09/28/2000 11:40 AM	1B
bromomethane	<	0.005	mg/L	city	grab/split	11/07/2000 12:20 PM	1B
bromomethane	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
bromomethane		**Minimum**		**0.0025 mg/L**		**Count 7**	
		Average		**0.0075 mg/L**			
		Maximum		**0.0250 mg/L**			
bromoxynil	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
bromoxynil		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
butyl benzyl phthalate	<	0.08	mg/L	city	composite	06/21/2000 11:12 AM	1B
butyl benzyl phthalate	<	0.01	mg/L	self	certified	06/30/2000	1B
butyl benzyl phthalate	<	0.04	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
butyl benzyl phthalate	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
butyl benzyl phthalate		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0175 mg/L**			
		Maximum		**0.0400 mg/L**			
captafol	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
captafol		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			

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Org Name **SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
captan	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
captan		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
carbaryl	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
carbaryl		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
carbazole	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
carbazole		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
carbofuran	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
carbofuran		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
carbon disulfide	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
carbon disulfide	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
carbon disulfide	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
carbon disulfide		**Minimum**		**0.0050**	**mg/L**	**Count 3**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
carbon tetrachloride	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
carbon tetrachloride	<	0.01	mg/L	self	certified	06/30/2000	1B
carbon tetrachloride	<	0.015	mg/L	city	grab/split	07/21/2000 9:31 AM	1B
carbon tetrachloride	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
carbon tetrachloride	<	0.003	mg/L	city	grab	09/28/2000 11:40 AM	1B
carbon tetrachloride	<	0.003	mg/L	city	grab/split	11/07/2000 12:20 PM	1B
carbon tetrachloride	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
carbon tetrachloride		**Minimum**		**0.0015**	**mg/L**	**Count 7**	
		Average		**0.0044**	**mg/L**		
		Maximum		**0.0075**	**mg/L**		
carbophenothion	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
carbophenothion		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
chlordane	<	0.01	mg/L	self	certified	06/30/2000	1B

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Org Name **SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
chlordane	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
chlordane		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
chlorfenvinphos	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
chlorfenvinphos		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
chlorobenzene	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
chlorobenzene	<	0.01	mg/L	self	certified	06/30/2000	1B
chlorobenzene	<	0.005	mg/L	city	grab/split	07/21/2000 9:31 AM	1B
chlorobenzene	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
chlorobenzene	<	0.001	mg/L	city	grab	09/28/2000 11:40 AM	1B
chlorobenzene	<	0.002	mg/L	city	grab/split	11/07/2000 12:20 PM	1B
chlorobenzene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
chlorobenzene		**Minimum**		**0.0005 mg/L**		**Count 7**	
		Average		**0.0034 mg/L**			
		Maximum		**0.0050 mg/L**			
chlorobenzilate	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
chlorobenzilate		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
chloroethane	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
chloroethane	<	0.01	mg/L	self	certified	06/30/2000	1B
chloroethane	<	0.05	mg/L	city	grab/split	07/21/2000 9:31 AM	1B
chloroethane	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
chloroethane	<	0.01	mg/L	city	grab	09/28/2000 11:40 AM	1B
chloroethane	<	0.005	mg/L	city	grab/split	11/07/2000 12:20 PM	1B
chloroethane	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
chloroethane		**Minimum**		**0.0025 mg/L**		**Count 7**	
		Average		**0.0075 mg/L**			
		Maximum		**0.0250 mg/L**			
chloroform	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
chloroform	<	0.01	mg/L	self	certified	06/30/2000	1B
chloroform	<	0.005	mg/L	city	grab/split	07/21/2000 9:31 AM	1B
chloroform	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
chloroform	=	0.004	mg/L	city	grab	09/28/2000 11:40 AM	1B
chloroform	=	0.004	mg/L	city	grab/split	11/07/2000 12:20 PM	1B

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Org Id 1592

Org Name SILTRONIC CORP Permit Number 469.001

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
chloroform	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
chloroform		**Minimum**		**0.0025 mg/L**		**Count 7**	
		Average		**0.0044 mg/L**			
		Maximum		**0.0050 mg/L**			
chloromethane	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
chloromethane	<	0.01	mg/L	self	certified	06/30/2000	1B
chloromethane	<	0.05	mg/L	city	grab/split	07/21/2000 9:31 AM	1B
chloromethane	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
chloromethane	<	0.01	mg/L	city	grab	09/28/2000 11:40 AM	1B
chloromethane	<	0.005	mg/L	city	grab/split	11/07/2000 12:20 PM	1B
chloromethane	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
chloromethane		**Minimum**		**0.0025 mg/L**		**Count 7**	
		Average		**0.0075 mg/L**			
		Maximum		**0.0250 mg/L**			
chloroprene	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
chloroprene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
chloroprene		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
chrysene	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
chrysene	<	0.01	mg/L	self	certified	06/30/2000	1B
chrysene	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
chrysene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
chrysene		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0063 mg/L**			
		Maximum		**0.0100 mg/L**			
coumaphos	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
coumaphos		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
crotoxyphos	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
crotoxyphos		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
dalapon	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
dalapon		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			

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Org Id **1592**

Org Name **SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
demeton-o	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
demeton-o		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
demeton-s	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
demeton-s		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
di(2-ethylhexyl)adipate	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
di(2-ethylhexyl)adipate		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
diallate (trans or cis)	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
diallate (trans or cis)		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
dibenzo(a,e)pyrene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
dibenzo(a,e)pyrene		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
dibenzo(a,h)anthracene	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
dibenzo(a,h)anthracene	<	0.01	mg/L	self	certified	06/30/2000	1B
dibenzo(a,h)anthracene	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
dibenzo(a,h)anthracene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
dibenzo(a,h)anthracene		**Minimum**		**0.0050**	**mg/L**	**Count 4**	
		Average		**0.0063**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
dibenzo(a,j)acridine	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
dibenzo(a,j)acridine		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
dibenzofuran	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
dibenzofuran		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
dibromochloromethane	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
dibromochloromethane	<	0.01	mg/L	self	certified	06/30/2000	1B

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Org Id **1592**

Org Name **SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
dibromochloromethane	<	0.025	mg/L	city	grab/split	07/21/2000 9:31 AM	1B
dibromochloromethane	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
dibromochloromethane	<	0.005	mg/L	city	grab	09/28/2000 11:40 AM	1B
dibromochloromethane	<	0.001	mg/L	city	grab/split	11/07/2000 12:20 PM	1B
dibromochloromethane	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
dibromochloromethane		**Minimum**		**0.0005 mg/L**		**Count 7**	
		Average		**0.0051 mg/L**			
		Maximum		**0.0125 mg/L**			
dibromomethane	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
dibromomethane	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
dibromomethane	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
dibromomethane	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
dibromomethane		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
dicamba	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
dicamba		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
dichlone	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
dichlone		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
dichlorodifluoromethane (freon-12)	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
dichlorodifluoromethane (freon-12)	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
dichlorodifluoromethane (freon-12)	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
dichlorodifluoromethane (freon-12)		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
dichlorovos	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
dichlorovos		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
dicrotophos	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
dicrotophos		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
dieldrin	<	0.01	mg/L	self	certified	06/30/2000	1B

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Org Id **1592**

Org Name **SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
dieldrin	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
dieldrin		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
diethyl phthalate	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
diethyl phthalate	<	0.01	mg/L	self	certified	06/30/2000	1B
diethyl phthalate	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
diethyl phthalate	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
diethyl phthalate		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0063 mg/L**			
		Maximum		**0.0100 mg/L**			
diethyl sulfate	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
diethyl sulfate	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
diethyl sulfate		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
diethylstilbesterol	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
diethylstilbesterol		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
dimethoate	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
dimethoate		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
dimethyl phthalate	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
dimethyl phthalate	<	0.01	mg/L	self	certified	06/30/2000	1B
dimethyl phthalate	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
dimethyl phthalate	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
dimethyl phthalate		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0063 mg/L**			
		Maximum		**0.0100 mg/L**			
di-n-butyl phthalate	<	0.08	mg/L	city	composite	06/21/2000 11:12 AM	1B
di-n-butyl phthalate	<	0.01	mg/L	self	certified	06/30/2000	1B
di-n-butyl phthalate	<	0.04	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
di-n-butyl phthalate	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
di-n-butyl phthalate		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0175 mg/L**			
		Maximum		**0.0400 mg/L**			

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Org Id **1592**

Org Name **SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
dinocap	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
dinocap		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
di-n-octyl phthalate	<	0.04	mg/L	city	composite	06/21/2000 11:12 AM	1B
di-n-octyl phthalate	<	0.01	mg/L	self	certified	06/30/2000	1B
di-n-octyl phthalate	<	0.02	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
di-n-octyl phthalate	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
di-n-octyl phthalate		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0100 mg/L**			
		Maximum		**0.0200 mg/L**			
dinoseb	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
dinoseb		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
diphenylamine	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
diphenylamine		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
disulfoton	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
disulfoton		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
endosulfan I	<	0.01	mg/L	self	certified	06/30/2000	1B
endosulfan I	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
endosulfan I		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
endosulfan II	<	0.01	mg/L	self	certified	06/30/2000	1B
endosulfan II	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
endosulfan II		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
endosulfan sulfate	<	0.01	mg/L	self	certified	06/30/2000	1B

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Org Id 1592

Org Name SILTRONIC CORP Permit Number 469.001

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
endosulfan sulfate	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
endosulfan sulfate		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
endrin	<	0.01	mg/L	self	certified	06/30/2000	1B
endrin	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
endrin		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
endrin aldehyde	<	0.01	mg/L	self	certified	06/30/2000	1B
endrin aldehyde	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
endrin aldehyde		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
endrin ketone	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
endrin ketone		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
epichlorohydrin	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
epichlorohydrin		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
epn	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
epn		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
ethanol	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
ethanol		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
ethion	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
ethion		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
ethyl benzene	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
ethyl benzene	<	0.01	mg/L	self	certified	06/30/2000	1B
ethyl benzene	<	0.015	mg/L	city	grab/split	07/21/2000 9:31 AM	1B

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Org Id **1592**

Org Name **SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
ethyl benzene	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
ethyl benzene	<	0.003	mg/L	city	grab	09/28/2000 11:40 AM	1B
ethyl benzene	<	0.003	mg/L	city	grab/split	11/07/2000 12:20 PM	1B
ethyl benzene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
ethyl benzene		**Minimum**		**0.0015 mg/L**		**Count 7**	
		Average		**0.0044 mg/L**			
		Maximum		**0.0075 mg/L**			
ethyl carbamate	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
ethyl carbamate		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
ethyl methacrylate	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
ethyl methacrylate	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
ethyl methacrylate		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
ethyl methanesulfonate	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
ethyl methanesulfonate		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
ethylene oxide	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
ethylene oxide		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
famphur	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
famphur		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
fensulfothion	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
fensulfothion		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
fenthion	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
fenthion		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			

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Org Id **1592**

Org Name **SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
fluchloralin	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
fluchloralin		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
fluoranthene	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
fluoranthene	<	0.01	mg/L	self	certified	06/30/2000	1B
fluoranthene	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
fluoranthene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
fluoranthene		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0063 mg/L**			
		Maximum		**0.0100 mg/L**			
fluorene	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
fluorene	<	0.01	mg/L	self	certified	06/30/2000	1B
fluorene	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
fluorene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
fluorene		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0063 mg/L**			
		Maximum		**0.0100 mg/L**			
heptachlor	<	0.01	mg/L	self	certified	06/30/2000	1B
heptachlor	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
heptachlor		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
heptachlor epoxide	<	0.01	mg/L	self	certified	06/30/2000	1B
heptachlor epoxide	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
heptachlor epoxide		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
hexachlorobenzene	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
hexachlorobenzene	<	0.01	mg/L	self	certified	06/30/2000	1B
hexachlorobenzene	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
hexachlorobenzene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
hexachlorobenzene		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0063 mg/L**			
		Maximum		**0.0100 mg/L**			
hexachlorobutadiene	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
hexachlorobutadiene	<	0.01	mg/L	self	certified	06/30/2000	1B
hexachlorobutadiene	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
hexachlorobutadiene	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B

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Org Id **1592**

Org Name **SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
hexachlorobutadiene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
hexachlorobutadiene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
hexachlorobutadiene		**Minimum**		**0.0050 mg/L**		**Count 6**	
		Average		**0.0058 mg/L**			
		Maximum		**0.0100 mg/L**			
hexachlorocyclopentadiene	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
hexachlorocyclopentadiene	<	0.01	mg/L	self	certified	06/30/2000	1B
hexachlorocyclopentadiene	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
hexachlorocyclopentadiene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
hexachlorocyclopentadiene		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0063 mg/L**			
		Maximum		**0.0100 mg/L**			
hexachloroethane	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
hexachloroethane	<	0.01	mg/L	self	certified	06/30/2000	1B
hexachloroethane	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
hexachloroethane	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
hexachloroethane		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0063 mg/L**			
		Maximum		**0.0100 mg/L**			
hexachlorophene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
hexachlorophene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
hexachloropropene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
hexachloropropene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
hexamethyl phosphoramide	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
hexamethyl phosphoramide		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
hydroquinone	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
hydroquinone		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
indeno (1,2,3-cd) pyrene	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
indeno (1,2,3-cd) pyrene	<	0.01	mg/L	self	certified	06/30/2000	1B
indeno (1,2,3-cd) pyrene	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B

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Org Id **1592**

Org Name **SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
indeno (1,2,3-cd) pyrene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
indeno (1,2,3-cd) pyrene		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0063 mg/L**			
		Maximum		**0.0100 mg/L**			
iodomethane	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
iodomethane		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
isobutyl alcohol	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
isobutyl alcohol	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
isobutyl alcohol		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
isodrin	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
isodrin		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
isophorone	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
isophorone	<	0.01	mg/L	self	certified	06/30/2000	1B
isophorone	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
isophorone	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
isophorone		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0063 mg/L**			
		Maximum		**0.0100 mg/L**			
isopropylbenzene	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
isopropylbenzene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
isopropylbenzene		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
isosafrole	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
isosafrole		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
kepone	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
kepone		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			

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Org Id **1592**

Org Name **SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
leptophos	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
leptophos		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
malathion	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
malathion		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
maleic anhydride	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
maleic anhydride		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
mcpa	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
mcpa		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
mcpp	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
mcpp		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
mestranol	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
mestranol		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
methacrylonitrile	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
methacrylonitrile		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
methapyrilene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
methapyrilene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
methoxychlor	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
methoxychlor		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			

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Org Id 1592

Org Name SILTRONIC CORP Permit Number 469.001

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
methyl iodide	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
methyl iodide	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
methyl iodide		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
methyl methacrylate	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
methyl methacrylate		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
methyl parathion	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
methyl parathion		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
methylacrylonitrile	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
methylacrylonitrile	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
methylacrylonitrile		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
methylene chloride	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
methylene chloride	<	0.01	mg/L	self	certified	06/30/2000	1B
methylene chloride	<	0.02	mg/L	city	grab/split	07/21/2000 9:31 AM	1B
methylene chloride	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
methylene chloride	<	0.004	mg/L	city	grab	09/28/2000 11:40 AM	1B
methylene chloride	<	0.005	mg/L	city	grab/split	11/07/2000 12:20 PM	1B
methylene chloride	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
methylene chloride		**Minimum**		**0.0020 mg/L**		**Count 7**	
		Average		**0.0049 mg/L**			
		Maximum		**0.0100 mg/L**			
methylmethanesulfonate	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
methylmethanesulfonate		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
mevinphos	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
mevinphos		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			

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Org Id **1592**

Org Name **SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
mexacarbate	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
mexacarbate		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
mirex	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
mirex		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
molybdenum	<	0.1	mg/L	city	comp/split	01/13/2000 10:40 AM	1B
molybdenum	=	0.008	mg/L	self	composite	03/09/2000 7:30 AM	1B
molybdenum	=	0.059	mg/L	self	composite	06/01/2000 12:40 PM	1B
molybdenum	<	0.1	mg/L	city	composite	06/08/2000 10:06 AM	1B
molybdenum	=	0.0189	mg/L	self	composite	09/07/2000 7:45 AM	1B
molybdenum	<	0.2	mg/L	city	composite	09/28/2000 11:45 AM	1B
molybdenum	<	0.2	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
molybdenum	<	0.05	mg/L	self	composite	12/14/2000 7:30 AM	1B
molybdenum		**Minimum**		**0.0080 mg/L**		**Count 8**	
		Average		**0.0514 mg/L**			
		Maximum		**0.1000 mg/L**			
monocrotophos	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
monocrotophos		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
naled	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
naled		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
naphthalene	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
naphthalene	<	0.01	mg/L	self	certified	06/30/2000	1B
naphthalene	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
naphthalene	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
naphthalene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
naphthalene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
naphthalene		**Minimum**		**0.0050 mg/L**		**Count 6**	
		Average		**0.0058 mg/L**			
		Maximum		**0.0100 mg/L**			
n-butylbenzene	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B

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Org Name **SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
n-butylbenzene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
n-butylbenzene		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
nicotine	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
nicotine		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
nitrobenzene	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
nitrobenzene	<	0.01	mg/L	self	certified	06/30/2000	1B
nitrobenzene	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
nitrobenzene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
nitrobenzene		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0063 mg/L**			
		Maximum		**0.0100 mg/L**			
nitrofen	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
nitrofen		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
nitroquinoline-1-oxide	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
nitroquinoline-1-oxide		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
n-ninitrosopiperidine	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
n-ninitrosopiperidine		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
n-nitrosodibutylamine	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
n-nitrosodibutylamine		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
n-nitrosodiethylamine	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
n-nitrosodiethylamine		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
n-nitrosodimethylamine	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
n-nitrosodimethylamine	<	0.01	mg/L	self	certified	06/30/2000	1B

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Org Name **SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
n-nitrosodimethylamine	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
n-nitrosodimethylamine	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
n-nitrosodimethylamine		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0063 mg/L**			
		Maximum		**0.0100 mg/L**			
n-nitroso-di-n-propylamine	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
n-nitroso-di-n-propylamine	<	0.01	mg/L	self	certified	06/30/2000	1B
n-nitroso-di-n-propylamine	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
n-nitroso-di-n-propylamine	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
n-nitroso-di-n-propylamine		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0063 mg/L**			
		Maximum		**0.0100 mg/L**			
n-nitrosodiphenylamine	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
n-nitrosodiphenylamine	<	0.01	mg/L	self	certified	06/30/2000	1B
n-nitrosodiphenylamine	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
n-nitrosodiphenylamine	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
n-nitrosodiphenylamine		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0063 mg/L**			
		Maximum		**0.0100 mg/L**			
n-nitrosomethylethylamine	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
n-nitrosomethylethylamine	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
n-nitrosomethylethylamine		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
n-nitrosomorpholine	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
n-nitrosomorpholine		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
n-nitrosopyrrolidine	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
n-nitrosopyrrolidine		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
n-propylamine	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
n-propylamine		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
n-propylbenzene	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B

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Org Id 1592

Org Name SILTRONIC CORP Permit Number 469.001

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
n-propylbenzene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
n-propylbenzene		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
o-anisidine	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
o-anisidine		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
octamethylpyrophosphoramide	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
octamethylpyrophosphoramide		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
o-toluidine	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
o-toluidine		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
parathion	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
parathion		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
p-benzoquinone	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
p-benzoquinone	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
p-benzoquinone		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
pcb 1016	<	0.01	mg/L	self	certified	06/30/2000	1B
pcb 1016	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
pcb 1016		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
pcb 1221	<	0.01	mg/L	self	certified	06/30/2000	1B
pcb 1221	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
pcb 1221		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
pcb 1232	<	0.01	mg/L	self	certified	06/30/2000	1B

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Org Name **SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
pcb 1232	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
pcb 1232		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
pcb 1242	<	0.01	mg/L	self	certified	06/30/2000	1B
pcb 1242	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
pcb 1242		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
pcb 1248	<	0.01	mg/L	self	certified	06/30/2000	1B
pcb 1248	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
pcb 1248		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
pcb 1254	<	0.01	mg/L	self	certified	06/30/2000	1B
pcb 1254	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
pcb 1254		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
pcb 1260	<	0.01	mg/L	self	certified	06/30/2000	1B
pcb 1260	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
pcb 1260		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
p-cresidine	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
p-cresidine		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
p-dimethylaminoazobenzene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
p-dimethylaminoazobenzene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
pentachlorobenzene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
pentachlorobenzene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
pentachloroethane	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B

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Org Id **1592**

Org Name **SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
pentachloroethane	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
pentachloroethane		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
pentachloronitrobenzene (pcnb)	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
pentachloronitrobenzene (pcnb)		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
pentachlorophenol	<	0.04	mg/L	city	composite	06/21/2000 11:12 AM	1B
pentachlorophenol	<	0.01	mg/L	self	certified	06/30/2000	1B
pentachlorophenol	<	0.02	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
pentachlorophenol	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
pentachlorophenol		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0100 mg/L**			
		Maximum		**0.0200 mg/L**			
pH	=	9.2	std units	city	grab	01/13/2000 10:36 AM	1B
pH	=		std units	self	continuous	01/31/2000	1B
pH	=		std units	self	continuous	02/29/2000	1B
pH	=		std units	self	continuous	03/31/2000	1B
pH	=		std units	self	continuous	04/30/2000	1B
pH	=		std units	self	continuous	05/31/2000	1B
pH	=	8.6	std units	city	grab	06/08/2000 10:02 AM	1B
pH	=		std units	self	continuous	06/30/2000	1B
pH	=		std units	self	continuous	07/31/2000	1B
pH	=		std units	self	continuous	08/31/2000	1B
pH	=	9.7	std units	city	grab	09/28/2000 11:40 AM	1B
pH	=		std units	self	continuous	09/30/2000	1B
pH	=		std units	self	continuous	10/31/2000	1B
pH	=	9.1	std units	city	grab/split	11/07/2000 12:20 PM	1B
pH	=		std units	self	continuous	11/30/2000	1B
pH	=		std units	self	continuous	12/31/2000	1B
pH		**Minimum**		**8.6000 std units**		**Count 16**	
		Maximum		**9.7000 std units**			
phenacetin	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
phenacetin		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
phenanthrene	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
phenanthrene	<	0.01	mg/L	self	certified	06/30/2000	1B

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Org Id **1592**

Org Name **SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
phenanthrene	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
phenanthrene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
phenanthrene		**Minimum**		**0.0050**	**mg/L**	**Count 4**	
		Average		**0.0063**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
phenobarbital	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
phenobarbital		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
phenol	<	0.01	mg/L	self	certified	06/30/2000	1B
phenol	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
phenol		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
phenols - total (epa 420)	<	0.04	mg/L	city	composite	06/21/2000 11:12 AM	1B
phenols - total (epa 420)	<	0.02	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
phenols - total (epa 420)		**Minimum**		**0.0100**	**mg/L**	**Count 2**	
		Average		**0.0150**	**mg/L**		
		Maximum		**0.0200**	**mg/L**		
phorate	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
phorate		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
phosalone	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
phosalone		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
phosmet	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
phosmet		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
phosphamidon	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
phosphamidon		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		

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Org Id 1592

Org Name SILTRONIC CORP Permit Number 469.001

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
phthalic anhydride	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
phthalic anhydride		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
piperonyl sulfoxide	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
piperonyl sulfoxide		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
pronamide	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
pronamide		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
propargyl alcohol	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
propargyl alcohol		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
propionitrile	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
propionitrile	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
propionitrile		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
propylthiouracil	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
propylthiouracil		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
pyrene	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
pyrene	<	0.01	mg/L	self	certified	06/30/2000	1B
pyrene	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
pyrene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
pyrene		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0063 mg/L**			
		Maximum		**0.0100 mg/L**			
pyridine	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
pyridine	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
pyridine		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			

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Org Id **1592**

Org Name **SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
resorcinol	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
resorcinol		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
safrole	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
safrole		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
sec-butylbenzene	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
sec-butylbenzene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
sec-butylbenzene		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
solids - total suspended	=	300	mg/L	city	grab	01/13/2000 10:36 AM	1B
solids - total suspended	=	355	mg/L	self	composite	03/09/2000 7:30 AM	1B
solids - total suspended	=	1462	mg/L	self	composite	06/01/2000 12:40 PM	1B
solids - total suspended	=	2190	mg/L	city	composite	06/08/2000 10:06 AM	1B
solids - total suspended	=	221	mg/L	self	composite	09/07/2000 7:45 AM	1B
solids - total suspended	=	130	mg/L	city	composite	09/28/2000 11:45 AM	1B
solids - total suspended	=	150	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
solids - total suspended	=	730	mg/L	self	composite	12/14/2000 7:30 AM	1B
solids - total suspended		**Minimum**		**130.0000**	**mg/L**	**Count 8**	
		Average		**692.2500**	**mg/L**		
		Maximum		**2,190.0000**	**mg/L**		
styrene	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
styrene	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
styrene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
styrene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
styrene		**Minimum**		**0.0050**	**mg/L**	**Count 4**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
sulfallate	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
sulfallate		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		

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Org Id **1592**

Org Name **SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
terbufos	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
terbufos		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
tert-butylbenzene	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
tert-butylbenzene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
tert-butylbenzene		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
tetrachloroethene	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
tetrachloroethene	<	0.01	mg/L	self	certified	06/30/2000	1B
tetrachloroethene	<	0.01	mg/L	city	grab/split	07/21/2000 9:31 AM	1B
tetrachloroethene	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
tetrachloroethene	<	0.002	mg/L	city	grab	09/28/2000 11:40 AM	1B
tetrachloroethene	<	0.003	mg/L	city	grab/split	11/07/2000 12:20 PM	1B
tetrachloroethene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
tetrachloroethene		**Minimum**		**0.0010 mg/L**		**Count 7**	
		Average		**0.0039 mg/L**			
		Maximum		**0.0050 mg/L**			
tetrachlorvinphos	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
tetrachlorvinphos		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
tetraethyl pyrophosphate	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
tetraethyl pyrophosphate		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
thionazine	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
thionazine		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
thiophenol (benzenethiol)	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
thiophenol (benzenethiol)		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
toluene	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
toluene	<	0.01	mg/L	self	certified	06/30/2000	1B
toluene	<	0.005	mg/L	city	grab/split	07/21/2000 9:31 AM	1B

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Org Name **SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
toluene	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
toluene	=	0.004	mg/L	city	grab	09/28/2000 11:40 AM	1B
toluene	<	0.003	mg/L	city	grab/split	11/07/2000 12:20 PM	1B
toluene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
toluene		**Minimum**		**0.0015 mg/L**		**Count 7**	
		Average		**0.0040 mg/L**			
		Maximum		**0.0050 mg/L**			
toluene diisocyanate	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
toluene diisocyanate		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
toxaphene	<	0.01	mg/L	self	certified	06/30/2000	1B
toxaphene	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
toxaphene		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
trichloroethene (tce)	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
trichloroethene (tce)	<	0.01	mg/L	self	certified	06/30/2000	1B
trichloroethene (tce)	<	0.02	mg/L	city	grab/split	07/21/2000 9:31 AM	1B
trichloroethene (tce)	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
trichloroethene (tce)	<	0.004	mg/L	city	grab	09/28/2000 11:40 AM	1B
trichloroethene (tce)	<	0.002	mg/L	city	grab/split	11/07/2000 12:20 PM	1B
trichloroethene (tce)	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
trichloroethene (tce)		**Minimum**		**0.0010 mg/L**		**Count 7**	
		Average		**0.0047 mg/L**			
		Maximum		**0.0100 mg/L**			
trichlorofluoromethane (freon-11)	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
trichlorofluoromethane (freon-11)	<	0.01	mg/L	self	certified	06/30/2000	1B
trichlorofluoromethane (freon-11)	<	0.02	mg/L	city	grab/split	07/21/2000 9:31 AM	1B
trichlorofluoromethane (freon-11)	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
trichlorofluoromethane (freon-11)	<	0.004	mg/L	city	grab	09/28/2000 11:40 AM	1B
trichlorofluoromethane (freon-11)	<	0.005	mg/L	city	grab/split	11/07/2000 12:20 PM	1B
trichlorofluoromethane (freon-11)	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
trichlorofluoromethane (freon-11)		**Minimum**		**0.0020 mg/L**		**Count 7**	
		Average		**0.0049 mg/L**			
		Maximum		**0.0100 mg/L**			

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Org Id **1592**

Org Name **SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
trifluraline	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
trifluraline		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
trimethyl phosphate	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
trimethyl phosphate		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
tri-p-tolyl phosphate(h)	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
tri-p-tolyl phosphate(h)		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
tris(2,3-dibromopropyl) phosphate	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
tris(2,3-dibromopropyl) phosphate		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
vinyl acetate	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
vinyl acetate		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
vinyl chloride	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
vinyl chloride	<	0.01	mg/L	self	certified	06/30/2000	1B
vinyl chloride	<	0.25	mg/L	city	grab/split	07/21/2000 9:31 AM	1B
vinyl chloride	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
vinyl chloride	<	0.05	mg/L	city	grab	09/28/2000 11:40 AM	1B
vinyl chloride	<	0.005	mg/L	city	grab/split	11/07/2000 12:20 PM	1B
vinyl chloride	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
vinyl chloride		**Minimum**		**0.0025**	**mg/L**	**Count 7**	
		Average		**0.0246**	**mg/L**		
		Maximum		**0.1250**	**mg/L**		
xylene, m-	<	0.01	mg/L	self	certified	06/30/2000	1B
xylene, m-	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
xylene, m-	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
xylene, m-		**Minimum**		**0.0050**	**mg/L**	**Count 3**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
xylene, o-	<	0.01	mg/L	self	certified	06/30/2000	1B
xylene, o-	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B

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Org Id **1592**

Org Name **SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
xylene, o-	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
xylene, o-		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
xylene, p-	<	0.01	mg/L	self	certified	06/30/2000	1B
xylene, p-	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
xylene, p-	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
xylene, p-		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
xylenes, total	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
xylenes, total	<	0.01	mg/L	self	certified	06/30/2000	1B
xylenes, total	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
xylenes, total	<	0.01	mg/L	self	grab	12/14/2000 7:30 AM	1B
xylenes, total		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			

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CITY OF PORTLAND
ENVIRONMENTAL SERVICES

Water Pollution Control Laboratory
6543 N. Burlington Ave., Portland, Oregon 97203-5452
(503) 823-5600

January 8, 2001

Mr. Thomas C. McCue
Wacker Siltronic Corporation
7200 NW Front Avenue
PO Box 83180
Portland, OR 97283-0180

RE: Periodic Self-Monitoring Report Forms

Dear Mr. McCue:

I am sending a set of yearly self-monitoring report forms that reflect Wacker Siltronic's self-monitoring requirements for 2001. I have dropped the quarterly monitoring requirement for molybdenum based on the last two years of data that showed no need to continue said monitoring. Reference the dates on the top of the forms to ensure on-time submittal of the appropriate sample results

I have also enclosed the sampling data collected from your facility during the last year. This data is provided to assist you in maintaining historical information for pollutants present in your facility's wastewater discharges. This information should help to identify any compliance issues. The Industrial Source Control Division maintains sampling data from both City and self-monitoring samples. Compare your self-monitoring results to the City monitoring results, to verify that this information is correct.

If you have any questions about the enclosed forms, call me at 823-5537. Thank you for your continued cooperation.

Sincerely,

Timothy P. Dean

Timothy P. Dean, CHMM
Permit Manager

cc: M. Santana, BES

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Historical Analytical Report for 01/01/2000 - 03/31/2001

Org Id 1592

Org Name WACKER SILTRONIC CORP

Permit Number 1200Z Stormwater

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
copper	=	0.0198	mg/L	self	grab	05/10/2000 11:20 AM	01
copper	=	0.00872	mg/L	self	grab	05/10/2000 11:30 AM	02
copper	=	0.00681	mg/L	self	grab	05/10/2000 11:45 AM	03
copper		**Minimum**		**0.0068 mg/L**		**Count 3**	
		Average		**0.0118 mg/L**			
		Maximum		**0.0198 mg/L**			
lead	=	0.00902	mg/L	self	grab	05/10/2000 11:20 AM	01
lead	=	0.00705	mg/L	self	grab	05/10/2000 11:30 AM	02
lead	=	0.00278	mg/L	self	grab	05/10/2000 11:45 AM	03
lead ✓		**Minimum**		**0.0028 mg/L**		**Count 3**	
		Average		**0.0063 mg/L**			
		Maximum		**0.0090 mg/L**			
oil/grease - total	<	5	mg/L	self	grab	05/10/2000 11:20 AM	01
oil/grease - total	<	5	mg/L	self	grab	05/10/2000 11:30 AM	02
oil/grease - total	<	5	mg/L	self	grab	05/10/2000 11:45 AM	03
oil/grease - total ✓		**Minimum**		**2.5000 mg/L**		**Count 3**	
		Average		**2.5000 mg/L**			
		Maximum		**2.5000 mg/L**			
pH	=	7	std units	self	grab	05/10/2000 11:20 AM	01
pH	=	6.7	std units	self	grab	05/10/2000 11:30 AM	02
pH	=	6.7	std units	self	grab	05/10/2000 11:45 AM	03
pH ✓		**Minimum**		**6.7000 std units**		**Count 3**	
		Maximum		**7.0000 std units**			
solids - total suspended Stormwater	=	151.5	mg/L	self	grab	05/10/2000 11:20 AM	01
solids - total suspended	=	14.75	mg/L	self	grab	07/03/2000 3:30 PM	01
solids - total suspended	=	27.5	mg/L	self	grab	05/10/2000 11:30 AM	02
solids - total suspended	=	19	mg/L	self	grab	05/10/2000 11:45 AM	03
solids - total suspended ✓		**Minimum**		**14.7500 mg/L**		**Count 4**	
		Average		**53.1875 mg/L**			
		Maximum		**151.5000 mg/L**			
zinc	=	0.347	mg/L	self	grab	05/10/2000 11:20 AM	01
zinc	=	0.143	mg/L	self	grab	05/10/2000 11:30 AM	02
zinc	=	0.202	mg/L	self	grab	05/10/2000 11:45 AM	03
zinc ✓		**Minimum**		**0.1430 mg/L**		**Count 3**	
		Average		**0.2307 mg/L**			
		Maximum		**0.3470 mg/L**			

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Org Id 1592

Org Name WACKER SILTRONIC CORP Permit Number 469.001

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
1,1-dichloroethane	<	0.002	mg/L	city	grab	09/28/2000 11:40 AM	1B
1,1-dichloroethane		**Minimum**		**0.0010 mg/L**		**Count 5**	
		Average		**0.0042 mg/L**			
		Maximum		**0.0050 mg/L**			
1,1-dichloroethene	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
1,1-dichloroethene	<	0.01	mg/L	self	certified	06/30/2000	1B
1,1-dichloroethene	<	0.015	mg/L	city	grab/split	07/21/2000 9:31 AM	1B
1,1-dichloroethene	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
1,1-dichloroethene	<	0.003	mg/L	city	grab	09/28/2000 11:40 AM	1B
1,1-dichloroethene		**Minimum**		**0.0015 mg/L**		**Count 5**	
		Average		**0.0048 mg/L**			
		Maximum		**0.0075 mg/L**			
1,1-dichloropropene	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
1,1-dichloropropene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2,3,4-diepoxybutane	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
1,2,3,4-diepoxybutane		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2,3-trichlorobenzene	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
1,2,3-trichlorobenzene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2,3-trichloropropane	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
1,2,3-trichloropropane	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
1,2,3-trichloropropane		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2,4-trichlorobenzene	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
1,2,4-trichlorobenzene	<	0.01	mg/L	self	certified	06/30/2000	1B
1,2,4-trichlorobenzene	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
1,2,4-trichlorobenzene	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
1,2,4-trichlorobenzene		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0063 mg/L**			
		Maximum		**0.0100 mg/L**			

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Org Id 1592

Org Name WACKER SILTRONIC CORP Permit Number 469.001

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
1,2-dichloroethene (trans)	<	0.01	mg/L	city	grab/split	07/21/2000 9:31 AM	1B
1,2-dichloroethene (trans)	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
1,2-dichloroethene (trans)	<	0.002	mg/L	city	grab	09/28/2000 11:40 AM	1B
1,2-dichloroethene (trans)		**Minimum**		**0.0010 mg/L**		**Count 5**	
		Average		**0.0042 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2-dichloropropane	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
1,2-dichloropropane	<	0.01	mg/L	self	certified	06/30/2000	1B
1,2-dichloropropane	<	0.015	mg/L	city	grab/split	07/21/2000 9:31 AM	1B
1,2-dichloropropane	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
1,2-dichloropropane	<	0.003	mg/L	city	grab	09/28/2000 11:40 AM	1B
1,2-dichloropropane		**Minimum**		**0.0015 mg/L**		**Count 5**	
		Average		**0.0048 mg/L**			
		Maximum		**0.0075 mg/L**			
1,3,5-trimethylbenzene	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
1,3,5-trimethylbenzene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,3-dichloro-2-propanol	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
1,3-dichloro-2-propanol		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,3-dichlorobenzene	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
1,3-dichlorobenzene	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
1,3-dichlorobenzene	<	0.01	mg/L	self	certified	06/30/2000	1B
1,3-dichlorobenzene	<	0.01	mg/L	self	certified	06/30/2000	1B
1,3-dichlorobenzene	<	0.01	mg/L	city	grab/split	07/21/2000 9:31 AM	1B
1,3-dichlorobenzene	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
1,3-dichlorobenzene	<	0.002	mg/L	city	grab	09/28/2000 11:40 AM	1B
1,3-dichlorobenzene	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
1,3-dichlorobenzene		**Minimum**		**0.0010 mg/L**		**Count 8**	
		Average		**0.0051 mg/L**			
		Maximum		**0.0100 mg/L**			
1,3-dichloropropane	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
1,3-dichloropropane		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,3-dichloropropene (cis)	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
1,3-dichloropropene (cis)	<	0.01	mg/L	self	certified	06/30/2000	1B

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
1,4-dichlorobenzene	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
1,4-dichlorobenzene		**Minimum**		**0.0010 mg/L**		**Count 8**	
		Average		**0.0051 mg/L**			
		Maximum		**0.0100 mg/L**			
2,2-dichloropropane	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
2,2-dichloropropane		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
2,4,6-trichlorophenol	<	0.04	mg/L	city	composite	06/21/2000 11:12 AM	1B
2,4,6-trichlorophenol	<	0.01	mg/L	self	certified	06/30/2000	1B
2,4,6-trichlorophenol	<	0.02	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
2,4,6-trichlorophenol		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0117 mg/L**			
		Maximum		**0.0200 mg/L**			
2,4-dichlorophenol	<	0.04	mg/L	city	composite	06/21/2000 11:12 AM	1B
2,4-dichlorophenol	<	0.01	mg/L	self	certified	06/30/2000	1B
2,4-dichlorophenol	<	0.02	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
2,4-dichlorophenol		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0117 mg/L**			
		Maximum		**0.0200 mg/L**			
2,4-dimethylphenol	<	0.04	mg/L	city	composite	06/21/2000 11:12 AM	1B
2,4-dimethylphenol	<	0.01	mg/L	self	certified	06/30/2000	1B
2,4-dimethylphenol	<	0.02	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
2,4-dimethylphenol		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0117 mg/L**			
		Maximum		**0.0200 mg/L**			
2,4-dinitrophenol	<	0.08	mg/L	city	composite	06/21/2000 11:12 AM	1B
2,4-dinitrophenol	<	0.01	mg/L	self	certified	06/30/2000	1B
2,4-dinitrophenol	<	0.04	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
2,4-dinitrophenol		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0217 mg/L**			
		Maximum		**0.0400 mg/L**			
2,4-dinitrotoluene	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
2,4-dinitrotoluene	<	0.01	mg/L	self	certified	06/30/2000	1B
2,4-dinitrotoluene	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
2,4-dinitrotoluene		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0067 mg/L**			
		Maximum		**0.0100 mg/L**			

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Org Id 1592

Org Name WACKER SILTRONIC CORP Permit Number 469.001

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
2-chlorotoluene	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
2-chlorotoluene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
2-hexanone	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
2-hexanone	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
2-hexanone		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
2-hydroxypropionitrile	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
2-hydroxypropionitrile		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
2-methyl-4,6-dinitrophenol	<	0.04	mg/L	city	composite	06/21/2000 11:12 AM	1B
2-methyl-4,6-dinitrophenol	<	0.01	mg/L	self	certified	06/30/2000	1B
2-methyl-4,6-dinitrophenol	<	0.02	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
2-methyl-4,6-dinitrophenol		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0117 mg/L**			
		Maximum		**0.0200 mg/L**			
2-methylphenol	<	0.01	mg/L	self	certified	06/30/2000	1B
2-methylphenol		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
2-nitrophenol	<	0.04	mg/L	city	composite	06/21/2000 11:12 AM	1B
2-nitrophenol	<	0.01	mg/L	self	certified	06/30/2000	1B
2-nitrophenol	<	0.02	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
2-nitrophenol		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0117 mg/L**			
		Maximum		**0.0200 mg/L**			
2-picoline	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
2-picoline		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
3,3'-dichlorobenzidine	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
3,3'-dichlorobenzidine	<	0.01	mg/L	self	certified	06/30/2000	1B

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
4-chlorophenyl phenyl ether	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
4-chlorophenyl phenyl ether		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0067 mg/L**			
		Maximum		**0.0100 mg/L**			
4-chlorotoluene	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
4-chlorotoluene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
4-isopropyltoluene	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
4-isopropyltoluene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
4-methyl-2-pentanone	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
4-methyl-2-pentanone	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
4-methyl-2-pentanone		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
4-methylphenol	<	0.01	mg/L	self	certified	06/30/2000	1B
4-methylphenol		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
4-nitrophenol	<	0.08	mg/L	city	composite	06/21/2000 11:12 AM	1B
4-nitrophenol	<	0.01	mg/L	self	certified	06/30/2000	1B
4-nitrophenol	<	0.04	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
4-nitrophenol		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0217 mg/L**			
		Maximum		**0.0400 mg/L**			
6-propiolactone	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
6-propiolactone		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
acenaphthene	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
acenaphthene	<	0.01	mg/L	self	certified	06/30/2000	1B
acenaphthene	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
acenaphthene		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0067 mg/L**			
		Maximum		**0.0100 mg/L**			

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
allyl chloride	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
allyl chloride		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
anthracene	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
anthracene	<	0.01	mg/L	self	certified	06/30/2000	1B
anthracene	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
anthracene		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0067 mg/L**			
		Maximum		**0.0100 mg/L**			
arsenic	<	0.001	mg/L	city	comp/split	01/13/2000 10:40 AM	1B
arsenic	=	0.001	mg/L	self	composite	03/09/2000 7:30 AM	1B
arsenic limit	=	0.021	mg/L	self	composite	06/01/2000 12:40 PM	1B
arsenic	=	0.0085	mg/L	city	composite	06/08/2000 10:06 AM	1B
arsenic ≤ 0.2 ppm	<	0.001	mg/L	self	composite	09/07/2000 7:45 AM	1B
arsenic	=	0.0011	mg/L	city	composite	09/28/2000 11:45 AM	1B
arsenic	=	0.0014	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
arsenic		**Minimum**		**0.0005 mg/L**		**Count 7**	
		Average		**0.0049 mg/L**			
		Maximum		**0.0210 mg/L**			
azobenzene	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
azobenzene	<	0.01	mg/L	self	certified	06/30/2000	1B
azobenzene	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
azobenzene		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0067 mg/L**			
		Maximum		**0.0100 mg/L**			
benzene	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
benzene	<	0.01	mg/L	self	certified	06/30/2000	1B
benzene	<	0.005	mg/L	city	grab/split	07/21/2000 9:31 AM	1B
benzene	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
benzene	<	0.001	mg/L	city	grab	09/28/2000 11:40 AM	1B
benzene		**Minimum**		**0.0005 mg/L**		**Count 5**	
		Average		**0.0036 mg/L**			
		Maximum		**0.0050 mg/L**			
benzidine	<	0.04	mg/L	city	composite	06/21/2000 11:12 AM	1B
benzidine	<	0.01	mg/L	self	certified	06/30/2000	1B
benzidine	<	0.01	mg/L	self	certified	06/30/2000	1B

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
benzyl chloride	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
benzyl chloride		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
bhc, alpha	<	0.01	mg/L	self	certified	06/30/2000	1B
bhc, alpha		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
bhc, beta	<	0.01	mg/L	self	certified	06/30/2000	1B
bhc, beta		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
bhc, delta	<	0.01	mg/L	self	certified	06/30/2000	1B
bhc, delta		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
bhc, gamma (lindane)	<	0.01	mg/L	self	certified	06/30/2000	1B
bhc, gamma (lindane)		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
bis(2-chloroethoxy) methane	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
bis(2-chloroethoxy) methane	<	0.01	mg/L	self	certified	06/30/2000	1B
bis(2-chloroethoxy) methane	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
bis(2-chloroethoxy) methane		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0067 mg/L**			
		Maximum		**0.0100 mg/L**			
bis(2-chloroethyl) ether	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
bis(2-chloroethyl) ether	<	0.01	mg/L	self	certified	06/30/2000	1B
bis(2-chloroethyl) ether	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
bis(2-chloroethyl) ether		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0067 mg/L**			
		Maximum		**0.0100 mg/L**			
bis(2-chloroisopropyl) ether	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
bis(2-chloroisopropyl) ether	<	0.01	mg/L	self	certified	06/30/2000	1B

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Org Id 1592

Org Name WACKER SILTRONIC CORP Permit Number 469.001

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
bromomethane	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
bromomethane	<	0.01	mg/L	self	certified	06/30/2000	1B
bromomethane	<	0.05	mg/L	city	grab/split	07/21/2000 9:31 AM	1B
bromomethane	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
bromomethane	<	0.01	mg/L	city	grab	09/28/2000 11:40 AM	1B
bromomethane		**Minimum**		**0.0050 mg/L**		**Count 5**	
		Average		**0.0090 mg/L**			
		Maximum		**0.0250 mg/L**			
butyl benzyl phthalate	<	0.08	mg/L	city	composite	06/21/2000 11:12 AM	1B
butyl benzyl phthalate	<	0.01	mg/L	self	certified	06/30/2000	1B
butyl benzyl phthalate	<	0.04	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
butyl benzyl phthalate		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0217 mg/L**			
		Maximum		**0.0400 mg/L**			
carbon disulfide	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
carbon disulfide	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
carbon disulfide		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
carbon tetrachloride	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
carbon tetrachloride	<	0.01	mg/L	self	certified	06/30/2000	1B
carbon tetrachloride	<	0.015	mg/L	city	grab/split	07/21/2000 9:31 AM	1B
carbon tetrachloride	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
carbon tetrachloride	<	0.003	mg/L	city	grab	09/28/2000 11:40 AM	1B
carbon tetrachloride		**Minimum**		**0.0015 mg/L**		**Count 5**	
		Average		**0.0048 mg/L**			
		Maximum		**0.0075 mg/L**			
chlordane	<	0.01	mg/L	self	certified	06/30/2000	1B
chlordane		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
chlorobenzene	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
chlorobenzene	<	0.01	mg/L	self	certified	06/30/2000	1B
chlorobenzene	<	0.005	mg/L	city	grab/split	07/21/2000 9:31 AM	1B
chlorobenzene	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
chlorobenzene	<	0.001	mg/L	city	grab	09/28/2000 11:40 AM	1B
chlorobenzene		**Minimum**		**0.0005 mg/L**		**Count 5**	
		Average		**0.0036 mg/L**			
		Maximum		**0.0050 mg/L**			

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
dibenzo(a,h)anthracene	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
dibenzo(a,h)anthracene		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0067 mg/L**			
		Maximum		**0.0100 mg/L**			
dibromochloromethane	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
dibromochloromethane	<	0.01	mg/L	self	certified	06/30/2000	1B
dibromochloromethane	<	0.025	mg/L	city	grab/split	07/21/2000 9:31 AM	1B
dibromochloromethane	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
dibromochloromethane	<	0.005	mg/L	city	grab	09/28/2000 11:40 AM	1B
dibromochloromethane		**Minimum**		**0.0025 mg/L**		**Count 5**	
		Average		**0.0060 mg/L**			
		Maximum		**0.0125 mg/L**			
dibromomethane	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
dibromomethane	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
dibromomethane		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
dichlorodifluoromethane (freon-12)	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
dichlorodifluoromethane (freon-12)	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
dichlorodifluoromethane (freon-12)		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
dieldrin	<	0.01	mg/L	self	certified	06/30/2000	1B
dieldrin		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
diethyl phthalate	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
diethyl phthalate	<	0.01	mg/L	self	certified	06/30/2000	1B
diethyl phthalate	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
diethyl phthalate		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0067 mg/L**			
		Maximum		**0.0100 mg/L**			
dimethyl phthalate	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
dimethyl phthalate	<	0.01	mg/L	self	certified	06/30/2000	1B
dimethyl phthalate	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
dimethyl phthalate		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0067 mg/L**			
		Maximum		**0.0100 mg/L**			

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Org Id 1592

Org Name WACKER SILTRONIC CORP Permit Number 469.001

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
ethanol	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
ethanol		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
ethyl benzene	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
ethyl benzene	<	0.01	mg/L	self	certified	06/30/2000	1B
ethyl benzene	<	0.015	mg/L	city	grab/split	07/21/2000 9:31 AM	1B
ethyl benzene	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
ethyl benzene	<	0.003	mg/L	city	grab	09/28/2000 11:40 AM	1B
ethyl benzene		**Minimum**		**0.0015**	**mg/L**	**Count 5**	
		Average		**0.0048**	**mg/L**		
		Maximum		**0.0075**	**mg/L**		
ethyl methacrylate	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
ethyl methacrylate		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
ethylene oxide	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
ethylene oxide		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
fluoranthene	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
fluoranthene	<	0.01	mg/L	self	certified	06/30/2000	1B
fluoranthene	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
fluoranthene		**Minimum**		**0.0050**	**mg/L**	**Count 3**	
		Average		**0.0067**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
fluorene	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
fluorene	<	0.01	mg/L	self	certified	06/30/2000	1B
fluorene	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
fluorene		**Minimum**		**0.0050**	**mg/L**	**Count 3**	
		Average		**0.0067**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
heptachlor	<	0.01	mg/L	self	certified	06/30/2000	1B
heptachlor		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		

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Org Id 1592

Org Name WACKER SILTRONIC CORP Permit Number 469.001

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
iodomethane	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
iodomethane		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
isobutyl alcohol	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
isobutyl alcohol		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
isophorone	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
isophorone	<	0.01	mg/L	self	certified	06/30/2000	1B
isophorone	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
isophorone		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0067 mg/L**			
		Maximum		**0.0100 mg/L**			
isopropylbenzene	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
isopropylbenzene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
methacrylonitrile	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
methacrylonitrile		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
methyl iodide	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
methyl iodide		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
methyl methacrylate	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
methyl methacrylate		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
methylacrylonitrile	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
methylacrylonitrile		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
methylene chloride	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
methylene chloride	<	0.01	mg/L	self	certified	06/30/2000	1B
methylene chloride	<	0.02	mg/L	city	grab/split	07/21/2000 9:31 AM	1B

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Org Id 1592

Org Name WACKER SILTRONIC CORP Permit Number 469.001

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
n-nitroso-di-n-propylamine	<	0.01	mg/L	self	certified	06/30/2000	1B
n-nitroso-di-n-propylamine	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
n-nitroso-di-n-propylamine		**Minimum**		**0.0050**	**mg/L**	**Count 3**	
		Average		**0.0067**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
n-nitrosodiphenylamine	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
n-nitrosodiphenylamine	<	0.01	mg/L	self	certified	06/30/2000	1B
n-nitrosodiphenylamine	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
n-nitrosodiphenylamine		**Minimum**		**0.0050**	**mg/L**	**Count 3**	
		Average		**0.0067**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
n-propylamine	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
n-propylamine		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
n-propylbenzene	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
n-propylbenzene		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
pcb 1016	<	0.01	mg/L	self	certified	06/30/2000	1B
pcb 1016		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
pcb 1221	<	0.01	mg/L	self	certified	06/30/2000	1B
pcb 1221		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
pcb 1232	<	0.01	mg/L	self	certified	06/30/2000	1B
pcb 1232		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
pcb 1242	<	0.01	mg/L	self	certified	06/30/2000	1B
pcb 1242		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		

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Org Id 1592

Org Name WACKER SILTRONIC CORP Permit Number 469.001

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
phenanthrene	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
phenanthrene	<	0.01	mg/L	self	certified	06/30/2000	1B
phenanthrene	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
phenanthrene		**Minimum**		**0.0050**	**mg/L**	**Count 3**	
		Average		**0.0067**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
phenol	<	0.01	mg/L	self	certified	06/30/2000	1B
phenol		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
phenols - total (epa 420)	<	0.04	mg/L	city	composite	06/21/2000 11:12 AM	1B
phenols - total (epa 420)	<	0.02	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
phenols - total (epa 420)		**Minimum**		**0.0100**	**mg/L**	**Count 2**	
		Average		**0.0150**	**mg/L**		
		Maximum		**0.0200**	**mg/L**		
propargyl alcohol	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
propargyl alcohol		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
propionitrile	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
propionitrile		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
pyrene	<	0.02	mg/L	city	composite	06/21/2000 11:12 AM	1B
pyrene	<	0.01	mg/L	self	certified	06/30/2000	1B
pyrene	<	0.01	mg/L	city	comp/split	11/07/2000 10:10 AM	1B
pyrene		**Minimum**		**0.0050**	**mg/L**	**Count 3**	
		Average		**0.0067**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
pyridine	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
pyridine		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
sec-butylbenzene	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
sec-butylbenzene		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		

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Org Id 1592

Org Name WACKER SILTRONIC CORP Permit Number 469.001

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
trichloroethene (tce)	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
trichloroethene (tce)	<	0.01	mg/L	self	certified	06/30/2000	1B
trichloroethene (tce)	<	0.02	mg/L	city	grab/split	07/21/2000 9:31 AM	1B
trichloroethene (tce)	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
trichloroethene (tce)	<	0.004	mg/L	city	grab	09/28/2000 11:40 AM	1B
trichloroethene (tce)		**Minimum**		**0.0020 mg/L**		**Count 5**	
		Average		**0.0054 mg/L**			
		Maximum		**0.0100 mg/L**			
trichlorofluoromethane (freon-11)	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
trichlorofluoromethane (freon-11)	<	0.01	mg/L	self	certified	06/30/2000	1B
trichlorofluoromethane (freon-11)	<	0.02	mg/L	city	grab/split	07/21/2000 9:31 AM	1B
trichlorofluoromethane (freon-11)	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
trichlorofluoromethane (freon-11)	<	0.004	mg/L	city	grab	09/28/2000 11:40 AM	1B
trichlorofluoromethane (freon-11)		**Minimum**		**0.0020 mg/L**		**Count 5**	
		Average		**0.0054 mg/L**			
		Maximum		**0.0100 mg/L**			
vinyl acetate	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
vinyl acetate		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
vinyl chloride	<	0.01	mg/L	self	grab	03/09/2000 7:30 AM	1B
vinyl chloride	<	0.01	mg/L	self	certified	06/30/2000	1B
vinyl chloride	<	0.25	mg/L	city	grab/split	07/21/2000 9:31 AM	1B
vinyl chloride	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
vinyl chloride	<	0.05	mg/L	city	grab	09/28/2000 11:40 AM	1B
vinyl chloride		**Minimum**		**0.0050 mg/L**		**Count 5**	
		Average		**0.0330 mg/L**			
		Maximum		**0.1250 mg/L**			
xylene, m-	<	0.01	mg/L	self	certified	06/30/2000	1B
xylene, m-	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
xylene, m-		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
xylene, o-	<	0.01	mg/L	self	certified	06/30/2000	1B
xylene, o-	<	0.01	mg/L	self	grab	09/07/2000 7:45 AM	1B
xylene, o-		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
xylene, p-	<	0.01	mg/L	self	certified	06/30/2000	1B

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CITY OF PORTLAND
ENVIRONMENTAL SERVICES

Water Pollution Control Laboratory
6543 N. Burlington Ave., Portland, Oregon 97203-5452
(503) 823-5600

August 30, 1999

Mr. Thomas C. McCue
Wacker Siltronic Corporation
7200 NW Front Avenue
P.O. Box 83180
Portland, OR 97283-0180

RE: 1st & 2nd Quarter Analytical Data.

Dear Mr. McCue;

Enclosed is the sampling data collected from your facility during the first and second quarters of 1999. We have provided you this data to assist you in maintaining historical information for pollutants present in your facility's wastewater discharge. This information will also help to identify compliance issues.

The Industrial Source Control Division maintains data from both City and self-monitoring. Please take this opportunity to compare self-monitoring results to City monitoring results, as well as to verify the analytical information contained within the report with your records.

As always if you have any questions about this report or your facility's wastewater discharge permit, contact me at (503) 823-5537. We thank you for doing your part to help protect water quality and the environment.

Respectfully,

Timothy P. Dean
Permit Manager.

Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
1,1,1,2-tetrachloroethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,1,1,2-tetrachloroethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,1,1,2-tetrachloroethane	<	0.01	mg/L	city	grab	06/28/1999 11:45 AM	1B
1,1,1,2-tetrachloroethane		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,1,1-trichloroethane	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
1,1,1-trichloroethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,1,1-trichloroethane	<	0.006	mg/L	city	grab	06/28/1999 11:45 AM	1B
1,1,1-trichloroethane		**Minimum**		**0.0030 mg/L**		**Count 3**	
		Average		**0.0043 mg/L**			
		Maximum		**0.0050 mg/L**			
1,1,2,2-tetrachloroethane	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
1,1,2,2-tetrachloroethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,1,2,2-tetrachloroethane	<	0.006	mg/L	city	grab	06/28/1999 11:45 AM	1B
1,1,2,2-tetrachloroethane		**Minimum**		**0.0030 mg/L**		**Count 3**	
		Average		**0.0043 mg/L**			
		Maximum		**0.0050 mg/L**			
1,1,2-trichloroethane	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
1,1,2-trichloroethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,1,2-trichloroethane	<	0.006	mg/L	city	grab	06/28/1999 11:45 AM	1B
1,1,2-trichloroethane		**Minimum**		**0.0030 mg/L**		**Count 3**	
		Average		**0.0043 mg/L**			
		Maximum		**0.0050 mg/L**			
1,1-dichloroethane	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
1,1-dichloroethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,1-dichloroethane	<	0.004	mg/L	city	grab	06/28/1999 11:45 AM	1B
1,1-dichloroethane		**Minimum**		**0.0020 mg/L**		**Count 3**	
		Average		**0.0040 mg/L**			
		Maximum		**0.0050 mg/L**			
1,1-dichloroethene	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
1,1-dichloroethene	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,1-dichloroethene	<	0.006	mg/L	city	grab	06/28/1999 11:45 AM	1B
1,1-dichloroethene		**Minimum**		**0.0030 mg/L**		**Count 3**	
		Average		**0.0043 mg/L**			
		Maximum		**0.0050 mg/L**			

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
1,2,3,4-diepoxybutane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,2,3,4-diepoxybutane		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2,3-trichloropropane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,2,3-trichloropropane		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2,4-trichlorobenzene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
1,2,4-trichlorobenzene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2-dibromo-3-chloropropane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,2-dibromo-3-chloropropane		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2-dibromoethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,2-dibromoethane		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2-dichlorobenzene	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
1,2-dichlorobenzene	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,2-dichlorobenzene	<	0.006	mg/L	city	grab	06/28/1999 11:45 AM	1B
1,2-dichlorobenzene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
1,2-dichlorobenzene		**Minimum**		**0.0030 mg/L**		**Count 4**	
		Average		**0.0045 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2-dichloroethane	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
1,2-dichloroethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,2-dichloroethane	<	0.01	mg/L	city	grab	06/28/1999 11:45 AM	1B
1,2-dichloroethane		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2-dichloroethene (trans)	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
1,2-dichloroethene (trans)	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
1,2-dichloroethene (trans)	<	0.004	mg/L	city	grab	06/28/1999 11:45 AM	1B
1,2-dichloroethene (trans)		**Minimum**		**0.0020 mg/L**		**Count 3**	
		Average		**0.0040 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2-dichloropropane	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
1,2-dichloropropane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,2-dichloropropane	<	0.006	mg/L	city	grab	06/28/1999 11:45 AM	1B
1,2-dichloropropane		**Minimum**		**0.0030 mg/L**		**Count 3**	
		Average		**0.0043 mg/L**			
		Maximum		**0.0050 mg/L**			
1,3-dichloro-2-propanol	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,3-dichloro-2-propanol		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,3-dichlorobenzene	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
1,3-dichlorobenzene	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,3-dichlorobenzene	<	0.004	mg/L	city	grab	06/28/1999 11:45 AM	1B
1,3-dichlorobenzene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
1,3-dichlorobenzene		**Minimum**		**0.0020 mg/L**		**Count 4**	
		Average		**0.0043 mg/L**			
		Maximum		**0.0050 mg/L**			
1,3-dichloropropene (cis)	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
1,3-dichloropropene (cis)	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,3-dichloropropene (cis)	<	0.008	mg/L	city	grab	06/28/1999 11:45 AM	1B
1,3-dichloropropene (cis)		**Minimum**		**0.0040 mg/L**		**Count 3**	
		Average		**0.0047 mg/L**			
		Maximum		**0.0050 mg/L**			
1,3-dichloropropene (trans)	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
1,3-dichloropropene (trans)	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,3-dichloropropene (trans)	<	0.006	mg/L	city	grab	06/28/1999 11:45 AM	1B
1,3-dichloropropene (trans)		**Minimum**		**0.0030 mg/L**		**Count 3**	
		Average		**0.0043 mg/L**			
		Maximum		**0.0050 mg/L**			
1,3-dichloropropene, total	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,3-dichloropropene, total		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			

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Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
1,4-dichloro-2-butene	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,4-dichloro-2-butene		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
1,4-dichlorobenzene	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
1,4-dichlorobenzene	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,4-dichlorobenzene	<	0.004	mg/L	city	grab	06/28/1999 11:45 AM	1B
1,4-dichlorobenzene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
1,4-dichlorobenzene		**Minimum**		**0.0020**	**mg/L**	**Count 4**	
		Average		**0.0043**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
1,4-dioxane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,4-dioxane		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
2,4,6-trichlorophenol	<	0.02	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
2,4,6-trichlorophenol		**Minimum**		**0.0100**	**mg/L**	**Count 1**	
		Average		**0.0100**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
2,4-dichlorophenol	<	0.02	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
2,4-dichlorophenol		**Minimum**		**0.0100**	**mg/L**	**Count 1**	
		Average		**0.0100**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
2,4-dimethylphenol	<	0.02	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
2,4-dimethylphenol		**Minimum**		**0.0100**	**mg/L**	**Count 1**	
		Average		**0.0100**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
2,4-dinitrophenol	<	0.04	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
2,4-dinitrophenol		**Minimum**		**0.0200**	**mg/L**	**Count 1**	
		Average		**0.0200**	**mg/L**		
		Maximum		**0.0200**	**mg/L**		
2,4-dinitrotoluene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
2,4-dinitrotoluene		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
2,6-dinitrotoluene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
2,6-dinitrotoluene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
2-butanone	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
2-butanone		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
2-chloroethanol	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
2-chloroethanol		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
2-chloroethylvinyl ether	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
2-chloroethylvinyl ether	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
2-chloroethylvinyl ether	<	0.1	mg/L	city	grab	06/28/1999 11:45 AM	1B
2-chloroethylvinyl ether		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0200 mg/L**			
		Maximum		**0.0500 mg/L**			
2-chloronaphthalene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
2-chloronaphthalene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
2-chlorophenol	<	0.02	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
2-chlorophenol		**Minimum**		**0.0100 mg/L**		**Count 1**	
		Average		**0.0100 mg/L**			
		Maximum		**0.0100 mg/L**			
2-hexanone	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
2-hexanone		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
2-hydroxypropionitrile	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
2-hydroxypropionitrile		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
2-methyl-4,6-dinitrophenol	<	0.02	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
2-methyl-4,6-dinitrophenol		**Minimum**		**0.0100 mg/L**		**Count 1**	
		Average		**0.0100 mg/L**			
		Maximum		**0.0100 mg/L**			
2-nitrophenol	<	0.02	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
2-nitrophenol		**Minimum**		**0.0100 mg/L**		**Count 1**	
		Average		**0.0100 mg/L**			
		Maximum		**0.0100 mg/L**			
2-picoline	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
2-picoline		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
3,3'-dichlorobenzidine	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
3,3'-dichlorobenzidine		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
3-chloropropionitrile	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
3-chloropropionitrile		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
4-bromophenyl phenyl ether	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
4-bromophenyl phenyl ether		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
4-chloro-3-methylphenol	<	0.02	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
4-chloro-3-methylphenol		**Minimum**		**0.0100 mg/L**		**Count 1**	
		Average		**0.0100 mg/L**			
		Maximum		**0.0100 mg/L**			
4-chlorophenyl phenyl ether	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
4-chlorophenyl phenyl ether		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
4-methyl-2-pentanone	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
4-methyl-2-pentanone		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
4-nitrophenol	<	0.04	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
4-nitrophenol		**Minimum**		**0.0200 mg/L**		**Count 1**	
		Average		**0.0200 mg/L**			
		Maximum		**0.0200 mg/L**			
6-propiolactone	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
6-propiolactone		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
acenaphthene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
acenaphthene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
acenaphthylene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
acenaphthylene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
acetone	=	0.894	mg/L	self	grab	06/24/1999 7:20 AM	1B
acetone		**Minimum**		**0.8940 mg/L**		**Count 1**	
		Average		**0.8940 mg/L**			
		Maximum		**0.8940 mg/L**			
acetonitrile	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
acetonitrile		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
acrolein	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
acrolein	<	0.2	mg/L	city	grab	06/28/1999 11:45 AM	1B
acrolein		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0525 mg/L**			
		Maximum		**0.1000 mg/L**			
acrylonitrile	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
acrylonitrile	<	0.1	mg/L	city	grab	06/28/1999 11:45 AM	1B
acrylonitrile		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0275 mg/L**			
		Maximum		**0.0500 mg/L**			

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
allyl alcohol	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
allyl alcohol		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
allyl chloride	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
allyl chloride		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
anthracene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
anthracene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
arsenic	<	0.005	mg/L	self	composite	03/11/1999 7:45 AM	1B
arsenic	<	0.001	mg/L	self	composite	06/24/1999 7:30 AM	1B
arsenic	=	0.00073	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
arsenic		**Minimum**		**0.0005 mg/L**		**Count 3**	
		Average		**0.0012 mg/L**			
		Maximum		**0.0025 mg/L**			
azobenzene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
azobenzene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
benzene	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
benzene	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
benzene	<	0.002	mg/L	city	grab	06/28/1999 11:45 AM	1B
benzene		**Minimum**		**0.0010 mg/L**		**Count 3**	
		Average		**0.0037 mg/L**			
		Maximum		**0.0050 mg/L**			
benzidine	<	0.02	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
benzidine		**Minimum**		**0.0100 mg/L**		**Count 1**	
		Average		**0.0100 mg/L**			
		Maximum		**0.0100 mg/L**			
benzo(a)anthracene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
benzo(a)anthracene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
benzo(a)pyrene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
benzo(a)pyrene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
benzo(b)fluoranthene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
benzo(b)fluoranthene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
benzo(g,h,i)perylene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
benzo(g,h,i)perylene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
benzo(k)fluoranthene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
benzo(k)fluoranthene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
benzyl chloride	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
benzyl chloride		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
bis(2-chloroethoxy) methane	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
bis(2-chloroethoxy) methane		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
bis(2-chloroethyl) ether	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
bis(2-chloroethyl) ether		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
bis(2-chloroisopropyl) ether	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
bis(2-chloroisopropyl) ether		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
bis(2-ethylhexyl)phthalate	=	0.04	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
bis(2-ethylhexyl)phthalate		**Minimum**		**0.0400 mg/L**		**Count 1**	
		Average		**0.0400 mg/L**			
		Maximum		**0.0400 mg/L**			

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Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
bromoacetone	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
bromoacetone		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
bromodichloromethane	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
bromodichloromethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
bromodichloromethane	<	0.006	mg/L	city	grab	06/28/1999 11:45 AM	1B
bromodichloromethane		**Minimum**		**0.0030 mg/L**		**Count 3**	
		Average		**0.0043 mg/L**			
		Maximum		**0.0050 mg/L**			
bromoform	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
bromoform	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
bromoform	<	0.006	mg/L	city	grab	06/28/1999 11:45 AM	1B
bromoform		**Minimum**		**0.0030 mg/L**		**Count 3**	
		Average		**0.0043 mg/L**			
		Maximum		**0.0050 mg/L**			
bromomethane	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
bromomethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
bromomethane	<	0.02	mg/L	city	grab	06/28/1999 11:45 AM	1B
bromomethane		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0067 mg/L**			
		Maximum		**0.0100 mg/L**			
butyl benzyl phthalate	<	0.04	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
butyl benzyl phthalate		**Minimum**		**0.0200 mg/L**		**Count 1**	
		Average		**0.0200 mg/L**			
		Maximum		**0.0200 mg/L**			
cadmium	<	0.03	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
cadmium		**Minimum**		**0.0150 mg/L**		**Count 1**	
		Average		**0.0150 mg/L**			
		Maximum		**0.0150 mg/L**			
carbon disulfide	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
carbon disulfide		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
carbon tetrachloride	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
carbon tetrachloride	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
carbon tetrachloride	<	0.006	mg/L	city	grab	06/28/1999 11:45 AM	1B
carbon tetrachloride		**Minimum**		**0.0030 mg/L**		**Count 3**	
		Average		**0.0043 mg/L**			
		Maximum		**0.0050 mg/L**			
chlorobenzene	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
chlorobenzene	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
chlorobenzene	<	0.002	mg/L	city	grab	06/28/1999 11:45 AM	1B
chlorobenzene		**Minimum**		**0.0010 mg/L**		**Count 3**	
		Average		**0.0037 mg/L**			
		Maximum		**0.0050 mg/L**			
chloroethane	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
chloroethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
chloroethane	<	0.02	mg/L	city	grab	06/28/1999 11:45 AM	1B
chloroethane		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0067 mg/L**			
		Maximum		**0.0100 mg/L**			
chloroform	=	0.003	mg/L	city	grab	01/25/1999 12:53 PM	1B
chloroform	=	0.012	mg/L	self	grab	06/24/1999 7:20 AM	1B
chloroform	<	0.002	mg/L	city	grab	06/28/1999 11:45 AM	1B
chloroform		**Minimum**		**0.0010 mg/L**		**Count 3**	
		Average		**0.0053 mg/L**			
		Maximum		**0.0120 mg/L**			
chloromethane	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
chloromethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
chloromethane	<	0.02	mg/L	city	grab	06/28/1999 11:45 AM	1B
chloromethane		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0067 mg/L**			
		Maximum		**0.0100 mg/L**			
chloroprene	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
chloroprene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
chromium	<	0.03	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
chromium		**Minimum**		**0.0150 mg/L**		**Count 1**	
		Average		**0.0150 mg/L**			
		Maximum		**0.0150 mg/L**			

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Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
chrysene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
chrysene		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
dibenzo(a,h)anthracene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
dibenzo(a,h)anthracene		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
dibromochloromethane	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
dibromochloromethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
dibromochloromethane	<	0.01	mg/L	city	grab	06/28/1999 11:45 AM	1B
dibromochloromethane		**Minimum**		**0.0050**	**mg/L**	**Count 3**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
dibromomethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
dibromomethane		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
dichlorodifluoromethane (freon-12)	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
dichlorodifluoromethane (freon-12)		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
diethyl phthalate	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
diethyl phthalate		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
dimethyl phthalate	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
dimethyl phthalate		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
di-n-butyl phthalate	<	0.04	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
di-n-butyl phthalate		**Minimum**		**0.0200**	**mg/L**	**Count 1**	
		Average		**0.0200**	**mg/L**		
		Maximum		**0.0200**	**mg/L**		

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Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
di-n-octyl phthalate	<	0.02	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
di-n-octyl phthalate		**Minimum**		**0.0100**	**mg/L**	**Count 1**	
		Average		**0.0100**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
epichlorohydrin	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
epichlorohydrin		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
ethanol	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
ethanol		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
ethyl benzene	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
ethyl benzene	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
ethyl benzene	<	0.006	mg/L	city	grab	06/28/1999 11:45 AM	1B
ethyl benzene		**Minimum**		**0.0030**	**mg/L**	**Count 3**	
		Average		**0.0043**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
ethyl methacrylate	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
ethyl methacrylate		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
ethylene oxide	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
ethylene oxide		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
fluoranthene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
fluoranthene		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
fluorene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
fluorene		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
hexachlorobenzene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
hexachlorobenzene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
hexachlorobutadiene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
hexachlorobutadiene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
hexachlorocyclopentadiene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
hexachlorocyclopentadiene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
hexachloroethane	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
hexachloroethane		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
indeno (1,2,3-cd) pyrene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
indeno (1,2,3-cd) pyrene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
iodomethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
iodomethane		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
isobutyl alcohol	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
isobutyl alcohol		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
isophorone	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
isophorone		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
mercury	=	0.0014	mg/L	self	composite	03/11/1999 7:45 AM	1B
mercury	<	0.0002	mg/L	self	composite	06/24/1999 7:30 AM	1B

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Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
mercury	<	0.0002	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
mercury		**Minimum**		**0.0001**	**mg/L**	**Count 3**	
		Average		**0.0005**	**mg/L**		
		Maximum		**0.0014**	**mg/L**		
methacrylonitrile	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
methacrylonitrile		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
methyl iodide	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
methyl iodide		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
methyl methacrylate	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
methyl methacrylate		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
methylacrylonitrile	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
methylacrylonitrile		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
methylene chloride	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
methylene chloride	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
methylene chloride	<	0.008	mg/L	city	grab	06/28/1999 11:45 AM	1B
methylene chloride		**Minimum**		**0.0040**	**mg/L**	**Count 3**	
		Average		**0.0047**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
molybdenum	<	0.025	mg/L	self	composite	03/11/1999 7:45 AM	1B
molybdenum	=	0.027	mg/L	self	composite	06/24/1999 7:30 AM	1B
molybdenum		**Minimum**		**0.0125**	**mg/L**	**Count 2**	
		Average		**0.0198**	**mg/L**		
		Maximum		**0.0270**	**mg/L**		
naphthalene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
naphthalene		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
nitrobenzene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
nitrobenzene		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
n-nitrosodimethylamine	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
n-nitrosodimethylamine		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
n-nitroso-di-n-propylamine	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
n-nitroso-di-n-propylamine		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
n-nitrosodiphenylamine	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
n-nitrosodiphenylamine		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
n-propylamine	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
n-propylamine		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
pentachloroethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
pentachloroethane		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
pentachlorophenol	<	0.02	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
pentachlorophenol		**Minimum**		**0.0100**	**mg/L**	**Count 1**	
		Average		**0.0100**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
pH	=		std units	self	continuous	01/31/1999	1B
pH	=		std units	self	continuous	02/28/1999	1B
pH	=		std units	self	continuous	04/30/1999	1B
pH	=		std units	self	continuous	05/30/1999	1B
pH	=		std units	self	continuous	06/30/1999	1B
pH		**Minimum**			**std units**	**Count 5**	
		Maximum			**std units**		

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
phenanthrene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
phenanthrene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
phenols - total (epa 420)	<	0.02	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
phenols - total (epa 420)		**Minimum**		**0.0100 mg/L**		**Count 1**	
		Average		**0.0100 mg/L**			
		Maximum		**0.0100 mg/L**			
propargyl alcohol	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
propargyl alcohol		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
propionitrile	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
propionitrile		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
pyrene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
pyrene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
pyridine	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
pyridine		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
selenium	<	0.005	mg/L	self	composite	03/11/1999 7:45 AM	1B
selenium	<	0.001	mg/L	self	composite	06/24/1999 7:30 AM	1B
selenium		**Minimum**		**0.0005 mg/L**		**Count 2**	
		Average		**0.0015 mg/L**			
		Maximum		**0.0025 mg/L**			
styrene	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
styrene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
tetrachloroethene	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
tetrachloroethene	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
tetrachloroethene	<	0.004	mg/L	city	grab	06/28/1999 11:45 AM	1B
tetrachloroethene		**Minimum**		**0.0020 mg/L**		**Count 3**	
		Average		**0.0040 mg/L**			
		Maximum		**0.0050 mg/L**			
toluene	=	0.003	mg/L	city	grab	01/25/1999 12:53 PM	1B
toluene	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
toluene	<	0.002	mg/L	city	grab	06/28/1999 11:45 AM	1B
toluene		**Minimum**		**0.0010 mg/L**		**Count 3**	
		Average		**0.0030 mg/L**			
		Maximum		**0.0050 mg/L**			
trichloroethene (tce)	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
trichloroethene (tce)	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
trichloroethene (tce)	<	0.008	mg/L	city	grab	06/28/1999 11:45 AM	1B
trichloroethene (tce)		**Minimum**		**0.0040 mg/L**		**Count 3**	
		Average		**0.0047 mg/L**			
		Maximum		**0.0050 mg/L**			
trichlorofluoromethane (freon-11)	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
trichlorofluoromethane (freon-11)	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
trichlorofluoromethane (freon-11)	<	0.008	mg/L	city	grab	06/28/1999 11:45 AM	1B
trichlorofluoromethane (freon-11)		**Minimum**		**0.0040 mg/L**		**Count 3**	
		Average		**0.0047 mg/L**			
		Maximum		**0.0050 mg/L**			
vinyl acetate	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
vinyl acetate		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
vinyl chloride	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
vinyl chloride	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
vinyl chloride	<	0.1	mg/L	city	grab	06/28/1999 11:45 AM	1B
vinyl chloride		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0200 mg/L**			
		Maximum		**0.0500 mg/L**			
xylene, m-	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
xylene, m-		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
xylene, o-	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
xylene, o-		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
xylene, p-	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
xylene, p-		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
xylenes, total	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
xylenes, total	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
xylenes, total		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
zinc	=	0.028	mg/L	self	composite	03/11/1999 7:45 AM	1B
zinc	=	0.032	mg/L	self	composite	06/24/1999 7:30 AM	1B
zinc		**Minimum**		**0.0280**	**mg/L**	**Count 2**	
		Average		**0.0300**	**mg/L**		
		Maximum		**0.0320**	**mg/L**		

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CITY OF PORTLAND
ENVIRONMENTAL SERVICES

Water Pollution Control Laboratory
6543 N. Burlington Ave., Portland, Oregon 97203-5452
(503) 823-5600

February 3, 2000

Mr. Tom McCue
Environmental, Health & Safety Manager
Wacker Siltronic Corporation
PO Box 83180
Portland , OR. 97203

RE: Analytical data for last half of 1999.

Dear Mr. McCue,

Enclosed is the sampling data collected from your facility during the last two quarters of 1999. We have provided this data to assist you in maintaining historical information for pollutants present in your facility's wastewater discharge. This information will also help to identify compliance issues.

The Industrial Source Control Division maintains sampling data from both City and self-monitoring. Please take this opportunity to compare self-monitoring results to City monitoring results, as well as to verify the analytical information contained within the report with your records.

If you do not receive a report in a given quarter, it may be because there was no sampling activity at your facility during that time period. As always, if you have any questions about this report or your facility's wastewater discharge permit, please contact me at 823-5537.

I hope that this information better enables you to evaluate your industrial discharge. We thank you for doing your part to help protect water quality and the environment.

Respectfully,

Timothy P. Dean
ISCD Permit Manager

Historical Analytical Report for 06/01/1999 - 12/31/1999

Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **1200Z**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
copper	=	0.0097	mg/L	self	grab	10/27/1999	01
copper	=	0.0116	mg/L	self	grab	10/27/1999	02
copper	=	0.0122	mg/L	self	grab	10/27/1999	03
copper		**Minimum**		**0.0097 mg/L**		**Count 3**	
		Average		**0.0112 mg/L**			
		Maximum		**0.0122 mg/L**			
lead	=	0.002	mg/L	self	grab	10/27/1999	01
lead	=	0.002	mg/L	self	grab	10/27/1999	02
lead	=	0.0018	mg/L	self	grab	10/27/1999	03
lead		**Minimum**		**0.0018 mg/L**		**Count 3**	
		Average		**0.0019 mg/L**			
		Maximum		**0.0020 mg/L**			
oil/grease - total	<	5	mg/L	self	grab	10/27/1999	01
oil/grease - total	=	5	mg/L	self	grab	10/27/1999	02
oil/grease - total	=	5	mg/L	self	grab	10/27/1999	03
oil/grease - total		**Minimum**		**2.5000 mg/L**		**Count 3**	
		Average		**4.1667 mg/L**			
		Maximum		**5.0000 mg/L**			
pH	=	7.05	std units	self	grab	10/27/1999	01
pH	=	6.41	std units	self	grab	10/27/1999	02
pH	=	5.5	std units	self	grab	10/27/1999	03
pH		**Minimum**		**5.5000 std units**		**Count 3**	
		Maximum		**7.0500 std units**			
solids - total suspended	=	14	mg/L	self	grab	10/27/1999	01
solids - total suspended	=	6.25	mg/L	self	grab	10/27/1999	02
solids - total suspended	=	8.25	mg/L	self	grab	10/27/1999	03
solids - total suspended		**Minimum**		**6.2500 mg/L**		**Count 3**	
		Average		**9.5000 mg/L**			
		Maximum		**14.0000 mg/L**			
zinc	=	0.173	mg/L	self	grab	10/27/1999	01
zinc	=	0.423	mg/L	self	grab	10/27/1999	02
zinc	=	0.287	mg/L	self	grab	10/27/1999	03
zinc		**Minimum**		**0.1730 mg/L**		**Count 3**	
		Average		**0.2943 mg/L**			
		Maximum		**0.4230 mg/L**			

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Historical Analytical Report for 06/01/1999 - 12/31/1999

Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
1,1,1,2-tetrachloroethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,1,1,2-tetrachloroethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,1,1,2-tetrachloroethane	<	0.01	mg/L	city	grab	06/28/1999 11:45 AM	1B
1,1,1,2-tetrachloroethane	<	0.01	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
1,1,1,2-tetrachloroethane		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,1,1-trichloroethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,1,1-trichloroethane	<	0.006	mg/L	city	grab	06/28/1999 11:45 AM	1B
1,1,1-trichloroethane	<	0.006	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
1,1,1-trichloroethane		**Minimum**		**0.0030 mg/L**		**Count 3**	
		Average		**0.0037 mg/L**			
		Maximum		**0.0050 mg/L**			
1,1,2,2-tetrachloroethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,1,2,2-tetrachloroethane	<	0.006	mg/L	city	grab	06/28/1999 11:45 AM	1B
1,1,2,2-tetrachloroethane	<	0.006	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
1,1,2,2-tetrachloroethane		**Minimum**		**0.0030 mg/L**		**Count 3**	
		Average		**0.0037 mg/L**			
		Maximum		**0.0050 mg/L**			
1,1,2-trichloroethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,1,2-trichloroethane	<	0.006	mg/L	city	grab	06/28/1999 11:45 AM	1B
1,1,2-trichloroethane	<	0.006	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
1,1,2-trichloroethane		**Minimum**		**0.0030 mg/L**		**Count 3**	
		Average		**0.0037 mg/L**			
		Maximum		**0.0050 mg/L**			
1,1-dichloroethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,1-dichloroethane	<	0.004	mg/L	city	grab	06/28/1999 11:45 AM	1B
1,1-dichloroethane	<	0.004	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
1,1-dichloroethane		**Minimum**		**0.0020 mg/L**		**Count 3**	
		Average		**0.0030 mg/L**			
		Maximum		**0.0050 mg/L**			
1,1-dichloroethene	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,1-dichloroethene	<	0.006	mg/L	city	grab	06/28/1999 11:45 AM	1B
1,1-dichloroethene	<	0.006	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
1,1-dichloroethene		**Minimum**		**0.0030 mg/L**		**Count 3**	
		Average		**0.0037 mg/L**			
		Maximum		**0.0050 mg/L**			

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
1,2,3,4-diepoxybutane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,2,3,4-diepoxybutane		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2,3-trichloropropane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,2,3-trichloropropane		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2,4-trichlorobenzene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
1,2,4-trichlorobenzene	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
1,2,4-trichlorobenzene		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0075 mg/L**			
		Maximum		**0.0100 mg/L**			
1,2-dibromo-3-chloropropane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,2-dibromo-3-chloropropane		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2-dibromoethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,2-dibromoethane		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2-dichlorobenzene	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,2-dichlorobenzene	<	0.006	mg/L	city	grab	06/28/1999 11:45 AM	1B
1,2-dichlorobenzene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
1,2-dichlorobenzene	<	0.006	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
1,2-dichlorobenzene	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
1,2-dichlorobenzene		**Minimum**		**0.0030 mg/L**		**Count 5**	
		Average		**0.0052 mg/L**			
		Maximum		**0.0100 mg/L**			
1,2-dichloroethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,2-dichloroethane	<	0.01	mg/L	city	grab	06/28/1999 11:45 AM	1B
1,2-dichloroethane	<	0.01	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
1,2-dichloroethane		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2-dichloroethene (trans)	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,2-dichloroethene (trans)	<	0.004	mg/L	city	grab	06/28/1999 11:45 AM	1B

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Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
1,2-dichloroethene (trans)	<	0.004	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
1,2-dichloroethene (trans)		**Minimum**		**0.0020 mg/L**		**Count 3**	
		Average		**0.0030 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2-dichloropropane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,2-dichloropropane	<	0.006	mg/L	city	grab	06/28/1999 11:45 AM	1B
1,2-dichloropropane	<	0.006	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
1,2-dichloropropane		**Minimum**		**0.0030 mg/L**		**Count 3**	
		Average		**0.0037 mg/L**			
		Maximum		**0.0050 mg/L**			
1,3-dichloro-2-propanol	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,3-dichloro-2-propanol		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,3-dichlorobenzene	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,3-dichlorobenzene	<	0.004	mg/L	city	grab	06/28/1999 11:45 AM	1B
1,3-dichlorobenzene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
1,3-dichlorobenzene	<	0.004	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
1,3-dichlorobenzene	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
1,3-dichlorobenzene		**Minimum**		**0.0020 mg/L**		**Count 5**	
		Average		**0.0048 mg/L**			
		Maximum		**0.0100 mg/L**			
1,3-dichloropropene (cis)	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,3-dichloropropene (cis)	<	0.008	mg/L	city	grab	06/28/1999 11:45 AM	1B
1,3-dichloropropene (cis)	<	0.008	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
1,3-dichloropropene (cis)		**Minimum**		**0.0040 mg/L**		**Count 3**	
		Average		**0.0043 mg/L**			
		Maximum		**0.0050 mg/L**			
1,3-dichloropropene (trans)	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,3-dichloropropene (trans)	<	0.006	mg/L	city	grab	06/28/1999 11:45 AM	1B
1,3-dichloropropene (trans)	<	0.006	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
1,3-dichloropropene (trans)		**Minimum**		**0.0030 mg/L**		**Count 3**	
		Average		**0.0037 mg/L**			
		Maximum		**0.0050 mg/L**			
1,3-dichloropropene, total	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,3-dichloropropene, total		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			

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Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
1,4-dichloro-2-butene	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,4-dichloro-2-butene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,4-dichlorobenzene	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,4-dichlorobenzene	<	0.004	mg/L	city	grab	06/28/1999 11:45 AM	1B
1,4-dichlorobenzene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
1,4-dichlorobenzene	<	0.004	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
1,4-dichlorobenzene	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
1,4-dichlorobenzene		**Minimum**		**0.0020 mg/L**		**Count 5**	
		Average		**0.0048 mg/L**			
		Maximum		**0.0100 mg/L**			
1,4-dioxane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,4-dioxane		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
2,4,6-trichlorophenol	<	0.02	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
2,4,6-trichlorophenol	<	0.04	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
2,4,6-trichlorophenol		**Minimum**		**0.0100 mg/L**		**Count 2**	
		Average		**0.0150 mg/L**			
		Maximum		**0.0200 mg/L**			
2,4-dichlorophenol	<	0.02	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
2,4-dichlorophenol	<	0.04	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
2,4-dichlorophenol		**Minimum**		**0.0100 mg/L**		**Count 2**	
		Average		**0.0150 mg/L**			
		Maximum		**0.0200 mg/L**			
2,4-dimethylphenol	<	0.02	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
2,4-dimethylphenol	<	0.04	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
2,4-dimethylphenol		**Minimum**		**0.0100 mg/L**		**Count 2**	
		Average		**0.0150 mg/L**			
		Maximum		**0.0200 mg/L**			
2,4-dinitrophenol	<	0.04	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
2,4-dinitrophenol	<	0.08	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
2,4-dinitrophenol		**Minimum**		**0.0200 mg/L**		**Count 2**	
		Average		**0.0300 mg/L**			
		Maximum		**0.0400 mg/L**			
2,4-dinitrotoluene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B

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Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
2,4-dinitrotoluene	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
2,4-dinitrotoluene		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0075 mg/L**			
		Maximum		**0.0100 mg/L**			
2,6-dinitrotoluene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
2,6-dinitrotoluene	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
2,6-dinitrotoluene		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0075 mg/L**			
		Maximum		**0.0100 mg/L**			
2-butanone	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
2-butanone		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
2-chloroethanol	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
2-chloroethanol		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
2-chloroethylvinyl ether	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
2-chloroethylvinyl ether	<	0.1	mg/L	city	grab	06/28/1999 11:45 AM	1B
2-chloroethylvinyl ether	<	0.1	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
2-chloroethylvinyl ether		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0350 mg/L**			
		Maximum		**0.0500 mg/L**			
2-chloronaphthalene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
2-chloronaphthalene	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
2-chloronaphthalene		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0075 mg/L**			
		Maximum		**0.0100 mg/L**			
2-chlorophenol	<	0.02	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
2-chlorophenol	<	0.04	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
2-chlorophenol		**Minimum**		**0.0100 mg/L**		**Count 2**	
		Average		**0.0150 mg/L**			
		Maximum		**0.0200 mg/L**			
2-hexanone	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
2-hexanone		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			

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Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
2-hydroxypropionitrile	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
2-hydroxypropionitrile		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
2-methyl-4,6-dinitrophenol	<	0.02	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
2-methyl-4,6-dinitrophenol	<	0.04	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
2-methyl-4,6-dinitrophenol		**Minimum**		**0.0100**	**mg/L**	**Count 2**	
		Average		**0.0150**	**mg/L**		
		Maximum		**0.0200**	**mg/L**		
2-nitrophenol	<	0.02	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
2-nitrophenol	<	0.04	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
2-nitrophenol		**Minimum**		**0.0100**	**mg/L**	**Count 2**	
		Average		**0.0150**	**mg/L**		
		Maximum		**0.0200**	**mg/L**		
2-picoline	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
2-picoline		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
3,3'-dichlorobenzidine	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
3,3'-dichlorobenzidine	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
3,3'-dichlorobenzidine		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0075**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
3-chloropropionitrile	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
3-chloropropionitrile		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
4-bromophenyl phenyl ether	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
4-bromophenyl phenyl ether	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
4-bromophenyl phenyl ether		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0075**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
4-chloro-3-methylphenol	<	0.02	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
4-chloro-3-methylphenol	<	0.04	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
4-chloro-3-methylphenol		**Minimum**		**0.0100**	**mg/L**	**Count 2**	
		Average		**0.0150**	**mg/L**		
		Maximum		**0.0200**	**mg/L**		

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Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
4-chlorophenyl phenyl ether	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
4-chlorophenyl phenyl ether	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
4-chlorophenyl phenyl ether		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0075 mg/L**			
		Maximum		**0.0100 mg/L**			
4-methyl-2-pentanone	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
4-methyl-2-pentanone		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
4-nitrophenol	<	0.04	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
4-nitrophenol	<	0.08	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
4-nitrophenol		**Minimum**		**0.0200 mg/L**		**Count 2**	
		Average		**0.0300 mg/L**			
		Maximum		**0.0400 mg/L**			
6-propiolactone	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
6-propiolactone		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
acenaphthene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
acenaphthene	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
acenaphthene		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0075 mg/L**			
		Maximum		**0.0100 mg/L**			
acenaphthylene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
acenaphthylene	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
acenaphthylene		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0075 mg/L**			
		Maximum		**0.0100 mg/L**			
acetone	=	0.894	mg/L	self	grab	06/24/1999 7:20 AM	1B
acetone		**Minimum**		**0.8940 mg/L**		**Count 1**	
		Average		**0.8940 mg/L**			
		Maximum		**0.8940 mg/L**			
acetonitrile	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
acetonitrile		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
acrolein	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B

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Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
acrolein	<	0.2	mg/L	city	grab	06/28/1999 11:45 AM	1B
acrolein	<	0.2	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
acrolein		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0683 mg/L**			
		Maximum		**0.1000 mg/L**			
acrylonitrile	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
acrylonitrile	<	0.1	mg/L	city	grab	06/28/1999 11:45 AM	1B
acrylonitrile	<	0.1	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
acrylonitrile		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0350 mg/L**			
		Maximum		**0.0500 mg/L**			
allyl alcohol	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
allyl alcohol		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
allyl chloride	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
allyl chloride		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
anthracene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
anthracene	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
anthracene		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0075 mg/L**			
		Maximum		**0.0100 mg/L**			
arsenic	<	0.001	mg/L	self	composite	06/24/1999 7:30 AM	1B
arsenic	=	0.00073	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
arsenic	<	0.005	mg/L	self	composite	09/09/1999 7:30 AM	1B
arsenic	<	0.01	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
arsenic	<	0.01	mg/L	city	comp/split	11/22/1999 1:04 PM	1B
arsenic	<	0.001	mg/L	self	composite	12/09/1999 7:00 AM	1B
arsenic		**Minimum**		**0.0005 mg/L**		**Count 6**	
		Average		**0.0024 mg/L**			
		Maximum		**0.0050 mg/L**			
azobenzene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
azobenzene	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
azobenzene		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0075 mg/L**			
		Maximum		**0.0100 mg/L**			

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Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
benzene	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
benzene	<	0.002	mg/L	city	grab	06/28/1999 11:45 AM	1B
benzene	<	0.002	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
benzene		**Minimum**		**0.0010 mg/L**		**Count 3**	
		Average		**0.0023 mg/L**			
		Maximum		**0.0050 mg/L**			
benzidine	<	0.02	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
benzidine	<	0.04	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
benzidine		**Minimum**		**0.0100 mg/L**		**Count 2**	
		Average		**0.0150 mg/L**			
		Maximum		**0.0200 mg/L**			
benzo(a)anthracene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
benzo(a)anthracene	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
benzo(a)anthracene		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0075 mg/L**			
		Maximum		**0.0100 mg/L**			
benzo(a)pyrene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
benzo(a)pyrene	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
benzo(a)pyrene		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0075 mg/L**			
		Maximum		**0.0100 mg/L**			
benzo(b)fluoranthene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
benzo(b)fluoranthene	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
benzo(b)fluoranthene		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0075 mg/L**			
		Maximum		**0.0100 mg/L**			
benzo(g,h,i)perylene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
benzo(g,h,i)perylene	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
benzo(g,h,i)perylene		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0075 mg/L**			
		Maximum		**0.0100 mg/L**			
benzo(k)fluoranthene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
benzo(k)fluoranthene	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
benzo(k)fluoranthene		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0075 mg/L**			
		Maximum		**0.0100 mg/L**			

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
benzyl chloride	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
benzyl chloride		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
bis(2-chloroethoxy) methane	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
bis(2-chloroethoxy) methane	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
bis(2-chloroethoxy) methane		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0075**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
bis(2-chloroethyl) ether	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
bis(2-chloroethyl) ether	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
bis(2-chloroethyl) ether		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0075**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
bis(2-chloroisopropyl) ether	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
bis(2-chloroisopropyl) ether	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
bis(2-chloroisopropyl) ether		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0075**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
bis(2-ethylhexyl)phthalate	=	0.04	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
bis(2-ethylhexyl)phthalate	=	0.082	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
bis(2-ethylhexyl)phthalate		**Minimum**		**0.0400**	**mg/L**	**Count 2**	
		Average		**0.0610**	**mg/L**		
		Maximum		**0.0820**	**mg/L**		
bromoacetone	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
bromoacetone		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
bromodichloromethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
bromodichloromethane	<	0.006	mg/L	city	grab	06/28/1999 11:45 AM	1B
bromodichloromethane	<	0.006	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
bromodichloromethane		**Minimum**		**0.0030**	**mg/L**	**Count 3**	
		Average		**0.0037**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
bromoform	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
bromoform	<	0.006	mg/L	city	grab	06/28/1999 11:45 AM	1B

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Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
bromoform	<	0.006	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
bromoform		**Minimum**		**0.0030**	**mg/L**	**Count 3**	
		Average		**0.0037**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
bromomethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
bromomethane	<	0.02	mg/L	city	grab	06/28/1999 11:45 AM	1B
bromomethane	<	0.02	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
bromomethane		**Minimum**		**0.0050**	**mg/L**	**Count 3**	
		Average		**0.0083**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
butyl benzyl phthalate	<	0.04	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
butyl benzyl phthalate	<	0.08	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
butyl benzyl phthalate		**Minimum**		**0.0200**	**mg/L**	**Count 2**	
		Average		**0.0300**	**mg/L**		
		Maximum		**0.0400**	**mg/L**		
cadmium	<	0.03	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
cadmium		**Minimum**		**0.0150**	**mg/L**	**Count 1**	
		Average		**0.0150**	**mg/L**		
		Maximum		**0.0150**	**mg/L**		
carbon disulfide	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
carbon disulfide		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
carbon tetrachloride	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
carbon tetrachloride	<	0.006	mg/L	city	grab	06/28/1999 11:45 AM	1B
carbon tetrachloride	<	0.006	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
carbon tetrachloride		**Minimum**		**0.0030**	**mg/L**	**Count 3**	
		Average		**0.0037**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
certification - tto	=		mg/L	self	certified	09/30/1999	1B
certification - tto	=		mg/L	self	certified	12/09/1999 7:00 AM	1B
certification - tto		**Minimum**			**mg/L**	**Count 2**	
		Average			**mg/L**		
		Maximum			**mg/L**		
chlorobenzene	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
chlorobenzene	<	0.002	mg/L	city	grab	06/28/1999 11:45 AM	1B

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Org Name WACKER SILTRONIC CORP Permit Number 469.001

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
chlorobenzene	<	0.002	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
chlorobenzene		**Minimum**		**0.0010 mg/L**		**Count 3**	
		Average		**0.0023 mg/L**			
		Maximum		**0.0050 mg/L**			
chloroethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
chloroethane	<	0.02	mg/L	city	grab	06/28/1999 11:45 AM	1B
chloroethane	<	0.02	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
chloroethane		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0083 mg/L**			
		Maximum		**0.0100 mg/L**			
chloroform	=	0.012	mg/L	self	grab	06/24/1999 7:20 AM	1B
chloroform	<	0.002	mg/L	city	grab	06/28/1999 11:45 AM	1B
chloroform	<	0.002	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
chloroform		**Minimum**		**0.0010 mg/L**		**Count 3**	
		Average		**0.0047 mg/L**			
		Maximum		**0.0120 mg/L**			
chloromethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
chloromethane	<	0.02	mg/L	city	grab	06/28/1999 11:45 AM	1B
chloromethane	<	0.02	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
chloromethane		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0083 mg/L**			
		Maximum		**0.0100 mg/L**			
chloroprene	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
chloroprene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
chromium	<	0.03	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
chromium		**Minimum**		**0.0150 mg/L**		**Count 1**	
		Average		**0.0150 mg/L**			
		Maximum		**0.0150 mg/L**			
chrysene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
chrysene	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
chrysene		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0075 mg/L**			
		Maximum		**0.0100 mg/L**			
dibenzo(a,h)anthracene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B

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Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
dibenzo(a,h)anthracene	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
dibenzo(a,h)anthracene		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0075 mg/L**			
		Maximum		**0.0100 mg/L**			
dibromochloromethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
dibromochloromethane	<	0.01	mg/L	city	grab	06/28/1999 11:45 AM	1B
dibromochloromethane	<	0.01	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
dibromochloromethane		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
dibromomethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
dibromomethane		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
dichlorodifluoromethane (freon-12)	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
dichlorodifluoromethane (freon-12)		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
diethyl phthalate	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
diethyl phthalate	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
diethyl phthalate		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0075 mg/L**			
		Maximum		**0.0100 mg/L**			
dimethyl phthalate	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
dimethyl phthalate	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
dimethyl phthalate		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0075 mg/L**			
		Maximum		**0.0100 mg/L**			
di-n-butyl phthalate	<	0.04	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
di-n-butyl phthalate	<	0.08	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
di-n-butyl phthalate		**Minimum**		**0.0200 mg/L**		**Count 2**	
		Average		**0.0300 mg/L**			
		Maximum		**0.0400 mg/L**			
di-n-octyl phthalate	<	0.02	mg/L	city	comp/split	06/28/1999 11:50 AM	1B

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Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
di-n-octyl phthalate	<	0.04	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
di-n-octyl phthalate		**Minimum**		**0.0100 mg/L**		**Count 2**	
		Average		**0.0150 mg/L**			
		Maximum		**0.0200 mg/L**			
epichlorohydrin	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
epichlorohydrin		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
ethanol	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
ethanol		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
ethyl benzene	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
ethyl benzene	<	0.006	mg/L	city	grab	06/28/1999 11:45 AM	1B
ethyl benzene	<	0.006	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
ethyl benzene		**Minimum**		**0.0030 mg/L**		**Count 3**	
		Average		**0.0037 mg/L**			
		Maximum		**0.0050 mg/L**			
ethyl methacrylate	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
ethyl methacrylate		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
ethylene oxide	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
ethylene oxide		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
fluoranthene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
fluoranthene	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
fluoranthene		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0075 mg/L**			
		Maximum		**0.0100 mg/L**			
fluorene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
fluorene	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
fluorene		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0075 mg/L**			
		Maximum		**0.0100 mg/L**			
hexachlorobenzene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B

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Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
hexachlorobenzene	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
hexachlorobenzene		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0075 mg/L**			
		Maximum		**0.0100 mg/L**			
hexachlorobutadiene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
hexachlorobutadiene	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
hexachlorobutadiene		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0075 mg/L**			
		Maximum		**0.0100 mg/L**			
hexachlorocyclopentadiene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
hexachlorocyclopentadiene	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
hexachlorocyclopentadiene		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0075 mg/L**			
		Maximum		**0.0100 mg/L**			
hexachloroethane	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
hexachloroethane	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
hexachloroethane		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0075 mg/L**			
		Maximum		**0.0100 mg/L**			
indeno (1,2,3-cd) pyrene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
indeno (1,2,3-cd) pyrene	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
indeno (1,2,3-cd) pyrene		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0075 mg/L**			
		Maximum		**0.0100 mg/L**			
iodomethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
iodomethane		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
isobutyl alcohol	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
isobutyl alcohol		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
isophorone	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
isophorone	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
isophorone		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0075 mg/L**			
		Maximum		**0.0100 mg/L**			

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Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
mercury	<	0.0002	mg/L	self	composite	06/24/1999 7:30 AM	1B
mercury	<	0.0002	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
mercury	<	0.0004	mg/L	self	composite	09/09/1999 7:30 AM	1B
mercury		**Minimum**		**0.0001**	**mg/L**	**Count 3**	
		Average		**0.0001**	**mg/L**		
		Maximum		**0.0002**	**mg/L**		
mercury ultra-clean	<	0.0004	mg/L	self	composite	12/09/1999 7:00 AM	1B
mercury ultra-clean		**Minimum**		**0.0002**	**mg/L**	**Count 1**	
		Average		**0.0002**	**mg/L**		
		Maximum		**0.0002**	**mg/L**		
methacrylonitrile	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
methacrylonitrile		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
methyl iodide	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
methyl iodide		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
methyl methacrylate	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
methyl methacrylate		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
methylacrylonitrile	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
methylacrylonitrile		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
methylene chloride	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
methylene chloride	<	0.008	mg/L	city	grab	06/28/1999 11:45 AM	1B
methylene chloride	<	0.008	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
methylene chloride		**Minimum**		**0.0040**	**mg/L**	**Count 3**	
		Average		**0.0043**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
molybdenum	=	0.027	mg/L	self	composite	06/24/1999 7:30 AM	1B
molybdenum	<	0.025	mg/L	self	composite	09/09/1999 7:30 AM	1B
molybdenum	<	0.1	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
molybdenum	<	0.1	mg/L	city	comp/split	11/22/1999 1:04 PM	1B

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Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
molybdenum	=	0.0746	mg/L	self	composite	12/09/1999 7:00 AM	1B
molybdenum		**Minimum**		**0.0125**	**mg/L**	**Count 5**	
		Average		**0.0428**	**mg/L**		
		Maximum		**0.0746**	**mg/L**		
naphthalene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
naphthalene	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
naphthalene		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0075**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
nitrobenzene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
nitrobenzene	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
nitrobenzene		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0075**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
n-nitrosodimethylamine	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
n-nitrosodimethylamine	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
n-nitrosodimethylamine		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0075**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
n-nitroso-di-n-propylamine	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
n-nitroso-di-n-propylamine	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
n-nitroso-di-n-propylamine		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0075**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
n-nitrosodiphenylamine	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
n-nitrosodiphenylamine	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
n-nitrosodiphenylamine		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0075**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
n-propylamine	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
n-propylamine		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
pentachloroethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
pentachloroethane		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
pentachlorophenol	<	0.02	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
pentachlorophenol	<	0.04	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
pentachlorophenol		**Minimum**		**0.0100 mg/L**		**Count 2**	
		Average		**0.0150 mg/L**			
		Maximum		**0.0200 mg/L**			
pH	=		std units	self	continuous	06/30/1999	1B
pH	=		std units	self	continuous	07/31/1999	1B
pH	=	9.8	std units	city	grab/split	09/14/1999 11:50 AM	1B
pH	=		std units	self	continuous	09/30/1999	1B
pH	=		std units	self	continuous	10/31/1999	1B
pH	=	9.3	std units	city	grab	11/22/1999 1:00 PM	1B
pH	=		std units	self	continuous	11/30/1999	1B
pH		**Minimum**		**9.3000 std units**		**Count 7**	
		Maximum		**9.8000 std units**			
phenanthrene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
phenanthrene	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
phenanthrene		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0075 mg/L**			
		Maximum		**0.0100 mg/L**			
phenols - total (epa 420)	<	0.02	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
phenols - total (epa 420)	<	0.04	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
phenols - total (epa 420)		**Minimum**		**0.0100 mg/L**		**Count 2**	
		Average		**0.0150 mg/L**			
		Maximum		**0.0200 mg/L**			
propargyl alcohol	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
propargyl alcohol		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
propionitrile	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
propionitrile		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
pyrene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
pyrene	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
pyrene		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0075 mg/L**			
		Maximum		**0.0100 mg/L**			

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
pyridine	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
pyridine		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
selenium	<	0.001	mg/L	self	composite	06/24/1999 7:30 AM	1B
selenium	<	0.005	mg/L	self	composite	09/09/1999 7:30 AM	1B
selenium	=	0.0043	mg/L	self	composite	12/09/1999 7:00 AM	1B
selenium		**Minimum**		**0.0005 mg/L**		**Count 3**	
		Average		**0.0024 mg/L**			
		Maximum		**0.0043 mg/L**			
styrene	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
styrene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
tetrachloroethene	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
tetrachloroethene	<	0.004	mg/L	city	grab	06/28/1999 11:45 AM	1B
tetrachloroethene	<	0.004	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
tetrachloroethene		**Minimum**		**0.0020 mg/L**		**Count 3**	
		Average		**0.0030 mg/L**			
		Maximum		**0.0050 mg/L**			
toluene	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
toluene	<	0.002	mg/L	city	grab	06/28/1999 11:45 AM	1B
toluene	<	0.002	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
toluene		**Minimum**		**0.0010 mg/L**		**Count 3**	
		Average		**0.0023 mg/L**			
		Maximum		**0.0050 mg/L**			
trichloroethene (tce)	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
trichloroethene (tce)	<	0.008	mg/L	city	grab	06/28/1999 11:45 AM	1B
trichloroethene (tce)	<	0.008	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
trichloroethene (tce)		**Minimum**		**0.0040 mg/L**		**Count 3**	
		Average		**0.0043 mg/L**			
		Maximum		**0.0050 mg/L**			
trichlorofluoromethane (freon-11)	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
trichlorofluoromethane (freon-11)	<	0.008	mg/L	city	grab	06/28/1999 11:45 AM	1B
trichlorofluoromethane (freon-11)	<	0.008	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
trichlorofluoromethane (freon-11)		**Minimum**		**0.0040 mg/L**		**Count 3**	
		Average		**0.0043 mg/L**			
		Maximum		**0.0050 mg/L**			

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
vinyl acetate	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
vinyl acetate		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
vinyl chloride	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
vinyl chloride	<	0.1	mg/L	city	grab	06/28/1999 11:45 AM	1B
vinyl chloride	<	0.1	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
vinyl chloride		**Minimum**		**0.0050**	**mg/L**	**Count 3**	
		Average		**0.0350**	**mg/L**		
		Maximum		**0.0500**	**mg/L**		
xylenes, total	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
xylenes, total		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
zinc	=	0.032	mg/L	self	composite	06/24/1999 7:30 AM	1B
zinc	=	0.036	mg/L	self	composite	09/09/1999 7:30 AM	1B
zinc	=	0.0325	mg/L	self	composite	12/09/1999 7:00 AM	1B
zinc		**Minimum**		**0.0320**	**mg/L**	**Count 3**	
		Average		**0.0335**	**mg/L**		
		Maximum		**0.0360**	**mg/L**		

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Historical Analytical Report for 01/01/1999 - 07/01/1999

Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
1,1,1,2-tetrachloroethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,1,1,2-tetrachloroethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,1,1,2-tetrachloroethane	<	0.01	mg/L	city	grab	06/28/1999 11:45 AM	1B
1,1,1,2-tetrachloroethane		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,1,1-trichloroethane	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
1,1,1-trichloroethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,1,1-trichloroethane	<	0.006	mg/L	city	grab	06/28/1999 11:45 AM	1B
1,1,1-trichloroethane		**Minimum**		**0.0030 mg/L**		**Count 3**	
		Average		**0.0043 mg/L**			
		Maximum		**0.0050 mg/L**			
1,1,2,2-tetrachloroethane	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
1,1,2,2-tetrachloroethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,1,2,2-tetrachloroethane	<	0.006	mg/L	city	grab	06/28/1999 11:45 AM	1B
1,1,2,2-tetrachloroethane		**Minimum**		**0.0030 mg/L**		**Count 3**	
		Average		**0.0043 mg/L**			
		Maximum		**0.0050 mg/L**			
1,1,2-trichloroethane	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
1,1,2-trichloroethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,1,2-trichloroethane	<	0.006	mg/L	city	grab	06/28/1999 11:45 AM	1B
1,1,2-trichloroethane		**Minimum**		**0.0030 mg/L**		**Count 3**	
		Average		**0.0043 mg/L**			
		Maximum		**0.0050 mg/L**			
1,1-dichloroethane	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
1,1-dichloroethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,1-dichloroethane	<	0.004	mg/L	city	grab	06/28/1999 11:45 AM	1B
1,1-dichloroethane		**Minimum**		**0.0020 mg/L**		**Count 3**	
		Average		**0.0040 mg/L**			
		Maximum		**0.0050 mg/L**			
1,1-dichloroethene	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
1,1-dichloroethene	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,1-dichloroethene	<	0.006	mg/L	city	grab	06/28/1999 11:45 AM	1B
1,1-dichloroethene		**Minimum**		**0.0030 mg/L**		**Count 3**	
		Average		**0.0043 mg/L**			
		Maximum		**0.0050 mg/L**			

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Historical Analytical Report for 01/01/1999 - 07/01/1999

Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
1,2,3,4-diepoxybutane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,2,3,4-diepoxybutane		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2,3-trichloropropane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,2,3-trichloropropane		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2,4-trichlorobenzene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
1,2,4-trichlorobenzene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2-dibromo-3-chloropropane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,2-dibromo-3-chloropropane		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2-dibromoethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,2-dibromoethane		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2-dichlorobenzene	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
1,2-dichlorobenzene	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,2-dichlorobenzene	<	0.006	mg/L	city	grab	06/28/1999 11:45 AM	1B
1,2-dichlorobenzene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
1,2-dichlorobenzene		**Minimum**		**0.0030 mg/L**		**Count 4**	
		Average		**0.0045 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2-dichloroethane	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
1,2-dichloroethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,2-dichloroethane	<	0.01	mg/L	city	grab	06/28/1999 11:45 AM	1B
1,2-dichloroethane		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2-dichloroethene (trans)	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
1,2-dichloroethene (trans)	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
1,2-dichloroethene (trans)	<	0.004	mg/L	city	grab	06/28/1999 11:45 AM	1B
1,2-dichloroethene (trans)		**Minimum**		**0.0020**	**mg/L**	**Count 3**	
		Average		**0.0040**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
1,2-dichloropropane	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
1,2-dichloropropane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,2-dichloropropane	<	0.006	mg/L	city	grab	06/28/1999 11:45 AM	1B
1,2-dichloropropane		**Minimum**		**0.0030**	**mg/L**	**Count 3**	
		Average		**0.0043**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
1,3-dichloro-2-propanol	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,3-dichloro-2-propanol		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
1,3-dichlorobenzene	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
1,3-dichlorobenzene	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,3-dichlorobenzene	<	0.004	mg/L	city	grab	06/28/1999 11:45 AM	1B
1,3-dichlorobenzene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
1,3-dichlorobenzene		**Minimum**		**0.0020**	**mg/L**	**Count 4**	
		Average		**0.0043**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
1,3-dichloropropene (cis)	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
1,3-dichloropropene (cis)	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,3-dichloropropene (cis)	<	0.008	mg/L	city	grab	06/28/1999 11:45 AM	1B
1,3-dichloropropene (cis)		**Minimum**		**0.0040**	**mg/L**	**Count 3**	
		Average		**0.0047**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
1,3-dichloropropene (trans)	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
1,3-dichloropropene (trans)	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,3-dichloropropene (trans)	<	0.006	mg/L	city	grab	06/28/1999 11:45 AM	1B
1,3-dichloropropene (trans)		**Minimum**		**0.0030**	**mg/L**	**Count 3**	
		Average		**0.0043**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
1,3-dichloropropene, total	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,3-dichloropropene, total		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		

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Historical Analytical Report for 01/01/1999 - 07/01/1999

Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
1,4-dichloro-2-butene	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,4-dichloro-2-butene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,4-dichlorobenzene	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
1,4-dichlorobenzene	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,4-dichlorobenzene	<	0.004	mg/L	city	grab	06/28/1999 11:45 AM	1B
1,4-dichlorobenzene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
1,4-dichlorobenzene		**Minimum**		**0.0020 mg/L**		**Count 4**	
		Average		**0.0043 mg/L**			
		Maximum		**0.0050 mg/L**			
1,4-dioxane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,4-dioxane		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
2,4,6-trichlorophenol	<	0.02	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
2,4,6-trichlorophenol		**Minimum**		**0.0100 mg/L**		**Count 1**	
		Average		**0.0100 mg/L**			
		Maximum		**0.0100 mg/L**			
2,4-dichlorophenol	<	0.02	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
2,4-dichlorophenol		**Minimum**		**0.0100 mg/L**		**Count 1**	
		Average		**0.0100 mg/L**			
		Maximum		**0.0100 mg/L**			
2,4-dimethylphenol	<	0.02	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
2,4-dimethylphenol		**Minimum**		**0.0100 mg/L**		**Count 1**	
		Average		**0.0100 mg/L**			
		Maximum		**0.0100 mg/L**			
2,4-dinitrophenol	<	0.04	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
2,4-dinitrophenol		**Minimum**		**0.0200 mg/L**		**Count 1**	
		Average		**0.0200 mg/L**			
		Maximum		**0.0200 mg/L**			
2,4-dinitrotoluene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
2,4-dinitrotoluene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
2,6-dinitrotoluene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
2,6-dinitrotoluene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
2-butanone	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
2-butanone		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
2-chloroethanol	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
2-chloroethanol		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
2-chloroethylvinyl ether	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
2-chloroethylvinyl ether	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
2-chloroethylvinyl ether	<	0.1	mg/L	city	grab	06/28/1999 11:45 AM	1B
2-chloroethylvinyl ether		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0200 mg/L**			
		Maximum		**0.0500 mg/L**			
2-chloronaphthalene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
2-chloronaphthalene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
2-chlorophenol	<	0.02	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
2-chlorophenol		**Minimum**		**0.0100 mg/L**		**Count 1**	
		Average		**0.0100 mg/L**			
		Maximum		**0.0100 mg/L**			
2-hexanone	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
2-hexanone		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
2-hydroxypropionitrile	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
2-hydroxypropionitrile		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
2-methyl-4,6-dinitrophenol	<	0.02	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
2-methyl-4,6-dinitrophenol		**Minimum**	**0.0100 mg/L**			**Count 1**	
		Average	**0.0100 mg/L**				
		Maximum	**0.0100 mg/L**				
2-nitrophenol	<	0.02	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
2-nitrophenol		**Minimum**	**0.0100 mg/L**			**Count 1**	
		Average	**0.0100 mg/L**				
		Maximum	**0.0100 mg/L**				
2-picoline	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
2-picoline		**Minimum**	**0.0050 mg/L**			**Count 1**	
		Average	**0.0050 mg/L**				
		Maximum	**0.0050 mg/L**				
3,3'-dichlorobenzidine	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
3,3'-dichlorobenzidine		**Minimum**	**0.0050 mg/L**			**Count 1**	
		Average	**0.0050 mg/L**				
		Maximum	**0.0050 mg/L**				
3-chloropropionitrile	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
3-chloropropionitrile		**Minimum**	**0.0050 mg/L**			**Count 1**	
		Average	**0.0050 mg/L**				
		Maximum	**0.0050 mg/L**				
4-bromophenyl phenyl ether	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
4-bromophenyl phenyl ether		**Minimum**	**0.0050 mg/L**			**Count 1**	
		Average	**0.0050 mg/L**				
		Maximum	**0.0050 mg/L**				
4-chloro-3-methylphenol	<	0.02	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
4-chloro-3-methylphenol		**Minimum**	**0.0100 mg/L**			**Count 1**	
		Average	**0.0100 mg/L**				
		Maximum	**0.0100 mg/L**				
4-chlorophenyl phenyl ether	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
4-chlorophenyl phenyl ether		**Minimum**	**0.0050 mg/L**			**Count 1**	
		Average	**0.0050 mg/L**				
		Maximum	**0.0050 mg/L**				
4-methyl-2-pentanone	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
4-methyl-2-pentanone		**Minimum**	**0.0050 mg/L**			**Count 1**	
		Average	**0.0050 mg/L**				
		Maximum	**0.0050 mg/L**				

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
4-nitrophenol	<	0.04	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
4-nitrophenol		**Minimum**		**0.0200**	**mg/L**	**Count 1**	
		Average		**0.0200**	**mg/L**		
		Maximum		**0.0200**	**mg/L**		
6-propiolactone	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
6-propiolactone		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
acenaphthene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
acenaphthene		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
acenaphthylene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
acenaphthylene		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
acetone	=	0.894	mg/L	self	grab	06/24/1999 7:20 AM	1B
acetone		**Minimum**		**0.8940**	**mg/L**	**Count 1**	
		Average		**0.8940**	**mg/L**		
		Maximum		**0.8940**	**mg/L**		
acetonitrile	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
acetonitrile		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
acrolein	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
acrolein	<	0.2	mg/L	city	grab	06/28/1999 11:45 AM	1B
acrolein		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0525**	**mg/L**		
		Maximum		**0.1000**	**mg/L**		
acrylonitrile	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
acrylonitrile	<	0.1	mg/L	city	grab	06/28/1999 11:45 AM	1B
acrylonitrile		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0275**	**mg/L**		
		Maximum		**0.0500**	**mg/L**		

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Historical Analytical Report for 01/01/1999 - 07/01/1999

Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
allyl alcohol	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
allyl alcohol		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
allyl chloride	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
allyl chloride		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
anthracene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
anthracene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
arsenic	<	0.005	mg/L	self	composite	03/11/1999 7:45 AM	1B
arsenic	<	0.001	mg/L	self	composite	06/24/1999 7:30 AM	1B
arsenic	=	0.00073	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
arsenic		**Minimum**		**0.0005 mg/L**		**Count 3**	
		Average		**0.0012 mg/L**			
		Maximum		**0.0025 mg/L**			
azobenzene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
azobenzene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
benzene	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
benzene	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
benzene	<	0.002	mg/L	city	grab	06/28/1999 11:45 AM	1B
benzene		**Minimum**		**0.0010 mg/L**		**Count 3**	
		Average		**0.0037 mg/L**			
		Maximum		**0.0050 mg/L**			
benzidine	<	0.02	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
benzidine		**Minimum**		**0.0100 mg/L**		**Count 1**	
		Average		**0.0100 mg/L**			
		Maximum		**0.0100 mg/L**			
benzo(a)anthracene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
benzo(a)anthracene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
benzo(a)pyrene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
benzo(a)pyrene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
benzo(b)fluoranthene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
benzo(b)fluoranthene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
benzo(g,h,i)perylene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
benzo(g,h,i)perylene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
benzo(k)fluoranthene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
benzo(k)fluoranthene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
benzyl chloride	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
benzyl chloride		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
bis(2-chloroethoxy) methane	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
bis(2-chloroethoxy) methane		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
bis(2-chloroethyl) ether	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
bis(2-chloroethyl) ether		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
bis(2-chloroisopropyl) ether	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
bis(2-chloroisopropyl) ether		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
bis(2-ethylhexyl)phthalate	=	0.04	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
bis(2-ethylhexyl)phthalate		**Minimum**		**0.0400 mg/L**		**Count 1**	
		Average		**0.0400 mg/L**			
		Maximum		**0.0400 mg/L**			

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
bromoacetone	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
bromoacetone		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
bromodichloromethane	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
bromodichloromethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
bromodichloromethane	<	0.006	mg/L	city	grab	06/28/1999 11:45 AM	1B
bromodichloromethane		**Minimum**		**0.0030**	**mg/L**	**Count 3**	
		Average		**0.0043**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
bromoform	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
bromoform	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
bromoform	<	0.006	mg/L	city	grab	06/28/1999 11:45 AM	1B
bromoform		**Minimum**		**0.0030**	**mg/L**	**Count 3**	
		Average		**0.0043**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
bromomethane	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
bromomethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
bromomethane	<	0.02	mg/L	city	grab	06/28/1999 11:45 AM	1B
bromomethane		**Minimum**		**0.0050**	**mg/L**	**Count 3**	
		Average		**0.0067**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
butyl benzyl phthalate	<	0.04	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
butyl benzyl phthalate		**Minimum**		**0.0200**	**mg/L**	**Count 1**	
		Average		**0.0200**	**mg/L**		
		Maximum		**0.0200**	**mg/L**		
cadmium	<	0.03	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
cadmium		**Minimum**		**0.0150**	**mg/L**	**Count 1**	
		Average		**0.0150**	**mg/L**		
		Maximum		**0.0150**	**mg/L**		
carbon disulfide	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
carbon disulfide		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
carbon tetrachloride	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
carbon tetrachloride	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
carbon tetrachloride	<	0.006	mg/L	city	grab	06/28/1999 11:45 AM	1B
carbon tetrachloride		**Minimum**		**0.0030 mg/L**		**Count 3**	
		Average		**0.0043 mg/L**			
		Maximum		**0.0050 mg/L**			
chlorobenzene	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
chlorobenzene	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
chlorobenzene	<	0.002	mg/L	city	grab	06/28/1999 11:45 AM	1B
chlorobenzene		**Minimum**		**0.0010 mg/L**		**Count 3**	
		Average		**0.0037 mg/L**			
		Maximum		**0.0050 mg/L**			
chloroethane	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
chloroethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
chloroethane	<	0.02	mg/L	city	grab	06/28/1999 11:45 AM	1B
chloroethane		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0067 mg/L**			
		Maximum		**0.0100 mg/L**			
chloroform	=	0.003	mg/L	city	grab	01/25/1999 12:53 PM	1B
chloroform	=	0.012	mg/L	self	grab	06/24/1999 7:20 AM	1B
chloroform	<	0.002	mg/L	city	grab	06/28/1999 11:45 AM	1B
chloroform		**Minimum**		**0.0010 mg/L**		**Count 3**	
		Average		**0.0053 mg/L**			
		Maximum		**0.0120 mg/L**			
chloromethane	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
chloromethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
chloromethane	<	0.02	mg/L	city	grab	06/28/1999 11:45 AM	1B
chloromethane		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0067 mg/L**			
		Maximum		**0.0100 mg/L**			
chloroprene	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
chloroprene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
chromium	<	0.03	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
chromium		**Minimum**		**0.0150 mg/L**		**Count 1**	
		Average		**0.0150 mg/L**			
		Maximum		**0.0150 mg/L**			

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
chrysene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
chrysene		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
dibenzo(a,h)anthracene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
dibenzo(a,h)anthracene		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
dibromochloromethane	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
dibromochloromethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
dibromochloromethane	<	0.01	mg/L	city	grab	06/28/1999 11:45 AM	1B
dibromochloromethane		**Minimum**		**0.0050**	**mg/L**	**Count 3**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
dibromomethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
dibromomethane		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
dichlorodifluoromethane (freon-12)	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
dichlorodifluoromethane (freon-12)		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
diethyl phthalate	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
diethyl phthalate		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
dimethyl phthalate	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
dimethyl phthalate		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
di-n-butyl phthalate	<	0.04	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
di-n-butyl phthalate		**Minimum**		**0.0200**	**mg/L**	**Count 1**	
		Average		**0.0200**	**mg/L**		
		Maximum		**0.0200**	**mg/L**		

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

alyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
di-n-octyl phthalate	<	0.02	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
di-n-octyl phthalate		**Minimum**		**0.0100 mg/L**		**Count 1**	
		Average		**0.0100 mg/L**			
		Maximum		**0.0100 mg/L**			
epichlorohydrin	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
epichlorohydrin		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
ethanol	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
ethanol		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
ethyl benzene	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
ethyl benzene	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
ethyl benzene	<	0.006	mg/L	city	grab	06/28/1999 11:45 AM	1B
ethyl benzene		**Minimum**		**0.0030 mg/L**		**Count 3**	
		Average		**0.0043 mg/L**			
		Maximum		**0.0050 mg/L**			
ethyl methacrylate	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
ethyl methacrylate		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
ethylene oxide	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
ethylene oxide		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
fluoranthene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
fluoranthene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
fluorene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
fluorene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
hexachlorobenzene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
hexachlorobenzene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
hexachlorobutadiene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
hexachlorobutadiene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
hexachlorocyclopentadiene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
hexachlorocyclopentadiene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
hexachloroethane	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
hexachloroethane		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
indeno (1,2,3-cd) pyrene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
indeno (1,2,3-cd) pyrene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
iodomethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
iodomethane		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
isobutyl alcohol	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
isobutyl alcohol		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
isophorone	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
isophorone		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
mercury	=	0.0014	mg/L	self	composite	03/11/1999 7:45 AM	1B
mercury	<	0.0002	mg/L	self	composite	06/24/1999 7:30 AM	1B

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
mercury	<	0.0002	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
mercury		**Minimum**		**0.0001**	**mg/L**	**Count 3**	
		Average		**0.0005**	**mg/L**		
		Maximum		**0.0014**	**mg/L**		
methacrylonitrile	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
methacrylonitrile		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
methyl iodide	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
methyl iodide		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
methyl methacrylate	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
methyl methacrylate		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
ylacrylonitrile	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
methylacrylonitrile		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
methylene chloride	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
methylene chloride	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
methylene chloride	<	0.008	mg/L	city	grab	06/28/1999 11:45 AM	1B
methylene chloride		**Minimum**		**0.0040**	**mg/L**	**Count 3**	
		Average		**0.0047**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
molybdenum	<	0.025	mg/L	self	composite	03/11/1999 7:45 AM	1B
molybdenum	=	0.027	mg/L	self	composite	06/24/1999 7:30 AM	1B
molybdenum		**Minimum**		**0.0125**	**mg/L**	**Count 2**	
		Average		**0.0198**	**mg/L**		
		Maximum		**0.0270**	**mg/L**		
naphthalene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
naphthalene		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		

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Org Id 1592

Org Name WACKER SILTRONIC CORP Permit Number 469.001

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
nitrobenzene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
nitrobenzene		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
n-nitrosodimethylamine	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
n-nitrosodimethylamine		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
n-nitroso-di-n-propylamine	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
n-nitroso-di-n-propylamine		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
n-nitrosodiphenylamine	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
n-nitrosodiphenylamine		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
n-propylamine	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
n-propylamine		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
pentachloroethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
pentachloroethane		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
pentachlorophenol	<	0.02	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
pentachlorophenol		**Minimum**		**0.0100**	**mg/L**	**Count 1**	
		Average		**0.0100**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
pH	=		std units	self	continuous	01/31/1999	1B
pH	=		std units	self	continuous	02/28/1999	1B
pH	=		std units	self	continuous	04/30/1999	1B
pH	=		std units	self	continuous	05/30/1999	1B
pH	=		std units	self	continuous	06/30/1999	1B
pH		**Minimum**			**std units**	**Count 5**	
		Maximum			**std units**		

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

alyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
phenanthrene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
phenanthrene		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
phenols - total (epa 420)	<	0.02	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
phenols - total (epa 420)		**Minimum**		**0.0100**	**mg/L**	**Count 1**	
		Average		**0.0100**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
propargyl alcohol	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
propargyl alcohol		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
propionitrile	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
propionitrile		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
ne	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
pyrene		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
pyridine	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
pyridine		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
selenium	<	0.005	mg/L	self	composite	03/11/1999 7:45 AM	1B
selenium	<	0.001	mg/L	self	composite	06/24/1999 7:30 AM	1B
selenium		**Minimum**		**0.0005**	**mg/L**	**Count 2**	
		Average		**0.0015**	**mg/L**		
		Maximum		**0.0025**	**mg/L**		
styrene	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
styrene		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
chloroethene	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
achloroethene	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
tetrachloroethene	<	0.004	mg/L	city	grab	06/28/1999 11:45 AM	1B
tetrachloroethene		**Minimum**		**0.0020 mg/L**		**Count 3**	
		Average		**0.0040 mg/L**			
		Maximum		**0.0050 mg/L**			
toluene	=	0.003	mg/L	city	grab	01/25/1999 12:53 PM	1B
toluene	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
toluene	<	0.002	mg/L	city	grab	06/28/1999 11:45 AM	1B
toluene		**Minimum**		**0.0010 mg/L**		**Count 3**	
		Average		**0.0030 mg/L**			
		Maximum		**0.0050 mg/L**			
trichloroethene (tce)	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
trichloroethene (tce)	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
trichloroethene (tce)	<	0.008	mg/L	city	grab	06/28/1999 11:45 AM	1B
trichloroethene (tce)		**Minimum**		**0.0040 mg/L**		**Count 3**	
		Average		**0.0047 mg/L**			
		Maximum		**0.0050 mg/L**			
trichlorofluoromethane (freon-11)	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
trichlorofluoromethane (freon-11)	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
trichlorofluoromethane (freon-11)	<	0.008	mg/L	city	grab	06/28/1999 11:45 AM	1B
trichlorofluoromethane (freon-11)		**Minimum**		**0.0040 mg/L**		**Count 3**	
		Average		**0.0047 mg/L**			
		Maximum		**0.0050 mg/L**			
vinyl acetate	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
vinyl acetate		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
vinyl chloride	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
vinyl chloride	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
vinyl chloride	<	0.1	mg/L	city	grab	06/28/1999 11:45 AM	1B
vinyl chloride		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0200 mg/L**			
		Maximum		**0.0500 mg/L**			
xylene, m-	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
xylene, m-		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
xylene, o-	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
xylene, o-		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
xylene, p-	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
xylene, p-		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
xylenes, total	<	0.01	mg/L	city	grab	01/25/1999 12:53 PM	1B
xylenes, total	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
xylenes, total		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
zinc	=	0.028	mg/L	self	composite	03/11/1999 7:45 AM	1B
zinc	=	0.032	mg/L	self	composite	06/24/1999 7:30 AM	1B
zinc		**Minimum**		**0.0280**	**mg/L**	**Count 2**	
		Average		**0.0300**	**mg/L**		
		Maximum		**0.0320**	**mg/L**		

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Historical Analytical Report for 06/01/1999 - 12/31/1999

Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **1200Z**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
copper	=	0.0097	mg/L	self	grab	10/27/1999	01
copper	=	0.0116	mg/L	self	grab	10/27/1999	02
copper	=	0.0122	mg/L	self	grab	10/27/1999	03
copper		**Minimum**		**0.0097 mg/L**		**Count 3**	
		Average		**0.0112 mg/L**			
		Maximum		**0.0122 mg/L**			
lead	=	0.002	mg/L	self	grab	10/27/1999	01
lead	=	0.002	mg/L	self	grab	10/27/1999	02
lead	=	0.0018	mg/L	self	grab	10/27/1999	03
lead		**Minimum**		**0.0018 mg/L**		**Count 3**	
		Average		**0.0019 mg/L**			
		Maximum		**0.0020 mg/L**			
oil/grease - total	<	5	mg/L	self	grab	10/27/1999	01
oil/grease - total	=	5	mg/L	self	grab	10/27/1999	02
oil/grease - total	=	5	mg/L	self	grab	10/27/1999	03
oil/grease - total		**Minimum**		**2.5000 mg/L**		**Count 3**	
		Average		**4.1667 mg/L**			
		Maximum		**5.0000 mg/L**			
pH	=	7.05	std units	self	grab	10/27/1999	01
pH	=	6.41	std units	self	grab	10/27/1999	02
pH	=	5.5	std units	self	grab	10/27/1999	03
pH		**Minimum**		**5.5000 std units**		**Count 3**	
		Maximum		**7.0500 std units**			
solids - total suspended	=	14	mg/L	self	grab	10/27/1999	01
solids - total suspended	=	6.25	mg/L	self	grab	10/27/1999	02
solids - total suspended	=	8.25	mg/L	self	grab	10/27/1999	03
solids - total suspended		**Minimum**		**6.2500 mg/L**		**Count 3**	
		Average		**9.5000 mg/L**			
		Maximum		**14.0000 mg/L**			
zinc	=	0.173	mg/L	self	grab	10/27/1999	01
zinc	=	0.423	mg/L	self	grab	10/27/1999	02
zinc	=	0.287	mg/L	self	grab	10/27/1999	03
zinc		**Minimum**		**0.1730 mg/L**		**Count 3**	
		Average		**0.2943 mg/L**			
		Maximum		**0.4230 mg/L**			

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
1,1,1,2-tetrachloroethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,1,1,2-tetrachloroethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,1,1,2-tetrachloroethane	<	0.01	mg/L	city	grab	06/28/1999 11:45 AM	1B
1,1,1,2-tetrachloroethane	<	0.01	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
1,1,1,2-tetrachloroethane		**Minimum**		**0.0050 mg/L**		**Count 4**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,1,1-trichloroethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,1,1-trichloroethane	<	0.006	mg/L	city	grab	06/28/1999 11:45 AM	1B
1,1,1-trichloroethane	<	0.006	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
1,1,1-trichloroethane		**Minimum**		**0.0030 mg/L**		**Count 3**	
		Average		**0.0037 mg/L**			
		Maximum		**0.0050 mg/L**			
1,1,2,2-tetrachloroethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,1,2,2-tetrachloroethane	<	0.006	mg/L	city	grab	06/28/1999 11:45 AM	1B
1,1,2,2-tetrachloroethane	<	0.006	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
1,1,2,2-tetrachloroethane		**Minimum**		**0.0030 mg/L**		**Count 3**	
		Average		**0.0037 mg/L**			
		Maximum		**0.0050 mg/L**			
1,1,2-trichloroethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,1,2-trichloroethane	<	0.006	mg/L	city	grab	06/28/1999 11:45 AM	1B
1,1,2-trichloroethane	<	0.006	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
1,1,2-trichloroethane		**Minimum**		**0.0030 mg/L**		**Count 3**	
		Average		**0.0037 mg/L**			
		Maximum		**0.0050 mg/L**			
1,1-dichloroethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,1-dichloroethane	<	0.004	mg/L	city	grab	06/28/1999 11:45 AM	1B
1,1-dichloroethane	<	0.004	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
1,1-dichloroethane		**Minimum**		**0.0020 mg/L**		**Count 3**	
		Average		**0.0030 mg/L**			
		Maximum		**0.0050 mg/L**			
1,1-dichloroethene	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,1-dichloroethene	<	0.006	mg/L	city	grab	06/28/1999 11:45 AM	1B
1,1-dichloroethene	<	0.006	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
1,1-dichloroethene		**Minimum**		**0.0030 mg/L**		**Count 3**	
		Average		**0.0037 mg/L**			
		Maximum		**0.0050 mg/L**			

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
1,2,3,4-diepoxybutane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,2,3,4-diepoxybutane		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
1,2,3-trichloropropane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,2,3-trichloropropane		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
1,2,4-trichlorobenzene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
1,2,4-trichlorobenzene	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
1,2,4-trichlorobenzene		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0075**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
1,2-dibromo-3-chloropropane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,2-dibromo-3-chloropropane		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
1,2-dibromoethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,2-dibromoethane		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
1,2-dichlorobenzene	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,2-dichlorobenzene	<	0.006	mg/L	city	grab	06/28/1999 11:45 AM	1B
1,2-dichlorobenzene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
1,2-dichlorobenzene	<	0.006	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
1,2-dichlorobenzene	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
1,2-dichlorobenzene		**Minimum**		**0.0030**	**mg/L**	**Count 5**	
		Average		**0.0052**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
1,2-dichloroethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,2-dichloroethane	<	0.01	mg/L	city	grab	06/28/1999 11:45 AM	1B
1,2-dichloroethane	<	0.01	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
1,2-dichloroethane		**Minimum**		**0.0050**	**mg/L**	**Count 3**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
1,2-dichloroethene (trans)	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,2-dichloroethene (trans)	<	0.004	mg/L	city	grab	06/28/1999 11:45 AM	1B

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Historical Analytical Report for 06/01/1999 - 12/31/1999

Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
1,2-dichloroethene (trans)	<	0.004	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
1,2-dichloroethene (trans)		**Minimum**		**0.0020 mg/L**		**Count 3**	
		Average		**0.0030 mg/L**			
		Maximum		**0.0050 mg/L**			
1,2-dichloropropane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,2-dichloropropane	<	0.006	mg/L	city	grab	06/28/1999 11:45 AM	1B
1,2-dichloropropane	<	0.006	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
1,2-dichloropropane		**Minimum**		**0.0030 mg/L**		**Count 3**	
		Average		**0.0037 mg/L**			
		Maximum		**0.0050 mg/L**			
1,3-dichloro-2-propanol	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,3-dichloro-2-propanol		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
1,3-dichlorobenzene	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,3-dichlorobenzene	<	0.004	mg/L	city	grab	06/28/1999 11:45 AM	1B
1,3-dichlorobenzene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
1,3-dichlorobenzene	<	0.004	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
1,3-dichlorobenzene	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
1,3-dichlorobenzene		**Minimum**		**0.0020 mg/L**		**Count 5**	
		Average		**0.0048 mg/L**			
		Maximum		**0.0100 mg/L**			
1,3-dichloropropene (cis)	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,3-dichloropropene (cis)	<	0.008	mg/L	city	grab	06/28/1999 11:45 AM	1B
1,3-dichloropropene (cis)	<	0.008	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
1,3-dichloropropene (cis)		**Minimum**		**0.0040 mg/L**		**Count 3**	
		Average		**0.0043 mg/L**			
		Maximum		**0.0050 mg/L**			
1,3-dichloropropene (trans)	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,3-dichloropropene (trans)	<	0.006	mg/L	city	grab	06/28/1999 11:45 AM	1B
1,3-dichloropropene (trans)	<	0.006	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
1,3-dichloropropene (trans)		**Minimum**		**0.0030 mg/L**		**Count 3**	
		Average		**0.0037 mg/L**			
		Maximum		**0.0050 mg/L**			
1,3-dichloropropene, total	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,3-dichloropropene, total		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
1,4-dichloro-2-butene	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,4-dichloro-2-butene		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
1,4-dichlorobenzene	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,4-dichlorobenzene	<	0.004	mg/L	city	grab	06/28/1999 11:45 AM	1B
1,4-dichlorobenzene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
1,4-dichlorobenzene	<	0.004	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
1,4-dichlorobenzene	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
1,4-dichlorobenzene		**Minimum**		**0.0020**	**mg/L**	**Count 5**	
		Average		**0.0048**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
1,4-dioxane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
1,4-dioxane		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
2,4,6-trichlorophenol	<	0.02	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
2,4,6-trichlorophenol	<	0.04	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
2,4,6-trichlorophenol		**Minimum**		**0.0100**	**mg/L**	**Count 2**	
		Average		**0.0150**	**mg/L**		
		Maximum		**0.0200**	**mg/L**		
2,4-dichlorophenol	<	0.02	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
2,4-dichlorophenol	<	0.04	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
2,4-dichlorophenol		**Minimum**		**0.0100**	**mg/L**	**Count 2**	
		Average		**0.0150**	**mg/L**		
		Maximum		**0.0200**	**mg/L**		
2,4-dimethylphenol	<	0.02	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
2,4-dimethylphenol	<	0.04	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
2,4-dimethylphenol		**Minimum**		**0.0100**	**mg/L**	**Count 2**	
		Average		**0.0150**	**mg/L**		
		Maximum		**0.0200**	**mg/L**		
2,4-dinitrophenol	<	0.04	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
2,4-dinitrophenol	<	0.08	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
2,4-dinitrophenol		**Minimum**		**0.0200**	**mg/L**	**Count 2**	
		Average		**0.0300**	**mg/L**		
		Maximum		**0.0400**	**mg/L**		
2,4-dinitrotoluene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
2,4-dinitrotoluene	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
2,4-dinitrotoluene		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0075**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
2,6-dinitrotoluene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
2,6-dinitrotoluene	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
2,6-dinitrotoluene		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0075**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
2-butanone	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
2-butanone		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
2-chloroethanol	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
2-chloroethanol		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
2-chloroethylvinyl ether	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
2-chloroethylvinyl ether	<	0.1	mg/L	city	grab	06/28/1999 11:45 AM	1B
2-chloroethylvinyl ether	<	0.1	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
2-chloroethylvinyl ether		**Minimum**		**0.0050**	**mg/L**	**Count 3**	
		Average		**0.0350**	**mg/L**		
		Maximum		**0.0500**	**mg/L**		
2-chloronaphthalene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
2-chloronaphthalene	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
2-chloronaphthalene		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0075**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
2-chlorophenol	<	0.02	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
2-chlorophenol	<	0.04	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
2-chlorophenol		**Minimum**		**0.0100**	**mg/L**	**Count 2**	
		Average		**0.0150**	**mg/L**		
		Maximum		**0.0200**	**mg/L**		
2-hexanone	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
2-hexanone		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
2-hydroxypropionitrile	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
2-hydroxypropionitrile		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
2-methyl-4,6-dinitrophenol	<	0.02	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
2-methyl-4,6-dinitrophenol	<	0.04	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
2-methyl-4,6-dinitrophenol		**Minimum**		**0.0100**	**mg/L**	**Count 2**	
		Average		**0.0150**	**mg/L**		
		Maximum		**0.0200**	**mg/L**		
2-nitrophenol	<	0.02	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
2-nitrophenol	<	0.04	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
2-nitrophenol		**Minimum**		**0.0100**	**mg/L**	**Count 2**	
		Average		**0.0150**	**mg/L**		
		Maximum		**0.0200**	**mg/L**		
2-picoline	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
2-picoline		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
3,3'-dichlorobenzidine	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
3,3'-dichlorobenzidine	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
3,3'-dichlorobenzidine		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0075**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
3-chloropropionitrile	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
3-chloropropionitrile		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
4-bromophenyl phenyl ether	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
4-bromophenyl phenyl ether	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
4-bromophenyl phenyl ether		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0075**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
4-chloro-3-methylphenol	<	0.02	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
4-chloro-3-methylphenol	<	0.04	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
4-chloro-3-methylphenol		**Minimum**		**0.0100**	**mg/L**	**Count 2**	
		Average		**0.0150**	**mg/L**		
		Maximum		**0.0200**	**mg/L**		

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
4-chlorophenyl phenyl ether	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
4-chlorophenyl phenyl ether	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
4-chlorophenyl phenyl ether		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0075**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
4-methyl-2-pentanone	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
4-methyl-2-pentanone		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
4-nitrophenol	<	0.04	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
4-nitrophenol	<	0.08	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
4-nitrophenol		**Minimum**		**0.0200**	**mg/L**	**Count 2**	
		Average		**0.0300**	**mg/L**		
		Maximum		**0.0400**	**mg/L**		
6-propiolactone	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
6-propiolactone		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
acenaphthene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
acenaphthene	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
acenaphthene		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0075**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
acenaphthylene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
acenaphthylene	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
acenaphthylene		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0075**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
acetone	=	0.894	mg/L	self	grab	06/24/1999 7:20 AM	1B
acetone		**Minimum**		**0.8940**	**mg/L**	**Count 1**	
		Average		**0.8940**	**mg/L**		
		Maximum		**0.8940**	**mg/L**		
acetonitrile	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
acetonitrile		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
acrolein	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
acrolein	<	0.2	mg/L	city	grab	06/28/1999 11:45 AM	1B
acrolein	<	0.2	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
acrolein		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0683 mg/L**			
		Maximum		**0.1000 mg/L**			
acrylonitrile	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
acrylonitrile	<	0.1	mg/L	city	grab	06/28/1999 11:45 AM	1B
acrylonitrile	<	0.1	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
acrylonitrile		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0350 mg/L**			
		Maximum		**0.0500 mg/L**			
allyl alcohol	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
allyl alcohol		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
allyl chloride	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
allyl chloride		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
anthracene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
anthracene	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
anthracene		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0075 mg/L**			
		Maximum		**0.0100 mg/L**			
arsenic	<	0.001	mg/L	self	composite	06/24/1999 7:30 AM	1B
arsenic	=	0.00073	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
arsenic	<	0.005	mg/L	self	composite	09/09/1999 7:30 AM	1B
arsenic	<	0.01	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
arsenic	<	0.01	mg/L	city	comp/split	11/22/1999 1:04 PM	1B
arsenic	<	0.001	mg/L	self	composite	12/09/1999 7:00 AM	1B
arsenic		**Minimum**		**0.0005 mg/L**		**Count 6**	
		Average		**0.0024 mg/L**			
		Maximum		**0.0050 mg/L**			
azobenzene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
azobenzene	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
azobenzene		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0075 mg/L**			
		Maximum		**0.0100 mg/L**			

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
benzene	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
benzene	<	0.002	mg/L	city	grab	06/28/1999 11:45 AM	1B
benzene	<	0.002	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
benzene		**Minimum**		**0.0010 mg/L**		**Count 3**	
		Average		**0.0023 mg/L**			
		Maximum		**0.0050 mg/L**			
benzidine	<	0.02	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
benzidine	<	0.04	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
benzidine		**Minimum**		**0.0100 mg/L**		**Count 2**	
		Average		**0.0150 mg/L**			
		Maximum		**0.0200 mg/L**			
benzo(a)anthracene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
benzo(a)anthracene	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
benzo(a)anthracene		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0075 mg/L**			
		Maximum		**0.0100 mg/L**			
benzo(a)pyrene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
benzo(a)pyrene	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
benzo(a)pyrene		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0075 mg/L**			
		Maximum		**0.0100 mg/L**			
benzo(b)fluoranthene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
benzo(b)fluoranthene	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
benzo(b)fluoranthene		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0075 mg/L**			
		Maximum		**0.0100 mg/L**			
benzo(g,h,i)perylene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
benzo(g,h,i)perylene	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
benzo(g,h,i)perylene		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0075 mg/L**			
		Maximum		**0.0100 mg/L**			
benzo(k)fluoranthene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
benzo(k)fluoranthene	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
benzo(k)fluoranthene		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0075 mg/L**			
		Maximum		**0.0100 mg/L**			

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
benzyl chloride	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
benzyl chloride		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
bis(2-chloroethoxy) methane	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
bis(2-chloroethoxy) methane	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
bis(2-chloroethoxy) methane		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0075**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
bis(2-chloroethyl) ether	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
bis(2-chloroethyl) ether	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
bis(2-chloroethyl) ether		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0075**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
bis(2-chloroisopropyl) ether	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
bis(2-chloroisopropyl) ether	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
bis(2-chloroisopropyl) ether		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0075**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
bis(2-ethylhexyl)phthalate	=	0.04	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
bis(2-ethylhexyl)phthalate	=	0.082	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
bis(2-ethylhexyl)phthalate		**Minimum**		**0.0400**	**mg/L**	**Count 2**	
		Average		**0.0610**	**mg/L**		
		Maximum		**0.0820**	**mg/L**		
bromoacetone	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
bromoacetone		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
bromodichloromethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
bromodichloromethane	<	0.006	mg/L	city	grab	06/28/1999 11:45 AM	1B
bromodichloromethane	<	0.006	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
bromodichloromethane		**Minimum**		**0.0030**	**mg/L**	**Count 3**	
		Average		**0.0037**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
bromoform	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
bromoform	<	0.006	mg/L	city	grab	06/28/1999 11:45 AM	1B

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Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
bromoform	<	0.006	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
bromoform		**Minimum**		**0.0030**	**mg/L**	**Count 3**	
		Average		**0.0037**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
bromomethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
bromomethane	<	0.02	mg/L	city	grab	06/28/1999 11:45 AM	1B
bromomethane	<	0.02	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
bromomethane		**Minimum**		**0.0050**	**mg/L**	**Count 3**	
		Average		**0.0083**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
butyl benzyl phthalate	<	0.04	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
butyl benzyl phthalate	<	0.08	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
butyl benzyl phthalate		**Minimum**		**0.0200**	**mg/L**	**Count 2**	
		Average		**0.0300**	**mg/L**		
		Maximum		**0.0400**	**mg/L**		
cadmium	<	0.03	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
cadmium		**Minimum**		**0.0150**	**mg/L**	**Count 1**	
		Average		**0.0150**	**mg/L**		
		Maximum		**0.0150**	**mg/L**		
carbon disulfide	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
carbon disulfide		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
carbon tetrachloride	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
carbon tetrachloride	<	0.006	mg/L	city	grab	06/28/1999 11:45 AM	1B
carbon tetrachloride	<	0.006	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
carbon tetrachloride		**Minimum**		**0.0030**	**mg/L**	**Count 3**	
		Average		**0.0037**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
certification - tto	=		mg/L	self	certified	09/30/1999	1B
certification - tto	=		mg/L	self	certified	12/09/1999 7:00 AM	1B
certification - tto		**Minimum**			**mg/L**	**Count 2**	
		Average			**mg/L**		
		Maximum			**mg/L**		
chlorobenzene	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
chlorobenzene	<	0.002	mg/L	city	grab	06/28/1999 11:45 AM	1B

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
chlorobenzene	<	0.002	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
chlorobenzene		**Minimum**		**0.0010 mg/L**		**Count 3**	
		Average		**0.0023 mg/L**			
		Maximum		**0.0050 mg/L**			
chloroethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
chloroethane	<	0.02	mg/L	city	grab	06/28/1999 11:45 AM	1B
chloroethane	<	0.02	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
chloroethane		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0083 mg/L**			
		Maximum		**0.0100 mg/L**			
chloroform	=	0.012	mg/L	self	grab	06/24/1999 7:20 AM	1B
chloroform	<	0.002	mg/L	city	grab	06/28/1999 11:45 AM	1B
chloroform	<	0.002	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
chloroform		**Minimum**		**0.0010 mg/L**		**Count 3**	
		Average		**0.0047 mg/L**			
		Maximum		**0.0120 mg/L**			
chloromethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
chloromethane	<	0.02	mg/L	city	grab	06/28/1999 11:45 AM	1B
chloromethane	<	0.02	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
chloromethane		**Minimum**		**0.0050 mg/L**		**Count 3**	
		Average		**0.0083 mg/L**			
		Maximum		**0.0100 mg/L**			
chloroprene	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
chloroprene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
chromium	<	0.03	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
chromium		**Minimum**		**0.0150 mg/L**		**Count 1**	
		Average		**0.0150 mg/L**			
		Maximum		**0.0150 mg/L**			
chrysene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
chrysene	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
chrysene		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0075 mg/L**			
		Maximum		**0.0100 mg/L**			
dibenzo(a,h)anthracene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B

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Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
dibenzo(a,h)anthracene	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
dibenzo(a,h)anthracene		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0075**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
dibromochloromethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
dibromochloromethane	<	0.01	mg/L	city	grab	06/28/1999 11:45 AM	1B
dibromochloromethane	<	0.01	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
dibromochloromethane		**Minimum**		**0.0050**	**mg/L**	**Count 3**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
dibromomethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
dibromomethane		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
dichlorodifluoromethane (freon-12)	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
dichlorodifluoromethane (freon-12)		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
diethyl phthalate	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
diethyl phthalate	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
diethyl phthalate		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0075**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
dimethyl phthalate	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
dimethyl phthalate	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
dimethyl phthalate		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0075**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
di-n-butyl phthalate	<	0.04	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
di-n-butyl phthalate	<	0.08	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
di-n-butyl phthalate		**Minimum**		**0.0200**	**mg/L**	**Count 2**	
		Average		**0.0300**	**mg/L**		
		Maximum		**0.0400**	**mg/L**		
di-n-octyl phthalate	<	0.02	mg/L	city	comp/split	06/28/1999 11:50 AM	1B

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Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
di-n-octyl phthalate	<	0.04	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
di-n-octyl phthalate		**Minimum**		**0.0100**	**mg/L**	**Count 2**	
		Average		**0.0150**	**mg/L**		
		Maximum		**0.0200**	**mg/L**		
epichlorohydrin	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
epichlorohydrin		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
ethanol	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
ethanol		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
ethyl benzene	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
ethyl benzene	<	0.006	mg/L	city	grab	06/28/1999 11:45 AM	1B
ethyl benzene	<	0.006	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
ethyl benzene		**Minimum**		**0.0030**	**mg/L**	**Count 3**	
		Average		**0.0037**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
ethyl methacrylate	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
ethyl methacrylate		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
ethylene oxide	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
ethylene oxide		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
fluoranthene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
fluoranthene	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
fluoranthene		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0075**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
fluorene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
fluorene	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
fluorene		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0075**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
hexachlorobenzene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B

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Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
hexachlorobenzene	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
hexachlorobenzene		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0075**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
hexachlorobutadiene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
hexachlorobutadiene	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
hexachlorobutadiene		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0075**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
hexachlorocyclopentadiene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
hexachlorocyclopentadiene	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
hexachlorocyclopentadiene		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0075**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
hexachloroethane	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
hexachloroethane	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
hexachloroethane		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0075**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
indeno (1,2,3-cd) pyrene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
indeno (1,2,3-cd) pyrene	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
indeno (1,2,3-cd) pyrene		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0075**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
iodomethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
iodomethane		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
isobutyl alcohol	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
isobutyl alcohol		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
isophorone	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
isophorone	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
isophorone		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0075**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		

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Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
mercury	<	0.0002	mg/L	self	composite	06/24/1999 7:30 AM	1B
mercury	<	0.0002	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
mercury	<	0.0004	mg/L	self	composite	09/09/1999 7:30 AM	1B
mercury		**Minimum**		**0.0001 mg/L**		**Count 3**	
		Average		**0.0001 mg/L**			
		Maximum		**0.0002 mg/L**			
mercury ultra-clean	<	0.0004	mg/L	self	composite	12/09/1999 7:00 AM	1B
mercury ultra-clean		**Minimum**		**0.0002 mg/L**		**Count 1**	
		Average		**0.0002 mg/L**			
		Maximum		**0.0002 mg/L**			
methacrylonitrile	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
methacrylonitrile		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
methyl iodide	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
methyl iodide		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
methyl methacrylate	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
methyl methacrylate		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
methylacrylonitrile	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
methylacrylonitrile		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
methylene chloride	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
methylene chloride	<	0.008	mg/L	city	grab	06/28/1999 11:45 AM	1B
methylene chloride	<	0.008	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
methylene chloride		**Minimum**		**0.0040 mg/L**		**Count 3**	
		Average		**0.0043 mg/L**			
		Maximum		**0.0050 mg/L**			
molybdenum	=	0.027	mg/L	self	composite	06/24/1999 7:30 AM	1B
molybdenum	<	0.025	mg/L	self	composite	09/09/1999 7:30 AM	1B
molybdenum	<	0.1	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
molybdenum	<	0.1	mg/L	city	comp/split	11/22/1999 1:04 PM	1B

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
molybdenum	=	0.0746	mg/L	self	composite	12/09/1999 7:00 AM	1B
molybdenum		**Minimum**		**0.0125**	**mg/L**	**Count 5**	
		Average		**0.0428**	**mg/L**		
		Maximum		**0.0746**	**mg/L**		
naphthalene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
naphthalene	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
naphthalene		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0075**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
nitrobenzene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
nitrobenzene	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
nitrobenzene		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0075**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
n-nitrosodimethylamine	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
n-nitrosodimethylamine	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
n-nitrosodimethylamine		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0075**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
n-nitroso-di-n-propylamine	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
n-nitroso-di-n-propylamine	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
n-nitroso-di-n-propylamine		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0075**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
n-nitrosodiphenylamine	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
n-nitrosodiphenylamine	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
n-nitrosodiphenylamine		**Minimum**		**0.0050**	**mg/L**	**Count 2**	
		Average		**0.0075**	**mg/L**		
		Maximum		**0.0100**	**mg/L**		
n-propylamine	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
n-propylamine		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
pentachloroethane	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
pentachloroethane		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
pentachlorophenol	<	0.02	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
pentachlorophenol	<	0.04	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
pentachlorophenol		**Minimum**		**0.0100 mg/L**		**Count 2**	
		Average		**0.0150 mg/L**			
		Maximum		**0.0200 mg/L**			
pH	=		std units	self	continuous	06/30/1999	1B
pH	=		std units	self	continuous	07/31/1999	1B
pH	=	9.8	std units	city	grab/split	09/14/1999 11:50 AM	1B
pH	=		std units	self	continuous	09/30/1999	1B
pH	=		std units	self	continuous	10/31/1999	1B
pH	=	9.3	std units	city	grab	11/22/1999 1:00 PM	1B
pH	=		std units	self	continuous	11/30/1999	1B
pH		**Minimum**		**9.3000 std units**		**Count 7**	
		Maximum		**9.8000 std units**			
phenanthrene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
phenanthrene	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
phenanthrene		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0075 mg/L**			
		Maximum		**0.0100 mg/L**			
phenols - total (epa 420)	<	0.02	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
phenols - total (epa 420)	<	0.04	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
phenols - total (epa 420)		**Minimum**		**0.0100 mg/L**		**Count 2**	
		Average		**0.0150 mg/L**			
		Maximum		**0.0200 mg/L**			
propargyl alcohol	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
propargyl alcohol		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
propionitrile	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
propionitrile		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
pyrene	<	0.01	mg/L	city	comp/split	06/28/1999 11:50 AM	1B
pyrene	<	0.02	mg/L	city	comp/split	09/14/1999 11:55 AM	1B
pyrene		**Minimum**		**0.0050 mg/L**		**Count 2**	
		Average		**0.0075 mg/L**			
		Maximum		**0.0100 mg/L**			

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
pyridine	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
pyridine		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
selenium	<	0.001	mg/L	self	composite	06/24/1999 7:30 AM	1B
selenium	<	0.005	mg/L	self	composite	09/09/1999 7:30 AM	1B
selenium	=	0.0043	mg/L	self	composite	12/09/1999 7:00 AM	1B
selenium		**Minimum**		**0.0005 mg/L**		**Count 3**	
		Average		**0.0024 mg/L**			
		Maximum		**0.0043 mg/L**			
styrene	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
styrene		**Minimum**		**0.0050 mg/L**		**Count 1**	
		Average		**0.0050 mg/L**			
		Maximum		**0.0050 mg/L**			
tetrachloroethene	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
tetrachloroethene	<	0.004	mg/L	city	grab	06/28/1999 11:45 AM	1B
tetrachloroethene	<	0.004	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
tetrachloroethene		**Minimum**		**0.0020 mg/L**		**Count 3**	
		Average		**0.0030 mg/L**			
		Maximum		**0.0050 mg/L**			
toluene	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
toluene	<	0.002	mg/L	city	grab	06/28/1999 11:45 AM	1B
toluene	<	0.002	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
toluene		**Minimum**		**0.0010 mg/L**		**Count 3**	
		Average		**0.0023 mg/L**			
		Maximum		**0.0050 mg/L**			
trichloroethene (tce)	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
trichloroethene (tce)	<	0.008	mg/L	city	grab	06/28/1999 11:45 AM	1B
trichloroethene (tce)	<	0.008	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
trichloroethene (tce)		**Minimum**		**0.0040 mg/L**		**Count 3**	
		Average		**0.0043 mg/L**			
		Maximum		**0.0050 mg/L**			
trichlorofluoromethane (freon-11)	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
trichlorofluoromethane (freon-11)	<	0.008	mg/L	city	grab	06/28/1999 11:45 AM	1B
trichlorofluoromethane (freon-11)	<	0.008	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
trichlorofluoromethane (freon-11)		**Minimum**		**0.0040 mg/L**		**Count 3**	
		Average		**0.0043 mg/L**			
		Maximum		**0.0050 mg/L**			

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Org Id **1592**

Org Name **WACKER SILTRONIC CORP** Permit Number **469.001**

Analyte Name	Result Op	Numeric Result	Analyte Units	Tester	Sample Type	Collection Date	Location Code
vinyl acetate	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
vinyl acetate		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
vinyl chloride	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
vinyl chloride	<	0.1	mg/L	city	grab	06/28/1999 11:45 AM	1B
vinyl chloride	<	0.1	mg/L	city	grab/split	09/14/1999 11:50 AM	1B
vinyl chloride		**Minimum**		**0.0050**	**mg/L**	**Count 3**	
		Average		**0.0350**	**mg/L**		
		Maximum		**0.0500**	**mg/L**		
xylenes, total	<	0.01	mg/L	self	grab	06/24/1999 7:20 AM	1B
xylenes, total		**Minimum**		**0.0050**	**mg/L**	**Count 1**	
		Average		**0.0050**	**mg/L**		
		Maximum		**0.0050**	**mg/L**		
zinc	=	0.032	mg/L	self	composite	06/24/1999 7:30 AM	1B
zinc	=	0.036	mg/L	self	composite	09/09/1999 7:30 AM	1B
zinc	=	0.0325	mg/L	self	composite	12/09/1999 7:00 AM	1B
zinc		**Minimum**		**0.0320**	**mg/L**	**Count 3**	
		Average		**0.0335**	**mg/L**		
		Maximum		**0.0360**	**mg/L**		

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CITY OF PORTLAND
ENVIRONMENTAL SERVICES

Water Pollution Control Laboratory
6543 N. Burlington Ave., Portland, Oregon 97203-5452
(503) 823-5600

October 15, 1998

Tom McCue
Env. Health & Safety
Wacker Siltronic Corp
P.O. Box 83180
Portland OR 97203

RE: Second quarter analytical data

Dear Tom:

Enclosed is the sampling data collected from your facility during the second quarter of 1998. We have provided this data to assist you in maintaining historical information for pollutants present in your facility's wastewater discharge. This information will also help to identify compliance issues.

The Industrial Source Control Division maintains sampling data from both City and self monitoring. Please take this opportunity to compare self monitoring results to City monitoring results, as well as to verify the analytical information contained within the report with your records.

If you do not receive a report in a given quarter, it may be because there was no sampling activity at your facility during that time period. As always, if you have any questions about this report or your facility's wastewater discharge permit, please contact me at (503) 823-5537.

I hope that this information better enables you to evaluate your industrial discharge. We thank you for doing your part to help protect water quality and the environment.

Cordially,

Timothy Dean
Permit Manager

CITY OF PORTLAND
INDUSTRIAL SOURCE CONTROL DIVISION
QUARTERLY ANALYTICAL DATA SUMMARY

COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE	RESULT			
WACKER SILTRONIC CORP							
469.001							
	city	4/17/98 10:55:00 AM	pH		=	10.6	std u
	city	5/6/98 12:37:00 PM	pH		=	10.3	std u
	city	6/17/98 9:45:00 AM	pH		=	10.2	std u

COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE	RESULT		
WACKER SILTRONIC CORP						
469.001						
	self	6/4/98 7:15:00 AM	0,0,0-triethylphosphorothioate	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***
	self	4/9/98 7:20:00 AM	1,1,1,2-tetrachloroethane	<	0.01	mg/L
	self	4/9/98 7:20:00 AM	1,1,1,2-tetrachloroethane	<	0.01	mg/L
	self	5/7/98	1,1,1,2-tetrachloroethane	<	0.01	mg/L
	self	5/7/98	1,1,1,2-tetrachloroethane	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	1,1,1,2-tetrachloroethane	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	1,1,1,2-tetrachloroethane	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	1,1,1,2-tetrachloroethane	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***
	self	4/9/98 7:20:00 AM	1,1,1-trichloroethane	<	0.01	mg/L
	self	5/7/98	1,1,1-trichloroethane	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	1,1,1-trichloroethane	<	0.01	mg/L
	city	6/17/98 9:45:00 AM	1,1,1-trichloroethane	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***

SCOEPA00036306

CITY OF PORTLAND
INDUSTRIAL SOURCE CONTROL DIVISION
QUARTERLY ANALYTICAL DATA SUMMARY

COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE	RESULT			
	self	4/9/98 7:20:00 AM	1,1,2,2-tetrachloroethane	<	0.01	mg/L
	self	5/7/98	1,1,2,2-tetrachloroethane	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	1,1,2,2-tetrachloroethane	<	0.01	mg/L
	city	6/17/98 9:45:00 AM	1,1,2,2-tetrachloroethane	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***
	self	4/9/98 7:20:00 AM	1,1,2-trichloroethane	<	0.01	mg/L
	self	5/7/98	1,1,2-trichloroethane	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	1,1,2-trichloroethane	<	0.01	mg/L
	city	6/17/98 9:45:00 AM	1,1,2-trichloroethane	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***
	self	4/9/98 7:20:00 AM	1,1-dichloroethane	<	0.01	mg/L
	self	5/7/98	1,1-dichloroethane	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	1,1-dichloroethane	<	0.01	mg/L
	city	6/17/98 9:45:00 AM	1,1-dichloroethane	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***
	self	4/9/98 7:20:00 AM	1,1-dichloroethene	<	0.01	mg/L
	self	5/7/98	1,1-dichloroethene	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	1,1-dichloroethene	<	0.01	mg/L

CITY OF PORTLAND
INDUSTRIAL SOURCE CONTROL DIVISION
QUARTERLY ANALYTICAL DATA SUMMARY

COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE	RESULT		
	city	6/17/98 9:45:00 AM	1,1-dichloroethene	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	1,1-dichloropropene	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	4/9/98 7:20:00 AM	1,2,3,4-diepoxybutane	<	0.01	mg/L
	self	5/7/98	1,2,3,4-diepoxybutane	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	1,2,3-trichlorobenzene	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	4/9/98 7:20:00 AM	1,2,3-trichloropropane	<	0.01	mg/L
	self	5/7/98	1,2,3-trichloropropane	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	1,2,3-trichloropropane	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	1,2,4,5-tetrachlorobenzene	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	1,2,4-trichlorobenzene	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	1,2,4-trichlorobenzene	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L

CITY OF PORTLAND
INDUSTRIAL SOURCE CONTROL DIVISION
QUARTERLY ANALYTICAL DATA SUMMARY

COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE	RESULT			
	self	6/4/98 7:15:00 AM	1,2,4-trimethylbenzene	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	4/9/98 7:20:00 AM	1,2-dibromo-3-chloropropane	<	0.01	mg/L
	self	5/7/98	1,2-dibromo-3-chloropropane	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	1,2-dibromo-3-chloropropane	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	1,2-dibromo-3-chloropropane	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	4/9/98 7:20:00 AM	1,2-dibromoethane	<	0.01	mg/L
	self	5/7/98	1,2-dibromoethane	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	1,2-dibromoethane	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	1,2-dibromoethane	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	4/9/98 7:20:00 AM	1,2-dichlorobenzene	<	0.01	mg/L
	self	5/7/98	1,2-dichlorobenzene	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	1,2-dichlorobenzene	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	1,2-dichlorobenzene	<	0.01	mg/L
	city	6/17/98 9:45:00 AM	1,2-dichlorobenzene	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L

CITY OF PORTLAND
INDUSTRIAL SOURCE CONTROL DIVISION
QUARTERLY ANALYTICAL DATA SUMMARY

COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE	RESULT			
	self	4/9/98 7:20:00 AM	1,2-dichloroethane	<	0.01	mg/L
	self	5/7/98	1,2-dichloroethane	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	1,2-dichloroethane	<	0.01	mg/L
	city	6/17/98 9:45:00 AM	1,2-dichloroethane	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***
	self	6/4/98 7:15:00 AM	1,2-dichloroethene (cis)	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***
	self	4/9/98 7:20:00 AM	1,2-dichloroethene (trans)	<	0.01	mg/L
	self	5/7/98	1,2-dichloroethene (trans)	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	1,2-dichloroethene (trans)	<	0.01	mg/L
	city	6/17/98 9:45:00 AM	1,2-dichloroethene (trans)	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***
	self	4/9/98 7:20:00 AM	1,2-dichloropropane	<	0.01	mg/L
	self	5/7/98	1,2-dichloropropane	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	1,2-dichloropropane	<	0.01	mg/L
	city	6/17/98 9:45:00 AM	1,2-dichloropropane	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***
	self	6/4/98 7:15:00 AM	1,2-dinitrobenzene	<	0.01	mg/L

CITY OF PORTLAND
INDUSTRIAL SOURCE CONTROL DIVISION
QUARTERLY ANALYTICAL DATA SUMMARY

COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE	RESULT		
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	1,2-diphenylhydrazine	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	1,3,5-trimethylbenzene	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	1,3,5-trinitrobenzene	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	4/9/98 7:20:00 AM	1,3-dichloro-2-propanol	<	0.01	mg/L
	self	5/7/98	1,3-dichloro-2-propanol	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	4/9/98 7:20:00 AM	1,3-dichlorobenzene	<	0.01	mg/L
	self	5/7/98	1,3-dichlorobenzene	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	1,3-dichlorobenzene	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	1,3-dichlorobenzene	<	0.01	mg/L
	city	6/17/98 9:45:00 AM	1,3-dichlorobenzene	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	1,3-dichloropropane	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L

CITY OF PORTLAND
INDUSTRIAL SOURCE CONTROL DIVISION
QUARTERLY ANALYTICAL DATA SUMMARY

COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE	RESULT			
	self	4/9/98 7:20:00 AM	1,3-dichloropropene (cis)	<	0.01	mg/L
	self	5/7/98	1,3-dichloropropene (cis)	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	1,3-dichloropropene (cis)	<	0.01	mg/L
	city	6/17/98 9:45:00 AM	1,3-dichloropropene (cis)	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***
	self	4/9/98 7:20:00 AM	1,3-dichloropropene (trans)	<	0.01	mg/L
	self	5/7/98	1,3-dichloropropene (trans)	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	1,3-dichloropropene (trans)	<	0.01	mg/L
	city	6/17/98 9:45:00 AM	1,3-dichloropropene (trans)	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***
	self	6/4/98 7:15:00 AM	1,3-dinitrobenzene	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***
	self	4/9/98 7:20:00 AM	1,4-dichloro-2-butene	<	0.01	mg/L
	self	5/7/98	1,4-dichloro-2-butene	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	1,4-dichloro-2-butene	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***
	self	6/4/98 7:15:00 AM	1,4-dichloro-2-butene (cis)	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***

CITY OF PORTLAND
INDUSTRIAL SOURCE CONTROL DIVISION
QUARTERLY ANALYTICAL DATA SUMMARY

COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE	RESULT			
	self	6/4/98 7:15:00 AM	1,4-dichloro-2-butene (trans)	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***
	self	4/9/98 7:20:00 AM	1,4-dichlorobenzene	<	0.01	mg/L
	self	5/7/98	1,4-dichlorobenzene	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	1,4-dichlorobenzene	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	1,4-dichlorobenzene	<	0.01	mg/L
	city	6/17/98 9:45:00 AM	1,4-dichlorobenzene	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***
	self	6/4/98 7:15:00 AM	1,4-dinitrobenzene	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	1,4-dinitrobenzene	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***
	self	4/9/98 7:20:00 AM	1,4-dioxane	<	0.01	mg/L
	self	5/7/98	1,4-dioxane	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***
	self	6/4/98 7:15:00 AM	1,4-naphthoquinone	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***
	self	6/4/98 7:15:00 AM	1,4-phenylenediamine	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***

COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE	RESULT		
	self	6/4/98 7:15:00 AM	1-acetyl-2-thiourea	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	1-chloronaphthalene	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	1-naphthylamine	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	2,2',3,3',4,4',6-heptachlorobiphe	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	2,2-dichloropropane	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	2,3,4,6-tetrachlorophenol	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	2,4,5-t	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	2,4,5-tp (silvex)	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	2,4,5-trichlorophenol	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L

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COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE	RESULT		
	self	6/4/98 7:15:00 AM	2,4,5-trimethylaniline	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	2,4,6-trichlorophenol	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	2,4-diaminotoluene	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	2,4-dichlorophenol	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	2,4-dimethylphenol	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	2,4-dinitrophenol	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	2,4-dinitrotoluene	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	2,4-dinitrotoluene	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	2,6-dichlorophenol	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	2,6-dichlorophenol	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L

CITY OF PORTLAND
INDUSTRIAL SOURCE CONTROL DIVISION
QUARTERLY ANALYTICAL DATA SUMMARY

COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE	RESULT		
	self	6/4/98 7:15:00 AM	2,6-dinitrotoluene	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***
	self	6/4/98 7:15:00 AM	2-acetylaminofluorene	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***
	self	6/4/98 7:15:00 AM	2-aminoanthraquinone	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***
	self	4/9/98 7:20:00 AM	2-butanone	<	0.01	mg/L
	self	5/7/98	2-butanone	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	2-butanone	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***
	self	4/9/98 7:20:00 AM	2-chloroethanol	<	0.01	mg/L
	self	5/7/98	2-chloroethanol	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***
	self	4/9/98 7:20:00 AM	2-chloroethylvinyl ether	<	0.01	mg/L
	self	5/7/98	2-chloroethylvinyl ether	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	2-chloroethylvinyl ether	<	0.01	mg/L
	city	6/17/98 9:45:00 AM	2-chloroethylvinyl ether	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***

CITY OF PORTLAND
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QUARTERLY ANALYTICAL DATA SUMMARY

COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE	RESULT		
	self	6/4/98 7:15:00 AM	2-chloronaphthalene	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	2-chlorophenol	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	2-chlorotoluene	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	2-cyclohexyl-4,6-dinitrophenol	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	4/9/98 7:20:00 AM	2-hexanone	<	0.01	mg/L
	self	5/7/98	2-hexanone	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	2-hexanone	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	4/9/98 7:20:00 AM	2-hydroxypropionitrile	<	0.01	mg/L
	self	5/7/98	2-hydroxypropionitrile	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	2-methyl-4,6-dinitrophenol	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	2-methylnaphthalene	<	0.01	mg/L

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QUARTERLY ANALYTICAL DATA SUMMARY

COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE	RESULT		
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	2-methylphenol	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	2-naphthylamine	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	2-nitroaniline	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	2-nitrophenol	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	4/9/98 7:20:00 AM	2-picoline	<	0.01	mg/L
	self	5/7/98	2-picoline	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	2-picoline	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	3,3'-dichlorobenzidine	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	3,3'-dimethoxybenzidine	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	3,3'-dimethylbenzidine	<	0.01	mg/L

CITY OF PORTLAND
INDUSTRIAL SOURCE CONTROL DIVISION
QUARTERLY ANALYTICAL DATA SUMMARY

COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE	RESULT			
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	3-(chloromethyl) pyridine hydroc	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	4/9/98 7:20:00 AM	3-chloropropionitrile	<	0.01	mg/L
	self	5/7/98	3-chloropropionitrile	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	3-methylcholanthrene	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	3-methylphenol	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	3-nitroaniline	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	4,4'-ddd (p,p'-tde)	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	4,4'-dde (p,p'-ddx)	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	4,4'-ddt	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L

COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE	RESULT			
	self	6/4/98 7:15:00 AM	4,4'-oxydianiline	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	4,4'methylenebis(2-chloroaniline	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	4,6-dinitro-2-methylphenol	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	4-aminobiphenyl	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	4-bromophenyl phenyl ether	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	4-chloro-3-methylphenol	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	4-chloroaniline	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	4-chlorophenyl phenyl ether	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	4-chlorotoluene	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L

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CITY OF PORTLAND
INDUSTRIAL SOURCE CONTROL DIVISION
QUARTERLY ANALYTICAL DATA SUMMARY

COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE	RESULT			
	self	6/4/98 7:15:00 AM	4-isopropyltoluene	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	4/9/98 7:20:00 AM	4-methyl-2-pentanone	<	0.01	mg/L
	self	5/7/98	4-methyl-2-pentanone	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	4-methyl-2-pentanone	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	4-methylphenol	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	4-nitroaniline	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	4-nitrobiphenyl	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	4-nitrophenol	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	5,5-diphenylhydantoin	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	5-chloro-2-methylaniline	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L

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COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE	RESULT			
	self	6/4/98 7:15:00 AM	5-nitro-o-anisidine		<	0.01	mg/L
			AVERAGE		<	0.01	mg/L
	self	6/4/98 7:15:00 AM	5-nitro-o-toluidine		<	0.01	mg/L
			AVERAGE		<	0.01	mg/L
	self	6/4/98 7:15:00 AM	5-nitroacenaphthene		<	0.01	mg/L
			AVERAGE		<	0.01	mg/L
	self	4/9/98 7:20:00 AM	6-propiolactone		<	0.01	mg/L
	self	5/7/98	6-propiolactone		<	0.01	mg/L
			AVERAGE		<	0.01	mg/L
	self	6/4/98 7:15:00 AM	7,12-dimethylbenz[a]anthracene		<	0.01	mg/L
			AVERAGE		<	0.01	mg/L
	self	6/4/98 7:15:00 AM	acenaphthene		<	0.01	mg/L
			AVERAGE		<	0.01	mg/L
	self	6/4/98 7:15:00 AM	acenaphthylene		<	0.01	mg/L
			AVERAGE		<	0.01	mg/L
	self	4/9/98 7:20:00 AM	acetone		=	0.923	mg/L MC
	self	5/7/98	acetone		=	1.78	mg/L ok
	self	6/4/98 7:15:00 AM	acetone		=	0.893	mg/L

COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE		RESULT		
				AVERAGE	=	1.198667	mg/L
	self	4/9/98 7:20:00 AM	acetonitrile		<	0.01	mg/L
	self	5/7/98	acetonitrile		<	0.01	mg/L
	self	6/4/98 7:15:00 AM	acetonitrile		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	acetophenone		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	4/9/98 7:20:00 AM	acrolein		<	0.01	mg/L
	self	5/7/98	acrolein		<	0.01	mg/L
	self	6/4/98 7:15:00 AM	acrolein		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	4/9/98 7:20:00 AM	acrylonitrile		<	0.01	mg/L
	self	5/7/98	acrylonitrile		<	0.01	mg/L
	self	6/4/98 7:15:00 AM	acrylonitrile		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	alachlor		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	aldrin		<	0.01	mg/L

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CITY OF PORTLAND
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QUARTERLY ANALYTICAL DATA SUMMARY

COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE		RESULT		
				AVERAGE	<	0.01	mg/L
	self	4/9/98 7:20:00 AM	allyl alcohol		<	0.01	mg/L
	self	5/7/98	allyl alcohol		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	4/9/98 7:20:00 AM	allyl chloride		<	0.01	mg/L
	self	5/7/98	allyl chloride		<	0.01	mg/L
	self	6/4/98 7:15:00 AM	allyl chloride		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	alpha,alpha-dimethylphenethyla		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	aminoazobenzene		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	anilazine		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	aniline		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	anthracene		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L

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INDUSTRIAL SOURCE CONTROL DIVISION
QUARTERLY ANALYTICAL DATA SUMMARY

COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE		RESULT		
	self	6/4/98 7:15:00 AM	aramite		<	0.01	mg/L
	self	6/4/98 7:15:00 AM	aramite		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	arsenic		=	0.001	mg/L
	city	6/18/98 10:00:00 AM	arsenic		<	0.001	mg/L
				AVERAGE	=	0.001	mg/L
	self	6/4/98 7:15:00 AM	azinphos methyl		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	barban		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	4/9/98 7:20:00 AM	benzene		<	0.01	mg/L
	self	5/7/98	benzene		<	0.01	mg/L
	self	6/4/98 7:15:00 AM	benzene		<	0.01	mg/L
	city	6/17/98 9:45:00 AM	benzene		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	benzidine		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	benzo(a)anthracene		<	0.01	mg/L

COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE	RESULT			
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	benzo(a)pyrene	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	benzo(b)fluoranthene	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	benzo(g,h,i)perylene	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	benzo(k)fluoranthene	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	benzoic acid	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	benzyl alcohol	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	benzyl alcohol	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	benzyl butyl phthalate	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	4/9/98 7:20:00 AM	benzyl chloride	<	0.01	mg/L
	self	5/7/98	benzyl chloride	<	0.01	mg/L

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COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE		RESULT	
				AVERAGE	< 0.01	mg/L
	self	6/4/98 7:15:00 AM	bhc, alpha		< 0.01	mg/L
				AVERAGE	< 0.01	mg/L
	self	6/4/98 7:15:00 AM	bhc, beta		< 0.01	mg/L
				AVERAGE	< 0.01	mg/L
	self	6/4/98 7:15:00 AM	bhc, delta		< 0.01	mg/L
				AVERAGE	< 0.01	mg/L
	self	6/4/98 7:15:00 AM	bhc, gamma (lindane)		< 0.01	mg/L
				AVERAGE	< 0.01	mg/L
	self	6/4/98 7:15:00 AM	bis(2-chloroethoxy) methane		< 0.01	mg/L
				AVERAGE	< 0.01	mg/L
	self	6/4/98 7:15:00 AM	bis(2-chloroethyl) ether		< 0.01	mg/L
				AVERAGE	< 0.01	mg/L
	self	6/4/98 7:15:00 AM	bis(2-chloroisopropyl) ether		< 0.01	mg/L
				AVERAGE	< 0.01	mg/L
	self	6/4/98 7:15:00 AM	bis(2-ethylhexyl)phthalate		< 0.01	mg/L
				AVERAGE	< 0.01	mg/L
	self	4/9/98 7:20:00 AM	bromoacetone		< 0.01	mg/L

CITY OF PORTLAND
INDUSTRIAL SOURCE CONTROL DIVISION
QUARTERLY ANALYTICAL DATA SUMMARY

COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE	RESULT			
	self	5/7/98	bromoacetone	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	bromobenzene	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	bromochloromethane	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	4/9/98 7:20:00 AM	bromodichloromethane	<	0.01	mg/L
	self	5/7/98	bromodichloromethane	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	bromodichloromethane	<	0.01	mg/L
	city	6/17/98 9:45:00 AM	bromodichloromethane	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	4/9/98 7:20:00 AM	bromoform	<	0.01	mg/L
	self	5/7/98	bromoform	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	bromoform	<	0.01	mg/L
	city	6/17/98 9:45:00 AM	bromoform	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	4/9/98 7:20:00 AM	bromomethane	<	0.01	mg/L
	self	5/7/98	bromomethane	<	0.01	mg/L

CITY OF PORTLAND
INDUSTRIAL SOURCE CONTROL DIVISION
QUARTERLY ANALYTICAL DATA SUMMARY

COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE		RESULT		
	self	6/4/98 7:15:00 AM	bromomethane		<	0.01	mg/L
	city	6/17/98 9:45:00 AM	bromomethane		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	bromoxynil		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	butyl benzyl phthalate		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	cadmium		<	0.01	mg/L
	city	6/18/98 10:00:00 AM	cadmium		<	0.02	mg/L
				AVERAGE	<	0.015	mg/L
	self	6/4/98 7:15:00 AM	captafol		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	captan		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	carbaryl		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	carbazole		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L

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CITY OF PORTLAND
INDUSTRIAL SOURCE CONTROL DIVISION
QUARTERLY ANALYTICAL DATA SUMMARY

COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE		RESULT		
	self	6/4/98 7:15:00 AM	carbofuran		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	4/9/98 7:20:00 AM	carbon disulfide		<	0.01	mg/L
	self	5/7/98	carbon disulfide		<	0.01	mg/L
	self	6/4/98 7:15:00 AM	carbon disulfide		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	4/9/98 7:20:00 AM	carbon tetrachloride		<	0.01	mg/L
	self	5/7/98	carbon tetrachloride		<	0.01	mg/L
	self	6/4/98 7:15:00 AM	carbon tetrachloride		<	0.01	mg/L
	city	6/17/98 9:45:00 AM	carbon tetrachloride		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	carbophenothion		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	chlordane		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	chlorfenvinphos		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	4/9/98 7:20:00 AM	chlorobenzene		<	0.01	mg/L

CITY OF PORTLAND
INDUSTRIAL SOURCE CONTROL DIVISION
QUARTERLY ANALYTICAL DATA SUMMARY

COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE		RESULT		
	self	5/7/98	chlorobenzene		<	0.01	mg/L
	self	6/4/98 7:15:00 AM	chlorobenzene		<	0.01	mg/L
	city	6/17/98 9:45:00 AM	chlorobenzene		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	chlorobenzilate		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	4/9/98 7:20:00 AM	chloroethane		<	0.01	mg/L
	self	5/7/98	chloroethane		<	0.01	mg/L
	self	6/4/98 7:15:00 AM	chloroethane		<	0.01	mg/L
	city	6/17/98 9:45:00 AM	chloroethane		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	4/9/98 7:20:00 AM	chloroform		<	0.01	mg/L
	self	5/7/98	chloroform		=	0.0031	mg/L
	self	6/4/98 7:15:00 AM	chloroform		<	0.01	mg/L
	city	6/17/98 9:45:00 AM	chloroform		=	0.003	mg/L
				AVERAGE	<	0.006525	mg/L
	self	4/9/98 7:20:00 AM	chloromethane		<	0.01	mg/L
	self	5/7/98	chloromethane		<	0.01	mg/L

CITY OF PORTLAND
INDUSTRIAL SOURCE CONTROL DIVISION
QUARTERLY ANALYTICAL DATA SUMMARY

COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE		RESULT		
	self	6/4/98 7:15:00 AM	chloromethane		<	0.01	mg/L
	city	6/17/98 9:45:00 AM	chloromethane		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	4/9/98 7:20:00 AM	chloroprene		<	0.01	mg/L
	self	5/7/98	chloroprene		<	0.01	mg/L
	self	6/4/98 7:15:00 AM	chloroprene		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	chromium		=	0.054	mg/L
	city	6/18/98 10:00:00 AM	chromium		<	0.01	mg/L
				AVERAGE	=	0.032	mg/L
	self	6/4/98 7:15:00 AM	chrysene		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	coumaphos		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	crotoxyphos		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	dalapon		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L

CITY OF PORTLAND
INDUSTRIAL SOURCE CONTROL DIVISION
QUARTERLY ANALYTICAL DATA SUMMARY

COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE	RESULT			
	self	6/4/98 7:15:00 AM	demeton-o	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	demeton-s	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	di(2-ethylhexyl)adipate	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	di-n-butyl phthalate	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	di-n-octyl phthalate	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	diallate (trans or cis)	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	dibenzo(a,e)pyrene	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	dibenzo(a,h)anthracene	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	dibenzo(a,j)acridine	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L

CITY OF PORTLAND
INDUSTRIAL SOURCE CONTROL DIVISION
QUARTERLY ANALYTICAL DATA SUMMARY

COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE	RESULT			
	self	6/4/98 7:15:00 AM	dibenzofuran	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***
	self	4/9/98 7:20:00 AM	dibromochloromethane	<	0.01	mg/L
	self	5/7/98	dibromochloromethane	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	dibromochloromethane	<	0.01	mg/L
	city	6/17/98 9:45:00 AM	dibromochloromethane	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***
	self	4/9/98 7:20:00 AM	dibromomethane	<	0.01	mg/L
	self	5/7/98	dibromomethane	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	dibromomethane	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	dibromomethane	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***
	self	6/4/98 7:15:00 AM	dicamba	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***
	self	6/4/98 7:15:00 AM	dichlone	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***
	self	4/9/98 7:20:00 AM	dichlorodifluoromethane (freon-	<	0.01	mg/L
	self	5/7/98	dichlorodifluoromethane (freon-	<	0.01	mg/L

CITY OF PORTLAND
INDUSTRIAL SOURCE CONTROL DIVISION
QUARTERLY ANALYTICAL DATA SUMMARY

COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE		RESULT		
	self	6/4/98 7:15:00 AM	dichlorodifluoromethane (freon-		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	dichlorovos		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	dicrotophos		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	dieldrin		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	diethyl phthalate		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	diethyl sulfate		<	0.01	mg/L
	self	6/4/98 7:15:00 AM	diethyl sulfate		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	diethylstilbesterol		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	dimethoate		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	dimethyl phthalate		<	0.01	mg/L

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CITY OF PORTLAND
INDUSTRIAL SOURCE CONTROL DIVISION
QUARTERLY ANALYTICAL DATA SUMMARY

COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE		RESULT		
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	dinocap		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	dinoseb		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	diphenylamine		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	disulfoton		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	endosulfan I		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	endosulfan II		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	endosulfan sulfate		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	endrin		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	endrin aldehyde		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L

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INDUSTRIAL SOURCE CONTROL DIVISION
QUARTERLY ANALYTICAL DATA SUMMARY

COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE		RESULT		
	self	6/4/98 7:15:00 AM	endrin ketone		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	4/9/98 7:20:00 AM	epichlorohydrin		<	0.01	mg/L
	self	5/7/98	epichlorohydrin		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	epn		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	4/9/98 7:20:00 AM	ethanol		<	0.01	mg/L
	self	5/7/98	ethanol		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	ethion		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	4/9/98 7:20:00 AM	ethyl benzene		<	0.01	mg/L
	self	5/7/98	ethyl benzene		<	0.01	mg/L
	self	6/4/98 7:15:00 AM	ethyl benzene		<	0.01	mg/L
	city	6/17/98 9:45:00 AM	ethyl benzene		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	ethyl carbamate		<	0.01	mg/L

COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE		RESULT	
				AVERAGE	< 0.01	mg/L
	self	4/9/98 7:20:00 AM	ethyl methacrylate		< 0.01	mg/L
	self	5/7/98	ethyl methacrylate		< 0.01	mg/L
	self	6/4/98 7:15:00 AM	ethyl methacrylate		< 0.01	mg/L
				AVERAGE	< 0.01	mg/L
	self	6/4/98 7:15:00 AM	ethyl methanesulfonate		< 0.01	mg/L
				AVERAGE	< 0.01	mg/L
	self	4/9/98 7:20:00 AM	ethylene oxide		< 0.01	mg/L
	self	5/7/98	ethylene oxide		< 0.01	mg/L
				AVERAGE	< 0.01	mg/L
	self	6/4/98 7:15:00 AM	famphur		< 0.01	mg/L
				AVERAGE	< 0.01	mg/L
	self	6/4/98 7:15:00 AM	fensulfothion		< 0.01	mg/L
				AVERAGE	< 0.01	mg/L
	self	6/4/98 7:15:00 AM	fenthion		< 0.01	mg/L
				AVERAGE	< 0.01	mg/L
	self	6/4/98 7:15:00 AM	fluchloralin		< 0.01	mg/L
				AVERAGE	< 0.01	mg/L

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CITY OF PORTLAND
INDUSTRIAL SOURCE CONTROL DIVISION
QUARTERLY ANALYTICAL DATA SUMMARY

COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE	RESULT			
	self	6/4/98 7:15:00 AM	fluoranthene	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	fluorene	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	heptachlor	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	heptachlor epoxide	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	hexachlorobenzene	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	hexachlorobutadiene	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	hexachlorobutadiene	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	hexachlorocyclopentadiene	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	hexachloroethane	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	hexachlorophene	<	0.01	mg/L

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INDUSTRIAL SOURCE CONTROL DIVISION
QUARTERLY ANALYTICAL DATA SUMMARY

COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE	RESULT		
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	hexachloropropene	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	hexamethyl phosphoramide	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	hydroquinone	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	indeno (1,2,3-cd) pyrene	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	4/9/98 7:20:00 AM	isobutyl alcohol	<	0.01	mg/L
	self	5/7/98	isobutyl alcohol	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	isobutyl alcohol	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	isodrin	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	isophorone	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	isopropylbenzene	<	0.01	mg/L

CITY OF PORTLAND
INDUSTRIAL SOURCE CONTROL DIVISION
QUARTERLY ANALYTICAL DATA SUMMARY

COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE		RESULT		
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	isosafrole		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	kepone		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	leptophos		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	malathion		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	maleic anhydride		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	mcpa		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	mcpp		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	mercury		<	0.0002	mg/L
	city	6/18/98 10:00:00 AM	mercury		<	0.0002	mg/L
				AVERAGE	<	0.0002	mg/L

CITY OF PORTLAND
INDUSTRIAL SOURCE CONTROL DIVISION
QUARTERLY ANALYTICAL DATA SUMMARY

COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE		RESULT		
	self	6/4/98 7:15:00 AM	mestranol		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	4/9/98 7:20:00 AM	methacrylonitrile		<	0.01	mg/L
	self	5/7/98	methacrylonitrile		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	methapyrilene		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	methoxychlor		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	4/9/98 7:20:00 AM	methyl iodide		<	0.01	mg/L
	self	5/7/98	methyl iodide		<	0.01	mg/L
	self	6/4/98 7:15:00 AM	methyl iodide		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	4/9/98 7:20:00 AM	methyl methacrylate		<	0.01	mg/L
	self	5/7/98	methyl methacrylate		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	methyl parathion		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L

COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE	RESULT			
	self	4/9/98 7:20:00 AM	methylacrylonitrile	<	0.01	mg/L
	self	5/7/98	methylacrylonitrile	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	methylacrylonitrile	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	4/9/98 7:20:00 AM	methylene chloride	<	0.01	mg/L
	self	5/7/98	methylene chloride	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	methylene chloride	<	0.01	mg/L
	city	6/17/98 9:45:00 AM	methylene chloride	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	methylmethanesulfonate	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	mevinphos	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	mexacarbate	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	mirex	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	monocrotophos	<	0.01	mg/L

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COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE	RESULT		
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	n-butylbenzene	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	n-ninitrosopiperidine	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	n-nitroso-di-n-propylamine	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	n-nitrosodibutylamine	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	n-nitrosodiethylamine	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	n-nitrosodimethylamine	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	n-nitrosodiphenylamine	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	n-nitrosomethylethylamine	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	n-nitrosomethylethylamine	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L

CITY OF PORTLAND
INDUSTRIAL SOURCE CONTROL DIVISION
QUARTERLY ANALYTICAL DATA SUMMARY

COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE	RESULT		
	self	6/4/98 7:15:00 AM	n-nitrosomorpholine	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	n-nitrosopyrrolidine	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	4/9/98 7:20:00 AM	n-propylamine	<	0.01	mg/L
	self	5/7/98	n-propylamine	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	n-propylbenzene	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	naled	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	naphthalene	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	naphthalene	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	nicotine	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	nitrobenzene	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L

COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE	RESULT			
	self	6/4/98 7:15:00 AM	nitrofen	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	nitroquinoline-1-oxide	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	o-anisidine	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	o-toluidine	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	octamethylpyrophosphoramide	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	p-benzoquinone	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	p-benzoquinone	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	p-cresidine	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	p-dimethylaminoazobenzene	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	parathion	<	0.01	mg/L

CITY OF PORTLAND
INDUSTRIAL SOURCE CONTROL DIVISION
QUARTERLY ANALYTICAL DATA SUMMARY

COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE		RESULT		
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	pcb 1016		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	pcb 1221		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	pcb 1232		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	pcb 1242		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	pcb 1248		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	pcb 1254		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	pcb 1260		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	pentachlorobenzene		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	4/9/98 7:20:00 AM	pentachloroethane		<	0.01	mg/L

CITY OF PORTLAND
INDUSTRIAL SOURCE CONTROL DIVISION
QUARTERLY ANALYTICAL DATA SUMMARY

COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE	RESULT			
	self	5/7/98	pentachloroethane	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	pentachloroethane	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	pentachloronitrobenzene (pcnb)	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	pentachlorophenol	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	phenacetin	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	phenanthrene	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	phenobarbital	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	phenol	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	phorate	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	phosalone	<	0.01	mg/L

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CITY OF PORTLAND
INDUSTRIAL SOURCE CONTROL DIVISION
QUARTERLY ANALYTICAL DATA SUMMARY

COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE		RESULT		
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	phosmet		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	phosphamidon		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	phthalic anhydride		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	piperonyl sulfoxide		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	pronamide		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	4/9/98 7:20:00 AM	propargyl alcohol		<	0.01	mg/L
	self	5/7/98	propargyl alcohol		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	4/9/98 7:20:00 AM	propionitrile		<	0.01	mg/L
	self	5/7/98	propionitrile		<	0.01	mg/L
	self	6/4/98 7:15:00 AM	propionitrile		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L

COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE		RESULT		
	self	6/4/98 7:15:00 AM	propylthiouracil		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	pyrene		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	4/9/98 7:20:00 AM	pyridine		<	0.01	mg/L
	self	5/7/98	pyridine		<	0.01	mg/L
	self	6/4/98 7:15:00 AM	pyridine		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	resorcinol		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	safrole		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	sec-butylbenzene		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	4/9/98 7:20:00 AM	styrene		<	0.01	mg/L
	self	5/7/98	styrene		<	0.01	mg/L
	self	6/4/98 7:15:00 AM	styrene		<	0.01	mg/L
	self	6/4/98 7:15:00 AM	styrene		<	0.01	mg/L

COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE		RESULT		
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	sulfallate		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	terbufos		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	tert-butylbenzene		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	4/9/98 7:20:00 AM	tetrachloroethene		<	0.01	mg/L
	self	5/7/98	tetrachloroethene		<	0.01	mg/L
	self	6/4/98 7:15:00 AM	tetrachloroethene		<	0.01	mg/L
	city	6/17/98 9:45:00 AM	tetrachloroethene		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	tetrachlorvinphos		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	tetraethyl pyrophosphate		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	thionazine		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L

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CITY OF PORTLAND
INDUSTRIAL SOURCE CONTROL DIVISION
QUARTERLY ANALYTICAL DATA SUMMARY

COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE	RESULT			
	self	6/4/98 7:15:00 AM	thiophenol (benzenethiol)	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***
	self	4/9/98 7:20:00 AM	toluene	<	0.01	mg/L
	self	5/7/98	toluene	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	toluene	<	0.01	mg/L
	city	6/17/98 9:45:00 AM	toluene	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***
	self	6/4/98 7:15:00 AM	toluene diisocyanate	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***
	self	6/4/98 7:15:00 AM	toxaphene	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***
	self	6/4/98 7:15:00 AM	tri-p-tolyl phosphate(h)	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***
	self	4/9/98 7:20:00 AM	trichloroethene (tce)	<	0.01	mg/L
	self	5/7/98	trichloroethene (tce)	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	trichloroethene (tce)	<	0.01	mg/L
	city	6/17/98 9:45:00 AM	trichloroethene (tce)	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***

CITY OF PORTLAND
INDUSTRIAL SOURCE CONTROL DIVISION
QUARTERLY ANALYTICAL DATA SUMMARY

COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE	RESULT			
	self	4/9/98 7:20:00 AM	trichlorofluoromethane (freon-11	<	0.01	mg/L
	self	5/7/98	trichlorofluoromethane (freon-11	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	trichlorofluoromethane (freon-11	<	0.01	mg/L
	city	6/17/98 9:45:00 AM	trichlorofluoromethane (freon-11	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***
	self	6/4/98 7:15:00 AM	trifluraline	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***
	self	6/4/98 7:15:00 AM	trimethyl phosphate	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***
	self	6/4/98 7:15:00 AM	tris(2,3-dibromopropyl) phospha	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***
	self	4/9/98 7:20:00 AM	vinyl acetate	<	0.01	mg/L
	self	5/7/98	vinyl acetate	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***
	self	4/9/98 7:20:00 AM	vinyl chloride	<	0.01	mg/L
	self	5/7/98	vinyl chloride	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	vinyl chloride	<	0.01	mg/L
	city	6/17/98 9:45:00 AM	vinyl chloride	<	0.01	mg/L

CITY OF PORTLAND
INDUSTRIAL SOURCE CONTROL DIVISION
QUARTERLY ANALYTICAL DATA SUMMARY

COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE		RESULT		
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	xylene, m-		<	0.01	mg/L
	city	6/17/98 9:45:00 AM	xylene, m-		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	xylene, o-		<	0.01	mg/L
	city	6/17/98 9:45:00 AM	xylene, o-		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	6/4/98 7:15:00 AM	xylene, p-		<	0.01	mg/L
	city	6/17/98 9:45:00 AM	xylene, p-		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	4/9/98 7:20:00 AM	xylenes, total		<	0.01	mg/L
	self	5/7/98	xylenes, total		<	0.01	mg/L
	self	6/4/98 7:15:00 AM	xylenes, total		<	0.01	mg/L
	city	6/17/98 9:45:00 AM	xylenes, total		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L

SCOEPA00036354

CITY OF PORTLAND
ENVIRONMENTAL SERVICES

Water Pollution Control Laboratory
6543 N. Burlington Ave., Portland, Oregon 97203-5452
(503) 823-5600

June 24, 1998

7/7/98 Tim Dean will have acetone result corrected. Should be µg/L, not mg/L.

Ms Petra Mattes
Wacker Siltronic Corp
PO Box 83180
Portland, OR 97203

RE: 1st quarter 1998 analytical data

Dear Petra,

Enclosed is the sampling data collected from your facility during the first quarter of 1998. We have provided this data to assist you in maintaining historical information for pollutants present in your facility's wastewater discharge. This information will also help to identify compliance issues.

The Industrial Source Control Division maintains sampling data from both City and self monitoring. Please take this opportunity to compare self monitoring results to City monitoring results, as well as to verify the analytical information contained within the report with your records.

If you do not receive a report in a given quarter, it may be because there was no sampling activity at your facility during that time period. As always, if you have any questions about this report or your facility's wastewater discharge permit, please contact me at 823-5537.

I hope that this information better enables you to evaluate your industrial discharge. We thank you for doing your part to help protect water quality and the environment.

Cordially,

Timothy P Dean

Timothy P Dean
Permit Manager

CITY OF PORTLAND
INDUSTRIAL SOURCE CONTROL DIVISION
1ST QUARTER ANALYTICAL DATA SUMMARY

COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE	RESULT			
WACKER SILTRONIC CORP							
469.001							
	city	1/16/98 9:00:00 AM	pH		=	10.7	std u
	city	2/12/98 11:51:00 AM	pH		=	10.5	std u
	city	3/3/98 11:40:00 AM	pH		=	10.6	std u

CITY OF PORTLAND
INDUSTRIAL SOURCE CONTROL DIVISION
1ST QUARTER ANALYTICAL DATA SUMMARY

COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE		RESULT	
WACKER SILTRONIC CORP						
469.001						
	city	3/3/98 11:40:00 AM	1,1,1-trichloroethane	<	0.01	mg/L
	self	3/4/98 11:30:00 AM	1,1,1-trichloroethane	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***
	city	3/3/98 11:40:00 AM	1,1,2,2-tetrachloroethane	<	0.01	mg/L
	self	3/4/98 11:30:00 AM	1,1,2,2-tetrachloroethane	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***
	city	3/3/98 11:40:00 AM	1,1,2-trichloroethane	<	0.01	mg/L
	self	3/4/98 11:30:00 AM	1,1,2-trichloroethane	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***
	city	3/3/98 11:40:00 AM	1,1-dichloroethane	<	0.01	mg/L
	self	3/4/98 11:30:00 AM	1,1-dichloroethane	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***
	city	3/3/98 11:40:00 AM	1,1-dichloroethene	<	0.01	mg/L
	self	3/4/98 11:30:00 AM	1,1-dichloroethene	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***

CITY OF PORTLAND
INDUSTRIAL SOURCE CONTROL DIVISION
1ST QUARTER ANALYTICAL DATA SUMMARY

COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE	RESULT			
	self	3/4/98 11:30:00 AM	1,2,3,4-diepoxybutane	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***
	self	3/4/98 11:30:00 AM	1,2,3-trichloropropane	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***
	self	3/4/98 11:30:00 AM	1,2-dibromo-3-chloropropane	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***
	self	3/4/98 11:30:00 AM	1,2-dibromoethane	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***
	city	3/3/98 11:40:00 AM	1,2-dichlorobenzene	<	0.01	mg/L
	self	3/4/98 11:30:00 AM	1,2-dichlorobenzene	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***
	city	3/3/98 11:40:00 AM	1,2-dichloroethane	<	0.01	mg/L
	self	3/4/98 11:30:00 AM	1,2-dichloroethane	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***
	city	3/3/98 11:40:00 AM	1,2-dichloroethene (trans)	<	0.01	mg/L
	self	3/4/98 11:30:00 AM	1,2-dichloroethene (trans)	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***
	city	3/3/98 11:40:00 AM	1,2-dichloropropane	<	0.01	mg/L

CITY OF PORTLAND
INDUSTRIAL SOURCE CONTROL DIVISION
1ST QUARTER ANALYTICAL DATA SUMMARY

COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE	RESULT		
	self	3/4/98 11:30:00 AM	1,2-dichloropropane	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***
	self	3/4/98 11:30:00 AM	1,3-dichloro-2-propanol	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***
	city	3/3/98 11:40:00 AM	1,3-dichlorobenzene	<	0.01	mg/L
	self	3/4/98 11:30:00 AM	1,3-dichlorobenzene	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***
	city	3/3/98 11:40:00 AM	1,3-dichloropropene (cis)	<	0.01	mg/L
	self	3/4/98 11:30:00 AM	1,3-dichloropropene (cis)	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***
	city	3/3/98 11:40:00 AM	1,3-dichloropropene (trans)	<	0.01	mg/L
	self	3/4/98 11:30:00 AM	1,3-dichloropropene (trans)	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***
	self	3/4/98 11:30:00 AM	1,4-dichloro-2-butene	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***
	city	3/3/98 11:40:00 AM	1,4-dichlorobenzene	<	0.01	mg/L
	self	3/4/98 11:30:00 AM	1,4-dichlorobenzene	<	0.01	mg/L
			AVERAGE	<	***0.01***	***mg/L***

CITY OF PORTLAND
INDUSTRIAL SOURCE CONTROL DIVISION
1ST QUARTER ANALYTICAL DATA SUMMARY

COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE	RESULT		
	self	3/4/98 11:30:00 AM	1,4-dioxane	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	3/4/98 11:30:00 AM	2-butanone	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	3/4/98 11:30:00 AM	2-chloroethanol	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	city	3/3/98 11:40:00 AM	2-chloroethylvinyl ether	<	0.01	mg/L
	self	3/4/98 11:30:00 AM	2-chloroethylvinyl ether	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	3/4/98 11:30:00 AM	2-hexanone	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	3/4/98 11:30:00 AM	2-hydroxypropionitrile	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	3/4/98 11:30:00 AM	2-picoline	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	3/4/98 11:30:00 AM	3-chloropropionitrile	<	0.01	mg/L
			AVERAGE	<	0.01	mg/L
	self	3/4/98 11:30:00 AM	4-methyl-2-pentanone	<	0.01	mg/L

SCOEPA00036360

Acetone, should be ug/l (not mg/l)

CITY OF PORTLAND
INDUSTRIAL SOURCE CONTROL DIVISION
1ST QUARTER ANALYTICAL DATA SUMMARY

COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE		RESULT		
				AVERAGE	<	0.01	mg/L
	self	3/4/98 11:30:00 AM	6-propiolactone		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	3/4/98 11:30:00 AM	acetone		=	248	mg/L
				AVERAGE	=	248	mg/L
	self	3/4/98 11:30:00 AM	acetonitrile		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	3/4/98 11:30:00 AM	acrolein		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	3/4/98 11:30:00 AM	acrylonitrile		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	3/4/98 11:30:00 AM	allyl alcohol		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	3/4/98 11:30:00 AM	allyl chloride		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	3/3/98 11:40:00 AM	arsenic		<	0.001	mg/L
	city	3/3/98 11:40:00 AM	arsenic		<	0.001	mg/L
				AVERAGE	<	0.001	mg/L

CITY OF PORTLAND
INDUSTRIAL SOURCE CONTROL DIVISION
1ST QUARTER ANALYTICAL DATA SUMMARY

COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE		RESULT		
	city	3/3/98 11:40:00 AM	benzene		<	0.01	mg/L
	self	3/4/98 11:30:00 AM	benzene		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	3/4/98 11:30:00 AM	benzyl chloride		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	3/4/98 11:30:00 AM	bromoacetone		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	city	3/3/98 11:40:00 AM	bromodichloromethane		<	0.01	mg/L
	self	3/4/98 11:30:00 AM	bromodichloromethane		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	city	3/3/98 11:40:00 AM	bromoform		<	0.01	mg/L
	self	3/4/98 11:30:00 AM	bromoform		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	city	3/3/98 11:40:00 AM	bromomethane		<	0.01	mg/L
	self	3/4/98 11:30:00 AM	bromomethane		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	3/3/98 11:40:00 AM	cadmium		<	0.001	mg/L
	city	3/3/98 11:40:00 AM	cadmium		<	0.02	mg/L

CITY OF PORTLAND
INDUSTRIAL SOURCE CONTROL DIVISION
1ST QUARTER ANALYTICAL DATA SUMMARY

COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE		RESULT		
				AVERAGE	<	0.0105	mg/L
	self	3/4/98 11:30:00 AM	carbon disulfide		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	city	3/3/98 11:40:00 AM	carbon tetrachloride		<	0.01	mg/L
	self	3/4/98 11:30:00 AM	carbon tetrachloride		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	city	3/3/98 11:40:00 AM	chlorobenzene		<	0.01	mg/L
	self	3/4/98 11:30:00 AM	chlorobenzene		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	city	3/3/98 11:40:00 AM	chloroethane		<	0.01	mg/L
	self	3/4/98 11:30:00 AM	chloroethane		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	city	3/3/98 11:40:00 AM	chloroform		<	0.01	mg/L
	self	3/4/98 11:30:00 AM	chloroform		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	city	3/3/98 11:40:00 AM	chloromethane		<	0.01	mg/L
	self	3/4/98 11:30:00 AM	chloromethane		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L

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CITY OF PORTLAND
INDUSTRIAL SOURCE CONTROL DIVISION
1ST QUARTER ANALYTICAL DATA SUMMARY

COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE		RESULT		
	self	3/4/98 11:30:00 AM	chloroprene		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	city	3/3/98 11:40:00 AM	chromium		<	0.01	mg/L
	self	3/3/98 11:40:00 AM	chromium		=	0.018	mg/L
				AVERAGE	<	0.014	mg/L
	self	3/3/98 11:40:00 AM	copper		=	0.031	mg/L
				AVERAGE	=	0.031	mg/L
	city	3/3/98 11:40:00 AM	dibromochloromethane		<	0.01	mg/L
	self	3/4/98 11:30:00 AM	dibromochloromethane		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	3/4/98 11:30:00 AM	dibromomethane		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	3/4/98 11:30:00 AM	dichlorodifluoromethane (freon-		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	3/4/98 11:30:00 AM	epichlorohydrin		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	3/4/98 11:30:00 AM	ethanol		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L

CITY OF PORTLAND
INDUSTRIAL SOURCE CONTROL DIVISION
1ST QUARTER ANALYTICAL DATA SUMMARY

COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE		RESULT			
	city	3/3/98 11:40:00 AM	ethyl benzene		<	0.01	mg/L
	self	3/4/98 11:30:00 AM	ethyl benzene		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	3/4/98 11:30:00 AM	ethyl methacrylate		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	3/4/98 11:30:00 AM	ethylene oxide		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	3/4/98 11:30:00 AM	isobutyl alcohol		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	3/3/98 11:40:00 AM	lead		=	0.002	mg/L
				AVERAGE	=	0.002	mg/L
	city	3/3/98 11:40:00 AM	mercury		<	0.0002	mg/L
	self	3/3/98 11:40:00 AM	mercury		<	0.0005	mg/L
				AVERAGE	<	0.00035	mg/L
	self	3/4/98 11:30:00 AM	methacrylonitrile		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	3/4/98 11:30:00 AM	methyl iodide		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L

CITY OF PORTLAND
INDUSTRIAL SOURCE CONTROL DIVISION
1ST QUARTER ANALYTICAL DATA SUMMARY

COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE		RESULT		
	self	3/4/98 11:30:00 AM	methyl methacrylate		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	3/4/98 11:30:00 AM	methylacrylonitrile		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	city	3/3/98 11:40:00 AM	methylene chloride		<	0.01	mg/L
	self	3/4/98 11:30:00 AM	methylene chloride		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	3/4/98 11:30:00 AM	n-propylamine		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	3/3/98 11:40:00 AM	nickel		=	0.008	mg/L
				AVERAGE	=	0.008	mg/L
	self	3/4/98 11:30:00 AM	pentachloroethane		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	3/4/98 11:30:00 AM	propargyl alcohol		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	3/4/98 11:30:00 AM	propionitrile		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	3/4/98 11:30:00 AM	pyridine		<	0.01	mg/L

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CITY OF PORTLAND
INDUSTRIAL SOURCE CONTROL DIVISION
1ST QUARTER ANALYTICAL DATA SUMMARY

COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE		RESULT		
				AVERAGE	<	0.01	mg/L
	self	3/3/98 11:40:00 AM	silver		<	0.001	mg/L
				AVERAGE	<	0.001	mg/L
	self	3/4/98 11:30:00 AM	styrene		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	city	3/3/98 11:40:00 AM	tetrachloroethene		<	0.01	mg/L
	self	3/4/98 11:30:00 AM	tetrachloroethene		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	city	3/3/98 11:40:00 AM	toluene		<	0.01	mg/L
	self	3/4/98 11:30:00 AM	toluene		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	city	3/3/98 11:40:00 AM	trichloroethene (tce)		<	0.01	mg/L
	self	3/4/98 11:30:00 AM	trichloroethene (tce)		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	city	3/3/98 11:40:00 AM	trichlorofluoromethane (freon-11		<	0.01	mg/L
	self	3/4/98 11:30:00 AM	trichlorofluoromethane (freon-11		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	3/4/98 11:30:00 AM	vinyl acetate		<	0.01	mg/L

SCOEPA00036368

CITY OF PORTLAND
INDUSTRIAL SOURCE CONTROL DIVISION
1ST QUARTER ANALYTICAL DATA SUMMARY

COMPANY NAME	TESTER	SAMPLE DATE	ANALYTE		RESULT		
				AVERAGE	<	0.01	mg/L
	city	3/3/98 11:40:00 AM	vinyl chloride		<	0.01	mg/L
	self	3/4/98 11:30:00 AM	vinyl chloride		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	city	3/3/98 11:40:00 AM	xylene, m-		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	city	3/3/98 11:40:00 AM	xylene, o-		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	city	3/3/98 11:40:00 AM	xylene, p-		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	city	3/3/98 11:40:00 AM	xylenes, total		<	0.01	mg/L
	self	3/4/98 11:30:00 AM	xylenes, total		<	0.01	mg/L
				AVERAGE	<	0.01	mg/L
	self	3/3/98 11:40:00 AM	zinc		=	0.17	mg/L
				AVERAGE	=	0.17	mg/L

SCOEPA00036369

CITY OF PORTLAND
ENVIRONMENTAL SERVICES

1211 S.W. 5th Ave., Suite 800, Portland, Oregon 97204-3713
(503) 823-5320, FAX (503) 823-5559

August 30, 1996

Tom McCue
Wacker Siltronic Corp.
P.O. Box 83180
Portland, OR 97283

Dear Tom McCue:

Enclosed is the sampling data from your facility for the second quarter of 1996. We are happy to provide quarterly report data to assist you in maintaining your company records on pollutant discharges. The information will also help you identify compliance problems.

The Industrial Source Control Division maintains sampling data from both City and self monitoring. Please take this opportunity to compare self monitoring results to the City monitoring results, as well as to verify the company information contained on the first page.

If you do not receive a report in a given quarter, it may be because there was no sampling activity at your facility during that time period. As always, if you have questions about this report or your permit, please contact me at 823-5537. We hope this information better enables you to evaluate your industrial discharge and we thank you for doing your part to help protect water quality and the environment.

Sincerely,

Tim Dean
Permit Manager

Violation report(SNC) for the period 04-1996 to 06-1996 Bureau of Environmental Service 23-AUG-96

Combined data

Company Name: WACKER SILTRONIC CORPORATION
Site address: 7200 NW FRONT AVE PORTLAND OR 97229
fax 226-0052
Mailing address: P.O. BOX 03180 PORTLAND OR 97203

Permit Number: 469001

Contact: TOM MCCUE Tel:243-2020 EX 132
Issue date:03-26-90 Expire date:03-26-95

Permit Manager: TPD

--- Date --- YY MM DD	HH:MN	LOC	DES TYPE	*pH	*Cd	*Cr	Cu	Ni	Pb	*Zn	Hg	*As	Ag	Se	Mo
				Pollutant Name											
(Monthly Avg.)				(5.500)	(0.7000)	(3.800)	(2.300)	(3.000)	(0.7000)	(4.000)	(0.0140)	(0.3000)	(0.4000)	(333.00)	(333.00)
(Daily Max.)				(11.500)	(0.7000)	(3.800)	(2.300)	(3.000)	(0.7000)	(4.000)	(0.0140)	(0.3000)	(0.4000)	(333.00)	(333.00)
				S.U.	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
96 04 09	08:30	01	S G												
96 04 15	11:00	02	S G												
96 05 01	10:15	00	C G	9.9											
96 05 01	10:18	00	CY C		<.001	<.003	.043	.010	<.02	.036		<.001		.052	.014
96 05 02	00:00	01	SY G												
96 05 02	10:15	00	C G	9.9											
96 05 03	10:20	01	SY C			0.008	0.042	<0.015	<0.002	0.049	<.0002	<0.002			
96 06 06	09:45	01	S C			0.007	0.044	<0.015	<0.002	0.025	0.0002	<0.002			
96 06 06	09:45	02	S C			0.012	0.027	<0.015	0.002	0.060	<.0002	<0.002			
Number of samples			9	2	1	4	4	4	4	4	3	4	0	1	1
Number of violate				0	0	0	0	0	0	0	0	0	0	0	0
Average value				9.900	0.001	0.007	0.039	0.008	0.004	0.043	0.000	0.001	0.000	0.052	0.014
Highest value				9.900	0.001	0.012	0.044	0.010	0.010	0.060	0.000	0.001	0.000	0.052	0.014

"D" = Exceed limit of daily Maximum
"M" = Exceed limit of monthly average
"B" = Exceed limit of daily and monthly limit

Combined data
Company: WACKER SILTRONIC CORPORATION

--- Date --- YY MM DD	HH:MN	LOC	DES TYPE	BOD5	TSS	HEM-T	HEM-N	HEM-P	FEM-T	FEM-N	FEM-P	CN-T	CN-A	NH3-N	F
				Pollutant Name											
(Monthly Avg.)				(300.00)	(350.00)	(100.00)	(100.00)	(500.00)	(100.00)	(100.00)	(500.00)	(1.200)	(1.200)	(50.000)	(333.00)
(Daily Max.)				(300.00)	(350.00)	(100.00)	(100.00)	(500.00)	(100.00)	(100.00)	(500.00)	(1.200)	(1.200)	(50.000)	(333.00)
				mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
96 04 09	08:30	01	S G												
96 04 15	11:00	02	S G												
96 05 01	10:15	00	C G												
96 05 01	10:18	00	CY C												
96 05 02	00:00	01	SY G												
96 05 02	10:15	00	C G												
96 05 03	10:20	01	SY C												
96 06 06	09:45	01	S C												
96 06 06	09:45	02	S C												
Number of samples			9	0	0	0	0	0	0	0	0	0	0	0	0
Number of violate				0	0	0	0	0	0	0	0	0	0	0	0
Average value				0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Highest value				0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Combined data
Company: WACKER SILTRONIC CORPORATION

--- Date --- YY MM DD	HH:MN	LOC	DES TYPE	VOC	ACID	B/N	PESTI	PCBs	*TTO-	Cl:CH	SO4	H2S	FP-CC	LEL	G-O2
				Pollutant Name											
(Monthly Avg.)				(1.000)	(1.000)	(1.000)	(333.00)	(333.00)	(1.370)	(0.5000)	(500.00)	(50.000)	(140.00)	(10.000)	(23.500)
(Daily Max.)				(1.000)	(1.000)	(1.000)	(333.00)	(333.00)	(1.370)	(0.5000)	(500.00)	(50.000)	(140.00)	(10.000)	(19.500)
				mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	Deg F	%	%
96 04 09	08:30	01 S	G						0.01						
96 04 15	11:00	02 S	G						0.00						
96 05 01	10:15	00 C	G												
96 05 01	10:18	00 CY	C												
96 05 02	00:00	01 SY	G						0.00						
96 05 02	10:15	00 C	G												
96 05 03	10:20	01 SY	C												
96 06 06	09:45	01 S	C						0.05						
96 06 06	09:45	02 S	C						0.05						
Number of samples			9	0	0	0	0	0	5	0	0	0	0	0	0
Number of violate				0	0	0	0	0	0	0	0	0	0	0	0
Average value				0.000	0.000	0.000	0.000	0.000	0.023	0.000	0.000	0.000	0.000	0.000	0.000
Highest value				0.000	0.000	0.000	0.000	0.000	0.050	0.000	0.000	0.000	0.000	0.000	0.000

Combined data
Company: WACKER SILTRONIC CORPORATION

--- Date ---			Pollutant Name			
YY	MM	DD	HH:MN	LOC	DES	G-H2S	G-CO
(Monthly Avg.)				TYPE		(10.000)	(35.000)
(Daily Max.)						(10.000)	(35.000)
						ppm	ppm
96	04	09	08:30	01	S G		
96	04	15	11:00	02	S G		
96	05	01	10:15	00	C G		
96	05	01	10:18	00	CY C		
96	05	02	00:00	01	SY G		
96	05	02	10:15	00	C G		
96	05	03	10:20	01	SY C		
96	06	06	09:45	01	S C		
96	06	06	09:45	02	S C		
Number of samples					9	0	0
Number of violate						0	0
Average value						0.000	0.000
Highest value						0.000	0.000

SAMPLE ID REPORT For: WACKER SILTRONIC CORPORATION

Sample Date	C SS	ID #	Sample Date	C SS	ID #	Sample Date	C SS	ID #	Sample Date	C SS	ID #
96-04-09-08-30	S		96-05-01-10-15	C	960899	96-05-02-00-00	SY		96-05-03-10-20	SY	
96-04-15-11-00	S		96-05-01-10-18	CY	960911	96-05-02-10-15	C	960910	96-06-06-09-45	S	

Program Watch - sample data report

[1]
Company Name: XYZ COMPANY
Site address: 1712 SE 26TH DRIVE PORTLAND OR 97200

Mailing address: PO BOX 12345 PORTLAND OR 97200

Contact: FRED JONES Tel:555-4839
Issue date:01-01-90 Expire date:12-31-99

Permit Number: 400000

Permit Manager: PDQ

--- Date --- YY MM DD	HH:MN	LOC	DES	*pH	Cd	Cr	Cu	Ni	Pb	Zn	Hg	As	Ag	Se	Mo
				[7] Pollutant Name											
(Monthly Avg.)			TYPE(	5.50)	(0.50)	(1.80)	(1.80)	(2.00)	(0.70)	(3.00)	(0.01)	(0.30)	(0.40)	(333.00)	(333.00)
(Daily Max.)				(11.50)	(0.70)	(3.80)	(2.30)	(3.00)	(0.70)	(4.00)	(0.01)	(0.30)	(0.40)	(333.00)	(333.00)
				S.U.	MG/L	MG/L	MG/L	MG/L	MG/L	MG/L	MG/L	MG/L	MG/L	MG/L	MG/L
[2]	[3]	[4	5	6]											
93 01 20	10:27	1	C	G	5.4D										
93 01 20	10:29	1	C	C		0.01	1.83M	0.06	0.37	<0.01	0.12				
93 02 01	14:08	1	S	C		0.72B	1.16	0.03	0.20	<0.01	0.11				
93 03 09	14:47	1	C	N											

[8]

Number of samples	3	1	2	2	2	2	2	2	0	0	0	0	
Number of violate		1	1	0	0	0	0	0	0	0	0	0	
Average value		5.4	0.365	1.395	0.045	0.285	0.005	0.115	0.000	0.000	0.0	0.0	
Highest value		5.4	0.720	0.000	1.830	0.060	0.370	0.005	0.120	0.000	0.000	0.0	0.0

[9]
"D" = Exceed limit of daily Maximum
"M" = Exceed limit of monthly average
"B" = Exceed limit of daily and monthly limit

Notes:

[1] The Company information includes your company name, address, permit number, contact person, telephone number, permit issue date, permit expiration date, and permit manager. If any information is in error, please notify Source Control.

[2] The date the samples were collected, using the format year-month-day.

[3] The time a grab sample was collected or composite sampling started, using a 24-hour clock.

[4] See **Sample Location Codes** for the sample point(s) of compliance. You may have several sample points and should be indicated on your sampling location map (Appendix 2 of your permit).

[5] For an explanation of who collected the sample, see the **Sample Type Code** .

[6] For an explanation of the type of sample collected, see **Sample Description** .

[7] The * indicates a pollutant of concern that must be analyzed by the City and the I.U. The pollutant names are abbreviated across the top of each column. (See explanation on reverse.) The daily and monthly discharge limits are from your discharge permit.

[8] This area summarizes the sampling results for the reporting period - the number of samples, violations, average concentration, greatest concentration.

[9] If a violation occurred, the code by the pollutant concentration indicates the type of violation.

Sample Location Codes

0 OTHER SOURCE
1 SMH #1
2 SMH #2
2A SMH #2A
3 SMH #3
3A SMH #3A
4 SUMP
4A SUMP - SECOND
5 CLEANOUT
6 OIL/WATER SEPARATOR
7 CATCH BASIN
8 CYANIDE TREATMENT
9 TANK
9A TANK - SECOND
9B TANK - THIRD
9C TANK - FOURTH
P4 SMH #4
P5 SMH #5
P6 SMH #6

Sample Type Code

C = City monitoring
S = Self monitoring
Y = Sample split

Sample Description

C = Composite
G = Grab
N = Insufficient flow for sampling

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Program Watch - sample data report

Symbol	Pollutant Name
pH	Hydrogen ion concentration
Cd	Cadmium
Cr	Chromium
Cu	Copper
Ni	Nickel
Pb	Lead
Zn	Zinc
Hg	Mercury
As	Arsenic
Ag	Silver
Se	Selenium
Mo	Molybdenum
BOD5	Biochemical oxygen demand - 5 day
TSS	Total suspended solids
HEM-T	n-Hexane extractable materials - total (EPA 1664)
HEM-N	n-Hexane extractable materials - non-polar fraction
HEM-P	n-Hexane extractable materials - polar fraction
FEM-T	Freon extractable materials - total (EPA 413.1)
FEM-N	Freon extractable materials - non-polar fraction
FEM-P	Freon extractable materials - polar fraction
CN-T	Cyanide - total
CN-A	Cyanide - amenable to chlorination
NH3-N	Ammonia - nitrogen
F	Fluoride

Symbol	Pollutant Name
VOC	Volatile Organic Carbon (EPA 601/624)
ACID	Acid Extractables (Phenolics)(EPA 604/625)
B/N	Base/Neutrals (EPA 625)
PESTI	Pesticides - group summation
PCBs	Polychlorinated Biphenyls - group summation
TTO-G	Total Toxic Organics - group summation
Cl:CH	Chlorinated Hydrocarbons - group summation
SO4	Sulfate
H2S	Hydrogen sulfide - colorimetric analysis
FP-CC	Flash point - closed cup (Pensky-Martin)
LEL	Lower explosive limit - Gastech meter
G-O2	Oxygen - Gastech meter
G-H2S	Hydrogen sulfide - Gastech meter
G-CO	Carbon monoxide - Gastech meter

* Indicates pollutant(s) of concern (POC) to Industrial Source Control Division and corresponds to POCs in Schedule A of Industrial Wastewater Discharge Permits.

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Version IV-5. Revised: June 8, 1994

Violation report(SNC) for the period 01-1996 to 03-1996 Bureau of Environmental Service 30-MAY-96

Combined data

Company Name: WACKER SILTRONIC CORPORATION
Site address: 7200 NW FRONT AVE PORTLAND OR 97229
fax 226-0052
Mailing address: P.O. BOX 03180 PORTLAND OR 97203

Permit Number: 469001

Contact: TOM MCCUE Tel:243-2020 EX 132
Issue date:03-26-90 Expire date:03-26-95

Permit Manager: SLA

--- Date --- YY MM DD	HH:MN	LOC	DES	*pH	*Cd	*Cr	Cu	Ni	Pb	*Zn	Hg	*As	Ag	Se	Mo
				Pollutant Name											
(Monthly Avg.)			TYPE	(5.500)	(0.7000)	(3.800)	(2.300)	(3.000)	(0.7000)	(4.000)	(0.0140)	(0.3000)	(0.4000)	(333.00)	(333.00)
(Daily Max.)				(11.500)	(0.7000)	(3.800)	(2.300)	(3.000)	(0.7000)	(4.000)	(0.0140)	(0.3000)	(0.4000)	(333.00)	(333.00)
				S.U.	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
96 02 26	10:35	00 C	G	10.2											
96 02 26	10:36	00 C	C		.001	.006	.040	<.004	<.02	.039		<.002		<.02	<.003
96 02 27	00:00	01 SY	C		<.0050	<.0050	0.023	<0.015	<0.002	0.026	<0.004	<0.002			
96 02 27	10:11	00 C	G	10.3											
96 03 27	10:22	00 C	C												
96 03 28	00:00	01 S	C												
Number of samples			6	2	2	2	2	2	2	2	1	2	0	1	1
Number of violate				0	0	0	0	0	0	0	0	0	0	0	0
Average value				10.250	0.002	0.004	0.032	0.005	0.005	0.033	0.002	0.001	0.000	0.010	0.002
Highest value				10.300	0.002	0.006	0.040	0.007	0.010	0.039	0.002	0.001	0.000	0.010	0.002

"D" = Exceed limit of daily Maximum
"M" = Exceed limit of monthly average
"B" = Exceed limit of daily and monthly limit

Combined data
Company: WACKER SILTRONIC CORPORATION

--- Date --- YY MM DD	HH:MN	LOC	DES TYPE	BOD5	TSS	HEM-T	HEM-N	HEM-P	FEM-T	FEM-N	FEM-P	CN-T	CN-A	NH3-N	F
				Pollutant Name											
(Monthly Avg.)				(300.00)	(350.00)	(100.00)	(100.00)	(500.00)	(100.00)	(100.00)	(500.00)	(1.200)	(1.200)	(50.000)	(333.00)
(Daily Max.)				(300.00)	(350.00)	(100.00)	(100.00)	(500.00)	(100.00)	(100.00)	(500.00)	(1.200)	(1.200)	(50.000)	(333.00)
				mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
96 02 26	10:35	00	C G												
96 02 26	10:36	00	C C												
96 02 27	00:00	01	SY C												
96 02 27	10:11	00	C G												
96 03 27	10:22	00	C C		120.										
96 03 28	00:00	01	S C	92.8	259				14	0.94	13.06				
Number of samples			6	1	2	0	0	0	1	1	1	0	0	0	0
Number of violate				0	0	0	0	0	0	0	0	0	0	0	0
Average value				92.800	189.50	0.000	0.000	0.000	14.000	0.940	13.060	0.000	0.000	0.000	0.000
Highest value				92.800	259.00	0.000	0.000	0.000	14.000	0.940	13.060	0.000	0.000	0.000	0.000

Combined data
Company: WACKER SILTRONIC CORPORATION

--- Date --- YY MM DD	HH:MN	LOC	DES	VOC	ACID	B/N	PESTI	PCBs	*TTO-	Cl:CH	SO4	H2S	FP-CC	LEL	G-O2
				Pollutant Name											
(Monthly Avg.)			TYPE	(1.000)	(1.000)	(1.000)	(333.00)	(333.00)	(1.370)	(0.5000)	(500.00)	(50.000)	(140.00)	(10.000)	(23.500)
(Daily Max.)				(1.000)	(1.000)	(1.000)	(333.00)	(333.00)	(1.370)	(0.5000)	(500.00)	(50.000)	(140.00)	(10.000)	(19.500)
				mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	Deg F	%	%
96 02 26	10:35	00 C	G												
96 02 26	10:36	00 C	C												
96 02 27	00:00	01 SY	C												
96 02 27	10:11	00 C	G												
96 03 27	10:22	00 C	C												
96 03 28	00:00	01 S	C												
Number of samples			6	0	0	0	0	0	0	0	0	0	0	0	0
Number of violate				0	0	0	0	0	0	0	0	0	0	0	0
Average value				0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Highest value				0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Combined data
Company: WACKER SILTRONIC CORPORATION

--- Date ---			Pollutant Name			
YY MM DD	HH:MN	LOC	DES	G-H2S	G-CO
(Monthly Avg.)			TYPE	(10.000)	(35.000)
(Daily Max.)				(10.000)	(35.000)
				ppm	ppm
96 02 26	10:35	00	C	G	
96 02 26	10:36	00	C	C	
96 02 27	00:00	01	SY	C	
96 02 27	10:11	00	C	G	
96 03 27	10:22	00	C	C	
96 03 28	00:00	01	S	C	
Number of samples			6	0	0
Number of violate				0	0
Average value				0.000	0.000
Highest value				0.000	0.000

SAMPLE ID REPORT For: WACKER SILTRONIC CORPORATION

Sample Date	C SS	ID #	Sample Date	C SS	ID #	Sample Date	C SS	ID #	Sample Date	C SS	ID #
96-02-26-10-35	C	960375	96-02-27-00-00	SY		96-03-27-10-22	C	960633			
96-02-26-10-36	C	960386	96-02-27-10-11	C	960385	96-03-28-00-00	S				

Violation report(SNC) for the period 07-1996 to 09-1996 Bureau of Environmental Service 2-DEC-96

Combined data

Company Name: WACKER SILTRONIC CORPORATION
Site address: 7200 NW FRONT AVE PORTLAND OR 97229
fax 226-0052
Mailing address: P.O. BOX 03180 PORTLAND OR 97203

Permit Number: 469001

Contact: TOM MCCUE Tel:241-7532
Issue date:03-25-91 Expire date:03-25-96

Permit Manager: TPD

--- Date --- YY MM DD	HH:MN	LOC	DES TYPE	*pH	*Cd	*Cr	Cu	Ni	Pb	Zn	*Hg	*As	Ag	Se	Mo
				Pollutant Name											
(Monthly Avg.)				(5.500)	(0.7000)	(3.800)	(2.300)	(3.000)	(0.7000)	(4.000)	(0.0140)	(0.3000)	(0.4000)	(333.00)	(333.00)
(Daily Max.)				(11.500)	(0.7000)	(3.800)	(2.300)	(3.000)	(0.7000)	(4.000)	(0.0140)	(0.3000)	(0.4000)	(333.00)	(333.00)
				S.U.	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
96 07 08	10:30	02 S	C												
96 08 22	11:10	00 C	G	10.5											
96 08 22	11:12	00 C	C		.002	.011	.100	.017	.031	2.96		.0022		<.02	.006
96 08 23	10:10	00 C	G	10.3											
96 08 27	00:00	01 SY	C		<0.005	0.018			0.0038		.00055	0.0025	<0.005	<0.002	
96 09 18	00:00	01 S	C												
Number of samples			6	2	2	2	1	1	2	1	1	2	1	2	1
Number of violate				0	0	0	0	0	0	0	0	0	0	0	0
Average value				10.400	0.002	0.014	0.100	0.017	0.017	2.960	0.001	0.002	0.002	0.005	0.006
Highest value				10.500	0.002	0.018	0.100	0.017	0.031	2.960	0.001	0.002	0.002	0.010	0.006

"D" = Exceed limit of daily Maximum
"M" = Exceed limit of monthly average
"B" = Exceed limit of daily and monthly limit

Combined data
Company: WACKER SILTRONIC CORPORATION

--- Date --- YY MM DD	HH:MN	LOC	DES	BOD5	TSS	HEM-T	HEM-N	HEM-P	FEM-T	FEM-N	FEM-P	CN-T	CN-A	NH3-N	F
				Pollutant Name											
(Monthly Avg.)		TYPE		(300.00)	(350.00)	(100.00)	(100.00)	(500.00)	(100.00)	(100.00)	(500.00)	(1.200)	(1.200)	(50.000)	(333.00)
(Daily Max.)				(300.00)	(350.00)	(100.00)	(100.00)	(500.00)	(100.00)	(100.00)	(500.00)	(1.200)	(1.200)	(50.000)	(333.00)
				mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
96 07 08	10:30	02 S	C												
96 08 22	11:10	00 C	G												
96 08 22	11:12	00 C	C	81.											
96 08 23	10:10	00 C	G												
96 08 27	00:00	01 SY	C												
96 09 18	00:00	01 S	C												
Number of samples			6	1	0	0	0	0	0	0	0	0	0	0	0
Number of violate				0	0	0	0	0	0	0	0	0	0	0	0
Average value				81.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Highest value				81.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Combined data
Company: WACKER SILTRONIC CORPORATION

--- Date --- YY MM DD	HH:MN	LOC	DES TYPE	VOC	ACID	B/N	PESTI	PCBs	*TTO-	Cl:CH	SO4	T-H2S	FP-CC	LEL	G-O2
				Pollutant Name											
(Monthly Avg.)				(1.000)	(1.000)	(1.000)	(333.00)	(333.00)	(1.370)	(0.5000)	(500.00)	(50.000)	(140.00)	(10.000)	(23.500)
(Daily Max.)				(1.000)	(1.000)	(1.000)	(333.00)	(333.00)	(1.370)	(0.5000)	(500.00)	(50.000)	(140.00)	(10.000)	(19.500)
				mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	Deg F	%	%
96 07 08	10:30	02	S C						0.00						
96 08 22	11:10	00	C G												
96 08 22	11:12	00	C C												
96 08 23	10:10	00	C G												
96 08 27	00:00	01	SY C												
96 09 18	00:00	01	S C						0.00						
Number of samples			6	0	0	0	0	0	2	0	0	0	0	0	0
Number of violate				0	0	0	0	0	0	0	0	0	0	0	0
Average value				0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000
Highest value				0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000

Combined data
Company: WACKER SILTRONIC CORPORATION

--- Date ---			Pollutant Name			
YY MM DD	HH:MN	LOC	DES	G-H2S	G-CO
(Monthly Avg.)			TYPE	(10.000)	(35.000)
(Daily Max.)				(10.000)	(35.000)
				ppm	ppm
96 07 08	10:30	02	S	C	
96 08 22	11:10	00	C	G	
96 08 22	11:12	00	C	C	
96 08 23	10:10	00	C	G	
96 08 27	00:00	01	SY	C	
96 09 18	00:00	01	S	C	

Number of samples	6	0	0
Number of violate		0	0
Average value		0.000	0.000
Highest value		0.000	0.000

SAMPLE ID REPORT For: WACKER SILTRONIC CORPORATION

Sample Date	C SS	ID #	Sample Date	C SS	ID #	Sample Date	C SS	ID #	Sample Date	C SS	ID #
96-07-08-10-30	S		96-08-22-11-12	C	961836	96-08-27-00-00	SY				
96-08-22-11-10	C	961824	96-08-23-10-10	C	961835	96-09-18-00-00	S				

Version IV-5. Revised: June 8, 1994

Violation report(SNC) for the period 10-1996 to 12-1996 Bureau of Environmental Service 7-MAR-97

Combined data

Company Name: WACKER SILTRONIC CORPORATION
Site address: 7200 NW FRONT AVE PORTLAND OR 97229
fax 226-0052
Mailing address: P.O. BOX 03180 PORTLAND OR 97203
Permit Number: 469001

Contact: TOM MCCUE Tel:241-7532
Issue date:03-25-91 Expire date:03-25-96 Permit Manager: TPD

--- Date ---					Pollutant Name											
YY MM DD	HH:MN	LOC	DES	*pH	*Cd	*Cr	Cu	Ni	Pb	Zn	*Hg	*As	Ag	Se	Mo
(Monthly Avg.)			TYPE	(5.500)	(0.7000)	(3.800)	(2.300)	(3.000)	(0.7000)	(4.000)	(0.0140)	(0.3000)	(0.4000)	(333.00)	(333.00)
(Daily Max.)				(11.500)	(0.7000)	(3.800)	(2.300)	(3.000)	(0.7000)	(4.000)	(0.0140)	(0.3000)	(0.4000)	(333.00)	(333.00)
				S.U.	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
96 10 09	08:15	01	S C												
96 11 07	08:29	0	C G	10.0											
96 11 07	08:31	0	C C		<0.001	0.014	0.118	0.010	<0.020	0.443		.00150		0.027	0.005
96 11 08	00:00	01	S C		<0.001		0.118	0.0254	.00230	0.297	<.0008	.00180			
96 11 08	10:38	0	C G	10.3											
96 12 02	08:55	0	C G	10.0											
96 12 04	09:20	00	S C		<0.001	0.009					<0.002	0.002			
96 12 05	08:45	0	CY G								<.0005				
Number of samples			8	3	3	2	2	2	2	2	3	3	0	1	1
Number of violate				0	0	0	0	0	0	0	0	0	0	0	0
Average value				10.100	0.001	0.012	0.118	0.018	0.006	0.370	0.001	0.002	0.000	0.027	0.005
Highest value				10.300	0.001	0.014	0.118	0.025	0.010	0.443	0.001	0.002	0.000	0.027	0.005

"D" = Exceed limit of daily Maximum
"M" = Exceed limit of monthly average
"B" = Exceed limit of daily and monthly limit

Combined data
Company: WACKER SILTRONIC CORPORATION

--- Date --- YY MM DD	HH:MN	LOC	DES	BOD5	TSS	HEM-T	HEM-N	HEM-P	FEM-T	FEM-N	FEM-P	CN-T	CN-A	NH3-N	F
				Pollutant Name											
(Monthly Avg.)			TYPE	(300.00)	(350.00)	(100.00)	(100.00)	(500.00)	(100.00)	(100.00)	(500.00)	(1.200)	(1.200)	(50.000)	(333.00)
(Daily Max.)				(300.00)	(350.00)	(100.00)	(100.00)	(500.00)	(100.00)	(100.00)	(500.00)	(1.200)	(1.200)	(50.000)	(333.00)
				mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
96 10 09	08:15	01	S C												
96 11 07	08:29	0	C G												
96 11 07	08:31	0	C C	105	513										
96 11 08	00:00	01	S C												
96 11 08	10:38	0	C G												
96 12 02	08:55	0	C G												
96 12 04	09:20	00	S C												
96 12 05	08:45	0	CY G												
Number of samples			8	1	1	0	0	0	0	0	0	0	0	0	0
Number of violate				0	0	0	0	0	0	0	0	0	0	0	0
Average value				105.00	513.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Highest value				105.00	513.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Combined data
Company: WACKER SILTRONIC CORPORATION

--- Date --- YY MM DD	HH:MN	LOC	DES	VOC	ACID	B/N	PESTI	PCBs	*TTO-	Cl:CH	SO4	T-H2S	FP-CC	LEL	G-O2
				Pollutant Name											
(Monthly Avg.)			TYPE(	1.000)	(1.000)	(1.000)	(333.00)	(333.00)	(1.370)	(0.5000)	(500.00)	(50.000)	(140.00)	(10.000)	(23.500)
(Daily Max.)				(1.000)	(1.000)	(1.000)	(333.00)	(333.00)	(1.370)	(0.5000)	(500.00)	(50.000)	(140.00)	(10.000)	(19.500)
				mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	Deg F	%	%
96 10 09	08:15	01 S	C						0.00						
96 11 07	08:29	0 C	G												
96 11 07	08:31	0 C	C												
96 11 08	00:00	01 S	C												
96 11 08	10:38	0 C	G												
96 12 02	08:55	0 C	G	0.00											
96 12 04	09:20	00 S	C						0.00						
96 12 05	08:45	0 CY	G												
Number of samples			8	1	0	0	0	0	2	0	0	0	0	0	0
Number of violate				0	0	0	0	0	0	0	0	0	0	0	0
Average value				0.001	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000
Highest value				0.001	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000

Combined data
Company: WACKER SILTRONIC CORPORATION

--- Date ---			Pollutant Name			
YY MM DD	HH:MN	LOC	DES	G-H2S	G-CO
(Monthly Avg.)			TYPE	(10.000)	(35.000)
(Daily Max.)				(10.000)	(35.000)
				ppm	ppm
96 10 09	08:15	01	S	C	
96 11 07	08:29	0	C	G	
96 11 07	08:31	0	C	C	
96 11 08	00:00	01	S	C	
96 11 08	10:38	0	C	G	
96 12 02	08:55	0	C	G	
96 12 04	09:20	00	S	C	
96 12 05	08:45	0	CY	G	

Number of samples	8	0	0
Number of violate		0	0
Average value		0.000	0.000
Highest value		0.000	0.000

SAMPLE ID REPORT For: WACKER SILTRONIC CORPORATION

Sample Date	C SS	ID #	Sample Date	C SS	ID #	Sample Date	C SS	ID #	Sample Date	C SS	ID #
96-10-09-08-15	S		96-11-07-08-31	C	962377	96-11-08-10-38	C	962376	96-12-04-09-20	S	
96-11-07-08-29	C	962351	96-11-08-00-00	S		96-12-02-08-55	C	962512	96-12-05-08-45	CY	962557

M-CVE P 431 369 825

UNITED STATES POSTAL SERVICE

Receipt for Certified Mail

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Sent to LINDA SCHEFFLER CITY OF PORT. - ENVIR. SERV	
Street and No. 1120 S.W. 5th AVE. Rm 400	
P.O., State and ZIP Code PORTLAND, OR. 97204	
Postage	$ .52
Certified Fee	1.00
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	1.00
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	$2.52
Postmark or Date	SAINT JOHNS PORTLAND, OR 13 1993

PS Form 3800, June 1991

SCOEPA00036393

STICK POSTAGE STAMPS TO ARTICLE TO COVER FIRST CLASS POSTAGE, CERTIFIED MAIL FEE, AND CHARGES FOR ANY SELECTED OPTIONAL SERVICES (see front).

1. If you want this receipt postmarked, stick the gummed stub to the right of the return address leaving the receipt attached and present the article at a post office service window or hand it to your rural carrier (no extra charge).

2. If you do not want this receipt postmarked, stick the gummed stub to the right of the return address of the article, date, detach and retain the receipt, and mail the article.

3. If you want a return receipt, write the certified mail number and your name and address on a return receipt card, Form 3811, and attach it to the front of the article by means of the gummed ends if space permits. Otherwise, affix to back of article. Endorse front of article **RETURN RECEIPT REQUESTED** adjacent to the number.

4. If you want delivery restricted to the addressee, or to an authorized agent of the addressee, endorse **RESTRICTED DELIVERY** on the front of the article.

5. Enter fees for the services requested in the appropriate spaces on the front of this receipt. If return receipt is requested, check the applicable blocks in item 1 of Form 3811.

6. Save this receipt and present it if you make inquiry.

105603-92-B-0226

PS Form **3800**, June 1991 *(Reverse)*

UNITED STATES POSTAL SERVICE

Official Business

PENALTY FOR PRIVATE
USE TO AVOID PAYMENT
OF POSTAGE, $300

U.S. MAIL

Print your name, address and ZIP Code here

Wacker Siltronic Corporation
P. O. Box 83180
Portland, Oregon 97283-0180
Attn: Thomas C. McCue

Is your RETURN ADDRESS completed on the reverse side?

SENDER:
- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Ms. Linda Scheffler
Industrial Waste Management
City of Portland
Bureau of Environmental Services
1120 S. W. Fifth Avenue, Room 400
Portland, Oregon 97204-1972

4a. Article Number
P431-369-825

4b. Service Type
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☒ Return Receipt for Merchandise

7. Date of Delivery
14 JUL 1993

5. Signature (Addressee)

8. Addressee's Address (Only if requested and fee is paid)

6. Signature (Agent)
Allen E. Moody

PS Form **3811**, December 1991 ☆U.S. GPO: 1992—323-402 **DOMESTIC RETURN RECEIPT**

Thank you for using Return Receipt Service.

SCOEPA00036396

sent 7/12 Chip - file

Wacker Siltronic Corporation

WACKER

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180
Phone (503) 243-2020
FAX (503) 226-0052

July 12, 1993

SER 015:CB

Ms. Linda Scheffler
Industrial Waste Management
City of Portland
Bureau of Environmental Services
1120 S.W. Fifth Avenue, Room 400
Portland, Oregon 97204-1972

Dear Ms. Scheffler:

As requested, enclosed are the sample results for total toxic organics taken from the approved point of compliance on June 10, 1993.

If you have any questions, please contact Chip Bloomer at 243-2020 ext 132.

Very truly yours,

WACKER SILTRONIC CORPORATION

Thomas C. McCue

Thomas C. McCue
Environmental Manager

enclosure:
(1) June 10 sample results

cc: John Pittman

PACIFIC
ENVIRONMENTAL
LABORATORY INC.

June 21, 1993

REC'D JUN 25 1992

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR, 97283-0180

JUN 2 1992

Attention: Tom Rothschild

JUN 2 1992

RE: JOB #
P.O.# 30381
PROJECT -

Enclosed are test results for your samples received in this lab on Jun. 10, 1993. For your reference, these analyses have been assigned our PEL # 93-1763.

Solid samples are reported on a dry weight basis except for Oregon DEQ Fuels Methods and where otherwise noted.

Please call if you have any questions.

Respectfully,

Howard Holmes
Project Manager

Rob May
Project Manager

Enclosure (1)

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

PACIFIC ENVIRONMENTAL LABORATORY INC.

Volatile Organic Compounds per EPA 8240
Results In ug/L (ppb)

REC'D JUN 23 1993

Client: Wacker Siltronic Corporation
Project:
Received: 06/10/1993

PEL Number: 93-1763
Matrix: water

Sample Name	Analyte	Result	MRL
93-45 OWW (grab)	Acetone	190	50
	Acrolein	ND	500
	Acrylonitrile	ND	250
	Benzene	ND	10
	Bromodichloromethane	ND	10
	Bromoform	ND	10
	Bromomethane	ND	50
	MEK 2-Butanone	ND	38
	Carbon Disulfide	ND	10
	Carbon Tetrachloride	ND	10
	Chlorobenzene	ND	10
	Chloroethane	ND	50
	Chloroform	ND	10
	Chloromethane	ND	50
	Dibromochloromethane	ND	10
	Dibromomethane	ND	10
	1,4-Dichloro-2-butene	ND	250
	1,2-Dichlorobenzene	ND	10
	1,3-Dichlorobenzene	ND	10
	1,4-Dichlorobenzene	ND	10
	Dichlorodifluoromethane	ND	25
	1,1-Dichloroethane	ND	10
	1,2-Dichloroethane	ND	10
	1,1-Dichloroethene	ND	10
	cis-1,2-Dichloroethene	ND	10
	trans1,2Dichloroethene	ND	10
	1,2-Dichloropropane	ND	10
	cis-1,3-Dichloropropene	ND	10
	trans1,3Dichloropropene	ND	10
	Ethyl Methacrylate	ND	10
	Ethylbenzene	ND	10
	2-Hexanone	ND	25
	Iodomethane	ND	10
	4-Methyl-2-pentanone	ND	25
	Methylene Chloride	ND	25
	Styrene	ND	10
	1,1,2,2-Tetrachloroethane	ND	10
	Tetrachloroethene	ND	10
	Toluene	ND	10
	1,1,1-Trichloroethane	ND	10
	1,1,2-Trichloroethane	ND	10
	Trichloroethene	ND	10

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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

PACIFIC ENVIRONMENTAL LABORATORY INC.

REC'D JUN 23 1993

Volatile Organic Compounds per EPA 8240
Results In ug/L (ppb)

Client: Wacker Siltronic Corporation
Project:
Received: 06/10/1993

PEL Number: 93-1763
Matrix: water

Sample Name	Analyte	Result	MRL
93-45 OWW (grab) (continued)	Trichlorofluoromethane	ND	10
	1,2,3-Trichloropropane	ND	10
	Vinyl Acetate	ND	50
	Vinyl Chloride	ND	25
	Xylenes (total)	ND	10
	Date Prepped	06/11/93	
	Date Analyzed	06/11/93	

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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

PACIFIC ENVIRONMENTAL LABORATORY INC.

REC'D JUN 23 1993

Volatile Organic Compounds per EPA 8240
Results In ug/L (ppb)

Client: Wacker Siltronic Corporation
Project:
Received: 06/10/1993

PEL Number: 93-1763
Matrix: water

Sample Name	Analyte	Result	MRL
Method Blank	Acetone	ND	10
	Acrolein	ND	100
	Acrylonitrile	ND	50
	Benzene	ND	2.0
	Bromodichloromethane	ND	2.0
	Bromoform	ND	2.0
	Bromomethane	ND	10
	2-Butanone	ND	7.5
	Carbon Disulfide	ND	2.0
	Carbon Tetrachloride	ND	2.0
	Chlorobenzene	ND	2.0
	Chloroethane	ND	10
	Chloroform	ND	2.0
	Chloromethane	ND	10
	Dibromochloromethane	ND	2.0
	Dibromomethane	ND	2.0
	1,4-Dichloro-2-butene	ND	50
	1,2-Dichlorobenzene	ND	2.0
	1,3-Dichlorobenzene	ND	2.0
	1,4-Dichlorobenzene	ND	2.0
	Dichlorodifluoromethane	ND	5.0
	1,1-Dichloroethane	ND	2.0
	1,2-Dichloroethane	ND	2.0
	1,1-Dichloroethene	ND	2.0
	cis-1,2-Dichloroethene	ND	2.0
	trans1,2Dichloroethene	ND	2.0
	1,2-Dichloropropane	ND	2.0
	cis-1,3-Dichloropropene	ND	2.0
	trans1,3Dichloropropene	ND	2.0
	Ethyl Methacrylate	ND	2.0
	Ethylbenzene	ND	2.0
	2-Hexanone	ND	5.0
	Iodomethane	ND	2.0
	4-Methyl-2-pentanone	ND	5.0
	Methylene Chloride	ND	5.0
	Styrene	ND	2.0
	1,1,2,2-Tetrachloroethane	ND	2.0
	Tetrachloroethene	ND	2.0
	Toluene	ND	2.0
	1,1,1-Trichloroethane	ND	2.0
	1,1,2-Trichloroethane	ND	2.0
	Trichloroethene	ND	2.0

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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

PACIFIC ENVIRONMENTAL LABORATORY INC.

REC'D JUN 23 1993

Volatile Organic Compounds per EPA 8240
Results In ug/L (ppb)

Client: Wacker Siltronic Corporation
Project:
Received: 06/10/1993

PEL Number: 93-1763
Matrix: water

Sample Name	Analyte	Result	MRL
Method Blank (continued)	Trichlorofluoromethane	ND	2.0
	1,2,3-Trichloropropane	ND	2.0
	Vinyl Acetate	ND	10
	Vinyl Chloride	ND	5.0
	Xylenes (total)	ND	2.0

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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

PACIFIC
ENVIRONMENTAL
LABORATORY INC.

SURROGATE RECOVERIES (%)

Client: Wacker Siltronic Corporation
Project:

PEL Number: 93-1763
Received: 06/10/1993

Sample Name	Analyte	Result	Control Limits
Volatile Organic Compounds per EPA 8240			
93-45 OWW (grab)	4-Bromofluorobenzene	92	86-115
	1,2-Dichloroethane-d4	91	76-114
	Toluene-d8	92	88-110

MRL Method Reporting Level
ND None Detected at or above the method reporting level
* See Comment Section at end of report

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

CITY OF PORTLAND
ENVIRONMENTAL SERVICES
1211 S.W. 5th Ave., Suite 800, Portland, Oregon 97204-3713
(503) 823-5320, FAX (503) 823-5559

April 10, 1996

Tom McCue
Wacker Siltronic Corp.
P.O. Box 83180
Portland, OR 97283

Dear Tom McCue:

Enclosed is the sampling data from your facility for the fourth quarter of 1995. We are happy to provide quarterly report data to assist you in maintaining your company records on pollutant discharges. The information will also help you identify compliance problems.

The Industrial Source Control Division maintains sampling data from both City and self monitoring. Please take this opportunity to compare self monitoring results to the City monitoring results, as well as to verify the company information contained on the first page.

If you do not receive a report in a given quarter, it may be because there was no sampling activity at your facility during that time period. As always, if you have questions about this report or your permit, please contact me at 823-7568. We hope this information better enables you to evaluate your industrial discharge and we thank you for doing your part to help protect water quality and the environment.

Sincerely,

Miguel Santana
Permit Manager

Violation report(SNC) for the period 10-1995 to 12-1995 Bureau of Environmental Service 5-APR-96

Combined data

Company Name: WACKER SILTRONIC CORPORATION
Site address: 7200 NW FRONT AVE PORTLAND OR 97229
fax 226-0052
Mailing address: P.O. BOX 03180 PORTLAND OR 97203

Permit Number: 469001

Contact: TOM MCCUE Tel:243-2020 EX 132
Issue date:03-26-90 Expire date:03-26-95

Permit Manager: SLA

--- Date --- YY MM DD	HH:MN	LOC	DES TYPE	*pH	*Cd	*Cr	Cu	Ni	Pb	*Zn	Hg	*As	Ag	Se	Mo
				Pollutant Name											
(Monthly Avg.)				(5.500)	(0.7000)	(3.800)	(2.300)	(3.000)	(0.7000)	(4.000)	(0.0140)	(0.3000)	(0.4000)	(333.00)	(333.00)
(Daily Max.)				(11.500)	(0.7000)	(3.800)	(2.300)	(3.000)	(0.7000)	(4.000)	(0.0140)	(0.3000)	(0.4000)	(333.00)	(333.00)
				S.U.	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
95 11 02	11:01	00	C G	10.4											
95 11 02	11:03	00	CY C		<.001	.005	.046	.009	<.020	.050		<.004		<.020	.003
95 11 03	09:50	00	S C		0.005	0.005	0.035	0.0065	0.002	0.03	0.0002	0.002			
95 12 06	00:00	01	S C		<0.005	0.0055	0.018	0.015	0.0046	0.031	<.0002	<0.002			
Number of samples			4	1	3	3	3	3	3	3	2	3	0	1	1
Number of violate				0	0	0	0	0	0	0	0	0	0	0	0
Average value				10.400	0.003	0.005	0.033	0.010	0.006	0.037	0.000	0.002	0.000	0.010	0.003
Highest value				10.400	0.005	0.005	0.046	0.015	0.010	0.050	0.000	0.002	0.000	0.010	0.003

"D" = Exceed limit of daily Maximum
"M" = Exceed limit of monthly average
"B" = Exceed limit of daily and monthly limit

Combined data
Company: WACKER SILTRONIC CORPORATION

--- Date --- YY MM DD HH:MN	LOC	DES TYPE	BOD5	TSS	HEM-T	HEM-N	HEM-P	FEM-T	FEM-N	FEM-P	CN-T	CN-A	NH3-N	F
			Pollutant Name											
(Monthly Avg.)			(300.00)	(350.00)	(100.00)	(100.00)	(500.00)	(100.00)	(100.00)	(500.00)	(1.200)	(1.200)	(50.000)	(333.00)
(Daily Max.)			(300.00)	(350.00)	(100.00)	(100.00)	(500.00)	(100.00)	(100.00)	(500.00)	(1.200)	(1.200)	(50.000)	(333.00)
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
95 11 02 11:01	00	C G												
95 11 02 11:03	00	CY C												
95 11 03 09:50	00	S C												
95 12 06 00:00	01	S C												
Number of samples		4	0	0	0	0	0	0	0	0	0	0	0	0
Number of violate			0	0	0	0	0	0	0	0	0	0	0	0
Average value			0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Highest value			0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Combined data
Company: WACKER SILTRONIC CORPORATION

--- Date --- YY MM DD	HH:MN	LOC	DES TYPE	VOC	ACID	B/N	PESTI	PCBs	*TTO-	Cl:CH	SO4	H2S	FP-CC	LEL	G-O2
				Pollutant Name											
(Monthly Avg.)				(1.000)	(1.000)	(1.000)	(333.00)	(333.00)	(1.370)	(0.5000)	(500.00)	(50.000)	(140.00)	(10.000)	(23.500)
(Daily Max.)				(1.000)	(1.000)	(1.000)	(333.00)	(333.00)	(1.370)	(0.5000)	(500.00)	(50.000)	(140.00)	(10.000)	(19.500)
				mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	Deg F	%	%
95 11 02	11:01	00	C G												
95 11 02	11:03	00	CY C												
95 11 03	09:50	00	S C												
95 12 06	00:00	01	S C												
Number of samples			4	0	0	0	0	0	0	0	0	0	0	0	0
Number of violate				0	0	0	0	0	0	0	0	0	0	0	0
Average value				0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Highest value				0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Combined data
Company: WACKER SILTRONIC CORPORATION

--- Date ---			Pollutant Name		
YY MM DD	HH:MN	LOC	DES	G-H2S	G-CO
(Monthly Avg.)			TYPE	(10.000)	(35.000)
(Daily Max.)				(10.000)	(35.000)
				ppm	ppm
95 11 02	11:01	00	C G		
95 11 02	11:03	00	CY C		
95 11 03	09:50	00	S C		
95 12 06	00:00	01	S C		
Number of samples			4	0	0
Number of violate				0	0
Average value				0.000	0.000
Highest value				0:000	0.000

SAMPLE ID REPORT For: WACKER SILTRONIC CORPORATION

Sample Date	C SS	ID #	Sample Date	C SS	ID #	Sample Date	C SS	ID #	Sample Date	C SS	ID #
95-11-02-11-01	C	952499	95-11-02-11-03	CY	952509	95-11-03-09-50	S		95-12-06-00-00	S	

Wacker Siltronic Corporation

WACKER

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180
Phone (503) 243-2020
FAX (503) 226-0052

September 27, 1991

Mr. Jim McCadden
Industrial Waste Management
City of Portland
Bureau of Environmental Services
1120 S.W. Fifth Avenue, Room 400
Portland, Oregon 97204-1972

Subject: Final Compliance Report

Dear Mr. McCadden:

This is the Final Compliance Report as required by our Municipal Discharge Permit No. 469-01. Based on the results of the periodic compliance monitoring period of April, May, and June, 1991, which indicated that Wacker Siltronics was in compliance with the applicable pretreatment standards, I hereby certify that; Based on my inquiry of the persons or persons directly responsible for managing compliance with the pretreatment standard for total toxic organics, I certify that, to the best of my knowledge and belief, no dumping of concentrated toxic organics has occurred since filing the last discharge monitoring report. I further certify that this facility is implementing the toxic organic management plan submitted to the control authority.

If you have any question, please call me at 243-2020, ext. 132.

Very truly yours,

WACKER SILTRONIC CORPORATION

Kent C. Mayer

Kent C. Mayer
Environmental Engineer

Enclosures

cc: John Pittman
Tom McCue

Portland, Oregon
Industrial Sewage Division

Permit Number: 469-01
EPA Class: Electronic Crystals and manufacture of electronic crystals.

MUNICIPAL PRETREATMENT PROGRAM PERMITTEE MONITORING REPORT

April (MONTH) 1991 (YEAR)

FROM: Wacker Siltronic Corp.
P.O. Box 83180
Portland, OR 97283-0180

PLANT LOCATION: 7200 N.W. Front Ave.
Portland, OR 97210

CONCENTRATION mg/l									
Sampling Date	Frequency ↓ Sample* →	As c	Cd c	Cr c	F c	Lbs F c	TTO g	TCE g	TSS g
	Weekly								
4-5-91					0.9	1.4		0.003	
4-12-91					0.1	0.1		<0.002	
4-19-91					0.2	0.3		0.004	
4-26-91					0.2	0.3		0.002	
	Semi Annual								

pH: Summary of Data:

Date	Duration of excursion (≥ 15 min.)	pH (max.)	pH (min.)

Sample*: c - 24 hour sampling, composited, compared with "Mo. Ave."
g - grab sample, compared with "Daily Max."

Tom McCu
Authorized Signature

SCOEPA00036411

'ortland, Oregon
ndustrial Sewage Division

Permit Number: 469-01
EPA Class: Electronic Crystals and manufacture of electronic crystals.

MUNICIPAL PRETREATMENT
PROGRAM
PERMITTEE MONITORING REPORT

May 1991
MONTH YEAR

ROM: Wacker Siltronic Corp.
P.O. Box 83180
Portland, OR 97283-0180

PLANT
LOCATION: 7200 N.W. Front Ave.
Portland, OR 97210

		CONCENTRATION mg/l							
Sampling Date	Frequency ↓ Sample* →	As c	Cd c	Cr c	F c	Lbs F c	TTO g	TCE g	TSS g
	Weekly								
5-3-91		--	--	--	0.3	0.5	--	<0.002	166
5-10-91		--	--	--	0.4	0.5	--	<0.002	162
5-17-91		--	--	--	0.3	0.5	--	0.002	202
5-24-91		--	--	--	0.1	0.2	--	<0.0006	178
5-31-91		--	--	--	7.3	6.9	--	<0.0008	316
	Semi Annual								

: Summary of Data:

te	Duration of excursion (≥ 15 min.)	pH (max.)	pH (min.)
	None		

mple*: c - 24 hour sampling, composited, compared with "Mo. Ave."
g - grab sample, compared with "Daily Max."

T. McCu
thorized Signature

SCOEPA00036412

CITY OF PORTLAND
INDUSTRIAL DISCHARGE REPORT

INDUSTRY NAME:	Wacker Siltronic Corporation		(FOR CITY USE ONLY)
PERMIT NUMBER:	469-01	REPORT TYPE (CHECK ONE)	
REPORT DUE DATE:	July 15, 1991	☐ BASELINE MONITORING	
SAMPLING PERIOD:	June, 1991	☐ PERIODIC COMPLIANCE	
SAMPLE CODE:		☐ SPECIAL COMPLIANCE	
TODAY'S DATE:	July 12, 1991	☐ _____	

SAMPLE DATE >	See Comments	SAMPLE LOCATION >	OWW MV1	SAMPLE TYPE >	X COMPOSITE _ GRAB	DATE RECEIVED AT LAB >	Comments	DATE OF SAMPLE ANALYSIS >	Comments

PARAMETER	CODE	REPORTED CONCENTRATION mg/L	LIMIT mg/l daily	LIMIT mg/l monthly	VIOLATION YES(X)	VIOLATION LEVEL	COMMENTS
pH	843	S.U.	5.5-11.5 S.U.				Within limits
Cadmium	736	<0.020	0.7				June 7, 1991
Cyanide (Total)	878	NA	1.2				
Chromium (Total)	748	<0.010	3.8				June 7, 1991
Copper (Total)	752	NA	2.3				
Nickel (Total)	824	NA	3.0				
Lead (Total)	811	NA	0.7				
Zinc (Total)	874	0.018	4.0				June 7, 1991
B.O.D.	729	240	>300=ESSC				Average of 4*, high = 268
T.S.S.	857	190	>350=ESSC				Average of 4*, high = 212
FEM-T Oil & Grease total	913	29					June 25, 1991 (Grab)
FEM-NP O & G Non-polar	915	NA	100				
FEM-P O & G Polar	914	NA	500				
Arsenic		<0.020	0.3				June 7, 1991
Chlorin. Hydrocar.		<0.010	0.5				June 25, 1991 (Grab)
Fluoride		4.2	30.0				Average of 4*, high = 14.6
							* Average of 4, taken June 7, 14
							21, & 28, 1991

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature: Thomas C. McCu Date: 7-12-91

Form 12-14 rev 2.21.61

SCOEPA00036413

PRECISION PETROLEUM LABS, INC.

5915 Star Lane Houston, TX. 77057
Ph. 713-680-9425 Fax: 713-680-9564

CERTIFICATE OF ANALYSIS

COMPANY: TFI-PORTLAND, OR
INVOICE No.: 23504
LAB REFERENCE No.: 2004-05-138
PRODUCT ID: MACHIOV SHOP FROM WAKER SILTRONIC
DATE RECEIVED: 05-07-2004
AUTHORIZED BY: DAN PAIN

TCLP METALS	TEST METHOD	PREPARATION METHOD	METHOD DETECTION LIMIT MG/L	RESULTS MG/L	REGULATORY LEVEL MG/L
Arsenic	EPA-6010	EPA-1311	0.500	BDL	5.000
Barium	EPA-6010	EPA-1311	0.100	1.394	100.000
Cadmium	EPA-6010	EPA-1311	0.100	BDL	1.000
Chromium	EPA-6010	EPA-1311	0.150	BDL	5.000
Lead	EPA-6010	EPA-1311	0.390	BDL	5.000
Mercury	EPA-6010	EPA-1311	0.170	BDL	0.200
Selenium	EPA-6010	EPA-1311	0.630	BDL	1.000
Silver	EPA-6010	EPA-1311	0.130	BDL	5.000

BDL: BELOW DETECTION LIMIT

DANIEL ZABIHI
LAB MANAGER

PRECISION PETROLEUM LAS, INC.'S RESPONSIBILITY FOR THE ABOVE ANALYSIS, OPINIONS OR INTERPRETATIONS IS LIMITED TO THE INVOICE AMOUNT.

PRECISION PETROLEUM LABS, INC.

5915 Star Lane Houston, TX. 77057
Ph. 713-680-9425 Fax: 713-680-9564

CERTIFICATE OF ANALYSIS

COMPANY: TFI-PORTLAND, OR
INVOICE No.: 23504
LAB REFERENCE No.: 2004-05-138
PRODUCT ID: MACHIOV SHOP FROM WAKER SILTRONIC
DATE RECEIVED: 05-07-2004
AUTHORIZED BY: DAN PAIN

Volatile Organics	Test Method	Method Detection Limit, PPM	Results PPM
Benzene	S.W. 8260	0.100	BDL
Bromodichloromethane	S.W. 8260	0.100	BDL
Bromoform	S.W. 8260	0.100	BDL
Methylene Chloride	S.W. 8260	0.100	BDL
Bromomethane	S.W. 8260	0.100	BDL
Carbon tetrachloride	S.W. 8260	0.100	BDL
Chloroethane	S.W. 8260	0.100	BDL
2-Chloroethyl Vinyl Ether	S.W. 8260	0.100	BDL
Chloroform	S.W. 8260	0.100	BDL
Chloromethane	S.W. 8260	0.100	BDL
Dibromochloromethane	S.W. 8260	0.100	BDL
Chlorobenzene	S.W. 8260	0.100	BDL
1,2-Dichlorobenzene	S.W. 8260	0.100	BDL
1,3-Dichlorobenzene	S.W. 8260	0.100	BDL
1,4-Dichlorobenzene	S.W. 8260	0.100	BDL
1,1-Dichloroethane	S.W. 8260	0.100	BDL
1,2-Dichloroethane	S.W. 8260	0.100	BDL
1,1-Dichloroethene	S.W. 8260	0.100	BDL
trans-1,2-Dichloroethene	S.W. 8260	0.100	BDL
Dichloromethane	S.W. 8260	0.100	BDL
2-Dichloropropane	S.W. 8260	0.100	BDL
Cis-1,3-Dichloropropene	S.W. 8260	0.100	BDL
trans-1,3-Dichloropropene	S.W. 8260	0.100	BDL
Ethyl benzene	S.W. 8260	0.100	BDL
1,1,2,2-Tetrachloroethane	S.W. 8260	0.100	BDL
Tetrachloroethene	S.W. 8260	0.100	BDL
Toluene	S.W. 8260	0.100	BDL
1,1,1-trichloroethane	S.W. 8260	0.100	BDL
1,1,2-Trichloroethane	S.W. 8260	0.100	BDL
Trichloroethene	S.W. 8260	0.100	BDL
Trichlorofluoromethane	S.W. 8260	0.100	BDL
Vinyl chloride	S.W. 8260	0.100	BDL
Xylenes	S.W. 8260	0.100	BDL

BDL = BELOW DETECTION LIMIT

DANIEL ZABIHI
LAB MANAGER

PRECISION PETROLEUM LABS, INC.'S RESPONSIBILITY FOR THE ABOVE ANALYSIS, OPINIONS OR INTERPRETATIONS IS LIMITED TO THE INVOICE AMOUNT.

PRECISION PETROLEUM LABS, INC.

5915 Star Lane Houston, TX. 77057
Ph. 713-680-9425 Fax: 713-680-9564

CERTIFICATE OF ANALYSIS

COMPANY: TFI-PORTLAND, OR
INVOICE No.: 23504
LAB REFERENCE No.: 2004-05-139
PRODUCT ID: OIL/WATER CENTRAL UTILITIES B FROM WACKER SILTRONIC
DATE RECEIVED: 05-07-2004
AUTHORIZED BY: DAN PAIN

TCLP METALS	TEST METHOD	PREPARATION METHOD	METHOD DETECTION LIMIT MG/L	RESULTS MG/L	REGULATORY LEVEL MG/L
Arsenic	EPA-6010	EPA-1311	0.500	BDL	5.000
Barium	EPA-6010	EPA-1311	0.100	BDL	100.000
Cadmium	EPA-6010	EPA-1311	0.100	BDL	1.000
Chromium	EPA-6010	EPA-1311	0.150	BDL	5.000
Lead	EPA-6010	EPA-1311	0.390	BDL	5.000
Mercury	EPA-6010	EPA-1311	0.170	BDL	0.200
Selenium	EPA-6010	EPA-1311	0.630	BDL	1.000
Silver	EPA-6010	EPA-1311	0.130	BDL	5.000

BDL: BELOW DETECTION LIMIT

DANIEL ZABIHI
LAB MANAGER

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PRECISION PETROLEUM LABS, INC.

5915 Star Lane Houston, TX. 77057
Ph. 713-680-9425 Fax: 713-680-9564

CERTIFICATE OF ANALYSIS

COMPANY: TFI-PORTLAND, OR
INVOICE No.: 23504
LAB REFERENCE No.: 2004-05-139
PRODUCT ID: OIL/WATER CENTRAL UTILITIES B FROM WACKER SILTRONIC
DATE RECEIVED: 05-07-2004
AUTHORIZED BY: DAN PAIN

Volatile Organics	Test Method	Method Detection Limit, PPM	Results PPM
Benzene	S.W. 8260	0.100	BDL
Bromodichloromethane	S.W. 8260	0.100	BDL
Bromoform	S.W. 8260	0.100	BDL
Methylene Chloride	S.W. 8260	0.100	BDL
Bromomethane	S.W. 8260	0.100	BDL
Carbon tetrachloride	S.W. 8260	0.100	BDL
Chloroethane	S.W. 8260	0.100	BDL
2-Chloroethyl Vinyl Ether	S.W. 8260	0.100	BDL
Chloroform	S.W. 8260	0.100	BDL
Chloromethane	S.W. 8260	0.100	BDL
Dibromochloromethane	S.W. 8260	0.100	BDL
Chlorobenzene	S.W. 8260	0.100	BDL
1,2-Dichlorobenzene	S.W. 8260	0.100	BDL
1,3-Dichlorobenzene	S.W. 8260	0.100	BDL
1,4-Dichlorobenzene	S.W. 8260	0.100	BDL
1,1-Dichloroethane	S.W. 8260	0.100	BDL
1,2-Dichloroethane	S.W. 8260	0.100	BDL
1,1-Dichloroethene	S.W. 8260	0.100	BDL
trans-1,2-Dichloroethene	S.W. 8260	0.100	BDL
Dichloromethane	S.W. 8260	0.100	BDL
2-Dichloropropane	S.W. 8260	0.100	BDL
Cis-1,3-Dichloropropene	S.W. 8260	0.100	BDL
trans-1,3-Dichloropropene	S.W. 8260	0.100	BDL
Ethyl benzene	S.W. 8260	0.100	BDL
1,1,2,2-Tetrachloroethane	S.W. 8260	0.100	BDL
Tetrachloroethene	S.W. 8260	0.100	BDL
Toluene	S.W. 8260	0.100	BDL
1,1,1-trichloroethane	S.W. 8260	0.100	BDL
1,1,2-Trichloroethane	S.W. 8260	0.100	BDL
Trichloroethene	S.W. 8260	0.100	BDL
Trichlorofluoromethane	S.W. 8260	0.100	BDL
Vinyl chloride	S.W. 8260	0.100	BDL
Xylenes	S.W. 8260	0.100	0.251

BDL = BELOW DETECTION LIMIT

DANIEL ZABIHI
LAB MANAGER

PRECISION PETROLEUM LABS, INC.'S RESPONSIBILITY FOR THE ABOVE ANALYSIS, OPINIONS OR INTERPRETATIONS IS LIMITED TO THE INVOICE AMOUNT.

Specialty Analytical

19761 S.W. 95th Place
Tualatin, OR 97062
(503) 612-9007
Fax (503) 612-8572
1 (877) 612-9007

September 11, 2001

Erica Baldwin
Spencer Environmental
6400 SE 101st Avenue
Portland, OR 97266

TEL: (503) 788-4612
FAX (503) 788-4628

RE: Wacker Fab 1

Order No.: 0109047

Dear Erica Baldwin:

Specialty Analytical received 1 sample on 9/6/2001 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,

Cindy Day
Project Manager

Dan Mann
Technical Review

Specialty Analytical

Date: *11-Sep-01*

CLIENT:	Spencer Environmental	**Client Sample ID:**	Wacker Feb 1 90092
Lab Order:	0109047	**Collection Date:**	8/23/2001
Project:	Wackee		
Lab ID:	0109047-01	**Matrix:**	SOLVENT

Analyses	Result	Limit	Qual	Units	DF	Date Analyzed
TOTAL METALS BY ICP		**E6010**				Analyst: **dmc**
Arsenic	ND	1.79		mg/Kg	1	9/11/2001 2:15:00 PM
Barium	ND	1.79		mg/Kg	1	9/11/2001 2:15:00 PM
Cadmium	ND	0.0893		mg/Kg	1	9/11/2001 2:15:00 PM
Chromium	ND	0.446		mg/Kg	1	9/11/2001 2:15:00 PM
Lead	ND	1.79		mg/Kg	1	9/11/2001 2:15:00 PM
Selenium	ND	1.79		mg/Kg	1	9/11/2001 2:15:00 PM
Silver	ND	1.79		mg/Kg	1	9/11/2001 2:15:00 PM
MERCURY, TOTAL		**SW7471**				Analyst: **mgh**
Mercury	ND	0.0200		mg/Kg	1	9/10/2001

SCOEPA00036419

Specialty Analytical

Date: *11-Sep-01*

CLIENT: Spencer Environmental
Work Order: 0109047
Project: Wacker

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID	MB-5651	SampType:	MBLK	TestCode:	6010_S	Units:	mg/Kg	Prep Date:	9/7/2001	Run ID:	TJA IRIS_010910A
Client ID:	ZZZZZ	Batch ID:	5651	TestNo:	E6010			Analysis Date:	9/10/2001	SeqNo:	99304

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	2.00									

Sample ID	MBLK-5651	SampType:	MBLK	TestCode:	6010_S	Units:	mg/Kg	Prep Date:	9/7/2001	Run ID:	TJA IRIS_010911B
Client ID:	ZZZZZ	Batch ID:	5651	TestNo:	E6010			Analysis Date:	9/11/2001	SeqNo:	99602

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.49	2.00									J
Barium	ND	2.00									
Cadmium	ND	0.100									
Chromium	ND	0.500									
Lead	ND	2.00									
Selenium	ND	2.00									
Silver	ND	2.00									

Sample ID	LCS-5651	SampType:	LCS	TestCode:	6010_S	Units:	mg/Kg	Prep Date:	9/7/2001	Run ID:	TJA IRIS_010910A
Client ID:	ZZZZZ	Batch ID:	5651	TestNo:	E6010			Analysis Date:	9/10/2001	SeqNo:	99303

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	476.4	2.00	500	0	95.3	92.9	107	0	0		

Sample ID	LCS-5651	SampType:	LCS	TestCode:	6010_S	Units:	mg/Kg	Prep Date:	9/7/2001	Run ID:	TJA IRIS_010911B
Client ID:	ZZZZZ	Batch ID:	5651	TestNo:	E6010			Analysis Date:	9/11/2001	SeqNo:	99603

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	512.3	2.00	500	0.49	102	93.3	109	0	0		
Barium	105.6	2.00	100	0	106	94.3	114	0	0		
Cadmium	102.4	0.100	100	0	102	89.5	110	0	0		
Chromium	102.9	0.500	100	0	103	92.3	110	0	0		
Lead	501.3	2.00	500	0	100	92.9	107	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

SCOEPA00036420

CLIENT: Spencer Environmental
Work Order: 0109047
Project: Wacker

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID	LCS-5651	SampType:	LCS	TestCode:	6010_S	Units:	mg/Kg	Prep Date:	9/7/2001	Run ID:	TJA IRIS_010911B
Client ID:	ZZZZZ	Batch ID:	5651	TestNo:	E6010			Analysis Date:	9/11/2001	SeqNo:	99603

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium	100.2	2.00	100	0	100	89.3	112	0	0		
Silver	50.77	2.00	50	0	102	80.4	115	0	0		

Sample ID	0109045-01AMS	SampType:	MS	TestCode:	6010_S	Units:	mg/Kg	Prep Date:	9/7/2001	Run ID:	TJA IRIS_010911B
Client ID:	ZZZZZ	Batch ID:	5651	TestNo:	E6010			Analysis Date:	9/11/2001	SeqNo:	99607

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	420.4	1.69	423.7	0.3182	99.1	90.7	105	0	0		
Barium	88.56	1.69	84.75	1.018	103	56.9	140	0	0		
Cadmium	84.52	0.0847	84.75	0.5364	99.1	85.2	104	0	0		
Chromium	85.59	0.424	84.75	0.1273	101	83	108	0	0		
Lead	432.9	1.69	423.7	23.24	96.7	77	107	0	0		
Selenium	83.91	1.69	84.75	0	99	86.1	105	0	0		
Silver	33.08	1.69	42.37	0	78.1	54	127	0	0		

Sample ID	0109045-01AMSD	SampType:	MSD	TestCode:	6010_S	Units:	mg/Kg	Prep Date:	9/7/2001	Run ID:	TJA IRIS_010911B
Client ID:	ZZZZZ	Batch ID:	5651	TestNo:	E6010			Analysis Date:	9/11/2001	SeqNo:	99608

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	444.6	1.79	446.4	0.3182	99.5	90.7	105	420.4	5.58	20	
Barium	93.57	1.79	89.29	1.018	104	56.9	140	88.56	5.50	20	
Cadmium	89.55	0.0893	89.29	0.5364	99.7	85.2	104	84.52	5.79	20	
Chromium	90.54	0.446	89.29	0.1273	101	83	108	85.59	5.61	20	
Lead	458.2	1.79	446.4	23.24	97.4	77	107	432.9	5.69	20	
Selenium	88.46	1.79	89.29	0	99.1	86.1	105	83.91	5.29	20	
Silver	33.59	1.79	44.64	0	75.2	54	127	33.08	1.51	20	

Sample ID	0109045-01ADUP	SampType:	DUP	TestCode:	6010_S	Units:	mg/Kg	Prep Date:	9/7/2001	Run ID:	TJA IRIS_010911B
Client ID:	ZZZZZ	Batch ID:	5651	TestNo:	E6010			Analysis Date:	9/11/2001	SeqNo:	99606

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

SCOEPA00036421

CLIENT: Spencer Environmental
Work Order: 0109047
Project: Wacker

ANALYTICAL QC SUMMARY REPORT

TestCode: 6010_S

Sample ID	0109045-01ADUP	SampType:	DUP	TestCode:	6010_S	Units:	mg/Kg	Prep Date:	9/7/2001	Run ID:	TJA IRIS_010911B
Client ID:	ZZZZZ	Batch ID:	5651	TestNo:	E6010			Analysis Date:	9/11/2001	SeqNo:	99606

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.5472	1.89	0	0	0	0	0	0.3182	0	20	J
Barium	0.9434	1.89	0	0	0	0	0	1.018	0	20	J
Cadmium	0.4906	0.0943	0	0	0	0	0	0.5364	8.92	20	
Chromium	0.1509	0.472	0	0	0	0	0	0.1273	0	20	J
Lead	21.62	1.89	0	0	0	0	0	23.24	7.19	20	
Selenium	ND	1.89	0	0	0	0	0	0	0	20	
Silver	ND	1.89	0	0	0	0	0	0	0	20	

Sample ID	CCV	SampType:	CCV	TestCode:	6010_S	Units:	mg/Kg	Prep Date:	9/7/2001	Run ID:	TJA IRIS_010910A
Client ID:	ZZZZZ	Batch ID:	5651	TestNo:	E6010			Analysis Date:	9/10/2001	SeqNo:	99305

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	486.4	2.00	500	0	97.3	90	110	0	0		

Sample ID	CCV	SampType:	CCV	TestCode:	6010_S	Units:	mg/Kg	Prep Date:	9/7/2001	Run ID:	TJA IRIS_010911B
Client ID:	ZZZZZ	Batch ID:	5651	TestNo:	E6010			Analysis Date:	9/11/2001	SeqNo:	99630

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	500.7	2.00	500	0	100	90	110	0	0		
Barium	102	2.00	100	0	102	90	110	0	0		
Cadmium	98.92	0.100	100	0	98.9	90	110	0	0		
Chromium	99.59	0.500	100	0	99.6	90	110	0	0		
Lead	485.1	2.00	500	0	97	90	110	0	0		
Selenium	97.28	2.00	100	0	97.3	90	110	0	0		
Silver	49.26	2.00	50	0	98.5	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 Blank
J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits

SCOEPA00036422

CLIENT: Spencer Environmental
Work Order: 0109047
Project: Wacker

ANALYTICAL QC SUMMARY REPORT

TestCode: HG_CTS

Sample ID	MB-R16299	SampType: MBLK	TestCode: HG_CTS	Units: mg/Kg	Prep Date:	Run ID: CVAA_010910A
Client ID:	ZZZZZ	Batch ID: R16299	TestNo: SW7471		Analysis Date: 9/10/2001	SeqNo: 99362

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.0200									

Sample ID	LCS-R16299	SampType: LCS	TestCode: HG_CTS	Units: mg/Kg	Prep Date:	Run ID: CVAA_010910A
Client ID:	ZZZZZ	Batch ID: R16299	TestNo: SW7471		Analysis Date: 9/10/2001	SeqNo: 99361

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.205	0.0200	0.208	0	98.6	87.7	113	0	0		

Sample ID	0109045-02A MS	SampType: MS	TestCode: HG_CTS	Units: mg/Kg	Prep Date:	Run ID: CVAA_010910A
Client ID:	ZZZZZ	Batch ID: R16299	TestNo: SW7471		Analysis Date: 9/10/2001	SeqNo: 99351

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.1163	0.0200	0.167	0	69.6	55.5	143	0	0		

Sample ID	0109045-02A MSD	SampType: MSD	TestCode: HG_CTS	Units: mg/Kg	Prep Date:	Run ID: CVAA_010910A
Client ID:	ZZZZZ	Batch ID: R16299	TestNo: SW7471		Analysis Date: 9/10/2001	SeqNo: 99352

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.1444	0.0200	0.1786	0	80.9	55.5	143	0.1163	21.6	20	R

Sample ID	0109045-02A DUP	SampType: DUP	TestCode: HG_CTS	Units: mg/Kg	Prep Date:	Run ID: CVAA_010910A
Client ID:	ZZZZZ	Batch ID: R16299	TestNo: SW7471		Analysis Date: 9/10/2001	SeqNo: 99350

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.0200	0	0	0	0	0	0	0	20	

Sample ID	CCV	SampType: CCV	TestCode: HG_CTS	Units: mg/Kg	Prep Date:	Run ID: CVAA_010910A
Client ID:	ZZZZZ	Batch ID: R16299	TestNo: SW7471		Analysis Date: 9/10/2001	SeqNo: 99360

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

SCOEPA00036423

CLIENT: Spencer Environmental
Work Order: 0109047
Project: Wacker

ANALYTICAL QC SUMMARY REPORT

TestCode: HG_CTS

Sample ID	CCV	SampType:	CCV	TestCode:	HG_CTS	Units:	mg/Kg	Prep Date:		Run ID:	CVAA_010910A
Client ID:	ZZZZZ	Batch ID:	R16299	TestNo:	SW7471			Analysis Date:	9/10/2001	SeqNo:	99360

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.1939	0.0200	0.208	0	93.2	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

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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 lube oil calibration standards.

A3. Results 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.

C. The result confirmed by secondary column or GC/MS analysis.

CN. See case narrative.

CR. Result for this analyte maybe biased due to interferences. Confirmation by GC/MS or other technique is recommended.

D. Surrogate was diluted outside reporting range.

E. Result exceeds the calibration range for the compound. The result should be considered an 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.

G. Result may be biased high due to biogenic interferences. Silica gel clean-up recommended.

H. Sample was analyzed outside recommended holding times.

HT. At clients request, sample was analyzed outside method recommended holding time.

J. The result for this analyte is between the MDL and the PQL, and should be considered an 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.

MC. Sample concentration is greater than 4x the spiked value; the spiked value is considered insignificant.

MI. Outside control limits due to Matrix Interference.

MSA. Value determined by Method of Standard Addition.

N. Sample appears to contain biogenic material biasing quantification.

Q. Detection limits elevated due to sample matrix.

R. RPD control limits were exceeded.

RF. Duplicate failed, due to result being at or near method reporting limit.

RP. Matrix spike values exceed established QC limits, post digestion spike is in control.

S. Recovery outside control limits.

*. The result for this parameter was greater than the maximum contaminant level or the TCLP regulatory limit.

rev. June 19, 2000

WACKER SILTRONIC

CATHRYN YOUNG
SENIOR MANAGER
CENTRAL ENGINEERING

Wacker Siltronic Corporation
7200 N.W. Front Avenue, MS 30
Portland, OR 97210-3676, USA
Tel. 503-219-7406
Fax 503-219-7599
cathryn_young@siltronic.com

FAX

February 26, 2003

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To Jim Maul, MFA

From Cathryn Young

Fax 971-544-2140

36 Page(s) incl. coversheet

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A Preliminary Report
Soil Investigation for Proposed Polysilicon Plant
CH2M Hill
June 1985

[redacted]

FILE COPY - PORTLAND

A PRELIMINARY REPORT
SOIL INVESTIGATION FOR PROPOSED POLYSILICON PLANT

WACKER SILTRONIC CORPORATION
PORTLAND, OREGON

Prepared By

CH2M HILL NORTHWEST, INC.
2020 S.W. Fourth Avenue
Portland, Oregon 97201

JUNE 1985
P19786.A1.00

Dept. of Environmental Quality
RECEIVED
JUL 24 1985
NORTHWEST REGION

INTRODUCTION

Wacker Siltronic Corporation contracted CH2M HILL to conduct a soil investigation on Wacker's property located in the Northwest Industrial area of Portland, Oregon. The purpose of the investigation was to evaluate subsurface conditions within a section of the vacant portion of the site as part of the preliminary engineering for the design and construction of the proposed polysilicon plant.

The subsurface investigation was initiated based on the presence (both past and current) of industrial manufacturing and processing facilities within the Doane Lake area and recent environmental regulations--the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the Resource Conservation and Recovery Act of 1976 (RCRA). Wacker was concerned that past or current management practices of industrial wastes within the Doane Lake area may have resulted in the presence of these materials or subsequent residues on Wacker's property, which would prevent or hinder the construction of the proposed polysilicon plant and future expansions of the existing manufacturing facilities.

This preliminary report describes the soil boring, sampling, and analytical procedures and construction of the groundwater monitoring wells. It also presents the results of the laboratory analyses, which indicate the presence of chemical constituents commonly associated with petroleum products, coal tar, and pesticides. Interpretation of the results presented in this report is beyond the scope of our contract and will be included as part of future work (i.e., site environmental assessment).

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SITE DESCRIPTION

Wacker Siltronic Corporation is located in the northwest section of the City of Portland on the west bank of the Willamette River. The property, consisting of approximately 85 acres, is situated between the St. Johns Bridge and the Burlington Northern Railroad Bridge and is essentially rectangular in shape. Property boundaries are the Willamette River to the northeast; the Burlington Northern Railroad berm, which provides the approach to the railroad bridge, to the southwest; Burlington Northern track and adjacent N.W. St. Helens Road to the southwest; and the property line shared with Northwest Natural Gas and the Koppers Company to the northwest. Figure 1 shows the location of the Wacker property in relation to these landmarks and other industrial companies in the vicinity.

The project site is located in a vacant field about 400 feet south of Wacker's existing facilities, as shown in Figure 2. The site is bounded on the north by the existing Wacker plant, and is bordered on the south and east by Burlington Northern Railroad right-of-way. Underground utilities, consisting of oil, water, gasoline, natural gas, and sewer lines, as well as electric and telephone cables, are located in a 100-foot-wide easement on the north side of the site.

The site is relatively level with elevations ranging from about 40 feet National Geodetic Vertical Datum 1929 (NGVD) in the southern part to about 32 feet in the northern part. The local ground surface is deeply rutted with heavy machinery tracks and ditches. Wood debris, concrete, and other waste materials are present in small amounts across the field.

FIELD INVESTIGATION

The field investigation was performed from April 1 through 5, 8 and 9, 1985. The investigation involved collecting soil

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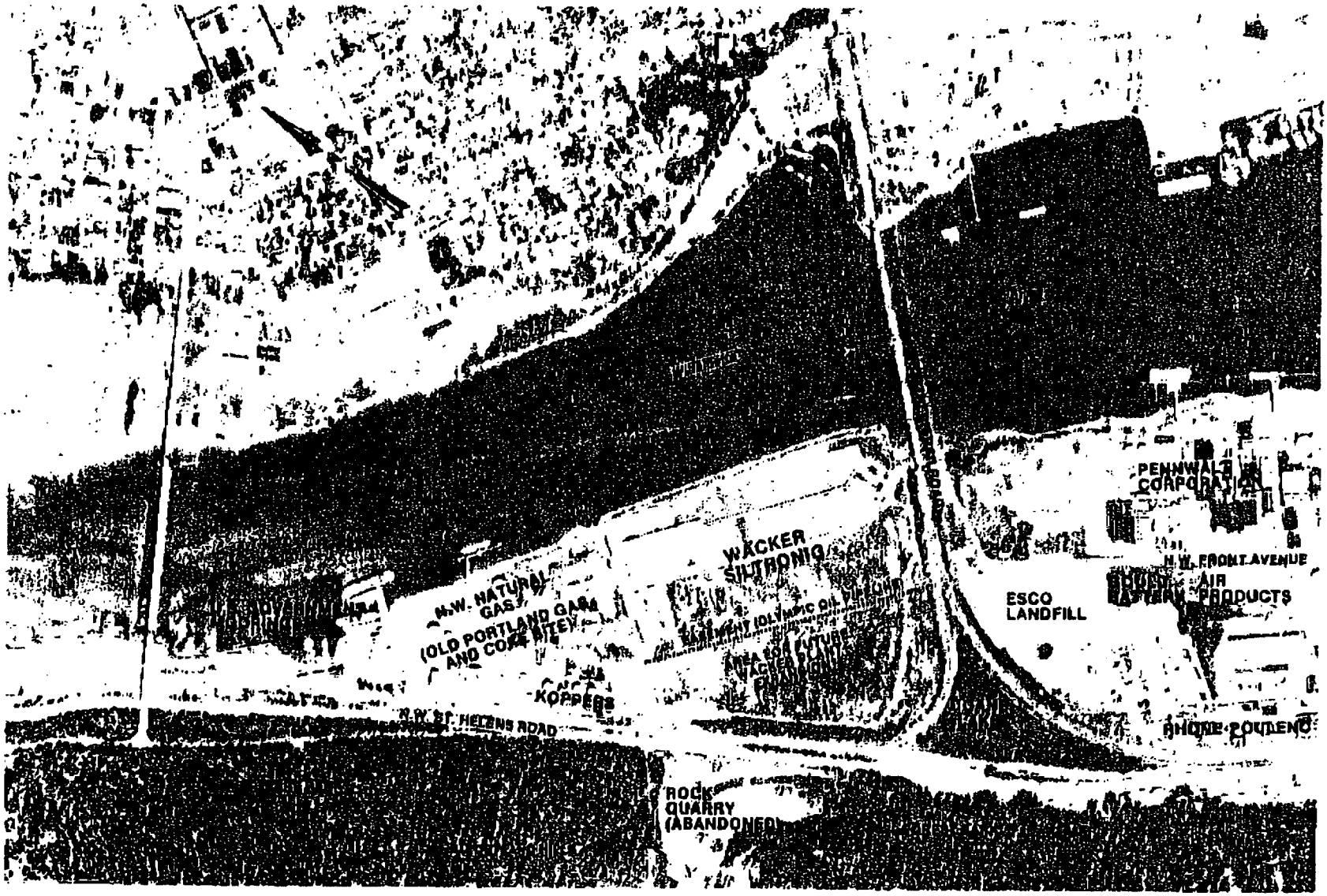

Figure 1 WACKER SILTRONIC PLANT AND SURROUNDING VICINITY (1983)

SCALE: 1" = 940 FEET (1 cm : 110 m)

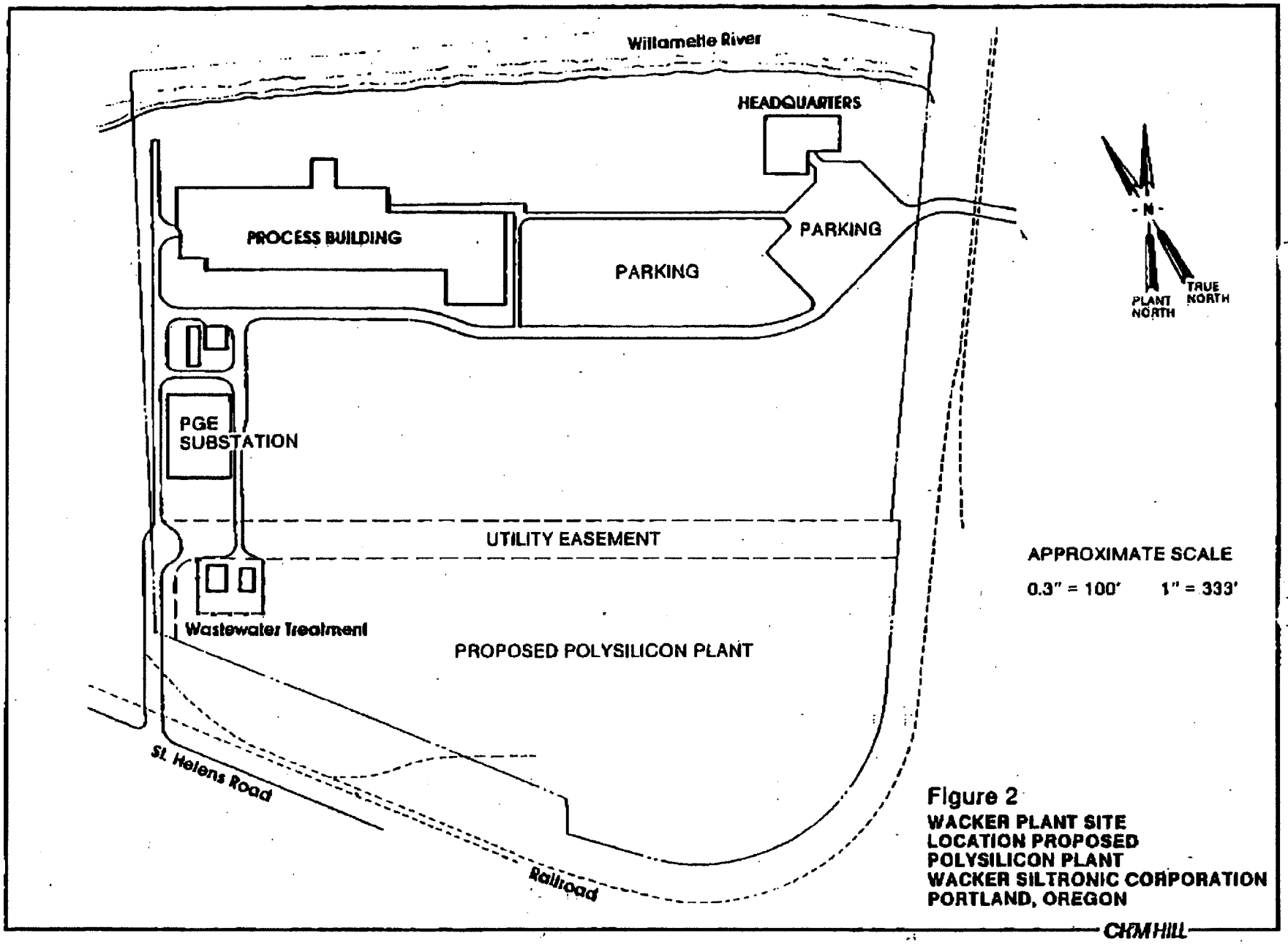

Figure 2
WACKER PLANT SITE
LOCATION PROPOSED
POLYSILICON PLANT
WACKER SILTRONIC CORPORATION
PORTLAND, OREGON

samples from seven soil borings, all of which were completed as monitoring wells. The locations of the borings/monitoring wells (designated MW-1 through MW-7) are shown in Figure 3. The soil borings were drilled and monitoring wells constructed by Geotech Explorations, Inc., of Beaverton, Oregon, under the field observation of a CH2M HILL hydrogeologist.

SOIL BORING AND SAMPLING

The seven soil borings were drilled using a CME-55 rotary drill rig and 6¼-inch (OD) hollow-stem augers. Soil samples were recovered at 5-foot intervals. Samples were recovered using a 2-inch split-spoon sampler following the requirements of the standard Penetration Test (ASTM D 1586). The sampler was driven 18 inches ahead of the auger bit to collect an undisturbed soil sample. The depth of soil borings ranged from 31.5 to 41.5 feet, generally between 5 and 20 feet below fill material and into native soils. The CH2M HILL hydrogeologist inspected, classified, and logged each borehole and soil sample in the field in approximate accordance with the Visual-Manual Procedure (ASTM D 2488). The log included a physical description of the soil type and a visual and odor estimate for the presence of contaminants. Sample intervals, soil types, and descriptions of the soil types and soil borings are provided in the soil boring record drawings presented in the appendix.

A composite soil sample from each split-spoon was placed in a clean 8-ounce glass jar. Each jar was filled to the top before it was sealed. The label that had been affixed to the sample container was then filled out. Information on the label included the facility name, the sample identification number, the name of the person collecting the sample, date and time of collection, and the location of the sample. The sample was then placed in a portable cooler until the end of each day when it was transferred via chain-of-custody record

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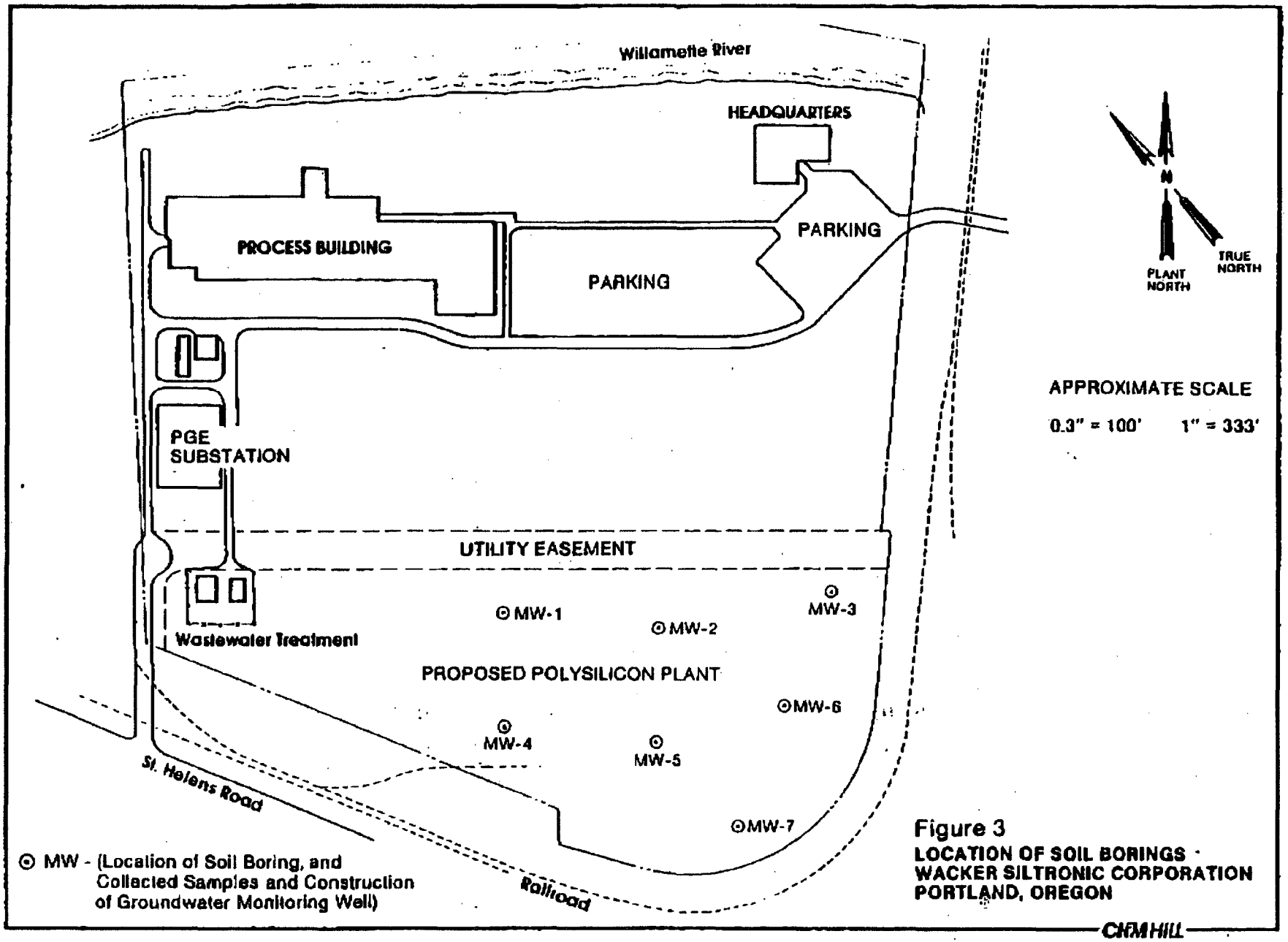
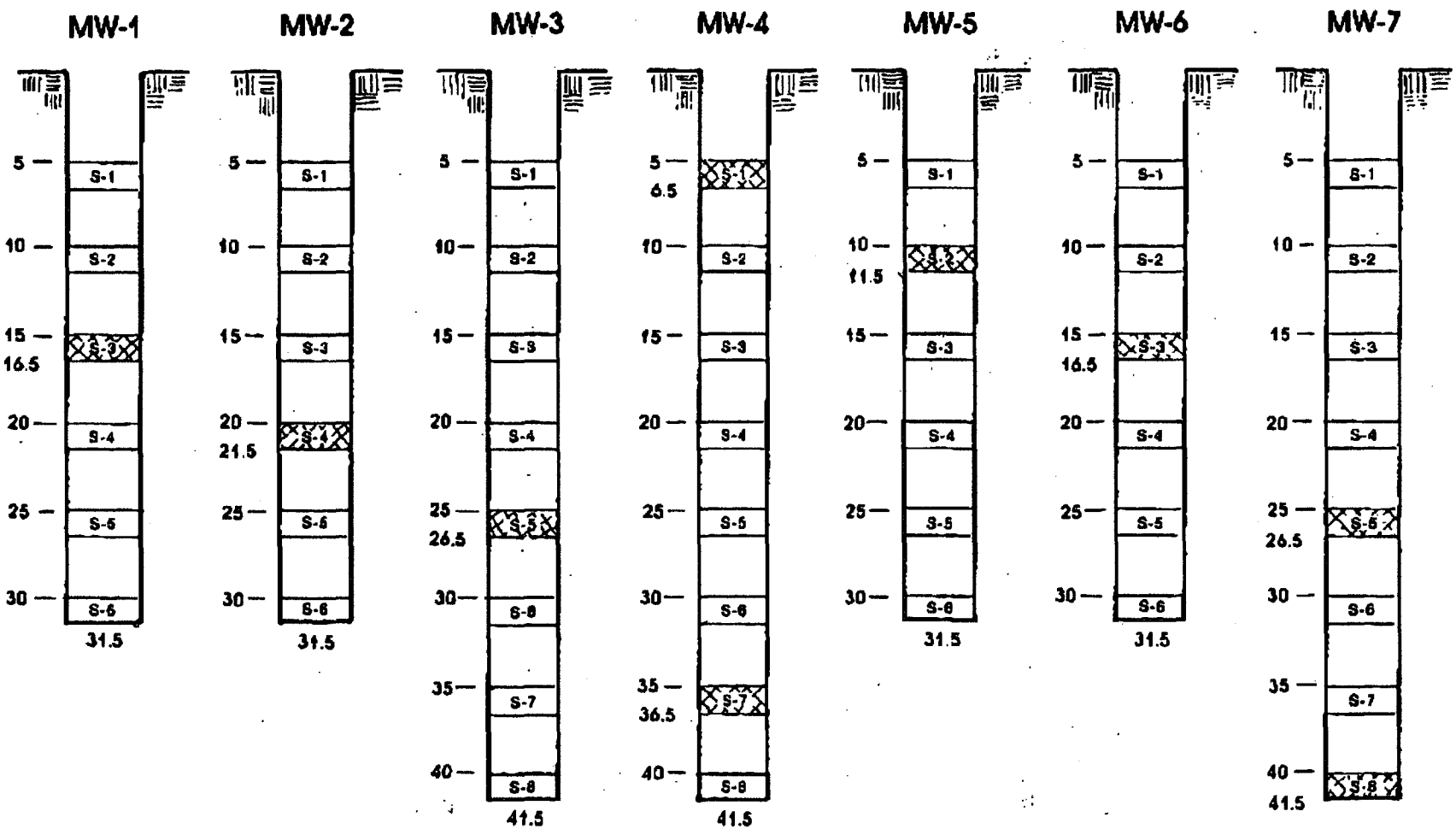


Figure 3
LOCATION OF SOIL BORINGS
WACKER SILTRONIC CORPORATION
PORTLAND, OREGON



Analyzed Collected Soil Samples

(NOTE: Parallel lines denote soil samples. These were taken at 1.5 ft intervals starting every (five feet)

Figure 4
GENERAL VERTICAL LOCATION COLLECTED SOIL SAMPLES
WACKER SILTRONIC CORPORATION
PORTLAND, OREGON

CH2M HILL

pack material used for well construction were collected and saved.

LABORATORY ANALYSIS AND SOIL SAMPLE RESULTS

The field sample description generally provided the basis for selecting samples to be sent to the laboratory for chemical analysis. Samples in which contaminants were most apparent visually and by odor were selected for analysis. Also, at least one soil sample from each soil boring site was analyzed, as was at least one sample at every 5-foot depth (except at 30 feet) from the combination of all soil boring locations. Figure 4 shows the approximate vertical location of the collected soil samples for each monitoring well and identifies which samples were analyzed.

The selection of the chemical analyses to be performed on each soil sample was based on the past and current industrial chemical manufacturing and handling activities within the Doane Lake area (i.e., petroleum products, coal tar, creosote, pesticides, battery recycling, foundry process waste disposal). The following chemical analyses were performed on the selected soil samples by Coffey Laboratories, Inc. (located at 4914 N.E. 122nd Avenue, Portland, Oregon):

- Oil and grease
- Phenols
- Volatiles and polynuclear aromatic hydrocarbons
- E.P. toxicity for:
  - --pesticides
  - --herbicides
  - --arsenic
  - --barium
  - --cadmium
  - --chromium
  - --lead
  - --mercury
  - --selenium
  - --silver

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GROUNDWATER MONITORING WELL CONSTRUCTION

Seven groundwater monitoring wells were constructed by installing well screen casing assemblies into the completed drill holes.

Each assembly consisted of 2-inch diameter schedule 40 PVC. Well screens consisted of a 15-foot length of PVC with three rows of 0.010-inch machine-slotted openings. A 5-foot solid PVC sump was placed beneath each screen. Solid PVC casing was placed above the screen and extended to the ground surface. Casing lengths were connected by flush-threaded fittings; no solvents were used to connect PVC sections.

Each well screen interval was gravel-packed by pouring a coarse-grained sand into the annular space between the PVC and the hollow stem of the auger. As the auger was pulled up, the sand dropped out of the hollow stem into the well to envelop the well screen. After the sand pack was installed to 2 or 3 feet above the top of the well screen, the annular space between the PVC casing and the hollow stem was filled with 1 to 2 feet of pelletized bentonite followed by cement grout to the ground surface. A summary of the construction of each well is provided in the soil boring record drawings presented in the appendix.

Well heads were completed at approximately 2 feet above the ground surface with locking steel caps that were anchored 2 to 3 feet into the cement grout mixture. The monitoring wells were developed by the drilling contractor by blowing compressed air through an air line into the sump (tail pipe) located below the well screen. Development was considered complete when the return water became visibly less turbid. The PVC monitoring well assembly was thoroughly steam-cleaned before construction of each well. As a measure of additional quality assurance and control, samples of the sand filter

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to a refrigerator located inside the laboratory area of Wacker's wastewater treatment building. Chain-of-custody records were kept for every sample collected. Sample custody was maintained until the samples were relinquished directly to Wacker or an outside laboratory. A sample of the chain-of-custody form used is illustrated in the appendix.

All drilling equipment was thoroughly steam-cleaned before drilling each boring. Oil and grease were not used at drill rod connection fittings to prevent contamination of the soil samples. The split-spoon soil sampler was decontaminated between each use. Decontamination steps included:

- Washing off grass, soil particles, mud smears, etc., in a bucket of tap water
- Washing in a 5 to 10 percent solution of trisodium phosphate (TSP) and tap water
- Two rinses in clean tap water
- One rinse each with distilled water and methanol

The same decontamination procedures were used for the stainless steel utensils used to transfer soil from the sampler to the jars. Utensils were stored in a new plastic bag until they were ready for use.

A number of quality control measures were performed in order to ensure that all data generated was of known precision, and accuracy and conformed to accepted procedures. Soil sample splits were collected at soil boring sites MW-2, -5, and -6. Several transfer blanks were also prepared to check for potential contamination of sample jars. Samples of water poured into the drill holes to hold back heaving sands were also collected.

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The results of the laboratory analysis are presented in Table 1. A copy of the Coffey Laboratories, Inc., report is included in the appendix.

The field samples were analyzed for phenols, pesticides, herbicides, metals, volatiles, and aromatic hydrocarbons by EPA methods (SW-846, EPA-602, 4-79-020); the oils and grease were measured by standard methods (method 503 D).

Laboratory quality assurance procedures included method blanks, duplicates for precision measurements, and spikes for accuracy measurements. The frequency of blank, duplicate, and spike measurements was at a minimum of 10 percent per set to meet the standard requirements. The data were evaluated in view of the QC findings and found acceptable.

A review of the laboratory analysis indicates that each soil boring location contained a mixture of substances commonly associated with petroleum products, coal tar, and pesticides. The following list summarizes the principal substances found in each of the seven borings:

- MW-1 PAHs, petroleum products
- MW-2 PAHs, petroleum products
- MW-3 petroleum products
- MW-4 petroleum products
- MW-5 PAHs, petroleum products, 2,4-D
- MW-6 petroleum products, 2,4-D
- MW-7 petroleum products

Interpretation of results presented in Table 1 is beyond the scope of this report and will be included as part of future work (i.e., site environmental assessment).

SCOEPA00036438

Table 1
WACKER SILTRONIC, POLYSILICON PLANT SOILS INVESTIGATION
SOURCE: COFFEY LABORATORIES, INC./APRIL 30, 1985
RESULTS OF SOILS ANALYSIS

Chemical Compounds	MW-1, S-3 (15-16.5 ft)	MW-2, S-4 (20-21.5 ft)	MW-3, S-5 (25-26.5 ft)	MW-4, S-1 (5-6.5 ft)	MW-4, S-7 (35-36.5 ft)	MW-5, S-2 (10-11.5 ft)	MW-6, S-3 (15-16.5 ft)	MW-7, S-5 (25-26.5 ft)	MW-7, S-8 (40-41.5 ft)	Detection Limits	Reference Criteria
Organic Analyses											
a Volatile Compounds											
1,1,1-Trichloroethane	0.01	BD	BD	BD	BD	BD	BD	BD	BD	0.01	pp, PDW (*)
1,2-Dichloroethane	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.01	pp, PDW (*)
1,1,2,2-Tetrachloroethylene	2.2	11	BD	BD	BD	0.14	BD	BD	BD	0.05	
Toluene	1.2	20	0.11	BD	BD	0.20	BD	BD	BD	0.1	pp
Chlorobenzene	0.04	BD	BD	BD	BD	BD	BD	BD	BD	0.04	pp
Ethylbenzene	17	5.4	BD	BD	BD	BD	BD	BD	0.05	0.04	pp
Xylene	146	116	BD	BD	BD	1.5	BD	2.8	1.2	1.0	
b Acid Extractables											
Phenol	0.35	3.1	0.20	0.30	0.17	0.07	0.05	0.06	0.08	NR	pp, SWQ
2-Chlorophenol	ND	7.8	0.08	0.26	ND	ND	0.13	ND	0.14	NR	pp, SWQ
2-Nitrophenol	ND	0.20	ND	ND	ND	ND	ND	ND	ND	NR	pp, SWQ
2,4-Dimethylphenol	ND	3.1	ND	ND	ND	0.22	0.17	ND	ND	NR	pp, SWQ
2,4-Dichlorophenol	ND	2.7	ND	ND	ND	0.24	ND	ND	ND	NR	pp, SWQ
2,4,6-Trichlorophenol	ND	ND	ND	ND	ND	0.22	ND	ND	ND	NR	pp, SWQ
2,4-Dinitrophenol	ND	ND	ND	ND	ND	0.81	ND	ND	ND	NR	pp, SWQ
Pentachlorophenol	ND	ND	ND	ND	0.31	6.9	5.1	ND	ND	NR	pp, SWQ, SWW
c Base Neutral Extractables											
Naphthalene	6.7	360	BD	BD	BD	230	BD	BD	BD	1	pp
Acenaphthylene	5.6	230	BD	BD	BD	24	BD	BD	BD	1	pp
Acenaphthene	8.0	560	BD	BD	BD	28	BD	BD	BD	1	pp
Fluorene	5.0	290	BD	BD	BD	20	BD	BD	BD	1	pp
Phenanthrene-Anthracene (***)	32	1,400	3	BD	BD	150	BD	1.6	BD	1	pp
Fluoranthene	16	530	BD	BD	BD	50	BD	1.1	BD	1	pp
Pyrene	18	550	BD	BD	BD	57	BD	1.2	BD	1	pp
Chrysene	12	92	BD	BD	BD	36	BD	1.7	BD	1	pp
Benzo (b) + Benzo (k) Fluoranthene (***)	8	120	BD	BD	BD	200	BD	BD	BD	1	pp
Benzo (a) pyrene	19	170	BD	BD	BD	100	BD	BD	BD	1	pp
Indeno (1,2,3-CD) Pyrene + Dibenzo (a,h) Anthracene (***)	BD	270	BD	BD	BD	7	BD	BD	BD	1	
Benzo (ghi) Perylene	BD	360	BD	BD	BD	25	BD	BD	BD	1	pp
d Pesticides (EP Toxicity)											
Gamma BHC (Lindane)	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.04	pp, SWW, PDW
Endrin	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.002	pp
Toxaphene	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	pp

PWR956.011.3

Table 1 (Continued)

Chemical Compounds	MW-1, S-3 (15-16.5 ft)	MW-2, S-4 (20-21.5 ft)	MW-3, S-5 (25-26.5 ft)	MW-4, S-1 (5-6.5 ft)	MW-4, S-7 (35-36.5 ft)	MW-5, S-2 (10-11.5 ft)	MW-6, S-3 (15-16.5 ft)	MW-7, S-5 (25-26.5 ft)	MW-7, S-8 (40-41.5 ft)	Detection Limits	Reference Criteria
Inorganic Analyses (EP Toxicity)											
Arsenic	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	pp, SHW, SWQ, PDW
Barium	0.05	0.11	0.05	0.09	BD	0.05	0.11	0.08	0.15	0.05	SHW, SWQ
Cadmium	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	pp, SHW, SWQ, PDW
Chromium	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	pp, SHW, SWQ, PDW
Lead	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	pp, SHW, SWQ, PDW
Mercury	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	pp, SHW, PDW
Selenium	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	pp, SHW, PDW
Silver	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	pp, SHW, PDW
Miscellaneous Analysis											
o non-PP Phenols/Cresols											
3 & 4-Chlorophenol	0.44	[illegible]	0.06	ND	ND	1.7	0.32	ND	ND	NR	SHW, SWQ
2,4,5-Trichlorophenol	ND	1.9	ND	ND	ND	ND	ND	ND	ND	NR	SHW, SWQ
2,3,4,5-Tetrachlorophenol	4.9	256	ND	0.40	ND	0.23	4.7	0.06	0.25	NR	SHW, SWQ
2,3,4,6-Tetrachlorophenol	0.24	ND	ND	ND	ND	ND	ND	1.0	ND	NR	SHW, SWQ
2,3,5,6-Tetrachlorophenol	ND	4.0	ND	0.58	0.11	0.33	0.55	ND	0.46	NR	SHW, SWQ
o-Cresol	0.04	3.4	ND	0.02	ND	0.19	0.05	ND	ND	NR	
m- and p-Cresol (***)	0.006	ND	ND	0.08	ND	ND	ND	ND	ND	NR	
o Non-PP Pesticides (EP Toxicity)											
Methoxychlor	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.1	SHW, PDW
2,4-D	BD	BD	BD	BD	BD	10.0	160.0	BD	BD	10	SHW, PDW
2,4,5-TP (Silvex)	BD	BD	BD	BD	BD	BD	BD	BD	BD	1	SHW, PDW
o Misc. Constituents/Parameters											
Oil and Grease	0.340%	0.1498%	0.0587%	0.914%	0.0304%	0.190%	0.0539%	0.0650%	0.0586%		

Unless otherwise specified, all units are mg/kg (mg/L).

pp Priority Pollutant
PDW National Interim Primary Drinking Water Regulations
PDW(*) Proposed N.I.P.D.W.R.
SHW State of Oregon Hazardous Waste Administrative Rules
SWQ State of Oregon Water Quality Administrative Rules
BD Parameter detected, but below analytical quantification limits.
ND Analyzed, but not detected.
NR Not reported.
(***) Reported as sum of two compounds.

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

April 30, 1995
Log #A950410-1

Wacker Siltronics
P.O. Box 03190
Portland, Oregon 97303

Analyses Requested: Oil and Grease, Phenols, Volatiles, and Polynuclear Aromatic Hydrocarbons

Sample Identifications:
#1 - MW1, S-3 (15.0' - 16.5')
#2 - MW2, S-4 (20.0' - 21.5')
#3 - MW3, S-5 (25.0' - 26.5')
#4 - MW4, S-1 (5.0' - 6.5')
#5 - MW4, S-7 (35.0' - 36.5')
#6 - MW5, S-2 (10.0' - 11.5')
#7 - MW6, S-3 (15.0' - 16.5')
#8 - MW7, S-5 (25.0' - 26.5')
#9 - MW7, S-8 (40.0' - 41.5')

SAMPLE #	OIL AND GREASE
#1	0.340 %
#2	0.1498 %
#3	0.0587 %
#4	0.0914 %
#5	0.0304 %
#6	0.190 %
#7	0.0535 %
#8	0.0650 %
#9	0.0586 %

THIS REPORT CONTINUES

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

Wacker Siltronic
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PHENOL RESULTS

ANALYSIS	SAMPLE #1 RESULTS
Phenol	0.35
O-Cresol	0.04
3 & 4 Chlorophenol	0.44
2,3,4,6 Tetrachlorophenol	0.34
2,3,4,5 Tetrachlorophenol	4.5
M & P Cresol	0.006

	SAMPLE #2 RESULTS
Phenol	3.1*
O-Cresol	3.4*
3 & 4 Chlorophenol	17.5*
2-Chlorophenol	7.8*
2-Nitrophenol	0.20
2,4 Dimethylphenol	3.1
2,4 Dichlorophenol	2.7
2,4,5 Trichlorophenol	1.9
2,3,5,6 Tetrachlorophenol	4.0
2,3,4,5 Tetrachlorophenol	355

	SAMPLE #3 RESULTS
Phenol	0.20
3 & 4 Chlorophenol	0.06
2-Chlorophenol	0.05

	SAMPLE #4 RESULTS
Phenol	0.30
2-Chlorophenol	0.25
O-Cresol	0.02
M & P Cresol	0.08
2,3,5,6 Tetrachlorophenol	0.59
2,3,4,5 Tetrachlorophenol	0.40

	SAMPLE #5 RESULTS
Phenol	0.17
2,3,5,6 Tetrachlorophenol	0.11
Pentachlorophenol	0.21

Results reported in mg/kg

THIS REPORT CONTINUED

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PHENOL RESULTS

ANALYSIS	SAMPLE #6 RESULTS
Phenol	0.07
O-Cresol	0.19
2,4 Dimethylphenol	0.22
2,4 Dichlorophenol	0.24
3 & 4 Chlorophenol	1.7
2,4,6 Trichlorophenol	0.22
2,3,5,6 Tetrachlorophenol	0.33
2,3,4,5 Tetrachlorophenol	0.23
2,4 Dinitrophenol	0.61
Pentachlorophenol	5.9

	SAMPLE #7 RESULTS
Phenol	0.05
O-Cresol	0.05
2-Chlorophenol	0.13
2,4 Dimethylphenol	0.17
3 & 4 Chlorophenol	0.32
2,3,5,6 Tetrachlorophenol	0.55
2,3,4,5 Tetrachlorophenol	4.7
Pentachlorophenol	5.1

	SAMPLE #8 RESULTS
Phenol	0.05
2,3,4,6 Tetrachlorophenol	1.0
2,3,4,5 Tetrachlorophenol	0.05

	SAMPLE #9 RESULTS
Phenol	0.03
2-Chlorophenol	0.14
2,3,5,6 Tetrachlorophenol	0.45
2,3,4,5 Tetrachlorophenol	0.25

Results reported in mg/kg

THIS REPORT CONTINUED

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EP TOXICITY PESTICIDES

Results below apply to the water extract of soil samples. Water extracts performed as per EPA Specification of EP-Toxicity Method.

SAMPLE #	ENDRIN	LINDANE	METHOXYCHLOR	TOXAPHENE
#1	<0.002	<0.04	<0.1	<0.05
#2	<0.002	<0.04	<0.1	<0.05
#3	<0.002	<0.04	<0.1	<0.05
#4	<0.002	<0.04	<0.1	<0.05
#5	<0.002	<0.04	<0.1	<0.05
#6	<0.002	<0.04	<0.1	<0.05
#7	<0.002	<0.04	<0.1	<0.05
#8	<0.002	<0.04	<0.1	<0.05
#9	<0.002	<0.04	<0.1	<0.05
Allowed Limits	0.02	0.4	10	0.5

< denotes "less than"

Results expressed in mg/liter

EP TOXICITY HERBICIDES

SAMPLE #	2,4-D	2,4,5 TP (SILVEX)
#1	<10 (mg/liter)	<1 (mg/liter)
#2	<10	<1
#3	<10	<1
#4	<10	1
#5	<10	<1
#6	10.0	<1
#7	150.0	<1
#8	<10	<1
#9	<10	<1

THIS REPORT CONTINUED

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Subject: E P Toxicity Test.

Method of Analysis: Federal Register/Vol.45, No.98/Monday, May 19, 1980/ Rules and Regulations; Appendix II, Page 33127

Field Data: Samples were collected and delivered by the Client

ANALYSIS	#1	#2	#3	#4	#5
Arsenic	<0.05	<0.05	<0.05	<0.05	<0.05
Barium	0.05	0.11	0.05	0.09	<0.05
Cadmium	<0.05	<0.05	<0.05	<0.05	<0.05
Chromium	<0.05	<0.05	<0.05	<0.05	<0.05
Lead	<0.05	<0.05	<0.05	<0.05	<0.05
Mercury	<0.05	<0.05	<0.05	<0.05	<0.05
Selenium	<0.05	<0.05	<0.05	<0.05	<0.05
Silver	<0.05	<0.05	<0.05	<0.05	<0.05

ANALYSIS	#6	#7	#8	#9	Limit
Arsenic	<0.05	<0.05	<0.05	<0.05	5.0
Barium	0.05	0.11	0.09	0.15	100.0
Cadmium	<0.05	<0.05	<0.05	<0.05	1.0
Chromium	<0.05	<0.05	<0.05	<0.05	5.0
Lead	<0.05	<0.05	<0.05	<0.05	5.0
Mercury	<0.05	<0.05	<0.05	<0.05	0.2
Selenium	<0.05	<0.05	<0.05	<0.05	1.0
Silver	<0.05	<0.05	<0.05	<0.05	5.0

< denotes "less than"

Results expressed in mg/liter

THIS REPORT CONTINUED

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VOLATILES (HEADSPACE ANALYSIS)

COMPOUND	#1	#2	#3	#4	#5
1,2-Dichloro-ethane	<0.01	<0.01	<0.01	<0.01	<0.01
1,1,1-Trichloro-ethane	0.01	<0.01	<0.01	<0.01	<0.01
Toluene	1.2	20	0.11	<0.1	<0.1
1,1,2,2 Tetra-chloroethylene	2.2	11	<0.05	<0.05	<0.05
Chlorobenzene	0.04	<0.04	<0.04	<0.04	<0.04
Ethyl Benzene	17.0	5.4	<0.04	<0.04	<0.04
Xylene	146	116	<1.0	<1.0	<1.0

COMPOUND	#6	#7	#8	#9
1,2-Dichloro-ethane	<0.01	<0.01	<0.01	<0.01
1,1,1-Trichloro-ethane	<0.01	<0.01	<0.01	<0.01
Toluene	0.20	<0.1	<0.1	<0.1
1,1,2,2 Tetra-chloroethylene	0.14	<0.05	<0.05	<0.05
Chlorobenzene	<0.04	<0.04	<0.04	<0.04
Ethyl Benzene	<0.04	<0.04	<0.04	0.05
Xylene	1.8	<1.0	2.8	1.2

< denotes "less than"

Results reported in mg/kg

Some interference was encountered due to naphthalene and some of the more volatile phenols and PNA's.

THIS REPORT CONTINUES

COFFEY LABORATORIES, INC.
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POLYNUCLEAR AROMATIC HYDROCARBONS

COMPOUND	#1	#2	#3	#4	#5
Naphthalene	6.7	360	< 1	< 1	< 1
Acenaphthalene	5.5	230	< 1	< 1	< 1
Acenaphthene	9.0	550	< 1	< 1	< 1
Fluorene	5.0	290	< 1	< 1	< 1
Phenanthrine-Anthracene	32	1400	3	< 1	< 1
Fluoranthrene	16	530	< 1	< 1	< 1
Pyrene	19	550	< 1	< 1	< 1
Chrysene	12	92	< 1	< 1	< 1
Benzo(b) + Benzo(k) Fluoranthrene	8.0	120	< 1	< 1	< 1
Benzo(a)Pyrene	19	120	< 1	< 1	< 1
Indeno(1,2,3-CD) Pyrene+Dibenzo (a,b)Anthracene	< 1	270	< 1	< 1	< 1
Benzo(ghi)-Perylene	< 1	360	< 1	< 1	< 1

COMPOUND	#6	#7	#8	#9
Naphthalene	230	< 1	< 1	< 1
Acenaphthalene	24	< 1	< 1	< 1
Acenaphthene	28	< 1	< 1	< 1
Fluorene	20	< 1	< 1	< 1
Phenanthrine-Anthracene	150	< 1	1.8	< 1
Fluoranthrene	50	< 1	1.1	< 1
Pyrene	57	< 1	1.2	< 1
Chrysene	36	< 1	1.7	< 1
Benzo(b)+Benzo(k) Fluoranthrene	200	< 1	< 1	< 1
Benzo(a)Pyrene	100	< 1	< 1	< 1
Indeno(1,2,3-CD Pyrene+Dibenzo (a,b)Anthracene	7	< 1	< 1	< 1
Benzo(ghi)-Perylene	25	< 1	< 1	< 1

< denotes "less than"
Results reported in mg/kg

Sincerely,

Susan M. Coffey

Susan M. Coffey
President

SMC/ab

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-1	SHEET 1 OF 2

SOIL BORING RECORD DRAWING

PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 8" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
	5	5.0				SILT, low plasticity, medium gray with brown mottling, moist, soft (ML), fill.	
		6.5	S-1	18	1-1-1 (2)		
	10	10.0				Upper 10" - SILT, same as S-1, some hydrocarbon odor (Jar 1 of 2), fill.	
		11.5	S-2	6	4-4-5 (9)	Lower 8" - SAND, poorly graded, fine sand, dark gray, wet compact (SP), heavily saturated with oil, strong odor (Jar 2 of 2), fill.	
	15	15.0				SAND, poorly graded, fine sand, dark gray, wet, compact (SP), heavily saturated with oil, fill.	
		16.5	S-3	18	3-4-5 (9)		
	20	20.0				SAND, same as S-3, heavily saturated with oil, fill.	
		21.5	S-4	18	4-3-4 (7)		
	25	25.0				Upper 14" - SAND as in S-3 (SP), mild hydrocarbon odor, probably is slough from washing out heave and not representative.	
		26.5	S-5	18	3-3-4	Lower 4" - SILT, low plasticity, medium brownish gray, moist, firm (ML), no noticeable hydrocarbon odor, probably native soil.	

SYMBOLIC LOG

COMMENTS:

- Grout to surface
- Top of bentonite at 2 1/2'
- Top of gravel at 5'
- Screen top at 7'
- Driller notes water at ±9'
- Prominent oily sheen and odor in cuttings between 10' and 15'
- Screen bottom at 22'
- Driller notes 3 feet of heave at 25', had to wash out hole to clean out heave
- Fill
- Native ±21'
- Sump bottom at 27'

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-1	SHEET 2 OF 2

SOIL BORING RECORD DRAWING

PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
	30	30.0						
		31.5	S-6	18	4-4-5 (9)	SILT, low plasticity, medium brownish gray, moist to wet, includes some sandy silt in upper 6", firm (ML), no noticeable hydrocarbon odor, native soil.		Bottom gravel at 31.5'
						END MW at 31.5 feet.		
								Worst samples
								S-2, Jar 2 of 2 and S-3 are equally bad, more sample in S-3 for testing.

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-2	SHEET 1 OF 2

SOIL BORING RECORD DRAWING

PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME GRADATION OR PLASTICITY PARTICLE SIZE DISTRIBUTION COLOR MOISTURE CONTENT RELATIVE DENSITY OR CONSISTENCY SOIL STRUCTURE MINERALOGY USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING DRILLING RATE DRILLING FLUID LOSS TESTS AND INSTRUMENTATION
								Grout to surface
								Top of bentonite at 3'
								Top of gravel at 4 1/2'
	5	5.0						
		6.5	S-1	18	1-2-3 (5)	SAND, poorly graded, fine sand, brown, moist, loose (SP), fill.		
								Screen top at 7 1/2'
								Driller notes water at 8';
	10	10.0						
		11.5	S-2	0	1-4-5	NO RECOVERY; sample tube came up oily, strong hydrocarbon odor, sandy material on outside of sampler.		
								15' screen 2" schedule 40 10 slot PVC
	15	15.0						
		16.5	S-3	18	1-1-2 (3)	SAND, poorly graded, fine sand, chalk gray, wet, loose (SP), some lenses of silt; strong hydrocarbon odor, oily material observed on sample fill.		
								Driller notes considerable degree of oiliness to cutting from 15'-25', more than in MW-1
	20	20.0						
		21.5	S-4	18	5-6-6 (12)	SANDY SILT, non-plastic, ~30% fill sand, medium to dark gray, wet, firm, (ML), strong hydrocarbon odor, noticeable oil in sample fill?		
								Screen bottom at 22'
								5' sump
	25	25.0						
		26.5	S-5	19	3-5-5 (10)	Upper 14" - SAND, as in S-3. Includes strong hydrocarbon odor and visible oil in sample, material may be slough from drilling and washing out heaved zone, may not be representative of 25'-26.5' interval.		Driller notes 2' heave at 25', had to wash out hole
						Lower 4" - SILT, low plasticity, medium grayish brown, firm, moist (ML), no apparent hydrocarbon, native.		Samp bottom at 27' 4"

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-2	SHEET 2 OF 2

SOIL BORING RECORD DRAWING

PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION (NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL)	SYMBOLIC LOG	COMMENTS (DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION)
	30							
		31.5	S-6	18	3-3-4 (7)	SILT, low plasticity, grayish brown, moist, firm (ML), no noticeable hydrocarbon odor, native soil.		
						END MW at 31.5 feet		
								Worst sample
								S-3, S-4 - about the same

REV. 11-92 FORM 01556

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-3	SHEET 1 OF 2

SOIL BORING RECORD DRAWING

PROJECT **WACKER SILTRONIC CORPORATION** LOCATION **PORTLAND, OREGON**

ELEVATION _____ DRILLING CONTRACTOR **GEOTECH EXPLORATIONS, BEAVERTON, OREGON**

DRILLING METHOD AND EQUIPMENT **CME-55, 6" HS AUGERS**

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
	5	5.0						Silty topsoil, then sandy cuttings to 5'
		6.5	S-1	18	7-8-2 (8)	SAND, poorly graded, fine sand, ~15% fine, but some interlayers of silt, medium dense, dry, light brown, (SP), fill.		Grout to surface
								Cuttings change to dark gray silt at ±7'
								7' top of bentonite soil
								Top of sand pack 8 1/2'
	10	10.0						
		11.5	S-2	18	2-2-7 (9)	Interbedded silt and sand, same as above (SP), except gray, SILT, low plasticity, 10-15% sand, odor, light gray, moist, firm (ML), fill.		Screen top 12'
	15	15.0						Driller notes H_2O at ±15'
		16.5	S-3	18	1-4-10 (14)	SAND, poorly graded, same as S-1, except strong hydrocarbon odor (SP), fill.		First notice hydrocarbon odor in cutting at 15'
	20	20.0						18' schedule 40 2" 10 slot PVC screen
		21.5	S-4	18	4-4-7 (11)	Interbedded silt and sand, same as S-2, except includes partially decomposed wood fragments and mild to strong hydrocarbon odor, wet, gray, fill.		
	25	25.0						
		26.5	S-5	18	5-6-6 (12)	SAND, poorly graded, fine sand, less than 10% fine, wet, medium to dark gray, compact (SP), strong hydrocarbon odor, fill.		Screen bottom 27'
								5'- 4" Sump
	30	30.0						

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-3	SHEET 2 OF 2

SOIL BORING RECORD DRAWING

PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
		31.5	S-4	18	4-5-5 (10)	SAND, poorly graded, fine sand, some interbedded silt in lower 2-4", medium gray, wet, medium dense, strong hydrocarbon odor, SP.		Sump bottom at 32'- 4"
								Bottom of fill at ±34 1/2'
	35	35.0						Augered to 35' and driller notes 3' of heave; opted to remove check ball from sampler and jet it to sample position in hopes of getting recovery; sample may be disturbed; pumped fresh water into hole (sample of water taken).
		38.5	S-7	18	4-6-6 (12)	Upper 14" - mixture of sand and silt, probably washed cavings. Lower 4" - SILT, low plasticity, medium to dark gray, moist, firm (ML), slight hydrocarbon odor in upper 12", not noticeable in lower 6", sand and silt were mixed together in jar, silt is probably native soil.		
	40	40.0						
		41.5	S-8	6"	3-3-3 (3)	Upper 12" - sand as in S-6, but is washed, probably is heaved material, discarded. Lower 6" - SILT, low plasticity, medium to dark gray, moist, firm (ML), probably native soil, no noticeable hydrocarbon odor.		Worst samples
								Sample choices, any of S-3, S-4, S-5, S-6.

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-4	SHEET 1 OF 2

SOIL BORING RECORD DRAWING

PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
	5	3.0				Upper 9" - SAND, poorly graded, fine sand, brown, moist to wet, loose (SP).		Hole is within 20' of abandoned natural gas line
		6.5	S-1	18	5-1-2 (3)	Lower 9" - SILT, non-plastic, 10-20% fine sand, dark gray, moist, soft (ML), fill.		Grout 5' to surface
	10	10.0				Upper 6" - SAND, same as S-1, maybe slough.		Bentonite from 5-6'
		11.5	S-2	18	11-13-11 (24)	Lower 12" - SILT, same as above.		Screen top at 5 1/2'
	15	15.0				SAND, poorly graded, fine sand, saturated, loose, (SP), maybe slough, possible mild odor of hydrocarbon.		Some gravel - like material at 8'
		16.5	S-3	6"	3-3-4 (7)			Driller notes water at ±8';
	20	20.0				SILT, low plasticity, brownish gray, moist, firm, (ML), native soil; included pieces of wills, probably dragged into sample.		15' screen 10 slot 2" schedule 40 PVC
		21.5	S-4	18	1-4-4 (8)			Place wood jammed into end of shoe
	25	25.0				SILT, same as above.		Fill ±20' Native
		26.5	S-5	12	4-4-4 (8)			Screen bottom at 21 1/2'
	30	30.0						5'-4" Sump
								Tailpiece bottom at 27'
								Bentonite from 27-28'
								Gravel to 41 1/2'

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-4	SHEET 2 OF 2

SOIL BORING RECORD DRAWING

PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
		31.5	S-6	18	4-5-4 (9)	SILT, low plasticity, gray with brown mottling, moist, firm (ML), includes some decomposed plant fragments.		
	35	35.0						
		36.5	S-7	6	2-3-8 (11)	SANDY SILT, non-plastic, 30-50% fine sand, brown, moist, firm (ML).		Gravel to 41 1/2'
	40	40.0						
		41.5	S-8	8				
						END MW at 41.5'		
								Worst samples
								None - all have clean appearance

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-5	SHEET 1 OF 2

SOIL BORING RECORD DRAWING

PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

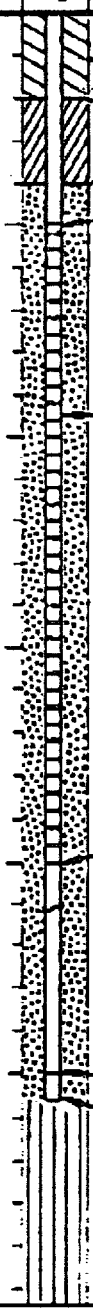
ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
	5	5.0					
		6.5	S-1	19	4-4-8 (12)	SAND, poorly graded, fine sands, brown and gray, some 1/2" silt lenses, moist, loose; includes some oil sheen and odor.	
	10	10.0					
		11.5	S-2	18	6-8-6 (14)	SAND, poorly graded, fine sand, dark gray, wet, loose to compact, (SP), fill, saturated with oil (split samples taken, Jar 1 and Jar 2).	
	15	15.0					
		16.5	S-3	19		SAND, same as S-2, except only has oily odor and occasional sheen in soil.	
	20	20.0					
		21.5	S-4	18	3-4-5 (9)	SAND, same as S-2, except has mild odor of oil; silt to top.	
	25	25.0					
		26.5	S-5	0	3-5-10 (15)	SILT, low plasticity, 10-15% fine sand, medium gray with brown, yellow and reddish mottling, slightly moist, very stiff (ML), no noticeable hydrocarbon odor.	
	30	30.0					

SYMBOLIC LOG



COMMENTS:

- Grout to surface
- Top of bentonite seals = 2'
- Top of sand at 4'
- Screen top at 5'
- Dark gray sandy material in cuttings from 5'-10', noticeable oily smell and sheen
- Driller notes water 5'-10'
- Screen bottom at 20'
- Silt in tip of sampler, for S-4 fill ±21
- Native
- Sump bottom at 25'
- Tailpiece bottom at 25' - 4"
- NOTE: Driller lost steel weight for tape in hole at 30 feet, not recovered.

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-5	SHEET 2 OF 2

SOIL BORING RECORD DRAWING

PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
		31.5	S-6	18	4-5-5 (10)	SILT, low plasticity, about 10% fine sand, gray with brown mottling, moist, stiff (ML), no noticeable hydrocarbon odor.		
						END MW at 31.5 feet.		
								Worst samples
								S-2 = worst S-3

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-6	SHEET 1 OF 2

SOIL BORING RECORD DRAWING

PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION (NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL)	SYMBOLIC LOG	COMMENTS (DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION)
								Grout to surface
	5	5.0						
		6.5	S-1	18	3-8-11 (19)	SAND, poorly graded, fine sand, less than 10% fine, brown, moist, compact (SP), RR.		Bentonite to 6 1/2'
								Sand to 7 1/2'
								Top of screen at 9'
	10	10.0						
		11.5	S-2	18	10-10-11 (21)	Primarily sand, as in S-1, but with several 1-inch silt layers; lower 6" of sample has strong hydrocarbon odor to it.		
								Driller notes water at ±12', coincident with appearance of "oily" odor from cuttings while drilling from 10-15'
	15	15.0						
		16.5	S-3	18	1-1-2 (3)	SAND, as in S-1, except lower 6" have blackish discoloration and strong hydrocarbon odor; small oily splotches noticeable in soil.		
	20	20.0						
		21.5	S-4	18	3-3-6 (9)	Upper 6" - SAND as in S-1, have blackish discoloration and hydrocarbon odor, RR. Lower 12" - SILT, low plasticity, gray with brown mottling, firm (ML), hydrocarbon odor not noticeable.		A-rods came out of hold with unusual yellow discoloration from water at 20-25'
								Bottom of screen at 24'
	25	25.0						
		26.5	S-5	18	9-26-26 (52)	SAND, as in S-1, but dark gray with mild hydrocarbon odor, material might be heaved sands and not representative of in-situ soil at 25'.		Driller notes 4' of heave after drilling to 25'; size, chain fell in hole, but was able to recover by retracting augers from hole; Augers moved during SPT from S-5, driller says no contact with sampler; why so high of an N value?
	30	30.0						Sump to 29 1/2'

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19435.A2	MW-6	SHEET 2 OF 2

SOIL BORING RECORD DRAWING

PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
		31.5	S-6	18	5-7-12 (19)	All 18" of soil in barrel is SAND, poorly graded, fine sand, less than 10% fine, medium to dark grey, wet, compact, (SP), probably heave or disturbed soil, not representative of 30' depth: mild hydrocarbon odor. 2" of soil in shoe of sampler is SANDY SILT, non-plastic, 30-50% fine sand, medium grey, wet, firm, (ML); no noticeable hydrocarbon odor, sandy silt is probably representative of in-situ soil.		Driller notes 3' of heave from 30-33' prior to sampling S-6; had to drill/wash out heave
								Sample choices S-3

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-7	SHEET 1 OF 2

SOIL BORING RECORD DRAWING

PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
	5	5.0				Lower 6" - SILT, low plasticity, moist, gray, soft (ML).		Grout to surface
		6.5	S-1	12"	1-3-1 (4)	Upper 6" - SAND, poorly graded, fine sand, brown, wet, loose, (SP), fill.		5 1/2' top of bentonite
								Cavings around PVC 7-15'
	10	10.0				SAND as in upper 6" of S-1, (SP), fill.		10' of top of screen
		11.5	S-2	14	5-6-11 (18)			Driller notes water at ±12'
								15' section 10 slot PVC wells
	15	15.0				SAND, same as upper 6" of S-1 (SP), fill.		During well construction, drill hole walls began squeezing in at 5' up to 7'. sand was packed in auger and walls apparently squeezed in faster than sand could drop out. Had twice unsuccessfully to jet-out sand.
		16.5	S-3	18	2-1-6			
	20	20.0				Upper 6" - sand as in upper 6" of S-1, (SP), fill; mild hydrocarbon odor.		Fill
		21.5	S-4	16	5-5-6 (11)	Lower 12" - SILT, low plasticity, medium brown with gray mottling, moist, firm, (ML); native soil.		Native
	25	25.0				Upper 9" - SILT, low plasticity, medium brown with gray mottling, moist, firm, (ML).		25' bottom screen
		26.5	S-5	10	4-3-4 (7)	Lower 9" - SAND, poorly graded, fine sand, medium gray, wet, loose, (SP), strong hydrocarbon odor, visible blotches of oil (?) in both silt and sand.		5'-4" Sump
								Bottom of Sump = 30'
	30	30.0						Driller notes heave at 30' ±4' of heave

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-7	SHEET 2 OF 2

SOIL BORING RECORD DRAWING

PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
		31.5	S-5	18	2-1-2 (3)	Lower 9" - SAND, poorly graded, fine, brown, wet, soft, (SP). Upper 9" - SAND, very fine, brown, wet, loose, (SM); All has definite hydrocarbon (?) odor, not visible in soil, however. Sample may be disturbed, heavy material.		Reamed out heaved area from 26 to 32' with wash water and intake bit to clear auger. Backfill to 32'-4"
		35.0						
35		36.5	S-7	19	3-5-5 (10)	SANDY SILT, low plasticity, 20-30% fine sand, medium brown, moist, soft, (ML); noticeable hydrocarbon (?) odor.		
		40.0						
40		41.5	S-8	14"	6-11-17 (28)	Upper 7" - SILT, low plasticity, brown, wet, firm, (ML). Lower 7" - SILTY SAND, fine sand, about 30% fine, brown, wet, compact, (SM); both silt and sand have noticeable hydrocarbon (?) odor, no visible traces. END MW at 41.5 feet		Sample choices (Ranked from worst) *S-6 S-8 S-7 - S-8 (about the same) *amount of odor

CH2M HILL
engineers
planners
economists
scientists

2912 8-2-78

23 September 1977

P11139.A5

Wacker-Chemitronic
Burghausen, Germany

Gentlemen:

Subject: Vibration and Geotechnical Investigations
High Purity Silicon Plant
Portland, Oregon

Transmitted herewith is the report of our vibration and geotechnical investigations performed for your proposed Portland plant site. Described in the report are the vibration measurements, the field and laboratory tests, and our analysis and evaluation of the data.

We have enjoyed the opportunity of working with you on this interesting project. If you have any questions regarding this report, or if we may be of further assistance, please contact us.

Respectfully,

John Ramage

John Ramage

Wacker-Chemitronic
Burghausen, West Germany

GEOTECHNICAL AND VIBRATION MONITORING INVESTIGATIONS

for

HIGH-PURITY SILICON PLANT
PORTLAND, OREGON

Prepared by
CH2M HILL
200 S.W. Market Street
Suite 1200
Portland, Oregon 97201

September 1977 P11139.A5

SCOEPA00036463

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Chapter 1
INTRODUCTION

This report describes an investigation by CH2M HILL of soil conditions and background vibrations at the proposed Wacker-Chemitronic plant site, Portland, Oregon. The purpose of the investigation was to assess subsurface conditions, measure surface vibration levels, and make preliminary foundation design recommendations for the plant site.

PROJECT DESCRIPTION

The proposed plant site is located in Northwest Portland. A vicinity map and site plan of the site are shown on Figure 1. The site is undeveloped at the present time. Underground utilities (oil, gas, water, and sewer) cross the site within the Front Avenue right-of-way. Overhead electric power lines also cross the site along the Front Avenue extension. Topography is fairly level with an average elevation of about +34 feet mean sea level (MSL).

The proposed plant will manufacture poly-crystal electronic circuits by means of crystalization of molten silicon. The manufacturing process can be adversely affected by high levels of vibration. Crystal-growing operations are to be located within the northwest half of the mono-silit building as shown on Figure 1. All buildings will tentatively be constructed with slab-on-grade, concrete wall and column footings. Two alternatives, concrete panels and corrugated metal siding, are being considered for the building walls. Most of the buildings will not exceed two stories in height. No basements are planned. The dikes and ponds will be constructed with rolled earth and a membrane liner.

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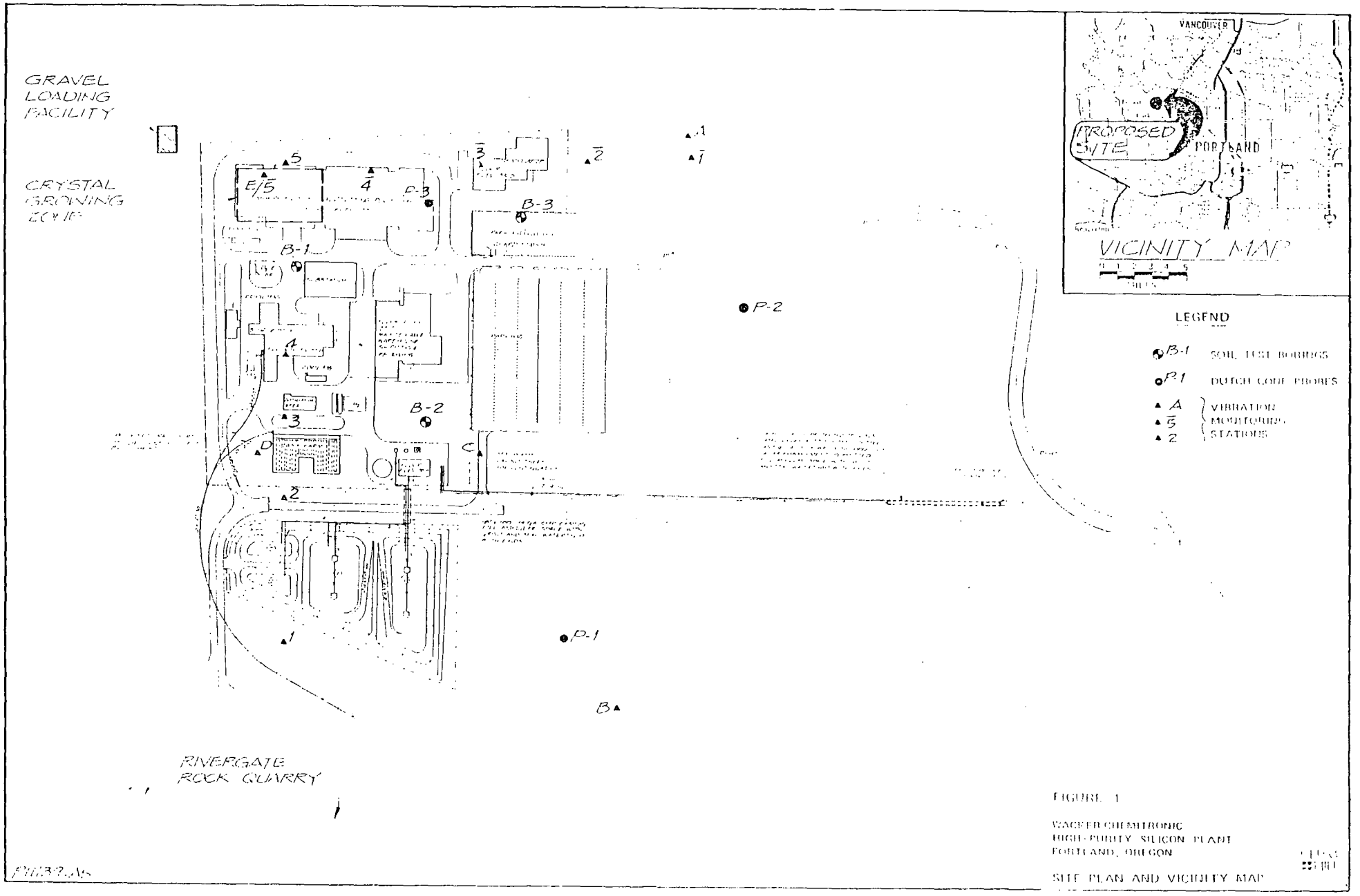

FIGURE 1

WACKER CHEMITRONIC
HIGH-PURITY SILICON PLANT
PORTLAND, OREGON

SITE PLAN AND VICINITY MAP

SCOPE

For this investigation, we have performed the following scope of work:

- Conducted a subsurface exploration program to evaluate the subsurface soil profile.
- Performed laboratory tests on subsurface soil samples.
- Arranged for and assisted with an on-site vibration monitoring program.
- Conducted engineering analyses to deterine foundation design parameters.
- Prepared this report summarizing the exploration, testing, monitoring, and analyses programs.

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Chapter 2
SITE INVESTIGATION

AREA GEOLOGY

The project site is located on the western flank of the Oregon Willamette Valley. Within the vicinity, the Willamette Valley consists of a downwarped (or faulted) synclinal basin. The upper geologic unit at the site is the Willamette silt, an unconsolidated deposit of silts, fine sands, and clays. Basalts of the Columbia River series constitute the bedrock formation beneath the site. The Rivergate Rock Quarry, adjacent to the site, mines and processes basalt from the Columbia River series.

SUBSURFACE INVESTIGATION

Three soil test borings and three Dutch cone (static penetrometer) probes were performed for the subsurface investigation. The test borings were completed between the ninth and tenth of August, 1977; the probes were completed between the sixteenth and seventeenth of August, 1977. The test borings were advanced using a SIMCO SK 2400 Versa Drill. A bentonite slurry was used during drilling operations to maintain the holes. Field logging of the test borings and supervision of the Dutch cone probes was performed by a member of the CH2M HILL geotechnical engineering staff. Soil samples were obtained from the test borings at roughly 5-foot intervals using 3-inch O.D. Shelby tubes or Standard Penetration Test (ASTM D-1586) samplers. Locations of the test borings and probes were field-determined using stadia measurements. The subsurface test locations are shown on Figure 1. Logs

SCOEPA00036469

of the borings and the probes are shown on Figures 2 and 3, respectively.

LABORATORY TEST PROGRAM

Material classification tests included visual examination of all soil samples plus selected Atterberg limit tests. Unit weight, moisture content, and grain size analyses were performed on representative samples. Strength and consolidation parameters were determined for subsurface strata within the upper 30 feet of the soil profile. Consolidation test results are shown on Figure 4. Table 1 summarizes the soil test data. Symbols used in Table 1 are defined in Appendix A.

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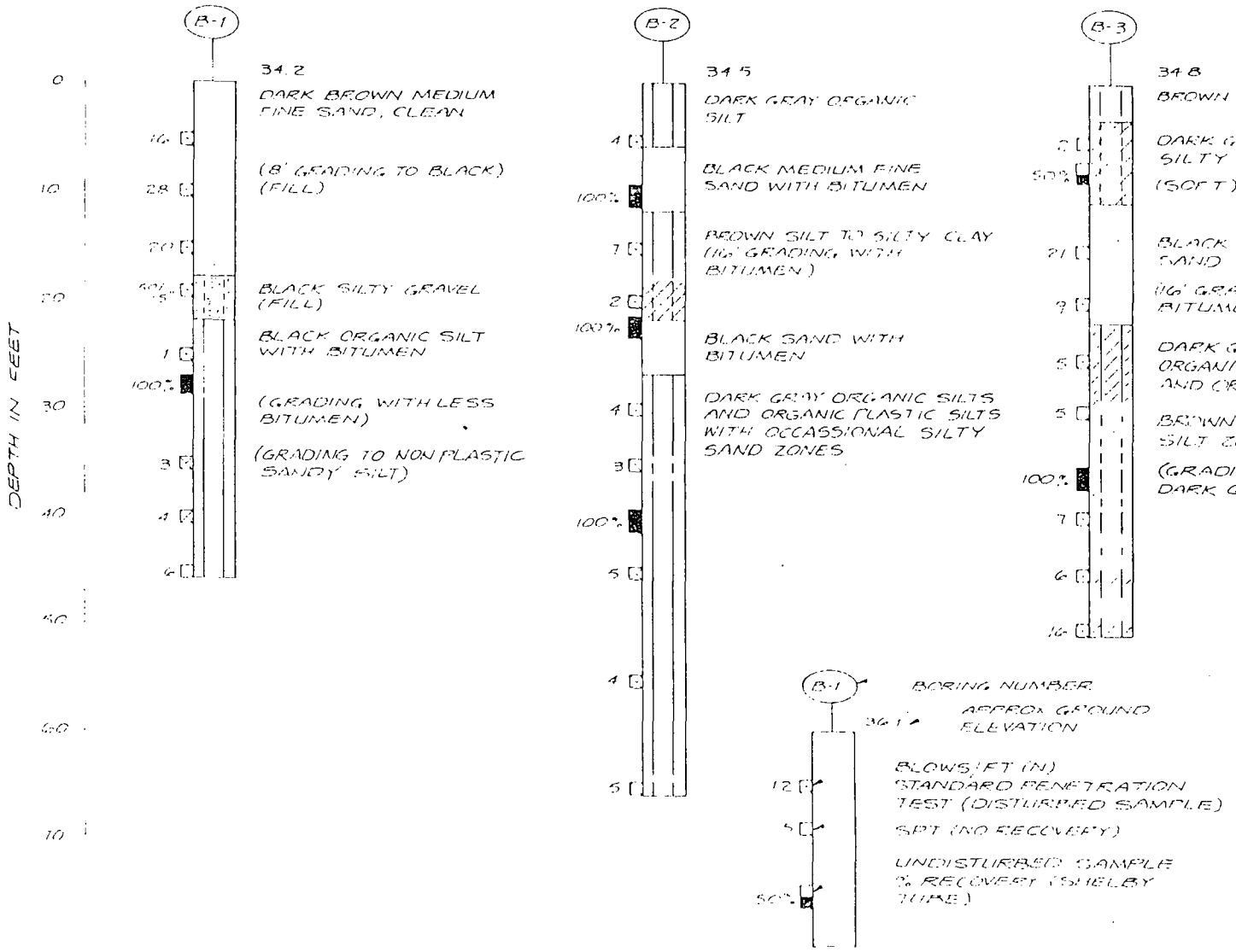

BORING LOG LEGEND

FIGURE 2

WALKER CHEMTRONIC
HIGH PURITY SILICON PLANT
PORTLAND, OREGON

SOIL BORING LOGS

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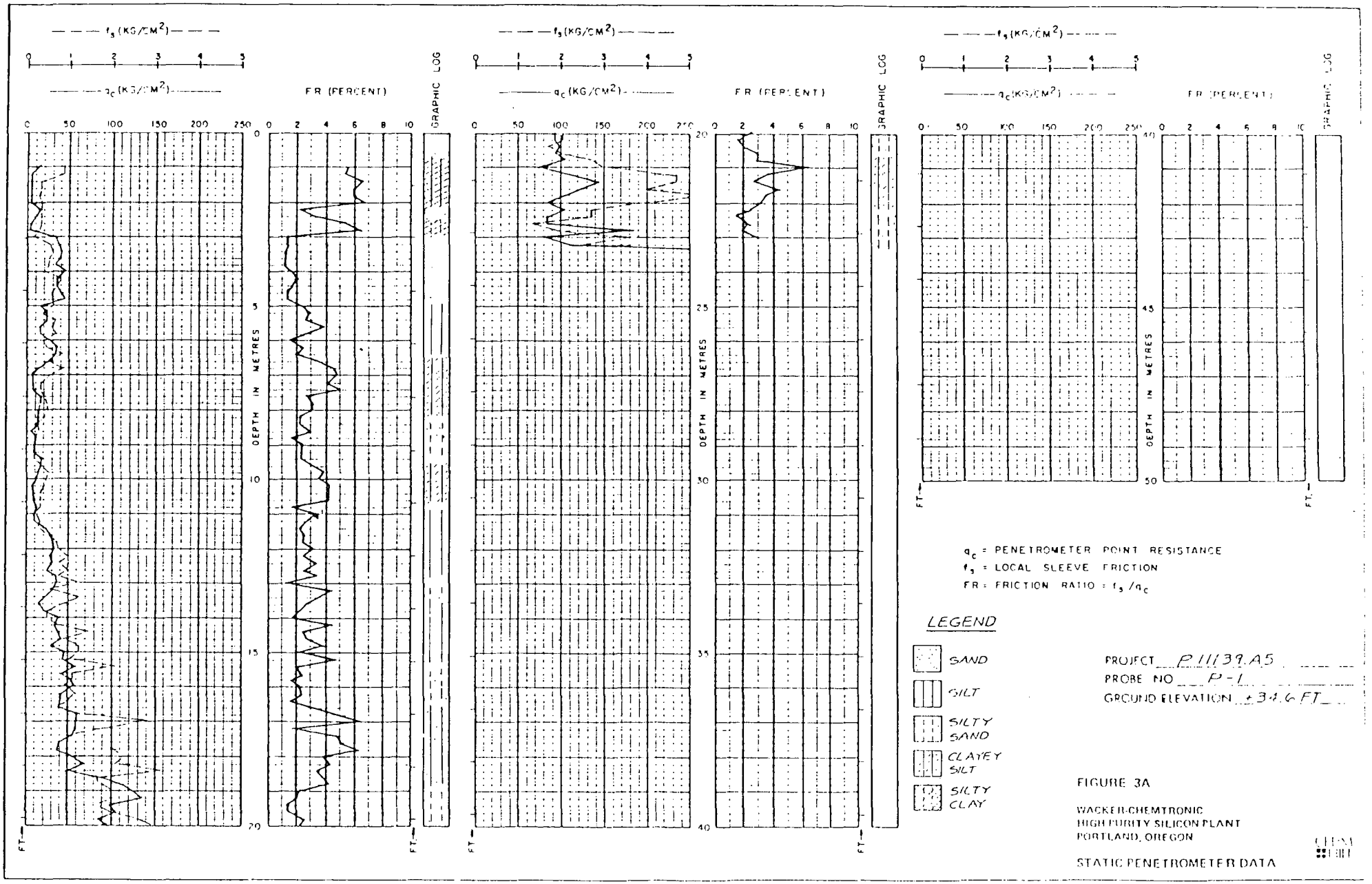


FIGURE 3A

WACKER-CHEMTRONIC
HIGH PURITY SILICON PLANT
PORTLAND, OREGON

STATIC PENETROMETER DATA

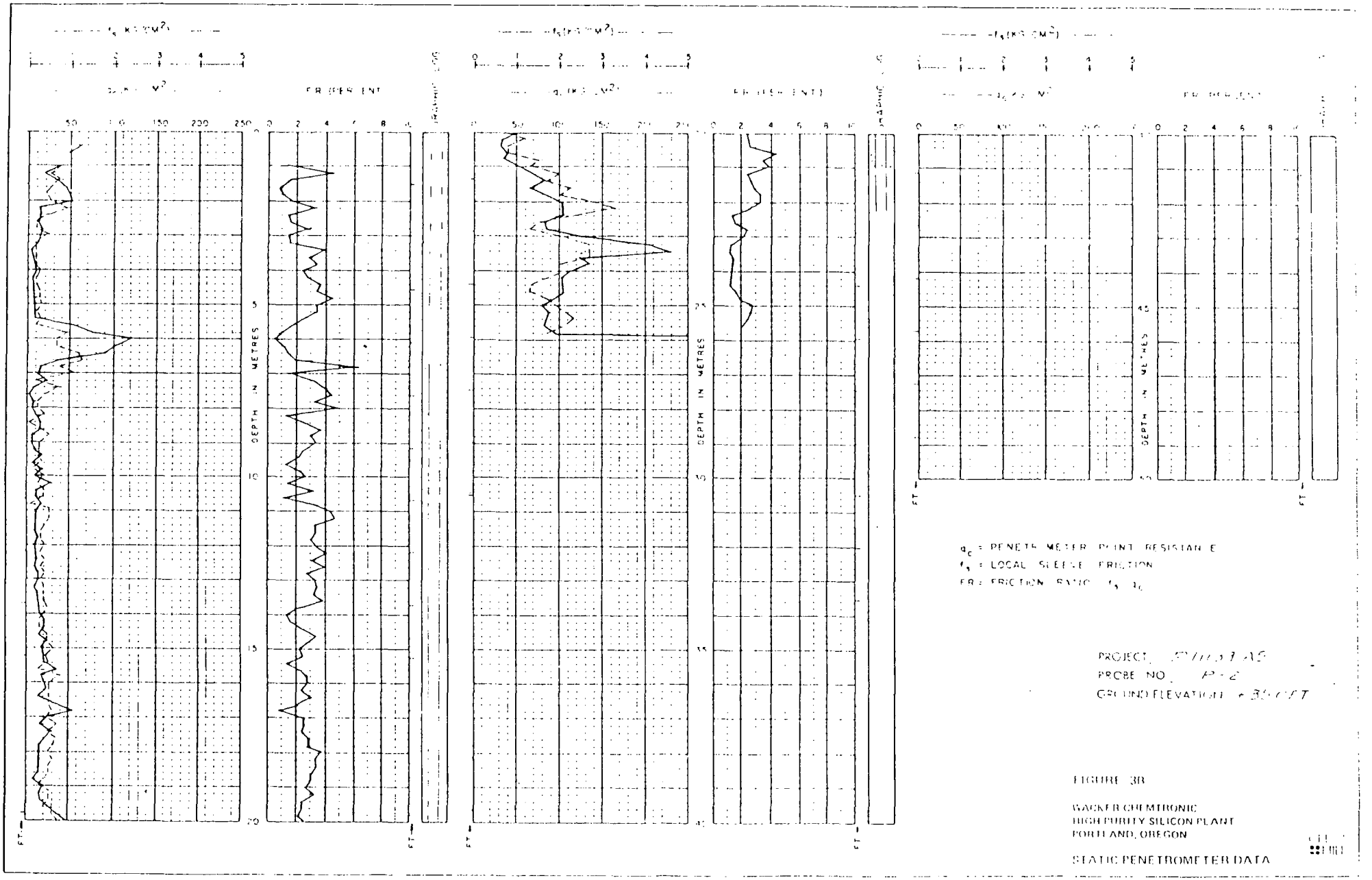


FIGURE 3B

WACKER CHEMTRONIC
HIGH PURITY SILICON PLANT
PORTLAND, OREGON

STATIC PENETROMETER DATA

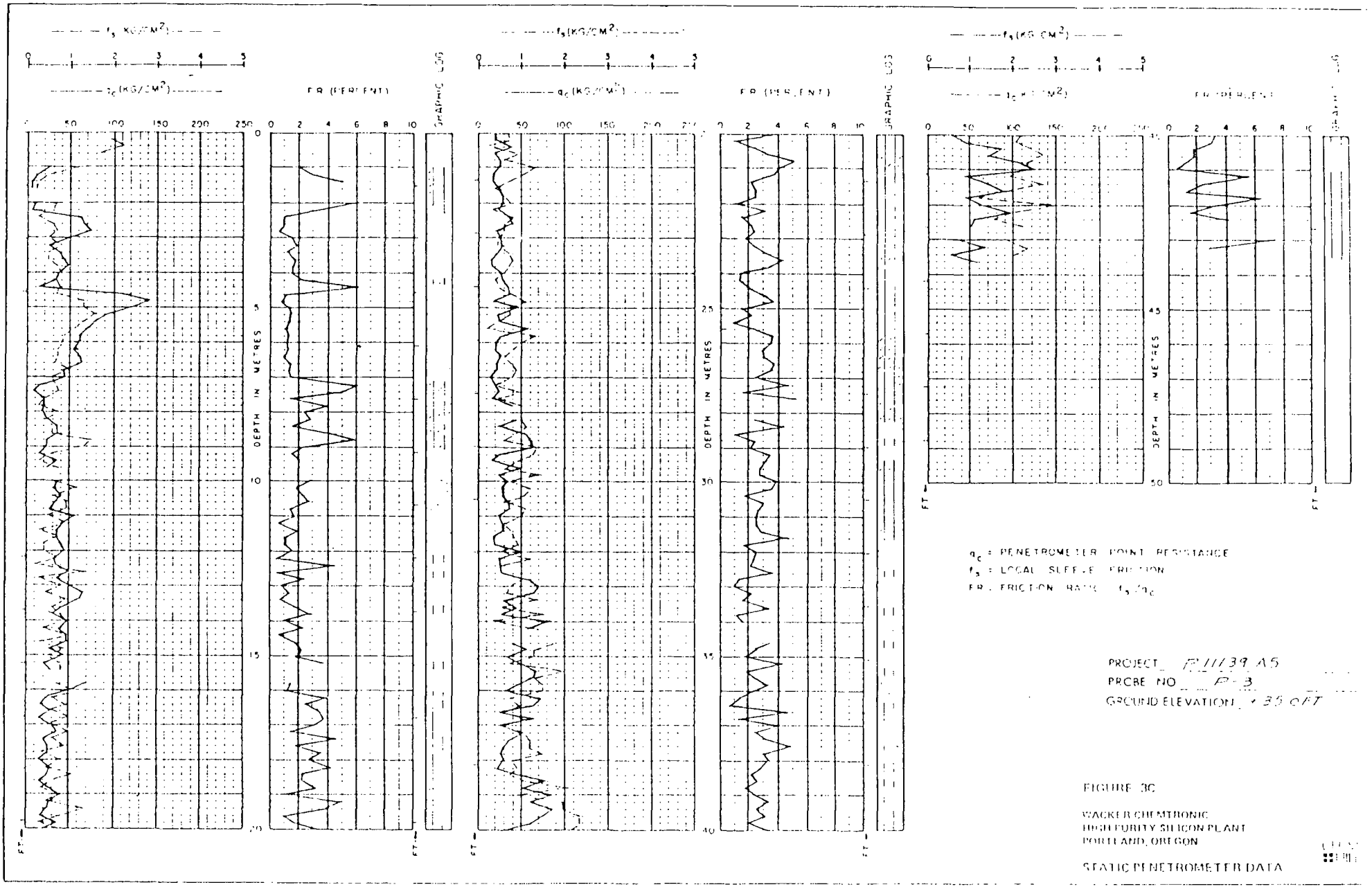
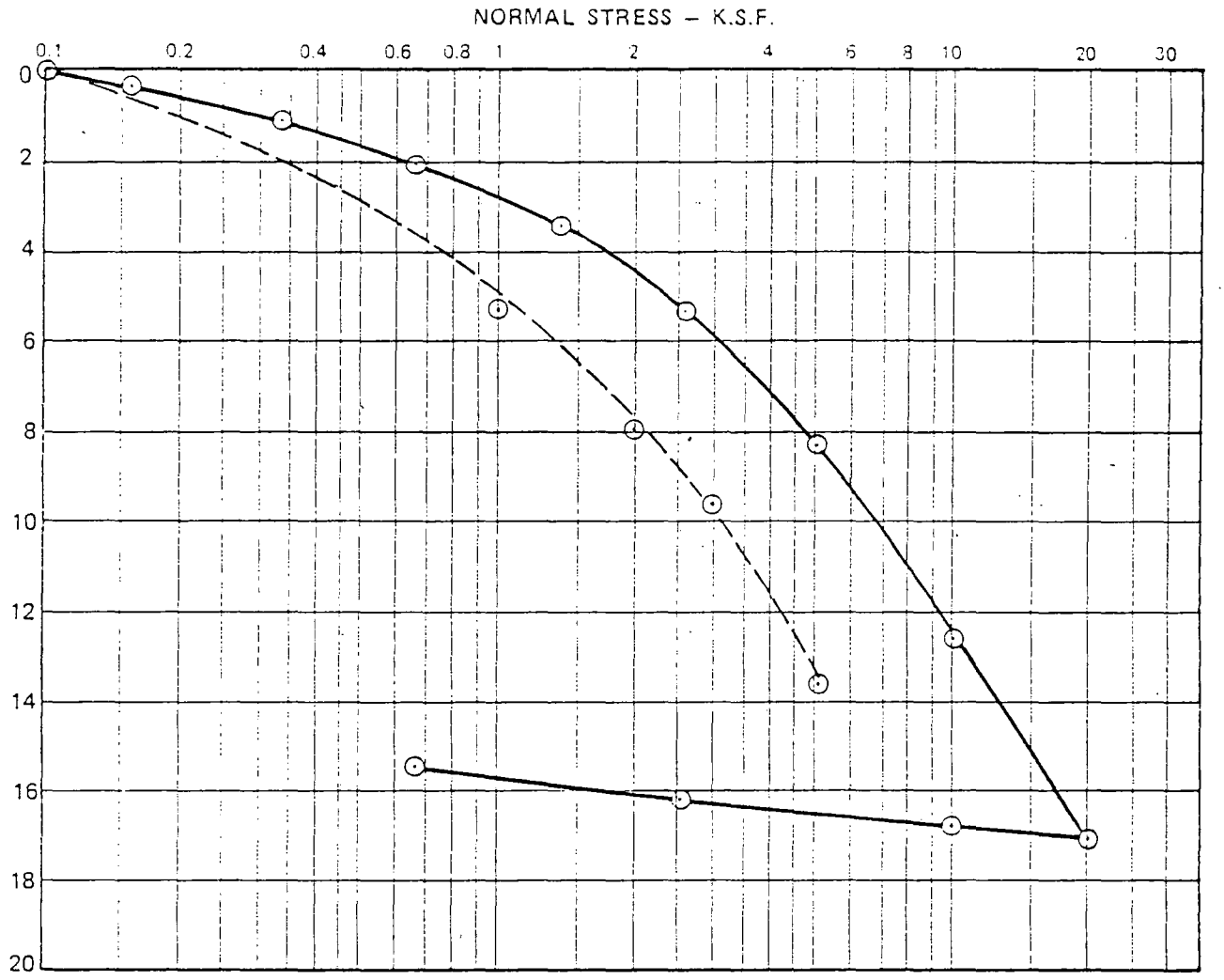


FIGURE 3C

WACKER CHEMTRONIC
HIGH PURITY SILICON PLANT
PORTLAND, OREGON

STATIC PENETROMETER DATA



- - - - - - B-3, ST-1, 7'-9'
DARK GRAY SILT CLAY
(DIRECT SHEAR CONSOLIDATION)

——— B-1, ST-1, 27'-29'
MOTTELED GRAY BROWN SILT

FIGURE 4

WACKER-CHEMTRONIC
HIGH-PURITY SILICON PLANT
PORTLAND, OREGON

CONSOLIDATION TEST PLOTS

CH2M HILL

P 11139.A5

TABLE 1

SAMPLE NUMBER	DEPTH (FEET)	DESCRIPTION OF MATERIAL	CLASSIFICATION	"N" (BL/FT)	MOISTURE PL (%)	MOISTURE W (%)	MOISTURE LL (%)	γ_d (LB/FT³)	STRENGTH q_u (K/FT²)	STRENGTH C (K/FT²)	STRENGTH ø (DEGREE)	GRADATION % PASSING BY WEIGHT + 4	GRADATION % PASSING BY WEIGHT - 4, + 200	GRADATION % PASSING BY WEIGHT - 200
SS-1	4.5-6.0	Clean Dark Gray Medium Fine Sand Medium Dense, Damp	SP	16								1	99	5
SS-2	9.5-11.0	Clean Dark Brownish Black Medium Fine Sand, Medium Dense, Damp	SP	28										
SS-3	14.5-16.0	Clean Black Medium Fine Uniform Sand, Medium Dense, Damp	SP	20										
SS-4	18.5-19	Black & Gray Silty Gravel, Very Dense, Damp (Fill?)	GM	50/5"										
		*Unable to penetrate obstruction, relocated 5' away. No samples until 24.5 feet												
SS-5	24.5-26.0	No Recovery	--	1										
ST-1	27.0-29.0	Black Organic Silt with Bitumen and Some Gravel, Soft, Saturated	OL	--	38	49	45	69.5						
SS-6	34.5-36.0	Mottled Brown and Gray Fine Sandy Silt With Some Bitumen, Non-Plastic, Loose, Saturated	ML	3										
SS-7	39.5-41.0	Mottled Brown and Gray, Very Fine Sandy Silt with Some Bitumen, Non-Plastic, Loose, Saturated	ML	4										
SS-8	44.5-46.0	No Recovery	--	6										

PROJECT P11139.A5.01 STATION & OFFSET

BORING NO. B-1 GROUND ELEVATION +34.2

SOIL TEST DATA

Wacker-Chemitronic
High-Purity Silicon Plant
Portland, Oregon

CH2M 801 111

SCOEPA00036476

TABLE 1 (Cont.)

SAMPLE NUMBER	DEPTH (FEET)	DESCRIPTION OF MATERIAL	CLASSIFICATION	"N" (BL/FT)	MOISTURE PL (%)	MOISTURE W (%)	MOISTURE LL (%)	γ_d (LB/FT³)	STRENGTH q_u (K/FT²)	STRENGTH C (K/FT²)	STRENGTH ø (DEGREE)	GRADATION % PASSING BY WEIGHT + 4	GRADATION % PASSING BY WEIGHT - 4, + 200	GRADATION % PASSING BY WEIGHT - 200
SS-1	4.5-6.0	Dark Gray Low-Medium Plastic Silt Over Dark Gray Fine Sand, Soft, Damp	ML&SP	4										
ST-1	9.5-11.5	Black Medium Fine Sand with Bitumen Medium Dense, Saturated	SP	--										
SS-2	14.5-16.0	Brown Silt with Some Black Mottling Petroliforous Odor, Non-Plastic, Loose, Damp	ML	7										
SS-3	19.5-21.0	Black Plastic Silt with Bitumen, Soft, Gooey	ML	2										
ST-2	21.5-23.5	Black Sand Saturated with Bitumen, Medium Dense, Gooey	SP	--										
SS-4	29.5-31.0	Dark Gray Organic Non-Plastic Silt, Soft, Saturated	OL	4										
SS-5	34.5-36.0	No Recovery	--	3										
ST-3	39.5-41.5	Dark Gray Organic Plastic Silt, Medium-High Plasticity Soft, Damp	ML/OH	--										
SS-6	44.5-46.0	Dark Gray Plastic Silt, Soft, Saturated	ML	5										
SS-7	54.5-56.0	Dark Gray Organic Plastic Silt, Some Brown Mottling Soft, Saturated	OH	4										
SS-8	64.5-66.0	No Recovery	--	5										

PROJECT P11139.A5.01 STATION & OFFSET

BORING NO. B-2 GROUND ELEVATION +34.5 ft. (MSL)

SOIL TEST DATA

Wacker-Chemitronic
High-Purity Silicon Plant
Portland, Oregon

SCOEPA00036477

TABLE 1 (Cont.)

SAMPLE NUMBER	DEPTH (FEET)	DESCRIPTION OF MATERIAL	CLASSIFICATION	"N" (BL/FT)	MOISTURE PL (%)	MOISTURE W (%)	MOISTURE LL (%)	γ_d (LB/FT³)	STRENGTH q_u (K/FT²)	STRENGTH C (K/FT²)	STRENGTH ø (DEGREE)	GRADATION % PASSING BY WEIGHT + 4	GRADATION % PASSING BY WEIGHT -4, +200	GRADATION % PASSING BY WEIGHT -200
SS-1	4.5-6.0	Brown Silty Fine Sand, Damp	SM	2										
ST-1	7.0-9.0	Dark Gray Organic Silty, Clay, Soft Damp	OH	--	37	65	78	62.8	--	0	32.5			
SS-2	14.5-16.0	Black, Medium Fine, Clean, Uniform SubAngular Sand, Medium Dense, Damp	SP	21										
SS-3	19.5-21.0	Black Medium Fine Sand with Bitumen Loose, Gooey, Some Organics	SP	9										
SS-4	24.5-26.0	Dark Greenish Brown Plastic Silt with Petroliforous Odor, Medium V. Damp	ML	5										
SS-5	29.5-31.0	No Recovery	--	5										
ST-2	34.5-36.0	Brown Silt with Some Gray Mottling, Low Plasticity, Soft Saturated	ML	--										
SS-6	39.5-41.0	Mottled Brown and Gray Silty Sand, Loose, Saturated	SM	7										
SS-7	44.5-46.0	Brown Silty Fine Sand, Loose Over Dark Gray Plastic Silt, Medium Stiff, Saturated	SM&ML	6										
SS-8	49.5-51.0	6-Inch Lenses, Dark Gray Medium Dense Silty Fine Sand and Medium Stiff Plastic Silt, Saturated	SM&ML	16										

PROJECT P11139.A5.01 STATION & OFFSET

BORING NO. B-3 GROUND ELEVATION +34.8 ft. (MSL)

SOIL TEST DATA

Wacker-Chemitronic
High-Purity Silicon Plant
Portland, Oregon

CH2M HILL

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Chapter 3
SUBSURFACE CONDITIONS AND ENGINEERING EVALUATION

SOIL PROFILE

The subsurface soil profile beneath the site appears quite random. Subsurface materials consist of zones of fine sand intermixed with zones of silt, fine sandy silt, and clay. The upper 20 to 25 feet of material appears to be fill. Below a 25-foot depth, the majority of the subsurface soils consist of soft to medium silts representative of the Willamette silts. With the exception of boring B-1, a soft, silty clay layer 3- to 8-foot thick was encountered at a fairly shallow depth below the surface. Again, at about 22- to 25-foot deep, a soft to medium soft 8- to 10-foot-thick plastic silt layer was encountered. Consolidation tests for these two layers (see Figure 4) indicate the material is normally consolidated.

A few thin gravel lenses were encountered within the upper 50 feet of the profile, but lenses were not continuous beneath the site. The Dutch cone probes were taken as deep as practicable in the event pile foundations are necessary for any of the structures. As described below, pile foundations are not recommended at this time.

Dense or very stiff soils were encountered beneath the site at moderate depth as measured with the static penetrometer. The stiff soils were encountered about 85 feet deep west of the Front Avenue extension and about 145 feet deep beneath the center of the northeast quadrant of the site. It was not possible to distinguish from the Dutch cone data whether

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the stiff soils encountered were dense gravels or the surface of the Columbia River basalts.

For purposes of analysis, the soil profile was divided into two normally consolidated, compressible zones and two sandy zones with minimal compression. The soil model consisted of 3 feet of sandy material, underlain by 8 feet of compressible material, followed by 11 feet of sandy material, in turn followed by 8 feet of compressible material. Only the upper 30 feet of the profile were considered. Below 30 feet, building loads, approximated as a sustained uniform loading of 150 pounds per square foot (psf) would be less than 5 percent of the overburden pressure and deep consolidation settlements would therefore be negligible.

GROUND WATER

The existing surface grade is at about elevation +34 feet USC & GS datum. Saturated soils were encountered at a depth of about 25 to 30 feet. This roughly corresponds with the current Willamette River elevation of +2 feet It is anticipated that the ground water table will closely follow the level of the Willamette River. The 100-year flood level at the project site (based on U.S. Army Corps of Engineers data) is +27.7 feet (USC & GS datum). The 50-year flood elevation is +25.8 feet (USC&GS). The equilibrium ground water level was placed at the base of the 30-foot soil profile model.

FOUNDATION RECOMMENDATIONS

Wall and column footings with slab-on-grade construction are the recommended foundation system for preliminary design of the site. The presence of the shallow, normally consolidated, plastic silt material may, however, lead to excessive

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footing and floor settlement without treatment. Without treatment, footing loadings for silt areas would have to be less than 300 psf in order to maintain footing settlements to less than one inch. In addition, floor slab settlements in excess of 1-inch could occur within buildings over untreated silt areas. Since the shallow silt is not continuous beneath the site, differential settlement could lead to slab cracking.

A 10-foot-high earth preload is advised for treatment of the silt underneath the buildings. Because the silt layer is fairly thin and appears to be doubly drained, consolidation should proceed fairly rapidly. Laboratory consolidation-time readings indicate the silt has a coefficient of consolidation of 673 square feet per day. We estimate that the preload should remain in place for at least 10 days over the silt areas in order to attain 90 percent consolidation.

It was beyond the scope of this investigation to determine subsurface conditions for each building, however additional shallow borings or probes prior to preloading would better define the extent of the silt and which building areas require treatment. Since the time required to achieve 90 percent consolidation is fairly short, the preload could be moved around the site in a rotating fashion. Earth for the preload could be obtained from the southern portion of the site. Alternatives to preloading might include pile foundations, mat foundations over silt areas, or excavation and replacement of the shallow silt with granular material. The preload would probably be less expensive than the three alternatives suggested and would reduce floor slab settlements from the lower compressible silt zone.

Figure 5 may be used to proportion building footings for vertical loading. We recommend the base of all footings

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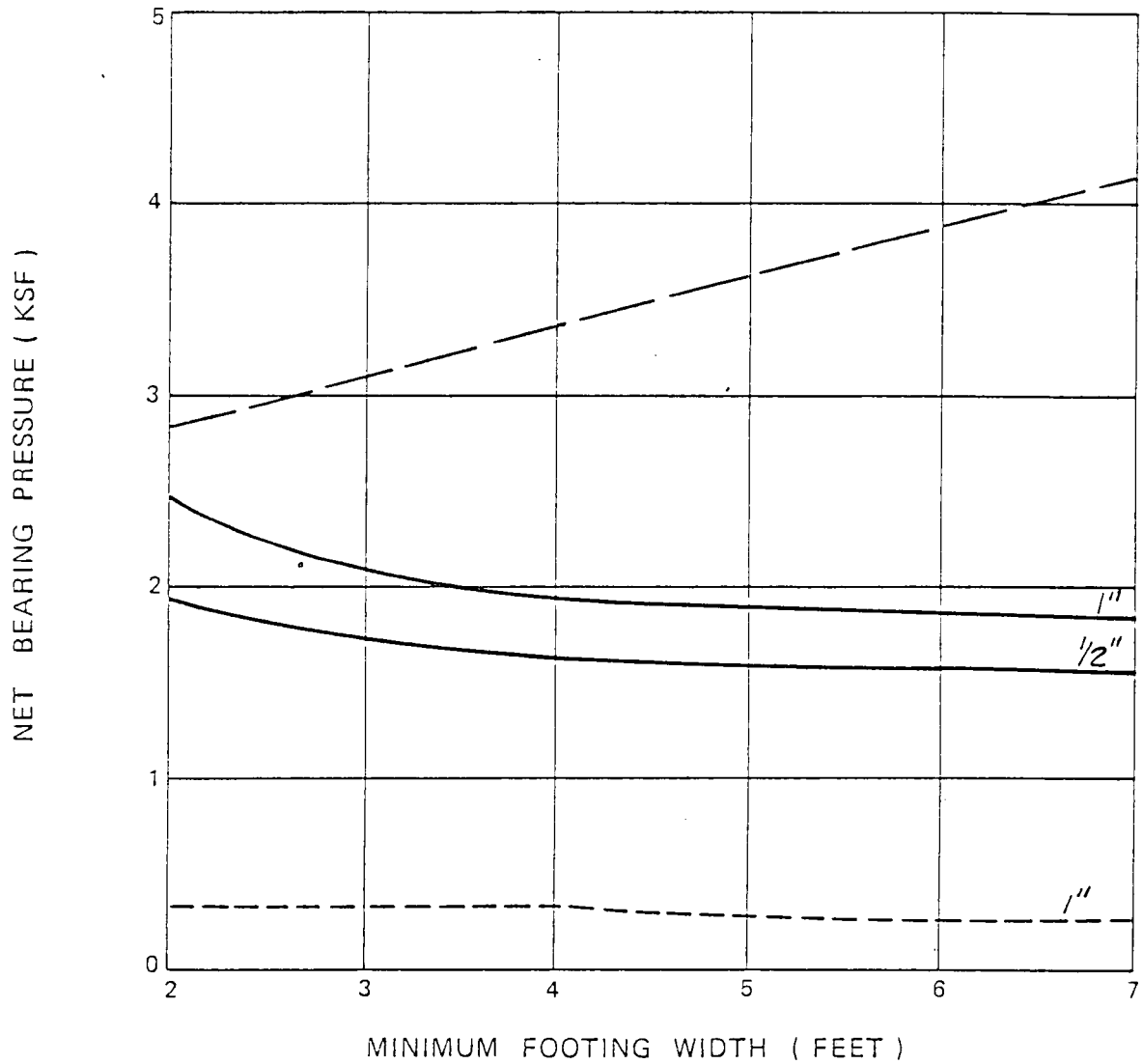

ALLOWABLE FOOTING LOADINGS

DESIGN LOADINGS FOR THE RESPECTIVE SETTLEMENTS, AFTER 10' PRELOAD

SETTLEMENT LOADINGS WITH NO PRELOAD

FIGURE 5

WACKER-CHEMTRONIC
HIGH-PURITY SILICON PLANT
PORTLAND, OREGON

FOOTING DESIGN CHART

CH2M HILL

P11139.A5

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be placed at least 1.5 feet below the site grade or 1.5 feet below the finish surface of adjacent floor slabs, whichever elevation is lower.

To resist lateral loads, footing design should include base friction and passive soil resistance. Ultimate base friction is estimated to be 25 percent of the net load on the footing (zero for all cases of footing uplift). Ultimate soil passive resistance is estimated to be an equivalent fluid pressure of 400 pounds per cubic foot (pcf). For footing lateral load resistances, a factor of safety of 1.5 is recommended. Lateral loadings will result in an overturning moment on the footing because the base will be below the load application point. The soil stress required to resist the moment should be a compressive stress only and should not exceed the value selected from Figure 5.

To prevent disturbance of the foundation soil, we recommend that a 6-inch-thick working mat of crushed rock be placed beneath all footings and floor slabs. Native soils should be satisfactory for general backfill at the site and for construction of the pond dikes (the latter will have a membrane liner). Negligible debris was encountered in the borings. No rock excavation is anticipated for the construction.

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Chapter 4
VIBRATION MEASUREMENTS

MEASUREMENT PROGRAM

Surface vibration measurements were made at the site on 11, 12, 13, and 19 August 1977, The measurements were taken by Messrs. Gordon Ness, Rick McAlister, and Barton Brown, geophysicists at Oregon State University (OSU). Dr. Richard Couch, Chairman, Geophysics Department, OSU, supervised the vibration monitoring program.

The vibration monitoring program consisted of:

- A continuous, 30-hour measurement period wherein vertical surface particle velocities were measured at five (5) locations at the site. At the fifth site, horizontal particle velocity measurements were also recorded.

- Specific recording of the vibration levels and attenuation at the site caused by a quarry blast at the Rivergate quarry.

- Reduction of the particle velocity-time plots for the four most severe events into velocity, acceleration, and displacement spectra.

In this report and Appendix B, "velocity" shall refer to particle velocity and should not be confused with wave propogation velocity.

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A complete description of the vibration measurement program, including the analog and spectral response plots, is continued in Appendix B. The original data tape recordings are on file with the Geophysics Department at OSU.

MEASURED EVENTS

An excellent sampling of the maximum anticipated site vibration levels from off-site sources was obtained during the vibration monitoring program. Sources initially considered possible causes of vibrations at the site included local train traffic, vehicular traffic along Highway 30, quarry operations, barge loading and unloading operations north of the site, and machinery or compressor operations at adjacent industrial properties.

The effects from all of the suspected sources were measured during the measurement program; however, only four events exhibited vibration levels discernible above the level of background "noise." Noise here refers to vibration level from unknown sources that are insignificant when compared with the vibration levels during the event. The four events are:

Event 1: Trains moving on the railroad bridge approach southeast of the site.

Event 2: Trains moving along the southwest boundary of the site.

Event 3: Gravel barge unloading operations northwest of the site.

Event 4: The quarry blast.

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For each of the events, a 16-second sample of the data was selected for reduction and study. Each 16-second sample contained the maximum velocity level for that event. Appendix B describes the vibration records at all the measuring stations. Because the vibration levels are of major importance within the crystal-growing zone, this report will focus primarily on the vibration levels recorded in that zone.

SITE VIBRATIONS

Monitoring stations E and 5 fall within the crystal-growing zone as shown on Figure 1. Table 2 below lists the maximum recorded vertical velocities within the crystal-growing zone for the four events described.

Table 2
MEASURED MAXIMUM VERTICAL VELOCITIES
CRYSTAL-GROWING ZONE
NORTHWEST PORTLAND SITE

Event 1	Event 2	Event 3	Event 4
Geophone E	Geophone E	Geophone E	Geophone 5
0.26 m-in/sec	0.07 m-in/sec	0.74 m-in/sec	5.8 m-in/sec
(0.007 mm/sec)	(0.002 mm/sec)	(0.019 mm/sec)	(0.147 mm/sec)

Review of the data indicates that for the crystal zone, Event 4 induces the maximum velocity (0.147 mm/sec vertical). According to German Industry Norm 2056, this maximum velocity would be within the "good" range for machine groups K, M, G, and T. The total three-axis vector would be greater than only the vertical vector because of the horizontal components. As described in Appendix B, a "worst case" total displacement to vertical displacement vector ratio for event 4 would be

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about 1.93. Applying this ratio to the 0.147 mm/sec velocity does not change the velocity rating per Norm 2056. Baxter and Bernard* rate machinery-vibration-severity data according to peak velocity. Based on the approximate total velocity, the crystal-growing zone would therefore be a "smooth" site.

The above standards are based on how the vibrations affect people; however, we are concerned here with the adverse effect of vibrations on the crystal-growing operations. Fortunately, some vibration measurements have been performed at the Burghausen plant site with which to compare the vibrations measured in Portland. The vibration measurement from the Burghausen site have been reported in decibels (dB) and are presented in Appendix C. A complete description of the Burghausen measurements was not available. In general, two types of measurements appear to have been made at the that facility:

- Background velocity measurements under normal operating conditions around the crystal units.

- Measurements of induced acceleration of a mercury surface via a shaker. The mercury surface was felt to represent a good comparison of the molten silicon batch.

The velocity measurements appear to have been reduced to their spectral components as has been done for the Portland measurements. For spectral components (harmonics) of random vibrations, the following relationships exist between acceleration (b), velocity (v), displacement (a), and frequency (f):

---

*"Vibration Tolerances for Industry," American Society of Mechanical Engineers, Paper 67-PEM-14 (1967).

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$$a = \frac{V}{2\pi f} = \frac{b}{(2\pi f)^2}$$

$$v = 2\pi f a = \frac{b}{2\pi f}$$

$$b = 2\pi f v = (2\pi f)^2 a$$

Hence, if the frequency and any one of the components of harmonic vibration are known, the remaining two components may be determined.

Tables 3 and 4 below compare the velocity and acceleration spectra levels for the Portland and Burghausen sites. The dB levels for the Portland site are based upon the major spectral peaks shown on pages 95, 96, 108, and 109 of Appendix B. Events 3 and 4 are listed in the table because they represent the most intense levels of vibration within the crystal-growing zone. The vertical spectral peaks for the Portland site were increased by multiplying them with the "worst case" total displacement to vertical displacement ratios in order to represent the maximum total velocity and acceleration levels. The Burghausen background velocity measurements represent normal successful operation levels except when the Ball Mill is in operation (the Ball Mill apparently interferes with the operations). The Burghausen acceleration spectral peaks were obtained by reducing the velocity spectral levels to actual velocity amplitudes, multiplying the velocity amplitude by "$2\pi f$" to obtain a spectral acceleration, and then converting the acceleration to a dB acceleration level.

Figures 6A, B, and C show upper bound envelopes of the Portland and Burghausen velocity, acceleration, and displacement spectral. The plots are in actual units however, whereas Tables 2 and 3 are dB levels. Although the spectral peaks for the two sets of background vibration measurements occur at different frequen-

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Table 3

BACKGROUND VELOCITY SPECTRA PEAKS
NORTHWEST PORTLAND AND BURGHAUSEN SITES

$$dB = 20 \log_{10} \left(\frac{\text{Velocity}}{V_o}\right), \quad V_o = 0.01 \text{ mm/sec at } 5\text{Hz}$$

NORTHWEST PORTLAND, (Approximate Total Velocity Spectra Peaks)

EVENT 3 (Gravel Barge Loading)

f(Hz)	3.3	5.4	6.7	9.6
Peak Velocity Level (dB)	12.4	-5.5	-9.7	-13.8

EVENT 4 (Quarry Blast)

f(Hz)	3.5	6.5	8.8	10.0	14.0	17.7	22.3	28.3
Peak Velocity Level (dB)	15.7	17.2	16.3	16.3	4.7	3.6	8.1	6.5

BURGHAUSEN (Levels at Normal Operation)

CRUCIBLE PULLING, CZ (4M From Crucible Surface, Near North Wall in Basement)

f(Hz)	3.2	5.0	6.3	8	10	12.5	16	20
Level (dB)	10	22	25	20	22	15	22	22

ZONE PULLING, FZ (3.5m From Melting Surface, at Foundation of Machine 106)

f(Hz)	4.0	5.0	6.3	8	10	12.5	16	20
Level (dB)	12	24	23	20	-	-	-	-

ZONE PULLING, FZ WITH BALL MILL IN OPERATION

f(Hz)	5.0
Level (dB)	44

NOTE: f = Frequency

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Table 4

BACKGROUND ACCELERATION SPECTRA PEAKS
NORTHWEST PORTLAND AND BURGHAUSEN SITES

$$dB = 20 \log_{10} \frac{(Accel.)}{A_o} \quad A_o = 0.314 \text{ mm/sec}$$

NORTHWEST PORTLAND (Approximate Total Acceleration Peaks)

EVENT 3 (Gravel Barge Unloading)

f(Hz)	3.3	5.4	6.7	9.6
Level (dB)	7.8	-5.0	-8.0	-9.8

EVENT 4

f(Hz)	3.5	6.5	8.8	10.0	14.0	17.7	22.3	28.3
Level (dB)	10.8	18.4	20.6	21.6	13.1	14.3	20.6	21.1

BURGHAUSEN (Levels at Normal Operation)

CRUCIBLE PULLING, Cz (4m From Crucible Surface, Velocity Data Conversion)

f(Hz)	3.1	5.0	6.3	8	10	12.5	16	20
Level (dB)	6.2	22	27	24.1	25.2	23	32	34

ZONE PULLING, Fz (3.5m From Melting Surface, Velocity Data Conversion)

f(Hz)	4.0	5.0	6.3	8	10	12.5	16	20
Level (dB)	10.1	24	25	24	-	-	-	-

CRUCIBLE MACHINE Tz 65 (Shaker Induced Agitation of Mercury Surface)

f(Hz)	21	26	31.5	42	52
Level (dB)	20	23	25	33	36

NOTE: f = Frequency

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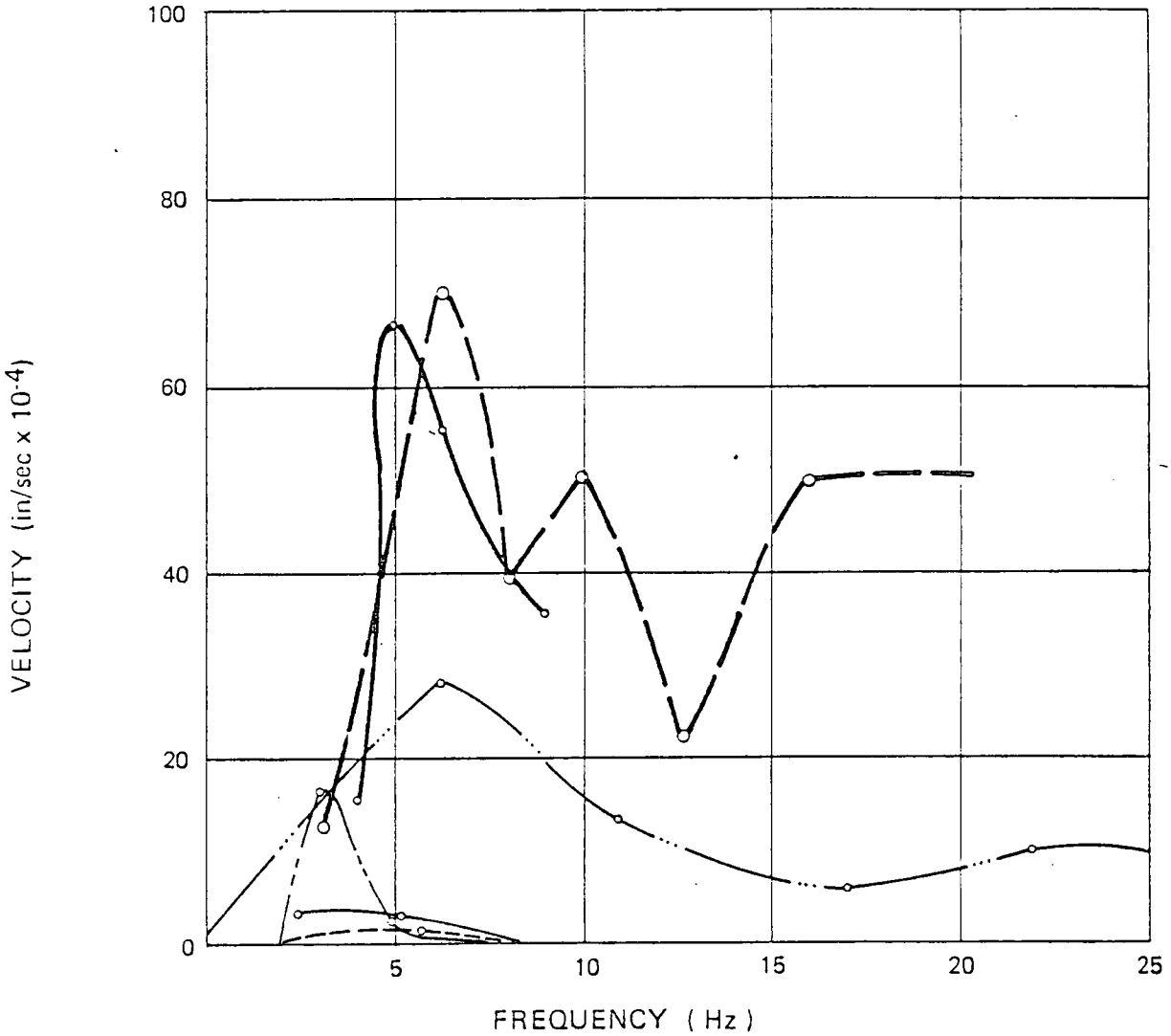

LEGEND

BURGHAUSEN

FZ FACILITY
CZ FACILITY

PORTLAND

EVENT 1, GEOPHONE E
EVENT 2, GEOPHONE E
EVENT 3, GEOPHONE E
EVENT 4, GEOPHONE 5

FIGURE 6A

WACKER-CHEMTRONIC
HIGH-PURITY SILICON PLANT
PORTLAND, OREGON

VELOCITY SPECTRA ENVELOPES

CH2M HILL

P11139.A5

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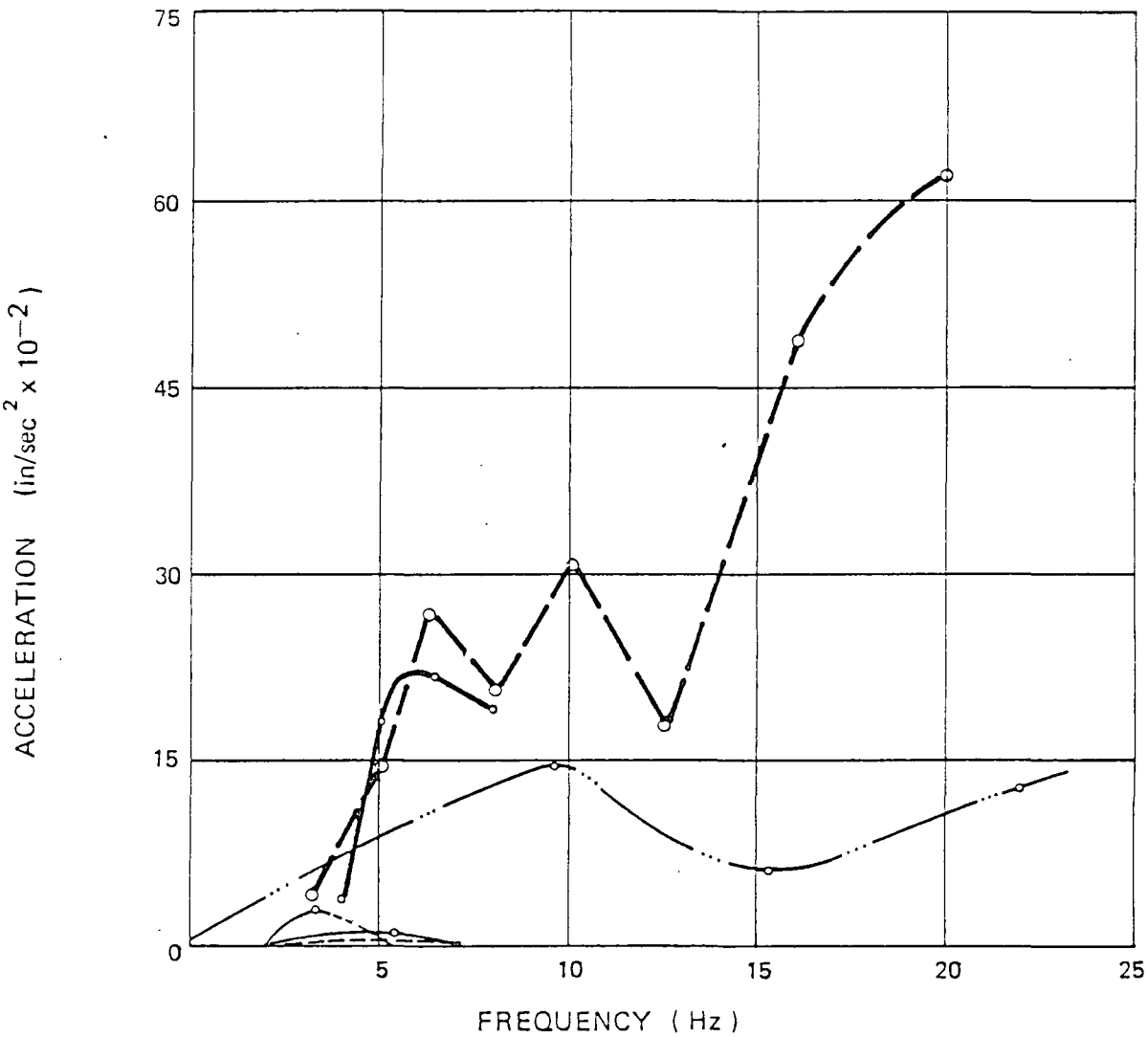

LEGEND

BURGHAUSEN

FZ FACILITY
CZ FACILITY

PORTLAND

EVENT 1, GEOPHONE E
EVENT 2, GEOPHONE E
EVENT 3, GEOPHONE E
EVENT 4, GEOPHONE 5

FIGURE 6B

WACKER-CHEMTRONIC
HIGH-PURITY SILICON PLANT
PORTLAND, OREGON

ACCELERATION SPECTRA
ENVELOPES

CH2M HILL

P 11139.A5

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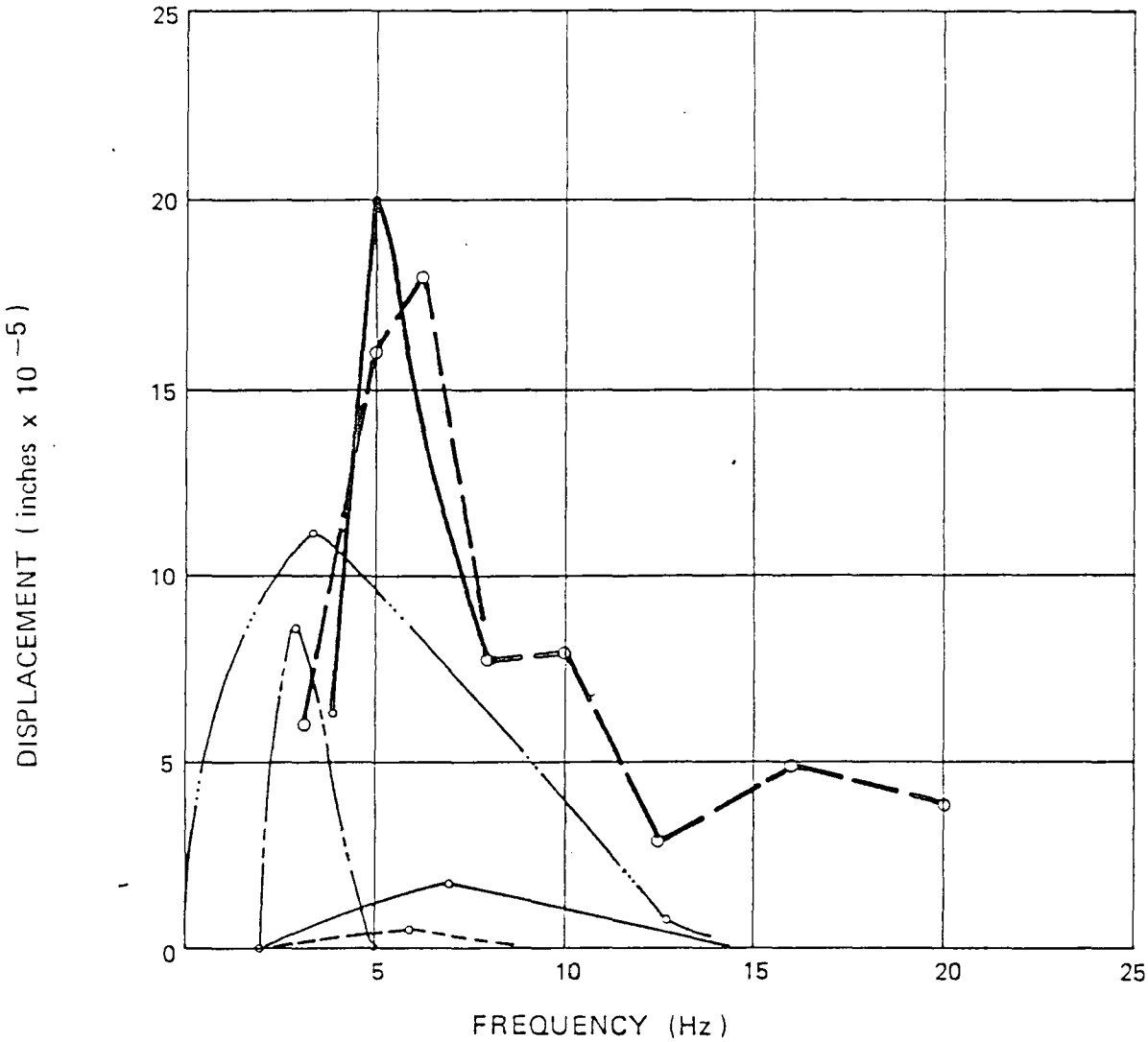

LEGEND

BURGHAUSEN

FZ FACILITY
CZ FACILITY

PORTLAND

EVENT 1, GEOPHONE E
EVENT 2, GEOPHONE E
EVENT 3, GEOPHONE E
EVENT 4, GEOPHONE 5

FIGURE 6C

WACKER-CHEMTRONIC
HIGH-PURITY SILICON PLANT
PORTLAND, OREGON

DISPLACEMENT SPECTRA
ENVELOPES

CH2M HILL

P11139.A5

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cies, it appears that within the crystal-growing zone and for similar frequencies, the maximum vibration levels at the Portland site are comparable to or less than the levels at the Burghausen site. The quarry blast is the maximum recorded vibration event at the Portland site, but by the time the vibration energy has reached the planned crystal-growing zone, the vibration levels are fairly low. Figure 9, page 22 of Appendix B shows the blast attenuation toward the crystal-growing zone. This figure, and Figure 1 of this report, indicate similar vibration levels at both stations 4 and 5 that roughly correspond with the locations of the mono-silit and the sitri and poly buildings respectively. Hence, it is justifiable to use the station E and station 5 vibration measurements to represent the crystal-growing zones.

Based upon the comparisons made in Tables 2 and 3, and Figures 6A, B, and C it does not appear that the quarry operations will adversely affect the crystal-growing operations at the Portland site. The latter opinion does not reflect possible effects of amplication or resonance of the crystal-growing structures with background vibrations or from sources within the plant itself. Such analyses are outside the scope of this investigation.

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Chapter 5
CONCLUSIONS

Based on the results of our exploration, vibration monitoring, and analysis, our conclusions are as follows:

- Subsurface soils at the site consist of fill and recent alluvium. Bedrock is deeper than 30 feet below the surface and is not anticipated to affect construction or performance of the plant.

- Existing site grade is well above the U.S. Army Corps of Engineers projection of the 50- and 100-year Willamette flood levels at the site.

- Plant buildings may be designed with footing and slab-on-grade foundation systems, although a preload coupled with additional subsurface investigation is advised to minimize settlement.

- Maximum surface vibration levels at the site are caused by blasting operations at the Rivergate quarry adjacent to the site.

- Within the proposed crystal-growing zone, the maximum surface vibration levels including the blasting-induced vibrations do not appear to exceed comparable levels measured at the existing Burghausen site.

The analyses and recommendations submitted in this report are based upon three soil test borings, three Dutch cone probes, and Appendix B. The report is intended to provide preliminary design information for the plant site. Additional

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subsurface investigation is recommended as part of the final design. This report has been prepared for the firm of Wacker-Chemitronic for specific application to the project site described herein in accordance with generally accepted geotechnical engineering practices. No other warranty, expressed or implied, is made.

SCOEPA00036496

APPENDIX A

SOIL TEST DATA

TITLE BLOCK, SOIL TEST DATA

SAMPLE NUMBER	DEPTH (FEET)	DESCRIPTION OF MATERIAL	CLASSIFICATION ①	"N" (BLOWS/FT) ②	MOISTURE ③			γ_d (LB/FT3) ④	STRENGTH ⑤			GRADATION ⑥		
												% PASSING BY WEIGHT		
					P.L. %	W %	L.L. %		q_u (K/FT2)	C (K/FT2)	ϕ (DEGREE)	#4	4, #200	200

① UNIFIED SOIL CLASSIFICATION SYSTEM

SOIL CLASSIFICATION CHART

		GW	[illegible]
		GP	[illegible]
		GM	[illegible]
		GC	[illegible]
		SW	[illegible]
		SP	[illegible]
		SM	[illegible]
		SC	[illegible]
		ML	[illegible]
		CL	[illegible]
		OL	[illegible]
		MH	[illegible]
		CH	[illegible]
		OH	[illegible]
		Pt	[illegible]

PLASTICITY CHART

[illegible]	[illegible]

② STANDARD PENETRATION RESISTANCE (IN BLOWS PER FOOT)

③ MOISTURE

P.L. PLASTIC LIMIT (ATTERBERG)

L.L. LIQUID LIMIT (ATTERBERG)

W NATURAL MOISTURE CONTENT

ATTERBERG LIMITS

STAGE	DESCRIPTION	POSSIBLY ON LIMIT
LIQUID	A SLURRY. FLOWS OR TO SOLE BUILD A VISCOUS LIQUID	LIQUID LIMIT
PLASTIC	SOLE BUILD TO STIFF PUTTY. DEFORMS BUT SOLE NOT CRACK	PLASTIC LIMIT
SEMISOLID	CHEESE. DEFORMS PERMANENTLY BUT CRACKS	[illegible]
SOLID	HARD CANDY. FAILS COMPLETELY UPON DEFORMATION	

④ [illegible] DRY DENSITY OF SOIL

⑤ SOIL STRENGTH VALUES

q_u UNCONFINED COMPRESSIVE STRENGTH [illegible]

C COHESION (KIPS PER SQUARE FOOT)

ϕ INTERNAL FRICTION ANGLE

⑥ GRADATION CHART

MATERIAL SIZE	PARTICLE SIZE			
	LOWER LIMIT		UPPER LIMIT	
	MILLIMETERS	SIEVE SIZE	MILLIMETERS	SIEVE SIZE
SAND				
FINE	[illegible]	[illegible]	[illegible]	[illegible]
MEDIUM	[illegible]	[illegible]	[illegible]	[illegible]
COARSE	[illegible]	[illegible]	[illegible]	[illegible]
GRAVEL				
FINE	[illegible]	[illegible]	[illegible]	[illegible]
COARSE	[illegible]	[illegible]	[illegible]	[illegible]
COBBLE	[illegible]	[illegible]	[illegible]	[illegible]
BOULDER	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

NOMENCLATURE AND SYMBOLS

SOIL TEST DATA

SCOEPA00036498

MEMORANDUM

To: Rick Reed
Sherril Pitkin

From: John Ramage
Stu Williams

Date: 10 August 1978

Subject: Second Phase Geotechnical Investigation Wacker Siltronics Site, Portland, Oregon.

Project: P11054.C1.00

A preliminary geotechnical and vibration monitoring investigation of the Wacker site is described in the September 1977 report (P11139.A5) of the same title. This report recommended a second phase site goetechnical investigation as the project approached final design. The following second phase work scope was approved and the results are described in this memorandum:

- Conduct additional test borings and subsurface probes beneath specific building sites. Select and perform laboratory tests on soil samples obtained from the additional borings.
- Review foundation treatment recommendations made in the preliminary investigation report.
- Review the possibility of amplification or resonance of the crystal-growing structures with the background vibrations.

SUBSURFACE INVESTIGATION

Three borings and three penetrometer probes were completed for the 1977 preliminary investigation. For the second phase investigation, 9 penetrometer probes and 7 soil test borings were completed. The locations of all probes and borings are shown on the enclosed Figure 1. Cross sections developed from the subsurface data beneath the process building are shown on Figure 2. Subsurface data beneath the Headquarters building indicates a similar profile.

In general, the second phase probes and borings reaffirm the initial findings, i.e., the site consists of an upper random fill about 25- to 30-feet thick underlain by silts and sands of the Willamette Silt series. Bedrock was encountered beneath the site at a depth of about 210 feet. Compressible zones of differing thicknesses and at various depths were reencountered in the upper 30 feet of the soil profile with no major differences detected between the preliminary and the second phase findings.

Laboratory tests performed for the second phase investigation are summarized in Table 1 of this memo. No significant differences were observed between these test results and the results of laboratory tests performed for the September 1977 report.

FOUNDATION RECOMMENDATIONS

In the September 1977 report, a 10-foot preload was recommended prior to construction. Based on the results of the second phase investigation and additional structural information, portions of the preload were cut down to 5 feet of fill. Specifications for the preload have already been sent to you. It is recommended that all preloads be left in place a minimum of thirty (30) days prior to removal. The random nature of the upper soils at the site with discontinuous compressible zones included therein pose a moderate potential for differential settlements. The preloads have been designed to reduce differential settlements to acceptable limits. Due to the varying fill geometry and subsurface profile, non-uniform preload settlements are anticipated. Preload settlements of 0.25- to 0.75-feet are anticipated.

In addition to recommending a preload, the September 1977 report included a Figure (5) showing recommended footing design pressures. Review of the process and headquarters building foundation designs indicates that the footings have been designed according to the Figure 5 chart for sustained dead and live loads. As no changes have been detected in the subsurface profile, the footings as designed should prove satisfactorily.

At the time of the 1977 report, no basements were planned. Final design now includes a basement in the crucible zone of the process building. The following recommendations are made regarding design of the basement:

- The basement structure should be designed to resist uplift due to external ground water rising to elevation 27.7 feet, USGS datum, (4 feet above the basement floor level). An alternative to designing for uplift would be to include an underdrain system.

- Backfilled basement walls beneath adjacent on grade floor slabs or traffic areas should be designed to resist an equivalent fluid pressure (EFP) of 40 pcf plus a uniform lateral surcharge of 50 psf. Backfilled walls with no adjacent (present or planned) floor slabs or traffic areas should be designed to resist an EFP of 40 pcf.

VIBRATION CONSIDERATIONS

Structural resonance considerations were not considered during the initial 1977 investigation. For this second phase investigation, Dr. Frank Richart, Jr., University of Michigan, was retained as a consultant to investigate the possibility of structural amplification by the crystal growing building of the background vibrations. He considered vibrations from Events (1) and (2) described in the 1977 report--the quarry and gravel loading operations are to be discontinued. In essence, he determined there was no potential for amplification of Event (1) or (2) input motions, hence the background vibration levels should be well below Wacker's limit criteria. Dr. Richart's report is the second enclosure to this report.

If you have any questions regarding this memo, please call.

Table 1

SUMMARY OF LABORATORY TESTS

Classification Tests	LL	PI	w(%)
B-2-8 ST-1 Depth 25-27' Gray plastic silt (ML)	43	10	44
B-2-8 ST-2 Depth 28' Mottled gray plastic silt (MH-ML)	51	16	44.9
B-2-8 57-3 Depth 30-32' Mottled gray plastic silt MH-ML	49	13	49.5
B-3-8 ST-1 Depth 28-30' Grayish brown plastic silt (ML)	43	10	47
B-5-8 SS-1 Depth 10-11-1/2' Gray plastic silt (ML)	49	43	57
B-5-8 ST-1 Depth 12-13.5' Plastic organic silt (MH-OH)	60	16	62

Consolidation Test Results

B-2-8 ST-1 Depth 26' Gray plastic silt (ML)	Cc= 0.28 Cr= 0.026	Cv=1.2 ft^2/day σp'=3.2 ksf σo'=3.0 ksf
B-2-8 ST-2 Depth 28' Mottled gray plastic silt (MH-ML)	Cc= 0.40	Cv=3.5 ft^2/day σp'=4.5-4.0 ksf σo'=3.4 ksf

KEY

LL - Liquid Limit Water Content
PI - Plasticity Index
w - Natural Water Content
Cc - Compression Index
Cr - Recompression Index
Cv - Coefficient of Consolidation
σp' - Preconsolidation Pressure
σo' - Overburden Pressure

F. E. RICHART, JR. PH.D
FELLOW ASCE
MEMBER NAE

CONSULTANT
2210 HILL STREET
ANN ARBOR, MICHIGAN 48104
313-665-0169

PROF. OF CIVIL ENG.
UNIVERSITY OF MICHIGAN
ANN ARBOR, MICHIGAN 48109
313-763-2146

July 25, 1978

CH2M HILL
Attn: Mr. John Ramage
200 SW Market, 12th Floor
Portland, Oregon 97201

Re: Your Project No. P11054.C1.00, Wacker-Chemitronic Vibration Analysis

Gentlemen:

In response to a request by telephone on June 27,1978, from your Mr. John Ramage, I visited your office on July 6 and 7,1978, to receive preliminary information and reports on the subject project. These documents are listed at the end of this letter. On July,19,1978, I received additional information related to foundation weights, stiffnesses, and geometries. Using this information, I have made calculations for the probable dynamic response of the foundation structure for the crystal-growing zone of the plant.

This study included:

(1) A review of the potential sources of vibration at the critical site,
(2) An estimation of design criteria, or limiting vibrations,
(3) An estimate of the shear wave velocities in the soil beneath the foundation, and their variation with depth,
(4) The responses of the foundation to the incoming vibrations, and
(5) A comparison of estimated vibrations with allowable values.

Details of this study are included in the 10 sheets of notes enclosed as Appendix A.

The potential sources of vibration were noted in the CH2M HILL Report of September, 1977. This report included a careful and comprehensive vibration monitoring program which produced valuable data. It was found that significant vibrations were developed by four events, (1) a train leaving the S.P.&S. railroad bridge, (2) a train passing adjacent to Highway U.S. 30, (3) gravel loading operations at a nearby dock on the river front, and (4) a quarry blast. I have been informed that the quarry blasting operation and

gravel loading will be discontinued before the Wacker plant goes into operation. Therefore, my study was based on the dynamic motions developed from Events (1) and (2). If any more serious vibration excitations develop, because of plant operation, adjacent construction, closer rail traffic, or other causes, then a re-evaluation of the foundation response will be needed.

The vibration limits were indicated as 6×10^{-5} radians in static plus dynamic rotation, and a vertical particle velocity of less than 0.0062 in./sec (or 2×10^{-4} in. displacement) as evaluated from 24 dB at 5 Hz. The 24 dB level was measured (by others) adjacent to a machine which was operating satisfactorily.

For evaluating shear wave velocities beneath the foundation, it was necessary to introduce typical values for the void ratio and the coefficient of earth pressure at rest. Then the calculated values of shear wave velocity and the critical frequency of 5.5 Hz. determined the length of the effective Rayleigh ground wave. It is the wave length and frequency of the incoming ground surface wave which develops the vertical, horizontal, and rocking motions of a rigid foundation.

Estimates of the foundation motion in the vertical direction, and in rocking about the 120 ft. long centerline of the base were based on methods described in Ref.(1). It was determined that the foundation had a very small mass ratio, B, in both vertical translation and in rocking modes of vibration, thus there would be essentially no dynamic magnification of the motion. The foundation would move with the ground motions, but because it is rigid, the foundation would reduce the incoming free field vibrations at points of soil contact with the base slab.

The calculated values of <u>vertical</u> motion of the rigid foundation, developed by Event (1) input, amounted to $A_z = 6 \times 10^{-6}$ in. @ 5.3 Hz. and $A_z = 9.0 \times 10^{-6}$ in. @ 4.8 Hz. Both values are <u>much</u> smaller than the indicated allowable value of 0.0002 in. @ 5 Hz. In <u>rocking</u> vibrations the calculated values are $\psi = 1.54 \times 10^{-8}$ radians @ 5.3 Hz., and $\psi = 2.3 \times 10^{-8}$ radians @ 4.8 Hz. These values are several orders of magnitude lower than the total allowable rotation of $\psi_{all.} = 6.0 \times 10^{-5}$ radians.

Consequently, from this rather brief study of the problem, it is concluded that the vibrations of the rigid basement foundation as caused by sources similar to Events (1) and (2) would not interfere with successful crystal-growing operations.

If additional sources of excitation are introduced into the plant vicinity, additional studies would be needed to ascertain their importance. Additional studies could incor-

porate more refined analyses, such as those indicated in References (2) and (3). However, at the present time, more elaborate studies do not appear to be needed.

I will be pleased to amplify or explain further any portions of this letter or the Appendix.

Very truly yours,

F.E. Richart, Jr

FER/b

F.E. Richart, Jr., P.E.

Reports Received:

(1) "Geotechnical and Vibratory Monitoring Investigations for High-Purity Silicon Plant, Portland, Oregon. Report to Wacker-Chemitronic, Burghausen, West Germany. Prepared by CH2M HILL, September, 1977.

(2) "Preload Report on Wacker-Chemitronic Site, Portland, Oregon", by CH2M HILL (No date)

(3) Notes on Foundation Loads, Stiffnesses, and Mass Moments of Inertia, for Wacker Facilities. Forwarded from Mr. John Ramage, CH2M HILL on July 18, 1978. 12 sheets.

(4) Five drawings of foundation details.

REFERENCES:

(1) Richart, F.E., Jr., Hall, J.R., Jr., and Woods, R.D. (1970), "Vibrations of Soils and Foundations", Prentice-Hall, Inc. Englewood Cliffs, N.J. 406 pp.

(2) Warburton, G.B., Richardson, J.D., and Webster, J.J. (1971), "Forced Vibrations of Two Masses on an Elastic Half-Space" J. Appl. Mech., Mar. pp. 148-156.

(3) Prange, B. (1978), "On the Dynamic Interaction Between an Inert Mass and Subsoil Wavefields", Veröffentlichen des Institutes für Bodenmechanik und Felsmechanik der Universität Fridericiana in Karlsruhe.

APPENDIX A

NOTES AND CALCULATIONS

CH2M-HILL : WACKER - PORTLAND

7/21/78
FCR
1 OF 10

VIBRATION PROBLEMS IN CRYSTAL GROWING ZONE

EXTERNAL VIBRATIONS TRANSMITTED TO THE CRYSTAL-GROWING MACHINES CAN INTERFERE WITH THE PROCESS. TO DETERMINE THE IMPORTANCE OF THESE VIBRATIONS WE NEED INFORMATION ON THE FOLLOWING:

1. POTENTIAL SOURCES OF VIBRATIONS - AND THE MAGNITUDE AND FREQUENCIES DEVELOPED IN THE FREE FIELD AT THE SITE.
2. VIBRATION LIMITS AT MACHINES - DESIGN CRITERIA
3. ESTIMATE OF SHEAR WAVE PROPAGATION VELOCITY IN SOIL - BETWEEN SOURCE AND SITE.
4. RESPONSE OF FOUNDATION STRUCTURE TO EXTERNAL EXCITATION
5. COMPARISON OF FOUNDATION VIBRATIONS TO CRITERIA

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1. APPENDIX B - SURFACE VIBRATION STUDY, WACKER CHEMICAL SITE, PORTLAND, OREGON -- OF CH2M-HILL REPORT OF SEPTEMBER, 1977 COVERS ITEM 1.

   4 EVENTS WERE FOUND TO GIVE VIBRATIONS GREATER THAN THE NOISE LEVEL. THESE ARE:

   EVENT 1 - TRAIN LEAVING S.P. + S. RAILROAD BRIDGE

   EVENT 2 - TRAIN ADJACENT TO HIGHWAY U.S. 30

   EVENT 3 - GRAVEL LOADING OPERATION

   EVENT 4 - QUARRY BLAST

   BECAUSE THE QUARRY OPERATION WILL BE <u>SHUT DOWN</u> BEFORE THE PLANT GOES INTO OPERATION - EVENTS 3 + 4 WILL NOT OCCUR - AND NEED NOT BE CONSIDERED.

CH2M-HILL : WACKER - PORTLAND

1. SOURCES OF VIBRATION - CONT'D:

DATA FROM EVENTS 1 AND 2, ACTING AT LOCATION E WILL BE CONSIDERED. LOCATION E IS IN THE CRYSTAL GROWING ZONE - AS NOTED ON Fig. 1 - CH2M-HILL, SEPT. 1977 REPORT.

EVENT	VERTICAL MOTION (TIME DOMAIN) PART. VEL IN/SEC	EST. FREQ HZ	VERTICAL MOTION (FROM FREQ. DOMAIN) IN/SEC	HZ	TOTAL DISPL / VERT. DISPL
1	0.00026	4.8 x	0.00020	3	1.66
			0.00019 x	5.3 x	
2.	0.00007	5.5 x	0.00009	6.0	1.87

	VERTICAL MOTION DISPL. (IN.)	HZ.	VERTICAL MOTION DISPL. (IN.)	HZ	
1	0.000009 x	4.8 x	0.000013	3	1.66
			0.000006 = 6x10^-6	5.3 x	
2	0.000002 x	5.5 x	0.000002	6	1.87

x = SCALED OR CALCULATED FROM APPENDIX B. DATA.

A. NOTE: THE MOST IMPORTANT VIBRATIONS ARE THOSE AT 5-6 HZ. SEE NEXT SHEET

B. NOTE: THESE VIBRATORY MOTIONS WERE MEASURED AT THE GROUND SURFACE AT POINT E. THE MOTIONS INCLUDE INFLUENCES OF THE FREE SURFACE ELEVATIONS AND SUBSURFACE SOIL AND ROCK CONTOURS.

2. VIBRATION LIMITS AT MACHINES - CRITERIA:

ROTATION:

THE MAXIMUM MISALIGNMENT ALLOWABLE DURING PROCESSING - STATIC + DYNAMIC - IS 0.06 mm/meter OR THIS IS AN ANGULAR DEVIATION OF 6×10^{-5} RADIANS

VERTICAL

FROM TESTS AT BURGHAUSEN - AT 5 HZ, VALUES OF 22 dB AND 24 dB WERE SATISFACTORY - BUT 44 dB WAS NOT.

AT 24 dB THE PARTICLE VELOCITY IS V = 0.00624 in/sec (0.0158 cm/sec) WHICH IS CLOSE TO THE BAXTER AND BERNHARD LEVEL OF V = 0.005 IN/SEC.

AT 5 HZ THIS V = 0.00624 IN/SEC CORRESPONDS TO A SINGLE-AMPLITUDE DISPLACEMENT OF $A_z = 0.0002$ IN.

THE MOTION OF THE FOUNDATION SHOULD NOT BE PERMITTED TO APPROACH THESE VALUES.

3. ESTIMATE OF SHEAR WAVE VELOCITY AT SITE

THE VARIATION OF SHEAR WAVE VELOCITY WITH DEPTH BELOW THE SITE IS NEEDED FOR AN ESTIMATE OF THE RAYLEIGH WAVE LENGTH, λ_R, WHICH MIGHT BE DEVELOPED AT 5 Hz.

THE SHEAR WAVE VELOCITY, v_s, DEPENDS PRIMARILY UPON THE AVERAGE CONFINING PRESSURE, $\bar{\sigma}_o$, AND THE VOID RATIO, e.

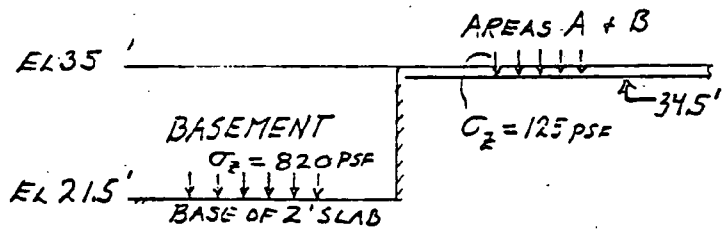
TABLE I OF THE CH2M-HILL REPORT GIVES NO DATA ON UNIT WEIGHTS OR e FOR THE SILTY SANDS - SO WILL ASSUME $e = 0.70$, THEN WITH THE 100 YR FLOOD AT 27.7'

-ALL SOIL BELOW THE 2' MAT WILL BE SATURATED

THEN $\gamma' = 61$ LB/FT³. ALSO ASSUME $K_o = 0.5$

SOIL PRESSURE AT BASE OF 2' SLAB

$\sigma_z = 820$ LB/FT² (FROM SHEET 2 SWP 6/28/78)



$$\bar{\sigma}_o = \left(\frac{1+2K_o}{3}\right)(\sigma_z + \gamma' z') \quad \text{- WHERE } z' = (21.5' - \text{ELEVATION})$$

$$v_s = [170 - (78.2)e](\bar{\sigma}_o)^{0.25} \quad \text{(FT/SEC)} \quad \bar{\sigma}_o \text{ LB/FT}^2$$

(RICHART, HALL, & WOODS, 1970)

BELOW BASEMENT

EL'	z' FT	$\bar{\sigma}_o$ LB/FT²	v_s FT/SEC
21.5	0	547	557
20	1.5	607	572
10	11.5	1014	650
0	21.5	1421	708
-10	31.5	1828	754
-20	41.5	2234	792
-30	51.5	2641	826
-40	61.5	3048	856
-50	71.5	3454	884

BELOW AREAS A + B

EL FT	z'' FT	$\bar{\sigma}_o$ LB/FT²	v_s FT/SEC
34.5	0	83.3	348
30	4.5	452	531
27.7	6.8	640	580
20	14.5	953	640
10	24.5	1359	700
0	34.5	1766	747
-10	44.5	2173	787
-20	54.5	2580	821
-40	74.5	3393	880

$z'' = (34.5' - \text{EL.})$

WATER TABLE AT EL 27.7'

$\gamma_{SAT} = 123$ LB/FT³

3. ESTIMATE OF SHEAR WAVE VELOCITY - CONT'D.

DATA FROM THE TABLES ON SHEET 4 ARE PLOTTED BELOW TO SHOW THE VARIATION OF v_s WITH DEPTH BELOW THE BASEMENT AND BELOW AREAS A AND B.

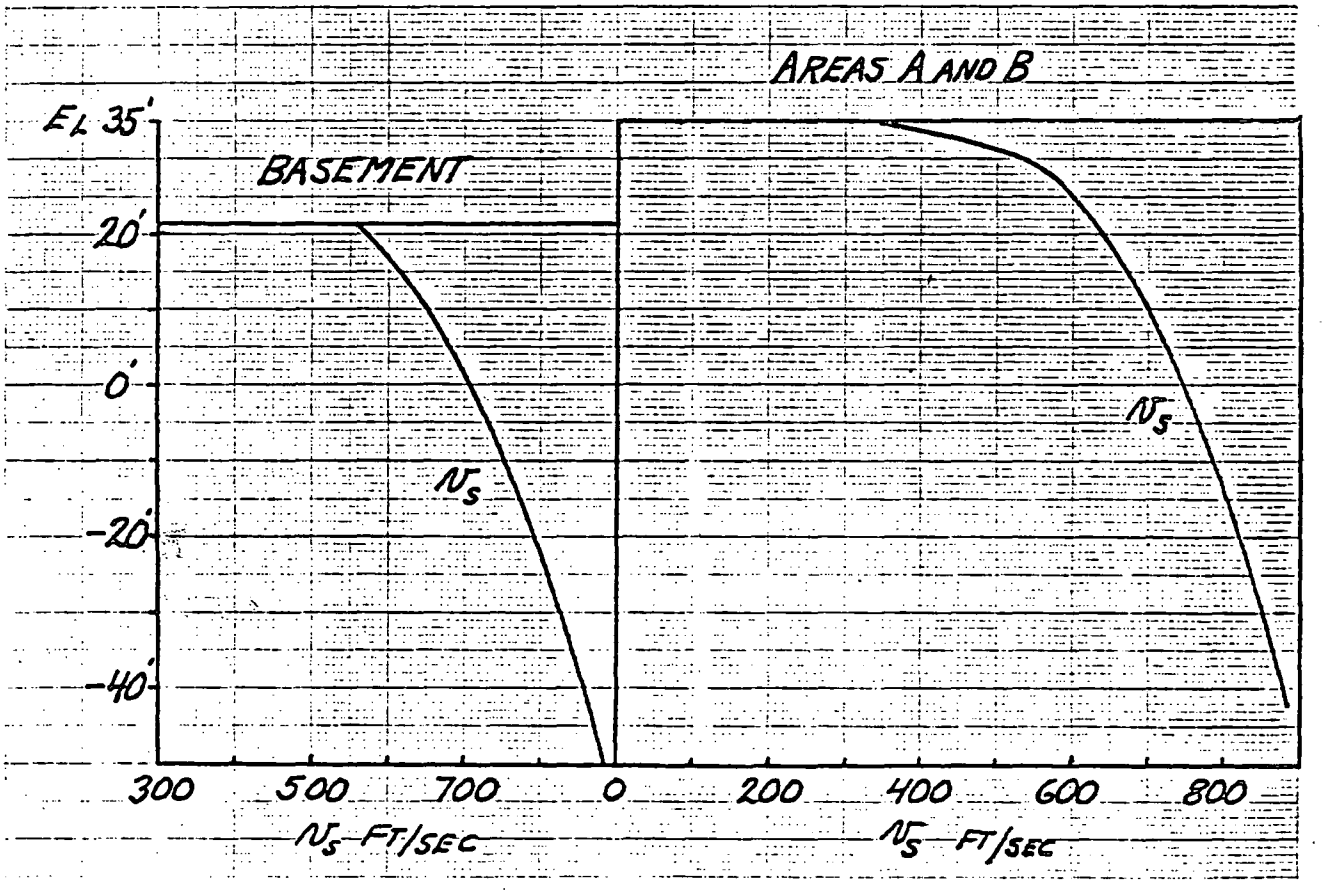
NOTE THAT FOR BOTH CASES, $v_s \approx 870$ FT/SEC AT ABOUT 75 FT BELOW GROUND SURFACE

WITH $v_R \approx 0.92\, v_s$, $v_R = 800$ FT/SEC.

AT $f = 5.5$ HZ, $\lambda_R = \frac{v_R}{f} = \frac{800}{5.5} = 145$ FT

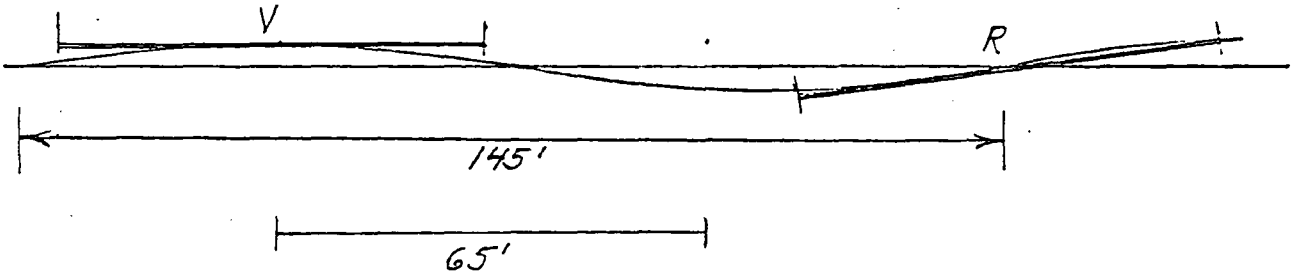
THIS IS A REASONABLE CHECK ON THE "HALF RAYLEIGH WAVE LENGTH" AS DEPTH FOR EVALUATING WAVE VELOCITIES. (SEE ART. 4.3 OF RICHART, HALL, + WOODS)

THUS, FOR FREQUENCIES OF 5-6 HZ, WE MIGHT ANTICIPATE RAYLEIGH WAVE LENGTHS OF $130 < \lambda_R < 160$ FT



4. RESPONSE OF FOUNDATION STRUCTURE TO EXTERNAL EXCITATION

WE MAY CONSIDER A SURFACE WAVE OF WAVE LENGTH, $\lambda_R = 145$ FT, FREQUENCY, $f = 5.5$ Hz., AND AMPLITUDE OF MOTION $A_z = 0.000006$ IN - FOR THE FIRST CASE - AND DETERMINE THE VERTICAL AND ROTATIONAL RESPONSE OF THE FOUNDATION BOX



THE BASE OF THE FOUNDATION IS SUBJECTED TO VERTICAL, HORIZONTAL, AND ROCKING INPUT MOTIONS. HORIZONTAL MOTIONS SHOULD BE MINIMIZED BY THE EFFECTS OF THE ADJACENT BLDGS.

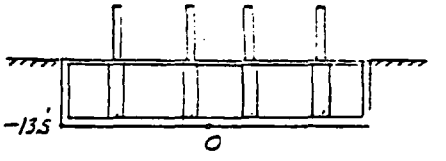
THE FOUNDATION BOX

FROM SMP NOTES 7/17/78

BOX IS 65' WIDE, 120' LONG, AND 13.5' DEEP

DEAD WEIGHT = W = 4320 K

CG IS 5.92 FT ABOVE BASE OF SLAB.



MOMENT OF INERTIA ABOUT POINT O - ℄ OF BASE OF SLAB:

SLAB: $2' \times 65' \times 120'$, $m = 7.268 \times 10^4 \ \frac{LB\ SEC^2}{FT} = \frac{2 \times 65 \times 120 \times 150}{32.2}$

$$I_o = \frac{m}{12}\left[4H^2 + W^2\right] = \frac{7.268 \times 10^4}{12}\left[4(2)^2 + 65^2\right] = 2.569 \times 10^7 \ FT\,LB\,SEC^2$$

BASEMENT WALLS: $2 \times 1' \times 65' \times 11.5'$, $m = 6.96 \times 10^3 \ \frac{LB\ SEC}{FT}$

$$\left.\begin{aligned} I_{CG} &= \frac{m}{12}\left[H^2 + W^2\right] = \frac{6964}{12}\left[11.5^2 + 65^2\right] = 2.529 \times 10^6 \\ m\bar{y}^2 &= 6964(7.75)^2 = 4.183 \times 10^5 \end{aligned}\right\} = 2.947 \times 10^6 \quad ''$$

$2 \times 1' \times 120' \times 11.5'$, $m = 12{,}857$ LB SEC

$$\left.\begin{aligned} I_{CG} &= \frac{12857}{12}\left[11.5^2 + 1^2\right] = 1.428 \times 10^5 \\ m\bar{y}^2 &= 12857(7.75)^2 = 7.722 \times 10^5 \end{aligned}\right\} = 9.150 \times 10^5 \quad ''$$

4. RESPONSE - CONT'D - FOUNDATION BOX

MOMENT OF INERTIA ABOUT POINT O - ℄ OF BASE OF SLAB

OPERATING FLOOR 5.82×10^5 LB, $m = 18074 \frac{LB\,SEC}{FT}$

$I_{CG} = \frac{m}{12}[H^2 + W^2] = \quad = 6.365 \times 10^6$ FT LB SEC^2

$m\bar{y}^2 = 18074(13.25)^2 \quad = 3.173 \times 10^6$

} 9.538×10^6 FT LB

EQUIPMENT 30 CZ = 600^K, 8 FZ = 160^K } 760^K

$m\bar{y}^2$ OF CZ $= \frac{30 \times 20}{32.2}(13.25)^2 = 3271$ FT K SEC^2

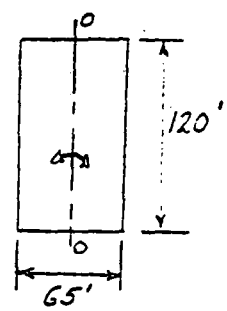
$m\bar{y}^2$ OF FZ $= \frac{8 \times 20}{32.2}(16.53)^2 = 1357$ "

} 4.629×10^6 "

TOTAL MASS MOMENT OF INERTIA ABOUT ℄ OF BASE (POINT O) - INCL. DATA FROM SHEET 6

$I_{\psi_0} = 4.372 \times 10^7$ FT LB SEC^2

EFFECTIVE RADIUS OF BOX - FOR ROCKING ABOUT ℄ OF LONG AXIS OF BASE, O-O



$$r_0 = \sqrt[4]{\frac{120(65)^3}{3\pi}} = 43.2 \text{ FT}$$

$$B_\psi = \frac{3(1-\nu)}{8}\frac{I_\psi}{\rho r_0^5} = \frac{3(1-0.25)}{8} \times \frac{4.372 \times 10^7}{\frac{120}{32.2}(43.2)^5} = 0.022$$

∴ THERE IS NO DYNAMIC OVERSWING - THE BOX WILL MOVE WITH THE SURFACE MOTION.

AT $f = 5.5$ HZ. $\quad a_0 = \frac{2\pi f r_0}{v_s} = \frac{2\pi \cdot 5 \cdot 43.2}{600} = 2.26$

FROM R.H. + W THE STATIC ROCKING STIFFNESS IS (FOR $\nu = \frac{1}{4}$)

$$k_\psi = \frac{8Gr_0^3}{3(1-\nu)} = \frac{8\left(\frac{120}{32.2}\right)(600)^2(43.2)^3}{3(1-0.25)} = 3.846 \times 10^{11} \text{ FT LB/RAD}$$

CHECK - BY WONG + LUCO, 1976. (FINITE ELEMENT SOLUTION)

$$k_\psi = \frac{Gb^3}{C_{MM}} = \frac{\frac{120}{32.2}(600)^2(60)^3}{0.31} = 9.35 \times 10^{11} \text{ FT LB/RAD } (\nu = 1/3)$$

(R.H. + W) VALUE INCREASES TO 4.33×10^{11} FT LB/RAD FOR $\nu = \frac{1}{3}$)

4. RESPONSE OF FOUNDATION BOX - CONT'D.

THE NOTES ON THE FOUNDATION STIFFNESS - ON SHEET 7 - HAVE NOT INCLUDED THE EFFECT OF EMBEDMENT - WHICH ACTUALLY MAKES THE FOUNDATION STIFFER.

CONSERVATIVE

ALSO THE GROUND WATER WAS CONSIDERED TO BE AT THE 100 YR. FLOOD STAGE - WHICH GIVES THE MINIMUM VALUE OF SOIL MODULUS, G. A LOWER WATER TABLE ALSO STIFFENS THE FOUNDATION

VERTICAL MOTION - THE MASS-RATIO FOR VERT MOTION IS $B_z = \frac{(1-\nu)\, m}{4\, \rho r_o^3} = \frac{0.75 \times 4.32 \times 10^6}{4 \times 120\, (49.8)^3} = 0.055$

FOR $r_o = \sqrt{\frac{65 \times 120}{\pi}} = 49.8'$ - ∴ NO DYNAMIC MAGNIFICATION OF MOTION

THE MAXIMUM VERTICAL MOTION WILL BE THAT OF THE FREE FIELD, WHICH WAS FOUND TO BE 6×10^{-6} IN. AT 5.3 Hz, FROM EVENT 1. (SEE SHEET 2 OF 10), OR 9×10^{-6} IN. AT 4.8 Hz.

NOTE: THE ABOVE CALCULATION INCLUDED ONLY THE WEIGHT OF THE FOUNDATION BOX + EQUIPMENT. INCLUDING THE DEAD WT. OF THE WALLS AND ROOF INCREASES W FROM 4320^k TO 5765^k. THIS WOULD INCREASE B_z TO 0.073 WHICH IS STILL WELL BELOW $B_z = 0.36$ - FOUND BY LYSMER - AS THE MASS RATIO AT WHICH DYNAMIC MAGNIFICATION BEGINS.

BECAUSE THE FOUNDATION BOX IS ABOUT 10 × AS STIFF AS THE SOIL (SEE SNAP CALCULATIONS 7/17/78), AND BECAUSE THE 65' WIDTH REPRESENTS A SUBSTANTIAL PORTION OF A HALF WAVE LENGTH (λ_R = 145' - SHEET 6), THE RIGIDITY OF THE BOX WILL REDUCE THE AVERAGE VERTICAL MOTION.

∴ THE ACTUAL MAX. VERTICAL MOTION WILL BE $< 6 \times 10^{-6}$ IN AT 5.3 Hz.

4. RESPONSE OF FOUNDATION STRUCTURE - CONT'D

ROCKING MOTION :

THE WORST CASE FOR ROCKING MOTION OF THE FOUNDATION BOX OCCURS AS SHOWN ON SHEET 6, WITH THE ℄ OF THE BOX AT ZERO VERTICAL DISPLACEMENT. THEN, IF THE BASE ELEVATION UNDERGOES SINUSOIDAL MOTION WITH $A_z = A \sin \frac{2\pi x}{L}$ AT ANY TIME, FOR $x = 32.5'$, AND $L = 145'$, $A_z = 0.987A \approx A$

THEN THE ANGULAR ROTATION OF THE BOX IS ABOUT

$$\psi = \frac{2A}{65'} = \frac{2 \times (6 \times 10^{-6})}{65 \times 12} = 1.54 \times 10^{-8} \text{ RADIANS}$$

FROM SHEET 3, THE TOTAL STATIC + DYNAMIC ROTATION ALLOWED WAS $\psi_{ALL} = 6 \times 10^{-5}$ RADIANS - AN AMPLITUDE OF ABOUT 4000 GREATER THAN THE CALCULATED DYNAMIC VALUE. EVEN IF WE USE $A_z = 9 \times 10^{-6}$ IN @ 4.8 Hz (TIME DOMAIN), THE CALCULATED VALUE IS ONLY 2.3×10^{-8} RAD. AND ψ_{ALL} IS 2600 TIMES GREATER. IF THE STRUCTURE OF THE MACHINERY ONLY HAD A LOW DAMPING RATIO OF $D \approx 0.02$, THE DYNAMIC MAGNIFICATION FACTOR AT RESONANCE ($f = 5.5$ Hz) WOULD BE ONLY $M = 25$.

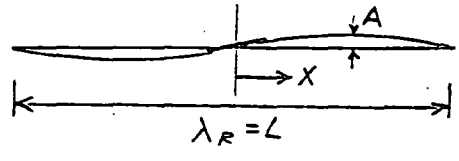
THUS, AN INPUT AMPLITUDE OF $\psi_I = 2.3 \times 10^{-8}$ RAD SHOULD AT THE WORST, PRODUCE $\psi_{MAX} = 5.8 \times 10^{-7}$ RAD — ABOUT 1% OF THE LIMITING CRITERIA

FOR LONGER λ_R, THE RELATIONSHIP OF $65'/\lambda_R$ WILL DECREASE, AND THE ROTATION ψ WILL INCREASE TO THE MAXIMUM

$$\psi_{MAX} = \frac{2\pi A}{\lambda_R}$$

$= 2.2 \times 10^{-8}$ RAD, FOR $A = 6 \times 10^{-6}$ IN, $\lambda_R = 145'$

$= 3.2 \times 10^{-8}$ RAD, FOR $A = 9 \times 10^{-6}$ IN, $\lambda_R = 145'$



IF $A_z = A \cdot \sin \frac{2\pi x}{L}$

$$\psi = \frac{dA_z}{dx} = A \cdot \frac{2\pi}{L} \cos \frac{2\pi x}{L}$$

$$\psi_{MAX} = \frac{2\pi A}{L} \quad \text{AT } X = 0, \text{ ETC.}$$

4. ROCKING RESPONSE - CONT'D

FROM SHEET 9, THE MAXIMUM SLOPE IS ONLY ABOUT 1.4 × THE VALUE FOR A 65' WIDE FOUNDATION RIDING ON A WAVE 145' LONG.

IF THE AMPLITUDE OF MOTION, A, IS MAINTAINED CONSTANT, BUT THE WAVE LENGTH IS INCREASED (AS OCCURS WHEN A LOWER FREQUENCY OF EXCITATION IS INTRODUCED) THEN THE ANGLE OF ROTATION IS REDUCED

ON THE OTHER HAND, IF THE FREQUENCY IS INCREASED, THE WAVE LENGTH BECOMES SHORTER. THEN IT MAY BE POSSIBLE TO TRAP MULTIPLE + AND − AMPLITUDES BENEATH THE FOUNDATION - AND REDUCE THE OVERALL MOTIONS. MULTIPLE HALF-WAVE LENGTHS WOULD BE TRAPPED WHEN THE SURFACE WAVE TRAVELS ALONG THE 120' LENGTH.

FURTHER REFINEMENTS AND IMPROVEMENTS ON THE ANALYSIS COULD BE MADE USING INFORMATION FROM

A.) Warburton, G.B., Richardson, J.D., and Webster, J.J. (1971) "Forced Vibrations of Two Masses on an Elastic Half-Space" J. Appl. Mech., Mar. pp. 148-156

B) Prange, B. (1978), "On the Dynamic Interaction between an Inert Mass and Subsoil Wave Fields", Veröffentlichungen des Institutes für Bodenmechanik und Felsmechanik der Universität Fridericiana in Karlsruhe. 230pp

CH2M HILL

PROJECT NUMBER P16058. B0

SOIL BORING LOG

PROJECT Wacker Siltronics LOCATION Portland, Oregon
DRILLING METHOD Mud Rotary DRILLERS & EQUIPMENT D. Kenner of Oregon, Inc.; CME-55
ELEVATION 32.2 ft. BORE HOLE: B-102
WATER LEVEL not measured DATE: — — START: 7/1/82 FINISH: 7/1/82 INSPECTOR CW HL

DEPTH BELOW SURFACE (ft)	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
30	30.0–31.5	S-6	10	1-2-2	4	SILT, NON PLASTIC, ABOUT 5% FINE SAND, MEDIUM GRAY, WET, SOFT, FRAGMENTS OF DECOMPOSED PLANT MATERIAL		ML	MIX MUD AT 30'.
	33.0–35.0	ST-7	24	— — —	—	SILT SIMILAR TO S-6 EXCEPT MODERATELY TO HIGHLY PLASTIC AND ORGANIC.		MH-OH	
35	36.5	S-8	18	1-2-2	4	SILT SIMILAR TO S-6 EXCEPT NO SAND AND MODERATELY TO HIGHLY PLASTIC AND ORGANIC		MH-OH	
40	41.5	S-9	18	4-7-8	15	SILT SIMILAR TO S-6, EXCEPT FOR LACK OF SAND, BLUE-GREEN COLOR AND STIFF.		ML	
45	46.5	S-10	18	2-2-2	4	SILT SIMILAR TO S-6, EXCEPT SLIGHTLY PLASTIC AND ABSENCE OF SAND AND FRAGMENTS OF PLANTS		ML	
	48.6–50.0	ST-11	24	— — —	—	UPPER 18"-SILT, SAME AS S-10 LOWER 6"-SILTYSAND, SAME AS S-12.		ML, SM	LAST 6" OF ST-11 PUSHED VERY HARD
50	51.5	S-12	10	4-6-10	16	SILTYSAND, FINE SAND, 20-25% FINES, BROWN, WET, COMPACT.		SM	
55	56.5	S-13	18	2-5-6	11	SILT, NON PLASTIC, BROWN, WET, STIFF.		ML	
60									

FORM D 1586 5/78

SCOEPA00036517

CH2M HILL

Engineers
Planners
Economists
Scientists

A PRELIMINARY REPORT
SOIL INVESTIGATION FOR PROPOSED
POLYSILICON PLANT

WACKER SILTRONIC CORPORATION
PORTLAND, OREGON

Prepared By

CH2M HILL NORTHWEST, INC.
2020 S.W. Fourth Avenue
Portland, Oregon 97201

JUNE 1985
P19786.A1.00

INTRODUCTION

Wacker Siltronic Corporation contracted CH2M HILL to conduct a soil investigation on Wacker's property located in the Northwest Industrial area of Portland, Oregon. The purpose of the investigation was to evaluate subsurface conditions within a section of the vacant portion of the site as part of the preliminary engineering for the design and construction of the proposed polysilicon plant.

The subsurface investigation was initiated based on the presence (both past and current) of industrial manufacturing and processing facilities within the Doane Lake area and recent environmental regulations--the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the Resource Conservation and Recovery Act of 1976 (RCRA). Wacker was concerned that past or current management practices of industrial wastes within the Doane Lake area may have resulted in the presence of these materials or subsequent residues on Wacker's property, which would prevent or hinder the construction of the proposed polysilicon plant and future expansions of the existing manufacturing facilities.

This preliminary report describes the soil boring, sampling, and analytical procedures and construction of the groundwater monitoring wells. It also presents the results of the laboratory analyses, which indicate the presence of chemical constituents commonly associated with petroleum products, coal tar, and pesticides. Interpretation of the results presented in this report is beyond the scope of our contract and will be included as part of future work (i.e., site environmental assessment).

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SITE DESCRIPTION

Wacker Siltronic Corporation is located in the northwest section of the City of Portland on the west bank of the Willamette River. The property, consisting of approximately 85 acres, is situated between the St. Johns Bridge and the Burlington Northern Railroad Bridge and is essentially rectangular in shape. Property boundaries are the Willamette River to the northeast; the Burlington Northern Railroad berm, which provides the approach to the railroad bridge, to the southwest; Burlington Northern track and adjacent N.W. St. Helens Road to the southwest; and the property line shared with Northwest Natural Gas and the Koppers Company to the northwest. Figure 1 shows the location of the Wacker property in relation to these landmarks and other industrial companies in the vicinity.

The project site is located in a vacant field about 400 feet south of Wacker's existing facilities, as shown in Figure 2. The site is bounded on the north by the existing Wacker plant, and is bordered on the south and east by Burlington Northern Railroad right-of-way. Underground utilities, consisting of oil, water, gasoline, natural gas, and sewer lines, as well as electric and telephone cables, are located in a 100-foot-wide easement on the north side of the site.

The site is relatively level with elevations ranging from about 40 feet National Geodetic Vertical Datum 1929 (NGVD) in the southern part to about 32 feet in the northern part. The local ground surface is deeply rutted with heavy machinery tracks and ditches. Wood debris, concrete, and other waste materials are present in small amounts across the field.

FIELD INVESTIGATION

The field investigation was performed from April 1 through 5, 8 and 9, 1985. The investigation involved collecting soil

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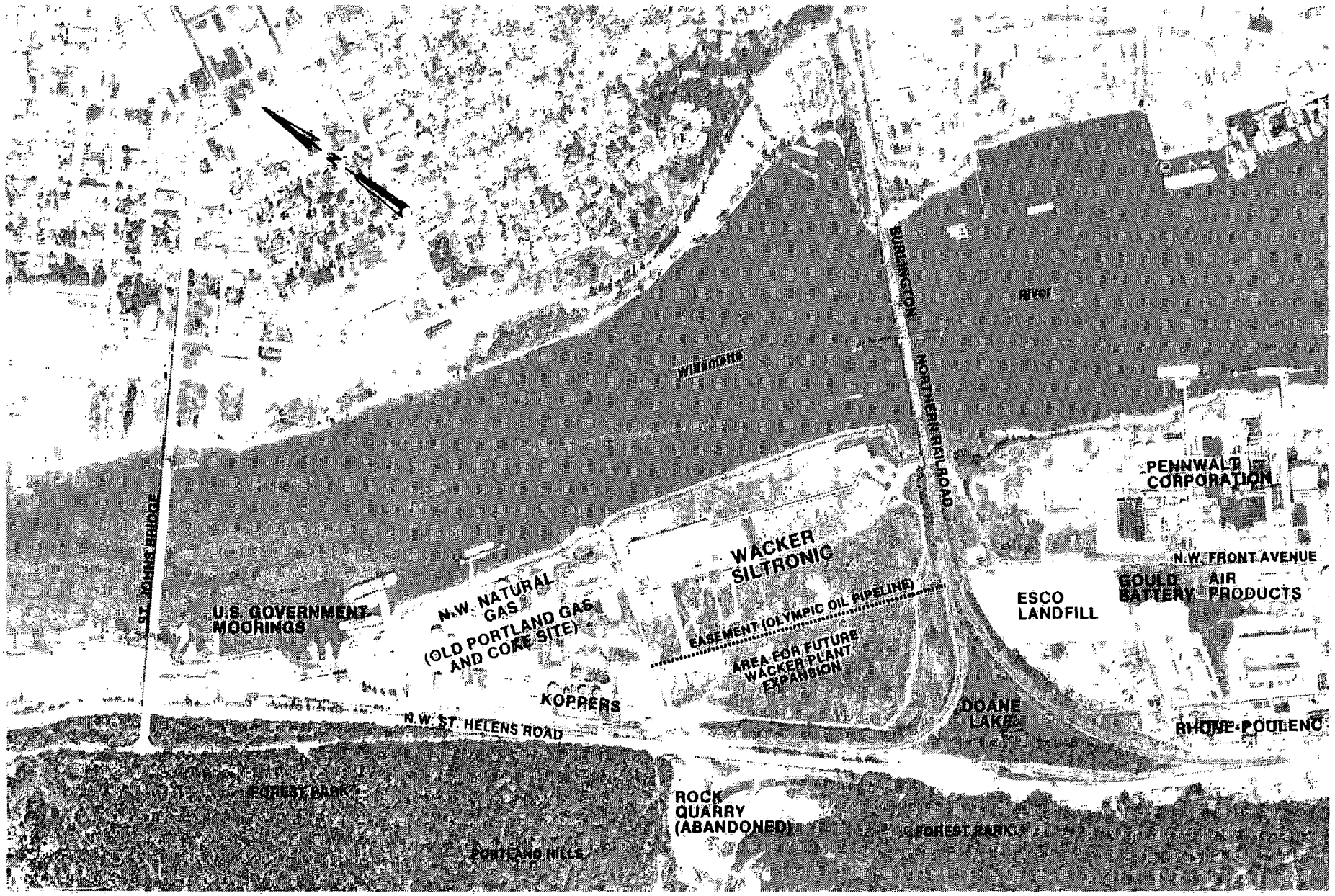

Figure 1 **WACKER SILTRONIC PLANT AND SURROUNDING VICINITY (1983)**

SCALE: 1" = 940 FEET (1 cm : 110 m)

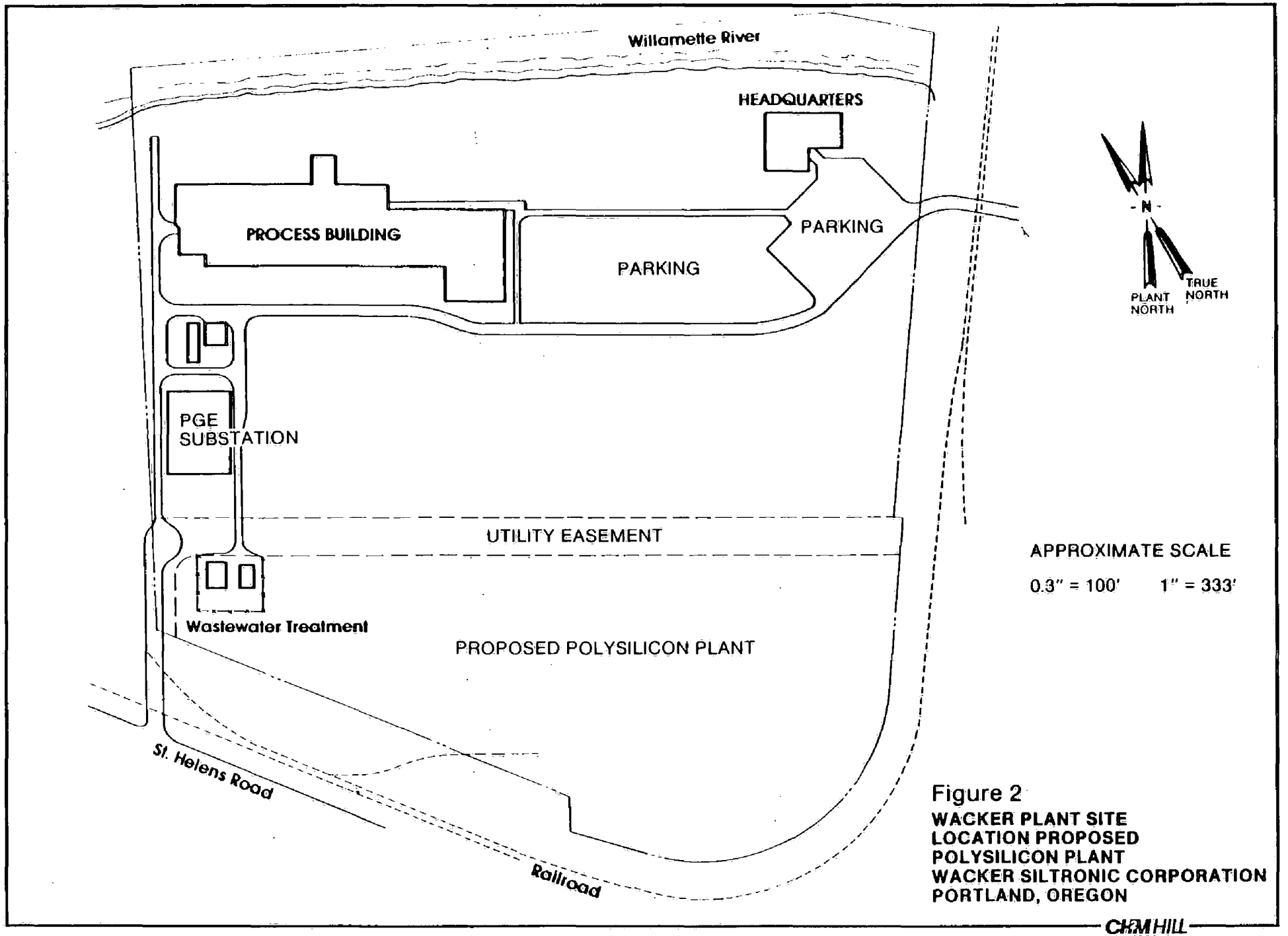

Figure 2
WACKER PLANT SITE LOCATION PROPOSED POLYSILICON PLANT WACKER SILTRONIC CORPORATION PORTLAND, OREGON

samples from seven soil borings, all of which were completed as monitoring wells. The locations of the borings/monitoring wells (designated MW-1 through MW-7) are shown in Figure 3. The soil borings were drilled and monitoring wells constructed by Geotech Explorations, Inc., of Beaverton, Oregon, under the field observation of a CH2M HILL hydrogeologist.

SOIL BORING AND SAMPLING

The seven soil borings were drilled using a CME-55 rotary drill rig and 6¼-inch (OD) hollow-stem augers. Soil samples were recovered at 5-foot intervals. Samples were recovered using a 2-inch split-spoon sampler following the requirements of the standard Penetration Test (ASTM D 1586). The sampler was driven 18 inches ahead of the auger bit to collect an undisturbed soil sample. The depth of soil borings ranged from 31.5 to 41.5 feet, generally between 5 and 20 feet below fill material and into native soils. The CH2M HILL hydrogeologist inspected, classified, and logged each borehole and soil sample in the field in approximate accordance with the Visual-Manual Procedure (ASTM D 2488). The log included a physical description of the soil type and a visual and odor estimate for the presence of contaminants. Sample intervals, soil types, and descriptions of the soil types and soil borings are provided in the soil boring record drawings presented in the appendix.

A composite soil sample from each split-spoon was placed in a clean 8-ounce glass jar. Each jar was filled to the top before it was sealed. The label that had been affixed to the sample container was then filled out. Information on the label included the facility name, the sample identification number, the name of the person collecting the sample, date and time of collection, and the location of the sample. The sample was then placed in a portable cooler until the end of each day when it was transferred via chain-of-custody record

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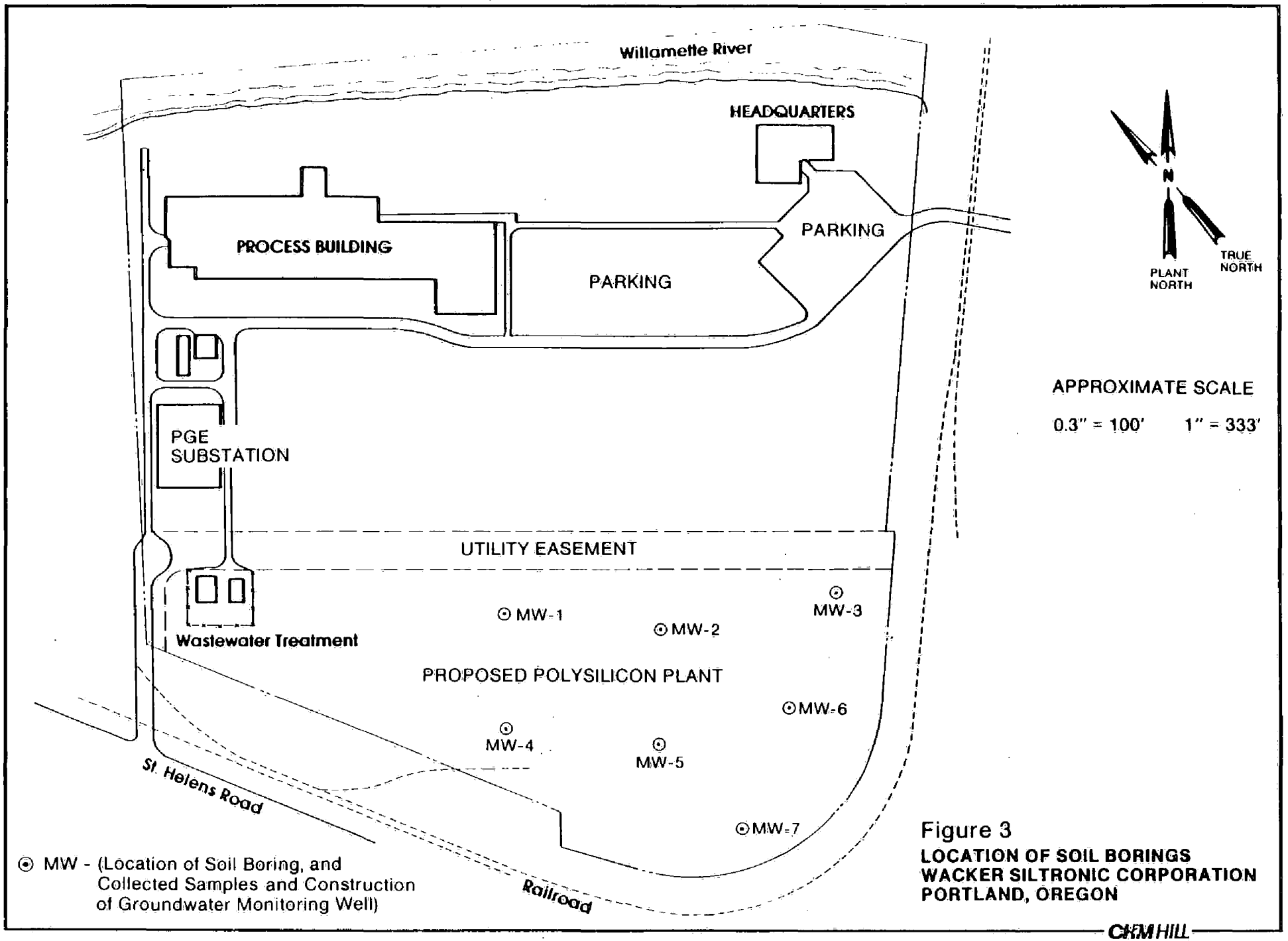

Figure 3
LOCATION OF SOIL BORINGS
WACKER SILTRONIC CORPORATION
PORTLAND, OREGON

to a refrigerator located inside the laboratory area of Wacker's wastewater treatment building. Chain-of-custody records were kept for every sample collected. Sample custody was maintained until the samples were relinquished directly to Wacker or an outside laboratory. A sample of the chain-of-custody form used is illustrated in the appendix.

All drilling equipment was thoroughly steam-cleaned before drilling each boring. Oil and grease were not used at drill rod connection fittings to prevent contamination of the soil samples. The split-spoon soil sampler was decontaminated between each use. Decontamination steps included:

- Washing off grass, soil particles, mud smears, etc., in a bucket of tap water
- Washing in a 5 to 10 percent solution of trisodium phosphate (TSP) and tap water
- Two rinses in clean tap water
- One rinse each with distilled water and methanol

The same decontamination procedures were used for the stainless steel utensils used to transfer soil from the sampler to the jars. Utensils were stored in a new plastic bag until they were ready for use.

A number of quality control measures were performed in order to ensure that all data generated was of known precision, and accuracy and conformed to accepted procedures. Soil sample splits were collected at soil boring sites MW-2, -5, and -6. Several transfer blanks were also prepared to check for potential contamination of sample jars. Samples of water poured into the drill holes to hold back heaving sands were also collected.

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GROUNDWATER MONITORING WELL CONSTRUCTION

Seven groundwater monitoring wells were constructed by installing well screen casing assemblies into the completed drill holes.

Each assembly consisted of 2-inch diameter schedule 40 PVC. Well screens consisted of a 15-foot length of PVC with three rows of 0.010-inch machine-slotted openings. A 5-foot solid PVC sump was placed beneath each screen. Solid PVC casing was placed above the screen and extended to the ground surface. Casing lengths were connected by flush-threaded fittings; no solvents were used to connect PVC sections.

Each well screen interval was gravel-packed by pouring a coarse-grained sand into the annular space between the PVC and the hollow stem of the auger. As the auger was pulled up, the sand dropped out of the hollow stem into the well to envelop the well screen. After the sand pack was installed to 2 or 3 feet above the top of the well screen, the annular space between the PVC casing and the hollow stem was filled with 1 to 2 feet of pelletized bentonite followed by cement grout to the ground surface. A summary of the construction of each well is provided in the soil boring record drawings presented in the appendix.

Well heads were completed at approximately 2 feet above the ground surface with locking steel caps that were anchored 2 to 3 feet into the cement grout mixture. The monitoring wells were developed by the drilling contractor by blowing compressed air through an air line into the sump (tail pipe) located below the well screen. Development was considered complete when the return water became visibly less turbid. The PVC monitoring well assembly was thoroughly steam-cleaned before construction of each well. As a measure of additional quality assurance and control, samples of the sand filter

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pack material used for well construction were collected and saved.

LABORATORY ANALYSIS AND SOIL SAMPLE RESULTS

The field sample description generally provided the basis for selecting samples to be sent to the laboratory for chemical analysis. Samples in which contaminants were most apparent visually and by odor were selected for analysis. Also, at least one soil sample from each soil boring site was analyzed, as was at least one sample at every 5-foot depth (except at 30 feet) from the combination of all soil boring locations. Figure 4 shows the approximate vertical location of the collected soil samples for each monitoring well and identifies which samples were analyzed.

The selection of the chemical analyses to be performed on each soil sample was based on the past and current industrial chemical manufacturing and handling activities within the Doane Lake area (i.e., petroleum products, coal tar, creosote, pesticides, battery recycling, foundry process waste disposal). The following chemical analyses were performed on the selected soil samples by Coffey Laboratories, Inc. (located at 4914 N.E. 122nd Avenue, Portland, Oregon):

- Oil and grease
- Phenols
- Volatiles and polynuclear aromatic hydrocarbons
- E.P. toxicity for:
  - --pesticides
  - --herbicides
  - --arsenic
  - --barium
  - --cadmium
  - --chromium
  - --lead
  - --mercury
  - --selenium
  - --silver

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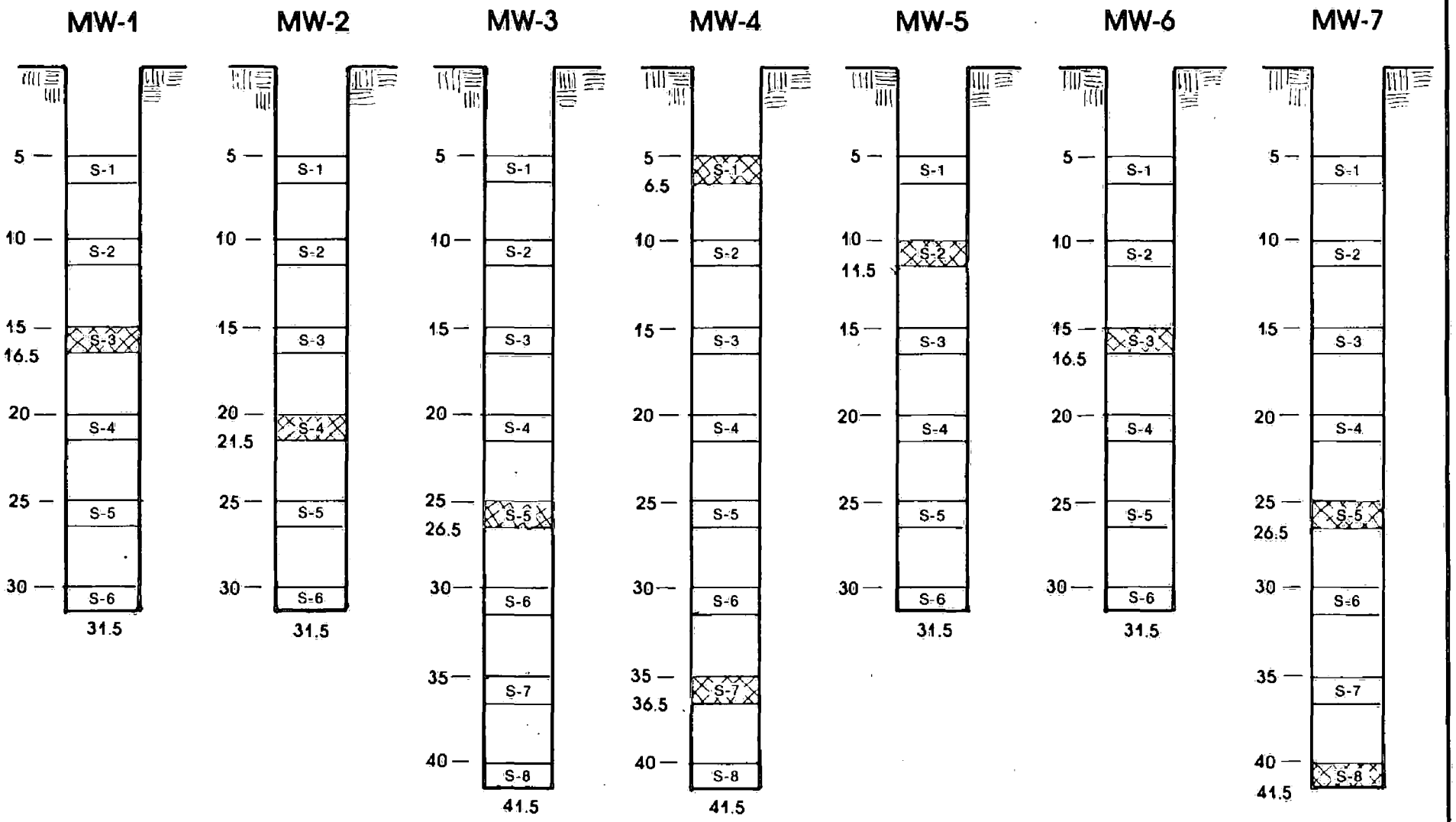

Analyzed Collected Soil Samples

(NOTE: Parallel lines denote soil samples. These were taken at 1.5 ft intervals starting every five feet)

Figure 4

GENERAL VERTICAL LOCATION COLLECTED SOIL SAMPLES WACKER SILTRONIC CORPORATION PORTLAND, OREGON

CH2M HILL

The results of the laboratory analysis are presented in Table 1. A copy of the Coffey Laboratories, Inc., report is included in the appendix.

The field samples were analyzed for phenols, pesticides, herbicides, metals, volatiles, and aromatic hydrocarbons by EPA methods (SW-846, EPA-602, 4-79-020); the oils and grease were measured by standard methods (method 503 D).

Laboratory quality assurance procedures included method blanks, duplicates for precision measurements, and spikes for accuracy measurements. The frequency of blank, duplicate, and spike measurements was at a minimum of 10 percent per set to meet the standard requirements. The data were evaluated in view of the QC findings and found acceptable.

A review of the laboratory analysis indicates that each soil boring location contained a mixture of substances commonly associated with petroleum products, coal tar, and pesticides. The following list summarizes the principal substances found in each of the seven borings:

- MW-1 PAHs, petroleum products
- MW-2 PAHs, petroleum products
- MW-3 petroleum products
- MW-4 petroleum products
- MW-5 PAHs, petroleum products, 2,4-D
- MW-6 petroleum products, 2,4-D
- MW-7 petroleum products

Interpretation of results presented in Table 1 is beyond the scope of this report and will be included as part of future work (i.e., site environmental assessment).

SCOEPA00036530

Dames & Moore
1220 S.W. Morrison Street
Portland, Oregon 97205
(503) 228-7688

LETTER OF TRANSMITTAL

TO: Wacker-Siltronic
P.O. Box 03180
Portland, OR 97203

DATE: October 28, 1986

PROJECT NAME:

ATTENTION: Mr. James R. Ellis

JOB NO: 14232-001-05

SUBJECT: CH2M HILL Report

YOUR ORDER NO:

WE ARE SENDING YOU VIA Hand Delivered

THE FOLLOWING:

NO. OF COPIES	DESCRIPTION
1	Original report dated August 10, 1982 from CH2M HILL.

THESE ARE FOR

REMARKS:

COPIES TO: File

DAMES & MOORE

BY C. F. Kienle

C. F. Kienle

CH2M HILL
engineers
planners
economists
scientists

August 10, 1982

P16058.BO

Wacker-Chemie
Department U
Postfach 1140, 8263 Werk Burghausen
West Germany

Attention: Mr. Herbert Schmid

Gentlemen:

Subject: Preliminary Geotechnical Exploration
Proposed Wacker Poly Plant

We are pleased to submit this report summarizing our geotechnical exploration for the proposed Wacker Poly Plant in Portland, Oregon. The report contains the results of our field exploration and laboratory analyses, and presents preliminary foundation recommendations.

We appreciate the opportunity to work with you on this project. If you have any questions regarding this report, or if we may be of further assistance, please contact us.

Sincerely,

Deanne L. Kasai

Deanne L. Kasai
Staff Geotechnical Engineer

Richard S. Reid

Richard Reid
Project Manager

480.002.1

Portland Office
200 S.W. Market Street, 12th Floor, Portland, Oregon 97201 503/224-9190 Cable: CH2M HILL

PRELIMINARY GEOTECHNICAL EXPLORATION

for the

PROPOSED WACKER POLY PLANT

PORTLAND, OREGON

Prepared for

WACKER-CHEMIE

BURGHAUSEN, WEST GERMANY

by

CH2M HILL

200 S.W. Market Street
Portland, Oregon 97201

August 1982

Project No. P16058.BO

480.003.1

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Appendix A--Boring Logs
Appendix B--Laboratory Test Results

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PRELIMINARY GEOTECHNICAL EXPLORATION
PROPOSED WACKER POLY PLANT

INTRODUCTION

Purpose and Scope

This report presents the results of our preliminary geotechnical exploration for the proposed Wacker Poly Plant, which will be adjacent to the existing Wacker Siltronic Corporation Plant in Portland, Oregon. The purpose of our exploration was to evaluate subsurface conditions at the site and to make preliminary foundation recommendations for support of the proposed facilities.

The scope of our work included:

- Reviewing existing data and reports of previous preload performance.
- Conducting a drilling program, consisting of nine soil borings, to explore subsurface conditions at the site.
- Performing laboratory testing on selected soil samples collected from soil borings.
- Developing preliminary foundation recommendations based on geotechnical evaluation of subsurface information and laboratory test results.
- Preparing this report summarizing our findings.

Limitations

The analysis and recommendations contained in this report are based on data obtained from soil borings, existing reports, and current geotechnical engineering practice. This report has been prepared to assist in the evaluation of the proposed site and to assist in the design of this project. Soil borings indicate soil conditions only at specific locations and times, and only to the depths penetrated. They do not necessarily reflect soil or strata variations that may exist between boring locations. If variations in subsurface conditions different from those described are noted during the course of excavation and construction, reevaluation of the exploration and design analysis will be necessary. The conclusions and recommendations contained in this report should be reevaluated in the event that changes are made in the nature or design of the structures, or if the structures are relocated outside the explored area.

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This report has been prepared for the exclusive use of Wacker-Chemie, Burghausen, West Germany, for specific application to the subject site, in accordance with generally accepted geotechnical engineering practices. No other warranty, expressed or implied, is made.

Site Description

The project site is located in a vacant field about 400 feet south of Wacker Siltronic Corporation's existing facilities in northwest Portland, Oregon (Figures 1 and 2). The site is bounded on the north by the existing Wacker Plant, and is bordered on the south and east by the SP&S railway's right-of-way. Underground utilities, consisting of oil, water, gasoline, natural gas, and sewer lines, as well as electric and telephone cables, are present in a 100-foot-wide easement on the north side of the site (Figure 2).

The site is relatively level with elevations ranging from about 40 feet National Geodetic Vertical Datum 1929 (NGVD) in the southern part to about 32 feet in the northern part. The ground surface is locally deeply rutted with heavy machinery tracks and ditches. Wood debris, concrete, and other waste materials are present in small concentrations across the field.

We understand that two generations of hydraulic fill material have been placed on the site during the past 25 years. Fill was first placed 20 to 25 years ago, and again sometime during the past 10 years. The most recent fill is about 5 feet thick. Overall fill thickness is probably 15 to 20 feet.

The existing Wacker Siltronic Plant was successfully preloaded to reduce post-construction building settlements. The first stages of preloading began on August 22, 1978, and the eleventh and final stage was placed on October 10, 1978. Preload removal began on September 9, 1978, and subsequent removal of each stage was authorized after review of settlement monitoring data. Preload removal was authorized after predicted settlement was achieved or primary settlement was complete. The last stage was removed by January 5, 1979. The measured settlements of the settlement plates varied between zero and 13.8 inches. This difference was attributed to differential fill heights and the variable nature of the subsurface materials (CH2M HILL, 1979).

Based on U.S. Army Corps of Engineers' data, the 100-year flood level at the project site is 27.7 feet NGVD. The 50-year flood elevation is 25.8 feet.

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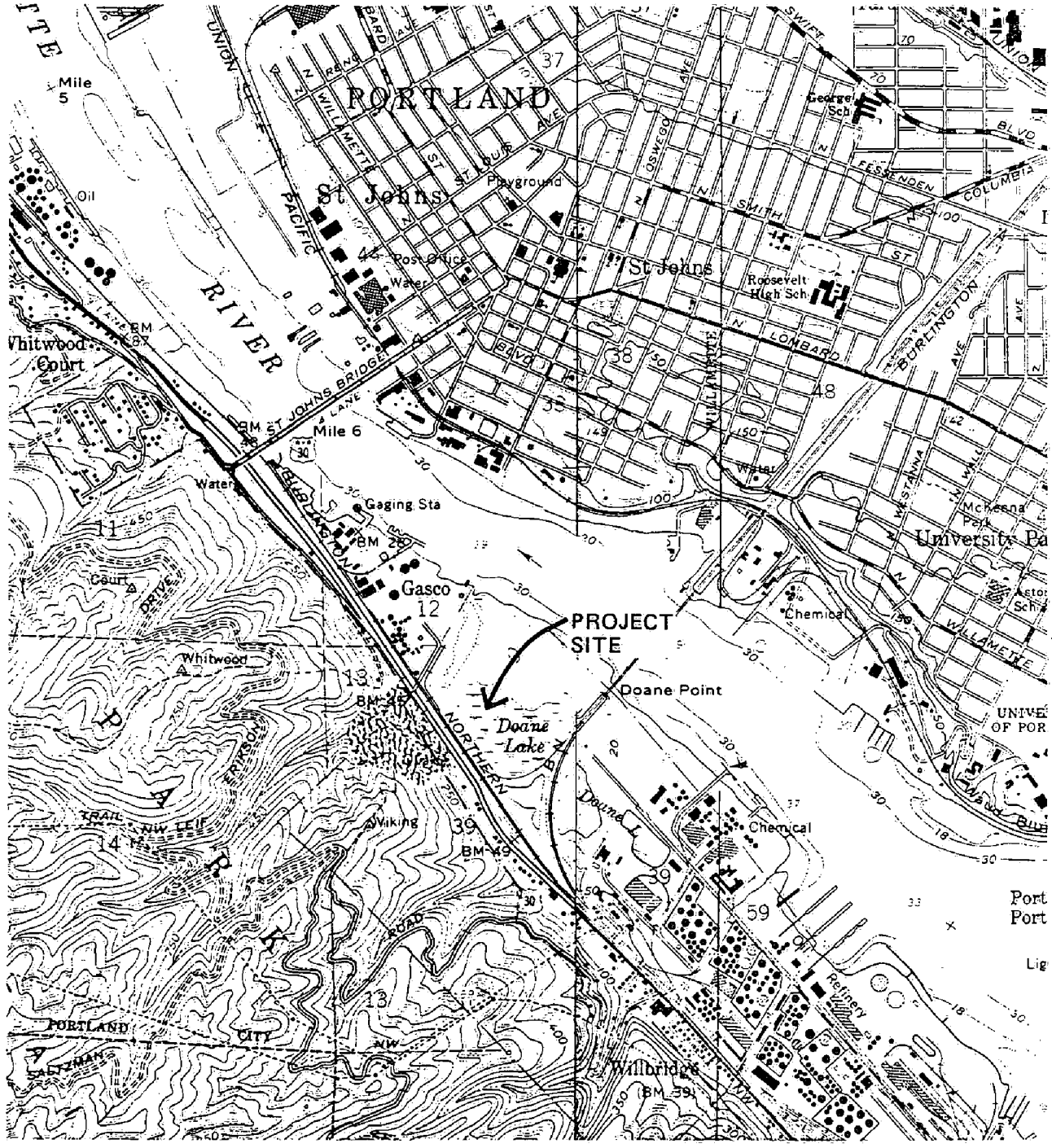

FIGURE 1
VICINITY MAP
Wacker Siltronics Corporation
August 1982

CH2M HILL

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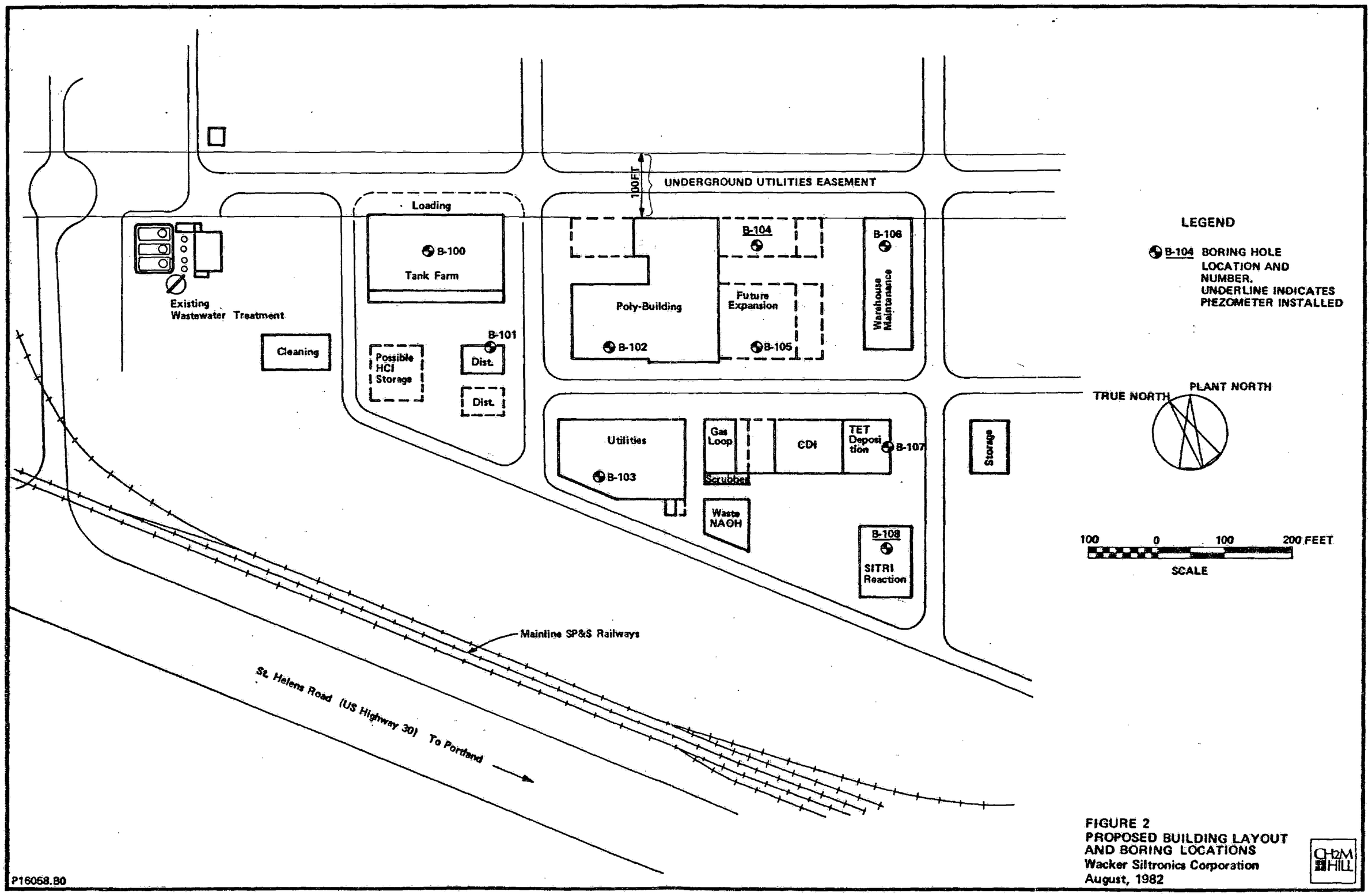

FIGURE 2
PROPOSED BUILDING LAYOUT
AND BORING LOCATIONS
Wacker Siltronics Corporation
August, 1982

Project Description

The proposed Poly Plant will consist of the following facilities: Distillation Tower, Tank Farm, Poly Deposition Building, Warehouse, Utility Area, Gas Loop, Scrubber, CDI, Tet-Deposition Building, Sitri Reaction, and miscellaneous storage areas (Figure 2). All structures will tentatively be constructed with slab-on-grade, concrete walls, and column footings. There are several structures that will exceed two stories in height, the Distillation Tower, the Poly Deposition Building, the Gas Loop structure, the Sitri Reaction structure, and the Tet-Deposition Building. No basements are planned. The structural loads used in the foundation analysis are shown in Table 1. These loads approximate the total live load plus dead load of the structure divided by the footprint area of the structure; isolated column loads will probably be heavier, while floor slab loads will probably be lighter. The design structural loads should be used for analysis during final design.

Table 1

STRUCTURAL LOADS

Warehouse	300 psf*
Poly Deposition Building, Tet-Deposition Building, Sitri Reaction, Storage Tanks, Utility, Gas Loop, Scrubber, CDI	1,000-1,200 psf
Tank Farm, Distillation Tower	2,000 psf

*psf = pounds per square foot

Process considerations required that the Distillation Tower be designed to restrict the horizontal displacement at the top of the 98-foot columns to 1½ inches, maximum.

EXPLORATION

Geology

The project site is located on the northwest edge of the northwest-trending structural depression known as the Willamette Valley. The physiography of this part of the

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Willamette Valley is dominated by the northwest-trending Portland Hills (also known as the Tualatin Mountains) and the flood plain of the Willamette River. The project area is situated between the base of the Portland Hills (about 0.1 mile to the southwest) and the Willamette River (about 0.3 mile to the northeast).

Beneath artificial fill material, the uppermost geologic unit at the site is unconsolidated alluvium deposited by the Willamette River. In the project area, the alluvium is composed of silt, sand, and combinations of these materials. Columbia River Basalt occurs at depths less than 100 feet beneath the site. Massive flows of Columbia River Basalt are exposed in the walls of the abandoned quarry located immediately southwest of the site.

The northeastern front of the Portland Hills forms a linear escarpment that persists for at least 50 miles in the Portland area. Investigators have speculated about the origin of the linear mountain front for many years. It has been explained as part of a large fold by Trimble (1963), and as the result of normal faulting by Schlicker et al. (1964) and by Balsillie and Beeson (1971). Gravity surveys by Beeson et al. (1974) support the concept of a right lateral strike slip fault with several hundred feet of vertical displacement. However, direct geologic or seismic evidence for a fault along the northeast flank of the Portland Hills has not yet been identified.

Seismic Considerations

The site is located in a region of low to moderate historic seismicity. The largest earthquake to occur within the Portland area since 1841 was a 1962 event with an estimated Richter magnitude of 5 that locally developed a Modified Mercalli (M.M.) Intensity of VII (Berg and Baker, 1963). The epicenter was in the area of the Columbia River about 9 miles northeast of the site. In January and May of 1968, two earthquakes of Richter magnitude 3.7 and 3.8, respectively, occurred in the same general area as the 1962 event and produced M.M. intensities of IV in Portland (Hammond et al., 1974).

Distant earthquakes have also been felt in the Portland area. In 1949, the Richter magnitude 7.1 Olympia, Washington, earthquake produced an intensity VI in Portland. In 1965, a Richter magnitude 6.5 earthquake near Tacoma, Washington, developed an intensity V in Portland. The epicenters of these events were more than 100 miles north of the project area. Events originating about 150 miles offshore from Oregon have produced intensities of IV in Portland (Hammond et al., 1974).

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Perkins et al. (1980) have developed seismic risk maps for the Pacific Northwest based on the estimated probability of maximum bedrock acceleration expected from earthquakes occurring within the region. These maps show that for the Portland area there is a 90 percent probability that bedrock accelerations will not exceed 0.15 g (where g is the acceleration of gravity) in 50 years. This corresponds to an earthquake with a recurrence interval of approximately 500 years. These maps also show that for the Portland area, there is a 90 percent probability that bedrock accelerations will not exceed 0.07 g in 10 years. This corresponds to an earthquake with a recurrence interval of approximately 100 years.

To establish a design earthquake and to determine probable site response, a detailed seismic evaluation would be required. Based on our experience, we believe that a detailed study is not warranted for this site. Therefore, we recommend using the applicable provisions of the Uniform Building Code (1979), Seismic Zone 2, for design.

Liquefaction Potential

We made a brief review of liquefaction potential at the site using the simplified procedure developed by Seed and Idris (1971), and the Standard Penetration Test results (see Appendix A). Following site improvement by use of preloads, we believe that soil liquefaction will be unlikely for bedrock accelerations less than about 0.07 g, which corresponds to an earthquake with a recurrence interval of about 100 years. However, bedrock accelerations of about 0.15 g (corresponding to the 500-year event) may cause local liquefaction at the site. To fully evaluate liquefaction potential, a detailed site response analysis would be required. We believe that this type of analysis is probably not warranted.

Field Exploration

Our field exploration program consisted of nine exploratory soil borings, numbered B-100 through B-108. The locations of borings are shown on Figure 2, and boring logs are presented in Appendix A. The borings were drilled by Donald A. Kenner Drilling of Oregon, Inc., of Sherwood, Oregon. The drilling program was observed in the field by a CH2M HILL geotechnical engineer and engineering geologist. Field work was performed from June 28 through July 2, 1982.

Boring locations and elevations were determined by surveying methods based on NGVD. The soil borings were drilled using two drill rigs on the site. Borings B-100, 101, 102, and 103 were drilled using a CME-55 rotary drill

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rig, while borings B-104, 105, 106, 107, and 108 were drilled with a CME-75 rotary drill rig. In all borings except B-104 and B-108, bentonite drilling mud was used to remove cuttings and to prevent sidewalls from collapsing. An organic polymer drilling fluid (Revert) was used in borings B-104 and B-108 where piezometers were installed. The soil borings were advanced to depths ranging from 69.5 to 100.0 feet. Borings were ended when bedrock was encountered.

Representative samples of materials encountered in the borings were generally obtained at 5-foot intervals with a standard 2-inch outside diameter split-spoon sampler, following the requirements of the Standard Penetration Test (ASTM D 1586). This test is used to characterize the consistency or density of in-place soil by measuring penetration resistance expressed as "blow counts," or "N-value." The blow count is the number of blows required to advance a standard split-spoon sampler 6 inches with a 140-pound hammer falling 30 inches. The sampler is driven 18 inches, and the blow count is recorded for each 6-inch increment. The sum of the second and third increments is referred to as the N-value. Low N-values indicate soft or loose deposits, while high N-values are evidence of hard or dense materials. After the sampler has been driven and the blow counts recorded, the sampler is withdrawn from the boring to recover a disturbed soil sample.

Soil samples were examined in the field and visually classified in approximate accordance with the visual-manual procedure for description of soils (ASTM D 2488). Sampling intervals and classification of soil samples are presented in the boring logs in Appendix A. Field soil boring logs were revised as necessary based on laboratory testing and office examination.

Shelby tube samples were recovered from all borings except B-105. Shelby tube samples provide relatively undisturbed soil samples that are suitable for laboratory testing. The samples were obtained using 3-inch-diameter, thin-walled, seamless steel tubes that are 30 inches long (ASTM D 1587). The tubes were pushed 24 inches into the undisturbed soil in one continuous stroke without rotation using hydraulic pressure. Intervals where Shelby tube samples were recovered are shown on the boring logs in Appendix A.

Open standpipe piezometers were installed at borings B-104 and B-108 to permit monitoring of water levels. Piezometers consist of a slotted PVC tip, 1-1/2 inches in diameter and 18 inches long, connected to a 3/4-inch inside diameter riser pipe that extends 12 to 18 inches above the ground surface. The annular space around the piezometer tips

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was gravel-packed with 3/8-inch-diameter pea gravel. The zone of gravel packing was then sealed with bentonite, and the borings were backfilled to the ground surface. The position of piezometer tips and the zone of gravel pack are described on the boring logs in Appendix A.

Water level measurements were made at borings B-104 and B-108 and are reported on the boring logs. Water levels were not recorded in other borings because drilling mud in the borings did not permit useful measurements to be made.

Laboratory Testing

Selected samples of the silt were tested in CH2M HILL's Portland laboratory for natural moisture content, liquid limits, and plastic limits. The results of these tests are shown in Appendix B. Classification of selected samples was also performed in the laboratory to confirm our visual field classification of the soils.

Consolidation tests were performed on relatively undisturbed samples of the silt layer to determine the compressibility of the soil. Samples for consolidation testing were obtained using a thin-wall tube sampler. The results of these tests are shown in Appendix B.

FINDINGS

Subsurface Conditions

The generalized subsurface soil conditions, described from the ground surface downward, are presented in the following discussion. This information was determined from the information on the soil boring logs in Appendix A. The soil descriptions are generalized for correlation purposes.

- Fill: This material is composed of sand, sandy silt, and silt, with minor gravelly sand in B-103. Sand is the predominant constituent in most of the fill, but silt is the dominant component in the northeastern part of the site at borings B-104 and B-106. The fill is usually dark gray or black in color, and it is moist to wet. Copper wire and rubber were present in fill in the western part of the project area, and chunks of wood were recovered in several other borings. A strong hydrocarbon odor was evident in most samples recovered from the lower half of the fill, and oil was observed in some samples. N-values of the fill ranged from 5 to 49 in the sandy and gravelly material, and from

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1 to 16 in the silts and sandy silts. The fill material is about 15 to 20 feet thick.

- Silt: This unit is composed of silt with lesser amounts of sand and interbedded lenses of silty sand. The silt is generally nonplastic or of low plasticity, but the unit includes zones of silt with moderate to high plasticity. The deposit locally contains as much as 20 to 30 percent fine sand and minor gravel. Color is variable, ranging from brown to shades of gray and blue, with occasional orange-brown mottling. The material is moist to wet. The silt contains fragments of decomposed plant material that is locally abundant. Wood fragments and oil were recovered in the upper part of the unit.

  The silt is very soft to hard in consistency. N-values range from less than 1 to 54. Thickness of the silt ranges from 32 to 77 feet, and averages about 40. The thickest deposits occur in the eastern part of the site, at borings B-104 and B-106. The thinnest part of the unit is in the southern part, at borings B-103 and B-108.

- Sand and Silty Sand: Sandy deposits occur in discontinuous and uneven layers on top of bedrock material (described below). Sand is uniformly graded fine sand with 5 to 12 percent fines, brown or black, and compact to very dense. Silty sand is poorly graded fine sand with 12 to 30 percent fines, brown or black, wet, and compact to dense. Minor lenses of silt are interbedded with the sand and silty sand. The deposits sometimes grade into a gravelly sand at the very bottom of the unit. N-values range from 24 to 94. Thickness of the sandy deposits ranges from about 5 to 20 feet. The sandy material is absent at borings B-104 and B-106.

- Basalt: Samples of Columbia River Basalt were recovered from most of the borings. In the western part of the site, the basalt was weathered to a sandy gravel. In the eastern part, the basalt appeared unweathered. N-values for weathered basalt ranged from 105 blows for 10 inches of penetration to 60 blows for 6 inches. N-values for unweathered basalt were about 60 blows for 0.5 inch of penetration. The depth to the bedrock surface beneath the project area ranges from nearly 100 feet in the northern part of the site to about 70 feet in the southernmost part of the site at boring B-108.

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Groundwater Conditions

Water levels were recorded at borings B-104 and B-108 where piezometers were installed. Measured water levels on July 23, 1982, are 16.1 and 18.8 feet below the ground surface for B-104 and B-108, respectively. These water levels correspond to elevation 15.5 feet in B-104 and 17.1 feet in B-108. If water-bearing zones communicate with the Willamette River, then fluctuations in the river level could influence water levels beneath the site. For design, assume water levels could rise to the 100-year flood elevation of 27.7 feet.

Reported water levels are representative for only the specific locations explored. Water levels between borings B-104 and B-108, and for other locations on the site, might differ. The water levels reported for borings B-104 and B-108 can be expected to change with time.

DISCUSSION

The soil beneath the proposed structures must provide adequate bearing capacity and limit differential settlement to a tolerable amount. Bearing capacity failure occurs when small increases in the imposed soil pressure cause large or sudden foundation movements. Settlement failure occurs when the imposed soil pressure produces more settlement than the structure can handle.

Settlement

Potential settlement was analyzed based on review of field measurements of preloads placed in 1978 and on the review of laboratory consolidation test data from the compressible strata. In general, the total settlement caused by applying a load to a soil mass consists of two components: primary and secondary settlement.

Primary settlement occurs in fine-grained soils, usually clay, as the result of water in the soil slowly being squeezed out by the applied load. Soil mechanics theories are used to estimate the magnitude and rate of this type of settlement.

Secondary settlement also occurs in fine-grained soils. Its cause is not well understood, but it is thought to be related to gradual readjustment of the soil particles under long-term loading. This type of settlement occurs at a constantly decreasing rate as long as the load is applied to the soil. There are no reliable methods available to accurately predict the magnitude or the rate of secondary settlement. However, empirical formulas are available to estimate the amount of secondary settlement.

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From our experience with silt soils in this region, settlements are often overestimated unless special care is taken to distinguish between primary and secondary consolidation. The loading branch of the consolidation curves presented in Appendix B has been corrected to reduce this tendency to overestimate by showing void ratio at completion of primary consolidation. The rebound portion of the curve was not corrected in this manner.

The magnitude of consolidation settlement is controlled by the compressibility and thickness of the foundation soil, the applied foundation load, and the size of the loaded area. A superimposed load on a large area will influence the soil to a greater depth than a superimposed load on a smaller area. As a consequence, consolidation settlement will probably be greater for a superimposed load on a large area than for a superimposed load on a small area.

In the northeastern part of the site, the consolidating strata is composed of 10 feet of a soft, nonplastic organic silt; 50 feet of a soft to firm, nonplastic to moderately plastic silt; and 40 feet of a hard, nonplastic silt. Without site improvements, we predict primary settlement from a slab with a 300-psf load to be 10 inches and to occur in 30 days. We also predict secondary settlement over the life of the building could range from 1 to 2 inches. This would produce total settlements of 11 to 12 inches. We predict primary settlement under a 1,000-psf load for 3- and 8-foot-square footings to be 4 and 8 inches, respectively. This settlement will occur in 30 days. Secondary settlement for these footings will be between 1 and 2 inches resulting in total settlements of 5 to 6 inches and 9 to 10 inches, respectively.

In the western part of the site, the consolidating strata is composed of 40 feet of a soft to firm, nonplastic to highly plastic silt. This strata is located beneath a 20-foot-thick strata of sand and silty sand. Without site improvements, we predict primary settlement from a slab with a 2,000-psf load to be 15 inches and to occur in 30 days. Secondary settlement will be about 1 inch. We predict primary settlement under a 2,000-psf load for 3- and 8-foot-square footings to be approximately 1 inch. Secondary settlements will be approximately 1 inch. Primary settlement under a 1,000-psf load for a 50- by 50-foot slab will be approximately 4 inches, and secondary settlement will be about 1 to 2 inches.

Preloads can be used to cause predicted settlement to occur before structure loads are in place. Based on our analysis, a preload applying a pressure approximately equal to anticipated structure loads will cause primary

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settlement in about 30 days. We have assumed a preload fill density of 110 pounds per cubic foot (pcf). The preload should be monitored using periodic surveys of settlement plates so that predicted behavior can be compared with actual behavior.

By increasing the height of preload (surcharge), a predicted amount of settlement can be forced to occur in a shorter amount of time. If a preload and surcharge are left in place longer than the amount of time required to cause the desired amount of primary settlement, then the additional settlement caused will serve to compensate, or offset, some of the effects of secondary settlement. Therefore, preload and surcharge design must consider:

- Settlement properties of the consolidating stratum (enables prediction of primary and secondary settlement)
- Time available to leave the preload and surcharge in place
- Desired magnitude of secondary settlement to be offset

Allowable Bearing Pressure

Allowable bearing pressure was analyzed for two types of bearing materials, silt and silty sand. Allowable bearing pressures increase as the depth of footing below final grade increases and as the footing width increases. With site improvements, the maximum allowable bearing pressure for the two types of bearing materials are shown in Table 2. This bearing pressure may be increased by 33 percent for short-term loads such as those from earthquake and wind.

Table 2

ALLOWABLE BEARING PRESSURE

Bearing Material	Average Corrected N-Value	Minimum Depth of Footing (ft)	Minimum Footing Width (ft)	Allowable Bearing Pressure (psf)
Silt	3	3.0	3	1,500
Silty sand	9	1.5	3	2,000

The allowable bearing pressure on the silt can be increased by overexcavating and replacing with compacted granular backfill.

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Dynamic Consolidation

Dynamic consolidation is a method for improving the engineering properties of in-place soil. The method consists of dropping a weight of up to 30 tons from heights up to 150 feet. The repeated high-energy impacts at the ground surface propagates shock waves, which densifies the soil to depths up to 60 feet. In saturated and unsaturated silt and fine sand, the shock causes partial soil liquefaction followed by rapid consolidation. Dynamic consolidation increases soil strength and decreases soil compressibility because of the soil densification that is achieved.

The primary variables that affect the depth of soil improvements when using dynamic consolidation are the soil type and the location of the groundwater table. Dynamic consolidation is less effective below the groundwater table and on plastic soils. At this site, the estimated depth of recommended soil improvements is about 30 to 40 feet below the ground surface.

We do not recommend using dynamic consolidation for improvement of soils at this site for the following reasons:

- Vibration levels could disturb crystal growth at the existing facility.
- Dynamic consolidation is relatively expensive compared to preloading.
- Local contractors are not familiar with the techniques and methods used in dynamic consolidation.
- Preloads have proved an effective method of soil improvement at the existing plant.
- Dynamic consolidation may be unable to significantly improve site soils to the depths required.

FOUNDATION RECOMMENDATIONS

Preload

To control post-construction settlement, we recommend preloading the site with an earthfill embankment. This will cause primary settlement and part of secondary settlement to occur before construction of the buildings. At this time, we recommend using a 20-foot-thick preload for the Distillation Tower and Tank Farm areas, a 5-foot-thick preload for the Warehouse area, and a 10-foot-thick preload for the other structures. These preloads should be left in place for approximately 30 days. Since the time to the end of primary consolidation is fairly short, the preload could be moved around the site in a rotating

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fashion. Earth for the preload will probably need to be obtained offsite. This material could be used later to construct landscaping berms around the site or for the tank farm berm.

To minimize the amount of imported granular material required for preloads, it will probably be most economic to consider use of individual preloads at each structure site. However, an individual preload will cause settlement to occur in areas outside of its footprint because of the distribution of stress increases in the consolidating strata caused by the presence of the preload. Therefore, care must be exercised in selecting the footprint dimensions of an individual preload. We recommend using the following guidelines to plan the sequence of preload construction and removal at this site:

- If no structures or future improvements are within 70 feet of the structure site being preloaded, the top of the preload should extend beyond the building footprint a distance equal to the height of the preload.

- The above criterion should also be used for adjacent sites that are preloaded before structures are built.

- If structures or future improvements are within 70 feet of the structure site being preloaded, the top of the preload should extend 30 feet beyond the building footprint. The toe of the subsequent preload should not be closer than 30 feet to the structure in place.

- The toe of the preload should be at least 30 feet from utilities in the existing easement.

These guidelines should be considered preliminary. Each individual preload should be evaluated during design based on design structural loads and final building locations.

Estimates of secondary (or post-construction) settlement following preload and surcharge are subject to considerable engineering judgment. First, the exact time the preload will be left in place is not yet known. Second, the exact shape of settlement versus time plots made from settlement plate data will assist in predicting secondary settlement. However, in advance of preload monitoring data, we anticipate that secondary settlements following preload at this site will be 1 to 2 inches over the life of the facility. This amount of secondary settlement is comparable to settlements estimated for the existing plant. This amount of secondary settlement is expected to be fairly uniform for structures that are uniformly loaded.

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Some differential settlement may occur between structures, particularly if the structures differ substantially in configuration or in applied load.

Piles

Pile support for structures is an alternative to preloading. However, pile foundations will add considerable construction cost, particularly if structural floor slabs are required.

To control differential settlement, we recommend using driven piles for support of the Distillation Tower and other settlement sensitive structures. A summary of allowable pile loads is presented in Table 3. Piles should be spaced no closer than three pile diameters. The bearing strata for the piles is basalt. The observed depth of this strata varies from 70 to 100 feet across the site. Depending on final structural locations, additional borings may be required to more clearly locate the bearing strata for a more accurate determination of pile lengths.

Table 3

ALLOWABLE PILE LOADS

Pile Type	Size	Allowable Compressive Load (tons)	Allowable Lateral Load (tons)	Vertical and Horizontal Deflections
Prestressed concrete $f_c' = 700$ psi $f_{pc} = 1,200$ psi	12"x12" square	120	2.5	Acceptable
	14"x14" square	175	8.0	Acceptable
Steel pipe (open end) A36 $f_s = 21,600$ psi	12-3/4" diameter 3/8" wall	140	4.6	Acceptable
	16" diameter 3/8" wall	180	7.4	Acceptable

Notes: Depth to fixity is equal to 7.5 feet.

A downdrag of 20 tons is incorporated in the allowable compressive loads.

Piles are coated to reduce downdrag.

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The pile types and allowable loads shown in Table 3 should be considered preliminary information. The final selection of pile type depends on material availability and determination of the most economic pile type for the actual structural loads. The design allowable compressive loads should consider the effects of downdrag caused by the actual layout and extent of preloads and any ongoing secondary settlement. The effects of vibrations generated during driving should also be examined. If vibration limitations are severe, displacement piles such as the prestressed concrete piles shown should not be used. Restriction of vibration levels may require the use of jetting or preboring for displacement piles.

The existing Wacker Plant soils were moderately corrosive. The corrosion potential of the soils at the proposed site should be examined during design.

General Considerations

Before beginning any work at the site, a thorough survey of existing utilities should be made to determine their exact locations. Any existing utilities under the proposed structures should be abandoned or rerouted before construction. If utilities are abandoned, the ends should be plugged. If they are removed, granular backfill should be placed and compacted as recommended later in this report.

Strip all organic materials from the ground surface before preload or foundation construction. These strippings should be removed from the site. Excavate the surface soil and proofroll the bearing surface with a loaded dump truck or a similar heavy vehicle to detect soft or loose zones. These zones, if encountered, should be excavated and backfilled with compacted granular material. The granular material should conform to the State of Oregon Standard Specifications for aggregate base with a maximum size of 1 inch. It should be compacted to at least 90 percent relative compaction.[1]

Before placement of formwork and concrete, a leveling course at least 6 inches thick should be placed and compacted immediately below the proposed foundation. The leveling course should conform to the State of Oregon Standard Specifications for aggregate base with a maximum size of 3/4 inch. It should be compacted to at least 90 percent relative compaction.

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[1]Relative compaction is defined as the ratio, expressed as a percentage, of the in-place field dry density after compaction to the maximum dry density as determined in the laboratory by ASTM D1557.

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Surface water should be controlled and diverted from excavations. If soil is softened by water standing in excavations, remove this soil and replace it with compacted granular material as recommended above.

To a large degree, foundation performance is dependent on construction quality control. Therefore, we recommend that CH2M HILL be retained to observe excavations and subgrade preparation for foundations. This will serve to best identify soil conditions exposed during construction, and to determine whether or not they differ from those conditions assumed in forming our recommendations.

Construction Considerations

The preload should be monitored with settlement plates to determine whether the preload is performing as expected. If the settlement rate is slower than anticipated, it may be necessary to increase the height of fill or the preload duration. We recommend the geotechnical engineer be consulted before preload removal.

Additional Work

The analyses and recommendations contained in this report should be considered preliminary. If the proposed construction proceeds as described in this report, and preloading is selected for site improvement, then additional subsurface exploration will probably not be required. However, if the structures are relocated outside the explored area or if the type of construction changes, then additional subsurface exploration will probably be required. Also, if settlement considerations should dictate widespread use of piles, additional borings and a test pile program may be necessary. In any event, geotechnical design memoranda should be prepared describing specific site improvement and foundation recommendations for each structure before final design.

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APPENDIX A

BORING LOGS

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BORING LOG LEGEND:

SAMPLE TYPE:

- S – SPLIT-BARREL (ASTM D1586 UNLESS OTHERWISE NOTED)
- ST – SHELBY TUBE
- W – WASH SAMPLE
- OT – OSTERBERG TUBE
- NX – DIAMOND CORE BARREL

STANDARD PENETRATION TEST:

BLOWS – THE NUMBER OF BLOWS FOR THREE 6-INCH INCREMENTS REQUIRED FROM A 140-LB HAMMER FALLING 30 INCHES TO DRIVE A STANDARD 2-INCH O.D. SPLIT-BARREL SAMPLER (ASTM D1586)

"N" – THE SUM OF BLOWS FOR THE SECOND AND THIRD 6-INCH INCREMENTS. IF THE SAMPLER IS DRIVEN LESS THAN 18 INCHES, THEN "N" IS THE NUMBER OF BLOWS FOR THE LAST TWO 6-INCH INCREMENTS.

UNIFIED SOIL CLASSIFICATION SYMBOL:

GROUP SYMBOL AS PER ASTM D 2487

NOTES:

1. ALL BORINGS WERE DRILLED USING EITHER A TRUCK-MOUNTED CME-55 OR A CME-75 MUD ROTARY DRILL RIG, OWNED AND OPERATED BY KENNER DRILLING, INC., OF SHERWOOD, OREGON.
2. BORINGS WERE DRILLED FROM JUNE 28-30, AND ON JULY 1 AND 2, 1982.
3. ENGINEERING PROPERTIES OF SUBSURFACE MATERIALS ARE OPINION OF THE ENGINEER AND ENGINEERING GEOLOGIST, EXCEPT WHERE LABORATORY TESTING WAS CONDUCTED.
4. THE LOGS SHOW SUBSURFACE CONDITIONS ONLY AT THE TIME AND PLACE THAT THE BORINGS WERE MADE.
5. TRANSITIONS BETWEEN SOIL TYPES MAY BE GRADUAL AND ONLY APPROXIMATELY AT THE ELEVATIONS SHOWN. VARIATIONS MAY EXIST BETWEEN ADJACENT BORINGS.
6. STANDARD PENETRATION TESTS WERE TAKEN IN APPROXIMATE ACCORDANCE WITH ASTM D1586.
7. SAMPLES WERE EXAMINED IN THE FIELD AND VISUALLY CLASSIFIED IN APPROXIMATE ACCORDANCE WITH ASTM 2488.
8. WATER LEVELS MAY VARY WITH TIME.

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PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT Wacker Siltronics LOCATION

DRILLING METHOD Mud Rotary DRILLERS & EQUIPMENT D. Kenner of Oregon, Inc.; CME-55

ELEVATION 35.6 ft BORE HOLE B-100

WATER LEVEL not measured DATE: — START: 6/29/82 FINISH: 6/30/82 INSPECTOR CWHL

DEPTH BELOW SURFACE (ft)	SAMPLE: INTERVAL AND TYPE	SAMPLE: NUMBER	SAMPLE: RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS: BLOWS 6"-6"-6"	STANDARD PENETRATION TEST RESULTS: BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
0									Start drilling at 11:00AM Begin drilling with drag bit
5	5.0								
	6.5	S-1	12	3-10-9	19	UPPER 3" SANDY SILT, SLIGHTLY PLASTIC, ABOUT 15% FINE SAND, GRAY, MOIST, LOOSE; FILL. LOWER 9" SILTY SAND, FINE SAND, 15-20% FINES, GRAY, WET, COMPACT, SOME PLANT FRAGMENTS; FILL.		ML SM	Driller notes strong petroleum odor at 5 to 10 ft
10	10.0								Driller notes some gravel at 9 ft
	11.5	S-2	7	12-11-18	29	SILTY SAND, 10-15% GRAVEL TO ABOUT 1¼" FINE SAND, 25-30% FINES, MOIST, BLACK, STRONG HYDROCARBON ODOR, SOME RUBBERY DEBRIS AND PLANT REMAINS; FILL.		SM	Rubbery debris and fine copper wire in cuttings from 10 to 15 ft.
15	15.0								
	16.5	S-3	2	12-24-11	35	SILTY SAND, SMALL RECOVERY BUT MATERIAL APPEARS SIMILAR TO S-2; FILL.		SM	Sampler bebounded during SPT for S-3 as if it were penetrating rubber (tires?)
20	20.0								
	21.5	S-4	14	1-1-1	2	UPPER 7"- SILT, SLIGHTLY TO MODERATELY PLASTIC, DARK GRAY, WET, VERY SOFT, WOOD DEBRIS, HYDROCARBON ODOR; FILL? LOWER 7"- SILT, SLIGHTLY PLASTIC, MEDIUM GRAY W/ORANGE BROWN MOTTLING, MOIST, VERY SOFT, SOME DECOMPOSED PLANT MATERIAL.		ML	
25	25.0								
	26.5	S-5	14	2-2-2	4	SILT, SIMILAR TO LOWER 7" OF S-4 EXCEPT CONSISTANCY IS SOFT.		ML	
	28.0								
30	30.0	ST-6	24	— — —	—	SILT, MODERATELY TO HIGHLY PLASTIC, GRAY, MOIST, VERY SOFT.		MH	

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CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT Wacker Siltronics LOCATION Portland, Oregon
DRILLING METHOD Mud Rotary DRILLERS & EQUIPMENT D. Kenner of Oregon, Inc.; CME-55
ELEVATION 35.6 ft BORE HOLE: B-100
WATER LEVEL not measured DATE: -- START: 6/29/82 FINISH: 6/30/82 INSPECTOR CW HL

DEPTH BELOW SURFACE (ft)	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
30	30.0–31.5	S-7	15	2-4-6	10	SILT, SLIGHTLY PLASTIC, LESS THAN 5% FINE SAND, GRAY, MOIST, FIRM TO STIFF.		ML	
35	35.0–36.5	S-8	18	1-1/12"	1"	SILT SIMILAR TO S-7 EXCEPT FOR WOOD DEBRIS IN LOWER 4" AND FRAGMENTS OF DECOMPOSED PLANT MATERIAL THROUGHOUT SAMPLE.		ML	
	38.0					SILT SAME AS S-7 EXCEPT LENSES OF SAND AND GRAVEL		ML	
40	40.0–41.5	S-10	14	3-1-1	2	SANDY SILT, NONPLASTIC, ABOUT 15% FINE TO COARSE SAND, MEDIUM GRAY, VERY LOOSE. DECOMPOSED WOOD FRAGMENTS THROUGHOUT SAMPLE, ABOUT 25% FINE SAND AND GRAVEL IN UPPER 3"; ORGANIC ODOR.		ML	
45	45.0–46.5	S-11	18	1-2-3	5	SILT, SLIGHTLY PLASTIC, BLUE-GREENISH GRAY, MOIST, FIRM.		ML	
50	50.0–51.5	S-12	18	3-3-3	6	SILT, SAME AS S-11.		ML	
55	55.0–56.5	S-13	16	2-5-10	15	SANDY SILT, NON PLASTIC, 15-20% FINE SAND, GRAY, MOIST, COMPACT.		ML	
60									

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT Wacker Siltronics LOCATION Portland, Oregon
DRILLING METHOD Mud Rotary DRILLERS & EQUIPMENT D. Kenner of Oregon; CME-55
ELEVATION 35.6 ft BORE HOLE: B-100
WATER LEVEL not measured DATE: -- START: 6/29/82 FINISH: 6/30/82 INSPECTOR CWHL

DEPTH BELOW SURFACE (ft)	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	STANDARD PENETRATION TEST RESULTS BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
60	60.0–61.5	S-14	8	6-11-12	23	SILTY SAND FINE SAND, 30-35% FINES, BROWN, WET, COMPACT.		SM	
65	65.0–66.5	S-15	10	7-12-18	30	UPPER 3" SILT MODERATELY PLASTIC, ABOUT 3% FINE SAND, BROWN, MOIST, STIFF. LOWER 7" SILTY SAND, FINE SAND, 20-25% FINES, BROWN, WET, COMPACT.		ML / SM	HOLE COLLAPSED FROM 65-85 FT ON NIGHT OF 6/29.
70	70.0–71.5	S-16	8	12-17-18	35	SAND, UNIFORMLY GRADED FINE SAND, 5-10% FINES, BROWN, WET, DENSE.		SP-SM	
75	75.0–76.5	S-17	8	9-16-17	33	SILTY SAND, FINE SAND, 12-15% FINES, BROWN, WET, DENSE.		SM	
80	80.0–81.5	S-18	8	10-17-17	34	SILTY SAND, SAME AS S-17, EXCEPT 20-25% FINES.		SM	
85	85.0–86.2	S-19	3	8-32-70/4"	102/14"	BASALT, HIGHLY WEATHERED TO SANDY GRAVEL, POORLY GRADED, GRAVEL TO AT LEAST 1 3/8", ABOUT 15% FINE TO COARSE SAND, 5-12% FINES, BROWN AND BLACK, MOIST, HARD.			END DRILLING @ 4:30 P.M. BEGIN DRILLING @ 7:30 AM CHANGE FROM DRAG BIT TO ROLLER BIT.
90									

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER P160.58.B0

SOIL BORING LOG

PROJECT Wacker Siltronics LOCATION Portland, Oregon
DRILLING METHOD Mud Rotary DRILLERS & EQUIPMENT P. Konner of Oregon, Inc.; CME-55
ELEVATION 35.6 ft BORE HOLE: B-100
WATER LEVEL not measured DATE: -- START: 6/29/82 FINISH: 6/30/82 INSPECTOR CWHL

DEPTH BELOW SURFACE (ft)	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	STANDARD PENETRATION TEST RESULTS BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
90	90.0 90.1	S-20	1.5	60/1.5	60/1.5	BASALT, WEATHERED, SAME AS S-19.			DRILLER NOTES VERY HARD MATERIAL AT 90'
						END BORING AT 90.1 FEET			SAMPLER BOUNCES DURING 5' FOR S-20
									FINISH DRILLING AT 8:45 A.M.
95									

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER

SOIL BORING LOG

PROJECT Wacker Siltronics LOCATION Portland, Oregon
DRILLING METHOD Mud Rotary DRILLERS & EQUIPMENT P. Kenner of Oregon, Inc.; CME-55
ELEVATION 34.5 ft BORE HOLE: B-101
WATER LEVEL not measured DATE: -- START: 6/28/82 FINISH: 6/29/82 INSPECTOR CW HL

DEPTH BELOW SURFACE (ft)	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
0						SILTY SAND AT SURFACE, BRICKS, WOOD DEBRIS, ETC, FILL.		SM	START DRILLING AT 1035. BEGIN DRILLING WITH A DRAG BIT.
5	5.0					NO RECOVERY.			DRILLER NOTES CHANGE FROM SILTY SAND TO SILT AT 6'.
	6.5	S-1	0	2-1-1	3				
10	10.0					SILTY SAND FINE TO MEDIUM SAND, 20-30% FINES, BLACK, WET, LOOSE, FILL.		SM	
	11.5	S-2	3	5-4-5	9				
15	15.0					SANDY SILT, SLIGHTLY PLASTIC, FINE TO MEDIUM SAND, BLACK, WET, LOOSE, SOME ROUNDED GRAVELS TO ½" STRANDS OF COPPER WIRE IN SAMPLE, FILL, HYDROCARBON ODOR.		ML	RUBBER DEBRIS (TIRES?) IN HOLE 15 TO 20'. DRILLER NOTES CLUMPS OF FINE COPPER WIRE IN CUTTINGS 15-20'.
	16.5	S-3	9	1-1-2	3				
20	20.0					LAYERED SILTY SAND AND SANDY SILT: SILTY SAND, FINE SAND, 25-35% FINES, DARK GRAY, WET, LOOSE, LAYERS 1-3" THICK. SANDY SILT SLIGHTLY PLASTIC, DARK GRAY, MOIST, LOOSE, LOCAL CONCENTRATION OF DECOMPOSED PLANT MATERIAL.		SM, ML	DRILLER SUSPECTS LOG(S) AT ABOUT 20'.
	21.5	S-4	13	3-3-3	6				
25	25.0					SANDY SILT, SLIGHTLY PLASTIC, 10-15% FINE SAND, MOTTLED BROWN AND GRAY, MOIST, COMPACT, TRACES OF DECOMPOSED PLANT MATERIAL, HYDROCARBON ODOR.		ML	
	26.5	S-5	18	1-4-5	9				
30									

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT Wacker Siltronics LOCATION Portland, Oregon
DRILLING METHOD Mud Rotary DRILLERS & EQUIPMENT D. Kneller of Oregon, Inc.; CME-55
ELEVATION 34.5 ft BORE HOLE: B-101
WATER LEVEL not measured DATE: -- START: 6/28/82 FINISH: 6/29/82 INSPECTOR CWHL

DEPTH BELOW SURFACE (ft)	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	STANDARD PENETRATION TEST RESULTS BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
30	30.0–31.5	S-6	16	1-1-1	2	SILT, SLIGHTLY PLASTIC, MEDIUM GRAY W/REDDISH BROWN MOTTLED, WET.		ML	
	33.0–35.0	ST-7	24	---	—	SILT, SIMILAR TO S-6 EXCEPT SLIGHTLY TO MODERATELY PLASTIC, BROWN COLOR.		ML	
35	36.5	S-8	18	4-5-9	14	SILT, SLIGHTLY TO MODERATELY PLASTIC, BROWN, moist, FIRM.		ML	
40	41.5	S-9	18	3-3-4	7	SILT, SIMILAR TO S-8, EXCEPT ABOUT 5% FINE SAND, SOFT TO FIRM.		ML	mix mud at 41.5!
45	46.5	S-10	12	3-6-10	16	UPPER 6" SILT, SIMILAR TO S-8 EXCEPT 5-10% FINE TO MEDIUM SAND, BROWN AND GRAY, SOFT. LOWER 6" SILTY SAND, FINE SAND, 25-30% FINES, BROWN, WET LOOSE TO COMPACT.		ML / SM	DRILLER NOTES SANDY MATERIAL AND SOFT DRILLING TO 50'.
50	51.5	S-11	18	3-8-13	21	SANDY SILT, NON PLASTIC, 12-15% FINE SAND, BROWN, WET, COMPACT.		ML	
55	56.5	S-12	6	11-23-28	51	SILTY SAND, FINE SAND, 10-15% FINES IN LOWER PART 30-40% FINES IN UPPER PART, BROWN, MOIST, DENSE, SEVERAL LENSES ≤ ½" OF SILT INTERBEDDED WITH THE SILTY SAND.		SM	DRILLER NOTES HARDER DRILLING AT 45'.
60									

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT Wacker Siltronics LOCATION Portland, Oregon
DRILLING METHOD Mud Rotary DRILLERS & EQUIPMENT D. Kramer of Oregon, Inc.; CME-55
ELEVATION 34.5 ft BORE HOLE: B-101
WATER LEVEL NOT MEASURED DATE: -- START: 6/28/82 FINISH: 6/29/82 INSPECTOR CWHL

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	STANDARD PENETRATION TEST RESULTS BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
60	60.0–61.5	S-13	10	10-13-17	30	SANDY SILT, NON PLASTIC, ABOUT 40% FINE SAND, BROWN, MOIST, COMPACT.		ML	
65	65.0–66.5	S-14	8	13-21-25	46	SILTY SAND, FINE SAND, ABOUT 30% FINE, BROWN, WET, COMPACT.		SM	
70	70.0–71.5	S-15	9	30-41-39	70	SAND, UNIFORMLY GRADED FINE SAND, 5-12% FINES, BROWN, WET, VERY DENSE.		SP-SM	
75	75.0–76.5	S-16	8	35-55-39	94	SAND, SAME AS S-15.		SP-SM	
80	80.0–81.5	S-17	8	13-24-30	54	SAND, UNIFORMLY GRADED FINE SAND, ABOUT 5% FINES, BROWN, WET, DENSE.		SP	DRILLER NOTES VERY HARD MATERIAL AT 84 FT; UNABLE TO PENETRATE W/DRAG BIT; STOP TO TAKE SAMPLE S-18 END DRILLING @ 4:30 P.M. BEGIN DRILLING @ 8:00 AM CHANGE FROM DRAG BIT TO ROLLER BIT; MIX MUD.
85	84.0–84.5	S-18	4	70/6"	70/6"	BASALT WEATHERED TO SANDY GRAVEL, POORLY GRADED GRAVEL TO 1/4", 30-40% FINE TO COARSE SAND, MOSTLY COARSE, LESS THAN 5% FINES, BROWN AND BLACK, DENSE.			VERY HARD DRILLING AT 86' DRILLS AT RATE OF 30 MIN/FT. ANGULAR BLACK BASALT CHIPS IN CUTTINGS - END DRILLING @ 9:40 AM
	87.0–87.5	S-19	5	78/6"	78/6"	BASALT, WEATHERED, SAME AS S-18.			
90						END BORING @ 87.5 FT			

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT Wacker Siltronics LOCATION Portland, Oregon

DRILLING METHOD Mud Rotary DRILLERS & EQUIPMENT D. Kenner of Oregon, Inc.; CME-55

ELEVATION 32.2 ft. BORE HOLE: B-102

WATER LEVEL not measured DATE: -- START: 7/1/82 FINISH: 7/1/82 INSPECTOR CWHL

DEPTH BELOW SURFACE (ft)	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
0									START DRILLING AT 955. BEGIN DRILLING WITH DRAG BIT.
5	5.0–6.5	S-1	7	1-2-2	4	SILT, SLIGHTLY TO MODERATELY PLASTIC, ABOUT 5% FINE SAND, GRAY WITH REDDISH BROWN MOTTLING, MOIST SOFT, DISTINCT LAYERING 1/16-1/2" THICK.		ML	
10	10.0–11.5	S-2	9	4-8-9	17	SAND, UNIFORMLY GRADED FINE SAND, LESS THAN 5% FINES, DARK GRAY, WET, HYDROCARBON ODOR.		SP	
15	15.0–16.5	S-3	0	2-1-3	4	NO RECOVERY.			
20	20.0–21.5	S-4	1	2-3-3	6	SILT, NONPLASTIC, BLACK, WET, SOFT, STRONG HYDROCARBON ODOR.		ML	AT 19 FT CUTTINGS ARE SATURATED WITH OILY MATERIAL AND HAVE A STRONG HYDROCARBON ODOR.
25	25.0–26.5	S-5	10	1-1-1	2	SILT, NONPLASTIC, LESS THAN 5%, FINE SAND, MEDIUM GRAY, WET, LOOSE.		ML	
30									

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER P16058. B0

SOIL BORING LOG

PROJECT Wacker Siltronics LOCATION Portland, Oregon
DRILLING METHOD Mud Rotary DRILLERS & EQUIPMENT D. Kenner of Oregon, Inc.; CME-55
ELEVATION 32.2 ft. BORE HOLE: B-102
WATER LEVEL not measured DATE: -- START: 7/1/82 FINISH: 7/1/82 INSPECTOR CW HL

DEPTH BELOW SURFACE (ft)	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
30	30.0–31.5	S-6	10	1-2-2	4	SILT, NON PLASTIC, ABOUT 5% FINE SAND, MEDIUM GRAY, WET, SOFT, FRAGMENTS OF DECOMPOSED PLANT MATERIAL		ML	MIX MUD AT 30'.
	33.0								
35	35.0	ST-7	24	---	—	SILT SIMILAR TO S-6 EXCEPT MODERATELY TO HIGHLY PLASTIC AND ORGANIC.		MH-OH	
	36.5	S-8	18	1-2-2	4	SILT SIMILAR TO S-6 EXCEPT NO SAND AND MODERATELY TO HIGHLY PLASTIC AND ORGANIC.		MH-OH	
40	40.0–41.5	S-9	18	4-7-8	15	SILT, SIMILAR TO S-6, EXCEPT FOR LACK OF SAND, BLUE-GREEN COLOR AND STIFF.		ML	
45	45.0–46.5	S-10	18	2-2-2	4	SILT SIMILAR TO S-6, EXCEPT SLIGHTLY PLASTIC AND ABSENCE OF SAND AND FRAGMENTS OF PLANTS		ML	
	48.6								LAST 6" OF ST-11 PUSHED VERY HARD
50	50.0	ST-11	24	---	—	UPPER 18"-SILT, SAME AS S-10 LOWER 6"-SILTYSAND, SAME AS S-12.		ML, SM	
	51.5	S-12	10	4-6-10	16	SILTYSAND, FINE SAND, 20-25% FINES, BROWN, WET, COMPACT.		SM	
55	55.0–56.5	S-13	18	2-5-6	11	SILT, NON PLASTIC, BROWN, WET, STIFF.		ML	
60									

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT Wacker Siltronics LOCATION Portland, Oregon

DRILLING METHOD Mud Rotary DRILLERS & EQUIPMENT D. Kenner of Oregon, Inc.; CME-55

ELEVATION 32.2 ft BORE HOLE: B-102

WATER LEVEL not measured DATE: — — START: 7/1/82 FINISH: 7/1/82 INSPECTOR CW HL

DEPTH BELOW SURFACE (ft)	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	STANDARD PENETRATION TEST RESULTS BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
60	60.0–61.5	S-14	18	3-11-20	31	SILTY SAND, FINE SAND, 20-25% FINES, BROWN, WET, COMPACT TO DENSE.		SM	
65	65.0–66.5	S-15	15	6-14-22	36	SILT, SLIGHT PLASTICITY, 5-10% FINE SAND, LOCAL CONCENTRATION OF FINE SAND WITHIN THE SILT, BROWN, MOIST, STIFF.		ML	
70	70.0–71.5	S-16	18	12-25-25	50	SILT, SIMILAR TO S-15, EXCEPT VERY STIFF.		ML	
75	75.0–76.5	S-17	9	11-28-29	57	SILTY SAND, FINE SAND, 15-20% FINES, BROWN, WET, VERY DENSE.		SM	DRILLER NOTES VERY HARD MATERIAL AT 79.5'.
80	79.5–80.0	S-18	4	60/6"	60/6"	BASALT, WEATHERED TO SANDY GRAVEL, POORLY GRADED ANGULAR GRAVEL TO ABOUT 1", 30-40% FINE TO COARSE SAND, 5-12% FINES, BROWN AND BLACK, WET, DENSE.			SAMPLER BOUNCES DURING SPT FOR FINISH DRILLING AT 2:10 P.M.
85						END BORING AT 80.0 Feet.			

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER P1605B.B0

SOIL BORING LOG

PROJECT Wacker Siltronics LOCATION Portland, Oregon
DRILLING METHOD Mud Rotary DRILLERS & EQUIPMENT D. Kenner & Oregon Inc; CME-55
ELEVATION 35.8 ft BORE HOLE: B-103
WATER LEVEL not measured DATE: — START: 6/30/82 FINISH: 7/1/82 INSPECTOR CW HL

DEPTH BELOW SURFACE (ft)	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	STANDARD PENETRATION TEST RESULTS BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
0									START DRILLING AT 10:20 BEGIN DRILLING WITH A DRAG BIT.
5	5.0								
	6.5	S-1	7	1-3-3	6	SILT, SLIGHTLY PLASTIC, ABOUT 5% FINESAND, DARK GRAY, MOIST, FIRM, FILL?		ML	
10	10.0								
	11.5	S-2	7	14-19-30	49	SAND, POORLY GRADED FINE TO MEDIUM SAND, 5-12% FINES BROWN, WET, DENSE, FILL.		SP-SM	ROUGH DRILLING AT ABOUT 11.5', CHANGE FROM DRAG BIT TO ROLLER BIT, DRILLER NOTES GRAVELLY MATERIAL TO 15'.
15	15.0								
	16.5	S-3	4	6-7-6	13	GRAVELLY SAND, POORLY GRADED, 10-15% GRAVEL TO 1". FINE TO COARSE SAND, 5-12% FINES, BROWN, WET, COMPACT, FILL?		SP-SM	ROUGH DRILLING TO 19', THEN SOFTER MATERIAL.
20	20.0								
	21.5	S-4	1	3-4-3	7	SILT SLIGHTLY PLASTIC, DARK GRAY, WET, SOFT TO FIRM.		ML	REMOVE ROLLER BIT, ATTACH DRAG BIT.
	23.0								
	25.0	ST-5	0	— — —	—	NO RECOVERY, TUBE SMEARED WITH BROWN SILT			ST-6 WAS PUSHED VERY SLOWLY, STIFF MATERIAL
25	26.5	S-6	18	3-7-8	15	SILT, SLIGHTLY TO MODERATELY PLASTIC, BROWN, MOIST, STIFF TO VERY STIFF.		ML	
	28.0								
	30.0	ST-7	18	— — —	—	SILT, SAME AS S-6		ML	
30									

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT Wacker Siltronics LOCATION Portland, Oregon
DRILLING METHOD Mud Rotary DRILLERS & EQUIPMENT D. Kenner of Oregon, Inc.; CME-55
ELEVATION 35.8 ft. BORE HOLE: B-103
WATER LEVEL not measured DATE: -- START: 6/30/82 FINISH: 7/1/82 INSPECTOR CW.HL

DEPTH BELOW SURFACE (ft)	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
30	30.0–31.5	S-8	18	2-2-3	5	SILT, SLIGHTLY PLASTIC, BROWN, MOIST, SOFT TO FIRM.		ML	
35	35.0–36.5	S-9	10	3-7-9	16	SILTY SAND FINE SAND, 25-30% FINES, BROWN, WET, COMPACT.		SM	
40	40.0–41.5	S-10	18	2-2-3	5	SILT, NON PLASTIC, LESS THAN 5% FINE SAND, BROWN, MOIST, SOFT TO FIRM.		ML	
	43.0–45.0	ST-11	24	---	—	SILT, SAME as S-10		ML	LAST 6" OF S-11 WERE VERY STIFF.
45	46.5	S-12	18	3-5-8	13	SILT, SAME AS S-10		ML	
50	51.5	S-13	24	4-9-9	18	SILT, SIMILAR TO S-10 EXCEPT 5-10% FINE SAND.		ML	
	53.0–54.5	ST-14	18	---	—	SILT, SAME AS S-10		ML	ST-14 WAS PUSHED FOR ONLY AN 18" DRIVE; MATERIAL WAS TOO HARD FOR 24" PUSH.
55	56.0	S-15	10	4-6-20	26	SAND, FINE SAND, 5-10% FINES BROWN, WET COMPACT		SP-SM	
60									

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT Wacker Siltronics LOCATION Portland, Oregon
DRILLING METHOD Mud Rotary DRILLERS & EQUIPMENT D. Kenner of Oregon, Inc.; CME-55
ELEVATION 35.8 ft BORE HOLE: B-103
WATER LEVEL Not Measured DATE: -- START: 6/30/82 FINISH: 7/1/82 INSPECTOR CW HL

DEPTH BELOW SURFACE (ft)	SAMPLE INTERVAL	SAMPLE NUMBER	RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
60	60.0								
	61.5	S-16	13	8-15-23	38	SILT, NON PLASTIC, LESS THAN 5% FINE SAND, BROWN, WET, DENSE		ML	
65	65.0								
	66.5	S-17	8	11-21-22	43	SAND, UNIFORMLY GRADED, FINE SAND, LESS THAN 5% FINES, BROWN, WET, DENSE.		SP	
70	70.0								
	71.5	S-18	8	16-28-26	54	SAND, SAME AS S-17		SP	
75	75.0								
	76.5	S-19	8	20-42-45	87	SAND, SIMILAR TO S-17, EXCEPT 5-10% FINES		SP-SM	DRILLER NOTES VERY HARD MATERIAL AT 76.5'
	77.0								
	77.0	S-20	0	60/0.5"	60/0.5"	NO RECOVERY; PROBABLY WEATHERED BASALT			END DRILLING @ 3:40 P.M. BEGIN DRILLING @ 7:30 A.M. SLOW, ROUGH DRILLING TO 77.0 FT. END DRILLING @ 8:45 A.M.
80						END BORING AT 77.0 FEET			

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER P16058.B0.00

SOIL BORING LOG

PROJECT WACKER SILTRONIC LOCATION PORTLAND, OR

DRILLING METHOD REVERT ROTARY; DRAG BIT DRILLERS & EQUIPMENT D. KENNER OF OR CME-75

ELEVATION 31.7 FEET BORE HOLE: B-104

WATER LEVEL 16.1 ft DATE: 7/23/82 START: 6/30/82 FINISH: 6/30/82 INSPECTOR DLKI

DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
0									START DRILLING @ 7:55 A.M. BEGAN DRILLING WITH A DRAG BIT
5	5.0								
	6.5	S-1	11	1-2-2	4	SILT, SLIGHTLY TO MODERATELY PLASTIC, LESS THAN 5% VERY FINE SAND AND ORGANICS, MOTTLED GRAY AND BROWN, DAMP, FILL?, SOFT; OCCASSIONAL ROOTS.		ML	
10	10.0								
	11.5	S-2	11	1-1/12"	1	SANDY SILT, NONPLASTIC, 20-30% VERY FINE SAND, 5-10% ORGANICS, BLUE, WET, VERY LOOSE; FILL?		ML	
15	15.0								
	16.5	S-3	11	0-2-1	3	SANDY SILT, NONPLASTIC, 20-30% VERY FINE SAND, BLUE, MOIST, VERY LOOSE; OIL, OCCASSIONAL WOOD FRAGMENTS, HYDROCARBON ODOR, FILL?		ML	DRILLER NOTES FIRMER MATERIAL @ 17.5 FEET.
20	20.0								
	21.5	S-4	17	2-2-2	4	SANDY SILT, NONPLASTIC, 15-20% VERY FINE SAND, 5-10% ORGANICS, BLUE, MOIST, VERY LOOSE.		ML	
25	25.0								
	26.5	S-5	18	1-2-2	4	SILT, NONPLASTIC, LESS THAN 5% VERY FINE SAND, LESS THAN 5% ORGANICS, BLUE, WET, SOFT. OCCASSIONAL WOOD FRAGMENTS.		ML	DRILLER NOTES FIRMER AND SOFTER DRILLING (POSSIBLE LENSES).
30									

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER P16058.B0.00

SOIL BORING LOG

PROJECT WACKER SILTRONIC LOCATION PORTLAND, OR
DRILLING METHOD REVERT ROTARY; DRAG BIT DRILLERS & EQUIPMENT D. KENNER OF OR, CME-75
ELEVATION 31.7 FEET BORE HOLE: B-104
WATER LEVEL 16.1 ft DATE 7/23/82 START 6/30/82 FINISH: 6/30/82 INSPECTOR DLKI

DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
30	30.0–31.5	S-6	16	1-1-2	3	SANDY SILT, NONPLASTIC, 15-20% VERY FINE SAND, 5-10% ORGANICS, BROWN, MOIST, VERY LOOSE; OCCASSIONAL WOOD FRAGMENTS.		ML	
35	35.0–37.0	ST-7	0	---	—	NO RECOVERY.			
	38.5	S-8	18	2-3-3	6	SANDY SILT, NONPLASTIC, 15-20% VERY FINE SAND, 5-10% ORGANICS, BLUE, WET, LOOSE; OCCASSIONAL WOOD FRAGMENTS.		ML	
40	40.0–41.5	S-9	18	1-1-2	3	SILT, SLIGHTLY TO MODERATELY PLASTIC, 5-10% ORGANICS, LESS THAN 5% VERY FINE SAND, GRAY, MOIST, SOFT; OCCASSIONAL WOOD FRAGMENTS		ML	
45	45.0–47.0	ST-10	0	---	—	NO RECOVERY.			MATERIAL SLIPPED OUT OF TUBE.
	48.5	S-11	14	2-3-4	7	SANDY SILT, NONPLASTIC, 20-30% VERY FINE SAND, 5-10% ORGANICS, BLUE, MOIST, LOOSE; OCCASSIONAL WOOD FRAGMENTS.		ML	
50	50.0–52.0	ST-12	24	---	—	SANDY SILT, SAME AS ABOVE		ML	
	53.5	S-13	18	4-7-8	15	SILT, NONPLASTIC, BLUE, MOIST, STIFF.		ML	
55	55.0–57.0	ST-14	24	---	—	SILT, SAME AS S-15.		ML	
	58.5	S-15	18	3-4-6	14	SILT, NONPLASTIC, 5-12% VERY FINE SAND, BROWN, WET, STIFF.		ML	
60									

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT WACKER SILTRONIC LOCATION PORTLAND, OR

DRILLING METHOD REVERT ROTARY; DRAG BIT DRILLERS & EQUIPMENT D. KENNER OF DR; CME-75

ELEVATION 31.7 FEET BORE HOLE: B-104

WATER LEVEL 16.1 ft DATE: 7/23/82 START: 6/30/82 FINISH: 6/30/82 INSPECTOR DLK

DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
60	60.0								
	61.5	S-16	18	4-6-8	14	SANDY SILT, NONPLASTIC, 15-20% VERY FINE SAND, BROWN, WET, COMPACT.		ML	
65	65.0								
	66.5	S-17	14	5-8-17	25	SANDY SILT, NONPLASTIC, 20-30% VERY FINE SAND, BROWN, WET, COMPACT.		ML	
70	70.0								
	71.5	S-18	18	3-9-15	24	SILT, NONPLASTIC, LESS THAN 5% VERY FINE SAND, BROWN, WET, VERY STIFF.		ML	
75	75.0								
	76.5	S-19	18	6-14-26	40	SILT, SAME AS S-18, EXCEPT CONISTENCY IS HARD.		ML	
80	80.0								
	81.5	S-20	17	5-11-16	27	SILT, SAME AS S-18.		ML	
85	85.0								
	86.5	S-21	17	6-11-13	24	SILT, SAME AS S-18.		ML	
90									

SCOEPA00036572

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT WACKER SILTRONIC LOCATION PORTLAND, OR

DRILLING METHOD REVERT ROTARY; DRIG BIT DRILLERS & EQUIPMENT D. KENNER OF OR; CME-75

ELEVATION 31.7 FEET BORE HOLE: B-104

WATER LEVEL 16.1 ft DATE: 7/23/82 START: 6/30/82 FINISH: 6/30/82 INSPECTOR: DLKI

DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
90									DRILLED TO 90 FEET, INSERTED SPLIT SPOON.
	92.0								
	93.5	S-22	8	2-2-3	5	SANDY SILT, NONPLASTIC, 20-30 % VERY FINE SAND, GRAY AND ORANGE, WET, LOOSE		ML	SPLIT SPOON DROPPED TO 92 FEET. DROVE SAMPLE @ 92 FEET
	95.0								
95	96.1	S-23 B A	12	6-22-60/1"	82/1"	BASALT, UNWEATHERED, FRACTURED, BLACK, HARD			END DRILLING @ 1:20 P.M.

END BORING @ 96.1 ft

NOTE: PIEZOMETER INSTALLED WITH 1.9-FT, 1½-INCH DIAMETER SLOTTED TIP 89.1 TO 91.0 FT; GRAVEL PACK, CONSISTING OF 3/8-INCH PEA GRAVEL FROM 96 TO 85 FT, FOLLOWED BY A 2-FOOT BENTONITE SEAL FROM 85 TO 83 FT; 3/4-INCH RISER PIPE INSTALLED FROM SLOTTED TIP TO ABOVE THE SURFACE; BORING WAS BACKFILLED FROM 83 FEET TO SURFACE WITH CUTTINGS AND PEA GRAVEL.

SCOEPA00036573

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT WACKER SILTRONIC LOCATION PORTLAND, OR

DRILLING METHOD MUD ROTARY; DRAGBIT DRILLERS & EQUIPMENT D. KENNER DF DR; CME-75

ELEVATION 32.8 FEET BORE HOLE: B-105

WATER LEVEL NOT MEASURED DATE: --- START: 7/1/82 FINISH: 7/2/82 INSPECTOR DLKI

DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
0									BEGAN DRILLING @ 3:05 P.M.
5	5.0–6.5	S-1	13	1-1-1	2	SANDY SILT, NONPLASTIC, 12-20% VERY FINE SAND, 5-10% ORGANICS, ORANGE AND GRAY MOTTLING, WET, VERY LOOSE; OCCASSIONAL ROOTS; AT BOTTOM; FILL?		ML	
10	10.0–11.5	S-2	8	3-6-6	12	SAND, MEDIUM TO FINE, LESS THAN 5% FINES, BLACK, WET, LOOSE; HYDROCARBON ODOR, FILL?		SP	
15	15.0–16.5	S-3	11	3-2-3	5	SAND, SAME AS S-2, EXCEPT WITH OIL AT BOTTOM; FILL?		SP	
20	20.0–21.5	S-4	16	2-1-2	3	SILT, NONPLASTIC, 5-12% VERY FINE SAND, LESS THAN 5% ORGANICS, GRAY AND ORANGE MOTTLING, WET, SOFT; OCCASSIONAL WOOD FRAGMENTS.		ML	DRILLER NOTES WOOD AT BOTTOM OF SAMPLER.
25	25.0–26.5	S-5	18	1-1-2	3	SILT, NONPLASTIC, 5-10% FINE SAND, GRAY, MOIST, SOFT; FRAGMENTS OF DECOMPOSED PLANT MATERIAL IN LOWER 9 INCHES OF SAMPLER		ML	END DRILLING @ 3:40 P.M.
30									

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT WACKER SILTRONIC LOCATION PORTLAND, OR
DRILLING METHOD MUD ROTARY; DRAGBIT DRILLERS & EQUIPMENT D. KENNER OF OR; CME-75
ELEVATION 32.8 FEET BORE HOLE: B-105
WATER LEVEL NOT MEASURED DATE: --- START: 7/1/82 FINISH: 7/2/82 INSPECTOR CWHL

DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
30	30.0–31.5	S-6	18	1-1-2	3	SILT, NONPLASTIC, LESS THAN 5% FINE SAND, GRAY, WET, SOFT; LENSE OF DECOMPOSED PLANT MATERIAL 3 INCHES FROM TOP, HYDROCARBON ODOR		ML	BEGAN DRILLING @ 7:45 A.M.
35	35.0–36.5	S-7	18	1-2-2	4	SILT, SLIGHTLY PLASTIC, GRAY, WET, SOFT.		ML	
40	40.0–41.5	S-8	18	3-6-8	14	SILT, SLIGHTLY TO MODERATELY PLASTIC, GREENISH GRAY, STIFF.		ML	
45	45.0–46.5	S-9	18	4-4-6	10	SILT, SLIGHTLY TO MODERATELY PLASTIC, 5-10% FINE SAND IN LOWER 9 INCHES, GREENISH GRAY IN UPPER PART, GRAY IN LOWER PART, MOIST, STIFF.		ML	
50	50.0–51.5	S-10	18	2-4-9	13	SILT, NONPLASTIC, LESS THAN 5% FINE SAND, BROWN, WET, COMPACT		ML	
55	55.0–56.5	S-11	18	2-4-8	12	SILT, SAME AS S-10		ML	
60									

SCOEPA00036575

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT WACKER SILTRONIC LOCATION PORTLAND, OR
DRILLING METHOD MUD ROTARY; DRAG BIT DRILLERS & EQUIPMENT D. KENNER OF OR; CME-75
ELEVATION 32.8 FEET BORE HOLE: B-105
WATER LEVEL NOT MEASURED DATE: — START: 7/1/82 FINISH: 7/2/82 INSPECTOR CWHL

DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
60	60.0								
	61.5	S-12	18	4-11-18	29	UPPER 12 INCHES SILT, SLIGHTLY PLASTIC, 5-10% FINE SAND, BROWN, MOIST, STIFF. LOWER 6 INCHES SILTY SAND, FINE SAND, 15-20% FINES, BROWN, WET, COMPACT.		ML SM	MIX MUD
65	65.0								
	66.5	S-13	18	6-10-14	24	SILTY SAND, FINE SAND, 20-25% FINES, BROWN, WET COMPACT.		SM	
70	70.0								
	71.5	S-14	15	9-23-22	45	UPPER 9 INCHES: SILTY SAND, SIMILAR TO S-13, EXCEPT 15-20% FINE SAND. LOWER 6 INCHES: SILT, SLIGHTLY PLASTIC, 10-15% FINE SAND, BROWN, MOIST, STIFF.		SM ML	
75	75.0								
	76.6	S-15	12	13-21-60/3"	81/9"	SILTY SAND WITH 1-2 INCH LAYERS OF SAND:		SM SP-SM	DRILLER NOTES VERY HARD DRILLING @ 76.5 FEET; CHANGE TO TRICONE BIT; SAMPLER BOUNCED DURING SPT FOR S-16
	76.5 76.7	S-16	2	60/2"	60/2"	SILTY SAND, FINE SAND, 20-25% FINES, BROWN, WET, COMPACT. SAND, UNIFORMLY GRADED, FINE SAND, 5-12% FINES, BROWN, WET, COMPACT. SAND, UNIFORMLY GRADED, FINE SAND, 5-12% FINES, WET, DENSE; PROBABLY CAVINGS ABOVE BASALT			FINISH DRILLING @ 9:55 A.M.
						END BORING @ 76.7 ft			

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT WACKER SILTRONIC LOCATION PORTLAND, OR

DRILLING METHOD MUD ROTARY; DRAG BIT DRILLERS & EQUIPMENT D. KENNER OF OR; CME-75

ELEVATION 32.2 FEET BORE HOLE: B-106

WATER LEVEL NOT MEASURED DATE: --- START: 6/29/82 FINISH: 6/29/82 INSPECTOR DLKI

DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
0									BEGIN DRILLING @ 10:00 A.M.
5	5.0								
	6.4	S-1	17	1-1-1	2	SILT, SLIGHTLY TO MODERATELY PLASTIC, BROWN AND ORANGE MOTTLED, MOIST, FILL?, SOFT; OCCASSIONAL ROOTS AND WOOD; FILL?		ML	
	8.0								
		ST-2	22	---	-	SILT, SAME AS S-1.		ML	
10	10.0								
	11.5	S-3	0	1-1-2	3	NO RECOVERY.			SILT SMEARED ON SPLIT SPOON
15	15.0								DRILLER NOTES WOOD IN CUTTINGS FROM 13-15 FEET; COULD BE REASON FOR NO RECOVERY OF S-3.
	16.5	S-4	14	0/12"-2	2	SILT, NONPLASTIC, 10-15% VERY FINE SAND, GRAY, MOIST, SOFT; OCCASSIONAL WOOD FRAGMENTS, HYDROCARBON ODOR; FILL?		ML	
20	20.0								DRILLER NOTES OIL FROM 18-20 FEET.
	21.5	S-5	16	3-4-6	10	SILT, NONPLASTIC, LESS THAN 5% VERY FINE SAND AND ORGANICS, GRAY, MOIST, STIFF; OCCASSIONAL ROOTS.		ML	
25	25.0								
	26.5	S-6	13	5-6-3	9	SAND, MEDIUM TO FINE, BLACK, WET, LOOSE.		SP	DRILLER NOTES FIRM DRILLING @ 26.5 FEET.
30									

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT WACKER SILTRONIC LOCATION PORTLAND, OR
DRILLING METHOD MUD ROTARY; DRAG BIT DRILLERS & EQUIPMENT D. KEINER OF OR; CME-75
ELEVATION 32.2 FEET BORE HOLE: B-106
WATER LEVEL NOT MEASURED DATE: --- START: 6/29/82 FINISH: 6/29/82 INSPECTOR DLKI

DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
30	30.0–32.0	ST-7	18	---	–	SILT, SAME AS S-8.		ML	DRILLER NOTES LAYERS OF FIRM AND SOFT DRILLING.
	33.5	S-8	18	2-2-5	7	SILT, NONPLASTIC, 5-12% VERY FINE SAND, 10-15% ORGANICS, BROWN, MOIST, FIRM; OCCASSIONAL WOOD FRAGMENTS.		ML	
35	35.0								
	36.5	S-9	18	1-1-2	3	SILT, SLIGHTLY TO MODERATELY PLASTIC, GRAY, MOIST, SOFT.		ML	
	38.0								
40	40.0	ST-10	0	---	–	NO RECOVERY.			
	42.0	ST-11	18	---	–	SILT, SAME AS S-12.		ML	
	43.5	S-12	18	3-3-5	8	SILT, NONPLASTIC, 5-12% VERY FINE SAND, 20-25% ORGANICS, GRAY, DAMP, FIRM; OCCASSIONAL WOOD.		ML	
45	45.0								
	47.0	ST-13	24	---	–	SILT, SAME AS S-14.		ML	WOODCHIP @ BOTTOM OF SHELBY TUBE.
	48.5	S-14	18	2-2-3	5	SILT, MODERATELY PLASTIC, GRAY, MOIST, FIRM; OCCASSIONAL WOOD FRAGMENTS.		ML	
50	50.0								
	51.5	S-15	18	2-2-6	8	SANDY SILT, 30-40% VERY FINE SAND, BLACK, WET, LOOSE.		ML	
55	55.0								
	56.0	S-16	11	7-9-8	17	SAND, LESS THAN 5% FINES, BLACK, MOIST, FIRM, GRADES TO SILT, MODERATELY PLASTIC, BROWN, MOIST, COMPACT; OCCASSIONAL ORGANICS.		SP ML	
60									

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT WACKER SILTRONIC LOCATION PORTLAND, OR

DRILLING METHOD MUD ROTARY; DRAG BIT DRILLERS & EQUIPMENT D. KENNER OF OR; CME-75

ELEVATION 32.2 FEET BORE HOLE: B-106

WATER LEVEL NOT MEASURED DATE: --- START: 6/29/82 FINISH: 6/29/82 INSPECTOR DLKI

DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
60	60.0–61.5	S-17	18	3-9-11	20	SILT, SLIGHTLY TO MODERATELY PLASTIC, BLUE, DAMP, VERY STIFF, GRADES TO SILT, NON-PLASTIC, 5-12% VERY FINE SAND, BLUE, DAMP, VERY STIFF.		ML	
65	65.0–66.5	S-18	18	6-14-22	36	SANDY SILT, NON PLASTIC, 15-20% VERY FINE SAND, BLUE, WET, DENSE.		ML	
70	70.0–71.5	S-19	18	4-6-15	21	SILT, NON PLASTIC, BROWN, WET, VERY STIFF. GRADES TO BLUE.		ML	
75	75.0–76.5	S-20	18	5-10-21	31	SILT, NON PLASTIC, 5-12% VERY FINE SAND, LIGHT BROWN, WET, HARD.		ML	
80	80.0–81.5	S-21	13	9-18-29	47	SILTY SAND, VERY FINE SAND, 20-30% FINES, LIGHT BROWN, WET, DENSE.		SM	
85	85.0–86.5	S-22	18	14-22-32	54	SILT, NON PLASTIC, 5-12% VERY FINE SAND, LIGHT BROWN, WET, HARD.		ML	
90									

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CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT WACKER SILTRONIC LOCATION PORTLAND, OR

DRILLING METHOD MUD ROTARY; DRAG BIT DRILLERS & EQUIPMENT D. KENNER OF OR; CME-75

ELEVATION 32.2 FEET BORE HOLE: B-106

WATER LEVEL NOT MEASURED DATE: --- START: 6/29/82 FINISH: 6/29/82 INSPECTOR DLKI

DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
90	90.0 91.5	S-23	18	5-9-12	21	SILT, NON PLASTIC, 5-12% VERY FINE SAND, LIGHT BROWN, WET, VERY STIFF.		ML	
95	95.0 96.5	S-24	2	7-10-11	21	SILT, SAME AS S-23.		ML	
	98.0 98.4	S-25	4.5	60/4.5"	60/4.5"	BASALT UNWEATHERED, FRACTURED, BLACK, VERY HARD			DRILLER NOTES HARD DRILLING @ 98 FEET. CHANGED TO TRICONE BIT (4 7/8 INCHES). END DRILLING @ 3:50 P.M.
100	100.0 100.0	S-26	0	60/0.5"	60/0.5"	NO RECOVERY			
						END BORING @ 100.0 ft			

SCOEPA00036580

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT WACKER SILTRONIC LOCATION PORTLAND, OR

DRILLING METHOD MUD ROTARY; DRAG BIT DRILLERS & EQUIPMENT D. KENNER OF OR; CME-75

ELEVATION 34.6 FEET BORE HOLE: B-107

WATER LEVEL NOT MEASURED DATE: --- START: 7/1/82 FINISH: 7/1/82 INSPECTOR DLKI

DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	STANDARD PENETRATION TEST RESULTS BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
0									BEGIN DRILLING @ 11:10 A.M.
5	5.0–6.5	S-1	7	3-3-3	6	SAND, MEDIUM TO FINE, LESS THAN 5% FINES, ORANGE, MOIST, LOOSE; FILL?		SP	
10	10.0–11.5	S-2	14	6-7-9	16	SAND, MEDIUM TO FINE, LESS THAN 5% FINES, BLACK, MOIST, COMPACT; HYDROCARBON ODOR; FILL?		SP	DRILLER NOTES OIL @ 12 OR 13 FEET
15	15.0–16.5	S-3	8	3-3-7	10	SAND, SAME AS S-2; WOOD CHUNK AT BOTTOM OF SPLIT SPOON; FILL?		SP	DRILLER NOTES WOOD IN CUTTINGS.
20	20.0–21.5	S-4	14	1-2-3	5	SILT, MODERATELY PLASTIC, BLUE, MOIST, FIRM; OCCASSIONAL WOOD FRAGMENTS, HYDROCARBON ODOR.		ML	
25	25.0–26.5	S-5	18	1-1-1	2	SILT, NONPLASTIC, BLUE, WET, SOFT.		ML	DRILLER NOTES OUT OF OIL @ 22 OR 23 FEET, BUT STILL IN WOOD.
30									

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER P/6058.B0

SOIL BORING LOG

PROJECT WACKER SILTRONIC LOCATION PORTLAND, OR
DRILLING METHOD MUD ROTARY; DRAG BIT DRILLERS & EQUIPMENT D. KENNER OF OR; CME-75
ELEVATION 34.6 FEET BORE HOLE: B-107
WATER LEVEL NOT MEASURED DATE: --- START: 7/1/82 FINISH: 7/1/82 INSPECTOR DLKI

DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
30	30.0–32.0	ST-6	24	---	–	SILT, SAME AS S-7.		ML	
	33.5	S-7	18	1-2-4	6	SILT, NON PLASTIC, LESS THAN 5% VERY FINE SAND AND ORGANICS, BROWN, MOIST, FIRM; OCCASIONAL WOOD FRAGMENTS		ML	
35	35.0								
	37.0	ST-8	22	---	–	SILT, SAME AS S-9.		ML	
	38.5	S-9	18	3-4-5	9	SILT, SLIGHTLY TO MODERATELY PLASTIC, 5-12% VERY FINE SAND, BLUE AND ORANGE MOTTLED, WET, STIFF.		ML	
40	40.0								
	41.5	S-10	18	2-3-4	7	SILT, SLIGHTLY TO MODERATELY PLASTIC, 5-12% VERY FINE SAND, BROWN, WET, FIRM.		ML	
45	45.0								
	46.5	S-11	18	2-4-7	11	SILT, SLIGHTLY PLASTIC, BROWN, MOIST, STIFF.		ML	
50	50.0								
	51.5	S-12	18	5-9-10	19	SANDY SILT, NON PLASTIC, 20-30% VERY FINE SAND, BROWN, WET, COMPACT.		ML	
55	55.0								
	56.5	S-13	18	6-10-13	23	SANDY SILT, SAME AS S-12.		ML	
60									

SCOEPA00036582

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT WACKER SILTRONIC LOCATION PORTLAND, OR

DRILLING METHOD MUD ROTARY; DRAG BIT DRILLERS & EQUIPMENT D. KENNER OF DR; CME-75

ELEVATION 346 FEET BORE HOLE: B-107

WATER LEVEL NOT MEASURED DATE: --- START: 7/1/82 FINISH: 7/1/82 INSPECTOR DLKI

DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	STANDARD PENETRATION TEST RESULTS BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
60	60.0 61.5	S-14	18	8-15-20	35	SILT, NONPLASTIC, 12-15% VERY FINE SAND, BROWN, WET, HARD.		ML	
65									
70	70.0 71.5	S-15	13	19-19-21	40	SAND, VERY FINE, LESS THAN 5% FINES, BROWN, WET, DENSE.		SP	
	71.5	S-16	0	30-43-60/3"	103/3"	NO RECOVERY; probably basalt			END DRILLING @ 2:30 P.M.
						END BORING @ 71.5 ft			

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT WACKER SILTRONIC LOCATION PORTLAND, OR
DRILLING METHOD REVERT ROTARY; DRAG BIT DRILLERS & EQUIPMENT D. KENNER OF OR; CME-75
ELEVATION 35.9 FEET BORE HOLE: B-108
WATER LEVEL 18.8 ft DATE: 7/23/82 START: 6/30/82 FINISH: 7/1/82 INSPECTOR DLKI

DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	STANDARD PENETRATION TEST RESULTS BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
0									BEGIN DRILLING @ 3:20 P.M.
5	5.0								
	6.5	S-1 A B	12	1-4-12	16	TOP: SILT, NONPLASTIC, LESS THAN 5% VERY FINE SAND, GRAY AND ORANGE MOTTLED, DRY, VERY STIFF. BOTTOM: SAND, MEDIUM TO FINE, LESS THAN 5% FINES, ORANGE, DRY, COMPACT; FILL?		ML SP	
10	10.0								
	11.5	S-2	12	3-8-9	17	SAND, MEDIUM TO FINE, LESS THAN 5% FINES, OCCASSIONAL GRAVEL TO 1 INCH MAX, BLACK, MOIST, COMPACT; FILL?		SP	
15	15.0								
	16.5	S-3	7	3-4-4	8	SAND, SAME AS S-2, EXCEPT WET, AND RELATIVE DENSITY IS LOOSE; FILL?		SP	
20	20.0								DRILLER NOTES CHANGE @ 18 FEET, WOOD CHUNKS.
	21.5	S-4	16	3-4-5	9	SILT, NONPLASTIC, ORANGE AND GRAY MOTTLING, MOIST, STIFF, OCCASSIONAL ROOTS.		ML	
25	25.0								
	27.0	ST-5	24	---	-	SILT, SAME AS S-6.		ML	
	28.5	S-6	18	2-2-3	5	SILT, SLIGHTLY PLASTIC, BROWN AND GRAY MOTTLING, MOIST, FIRM.		ML	END DRILLING @ 4:20 P.M.
30									

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT WACKER SILTRONIC LOCATION PORTLAND, OR

DRILLING METHOD REVERT ROTARY; DRAG BIT DRILLERS & EQUIPMENT D. KENNER OF OR; CME-75

ELEVATION 35.9 FEET BORE HOLE: B-108

WATER LEVEL 18.8 ft DATE: 7/23/82 START: 6/30/82 FINISH: 7/1/82 INSPECTOR DLKI

DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
30	30.0–32.0	ST-7	24	- - -	—	SILT, SAME AS S-8.		ML	BEGAN DRILLING @ 7:45 A.M.
	33.5	S-8	18	1-2-2	4	SILT, NONPLASTIC, 5-12% VERY FINE SAND, BROWN, MOIST, SOFT.		ML	
35	35.0–36.5	S-9	18	3-3-2	5	SILT, NON PLASTIC, LESS THAN 5% VERY FINE SAND, BROWN, WET, FIRM.		ML	
40	40.0–41.5	S-10	18	2-5-8	14	SILT, SAME AS S-9.		ML	
45	45.0–46.5	S-11	18	6-7-10	17	SANDY SILT, NONPLASTIC, 15-20% VERY FINE SAND, BROWN, WET, COMPACT.		ML	
50	50.0–51.5	S-12	14	7-15-14	29	SAND, MEDIUM TO FINE, LESS THAN 5% FINES, BROWN, WET, COMPACT.		SP	
55	55.0–56.5	S-13	14	6-8-16	24	SILTY SAND, FINE SAND, 10-15% FINES, BROWN, WET, COMPACT.		SM	
60									

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT WACKER SILTRONIC LOCATION PORTLAND, OR

DRILLING METHOD REVERT ROTARY; DRAG BIT DRILLERS & EQUIPMENT D. KENNER OF OR; CME-75

ELEVATION 35.9 FEET BORE HOLE: B-108

WATER LEVEL 18.8 ft DATE: 7/23/82 START: 6/30/82 FINISH: 7/1/82 INSPECTOR DLKI

DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
60	60.0 61.5	S-14	14	12-24-25	49	SAND, MEDIUM TO FINE, LESS THAN 5 % FINES, BLACK, WET, DENSE.		SP	
65									
	68.0								
	69.5	S-15	12	16-14-24	38	BASALT SLIGHTLY WEATHERED, FRACTURED, HARD, BLACK			END DRILLING @ 9:30 A.M.
70	69.5	S-16	0	60/1"	60/1"	NO RECOVERY			

END BORING @ 69.5 ft

NOTE: PIEZOMETER INSTALLED WITH A 1.9-FOOT 1½-inch DIAMETER SLOTTED TIP FROM 65.6 TO 67.5 FT; GRAVEL PACK, CONSISTING OF 3/8-INCH PEA GRAVEL FROM 70 FEET TO 64 FEET; FOLLOWED BY A 2-FOOT BENTONITE SEAL FROM 64 TO 62 FEET; 3/4-INCH RISER PIPE INSTALLED FROM SLOTTED TIP TO ABOUT 1.5 FEET ABOVE THE GROUND SURFACE; BORING WAS THEN BACKFILLED FROM 62 FEET TO SURFACE WITH CUTTINGS AND PEA GRAVEL.

APPENDIX B

LABORATORY TEST RESULTS

SCOEPA00036587

CH2M HILL

PROJECT NUMBER P160S8.B0

SOILS CLASSIFICATION AND TEST SUMMARY

ASTM D2487

PROJECT DESCRIPTION: WACKER SILTRONIC

MATERIALS LABORATORY: CH2M HILL - PDX TYPE OF SAMPLE:

SAMPLE LOCATION: AS NOTED SAMPLE NO:

SAMPLE LOCATION	SAMPLE NUMBER	DEPTH INTERVAL (FEET)	DESCRIPTION OF MATERIAL	ASTM CLASSIFICATION	MOISTURE P.L. (%)	MOISTURE ω (%)	MOISTURE L.L. (%)	GRADATION, % PASSING 3"	1½"	#4	#200	LABORATORY TESTS		
B-100	ST-6	28-30	GRAY PLASTIC SILT	MH	33	49	62					CONSOLIDATION		
B-100	S-11	45-46.5	GRAY PLASTIC SILT	ML	25	28	35							
B-101	ST-7	33-35	GRAY PLASTIC SILT	ML	28	35	40							
B-102	ST-7	33-35	DARK GRAY ORGANIC SILT	MH-OH	58	98	125							
B-104	ST-12	50-52	BROWN SILT	ML	NP	34	NP					CONSOLIDATION		
B-105	S-8	40-41.5	GRAY PLASTIC SILT	ML	29	36	41							
B-107	S-6	30-32	BROWN SILT	ML	NP	68	NP					CONSOLIDATION		

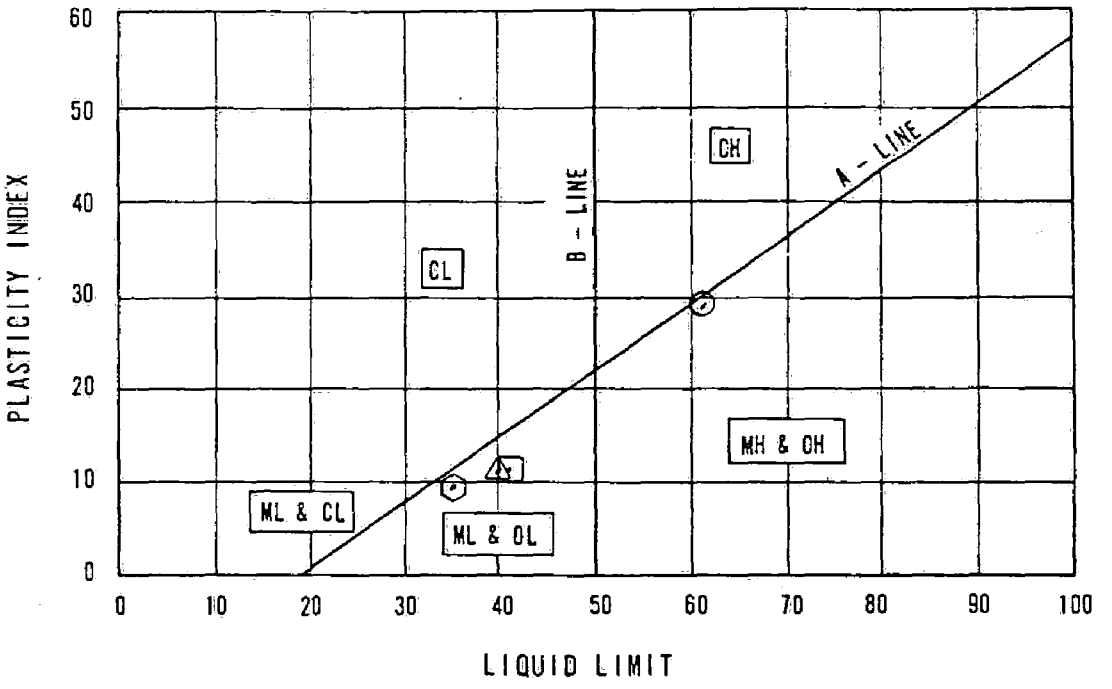
REMARKS: NP = NONPLASTIC

TESTED BY:	DATE:	COMPUTED BY:	DATE:	CHECKED BY:	DATE:

LAB FORM D2487P 2/78

SCOEPA00036588

PLASTICITY CHART



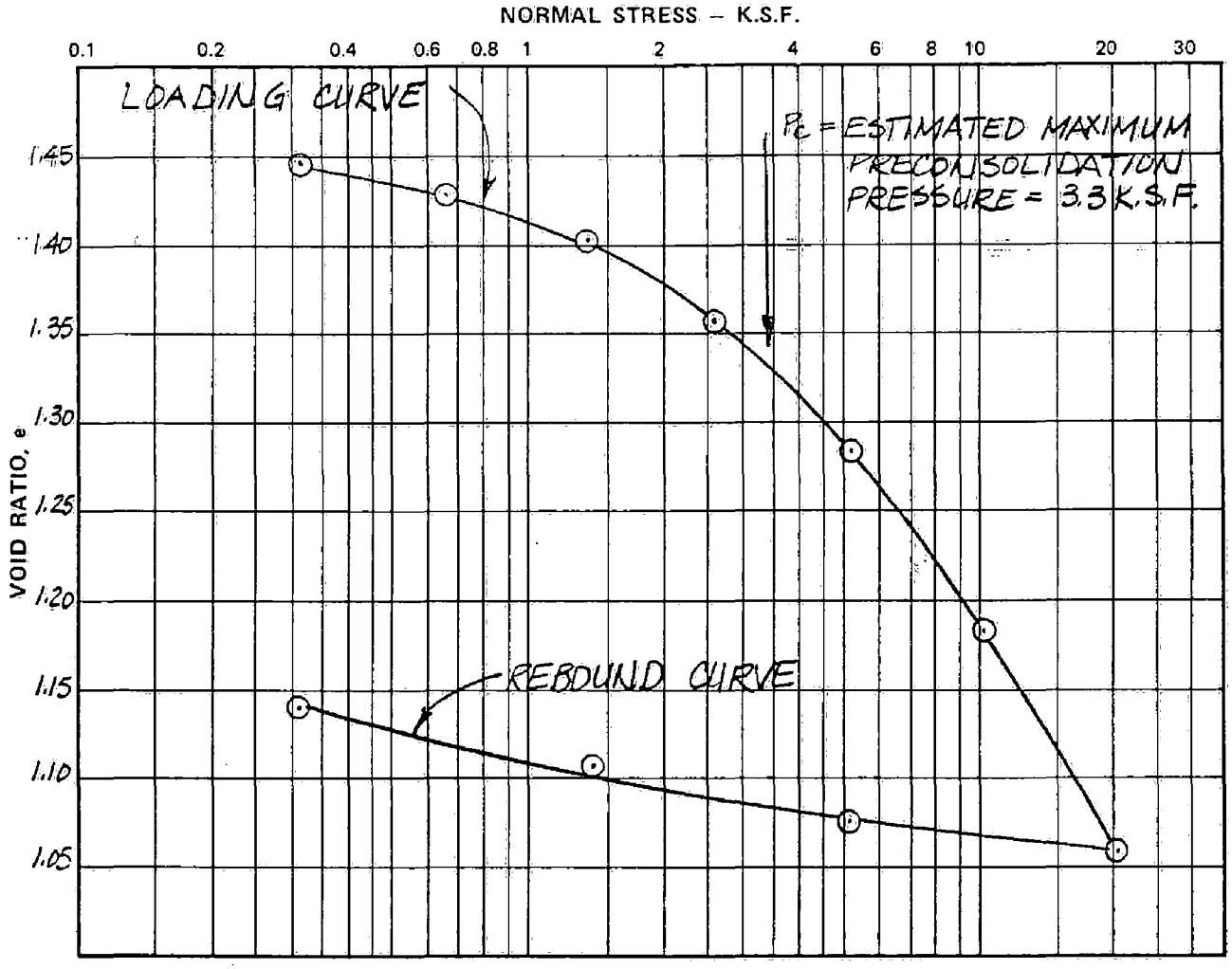
SYMBOL	SAMPLE	LIQUID LIMIT	PLASTICITY INDEX	NATURAL MOISTURE
⊙	B-100 ST-6	62	29	49
⬡	B-100 S-11	35	10	28
△	B-101 ST-7	40	12	35
⊡	B-105 S-8	41	12	36

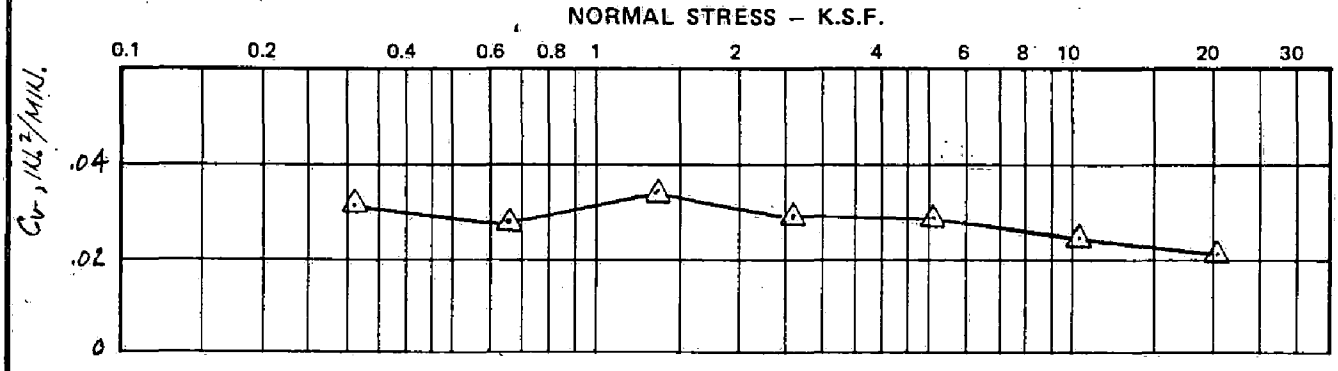
PLASTICITY CHART
WACKER SILTRONICS
CORPORATION

P1L058.BO

CH2M HILL

SCOEPA00036589





PLOT OF PRIMARY CONSOLIDATION

SAMPLE DATA:
GRAY SILT (MH)
DEPTH 28.0-30.0 FT.
INITIAL DIAMETER = 2.50 IN.
INITIAL HEIGHT = 1.00 IN.
INITIAL VOID RATIO = 1.46
NATURAL MOISTURE CONTENT = 55%
DRY DENSITY = 67.4 P.C.F.

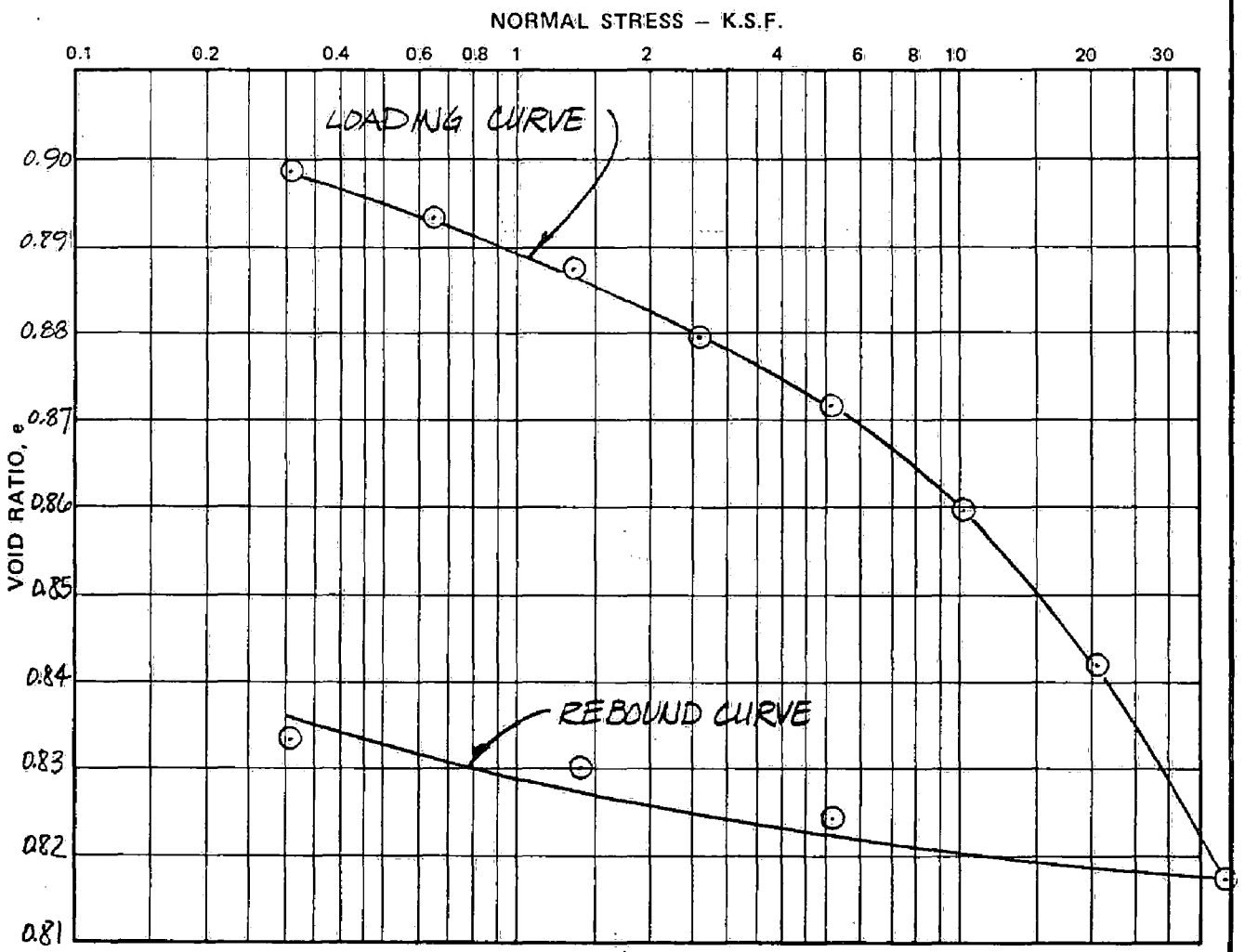
B-100 ST-6
CONSOLIDATION TEST
WACKER SILTRONICS CORPORATION

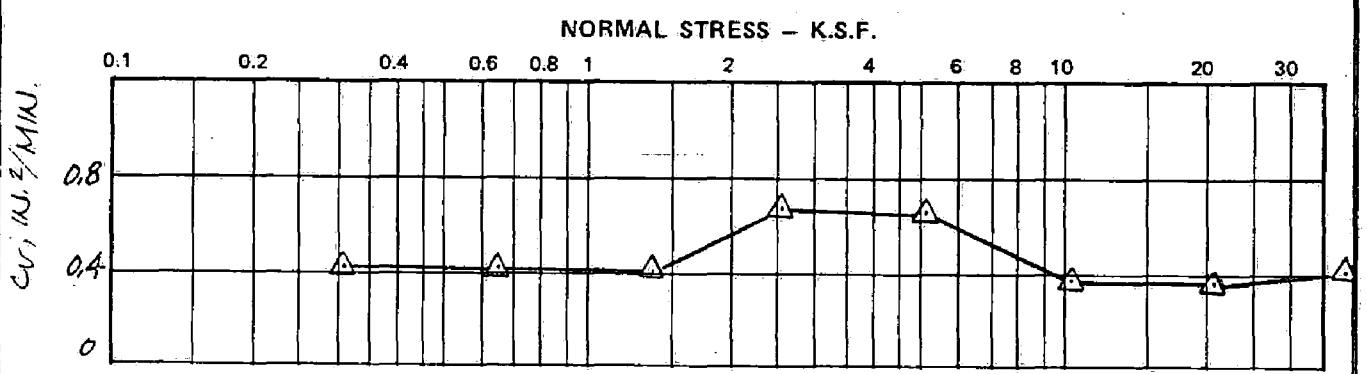
CH2M HILL

P16058.80

FORM 70

SCOEPA00036590





PLOT OF PRIMARY CONSOLIDATION

SAMPLE DATA:
MEDIUM BROWN SILT (ML)
DEPTH 50.0 - 52.0 FT.
INITIAL DIAMETER = 2.50 IN.
INITIAL HEIGHT = 1.00 IN.
INITIAL VOID RATIO = 0.90
NATURAL MOISTURE CONTENT = 35%
DRY DENSITY = 87.1 P.C.F.

B-104 ST-12
CONSOLIDATION TEST
WACKER SILTRONICS CORPORATION

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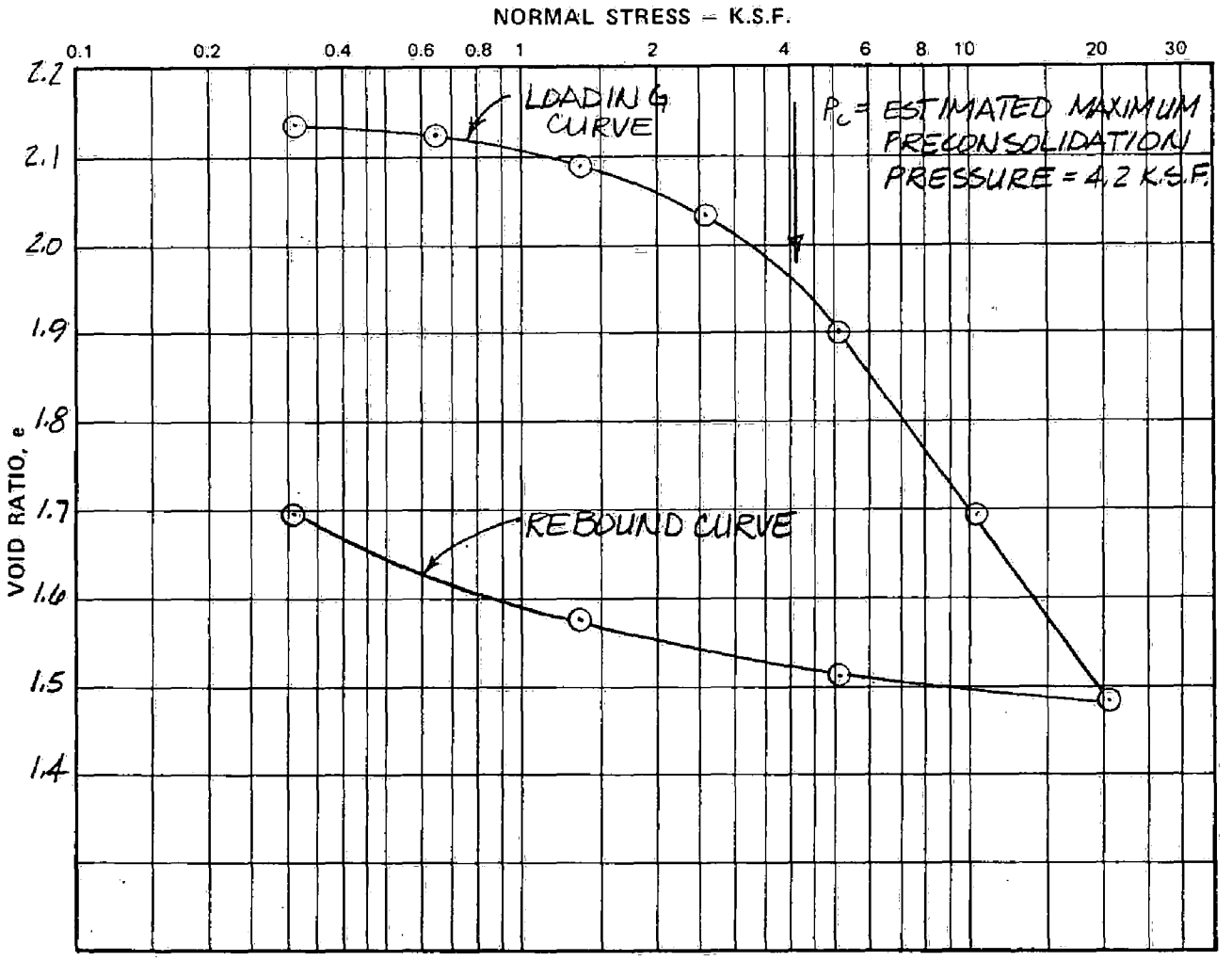
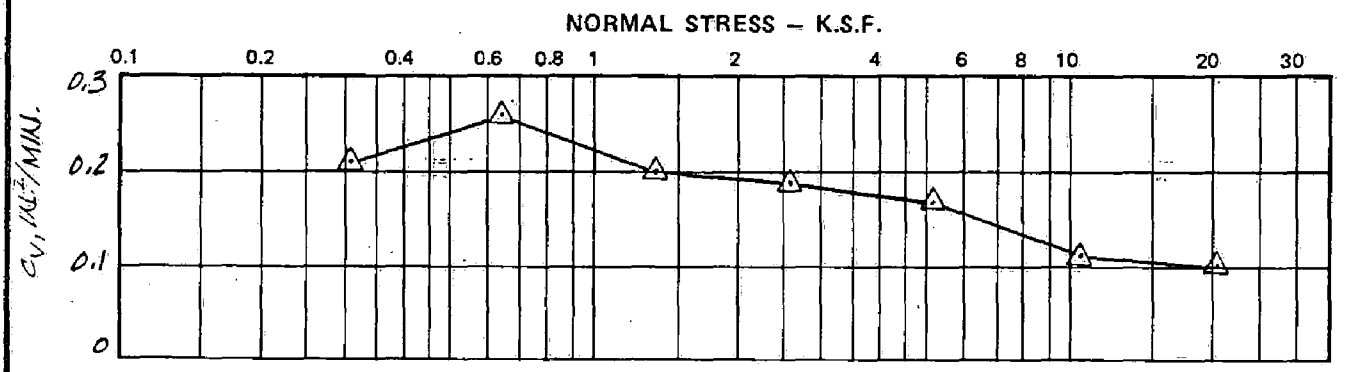
P16058.80

FORM 70

SCOEPA00036591





PLOT OF PRIMARY CONSOLIDATION

SAMPLE DATA:
MEDIUM BROWN SILT (ML)
DEPTH 30.0 - 32.0 FT.
INITIAL DIAMETER = 2.50 IN.
INITIAL HEIGHT = 1.0 IN.
INITIAL VOID RATIO = 2.16
NATURAL MOISTURE CONTENT = 75 %
DRY DENSITY = 47.0 P.C.F.

B-107 ST-6
CONSOLIDATION TEST
WACKER SILTRONICS CORPORATION

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P16058.80

FORM 70

SCOEPA00036592

CH2M HILL
engineers
planners
economists
scientists

CH2M HILL
200 S. W. Market St.
12th Floor
Portland, Oregon 97201
(503)224-9190
Telex: 36-0103 CH2M PTL

USGS
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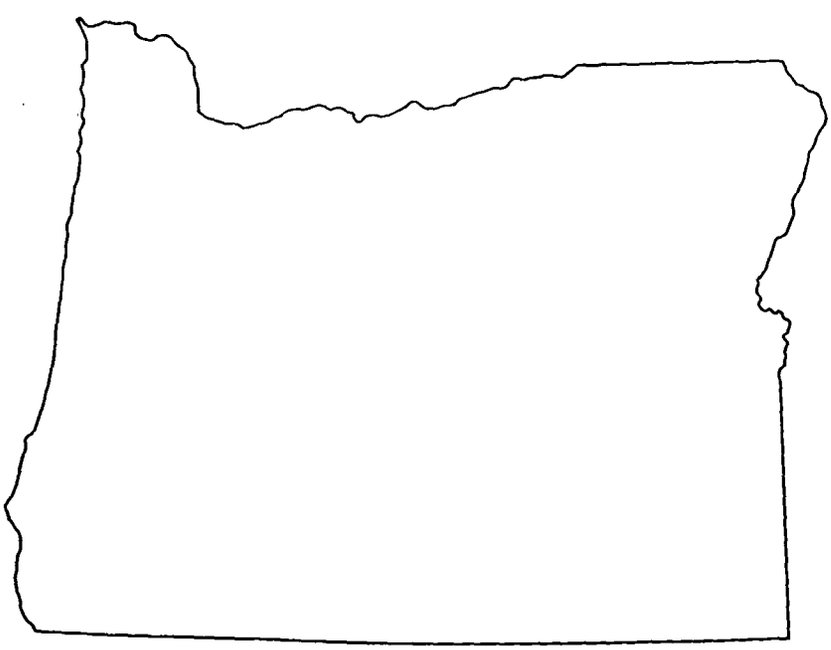
Water Resources Data
Oregon
Water Year 1998

Water-Data Report OR-98-1



Prepared in cooperation with other agencies

U.S. Department of the Interior
U.S. Geological Survey

SCOEPA00036594

14211720 WILLAMETTE RIVER AT PORTLAND, OR
(National stream quality accounting network station)

WATER-QUALITY RECORDS

LOCATION.--Lat 45°31'07", long 122°40'00", in NW 1/4 NE 1/4 sec.3, T.1 S., R.1 E., Multnomah County, Hydrologic Unit 17090012, in pier at east end of drawspan, on upstream side of Morrison Bridge, in Portland, and at mile 12.8.

DRAINAGE AREA.--11,100 mi^2, approximately.

PERIOD OF RECORD.--October 1974 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: December 1975 to September 1981.
WATER TEMPERATURE: November 1975 to September 1981.

REMARKS.--Water-discharge records used for computation of suspended-sediment loads were obtained by flow routing procedures using upstream records. Boron values less than 16 UG/L have been designated as estimated due to a change in the minimum reporting level effective December 22, 1997.

WATER-QUALITY DATA

DATE	TIME	DIS-CHARGE, IN CUBIC FEET PER SECOND (00060)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	TEMPER-ATURE WATER (DEG C) (00010)	TUR-BID-ITY (NTU) (00076)	OXYGEN, DIS-SOLVED (MG/L) (00300)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	HARD-NESS, TOTAL (MG/L AS CACO3) (00900)	CALCIUM, DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)
OCT 1997												
30...	1240	E34000	70	7.3	11.5	4.2	11.1	755	103	23	5.9	1.9
NOV												
17...	1100	E23600	70	7.4	10.1	3.5	11.7	767	103	24	6.1	2.0
25...	1110	E64700	72	7.2	10.0	20	11.7	766	103	24	6.1	2.0
DEC												
10...	1050	E31000	79	7.6	7.0	3.6	14.0	778	113	26	6.7	2.2
17...	1120	E43200	82	7.4	6.6	7.4	13.1	764	107	27	6.9	2.4
19...	0950	E88500	65	7.2	7.7	--	14.1	771	117	--	--	--
22...	1020	E55600	69	7.2	6.6	13	14.8	773	119	23	5.9	2.0
JAN 1998												
06...	1040	E45000	74	7.3	6.3	8.7	13.4	762	108	25	6.4	2.1
FEB												
10...	1140	E40800	85	7.3	8.5	13	12.6	756	108	30	7.6	2.6
MAR												
04...	1240	E64500	67	7.3	8.5	12	12.8	753	110	24	6.1	2.0
APR												
08...	1100	E25500	83	7.3	10.6	4.5	11.8	769	105	30	7.6	2.6
MAY												
05...	1050	E20800	78	7.2	16.5	1.8	9.6	759	99	26	6.7	2.2
19...	1040	E38900	64	7.2	11.8	4.1	12.7	763	117	21	5.6	1.8
JUN												
10...	1010	E21200	78	7.2	17.3	2.6	9.6	759	100	26	6.8	2.2
JUL												
13...	1110	E11000	91	7.3	21.2	3.1	8.5	763	95	28	7.1	2.4
AUG												
25...	1100	E9030	99	7.1	20.9	3.0	7.5	762	84	27	6.7	2.4

DATE	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY, DIS IT FIELD (MG/L AS CACO3) (39086)	BICAR-BONATE, DIS IT FIELD (MG/L AS HCO3) (00453)	CAR-BONATE, DIS IT FIELD (MG/L AS CO3) (00452)	SULFATE, DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
OCT 1997												
30...	5.6	34	0.5	0.9	27	33	0	1.4	3.9	<0.1	15	55
NOV												
17...	5.2	32	0.5	0.7	29	36	0	2.9	4.0	<0.1	16	72
25...	4.5	28	0.4	0.9	23	27	0	3.2	3.5	<0.1	15	56
DEC												
10...	5.1	29	0.4	0.8	26	32	0	3.4	4.2	<0.1	16	62
17...	5.5	30	0.5	0.8	27	33	0	4.0	4.5	<0.1	16	66
19...	--	--	--	--	20	24	0	3.2	3.4	<0.1	--	58
22...	4.1	28	0.4	0.8	23	28	0	3.4	3.6	<0.1	15	63
JAN 1998												
06...	4.8	29	0.4	0.7	25	30	0	3.7	3.8	<0.1	15	61
FEB												
10...	5.2	27	0.4	0.9	29	35	0	4.2	4.0	<0.1	16	62
MAR												
04...	4.0	26	0.4	0.7	23	28	0	2.8	2.9	<0.1	14	64
APR												
08...	5.5	28	0.4	0.7	29	35	0	3.9	4.3	<0.1	16	64
MAY												
05...	5.2	30	0.4	0.7	28	34	0	3.5	4.1	<0.1	14	61
19...	4.2	29	0.4	0.7	23	28	0	2.4	2.9	<0.1	14	54
JUN												
10...	4.9	28	0.4	0.7	29	33	0	2.9	3.6	<0.1	16	62
JUL												
13...	7.0	34	0.6	1.0	31	38	0	4.0	5.0	<0.1	15	69
AUG												
25...	8.3	39	0.7	1.2	30	36	0	4.7	6.2	<0.1	17	69

E Estimated.

SCOEPA00036595

14211720 WILLAMETTE RIVER AT PORTLAND, OR--Continued

WATER-QUALITY DATA

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	NITRO-GEN, AM-MONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	PHOS-PHORUS, TOTAL (MG/L AS P) (00665)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P) (00666)	PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P) (00671)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS-PENDED TOTAL (MG/L AS C) (00689)
OCT 1997												
30...	52	0.07	0.041	0.003	0.1	0.2	0.23	0.05	0.02	0.034	--	0.2
NOV												
17...	56	0.10	0.043	0.010	<0.1	0.1	0.35	0.05	0.02	0.037	1.7	0.4
25...	52	0.08	0.019	0.009	0.1	0.3	0.88	0.09	0.02	0.032	2.0	1.1
DEC												
10...	57	0.08	0.064	0.012	0.2	0.2	0.61	0.04	0.03	0.037	1.4	0.2
17...	59	0.09	0.081	0.016	0.2	0.2	0.71	0.06	0.02	0.035	1.8	0.3
19...	--	--	0.027	0.008	0.1	0.4	0.79	0.14	0.03	0.026	2.3	0.3
22...	52	0.09	0.038	0.008	0.2	0.2	0.82	0.06	0.03	0.026	2.0	0.6
JAN 1998												
06...	55	0.08	0.059	0.010	0.2	0.2	0.67	0.05	0.03	0.034	2.1	0.5
FEB												
10...	62	0.08	0.074	0.013	0.2	0.2	0.87	0.08	0.04	0.037	1.9	0.3
MAR												
04...	50	0.09	0.048	0.012	0.2	0.2	0.73	0.06	0.03	0.026	1.8	0.3
APR												
08...	61	0.09	0.055	0.012	0.1	0.2	0.64	0.06	0.03	0.032	1.3	0.2
MAY												
05...	54	0.08	0.021	0.006	0.1	<0.1	0.34	0.02	<0.01	0.020	1.8	<0.2
19...	47	0.07	0.028	0.006	0.2	0.2	0.32	0.04	0.02	0.021	1.6	0.3
JUN												
10...	55	0.08	0.028	0.007	<0.1	0.2	0.36	0.03	<0.01	0.031	1.3	0.5
JUL												
13...	62	0.09	0.068	0.014	0.2	0.3	0.27	0.10	0.03	0.036	1.5	0.5
AUG												
25...	66	0.09	0.086	0.013	0.2	0.3	0.35	0.06	0.05	0.057	1.6	0.4

DATE	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	ANTI-MONY, DIS-SOLVED (UG/L AS SB) (01095)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE) (01010)	BORON, DIS-SOLVED (UG/L AS B) (01020)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)
OCT 1997												
30...	9	<1	<1	5	<1	E8	<1	<1	<1	<1	41	<1
NOV												
17...	6	<1	<1	5	<1	E10	<1	<1	<1	2	37	<1
25...	15	<1	<1	7	<1	E10	<1	<1	<1	1	48	<1
DEC												
10...	6	<1	<1	7	<1	<16	<1	<1	<1	1	37	<1
17...	9	<1	<1	7	<1	<16	<1	<1	<1	1	43	<1
19...	--	--	--	--	--	--	--	--	--	--	--	--
22...	14	<1	<1	6	<1	<16	<1	<1	<1	1	45	<1
JAN 1998												
06...	7	<1	<1	6	<1	<16	<1	<1	<1	2	32	<1
FEB												
10...	5	<1	<1	8	<1	<16	<1	<1	<1	1	36	<1
MAR												
04...	8	<1	<1	7	<1	<16	<1	<1	<1	<1	35	<1
APR												
08...	5	<1	<1	7	<1	<16	<1	<1	<1	<1	39	<1
MAY												
05...	4	<1	<1	6	<1	<16	<1	<1	<1	1	25	<1
19...	13	<1	<1	5	<1	<16	<1	<1	<1	2	43	<1
JUN												
10...	4	<1	<1	6	<1	<16	<1	<1	<1	<1	21	<1
JUL												
13...	4	<1	<1	6	<1	<16	<1	<1	<1	<1	33	<1
AUG												
25...	3	<1	<1	6	<1	<16	<1	<1	<1	1	28	<1

DATE	LITHIUM, DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO) (01060)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)	URANIUM NATURAL DIS-SOLVED (UG/L AS U) (22703)	VANA-DIUM, DIS-SOLVED (UG/L AS V) (01085)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	DIAZ-INON D10 SRG WAT FLT 0.7 U GF, REC PERCENT (91063)	TERBUTH YLAZINE SURROGT WAT FLT 0.7 U GF, REC PERCENT (91064)
OCT 1997												
30...	<4	10	<1	<1	<1	<1	37	<1	<6	2	97	115
NOV												
17...	<4	14	<1	<1	<1	<1	38	<1	<6	1	106	126
25...	<4	7	<1	<1	<1	<1	40	<1	<6	1	109	121
DEC												
10...	<4	14	<1	<1	<1	<1	41	<1	<6	3	109	125
17...	<4	15	<1	<1	<1	<1	43	<1	<10	3	123	134
19...	--	--	--	--	--	--	--	--	--	--	89	125
22...	<4	7	<1	<1	<1	<1	37	<1	<10	1	88	121
JAN 1998												
06...	<4	7	<1	<1	<1	<1	40	<1	<10	2	117	122
FEB												
10...	<4	13	<1	2	<1	<1	49	<1	<10	7	117	133
MAR												
04...	<4	8	<1	<1	<1	<1	40	<1	<10	2	101	102
APR												
08...	<4	18	<1	<1	<1	<1	47	<1	<10	1	89	97
MAY												
05...	<4	4	<1	<1	<1	<1	40	<1	<10	2	108	117
19...	<4	8	<1	<1	<1	<1	35	<1	<10	2	100	110
JUN												
10...	<4	18	<1	<1	<1	<1	42	<1	<10	1	111	120
JUL												
13...	<4	2	<1	<1	<1	<1	44	<1	<10	2	93	115
AUG												
25...	<4	4	<1	<1	<1	<1	43	<1	<10	2	111	102

E Estimated.

SCOEPA00036596

14211720 WILLAMETTE RIVER AT PORTLAND, OR--Continued

WATER-QUALITY DATA

DATE	HCH ALPHA D6 SRG WAT FLT 0.7 U GF, REC PERCENT (91065)	PROP-CHLOR, WATER, DISS, REC (UG/L) (04024)	BUTYL-ATE, WATER, DISS, REC (UG/L) (04028)	SI-MAZINE, WATER, DISS, REC (UG/L) (04035)	PRO-METON, WATER, DISS, REC (UG/L) (04037)	DEETHYL ATRA-ZINE, WATER, DISS, REC (UG/L) (04040)	CYANA-ZINE, WATER, DISS, REC (UG/L) (04041)	FONOFOS WATER DISS REC (UG/L) (04095)	ALPHA BHC DIS-SOLVED (UG/L) (34253)	P,P' DDE DISSOLV (UG/L) (34653)	CHLOR-PYRIFOS DIS-SOLVED (UG/L) (38933)	LINDANE DIS-SOLVED (UG/L) (39341)
OCT 1997												
30...	92	<0.007	<0.002	0.016	<0.018	E0.004	<0.004	<0.003	<0.002	<0.006	<0.004	<0.004
NOV												
17...	104	<0.007	<0.002	0.014	<0.018	E0.005	<0.004	<0.003	<0.002	<0.006	E0.004	<0.004
25...	98	<0.007	<0.002	0.082	<0.018	E0.016	<0.004	<0.003	<0.002	<0.006	0.010	<0.004
DEC												
10...	112	<0.007	<0.002	0.020	<0.018	E0.010	<0.004	<0.003	<0.002	<0.006	0.005	<0.004
17...	122	<0.007	<0.002	0.031	<0.018	E0.013	<0.004	<0.003	<0.002	<0.006	0.014	<0.004
19...	104	<0.007	<0.002	0.056	<0.018	E0.020	<0.004	<0.003	<0.002	<0.006	0.006	<0.004
22...	101	<0.007	<0.002	0.052	<0.018	E0.015	<0.004	<0.003	<0.002	<0.006	0.004	<0.004
JAN 1998												
06...	116	<0.007	<0.002	0.024	<0.018	E0.013	<0.004	<0.003	<0.002	<0.006	0.004	<0.004
FEB												
10...	104	<0.007	<0.002	0.031	<0.018	E0.015	<0.004	<0.003	<0.002	<0.006	E0.003	<0.004
MAR												
04...	94	<0.007	<0.002	0.028	<0.018	E0.009	<0.004	<0.003	<0.002	<0.006	0.005	<0.004
APR												
08...	82	<0.007	<0.002	0.014	<0.018	E0.007	<0.004	<0.003	<0.002	<0.006	E0.003	<0.004
MAY												
05...	101	E0.004	<0.002	0.025	E0.008	<0.002	<0.004	<0.003	<0.002	<0.006	<0.004	<0.004
19...	92	<0.007	<0.002	0.031	<0.018	E0.004	<0.004	<0.003	<0.002	<0.006	<0.004	<0.004
JUN												
10...	97	<0.007	<0.002	0.011	<0.018	E0.006	<0.004	<0.003	<0.002	<0.006	<0.004	<0.004
JUL												
13...	92	<0.007	<0.002	<0.005	<0.018	<0.002	<0.004	<0.003	<0.002	<0.006	<0.004	<0.004
AUG												
25...	93	<0.007	<0.002	<0.005	<0.018	<0.002	<0.004	<0.003	<0.002	<0.006	<0.004	<0.004

DATE	DI-ELDRIN DIS-SOLVED (UG/L) (39381)	METO-LACHLOR WATER DISSOLV (UG/L) (39415)	MALA-THION, DIS-SOLVED (UG/L) (39532)	PARA-THION, DIS-SOLVED (UG/L) (39542)	DI-AZINON, DIS-SOLVED (UG/L) (39572)	ATRA-ZINE, WATER, DISS, REC (UG/L) (39632)	ALA-CHLOR, WATER, DISS, REC, (UG/L) (46342)	ACETO-CHLOR, WATER FLTRD REC (UG/L) (49260)	METRI-BUZIN SENCOR WATER DISSOLV (UG/L) (82630)	2,6-DI-ETHYL ANILINE WAT FLT 0.7 U GF, REC (UG/L) (82660)	TRI-FLUR-ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661)
OCT 1997											
30...	<0.001	0.006	<0.005	<0.004	<0.002	0.009	<0.002	<0.002	<0.004	<0.003	<0.002
NOV											
17...	<0.001	0.010	<0.005	<0.004	E0.003	0.025	<0.002	<0.002	0.008	<0.003	<0.002
25...	<0.001	0.032	<0.005	<0.004	0.005	0.198	<0.002	<0.002	0.043	<0.003	<0.002
DEC											
10...	<0.001	0.013	<0.005	<0.004	E0.004	0.079	<0.002	<0.002	0.011	<0.003	<0.002
17...	<0.001	0.016	<0.005	<0.004	<0.002	0.155	<0.002	<0.002	0.017	<0.003	<0.002
19...	<0.001	0.036	<0.005	<0.004	<0.002	0.269	<0.002	<0.002	0.043	<0.003	<0.002
22...	<0.001	0.025	<0.005	<0.004	<0.002	0.173	<0.002	<0.002	0.022	<0.003	0.005
JAN 1998											
06...	<0.001	0.017	<0.005	<0.004	<0.002	0.090	<0.002	<0.002	0.028	<0.003	<0.002
FEB											
10...	<0.001	0.024	<0.005	<0.004	<0.002	0.143	<0.002	<0.002	0.038	<0.003	<0.002
MAR											
04...	<0.001	0.018	<0.005	<0.004	E0.003	0.050	<0.002	<0.002	0.015	<0.003	<0.002
APR											
08...	<0.001	0.007	<0.005	<0.004	E0.002	0.038	<0.002	<0.002	<0.004	<0.003	<0.002
MAY											
05...	<0.001	0.009	<0.005	<0.004	0.007	0.039	<0.002	<0.002	<0.004	<0.003	<0.002
19...	<0.001	0.022	<0.005	<0.004	E0.002	0.039	<0.002	<0.002	<0.004	<0.003	<0.002
JUN											
10...	<0.001	0.010	<0.005	<0.004	<0.002	0.019	<0.002	<0.002	<0.004	<0.003	<0.002
JUL											
13...	<0.001	<0.002	<0.005	<0.004	<0.002	0.010	<0.002	<0.002	<0.004	<0.003	<0.002
AUG											
25...	<0.001	<0.002	<0.005	<0.004	<0.002	<0.001	<0.002	<0.002	<0.004	<0.003	<0.002

DATE	ETHAL-FLUR-ALIN WAT FLT 0.7 U GF, REC (UG/L) (82663)	PHORATE WATER FLTRD 0.7 U GF, REC (UG/L) (82664)	TER-BACIL WATER FLTRD 0.7 U GF, REC (UG/L) (82665)	LIN-URON WATER FLTRD 0.7 U GF, REC (UG/L) (82666)	METHYL PARA-THION WAT FLT 0.7 U GF, REC (UG/L) (82667)	EPTC WATER FLTRD 0.7 U GF, REC (UG/L) (82668)	PEB-ULATE WATER FILTRD 0.7 U GF, REC (UG/L) (82669)	TEBU-THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670)	MOL-INATE WATER FLTRD 0.7 U GF, REC (UG/L) (82671)	ETHO-PROP WATER FLTRD 0.7 U GF, REC (UG/L) (82672)	BEN-FLUR-ALIN WAT FLD 0.7 U GF, REC (UG/L) (82673)
OCT 1997											
30...	<0.004	<0.002	<0.007	<0.002	<0.006	<0.002	<0.004	<0.010	<0.004	<0.003	<0.002
NOV											
17...	<0.004	<0.002	<0.007	<0.002	<0.006	<0.002	<0.004	<0.010	<0.004	<0.003	<0.002
25...	<0.004	<0.002	E0.012	<0.002	<0.006	<0.002	<0.004	<0.010	<0.004	<0.003	<0.002
DEC											
10...	<0.004	<0.002	<0.007	<0.002	<0.006	<0.002	<0.004	<0.010	<0.004	<0.003	<0.002
17...	<0.004	<0.002	<0.007	<0.002	<0.006	<0.002	<0.004	<0.010	<0.004	<0.003	<0.002
19...	<0.004	<0.002	E0.011	<0.002	<0.006	<0.002	<0.004	<0.010	<0.004	<0.003	<0.002
22...	<0.004	<0.002	E0.007	<0.002	<0.006	<0.002	<0.004	<0.010	<0.004	<0.003	<0.002
JAN 1998											
06...	<0.004	<0.002	E0.006	<0.002	<0.006	<0.002	<0.004	<0.010	<0.004	<0.003	<0.002
FEB											
10...	<0.004	<0.002	E0.013	<0.002	<0.006	<0.002	<0.004	<0.010	<0.004	<0.003	<0.002
MAR											
04...	<0.004	<0.002	E0.019	<0.002	<0.006	<0.002	<0.004	<0.010	<0.004	E0.003	<0.002
APR											
08...	<0.004	<0.002	E0.003	<0.002	<0.006	<0.002	<0.004	<0.010	<0.004	<0.003	<0.002
MAY											
05...	<0.004	<0.002	<0.007	<0.002	<0.006	0.026	<0.004	<0.010	<0.004	0.024	<0.002
19...	<0.004	<0.002	<0.007	<0.002	<0.006	E0.004	<0.004	<0.010	<0.004	<0.003	<0.002
JUN											
10...	<0.004	<0.002	<0.007	<0.002	<0.006	0.005	<0.004	<0.010	<0.004	<0.003	<0.002
JUL											
13...	<0.004	<0.002	<0.007	<0.002	<0.006	<0.002	<0.004	<0.010	<0.004	<0.003	<0.002
AUG											
25...	<0.004	<0.002	<0.007	<0.002	<0.006	<0.002	<0.004	<0.010	<0.004	<0.003	<0.002

E Estimated.

SCOEPA00036597

14211720 WILLAMETTE RIVER AT PORTLAND, OR--Continued

WATER-QUALITY DATA

DATE	CARBO-FURAN WATER FLTRD 0.7 U GF, REC (UG/L) (82674)	TER-BUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675)	PRON-AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676)	DISUL-FOTON WATER FLTRD 0.7 U GF, REC (UG/L) (82677)	TRIAL-LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)	PRO-PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679)	CAR-BARYL WATER FLTRD 0.7 U GF, REC (UG/L) (82680)	THIO-BENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681)	DCPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682)	PENDI-METH-ALIN WAT FLT 0.7 U GF, REC (UG/L) (82683)	NAPROP-AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82684)
OCT 1997											
30...	E0.022	<0.013	0.007	<0.017	<0.001	<0.004	<0.003	<0.002	<0.002	<0.004	0.013
NOV											
17...	E0.009	<0.013	<0.003	<0.017	<0.001	<0.004	<0.005	<0.002	<0.002	<0.004	<0.003
25...	E0.008	<0.013	0.021	<0.017	E0.003	<0.004	E0.007	<0.002	<0.002	<0.004	0.007
DEC											
10...	<0.003	<0.013	E0.005	<0.017	<0.001	<0.004	<0.003	<0.002	<0.002	<0.004	<0.003
17...	<0.003	<0.013	0.006	<0.017	<0.001	<0.004	<0.003	<0.002	<0.002	<0.004	0.005
19...	<0.003	<0.013	0.064	<0.017	E0.003	<0.004	E0.006	<0.002	<0.002	<0.004	<0.003
22...	<0.003	<0.013	0.023	<0.017	<0.001	<0.004	E0.006	<0.002	<0.002	<0.004	<0.003
JAN 1998											
06...	<0.003	<0.013	0.033	<0.017	<0.001	<0.004	<0.003	<0.002	<0.002	<0.004	<0.003
FEB											
10...	<0.003	<0.013	0.051	<0.017	<0.001	<0.004	<0.003	<0.002	<0.002	<0.004	0.004
MAR											
04...	<0.003	<0.013	0.033	<0.017	<0.001	<0.004	<0.003	<0.002	<0.002	<0.004	0.010
APR											
08...	<0.003	<0.013	E0.002	<0.017	<0.001	<0.004	<0.003	<0.002	<0.002	<0.004	<0.003
MAY											
05...	<0.003	<0.013	<0.003	<0.017	<0.001	<0.004	E0.023	<0.002	<0.002	<0.004	<0.003
19...	<0.003	<0.013	<0.003	<0.017	<0.001	<0.004	<0.003	<0.002	<0.002	<0.004	<0.003
JUN											
10...	<0.003	<0.013	<0.003	<0.017	<0.001	<0.004	<0.003	<0.002	<0.002	<0.004	<0.003
JUL											
13...	<0.003	<0.013	<0.003	<0.017	<0.001	<0.004	<0.003	<0.002	<0.002	<0.004	<0.003
AUG											
25...	<0.003	<0.013	<0.003	<0.017	<0.001	<0.004	<0.003	<0.002	<0.002	<0.004	<0.003

DATE	PRO-PARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685)	METHYL AZIN-PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686)	PER-METHRIN CIS WAT FLT 0.7 U GF, REC (UG/L) (82687)	AN-TIMONY SED. SUSP. (UG/G) (29816)	ARSENIC SED. SUSP. (UG/G) (29818)	BARIUM SED. SUSP. (UG/G) (29820)	BERYL-LIUM SED. SUSP. (UG/G) (29822)	CADMIUM SED. SUSP. (UG/G) (29826)	CHRO-MIUM SED. SUSP. (UG/G) (29829)	COPPER SED. SUSP. (UG/G) (29832)	LEAD SED. SUSP. (UG/G) (29836)
OCT 1997											
30...	<0.013	<0.001	<0.005	2.0	9.2	470	1.4	0.6	78	66	44
NOV											
17...	<0.013	<0.001	<0.005	1.5	7.8	400	1.2	0.5	86	85	20
25...	<0.013	<0.001	<0.005	1.2	7.8	500	1.6	0.4	92	71	15
DEC											
10...	0.014	<0.001	<0.005	1.3	8.0	500	1.3	0.3	100	69	24
17...	<0.013	<0.001	<0.005	1.2	8.1	500	1.6	0.3	83	75	29
19...	<0.013	<0.001	<0.005	0.8	7.8	450	1.5	0.2	79	62	17
22...	<0.013	<0.001	<0.005	1.1	9.0	460	1.7	<0.2	81	57	21
JAN 1998											
06...	<0.013	<0.001	<0.005	1.4	8.9	440	1.5	0.2	79	56	21
FEB											
10...	<0.013	<0.001	<0.005	1.1	9.2	460	1.6	0.1	93	54	18
MAR											
04...	<0.013	<0.001	<0.005	0.9	8.0	530	1.6	0.4	78	60	19
APR											
08...	<0.013	<0.001	<0.005	1.4	10	450	1.3	0.4	88	57	24
MAY											
05...	<0.013	<0.001	<0.005	1.4	7.2	460	1.1	0.3	76	42	22
19...	<0.013	<0.001	<0.005	1.2	8.2	390	1.2	0.6	73	58	23
JUN											
10...	<0.013	<0.001	<0.005	1.4	8.6	420	1.1	0.5	210	50	28
JUL											
13...	<0.013	<0.001	<0.005	0.8	8.2	420	1.2	0.3	63	60	26
AUG											
25...	<0.020	<0.001	<0.005	0.9	7.8	480	1.3	0.4	79	49	25

DATE	MAN-GANESE SED. SUSP. (UG/G) (29839)	MERCURY SED. SUSP. (UG/G) (29841)	MOLYB-DENUM SED. SUSP. (UG/G) (29843)	NICKEL SED. SUSP. (UG/G) (29845)	SELE-NIUM SED. SUSP. (UG/G) (29847)	SILVER SED. SUSP. (UG/G) (29850)	VANA-DIUM SED. SUSP. (UG/G) (29853)	ZINC SED. SUSP. (UG/G) (29855)	ALUM-INUM SED, SUS PERCENT (30221)	CARBON SED. SUSP. PERCENT (30244)	IRON SEDI-MENT SUSP. PERCENT (30269)
OCT 1997											
30...	2400	0.12	<10	43	0.5	<1.0	170	190	8.7	4.5	6.3
NOV											
17...	2700	--	<10	48	0.5	<1.0	150	140	7.6	5.3	5.6
25...	1500	0.12	<10	46	0.5	<1.0	190	140	8.9	3.2	6.3
DEC											
10...	2100	--	<10	55	0.5	<1.0	150	130	7.5	4.2	5.5
17...	1800	0.08	<10	47	0.5	<1.0	150	170	8.4	4.0	6.2
19...	1300	0.06	<5	43	0.5	<0.5	170	120	8.1	2.9	6.1
22...	1500	0.08	<10	46	0.5	<1.0	170	130	8.3	3.7	6.6
JAN 1998											
06...	1600	0.04	<10	49	0.5	<1.0	160	140	8.0	4.3	6.2
FEB											
10...	1700	0.08	<10	74	0.5	<1.0	160	150	8.1	4.4	6.2
MAR											
04...	1400	0.06	<5	42	0.4	<0.5	170	140	8.8	3.4	5.9
APR											
08...	2300	--	<10	50	0.5	<1.0	150	140	7.5	5.6	5.5
MAY											
05...	2900	<0.01	<10	44	0.5	<2.0	130	120	6.4	7.3	4.7
19...	1700	--	<10	40	0.5	<1.0	140	180	7.7	6.6	5.4
JUN											
10...	4100	0.10	22	140	0.4	<1.0	150	150	7.6	--	5.8
JUL											
13...	3600	0.14	<10	37	0.4	<1.0	150	140	7.3	5.0	5.4
AUG											
25...	3200	--	<5	43	0.4	<0.5	150	150	7.7	--	5.4

E Estimated.

SCOEPA00036598

14211720 WILLAMETTE RIVER AT PORTLAND, OR--Continued

WATER-QUALITY DATA

DATE	PHOS-PHORUS SEDI-MENT SUSP. PERCENT (30292)	SULFUR SEDI-MENT SUSP. PERCENT (30308)	TITA-NIUM SEDI-MENT SUSP. PERCENT (30317)	COBALT SEDI-MENT SUSP. (UG/G) (35031)	STRON-TIUM SEDI-MENT SUSP. (UG/G) (35040)	URANIUM SEDI-MENT SUSP. (UG/G) (35046)	LITHIUM SEDI-MENT SUSP. (UG/G) (35050)	CARBON, ORGANIC SUS-PENDED, TOTAL PERCENT (50465)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN 0.062 MM (70331)
OCT 1997											
30...	0.20	0.1	0.70	28	230	<100	32	4.2	10	E905	97
NOV											
17...	0.18	0.3	0.61	24	270	<100	27	--	7	E446	96
25...	0.17	0.1	0.78	27	190	<100	36	3.0	44	E7690	96
DEC											
10...	0.18	0.2	0.62	23	230	<100	31	--	9	E753	96
17...	0.18	0.2	0.68	26	210	<100	30	3.7	20	E2330	95
19...	0.15	0.1	0.70	26	210	<50	30	2.7	77	E18400	96
22...	0.17	0.2	0.72	27	210	<100	32	3.6	37	E5550	95
JAN 1998											
06...	0.19	0.2	0.69	25	220	<100	29	4.3	26	E3160	96
FEB											
10...	0.22	0.2	0.66	26	210	<100	32	--	16	E1760	99
MAR											
04...	0.16	0.1	0.74	25	230	<50	33	3.3	26	E4530	95
APR											
08...	0.18	0.2	0.66	23	240	<100	27	--	9	E620	97
MAY											
05...	0.24	0.2	0.51	21	220	<100	19	--	5	E281	96
19...	0.16	0.2	0.58	28	190	<100	26	--	8	E840	98
JUN											
10...	0.20	--	0.60	32	230	<100	24	--	16	E916	99
JUL											
13...	0.24	0.2	0.61	29	220	<100	22	4.6	10	E297	98
AUG											
25...	0.23	--	0.66	26	240	<50	25	--	10	E244	99

E Estimated.

SCOEPA00036599

A REPORT ON THE INVESTIGATION OF AMBIENT VOLATILE ORGANIC LEVELS

WACKER SILTRONIC CORPORATION
PORTLAND, OREGON

CH2M HILL

Engineers
Planners
Economists
Scientists

A REPORT ON THE INVESTIGATION OF AMBIENT VOLATILE ORGANIC LEVELS

WACKER SILTRONIC CORPORATION
PORTLAND, OREGON

Prepared by

CH2M HILL NORTHWEST, INC.
2020 S.W. FOURTH AVENUE
PORTLAND, OREGON 97201

JUNE 1985
P19786.A0.00

INTRODUCTION

Wacker Siltronic Corporation contracted CH2M HILL to conduct an air quality investigation at the Portland plantsite. The purpose of the investigation was to survey the level of volatile organic compounds in the ambient air at the site with respect to air quality standards.

The hydrocarbon measurements were performed on June 4, 1985, between 9:20 a.m. and 2:45 p.m. by Mr. Mark Boedigheimer, supervisor of laboratory field services from CH2M HILL's Corvallis, Oregon, office, and Mr. Jack Payne, project manager from CH2M HILL's Portland, Oregon, office.

Mr. James Ellis, polysilicon project manager of Wacker Siltronic Corporation, witnessed the plant survey.

The results of the survey, along with a brief description of the sampling procedures and quality assurance, are presented in this report.

SAMPLING PROCEDURE

Two types of analyzers were used to measure the organic concentration of air in this survey. These analyzers are:

- Organic Vapor Analyzer (OVA), manufactured by Century Systems, model OVA-128

- Portable Photo-Ionizer (HNU), manufactured by HNU Systems, model PI-101

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These analyzers were used simultaneously to cross-reference the results from one another and to observe methane and non-methane organic content of the air. Measurements were made within the breathing zone at each sampling location.

A brief theory of operation for these analyzers is included here to provide an understanding of the application and the results of the measurements that were made.

THEORY OF OPERATION

OVA uses the principal of flame ionization detection (FID) as a means to measure organic compounds. The FID system consists of a diffusion flame supported by hydrogen and air that is free of ions and, therefore, non-conducting. When organic compounds are introduced via the sample air into the flame, ions are formed causing an increase in flame conductivity. The flame conductivity is related to a number of factors, but principally to the number of positively charged carbon atoms generated in the detector combustion process and the efficiency of combustion. The change in flame conductivity is measured by an electrometer, amplified and applied to the readout meter of the OVA.

When in use the analyzer is calibrated with methane (CH_4), thus the readings are reported in terms of methane equivalents. The OVA has a working range of 0 to 1,000 ppm with a sensitivity of 0.1 ppm between 0 and 10 ppm. In general, the OVA response for hydrocarbons other than methane, is between 50 and 250 percent of the response for methane. The analyzer has negligible or no response to permanent gases such as carbon monoxide and carbon dioxide, as well as any molecule which, because of its structure, does not produce ions in the detector flame.

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In application the OVA can be operated in two modes, referred to as the survey mode and the GC mode. In the survey mode the OVA acts as a total hydrocarbon analyzer by introducing the sample air directly to the detector. In the GC mode the analyzer functions as a rudimentary gas chromatograph (GC) where organic compounds can be separately detected. In practice the GC mode is commonly used to identify the methane from the non-methane organic fractions of the sample air. This technique is accomplished by introducing the sample air onto a GC column, allowing the methane fraction to pass through the column into the detector; then, by virtue of a backflush assembly, the non-methane organics are backflushed off the column onto the detector.

HNU is a portable, non-specific vapor/gas detector using the principal of photo-ionization to detect a wide variety of organic and some inorganic gases. The HNU detector consists of an ultraviolet light source and a pair of electrodes within its detector chamber. As sample air is drawn through the detector, compounds absorb photons and are ionized producing a change in the electrical field (current) within the detector. The resulting change in current is amplified and displayed on the HNU read-out meter.

The analyzer is calibrated with benzene (C_6H_6), therefore, the readings are reported in terms of benzene equivalents. The linear working range is up to 600 ppm with a sensitivity of 0.1 ppm between 0 and 20 ppm. Each compound has an individual response factor that varies between approximately 80 to 120 percent for most volatile hydrocarbons as compared to benzene.

The HNU analyzer used in this survey contained an ultraviolet lamp with an ionization energy of 10.2 electron volts (eV). Therefore, the analyzer would detect those compounds

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with ionization potentials less than 10.2 eV. These compounds include volatile hydrocarbons such as alkenes, ketones, olefins, aromatics, etc., but exclude light molecular weight alkanes (i.e., methane, ethane) and simple molecules such as carbon dioxide, carbon monoxide, nitrogen, and oxygen. Hence the HNU analyzer readings are generally interpreted as a measure of the non-methane organic content of the sample air.

When used simultaneously, the OVA and HNU analyzers provide a comprehensive survey of methane and non-methane organic content of the air. Use of two meters also provides some redundant analyses, with one meter serving as a cross-reference for the other meter.

METEOROLOGICAL CONDITIONS DURING SAMPLING

During the field investigation the weather at Wacker was dry and cloudy with patches of blue sky increasing through late morning-early afternoon. There was a light breeze coming upriver, from the west.

The local weather conditions (i.e., ambient temperature, light winds, and change in barometric pressure) were as ideal as one could want for conducting the field measurements and obtaining representative volatile organic levels at Wacker's property.

The U.S. Weather Bureau at the Portland International Airport reported the following weather conditions from 8:00 a.m. through 5:00 p.m. on June 4, 1985.

- Precipitation: 0 inches
- High/Low temperature: 71°F/57°F
- Cloud cover: overcast
- Wind speed: 0-7 mph

SCOEPA00036605

- Direction: north
- Barometric pressure:
  - Hour ending 8:00 a.m.: 30.08 inches Hg
  - Hour ending 5:00 p.m.: 29.97 inches Hg

QUALITY ASSURANCE

During the survey both the OVA and HNU were calibrated with zero air and span gases. The OVA calibration was performed by zeroing with zero grade air and spanning with a 92 ppm methane (CH_4) span gas standard. The HNU calibration was performed by zeroing with zero grade air and spanning with a 61 ppm benzene span gas standard.

Calibration was performed at the start of the survey, checked midway through the survey, and rechecked again at the end of the survey. The calibrations are included as part of the field data documentation, which is included in the appendix.

RESULTS

The general location of each sampling point is shown in Figure 1. The results of the survey are summarized in Tables 1 and 2.

All of the sampling locations surveyed outside of Wacker's buildings had readings on both the OVA and HNU of 0.4 ppm or less. The sample locations inside the buildings were, for the most part, less than 1 ppm for OVA (total hydrocarbons) and less than 0.7 ppm for HNU (nonmethane hydrocarbons). Samples measured above these levels are believed to be directly related to the interior finishing of the newly constructed addition to the process building.

The Oregon Department of Environmental Quality (DEQ) has one ambient air quality monitoring station that measures total

SCOEPA00036606

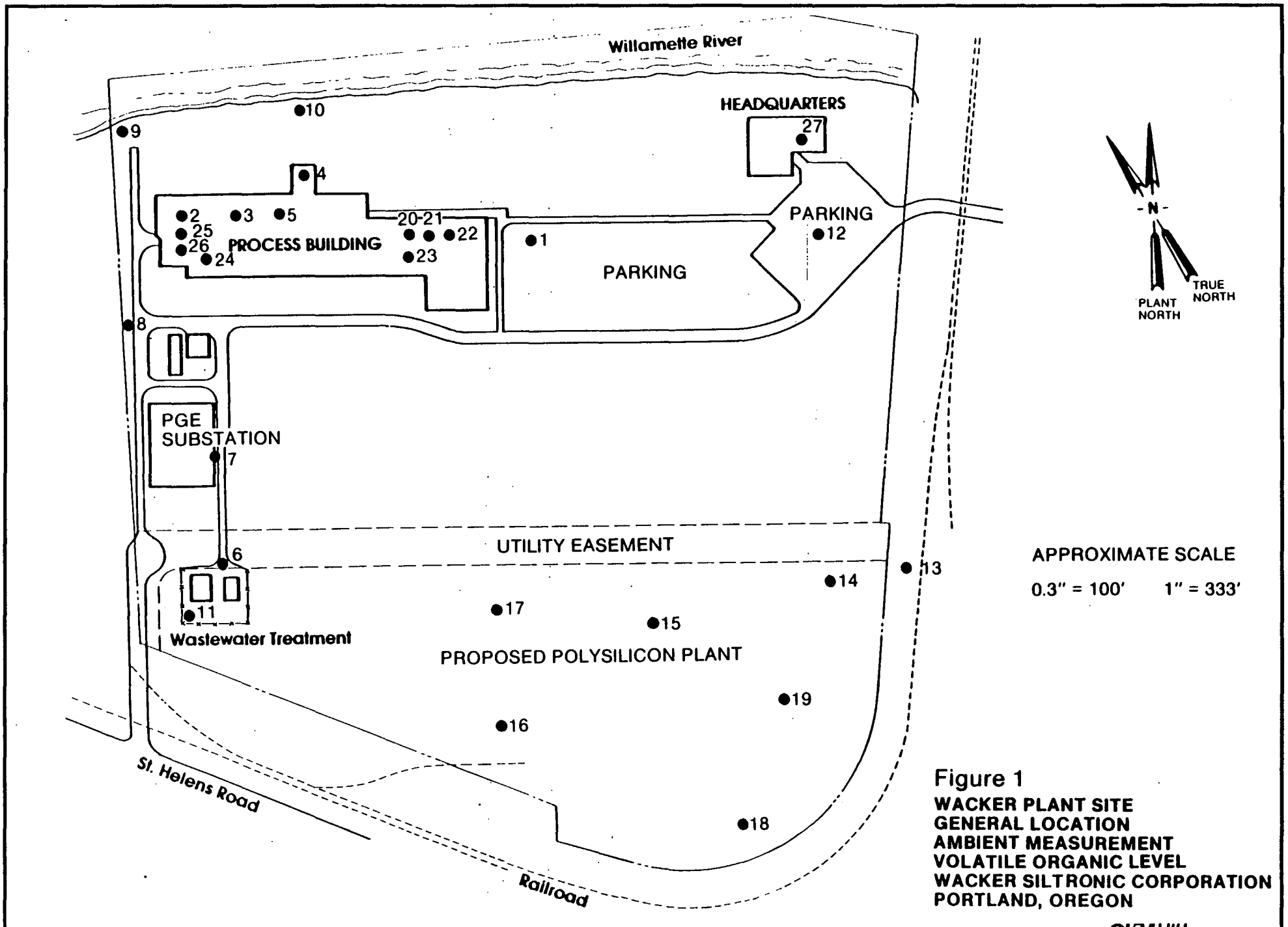

Figure 1
WACKER PLANT SITE
GENERAL LOCATION
AMBIENT MEASUREMENT
VOLATILE ORGANIC LEVEL
WACKER SILTRONIC CORPORATION
PORTLAND, OREGON

CH2M HILL

SCOEPA00036607

Table 1
SUMMARY OF MEASUREMENTS
OUTSIDE OF THE BUILDINGS

Location	Measurement (ppm) OVA[1]	Measurement (ppm) HNU[2]
1. Visitor Parking Process Building	0.4	0.4
Process Building Roof		
2. Penthouse No. 1 air intake	0.4	0.4
3. Penthouse No. 2 air intake	0.4	0.4
4. Roof edge above polishing expansion	0.4	0.4
5. Penthouse No. 4 air intake	0.4	0.4
Inside Fence		
6. Wastewater treatment parking area	0.4	0.4
7. PGE substation	0.4	0.4
8. Fence line north of substation	0.4	0.4
9. NW corner Wacker property	0.4	0.4
10. River edge across from polishing	0.4	0.4
11. SW corner Wacker property	0.4	0.4
12. Visitor Parking Headquarter Building	0.4	0.4
South Side of Easement		
13. Power pole adjacent raised railroad tracks	0.4	0.4
14. Near MW-3[3]	0.4	0.4
15. Near MW-2[3]	0.4 <0.1 (Non-methane)	--
16. Near MW-4[3]	0.4 <0.1 (Non-methane)	--
17. Near MW-1[3]	0.4 <0.1 (Non-methane)	--
18. Near MW-7[3]	0.4 <0.1 (Non-methane)	--
19. Near MW-6[3]	0.4 <0.1 (Non-methane)	--

[1] Total hydrocarbon in terms of methane equivalents.

[2] Total non-methane hydrocarbons in terms of benzene equivalents.

[3] HNU battery weak, discontinued its use. Used the OVA in the GC mode to measure non-methane organic fraction of the sample air (explanation of GC mode provided in Sampling Procedures).

SCOEPA00036608

Table 2
SUMMARY OF MEASUREMENTS
INSIDE OF THE BUILDINGS

Location	Measurement (ppm) OVA[1]	Measurement (ppm) HNU[2]
Process Building		
20. Lobby/Security Station[3]	4.5	1.7
21. Lobby/Security Station[3]	4.6	2.0
22. Ground Level Expansion (behind lobby/security station)[3]	5.3	2.3
23. Main Corridor (across from lobby/ security station)[3]	0.4	0.4
24. Far End of Main Corridor (next to stairway to basement)[3]	2.1	1.7
25. Basement (center area)	0.9	0.6
26. Basement (next to stairway to ground level)	0.5	0.4
	0.5	0.4
Headquarter Building		
27. Lobby/Visitors Waiting Area[4]	0.6	0.6

[1] Total hydrocarbon in terms of methane equivalents.

[2] Total non-methane hydrocarbons in terms of benzene equivalents.

[3] Measurements non-representative of normal plant building air because of interior finishing of the main floor expansion. Within the previous 7 days the walls had been painted and carpets installed. In addition, the kickboard had been glued in place less than 2 hours before performing the survey.

[4] Visitor lobby area carpeted.

SCOEPA00036609

hydrocarbon levels within the Portland Metropolitan area. A summary of the total hydrocarbon levels measured at these stations is presented in Table 3.

Table 3
TOTAL HYDROCARBON SUMMARY[a]
($\mu g/m^3$)[b]

Station Location	Year	Annual Arithmetic Means	Maximum 1-Hour Average
Portland (S.E. LaFayette)	1982	1,277	4,716
	1983	1,349	5,469

[a]Source: DEQ 1983 Air Quality Annual Report.
[b]Micrograms per cubic meter.

The total hydrocarbon concentration ranges presented in Table 3 in terms of methane (CH_4) equivalents are 0.7 to 0.9 ppm for the annual arithmetic means and 1.9 to 3.9 ppm for the maximum 1-hour average.

The outside ambient measurements throughout the Wacker site were all below the maximum 1-hour average and annual arithmetic mean levels measured by DEQ at its Portland monitoring station. Excluding the measurements that were apparently a reflection of interior construction activities, the measurements inside Wacker's buildings did not exceed DEQ annual average or maximum 1-hour average levels.

The federal government no longer has either a Primary (health) or Secondary (welfare) ambient air quality standard for hydrocarbons. The State of Oregon has a standard for hydrocarbons (nonmethane) of 160 $\mu g/m^3$ (3-hour averaging time). All six samples that specifically measured non-methane hydrocar-

SCOEPA00036610

bons were less than 0.1 ppm, which is approximately equivalent to less than 150 $\mu g/m^3$ (methane equivalent). These measured levels were in compliance with Oregon's ambient air quality standard for nonmethane hydrocarbons.

SCOEPA00036611

CH2M HILL DAILY SITE INVESTIGATION DIARY

PROJECT NO. P 19786 AO

DAY TUESDAY DATE: 06/04/85 WORK PERIOD 9:20 A.M. P.M. TO 2:45 A.M. P.M. PAGE NO. 1

WEATHER _____ TEMP. MAX ____ °F: MIN ____ °F: PRECIPITATION NONE

ONSITE PERSONNEL

JACK PAYNE - CH2M

MARK BOEDIGHEIMER - CH2M

JIM ELLIS - WACKER SILTRONIC

PROJECT: PERFORM AIR QUALITY INVESTIGATION OF AMBIENT ORGANIC VAPOR MEASUREMENTS

TIME	RECORD OF ONSITE ACTIVITIES
9:21am	MARK & Jack arrived at Wacker, signed in and met with Jim Ellis & John Pittman (Wacker) to review proposed sampling program
9:50am	Mark calibrated OVA and HNU sampling equipment. (Wacker Visitor Parking-Headquarters Local weather - heavy overcast, no precipitation, very light breeze. Flags at Wacker were limp. ~~winds~~ Breeze appear to be out of the West coming up and off river. No visible emission plumes or desernable odors were detected from either Wacker's process facilities and/or adjacent active industrial process properties (ie Pennwalt, NWNG, KOPPERS, RHONE POL., M&B.
9:59am	First Field Measurement - Visitor parking plant process building. No auto movement, light variable breeze no desecernable odors. 0.4ppm HNU 0.4 ppm OVA

FIELD EQUIPMENT	HOURS OF USE	DATE OF CALIBRATION

SIGNATURE [signature] DATE 6/4/85

FORM 341

SCOEPA00036612

CH2M HILL DAILY SITE INVESTIGATION DIARY

PROJECT NO. P19786 A0

DAY: _____ DATE: _____ WORK PERIOD ____ A.M. P.M. TO ____ A.M. P.M. PAGE NO. 2

WEATHER _____ TEMP. MAX ____ °F: MIN ____ °F: PRECIPITATION _____

ONSITE PERSONNEL

Continuation From Page 1

TIME	RECORD OF ONSITE ACTIVITIES
10:00am	Span Check OVA 4.1 HNU 8.5 Done outside, covered entrance to plant process building
10:02 am	Main Lobby Plant Process Bldg (Where security HQ located. H_2S ppm OVA 1.7 ppm HNU (No initial explanation for readings will sample again prior completion of sampling program)
10:04 am	Main Corridor after passing through inside lobby doors 2.1 ppm OVA 1.7 ppm HNU
10:05 am	Far end of Corridor prior to going through doors to basement 0.9 ppm OVA 0.6 ppm HNU
10:06 am	Basement (approximately center of area) 0.5 ppm OVA 0.4 HNU (ppm)
10:07 am	Basement close to exit up stairs 0.5 ppm OVA, 0.4 ppm HNU

~~FIELD EQUIPMENT~~	~~HOURS OF USE~~	~~DATE OF~~ CALIBRATION
10:08 am Outside Top Process Building Roof Penthouse #1 Louvered air intake 0.4 ppm OVA 0.4 ppm HNU		
10:17 am Penthouse #2 Louvered air intake center 0.4 ppm OVA 0.4 ppm HNU		

Rachel Payne 6/4/85

SIGNATURE DATE

FORM 341

SCOEPA00036613

CH2M HILL DAILY SITE INVESTIGATION DIARY

PROJECT NO. P 19786 AO

DAY: _____ DATE: _____ WORK PERIOD ____ A.M. P.M. TO ____ A.M. P.M. PAGE NO. 3

WEATHER _____ TEMP. MAX ____ °F: MIN ____ °F: PRECIPITATION _____

ONSITE PERSONNEL

Continuation From Page 2

TIME	RECORD OF ONSITE ACTIVITIES
10:30am	Corner Roof Top, Directly Above Polish Expansion 0.4ppm HNU, 0.4ppm OVA
10:45am	Roof Top Penthouse #4 0.4 ppm HNU, 0.4ppm OVA Slight Breeze Upriver
10:50am	Inside Second Floor New Unoccupied Engineers Office. Inside area unfinished, still interior construction 0.8 ppm OVA, 0.7 ppm HNU
11:05am	Wacker's Fence Adjacent NWNG Property at intersection road from process building to St Helens Rd. Very Slight Breeze moving upriver 0.4 ppm OVA 0.4ppm HNU
11:10am	Corner Wacker Property / NWNG / River 0.4ppm OVA, 0.4 ppm HNU
11:12am	Wacker Property, River Edge across from poly polishing. 0.4ppm OVA 0.4ppm HNU
11:18am	Gravel Parking Area in Front Wacker's Wastewater Treatment Plant By Strip Chart Circular Recorder FH 39-49 (Flow Indicator transmitter 0.4ppm OVA 0.4ppm HNU

~~FIELD EQUIPMENT~~	~~HOURS OF USE~~	~~DATE OF CALIBRATION~~

SIGNATURE _____ DATE 6/4/85

FORM 341

SCOEPA00036614

CH2M HILL DAILY SITE INVESTIGATION DIARY

PROJECT NO. P19786AO

DAY: _____ DATE: _____ WORK PERIOD _____ A.M. P.M. TO _____ A.M. P.M. PAGE NO. 4

WEATHER _____ TEMP. MAX _____ °F: MIN _____ °F: PRECIPITATION _____

ONSITE PERSONNEL

Continuation From Page 3

TIME	RECORD OF ONSITE ACTIVITIES
11:20am	Corner Wacker Force in wastewater treatment area across from Koppers, Slight Breeze 0.4 ppm OVA 0.4 HNU
11:22am	Next to PGE substation 0.4 ppm OVA 0.4ppm HNU
11:26am	Lobby process building where security located (previously took a reading at 10:09 am 2.0 ppm HNU, 4.6 ppm OVA
11:28	Main Floor - expanded building adjacient to lobby. No door open between both areas 5.3 OVA(ppm) 2.3 ppm HNU
	CH2M Construction Manager (Greg Young) and Hoffman's construction manager happened to be in the area. They said the main floor building had carpets installed less than a week ago. Walls

FIELD EQUIPMENT	HOURS OF USE	DATE OF CALIBRATION
had been painted about a week ago. And the kick boards (bottom walls to floors) recently glued this morning. Apparent (only) explanation why lobby area had levels significantly different than rest of building and outside areas		

Daniel E. Bowyer 6/4/95

SIGNATURE DATE

FORM 341

SCOEPA00036615

CH2M HILL DAILY SITE INVESTIGATION DIARY

PROJECT NO. P 19786 A0

DAY: _____ DATE: _____ WORK PERIOD ____ A.M. P.M. TO ____ A.M. P.M. PAGE NO. 5

WEATHER _____ TEMP. MAX ____ °F: MIN ____ °F: PRECIPITATION _____

ONSITE PERSONNEL

Continuation From Page 4

TIME	RECORD OF ONSITE ACTIVITIES
11:35am	Administration (Headquarter) Building Lobby - Visitor Waiting Area. Reading taken over carpet 0.6ppm OVA, 0.6ppm HNU
	Shut Down Sample Measurements For lunch. Hooked up Battery Chargers for Portable Units.
12:50pm	Returned From lunch
1:15pm	Headquarters Parking Lot (Visitors) Sunny Skies 50% Cloud Cover. Little Breeze Some Flag Movement
	Recharged OVA with H_2
	Calibrated Both instruments
	HNU - 61ppm - Span 8.5
	OVA 92ppm Span 4.1
	Measurement Parking Lot Air - No Vehicular Traffic

~~FIELD EQUIPMENT~~	~~HOURS OF USE~~	~~DATE OF CALIBRATION~~
OVA 0.4ppm HNU 0.4ppm		
1:19. South Side of Easement		
Olympia Pipeline Co. Adjacent To Power Pole To Vents		
River Side 0.9 ppm OVA 0.4ppm HNU		
St Helens Road Side 0.6ppm OVA 0.4ppm HNU		

SIGNATURE _____ DATE 6/4/85

FORM 341

SCOEPA00036616

CH2M HILL DAILY SITE INVESTIGATION DIARY

PROJECT NO. P 19786-A0

DAY: _____ DATE: _____ WORK PERIOD _____ A.M. P.M. TO _____ A.M. P.M. PAGE NO. 6

WEATHER _____ TEMP. MAX _____ °F: MIN _____ °F: PRECIPITATION _____

ONSITE PERSONNEL

Continuation From Page 5

TIME	RECORD OF ONSITE ACTIVITIES
1:20pm	Adjacent To Power Pole, Close to RR enbankment NWNG Vent 0.4ppm HNU, 0.4ppm OVA
1:30pm	Adjacent To MW-3 (Well capped) 0.4 ppm OVA 0.4 ppm HNU
1:40pm	Adjacent To MW-2 (Well capped) 0.4ppm OVA HNU battery dead. Use OVA for both methane & other organic vapors (total) and non methane. Non methane <0.1ppm
1:50pm	Adjacent To MW-4. (Well capped) 0.4ppm OVA (Includes methane) <0.1ppm Non methane
2:00pm	Adjacent To MW-1 (Well capped) 0.4ppm OVA (Includes methane) <0.1 ppm Non methane

~~FIELD EQUIPMENT~~	~~HOURS OF USE~~	~~DATE OF CALIBRATION~~
2:10pm Adjacent To MW-7 (Well capped) 0.4 ppm OVA (Includes methane) <0.1 ppm Non methane		
2:20pm Adjacent To MW-6 (Well capped) 0.4ppm OVA (Includes methane <0.1ppm Non methane		

SIGNATURE [signature] DATE 6/4/85

FORM 341

SCOEPA00036617

CH2M HILL DAILY SITE INVESTIGATION DIARY

PROJECT NO. P19786 AO

DAY: _____ DATE: _____ WORK PERIOD ____ A.M. P.M. TO ____ A.M. P.M. PAGE NO. 7

WEATHER _____ TEMP. MAX ____ °F: MIN ____ °F: PRECIPITATION _____

ONSITE PERSONNEL

Continuation From Page 6

TIME	RECORD OF ONSITE ACTIVITIES
	Sample measurements discontinued 2:30pm.
	Note
	The previous 6 pages of recorded field measurements are at descrete points. In addition to these points, The operator of the equipment (Mark Boed) had the equipment operating while walking from point to point throughout the sampling program. Throughout the program he periodically checked both the OVA and HNU (when working) and never noticed any readings outside of the building and not in any pipes greater than 50.0 ppm for OVA or HNU
	COMPLETION FIELD NOTES

FIELD EQUIPMENT	HOURS OF USE	DATE OF CALIBRATION

SIGNATURE [signature] DATE 6/14/95

FORM 341

SCOEPA00036618

CDM

NORTH DOANE'S LAKE
SITE CHARACTERIZATION
WORK PLAN

SECTION 3.0 REVISION
OCTOBER 1987

Camp Dresser & McKee

10-21-87

Route:

Harry Schmid HS 10-21

John Pittman JP 10-28

Attached find Ed Bolin's cover letter to DEQ regarding CDM's revised report.

Also, attached find the revised Section 3 from the CDM report.

The revised report from CDM does not say we will drill additional wells or borings, but it indicates that a "full chemical characterization" will be run on one of Wacker's monitoring wells. It also indicates that "near surface field screening will be assessed to determine if additional areas warrant investigation."

Jim E.

P.S. I can provide the old CDM Report if you want to compare differences.

NORTHWEST NATURAL GAS COMPANY

220 N.W. SECOND AVENUE PORTLAND, OREGON 97209

(503) 226-4211

October 19, 1987

RECEIVED
OCT 21 1987
JIM ELLIS

Tom Miller
Remedial Project Manager
Department of Enviromental Quality
811 S.W. 6th Ave.
Portland OR 97204-1334

Dear Tom:

Enclosed are two copies of our contractor CDM's response to your comments following our July 30, 1987 meeting. It consists of an expansion of Section 3.0 of the previously submitted work plan and a schedule for completing the various elements of the investigation.

Please let me know when it would be convenient to meet for further discussion of the proposed work plan.

Sincerely,

E.L. Bolin, Manager
Land & Claims Dept.

ELB/kf
Enc.

cc: Jim Ellis
Dick Bach
Jordan Dern

NORTH DOANE'S LAKE
SITE CHARACTERIZATION
WORK PLAN

SECTION 3.0 REVISION
OCTOBER 1987

Prepared by:

Camp, Dresser, & Mckee, Inc.
2300 15th Street, Suite 400
Denver, Colorado 80202

3.0 SITE CHARACTERIZATION PLAN

The objective of this site characterization plan is to confirm the presence of expected contaminants that have been identified from review of historic information and past sampling efforts within and adjacent to the study area. As discussed in Section 2 of this report, the expected contaminants include primarily the following; chlorinated phenolic herbicide manufacturing wastes originating from the Rhone Poulenc Chemical Plant Site, metals originating from the Gould/NL superfund site, and polynuclear aromatics, tars, and volatile aromatic organics originating from the Portland Gas and Coke Plant. Sufficient data collection is planned to assess in a qualitative manner the ranges and types of contaminants present and the approximate vertical and areal extent of contamination. Site data are also required in order to complete the analysis of transport pathways and to identify sensitive receptors for endangerment assessments.

The proposed site characterization focuses on waste products associated with the former Portland Gas and Coke manufactured gas facility. The southeast portion of the study area has potentially been impacted by contamination known to exist in the Northwest Portland industrial area, either via direct discharge to Doanes Lake by these industries or via sub-surface flow. However, since this contamination is not related to on-site activities and prior sampling as confirmed the presence of the chlorinated phenolics in areas previously covered by Doanes Lake , no additional investigations are proposed. This characterization is designed to determine if a significant risk to human populations or the environment is potentially present, rather than collecting data to support detailed remedial design. Sufficient data collection is planned for support of initial screening of remedial alternatives, including the no action alternative if necessary. In order to meet these objectives, investigation and sampling of surface and sub-surface soils, ground water, surface water and river sediments are proposed. This document is intended to outline the scope of proposed investigations for the purpose of developing a consensus

SCOEPA00036623

among the interested parties. Specific details of field and laboratory investigations will be addressed in a Sampling Plan and a Quality Assurance Plan to be prepared as the initial step in implementation of this site characterization plan, after development of this consensus. The detailed Project Plan documents will incorporate standard professional practice in the area of hazardous waste investigations and will used accepted procedures as set forth in EPA and OSHA guidance documents. These plans will identify potentially relevant standards that may affect detection limits required to define contaminated areas.

3.1 ANALYSIS OF SAMPLES

A program of field screening analyses of a limited suite of compounds combined with certified laboratory analyses of a wider range of compounds will be conducted to aid in the site characterization. The emphasis within the sampling programs will be on defining the types of contamination present on the site and determining the approximate vertical and areal extent of the expected gassification plant related compounds.

Rapid field screening methods for polynuclear aromatic hydrocarbons (PNA) and aromatic volatile organic compounds using an on-site field laboratory will be implemented to allow sample results to guide the field sampling program. The use of field screening techniques will allow more accurate and cost-effective delineation of gassification plant related contamination on site. The primary contaminants of concern related to historic on-site activities include PNAs from tar and aromatic volatiles from the refining operations. These field screening procedures are described in more detail in the following paragraphs.

A selective total PNA procedure will be used for field screening analysis. Sample preparation will consist of PNA extraction from soil samples using acetonitrile and analysis for total PNA's using a UV fluorescence spectrophotometer, yielding an estimate of total PNAs that is comparable to summing individual PNAs reported in high performance liquid chromatography

SCOEPA00036624

(HPLC) or gas chromatographic (GC) methods. A filter type UV fluorescence spectrophotometer using a bandpass filter passing radiation in the 240-380 nanometer wavelength range (Corning 7-54 or equal) will be utilized for this analysis. Calibration of the method will be done using prepared standards of naphthalene, phenanthrene, pyrene, acenaphthene, fluoranthene, and benzo(a)pyrene in acetonitrile at several concentrations. The range over which instrument response is linear will be defined and operating characteristics finalized in the field. Standard quality assurance procedures will be implemented including analysis of spiked samples and calculation of spike recoveries, analysis of organic free blanks, and known concentration standards. Detection limits for a soil matrix are expected to be about 10 mg/kg total PNAs for this screening method. Since results will be available in the field approximately an hour after sample collection, real-time decisions will be made to optimize sample network design and minimize redundant analyses of contaminated area samples. Approximately 10 percent of the samples will be randomly selected, split and analyzed in a certified laboratory for confirmation of screening results.

Collected soil samples will also be analyzed in the field laboratory for aromatic volatiles using headspace analysis (Method 3810 SW-846) with GC operating conditions set as in Method 8020. A program similar to that described above for laboratory verification of both clean and contaminated samples and field laboratory quality control will be implemented.

The on-site screening will also be used to select representative samples for full priority pollutant analyses. These laboratory confirmation analyses will include both contaminated and clean samples as determined by the screening techniques. This screening type approach with laboratory confirmation of a small sub-set of samples is consistent with the approach used by EPA at many Superfund sites.

Laboratory confirmation analysis of PNAs will be conducted using either GC (method 8100) or HPLC (method 8310) techniques documented in the current

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release of SW-846. The PNAs will be extracted from the soil matrix using an acetonitrile/methylene chloride mixture or another appropriate solvent. These methods are adequate for differentiating "clean" from "contaminated" samples. In highly contaminated samples, lower concentration PNA's may be overestimated by up to two orders of magnitude. Several highly contaminated samples will be analyzed using GS/MS (Gas Chromatograph/Mass Spectrometer) methods to quantify these PNAs. Clean-up techniques will be utilized on oily samples to minimize analytical interferences. These cleanup techniques may include Method 3611, 3630, and 3640 as defined in SW-846. Analysis of priority pollutants including volatiles, semi-volatiles and pesticides will be conducted on a sub-set of the surface and sub-surface soil samples, sediments and waters. These analyses will be conducted in accordance with SW-846 (USEPA, 1986) for soil and sediment samples and with 40 CFR Part 136 published in the Federal Register on October 26, 1984 for water samples. Laboratories will be selected from those certified under the EPA contract laboratory program. Appropriate field and travel blanks along with blind duplicates will be analyzed.

3.2 SURFACE SOIL CHARACTERIZATION

Since the the primary contaminants of concern at the site have a significant potential risk associated with dermal contact and respiration, a surface and near surface soil sampling program will be conducted to define those areas that may have contaminated material exposed at the surface. The sampling locations are designed to characterize variability in each area of the site, with a higher sampling density in those area with the greatest variability and the highest probability of near surface contamination. Visual evidence of gross tar contamination will be noted and the sample locations modified in the field to allow delineation of contaminated area boundaries. Extensive, multiple analyses of obviously contaminated areas will not be conducted. Actual field locations for sampling will be modified to select locations exhibiting visual evidence of contamination such as stains or vegetation stress close to the pre-selected sites. As discussed in section 3.1, rapid field screening techniques will

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be used to analyze composite soil samples collected in the upper one foot of soil at each site. These composite soil samples will be collected using a stainless steel bucket auger or shovel. All samples collected will be screened for total PNA compounds. Any of the near surface samples that indicate the presence of volatile hydrocarbons, as indicated by the photoionization detector that will be used to assure worker protection during field studies, will also be analyzed for volatile aromatics using the headspace technique. Ten percent of all soil samples collected will be analyzed for individual PNA compounds at a certified laboratory using HPLC or GC methods. Three of the samples with indicated presence of PNAs or volatile aromatics from the field screening plus three clean samples will be submitted to a certified laboratory for analysis of the full spectrum of priority pollutants including volatiles, semi-volatiles, pesticides and metals. In addition, areas potentially affected by spent oxide disposal will be analyzed for pH, cyanide and total iron. A maximum of about 52 near surface soil samples are anticipated at the approximate locations shown on Figure 3-14. The location of three existing shallow soil sampling sites are shown on this figure for reference.

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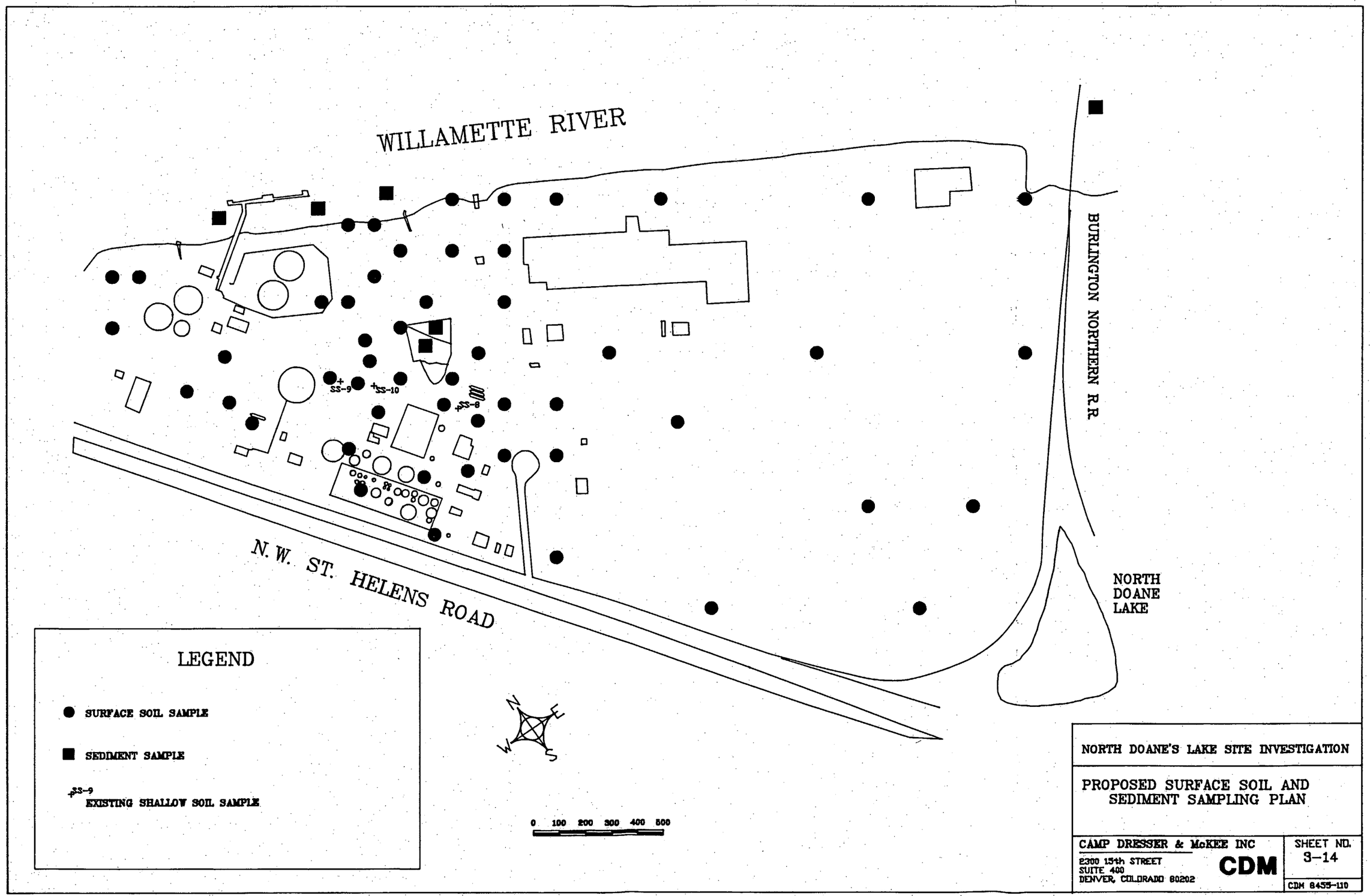
WILLAMETTE RIVER
BURLINGTON NORTHERN R.R.
NORTH DOANE LAKE
N.W. ST. HELENS ROAD
SS-9
SS-10
SS-8
LEGEND
SURFACE SOIL SAMPLE
SEDIMENT SAMPLE
SS-9
EXISTING SHALLOW SOIL SAMPLE
N
E
S
W
0 100 200 300 400 500
NORTH DOANE'S LAKE SITE INVESTIGATION
PROPOSED SURFACE SOIL AND SEDIMENT SAMPLING PLAN
CAMP DRESSER & McKEE INC
2300 15th STREET
SUITE 400
DENVER, COLORADO 80202
CDM
SHEET NO.
3-14
CDM 8455-110

3.3 SUB-SURFACE SOIL CHARACTERIZATION

A sub-surface drilling and sampling program is proposed to allow collection of samples in areas potentially affected by waste disposal activities. It is known that large quantities of tar have been blended with soil and buried on site within the triangular area shown on Figure 2-11 defined by the current fuel storage area, the Wacker process building and the Koppers lease area. A limited amount of drilling is planned at the site of the old tar ponds to confirm the current physical state of the materials and to allow collection of tar samples. Other borings are planned outside the boundaries of the area to define areal extent of sub-surface tar contamination, allow well installation and assess the degree of movement of tar that may have taken place. Exploration of fill and waste pile areas is planned to determine if they contain contaminated materials. Results of near surface field screening will be assessed to determine if additional areas warrant investigation. No additional sub-surface investigation is planned in the fill areas under the Wacker portion of the study area since an ~~and~~ extensive soils and ground water program has already been conducted that identified that contaminants of concern are present.

Sub-surface soil sampling will be conducted by drilling with either cable tool or hollow stem auger techniques with drive samplers used for actual sample collection. Due to the complexity of the site geology and the degree of control on migration potential by changes in lithology, near-continuous drive samples will be collected as the boring is advanced. Care will be taken to avoid inducement of movement of contamination vertically by use of double casing through contaminated zones. Most borings will be advanced to a depth 10 feet below artificial fill in a consistent silt and clayey silt present through most of the site. On-site laboratory screening results will be used to aid decision making in the field on drilling depth. If PNAs or volatile aromatics are still detected at the initial target depth then the boring will be continued to a greater depth to define vertical extent of contamination. Other borings drilled

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for purposes of installing wells in the intermediate and deep alluvial aquifer zones will also be sampled and analyzed.

The current proposed program does not address investigation of the deepest alluvial aquifer zone due to the low probability of contamination reaching this zone. If the intermediate alluvial aquifer shows evidence of significant contamination based on the laboratory results, investigation of the deep alluvial zone will be undertaken to determine if it has been affected by the on-site operations.

Representative samples will be composited for each stratigraphic unit encountered, or at five foot intervals in consistent strata, for analysis of total PNA's and volatile aromatics using the field laboratory screening techniques. Certified laboratory confirmation of 10 percent of the samples for individual compounds will be done. Several samples of tar waste will be collected for physical property analysis (viscosity, density) and a single analysis of volatile, semi-volatile and heavy metal priority pollutants. An additional five samples of sub-surface soil material will also be analyzed in a certified laboratory for volatile, semi-volatile pesticide priority pollutants. These samples will include both contaminated and clean samples as indicated by the field screening. Analysis of pH, total iron and cyanide will be conducted for areas potentially affected by spent oxide disposal.

Figure 3-15 provides the anticipated locations for sub-surface borings. The boring program includes drilling and sampling at 16 individual sites including 5 sites where multiple wells will be installed. The distribution of these borings with approximate depth of investigation is as follows:

- shallow (30 ft depth) 11 sites
- intermediate (60 ft depth) 5 sites

This boring program will result in screening for total PNAs and volatile aromatics on about 125 sub-surface samples. Results from the field screening will be be used to guide placement and depth of borings used to

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delineate areal and vertical extent of contamination. All borings not used for installation of monitoring wells will be properly plugged and abandoned in accordance with Oregon guidelines.

3.4 RIVER SEDIMENT CHARACTERIZATION

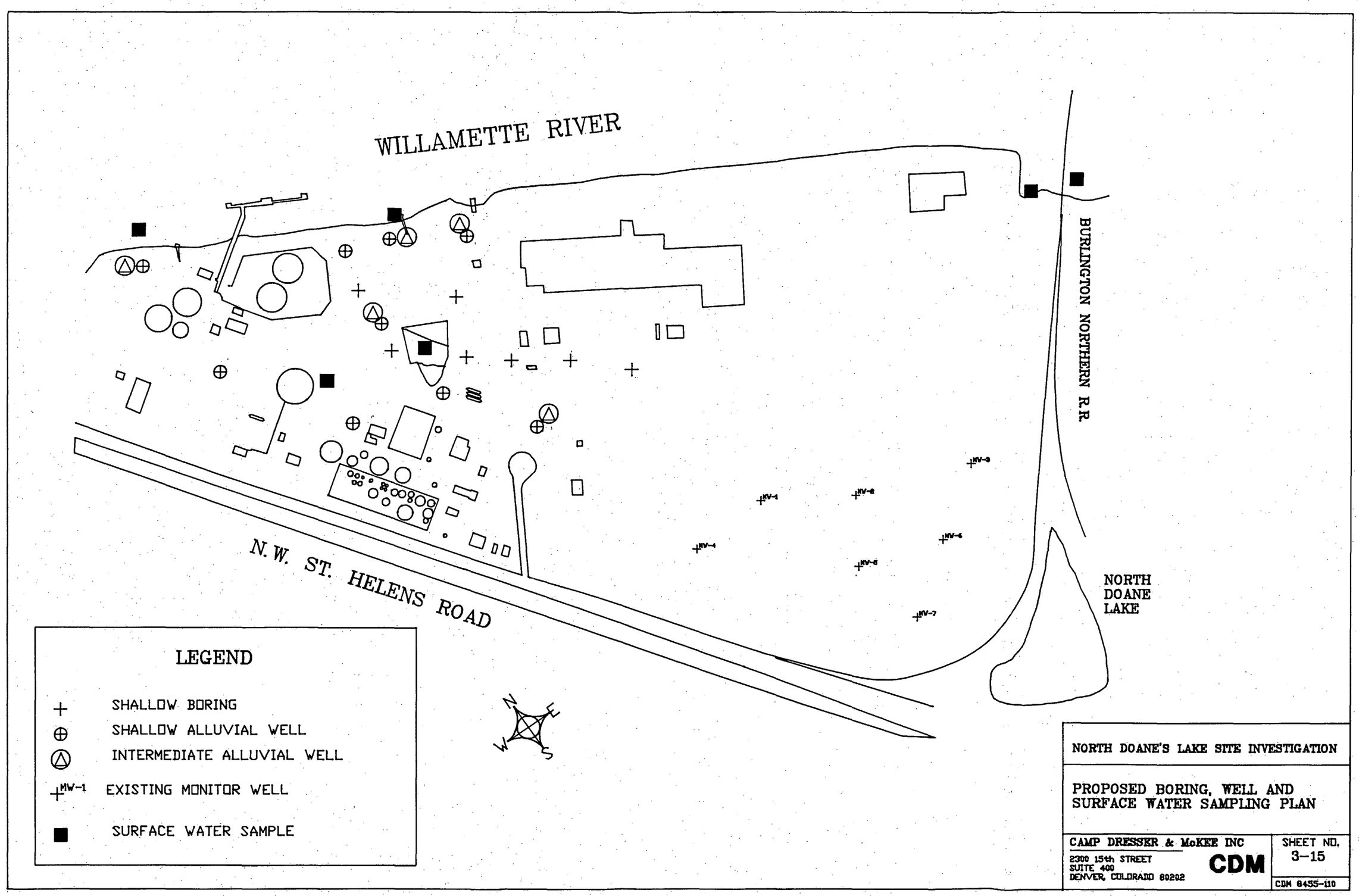
Waste discharge practices at the manufactured gas facility prior to 1941 when settling ponds were built may have led to the deposition of tars in river sediments during that period. Active dredging in areas that may have been affected by this discharge has been conducted. Three river sediment samples will be collected in near-shore areas adjacent to and downstream of past discharge locations. Two samples from existing on-site ponds will also be collected. In addition, one background sample upgradient of the manufactured gas facilities will be collected. Approximate locations for samples are shown on Figure 3-14. Certified laboratory analysis of individual PNA compounds will be performed using HPLC or GC techniques. Samples will be collected using an appropriate sediment sampler.

3.5 GROUND WATER CHARACTERIZATION

Ground water comprises a major pathway by which contaminants may migrate to the surface environment and potentially could provide a pathway for contamination of drinking water. Existing site boring and well data suggests that up to three potential aquifer units may exist in the unconsolidated deposits. These units include the artificial fill (shallow zone), sandy units occurring between 0 and -15 feet MSL (intermediate zone) and a lower sand between -30 and -50 feet MSL (deep zone). The intermediate zone aquifer does not appear to be present on the Wacker Property due to the presence of an old abandoned meander of the river.

Monitoring wells will be installed to allow collection of samples from the shallow and intermediate zones, allow measurement of water levels for definition of ground water flow direction and to allow the conduct of single borehole permeability tests. All newly installed wells will be

SCOEPA00036631


WILLAMETTE RIVER
BURLINGTON NORTHERN R.R.
NORTH DOANE LAKE
N.W. ST. HELENS ROAD
MW-1
MW-2
MW-3
MW-4
MW-5
MW-6
MW-7
N
E
S
W
LEGEND
SHALLOW BORING
SHALLOW ALLUVIAL WELL
INTERMEDIATE ALLUVIAL WELL
MW-1 EXISTING MONITOR WELL
SURFACE WATER SAMPLE
NORTH DOANE'S LAKE SITE INVESTIGATION
PROPOSED BORING, WELL AND SURFACE WATER SAMPLING PLAN
CAMP DRESSER & McKEE INC
2300 15th STREET
SUITE 400
DENVER, COLORADO 80202
CDM
SHEET NO.
3-15
CDM 8455-110

analyzed for individual PNA compounds and volatile aromatics at a certified laboratory, while four wells distributed throughout the site from each of the monitored aquifer zones will be analyzed for volatile, semi-volatile, pesticide and heavy metal priority pollutants at a certified laboratory. One of the selected wells for full chemical characterization will be selected from monitoring wells on the Wacker-Siltronic property. The primary emphasis in the well installation and monitoring program will be on the upper and intermediate aquifer zones, since these have the highest potential to serve as a pathway for contaminant migration, based on analysis of existing sub-surface information. The lower zone will not be investigated unless significant contamination of ground water in the intermediate zone is detected. Locations of proposed wells are shown on Figure 3-15 along with the location of existing monitoring wells suitable for use in the program. The proposed well installation program includes 9 sites with a total of 9 shallow zone wells and 5 intermediate zone wells. Several existing shallow zone wells on the Wacker property will be included in the sampling program. A subset of 4 wells from each monitored aquifer will be analyzed for individual PNA compounds and other contaminants detected during the initial sampling program on a quarterly basis for one year to determine if seasonal water level fluctuation affects contaminant migration. All installed wells will be completed with 4-inch diameter Fiberglas or stainless steel casing and screen due to the aggressive nature of the tar material that may degrade PVC casing. The well construction materials will be steam cleaned prior to installation and all sub-surface drilling tools will be de-contaminated to avoid cross-contamination. Double casings will be utilized on intermediate zone wells in order to avoid inducing vertical movement of contamination downward. Adequate expansive annular seals such as bentonite or bentonite/portland grout will be installed.

3.6 SURFACE WATER CHARACTERIZATION

A total of seven surface water samples will be collected for analysis of PNAs and volatile aromatics in the laboratory to determine if any on-site release of contaminants to surface water is taking place. This sampling

SCOEPA00036633

will be conducted during a single time period, with the exception of the downgradient Willamette River station, which will be sampled at both high and low stage. Locations to be sampled are shown on Figure 3-15 and summarized below.

- Willamette River, upgradient of site
- Willamette River, high stage, downgradient near bank sample
- Willamette River, low stage, downgradient near bank sample
- Unnamed tributary stream draining through site
- Ponded water in LNG excavation
- Existing settling pond on-site
- Outflow of settling pond

3.7 REPORTING

A comprehensive analysis of the site data and interpretation of potential risk to human populations and the environment will be presented. Existing data on geology, hydrology, aquatic ecology, water use and other information will be summarized along with results from site specific programs. The report will be formatted to address concerns identified in the letter from DEQ to Northwest Natural Gas company dated 15 August 1986 regarding general study needs for the Northern Doane's Lake Investigation.

The report will address in particular whether there is a need for any remedial action. This assessment will be based on potential risks associated with exposure pathways that may be active on site. If a significant risk is indicated, preliminary definition of a range of potentially applicable remedial alternative will be presented. The objective of the studies and report is not, however, preparation of Remedial Investigation/Feasibility Study documents that would be applicable at a Superfund site.

SCOEPA00036634

The projected schedule for implementation of this conceptual work plan is identified below.

Agency concurrence with concept plan	February 88
Prepare detailed Project Operations Plan	March 88
Field Investigations	April 88
Interim Report	August 88
Monitoring	June 88 to March 89
Final Report	June 89

SCOEPA00036635

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environmental engineers, scientists, planners, & management consultants

RECEIVED
JUN 11 1987
JIM ELLIS

NORTHWEST NATURAL GAS COMPANY

220 N.W. SECOND AVENUE PORTLAND, OREGON 97209

(503) 226-4211

June 9, 1987

Mr. James R. Ellis
Wacker Siltronic Corporation
P.O. Box 03180
Portland OR 97203

Re: Northern Doane's Lake Investigation

Dear Jim:

Please exchange the pages marked "Final Draft" in your current CDM report with the enclosed replacements. I will let you know soon the date of our meeting with the Department of Environmental Quality.

Sincerely,

E.L. Bolin, Manager
Land & Claims Department

ELB:f
Enclosure

NORTH DOANE'S LAKE
SITE CHARACTERIZATION
WORK PLAN

JUNE 1987

Prepared by:
Camp Dresser & McKee Inc.
2300 15th Street, Suite 400
Denver, CO 80202

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REFERENCES

APPENDICIES

A - Logs of borings used in simplified geologic cross-sections
B - Tentatively Identified Organic Compounds at Sample Sites

SCOEPA00036639

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SCOEPA00036640

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SCOEPA00036641

EXECUTIVE SUMMARY

The North Doane's Lake study area includes land areas potentially affected by plant operations and waste disposal activities conducted at the Portland Gas and Coke Company's manufactured gas facility that operated from 1913 to 1956. Current facilities in the area of concern include the Northwest Natural Gas Company LNG facility, the Wacker Siltronic semiconductor fabrication plant, Pacific Northern Oil petroleum product terminal and the Koppers Corporation creosote terminal.

Historic operation of the manufactured gas facility resulted in the deposition of large volumes of residual tar containing high concentrations of suspected carcinogenic polynuclear aromatic hydrocarbons. Other wastes disposed of on-site include spent oxide that was used for sulfur removal and may contain cyanide in small quantities.

A Work Plan identifying sampling plans for delineation of the potential presence and migration pathways for hazardous constituents into the human or natural environment is presented. This Work Plan includes screening level sampling of surface and subsurface soils, river and pond sediment, and surface and ground water sampling. Results of the investigations will be used to perform an endangerment assessment to determine if the waste on-site presents a hazard.

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1.0 INTRODUCTION

This summary of site conditions and Work Plan for characterization of the North Doane's Lake study area is presented based on concerns regarding contamination at the site related to operations and closure of the Portland Gas and Coke Company manufactured gas facility that operated on a portion of the site from 1913 to 1956. The State of Oregon, Department of Environmental Quality requested that the current owners conduct a site assessment to determine if a hazard is associated with contaminants present on-site.

This document addresses the site history relevant to the origin of contaminants at the site, summarizes available site data, and presents a Work Plan for characterization of the site for the purpose of identifying if a potential hazard is associated with the continued presence of contaminants at the site.

SCOEPA00036643

2.0 EXISTING SITE CONDITION SUMMARY

2.1 SITE DESCRIPTION

2.1.1 SITE LOCATION

The location of the North Doane's Lake site is in the northwest part of Portland on the west bank of the Willamette River, northwest and downstream of the Northwest Portland industrial area. For the purposes of this study, the site includes land occupied by the former Portland Gas and Coke Company manufactured gas facility, the Northwest Natural Gas (NWNG) LNG facility; Pacific Northern Oil's petroleum terminal; the Koppers Company creosote terminal; and the Wacker Siltronic Corporation semiconductor manufacturing facility. Both Pacific Northern Oil and Koppers lease the property from NWNG. NWNG owns the northwestern part of the site and Wacker owns the southeastern part of the site. Figure 2-1 is a recent aerial photograph of the study area. Figure 2-2 identifies current day features within the study area for reference.

This study area is roughly triangular in shape, consisting of about 120 acres. The northeast boundary of the site is the Willamette River; the southeast boundary is the Burlington Northern (BN) Railroad berm along the approach to the BN Railroad Bridge; the southwest boundary is the main BN Railroad track adjacent to N.W. St. Helens Road; and the northwest boundary is the property line between NWNG property and the U.S. Army Corps of Engineers Moorings facility, which is southeast of the St. John's Bridge. The site is about 6 miles upstream of confluence of the the Willamette River with the Columbia River.

2.1.2 SITE HISTORY

This section discusses history of the site to the present. Much of the information was obtained from a site history prepared for Walker Siltronic

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3.0 SITE CHARACTERIZATION PLAN

The objective of this site characterization plan is to confirm the presence of expected contaminants and qualitatively assess their areal and vertical extent. Site data are also required in order to complete the analysis of transport pathways and to identify sensitive receptors for endangerment assessments. These analyses are focused on waste products associated with the former Portland Gas and Coke manufactured gas facility. The southeast portion of the study area has potentially been impacted by contamination known to exist upgradient in the Northwest Portland industrial area, however, since this contamination is not related to on-site activities, no additional investigations are proposed. This characterization is designed to determine if a significant risk to human populations or the environment is potentially present, rather than collecting data to support detailed remedial design. Sufficient data collection is planned for support of initial screening of remedial alternatives, including the no action alternative if necessary. In order to meet these objectives, investigation and sampling of surface and sub-surface soils, ground water, surface water and river sediments are proposed. Specific details of field and laboratory investigations will be addressed in a Sampling Plan and a Quality Assurance Plan to be prepared as the initial step in implementation of this site characterization plan. These plans will identify potentially relevant standards that may affect detection limits required to define contaminated areas.

3.1 ANALYSIS OF SAMPLES

Screening methods for PNA compounds using an on-site field laboratory will be implemented to allow sample results to guide the field sampling program. This will allow more accurate and cost-effective delineation of contamination on site. The primary contaminants of concern at the site are PNAs, thus a selective total PNA procedure will be used for field screening analysis. PNAs will be extracted from soil samples using acetonitrile and

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NORTH DOANE'S LAKE
SITE CHARACTERIZATION
WORK PLAN
FINAL DRAFT

April 1987

Camp Dresser & McKee

SCOEPA00036646

NORTH DOANE'S LAKE
SITE CHARACTERIZATION
WORK PLAN
FINAL DRAFT

April 1987

Prepared by:

Camp Dresser & McKee Inc.
2300 15th Street, Suite 400
Denver, Colorado 80202

FINAL

DRAFT

NORTH DOANE'S LAKE
SITE CHARACTERIZATION
WORK PLAN
FINAL DRAFT

April, 1987

Prepared by:

Camp Dresser & McKee Inc.
2300 15th Street, Suite 400
Denver, CO 80202

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B - Tentatively Identified Organic Compounds at Sample Sites

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EXECUTIVE SUMMARY

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2.1 SITE DESCRIPTION

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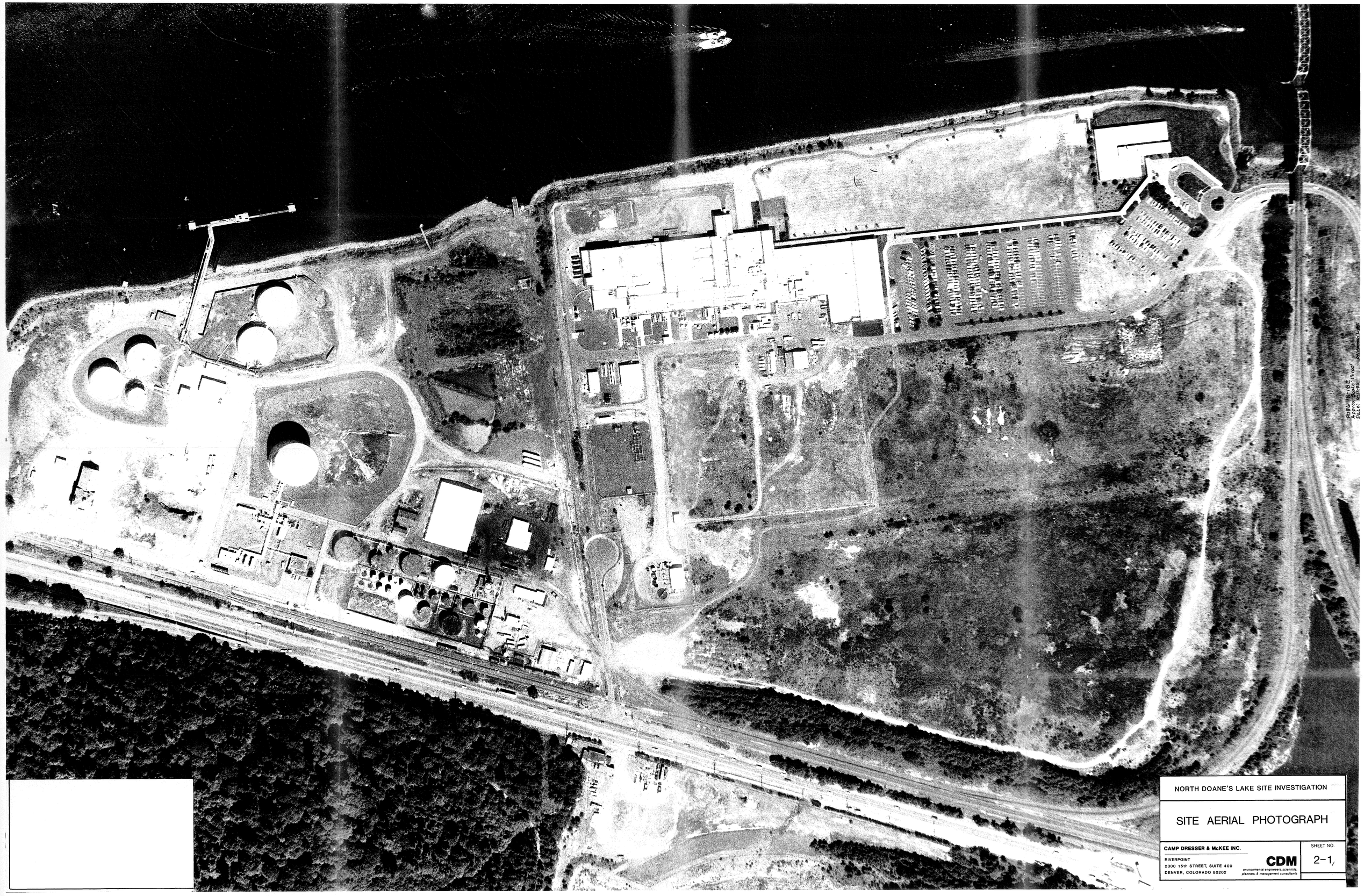
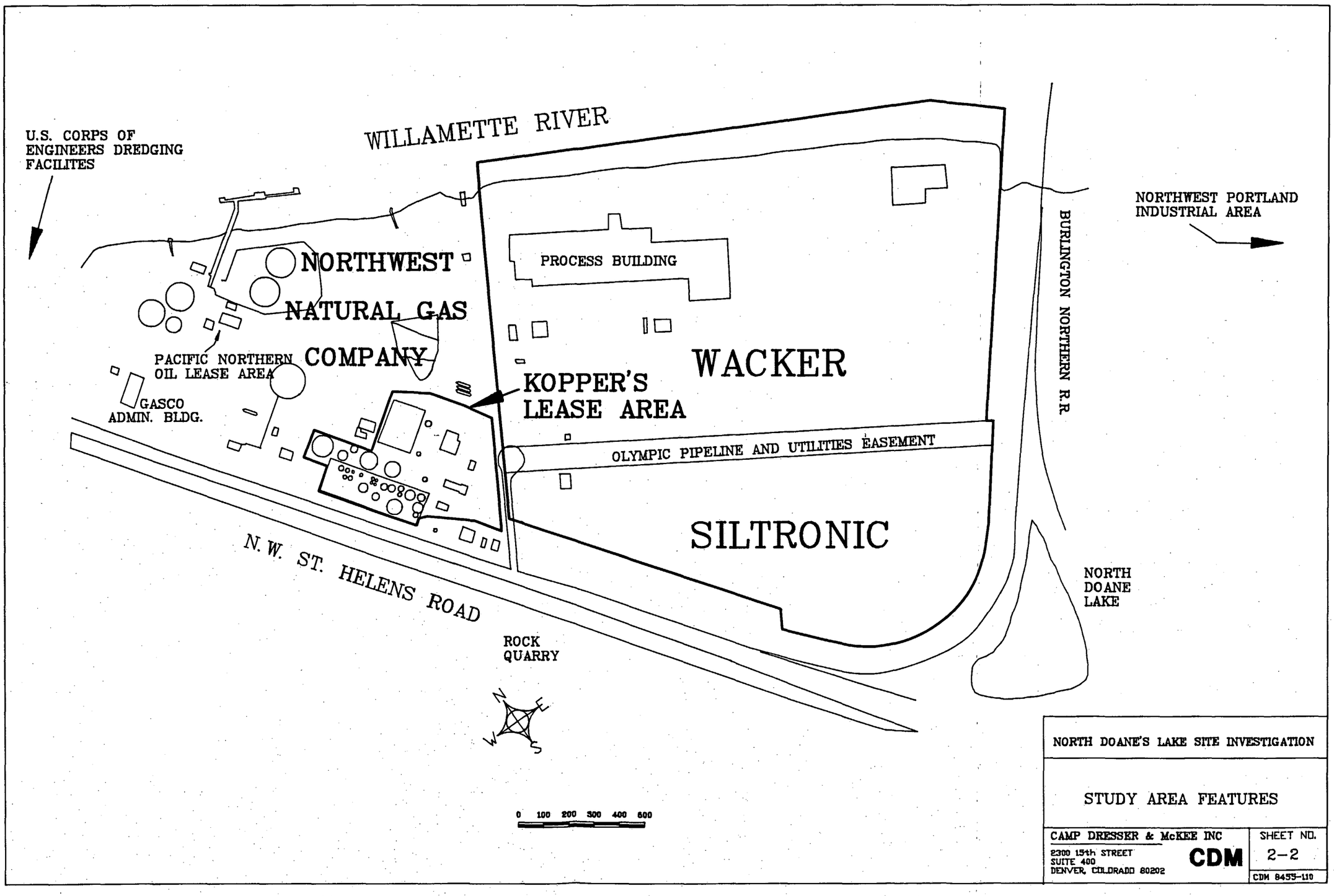


NORTH DOANE'S LAKE SITE INVESTIGATION

SITE AERIAL PHOTOGRAPH

CAMP DRESSER & McKEE INC.
RIVERPOINT
2300 15th STREET, SUITE 400
DENVER, COLORADO 80202
CDM
environmental engineers, scientists, planners, & management consultants

SHEET NO. 2-1


U.S. CORPS OF ENGINEERS DREDGING FACILITES
WILLAMETTE RIVER
NORTHWEST PORTLAND INDUSTRIAL AREA
BURLINGTON NORTHERN R.R.
PROCESS BUILDING
NORTHWEST NATURAL GAS COMPANY
PACIFIC NORTHERN OIL LEASE AREA
GASCO ADMIN. BLDG.
KOPPER'S LEASE AREA
WACKER
OLYMPIC PIPELINE AND UTILITIES EASEMENT
SILTRONIC
N.W. ST. HELENS ROAD
ROCK QUARRY
NORTH DOANE LAKE
N
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0 100 200 300 400 600
NORTH DOANE'S LAKE SITE INVESTIGATION
STUDY AREA FEATURES
CAMP DRESSER & McKEE INC
2300 15th STREET
SUITE 400
DENVER, COLORADO 80202
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SHEET NO.
2-2
CDM 8453-110

Corporation by the Portland Development Commission (1984). Section 2.2 presents a detailed discussion of past waste product disposal practices.

In 1883, a rail line was begun between Portland and Astoria and completed in 1898. This is the line that is now owned by BN and forms the southwest boundary of the site. The railroad bridge across the Willamette River was completed in 1908. The railroad leading to the bridge bisected Doane Lake, a small shallow lake originally located partly on the southwest edge of the site.

The federal government purchased the property immediately northwest of the study area in 1903 and 1905 for moorings. Additional property was purchased in 1940. The area of 11 acres is currently used by the U.S. Army Corps of Engineers for storage and operating facilities for dredges and other floating equipment.

In 1913, the Portland Gas and Coke Company built a residual oil gasification facility, known as the GASCO facility, on the present-day NWNG property. The plant produced 570 Btu town gas and pressed lampblack briquettes, which were sold in the area as solid fuel. Beginning in 1923, the process was modified to optimize aromatic generation and light oil recovery for use as motor fuel. In 1925, tar recovery and refining were initiated to provide tar for use as road binder. During the 1930's, the plant expanded and in 1941 a coking plant began production of electrode grade coke and high Btu gas. With the availability of natural gas in the 1950's, much of the facility was shut down and dismantled. The last full year of operation was 1955. Natural gas arrived in 1956 and Portland Gas and Coke became Northwest Natural Gas Company (NWNG) in 1958. NWNG began construction of a liquefied natural gas (LNG) plant in the late 1960's and most of the old gasification plant facilities were demolished.

A small area of the southeastern part of the former plant site, including a small tank farm, was leased to Koppers Company Inc., Organic Material Division. Koppers built a plant in 1966 to make coal tar pitch for the

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aluminum industry. Koppers land farmed wastewater from the tar stills on the property. The coal tar pitch plant ceased operation in 1973. Koppers still leases the facility which currently serves as a terminal for distribution of creosote oils for wood treating.

During the 1960's, several large tanks at the northwest edge of the property near the river were leased to Pacific Northern Oil. Pacific Northern continues to lease and operate in this location today. Oil is received by ship, stored in the tanks, and distributed to customers.

In the 1970's, all of the remaining gas plant structures outside of the lease areas, except for the GASCO Administration Building, were demolished. Most of the spent oxide pile was taken to the Scappose, Oregon landfill. The remaining tar pond was filled with spent oxide, material from the adjacent rock quarry and overburden after action by the Coast Guard regarding leakage of oil from the tar pond to the river. Underground piping was also removed and sold as scrap. The Administration Building remains and is on the National Register of Historic Places. In the early 1980's, NWNG added a new dock, three tanks, and a new drainage system.

NWNG continues to operate the LNG plant on the property today. During 1985, NWNG contracted to have the river dredged near the docks to accommodate tankers making deliveries to Pacific Northern Oil. About 500 cubic yards of dredge material was taken to an off-site landfill. The U.S. Army Corps of Engineers (COE) dredges the Willamette periodically to maintain the channel. The river reach near the site between the St. John's Bridge and Burlington Northern bridge was last dredged in 1973.

The southeastern part of the site, which is currently owned by Wacker Siltronic Corporation, was formerly a low-lying swampy area occupying an abandoned river oxbow, that was subject to winter flooding. Several small buildings existed on the site in the 1930's on the river bank near the railroad bridge. Western Transportation had a river dock with two piers,

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five buildings and two fuel tanks. The facility was used for refueling tugs, and to tie up log rafts and barges. The dock and piers were removed in the 1950's, and the buildings by 1973.

In the 1930's, Shell Oil Company built a dock and building on the river bank at the boundary of the present-day Wacker and NWNG properties, with a road following that present boundary. Shell purchased a by-product from Portland Gas and Coke and shipped it by barge from the dock. By 1957 the facility was apparently abandoned and the building destroyed by 1973.

The present-day Wacker property was purchased in 1962 from the railroad and Portland Gas and Coke. The purchasers agreed to fill the site to a minimum elevation of 30 feet by the end of 1973 and construct industrial buildings by the end of 1978. The site was filled with material from the adjacent rock quarry (Figure 2-2) and dredge material from the Port of Portland. Port of Portland records indicate that 695,522 cubic yards of dredge material was placed on the site in 1974. Total fill, including rock, was estimated to be 1,529,400 cubic yards. Settling ponds containing tar along the property line with the gasification facility were filled and the contents spread over the low lying area at this time.

In 1978, the City of Portland Development Commission purchased the site as part of an urban renewal project and sold it to the Wacker Siltronic Corporation in the same year. Construction of the Wacker plant began in October 1978. Construction was completed in December 1979, and operation began in March 1980.

Two pipelines that run parallel to the river, cross the site. The pipelines carry a variety of petroleum products and are operated by Olympic Pipeline.

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2.1.3 ENVIRONMENTAL SETTING

2.1.3.1 Site Physiography and Climate

The study area is located on artificial fill placed on floodplain deposits on the south bank of the Willamette River. The Willamette River flows northwest to its confluence with the Columbia River approximately six miles downstream. The river's floodplain varies in width from several thousand feet southeast of the site to approximately 500 feet wide northwest of the site. The land surface is generally flat across the site due to the extensive artificial fill. Elevations range from about 45 feet above mean sea level (MSL) on the southwest adjacent to the NW St. Helen's Road to less than 10 feet above MSL on the northeast side, near the Willamette River. Immediately southwest of the study area are the Tualatin Mountains, which rise to over 1,100 feet elevation. These mountains form an escarpment 800 feet high near the study site, and parallel the river throughout the Portland area.

The region has a temperate maritime climate, with mild, wet winters and warm, dry summers. Mean annual precipitation in the area is approximately 44 inches. The average annual evaporation is about 26 inches (USDOC, 1968).

2.1.3.2 Geology

The Columbia River basalt is the uppermost bedrock unit underlying the study area. It consists of a series of basaltic lava flows which were emplaced during the middle Tertiary Period, when the Cascade and Coast Ranges were being formed. The Tualatin Mountains southwest of the site were formed by tectonic folding of the basalt during this time. The contacts between individual basalt flows on the northeast flank of the Tualatin Mountains dip approximately 15 degrees to the northeast, toward the Willamette River (Trimble, 1957). Individual lava flows vary in thickness but are typically about 50 feet thick where exposed in the

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Tualatin Mountains (Trimble, 1957). Each flow is characterized by a fractured upper surface which formed due to rapid cooling. This zone of fracturing at the upper surface forms a planar zone of permeable material. A deep bedrock valley roughly parallel to the present day Willamette River was eroded in the surface of the basalt during times of lower sea level. Drilling information within the study area indicates the depth to this erosional bedrock contact ranges from about 40 feet near the road at the southwest boundary of the site, to about 150 feet adjacent to the river.

Unconsolidated deposits of relatively recent age overly the Columbia River basalt in the study area. The unit immediately above the basalt consists of interbeded fine to medium sand and silty sand layers, and is thought to have been deposited in a lake environment approximately 19,000 years ago, near the end of the last major ice age (Trimble, 1957). These deposits range up to approximately 30 feet in thickness immediately southeast of the site (Dames & Moore, 1983). Overlying the lake-deposited sediments are more recent channel, point bar, and overbank deposits of the Willamette River. This unit consists of interbedded layers of fine sand, silt and organic clay. The uppermost layer of unconsolidated material is composed of man-made fill, including debris from former site facilities, process wastes, materials from a nearby rock quarry and sediment from dredging operations on the Willamette River. The unconsolidated deposits vary in thickness across the site from less than five feet along the flank of the Tualatin Mountains to over 150 feet near the Willamette River.

Figure 2-3 shows the approximate location of subsurface borings that have been completed within the study area for various purposes, including foundation exploration and monitoring well installation. The plan view of the lines of cross-section for Figures 2-4 and 2-5 are also shown on Figure 2-3. These simplified geologic cross-sections, which are based on borings from various sources, indicate that the unconsolidated deposits are generally flat lying throughout the site. Copies of boring logs used in the study area cross-sections are provided in Appendix A. It should be noted that the lithologic units are gradational in nature and the

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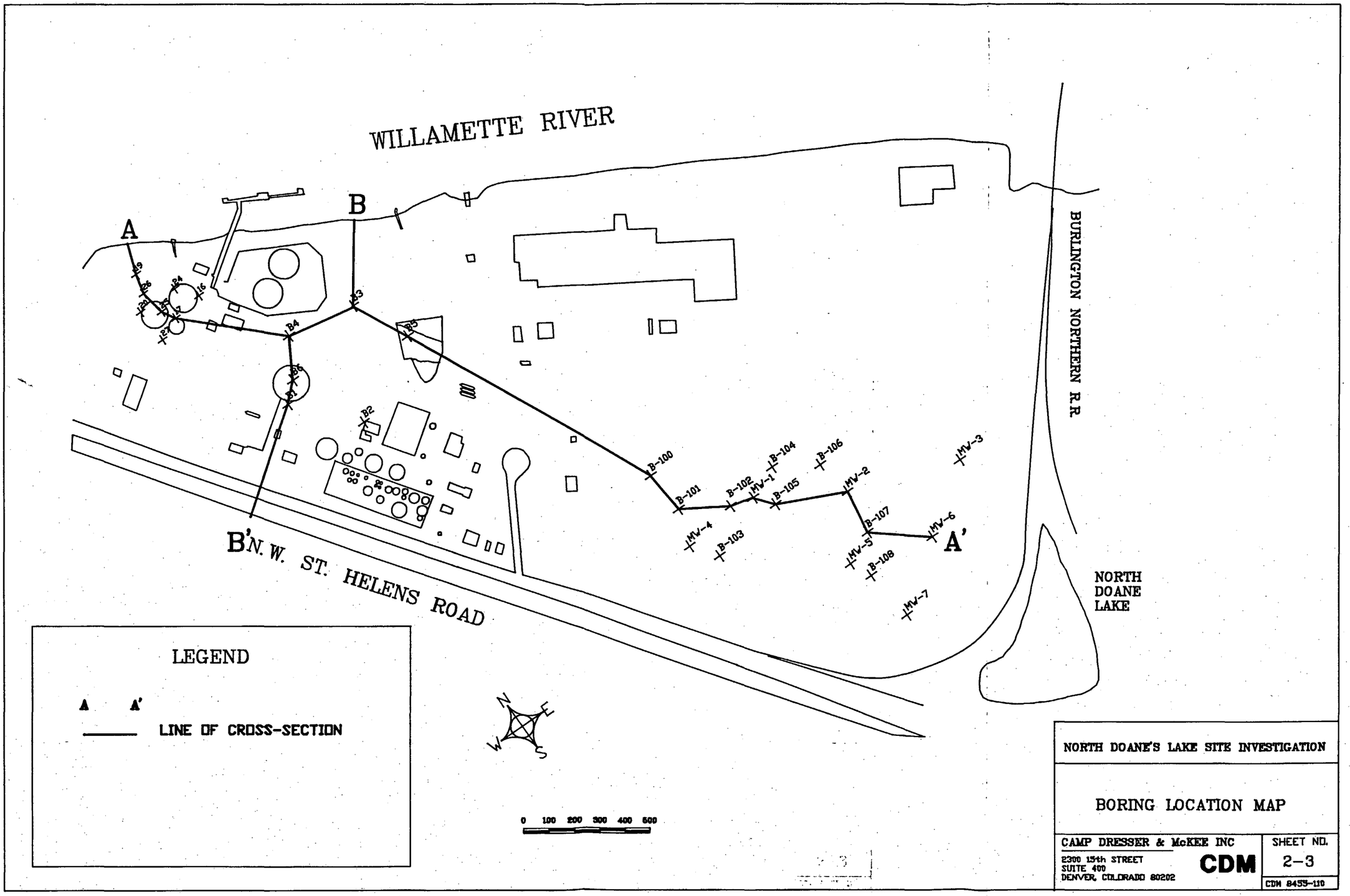
WILLAMETTE RIVER
A
A'
B
B'
N.W. ST. HELENS ROAD
BURLINGTON NORTHERN R.R.
NORTH DOANE LAKE
B-100
B-101
B-102
B-103
B-104
B-105
B-106
B-107
B-108
MV-1
MV-2
MV-3
MV-4
MV-5
MV-6
MV-7
B1
B2
B3
B4
B5
B6
LEGEND
A A'
LINE OF CROSS-SECTION
N
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S
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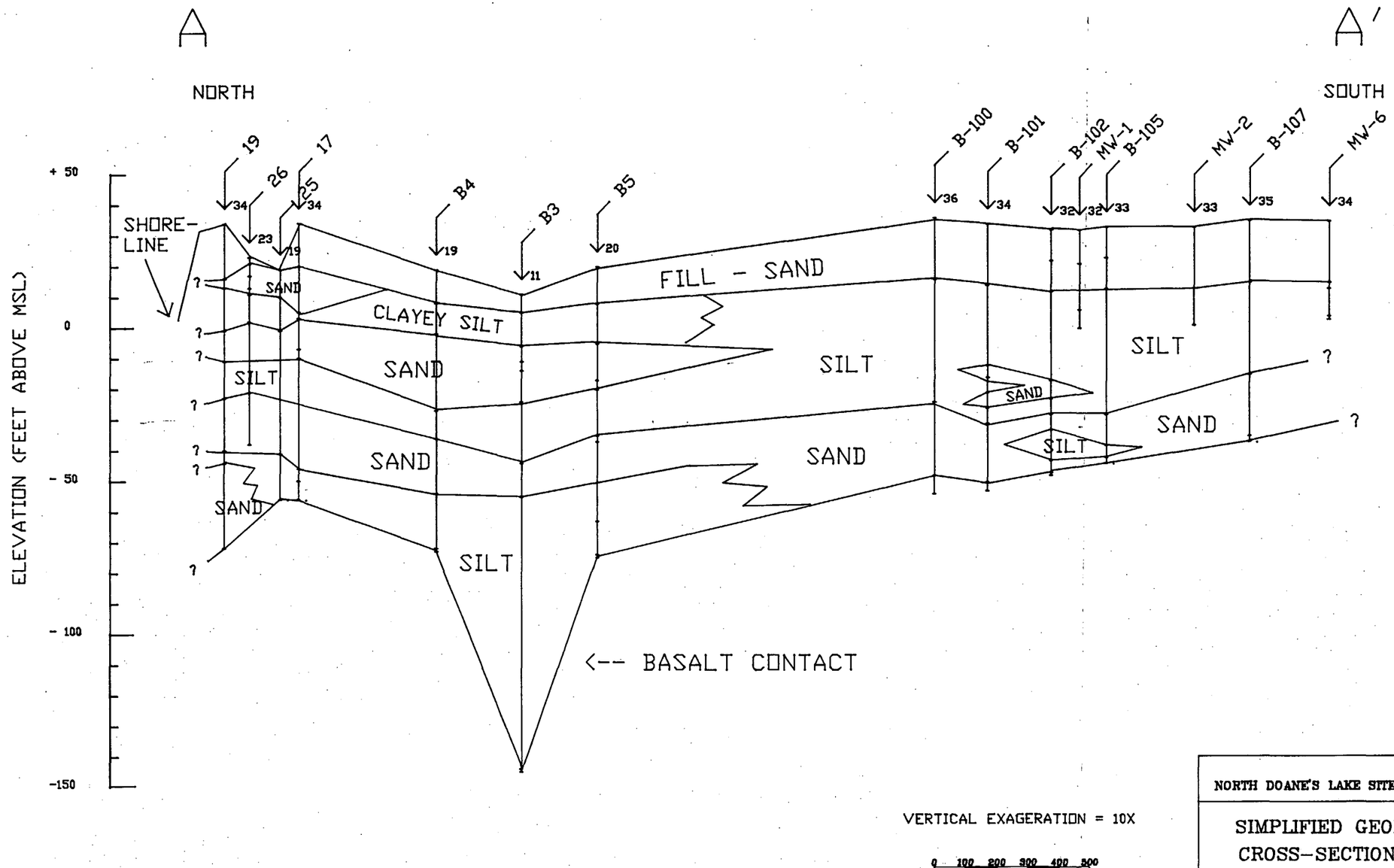
0 100 200 300 400 500
NORTH DOANE'S LAKE SITE INVESTIGATION
BORING LOCATION MAP
CAMP DRESSER & McKEE INC
2300 15th STREET
SUITE 400
DENVER, COLORADO 80202
CDM
SHEET NO.
2-3
CDM 8455-110



NORTH DOANE'S LAKE SITE INVESTIGATION

SIMPLIFIED GEOLOGIC CROSS-SECTION A-A'

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SUITE 400
DENVER, COLORADO 80202

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SHEET NO. 2-4

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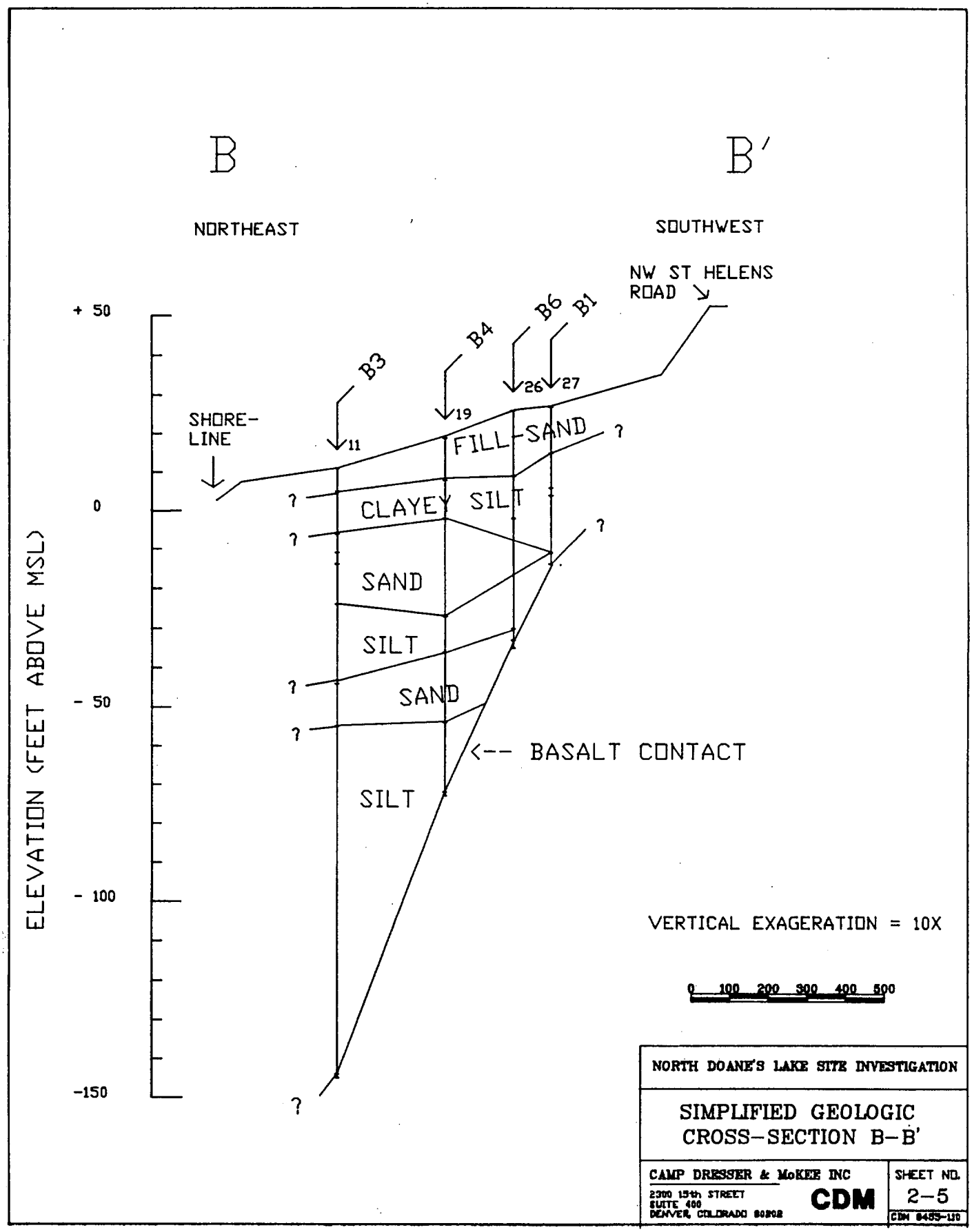
B
B'
NORTHEAST
SOUTHWEST
NW ST HELENS ROAD
B3
B4
B6
B1
11
19
26
27
SHORE-LINE
FILL-SAND
CLAYEY SILT
SAND
SILT
SAND
SILT
<-- BASALT CONTACT
+ 50
0
- 50
- 100
-150
ELEVATION (FEET ABOVE MSL)
VERTICAL EXAGERATION = 10X
0 100 200 300 400 500
NORTH DOANE'S LAKE SITE INVESTIGATION
SIMPLIFIED GEOLOGIC CROSS-SECTION B-B'
CAMP DRESSER & McKEE INC
2300 15th STREET
SUITE 400
DENVER, COLORADO 80202
CDM
SHEET NO.
2-5

simplified notation used implies only the dominant lithology within the interval shown at individual borings. A clay-rich zone underlies the surficial fill over most of present NWNG property, but appears to be absent in the Wacker property borings, as indicated on Figure 2-3. Absence of the clay rich zone under the Wacker property may be related to meandering of the river and subsequent scouring and erosion of the clay sediments, but since different companies were responsible for drilling, the apparent difference may be due to differences in logging terminology. A 1936 aerial photograph of the area does, however, show an abandoned river meander on the site of the present Wacker property that corresponds to the area in which the clay-rich zone is absent.

Underlying the clay-rich layer on the NWNG property are interbedded sands and silts. They extend down to an erosional contact with the Columbia River basalt, as shown on Figure 2-4.

2.1.3.3 Hydrology

Surface Water

The Willamette River is the most significant surface water feature in the vicinity of the study area. It is over 1,200 feet wide adjacent to the site with a maintained navigational channel depth of 40 feet. The river flows to the northwest, toward its confluence with the Columbia River six miles downstream. Discharge averages approximately 20,000 cfs (cubic feet per second), but varies with ocean tides and stage in the Columbia River. The Willamette River is the local base level, or drainage point for the area. Its surface elevation averages approximately two feet above MSL in the area, and fluctuates about 5 feet on a daily basis due to tidal influences. The bottom sediments in the river channel consist primarily of silt size particles, based on Corps of Engineers analysis of dredged samples. The river is used for shipping and provides ocean going vessel access to the Port of Portland dock facilities.

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Other surface water features on or near the site include settling ponds, drainage ditches, and streams draining the adjacent Tualatin Mountains. The NWNG property currently contains three settling ponds, located near the center of the study area. They cover a surface area of about 0.7 acres, and collect water from the LNG tank collection/containment basin and the LNG process units after it passes through an oil/water separator. An outfall ditch, periodically monitored by the DEQ, carries water from the final pond into the Willamette River. Its discharge is less than one cubic foot per second.

An unnamed stream which drains the northeast slopes of the Tualatin Mountains formerly passed through the southern part of the site. The valley through which it flows intersects the N.W. St. Helens road at a former rock quarry (Figure 2-2). The stream was channelized in the mid-1970s and is routed through culverts around the southern edge of the adjacent Wacker property.

A remnant of Doane Lake referred to as North Doane Lake is located adjacent to the southwest boundary of the study area. Doane Lake formerly covered portions of the present Wacker, Rhone-Poulenc, ESCO Landfill, Gould and Penwalt Corp. properties. Due to industrialization of the area since the early 1900s, the lakes now are divided by spurs of the Burlington Northern Railroad bridge, southeast of the Wacker property.

Ground Water

Two principal underground water-bearing units are present in the study area, an upper alluvial aquifer zone in the unconsolidated sediments and a lower confined aquifer zone in the underlying Columbia River basalt. The alluvial aquifer is recharged primarily by direct infiltration of precipitation and discharge from the basalt aquifer. Surface runoff in ditches, inflow from the Willamette River during high flow and leakage from the settling ponds on site also contribute recharge to the shallow aquifer.

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Monitoring wells installed on properties southeast of the NWNG site indicate ground water flow in the shallow aquifer is generally north-northeast, toward discharge areas along the Willamette River (Dames & Moore, 1983). Apparent ground water flow direction can change substantially due to daily tidal fluctuations and flow stage of the Willamette River. Ground water gradients in the alluvial aquifer at the Rhone-Poulenc site, approximately 4,000 feet to the southeast, average about one percent (Dames and Moore, 1983). Pumping tests conducted at that site yield calculated hydraulic conductivities of approximately 8.6 ft per day (Dames & Moore, 1983). This value is typical of unconsolidated silts and sands.

Monitoring wells on the Wacker property indicate the water table is between approximately two and fifteen feet of the land surface. Water table fluctuations in these wells of five to ten feet annually appear to be closely related to changes in flow rate of the Willamette River, with high river stages in March corresponding with seasonally high water table elevations during that period. This indicates a hydraulic connection between the river and the unconfined ground water systems. The alluvial aquifer is generally unconfined, although in locations where river-deposited clays exist the underlying sands and silts may exhibit confined aquifer conditions. The presence of these low permeability units on the NWNG property is likely to provide some degree of vertical isolation between different aquifer zones in the unconsolidated material that may limit downward movement of contaminants. Three distinct potential aquifers can be delineated within the unconsolidated deposits based on analysis of geologic cross-sections presented on Figures 2-4 and 2-5. The shallowest unit consists of artificial fill material generally above 10 feet in elevation MSL, the intermediate zone a sand to sandy silt typically located between 0 and -20 feet MSL, and a lower sandy zone between -30 to -50 feet MSL. The intermediate aquifer zone does not appear to be present under the Wacker property based on available boring logs.

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Ground water in the underlying Columbia River basalt exists primarily as isolated confined aquifers in the permeable fracture zones between individual basalt flows. In places, these confined aquifer units may be interconnected by vertical fractures in the basalt. Recharge to the basalt aquifers is largely from direct infiltration of precipitation on the northeastern slopes of the Tualatin Mountains, located west of the site. Flow is expected to be to the northeast, in the downdip direction toward the Willamette River, where discharge to the alluvial aquifer likely takes place.

Water use in the area is supplied principally by municipal water systems. There are several industrial supply wells which tap basalt aquifers in the area, including one 370 foot well owned by NWNG. The other deep wells, located near the Rhone-Poulenc facility to the southeast, are reportedly no longer in operation. There is no documentation of water use in the area from the unconsolidated aquifer.

2.2 CONTAMINATION PROBLEM DEFINITION

Several industrial facilities have conducted operations in the study area since initial development of the site. These include gas and by-product production from residual oils by the Portland Gas and Coke Company, tar distillation and creosote terminal operations by Koppers, LNG operations by Northwest Natural Gas, petroleum product handling by Northern Petroleum, and semiconductor manufacturing by Wacker-Siltronics. The primary facility of concern for purposes of this work plan document is the oil gasification plant due to its size and waste handling practices. Other operations associated with the Port of Portland, including dredging and historic tanker bilge pumping operations, may have also contributed hydrocarbon contamination to the adjacent river sediments, dredge spoils disposed along the river banks, and dredge spoils used for fill on the Wacker Property. Each of the facilities is described below.

2.2.1 GASCO FACILITY, PORTLAND GAS AND COKE COMPANY

The original development of the site was associated with a residual oil gasification facility, the GASCO plant, that was placed in operation in about 1913. This facility was constructed on hydraulically placed sandy fill material built up on lowland areas adjacent to the Willamette River. No information regarding site layout prior to the first available aerial photographs in 1936 is available. Published process summaries (Hall, 1941; Hall and Kohlhoff, 1952) provide information on changes in plant operations during its history. More general information on the process was obtained from Morgan (1931). Significant milestones in plant operations are summarized on Table 2-1. This facility grew to be one of the largest and most efficient oil-gas generation facilities in the west, with a generation capacity of 77,000,000 standard cubic feet of oil-gas and butane-air gas with a heating value of 570 Btu/cubic ft. The facility did extensive recovery and processing of by-products and near the end of its operation over 1/3 of the plant revenue was derived from the sale of these by-products.

The GASCO facility used two primary processes in the generation of gas for distribution, in addition to a number of refinery type processes for production of tar, pitch, and various other refined petroleum products. A technique known as the "Pacific Coast Oil Gas Process" (Morgan, 1931) was used throughout the life of the facility. This is a cyclical process whereby oil is subjected to thermal cracking at near atmospheric pressure in a cylindrical shell containing heated refractory checkerbrick. The checkerbrick is heated by combustion of oil and burning of carbon deposits on the checkerbrick to attain a temperature of about 2000°F. Heavy oils were introduced after pre-heating the reaction vessel and were thermally cracked as they moved downward through the gassifier. This cycle of alternating heating and gasification was continually repeated. This process generated the following products and by-products for each 10 gallons of 8.4 degree API oil (Hall and Kohlhoff, 1952):

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TABLE 2-1

PORTLAND GAS AND COKE PLANT HISTORY SUMMARY

1913	Plant construction completed and production of 570 Btu town gas and pressed lampblack briquettes initiated. Aromatics and tars not recovered. Waste discharge directly to river included all waste water and tars not usable as fuel.
1923	Gassification process modified to optimize aromatic generation. Light oil recovery and refining units placed in operation.
1925	Tar recovery and refining units built and placed in operation for production of road binder. Significant discharge of tars in waste water probable since no emulsion breaking agents used.
1935	Plant modified to use high carbon feedstock.
1941	Coke over installed to produce high Btu gas and electrode grade coke. Settling ponds constructed to treat waste water discharge.
1947	Plant capacity increased. Electrode pitch process line added.
1956	Plant production ceased.

- 1,000 cubic ft of 570 Btu/cubic ft oil gas
- 28.3 lbs lampblack
- 0.38 gallons tar
- 0.46 gallons light oil

The gas was cooled and subjected to various cleaning processes to remove tars, light oils, and sulfur prior to distribution. Tars and light oils were removed by cooling and de-misting the gas. Sulfur was removed by passing the cooled gas with small amounts of added ammonia and air through beds of iron oxide adsorbed on wood shavings. In 1941 a coke oven was installed at the plant to generate electrode grade coke and high Btu gas for re-forming in the existing retorts. The coke ovens produced the following products for each 10 gallons of 8.4 degree API feedstock oil and 9 pounds of lampblack (Hall and Kohlhoff, 1952):

- 540 cubic ft of 1030 Btu/cubic ft gas
- 19.5 lbs coke
- 3.6 gallons tar
- 0.66 gallons light oil
- 0.06 gallons creosote oil

Figures 2-6, 2-7, and 2-8 show respectively process flow sheets for the gas generator, coke oven and by-product refining operations. Several of these processes likely resulted in generation of waste streams that were deposited on site or were discharged to the adjacent Willamette River. It should be noted that due to the large size of this plant, economic recovery of many of the by-products typically wasted at other plants of this type was conducted and waste quantities are correspondingly smaller. During the life of the plant a total of approximately 70,000,000 barrels of petroleum feedstock were processed. Near the end of the plants operation, processing of 2,100,000 barrels of petroleum resulted in product and by-product sales on an annual basis as follows (Hall and Kohlhoff, 1952):

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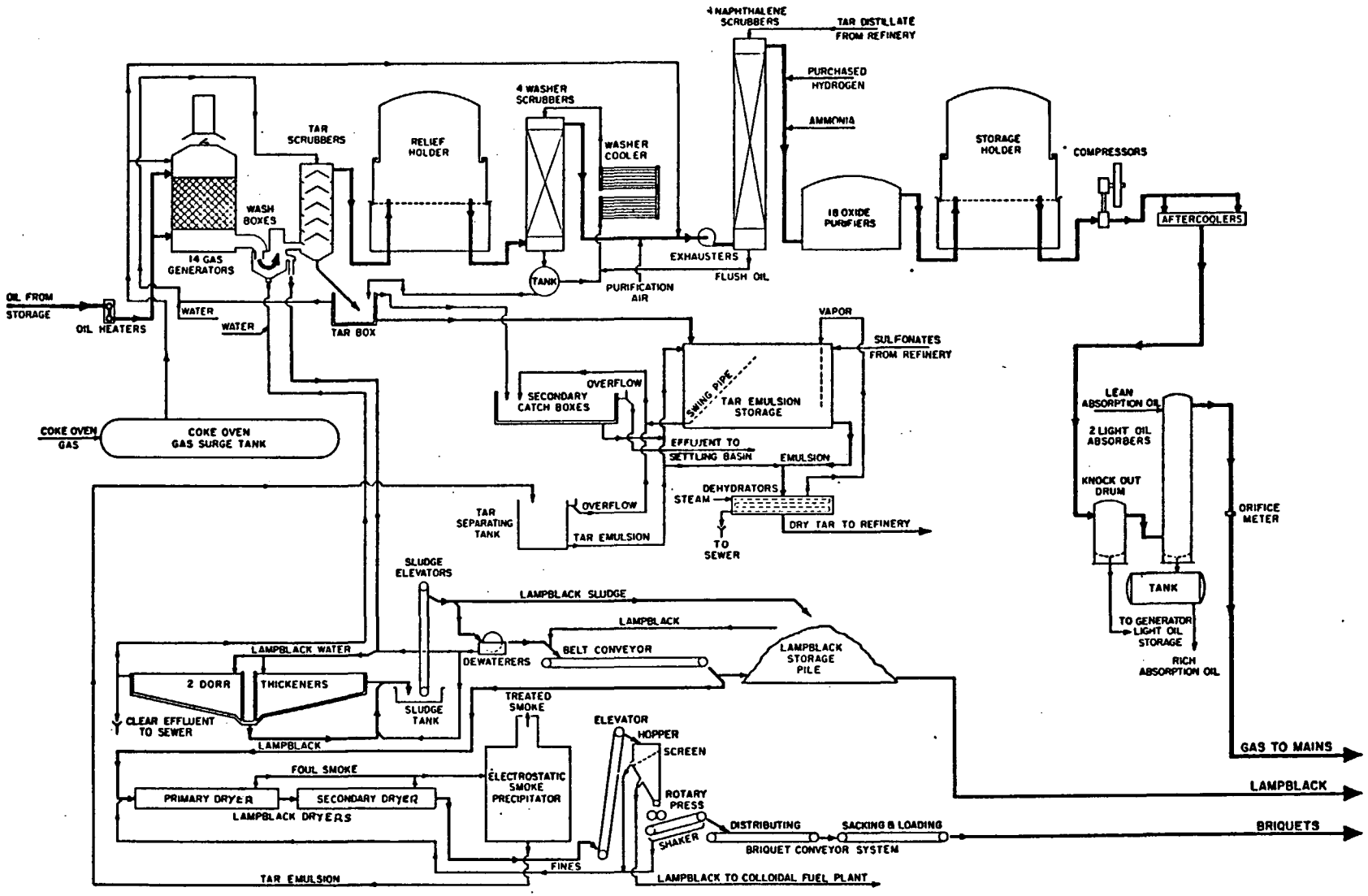

Source: Hull and Kohlhoff (1952)

Figure 2-6 Flow Sheet - Generator Gas Production

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environmental engineers, scientists, planners, & management consultants

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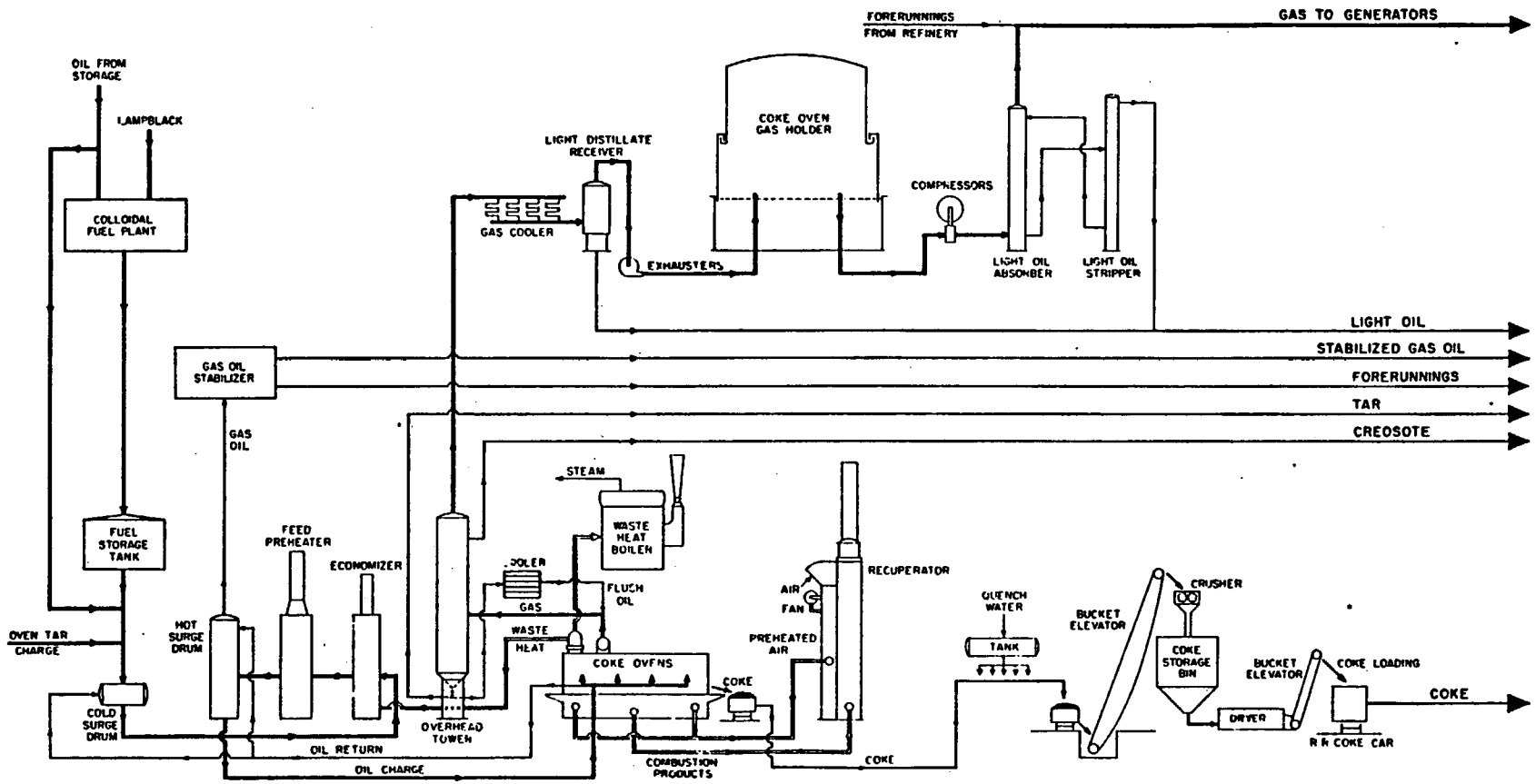

Source: Hull and Kohlhoff (1952)

Figure 2-7 Flow Sheet - Coke Oven Gas Production

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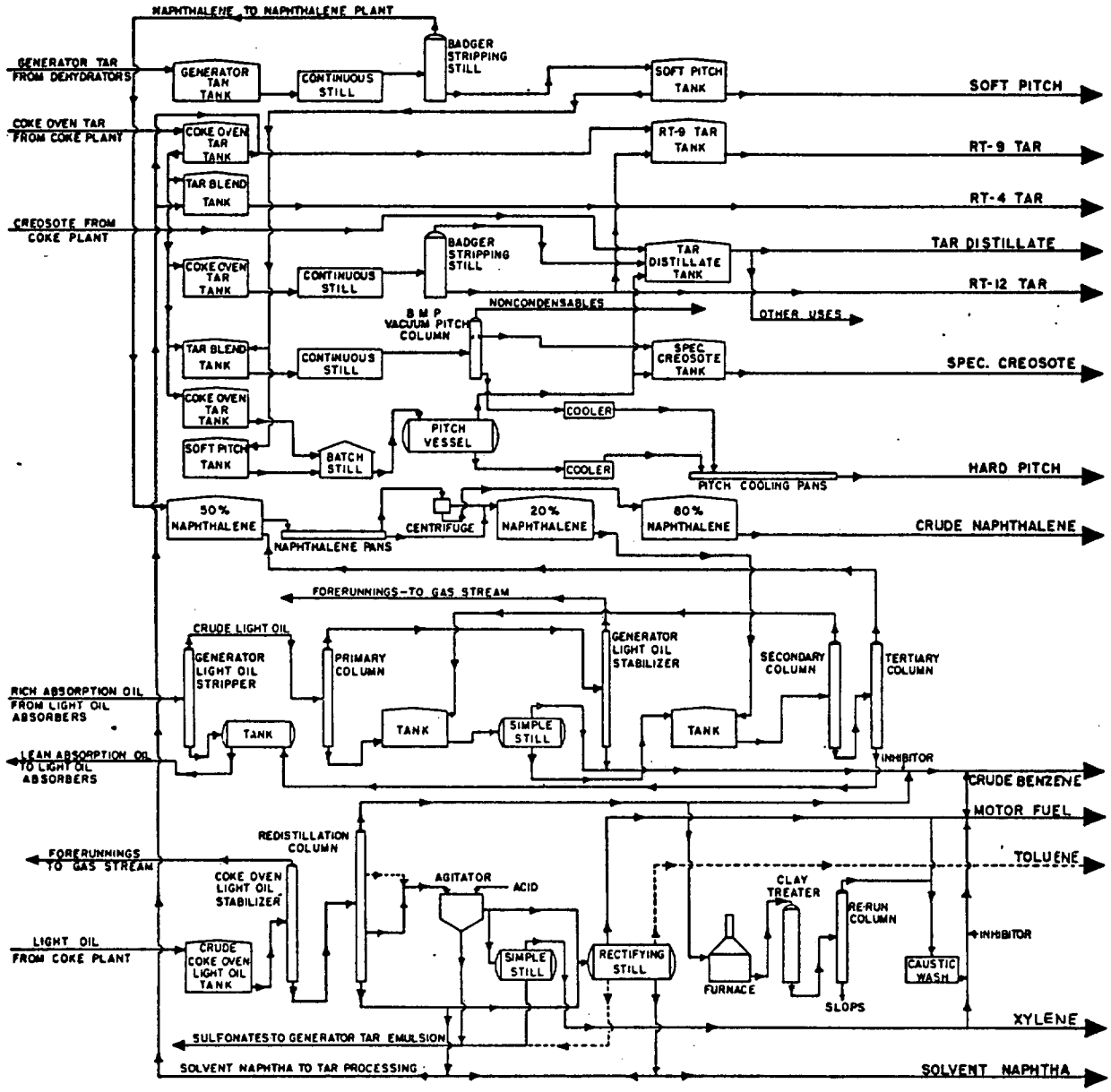


Source: Hull and Kohlhoff (1952)

Figure 2-8 Flow Sheet - By-Products Refining

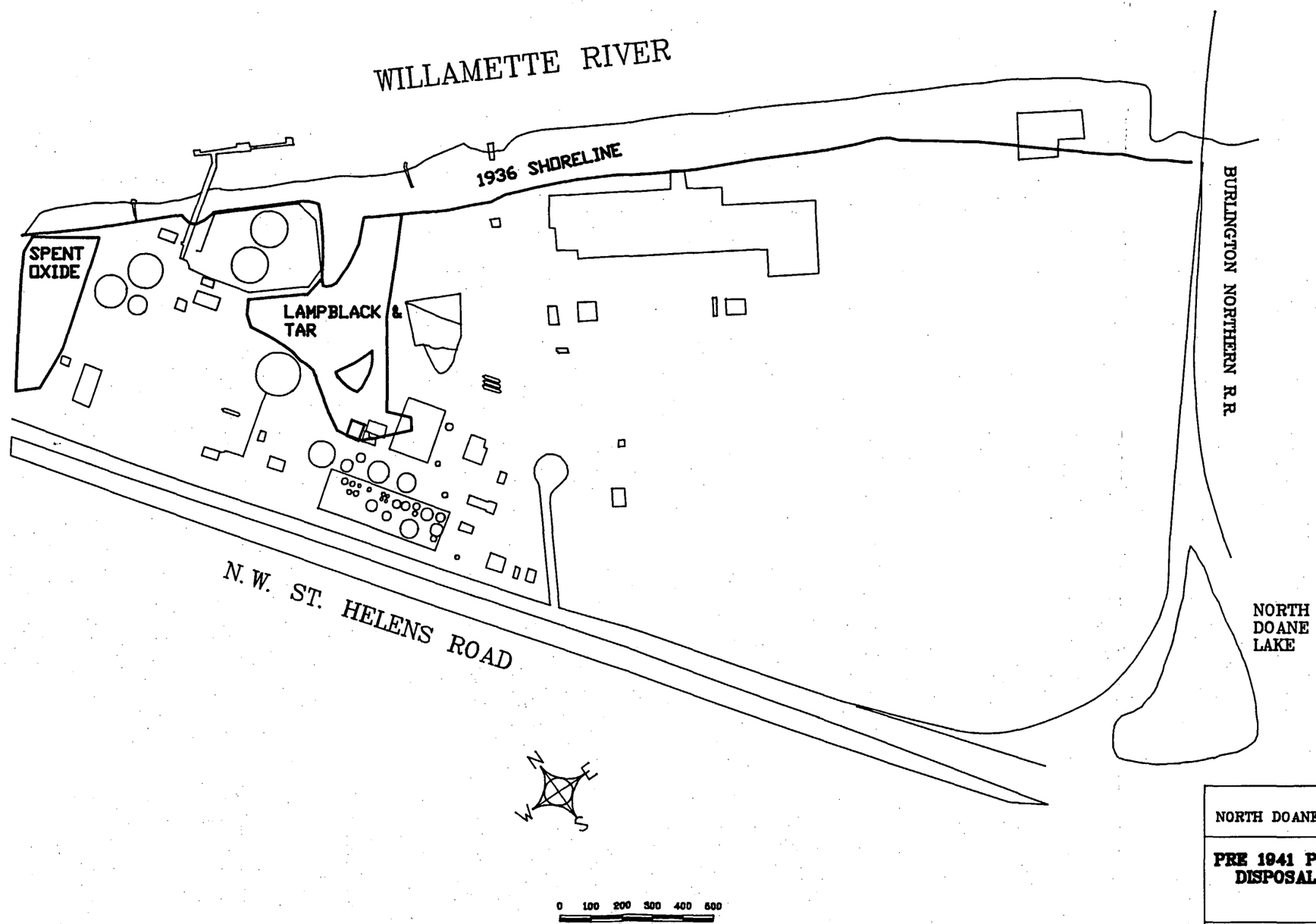
CDM
environmental engineers scientists planners, & management consultants

- 9,000,000,000 cubic ft of 570 Btu gas
- 4,900,000 gallons light oil
- 8,263,000 gallons tar
- 114,000 tons lampblack and coke
- 600,000 gallons gas oil

Due to significant changes in plant processes and site layout, waste generation is separately addressed for the pre-1941 period and post plant expansion in 1941.

Pre 1941 Period

During the initial period of operation from 1913 through 1923 only 570 Btu gas and lampblack briquettes were produced by the plant. Commencing in 1923, light oils were recovered and refined on site for use as motor fuel. In 1925 recovery and processing of tars for use primarily as road binder was initiated. The wastes generated prior to 1925 would include primarily waste water with a low level of dissolved and suspended hydrocarbons, tar and spent oxide from sulfur removal. Figure 2-9 identifies areas from the 1936 aerial photography that exhibit evidence of either tar, lampblack, or spent oxide deposition. The main area that received waste discharge was along the south side of the fuel storage tank area. This area was subsequently filled in and likely contains tar and other solids discharged from the plant. After 1925, when tar refining operations were started, the quantity of tar going to the waste discharge would only be a small percentage of the total tar generated. Most of the waste tar after 1925 would occur as suspended material and emulsions in waste water discharging from the secondary tar box. Once the discharged tar entered the active stream channel, the velocity of the water would tend to keep the material entrained and likely dispersed it in a narrow plume downstream. This tar was likely transported to an unknown distance downstream before settling.



NORTH DOANE'S LAKE SITE INVESTIGATION

PRE 1941 POTENTIAL WASTE DISPOSAL AREAS

CAMP DRESSER & McKEE INC
2300 15th STREET
SUITE 400
DENVER, COLORADO 80202

SHEET NO.
2-9

CDM 8453-110

Spent oxide from the purifiers was stockpiled on site, adjacent to the oxide purifier process units. Some of the spent oxide may have been disposed of either on or off-site.

Post 1941 Period

A major plant expansion was initiated in the late 1930s and came on-line in 1941. This expansion involved implementation of a coking plant for producing electrode grade coke, pitch, and high Btu gas for reforming in the oil gas generators. These additional process units were constructed on artificial fill potentially containing waste materials placed east of the light oil and tar tankage area. Additional pollution abatement facilities were also installed during this expansion. These abatement facilities included a series of four effluent settling basins that received water from the sewers and discharge from tar boxes and lampblack thickeners. All of the oily waste water passed through the tar separation tanks where sulfonates from the refinery were blended to aid in breaking the tar/water emulsion prior to discharge to the settling ponds. The majority of the tars that were not in aqueous solution settled out and remained in these ponds. Periodic flooding may have scoured some of the tars deposited in the ponds, but this mechanism is expected to be minor due to tar properties. Company records indicate occasional cleanout of the settling ponds was done and it is assumed that the dredged materials were disposed of in low lying areas on site. Spent oxide material continued to be stockpiled on site. Plant operations continued in this manner until the plant was shut down in 1955 with the arrival of natural gas. Removal and sale of stockpiled lampblack and possibly tar continued for several years thereafter. At the time of plant closure, a number of waste storage facilities remained on site. Figure 2-10 is a site plan near the time of plant closure. During filling of the adjacent Walker property in the late 1960s, the three smaller tar ponds along the property boundary were eliminated and the tar incorporated into the soil fill material in a low lying area paralleling the Walker property line. The Coast Guard detected an oil slick originating at the remaining tar pond in July 1970 and

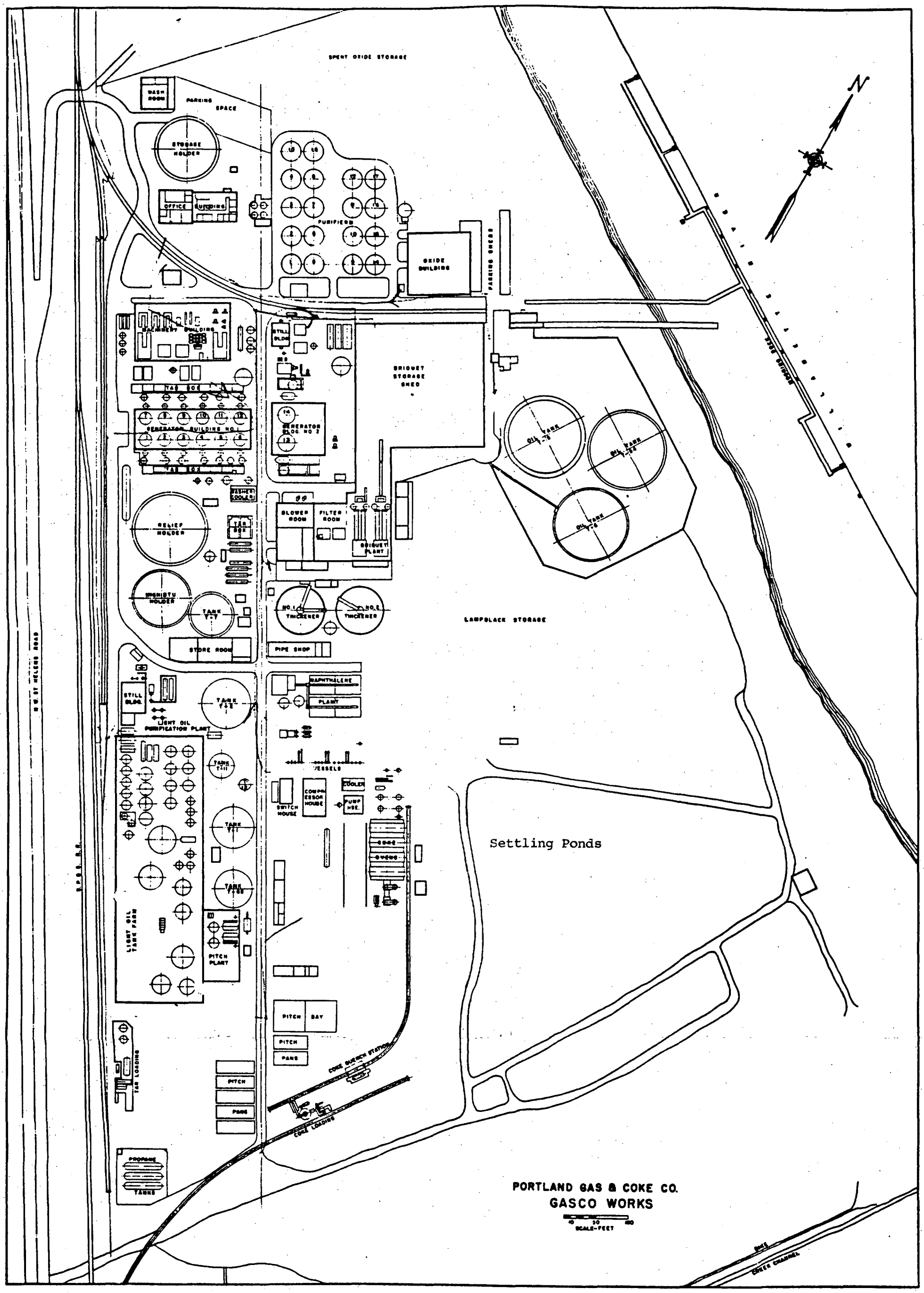


FIGURE 2-10: Plant Layout at Closure

initiated enforcement action. The remaining tar pond was filled with material from the spent oxide pile and with waste rock from the adjacent quarry in response to this action to stop oily discharge to the river. Spent oxide material that was not used for fill was disposed of at the Scappose landfill.

2.2.2 KOPPERS FACILITY

Koppers leased a portion of the GASCO facility that included the main light oil and tar tank farm area and the tar processing facility. Distillation of coal tars received via rail was conducted for several years, with the approximately 1,500 gallons per day of wastewater being land treated on site. This facility currently serves as a terminal for distribution of creosote oils for wood treating. Koppers records indicate that only creosotic and tar materials have been handled at this facility.

2.2.3 WACKER-SILTRONICS FACILITY

The Walker facility is constructed on fill material consisting of Port of Portland dredge spoils and waste rock from the adjacent quarry. Construction of the Wacker plant began in 1978, and the plant began operating in 1980. This facility manufactures silicon wafers that are used in semiconductor manufacturing. One small-volume TCE spill has been reported on the site but was remediated by soil removal. Site investigations were conducted for a proposed plant expansion that indicated the presence of tar-related hydrocarbons and other contaminants that may be related to upgradient facilities in both ground water and subsurface soils. It is unknown if this contamination is related to river dredge materials or to fill with tar contaminated soils. Excavations at the site during construction also indicated the presence of refractory brick that suggests some rubble or waste material originating on the adjacent gasification facility may have been used for fill.

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A petroleum pipeline easement crosses the plant site and historic information indicates that a pipeline leak was discovered in 1979 during plant construction that was investigated by the State. No information on possible disposal of oil contaminated soil is available. The pipeline leak was repaired.

2.2.4 ADJACENT SITES

Several facilities are present upgradient of the study area and may potentially contribute contamination to the site. These upgradient sites include the following:

- Rhone-Poulenc herbicide manufacturing facility
- Gould Superfund site containing expended auto batteries
- Penwalt chemical manufacturing facility

Contaminants identified at these sites include pesticides, herbicides, chlorinated solvents, chlorinated phenolics, and lead.

2.3 POTENTIAL CONTAMINANTS

A variety of waste products of potential concern were generated and disposed of at the gasification plant. These wastes include tars, pitch, sludges, tank bottoms, spent oxide, and lampblack. Only a small percentage of the total tar and lampblack generated by the plant ended up as waste since these were salable products. The locations of disposal sites at various times in the plant history has been reconstructed from interpretation of aerial photographs and from available company records. Figure 2-11 summarizes the location of areas that may have been impacted by waste disposal practices during the past. The areas indicated on Figure 2-11 with the higher potential for contamination are the tar ponds and adjacent low areas where this material was buried, the spent oxide pile, and the coke oven process areas that was filled in the late 1930's. A lesser degree of contamination may be associated with the former retort and

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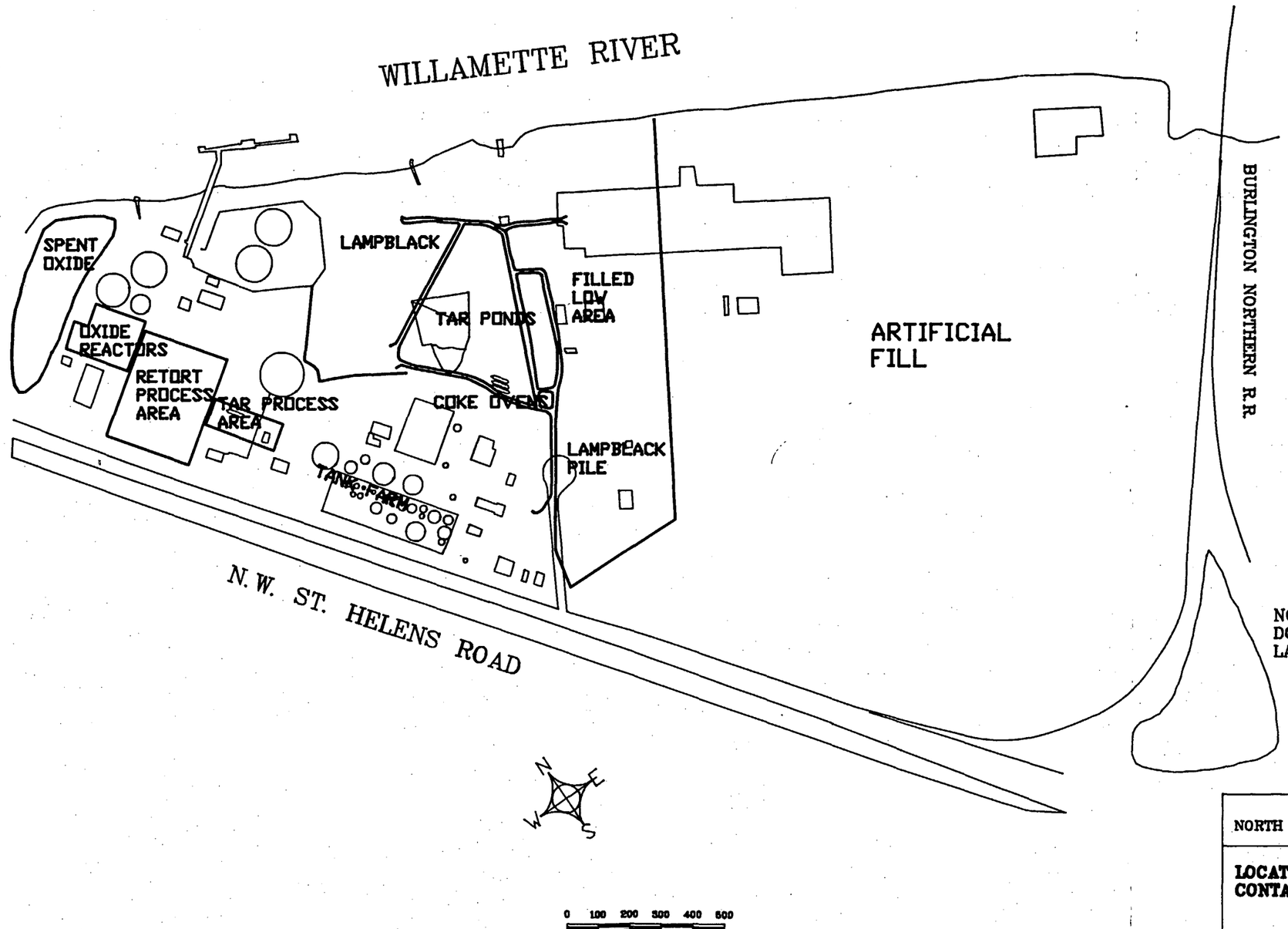

NORTH DOANE'S LAKE SITE INVESTIGATION

LOCATION OF POTENTIALLY CONTAMINATED AREAS

CAMP DRESSER & McKEE INC
2300 15th STREET
SUITE 400
DENVER, COLORADO 80202

SHEET NO.
2-11

CDM 8455-110

tar process areas and a minor amount of material may have been deposited with artificial fill under the bulk of the Wacker property. Characteristics of the various waste streams are described below.

Extensive quantities of tar are known to have been present in the four sedimentation ponds located on site from surveys that were conducted by Portland Gas and Coke in 1953, 1957, and 1971. Tar accumulated due to settling of emulsions from the process sewers, lampblack filtration effluent and from tar box discharge. The three southern ponds were estimated to contain about 700,000 gallons of dry tar. The contents of these three smaller ponds are thought to have been blended with soil material and spread over the low lying area separating the present Wacker and NWNG properties. The largest pond, located east of the Koppers lease area, was inventoried in 1971 before it was filled and found to contain about 6,000,000 gallons (30,000 cubic yds) of tar and tar/water emulsions with a total equivalent dry tar content of 3,900,000 gallons. Depth and tar thickness soundings made at that time indicated that an average of about 10 feet of tar was present in the 2½ acre pond. Four samples of the residual tar collected in 1970 and 1971 were analyzed for bulk tar and physical properties and the results are summarized on Table 2-2. The largest of the tar ponds was filled with spent oxide waste and rubble between 1971 and 1973 and the resulting solidified tar/soil mixture spread around and covered with other random fill. Early operations of the plant, prior to construction of the ponds in 1941, probably resulted in discharge of tar to the river and low lying areas on-site. Discharge of tar to the river after 1941 is expected to be negligible in quantity.

Large volumes of lampblack were stored on site during operations and after plant closure. Primary stockpiles were located between the settling ponds and the fuel bunker area and along the rail spur at the property boundary between the current day NWNG and Wacker properties. Significant quantities of suspended lampblack were likely discharged to the river and later to

TABLE 2-2

RESIDUAL TAR PROPERTIES SUMMARY

Collection Date: 1970 and 1971 (4 samples)

Bulk Tar Analysis (weight percent)

	Wet	Dry
Tar	69.2	93.5
Water	26.0	.1
Ash	1.8	2.4
Naphthalene	2.2	2.9
Sulfur	0.8	1.1

Specific Gravity	wet	1.225
	dry	1.28
Viscosity range (cp)		28,000-67,200

Fraction soluble in CCl_4 46%
Fraction soluble in Acetone 50%

Bulk Tar Distilation Data

Temperature °C	Cumulative % Vaporized	
141	0	initial boiling point
141-170	.93	
170-270	10.86	
270-300	21.34	
over 300	78.66	solids and high boiling liquids

Acetone Soluble Fraction Distilation Data

Temperature °C	Cumulative % Vaporized	
145		initial boiling point
225-236	16.3	
236-280	22.1	
280-295	40.2	
295-310	58.3	
310-365	66.6	
over 365	33.4	solids and high boiling liquids

the settling ponds since the thickeners were not 100% efficient and the lampblack water was only partially recycled. Lampblack was hauled to an unknown off-site disposal area after plant shut-down.

Spent oxide that was not capable of regeneration during plant operations was placed on a waste pile adjacent to the purifiers. At the time of plant closure about 41,000 cubic yards was in storage in the waste piles. Part of this was used for blending with tars in the main pond, while the remainder was disposed of at an off-site landfill. Oxide wastes potentially may contain cyanide compounds in some cases. The potential for presence of high cyanide concentration is anticipated to be small due to the generally low nitrogen content of oil gas, and the low feed rate for ammonia used in the low temperature, low pressure sulfur removal process. Some potential may exist for liberation of hydrogen sulfide gas from spent oxide that did not fully oxidize in the waste pile.

Other wastes such as plant demolition rubble, tank bottom sludges and other miscellaneous wastes were likely disposed of in low lying areas on site or trucked to off-site disposal areas with the oxide and waste lampblack. Geotechnical borings indicate areas of near saturation of the shallow hydraulic fill with liquid hydrocarbons in the former plant process area.

A number of analyses of ground water and surface water have been collected on the site at various times by Wacker or the DEQ. Figure 2-12 identifies the location of sampled wells and surface water sampling locations. Table 2-3 summarizes the results of these sampling efforts. Ground water sampling sites GW-1 through GW-7 are monitoring wells located in the proposed Wacker plant expansion area, while sites GW-8 through GW-12 are wells of unknown construction around the former Koppers land treatment area. Samples from these wells contained significant concentrations of a wide range of polynuclear aromatic hydrocarbons (PNA's) typical of those expected in manufactured gas plant tars (ERT & Koppers, 1984). Other constituents detected in these wells include soluble components of refined

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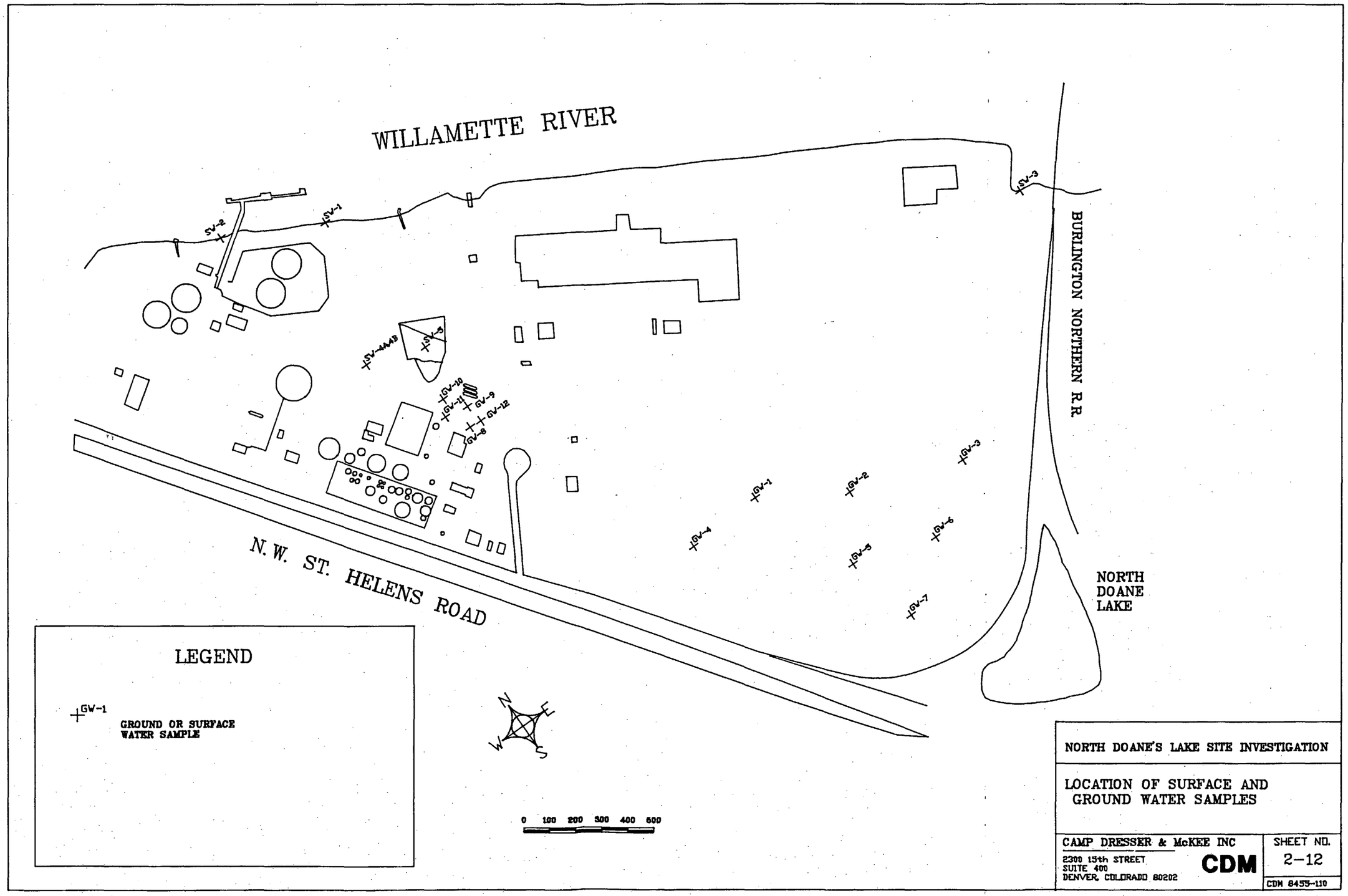
WILLAMETTE RIVER
BURLINGTON NORTHERN R.R.
NORTH DOANE LAKE
N.W. ST. HELENS ROAD
SV-1
SV-2
SV-3
SV-4A&B
SV-5
GW-1
GW-2
GW-3
GW-4
GW-5
GW-6
GW-7
GW-8
GW-9
GW-10
GW-11
GW-12
LEGEND
GW-1
GROUND OR SURFACE WATER SAMPLE
N
E
S
W
0 100 200 300 400 600
NORTH DOANE'S LAKE SITE INVESTIGATION
LOCATION OF SURFACE AND GROUND WATER SAMPLES
CAMP DRESSER & McKEE INC
2300 15th STREET
SUITE 400
DENVER, COLORADO 80202
CDM
SHEET NO.
2-12
CDM 8455-110

TABLE 2-3 SURFACE AND GROUND WATER ANALYSIS RESULTS

MAP IDENTIFICATION		GW-1	GW-2	GW-3	GW-4	GW-5	GW-6	GW-7	GW-8A	GW-8B	GW-9A	GW-9B	GW10	GW-11A	GW-11B	GW-12	SW-1	SW-2	SW-3	SW-4A	SW-4B	SW-5
SAMPLED BY		WACKER	WACKER	WACKER	WACKER	WACKER	WACKER	WACKER	DEQ	DEQ	DEQ	DEQ	DEQ	DEQ	DEQ	DEQ	DEQ	DEQ	DEQ	DEQ	DEQ	DEQ
SAMPLE DATE		8/1/85	8/1/85	8/1/85	8/1/85	8/1/85	8/1/85	8/1/85	7/19/82	12/19/84	7/19/82	---12/19/84--		7/19/82	12/19/84	7/19/82	9/25/85	9/25/85	6/27/86	9/7/84	12/19/84	7/19/82
COMPOUND NAME	UNITS																					
ACETONE	PPM	0.120	<0.001	<0.001	0.021	0.049	<0.001	<0.001	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BENZENE	PPM	1.100	0.100	0.039	<0.001	<0.001	1.200	<0.001	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.0	NA	NA
ETHYLBENZENE	PPM	0.410	<0.036	<0.001	<0.010	<0.001	0.390	0.001	NA	380	NA	NA	24	NA	51	NA	NA	NA	NA	0.3	NA	NA
METHYLENE CHLORIDE	PPM	0.088	<0.010	<0.010	<0.010	0.021	<0.010	<0.010	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.001	NA	NA
TOLUENE	PPM	<0.010	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.7	NA	NA
TOTAL XYLENES	PPM	1.200	0.032	<0.010	0.015	<0.001	0.430	<0.001	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-DIMETHYLPHENOL	PPM	0.027	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	NA	<1	NA	<1	<1	NA	<0.1	NA	<0.1	<0.1	<0.001	0.01	NA	NA
2,4-DINITROTOLUENE	PPM	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	NA	<1	NA	<1	NA	<1	<0.1	NA	<0.1	<0.1	0.023	<0.01	<0.001	NA
2-METHYLNAPHTHALENE	PPM	<0.001	0.260	0.067	0.019	0.012	0.041	<0.001	NA	NA	NA	NA	8	NA	14	NA	NA	NA	NA	0.2	0.14	NA
ACENAPHTHENE	PPM	0.270	0.940	0.086	0.350	0.054	0.200	0.019	NA	45	NA	3	<1	NA	1.2	NA	1.0	0.3	0.021	0.03	0.020	NA
ACENAPHTHYLENE	PPM	0.088	0.200	<0.010	<0.010	0.031	0.032	<0.001	NA	<1	NA	<1	<1	NA	<0.1	NA	<0.1	<0.1	<0.001	0.03	0.023	NA
ANTHRACENE	PPM	0.039	0.630	<0.010	<0.010	<0.010	<0.010	<0.001	NA	330	NA	9	47	NA	13.1	NA	1.6	0.3	<0.001	<0.01	0.006	NA
BENZO(A)ANTHRACENE	PPM	0.031	0.480	<0.010	<0.010	<0.010	<0.010	0.012	NA	<1	NA	<1	NA	NA	0.3	NA	1.6	0.4	<0.001	<0.01	0.001	NA
BENZO(A)PYRENE	PPM	0.040	0.760	<0.010	<0.010	<0.010	<0.010	0.010	NA	<1	NA	<1	<1	NA	<0.1	NA	2.4	<0.1	<0.001	<0.01	<0.001	NA
BENZO(B)FLUORANTHENE	PPM	0.024	0.400	<0.001	<0.010	<0.010	<0.010	<0.010	NA	NA	NA	NA	NA	NA	NA	NA	2.6	<0.1	<0.001	NA	NA	NA
BENZO(G,H,I)PERYLENE	PPM	0.025	0.370	<0.001	<0.010	<0.010	<0.010	<0.010	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(K)FLUORANTHENE	PPM	<0.010	0.120	<0.001	<0.001	<0.001	<0.010	<0.010	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BIS(2-ETHYLHEXYL) PHTHALATE	PPM	<0.010	0.024	<0.010	0.013	<0.010	<0.010	<0.010	NA	<1	NA	<1	<1	NA	<0.1	NA	<0.1	<0.1	0.025	<0.01	<0.001	NA
CHRYSENE	PPM	0.036	0.650	<0.010	<0.010	<0.010	<0.010	0.015	NA	<1	NA	1	2	NA	0.5	NA	2.4	0.7	<0.001	<0.01	0.001	NA
DI-N-OCTYL PHTHALATE	PPM	<0.010	<0.001	<0.010	<0.010	<0.010	<0.001	<0.010	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
DIBENZO(A,H)ANTHRACENE	PPM	<0.001	<0.010	<0.001	<0.001	<0.001	<0.001	<0.001	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
DIBENZOFURAN	PPM	0.077	0.075	<0.010	0.088	<0.010	0.014	<0.010	NA	NA	NA	NA	6	NA	8	NA	NA	NA	NA	NA	NA	NA
DIETHYL PHTHALATE	PPM	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	NA	NA	NA	<0.1	NA	<1	<1	<0.010	<0.01	NA	NA
DIMETHYL PHTHALATE	PPM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.1	NA	1.7	<0.1	NA	NA	<0.001	NA
FLUORANTHENE	PPM	0.072	1.300	<0.010	0.018	<0.010	<0.010	0.023	NA	110	NA	4	3	NA	1.8	NA	6.4	1.4	0.003	<0.01	0.007	NA
FLUORENE	PPM	0.095	0.440	0.013	0.053	0.012	0.035	<0.001	NA	65	NA	3	3	NA	1.9	NA	1.4	0.3	0.005	0.02	0.018	NA
INDENO(1,2,3-CD)PYRENE	PPM	0.020	0.300	<0.001	<0.010	<0.010	<0.010	<0.010	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NAPHTHALENE	PPM	<0.001	1.900	0.600	0.350	0.058	2.100	<0.010	NA	48	NA	3	2	NA	4.2	NA	22	0.1	0.007	2.24	<0.001	NA
PHENANTHRENE	PPM	0.180	1.630	0.013	0.028	0.021	0.056	<0.010	NA	240	NA	11	9	NA	5.5	NA	10	1.1	<0.001	0.06	0.051	NA
PHENOL	PPM	<0.010	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	NA	<1	NA	<1	<1	NA	<0.1	NA	<0.1	<0.1	<0.001	0.02	0.010	NA
PYRENE	PPM	0.081	1.430	<0.010	0.014	0.010	0.010	0.011	NA	88	NA	3	2	NA	<0.1	NA	5.1	2.0	0.007	0.01	0.007	NA
4,4-DDT	PPB	<0.4	<0.4	<0.04	<0.04	<0.04	0.28	<0.04	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ALPHA-BHC	PPB	<0.2	<0.2	<0.02	0.24	<0.02	0.06	<0.02	NA	<500	NA	<500	<500	NA	<50	NA	<50	<50	<5	NA	<5	NA
ENDRIN	PPB	<0.4	<0.4	<0.04	<0.04	0.02	<0.04	<0.04	NA	<500	NA	<500	<500	NA	<50	NA	<50	<50	NA	NA	<5	NA
PH	S.U.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.0	NA	NA	NA
PHENOLS (TOTAL)	PPM	0.072	0.013	0.006	<0.005	<0.005	0.030	<0.005	0.44	NA	24.0	NA	NA	0.12	NA	0.59	NA	NA	NA	2.4	NA	0.51
SOLIDS-SUSPENDED	PPM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	167	NA	NA	NA
ARSENIC	PPM	0.005	<0.005	0.005	<0.005	<0.005	0.010	<0.005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.005	NA	NA
BERYLLIUM	PPM	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.002	NA	NA
CADMIUM	PPM	0.003	0.002	0.001	0.003	0.002	0.002	<0.001	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.01	NA	NA
CHROMIUM	PPM	0.010	0.008	0.005	0.009	0.006	0.006	0.004	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.1	NA	NA
COPPER	PPM	0.002	0.007	0.001	0.002	0.002	0.001	0.004	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.05	NA	NA
CYANIDE	PPM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.09	NA	NA
LEAD	PPM	0.052	0.040	0.025	0.049	0.028	0.030	0.020	NA	236 ?	NA	22	23	NA	47	NA	NA	NA	NA	<0.1	<0.1	NA
MERCURY	PPM	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0005	NA	NA
NICKEL	PPM	0.010	0.007	0.005	0.011	0.006	0.006	0.008	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.06	NA	NA
ZINC	PPM	0.026	0.016	0.017	0.050	0.011	0.011	0.047	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.10	NA	NA
ARSENIC (DISSOLVED)	PPM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.007	NA	NA	NA
CHROMIUM (DISSOLVED)	PPM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.002	NA	NA	NA
COPPER (DISSOLVED)	PPM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.003	NA	NA	NA
IRON (DISSOLVED)	PPM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	48	NA	NA	NA
ARSENIC (TOTAL)	PPM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.017	NA	NA	NA
CHROMIUM (TOTAL)	PPM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.002	NA	NA	NA
COPPER (TOTAL)	PPM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.005	NA	NA	NA
CYANIDE (TOTAL)	PPM	0.180	0.058	0.130	0.930	0.130	0.040	0.033	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
IRON (TOTAL)	PPM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	220	NA	NA	NA
LEAD (TOTAL)	PPM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.02	NA	NA	NA
TOC	PPM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	9	NA	NA	NA

NOTES: NA = COMPOUND NOT ANALYZED FOR.
< = COMPOUND BELOW THE DETECTION LIMIT SPECIFIED.
PPM = PARTS PER MILLION.
PPB = PARTS PER BILLION.

petroleum products such as ethylbenzene. Other compounds detected in the Wacker wells included various chlorinated phenolic compounds, cyanide, and several pesticides including 4,4-DDT, Alpha-BHC and Endrin. Surface water samples were collected at several discharge points to the Willamette and also from excavated pits in shoreline areas of the Willamette near the gasification facility. These samples also indicate the presence of PNA's in the low part per million (ppm) to part per billion (ppb) range. The only available samples in areas potentially downgradient from the primary area affected by tar disposal are surface water samples SW-1, SW-2, and SW-4. These samples represent shallow ground water discharge and show the presence of a wide range of PNAs in the low ppm to high ppb range. The suspected carcinogen benzo(a)pyrene showed a high of 2.4 ppm at location SW-1 which was a shallow pit excavated a short distance from the bank of the Willamette near water level. Tentatively identified organic compounds in addition to those listed on Table 2-3 are provided in Appendix B.

Near surface and sub-surface soils have been sampled at various times at locations shown on Figure 2-13 and summarized on Table 2-4. Soils also provide information on the presence of tar related PNA's. In addition, a variety of chlorinated phenol compounds were detected. Soil samples at sites 5 and 6 indicate presence of the herbicide 2,4-D. The presence of chlorinated phenols and the herbicides suggest contamination is migrating into the study area via a ground water pathway from the industrial area immediately upgradient. Additional compounds that were tentatively identified in certain soil samples are shown in Appendix B.

Analysis of past activities and examination of the limited on site sampling data confirms that PNA's and aromatics related to tar are the primary constituents of concern from on-site operations and disposal practices. Presence of cyanide is also indicated that may be related to spent oxide disposal. Available data also suggests migration of contaminants from off-site is taking place. Following sections address characteristics, toxicity and mobility of these constituents.

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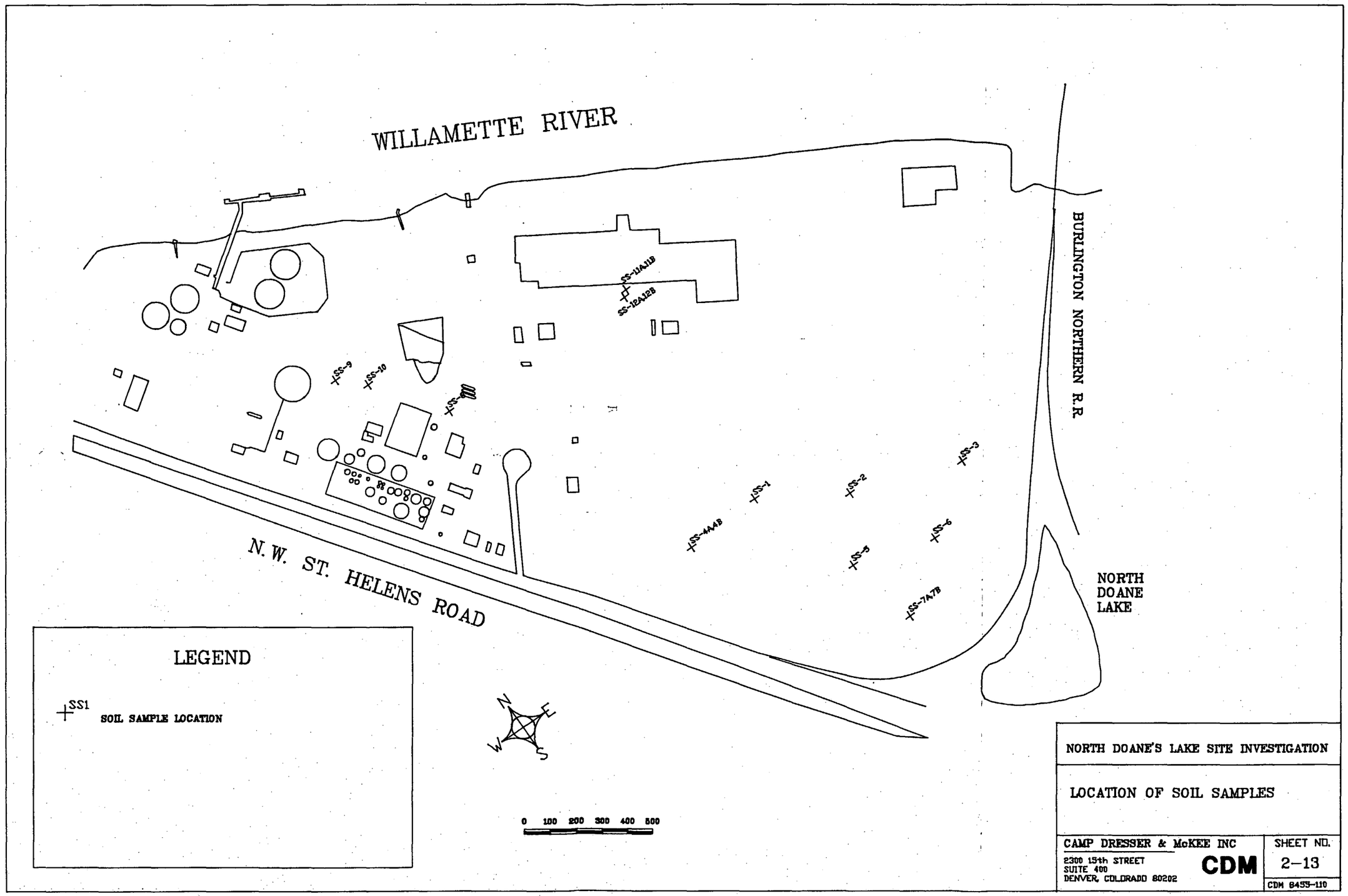
TABLE 2-4 SOIL ANALYSIS RESULTS

MAP IDENTIFICATION		SS-1	SS-2	SS-3	SS-4A	SS-4B	SS-5	SS-6	SS-7A	SS-7B	SS-8	SS-9	SS-10	SS-11A	SS-11B	SS-12A	SS-12B
SAMPLED BY		WACKER	WACKER	WACKER	WACKER	WACKER	WACKER	WACKER	WACKER	WACKER	DEQ	DEQ	DEQ	WACKER	WACKER	WACKER	WACKER
SAMPLE DATE		4/30/85	4/30/85	4/30/85	4/30/85	4/30/85	4/30/85	4/30/85	4/30/85	4/30/85	9/7/84	9/7/84	12/19/84	4/3/85	4/3/85	4/3/85	4/3/85
COMPOUND NAME	UNITS																
1,1,1-TRICHLOROETHANE	PPM	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-TETRACHLOROETHANE	PPM	2.2	11	<0.05	<0.05	<0.05	0.14	<0.05	<0.05	<0.05	NA	NA	NA	NA	NA	NA	NA
CHLOROBENZENE	PPM	0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	NA	NA	NA	NA	NA	NA	NA
ETHYLBENZENE	PPM	17	5.4	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.05	NA	NA	10	NA	NA	NA	NA
TOLUENE	PPM	1.2	20	0.11	<0.1	<0.1	0.20	<0.1	<0.1	<0.1	NA	NA	NA	NA	NA	NA	NA
TRICHLOROETHENE	PPM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1.0	<1.0	<1.0	<1.0
2,4,5-TRICHLOROPHENOL	PPM	ND	1.9	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA
2,4,6-TRICHLOROPHENOL	PPM	ND	ND	ND	ND	ND	0.22	ND	ND	ND	<1	<10	<10	NA	NA	NA	NA
2,4-DICHLOROPHENOL	PPM	ND	2.7	ND	ND	ND	0.24	ND	ND	ND	<1	<10	<10	NA	NA	NA	NA
2,4-DIMETHYLPHENOL	PPM	ND	3.1	ND	ND	ND	0.22	0.17	ND	ND	<1	<10	<10	NA	NA	NA	NA
2,4-DINITROPHENOL	PPM	ND	ND	ND	ND	ND	0.81	ND	ND	ND	<1	<10	<10	NA	NA	NA	NA
2-CHLOROPHENOL	PPM	ND	7.8	0.08	0.26	ND	ND	0.13	ND	0.14	<1	<10	<10	NA	NA	NA	NA
2-NITROPHENOL	PPM	ND	0.20	ND	ND	ND	ND	ND	ND	ND	<1	<10	<10	NA	NA	NA	NA
ACENAPHTHENE	PPM	8.0	560	<1	<1	<1	28	<1	<1	<1	150	15	90	NA	NA	NA	NA
ACENAPHTHYLENE	PPM	5.6	230	<1	<1	<1	24	<1	<1	<1	<10	15	80	NA	NA	NA	NA
ANTHRACENE	PPM	NA	NA	NA	NA	NA	NA	NA	NA	NA	1350	<10	70	NA	NA	NA	NA
BENZO(A)ANTHRACENE	PPM	NA	NA	NA	NA	NA	NA	NA	NA	NA	30	<10	20	NA	NA	NA	NA
BENZO(A)PYRENE	PPM	19	120	<1	<1	<1	100	<1	<1	<1	<10	<10	90	NA	NA	NA	NA
BENZO(G,H,I)PERYLENE	PPM	<1	360	<1	<1	<1	25	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA
CHRYSENE	PPM	12	92	<1	<1	<1	36	<1	1.7	<1	30	10	40	NA	NA	NA	NA
FLUORANTHENE	PPM	16	530	<1	<1	<1	50	<1	1.1	<1	140	30	140	NA	NA	NA	NA
FLUORENE	PPM	5.0	290	<1	<1	<1	20	<1	<1	<1	280	15	120	NA	NA	NA	NA
NAPHTHALENE	PPM	6.7	360	<1	<1	<1	230	<1	<1	<1	140	920	1750	NA	NA	NA	NA
PHENANTHRENE	PPM	NA	NA	NA	NA	NA	NA	NA	NA	NA	840	60	560	NA	NA	NA	NA
PHENOL	PPM	0.35	3.1	0.20	0.30	0.17	0.07	0.05	0.06	0.08	<1	<10	<10	NA	NA	NA	NA
PYRENE	PPM	18	550	<1	<1	<1	57	<1	1.2	<1	120	35	160	NA	NA	NA	NA
GREASE, OILS, AND FATS	%	0.340	0.150	0.059	0.914	0.030	0.190	0.054	0.065	0.059	NA	NA	NA	NA	NA	NA	NA
PHENOLS (TOTAL)	PPM	NA	NA	NA	NA	NA	NA	NA	NA	NA	8	2	NA	NA	NA	NA	NA
ARSENIC	PPM	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	4.2	4.6	NA	NA	NA	NA	NA
BARIUM	PPM	0.05	0.11	0.05	0.09	<0.05	0.05	0.11	0.08	0.15	NA	NA	NA	NA	NA	NA	NA
BERYLLIUM	PPM	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.2	0.3	NA	NA	NA	NA	NA
CHROMIUM	PPM	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	19	12.4	NA	NA	NA	NA	NA
COPPER	PPM	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	17	<0.05	NA	NA	NA	NA	NA
CYANIDE	PPM	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	19.4	5	NA	NA	NA	NA	NA
LEAD	PPM	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	4.4	16	23	NA	NA	NA	NA
MERCURY	PPM	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.23	0.06	NA	NA	NA	NA	NA
NICKEL	PPM	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	21	26	NA	NA	NA	NA	NA
ZINC	PPM	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	59	62	NA	NA	NA	NA	NA
XYLENE	PPM	146	116	<1.0	<1.0	<1.0	1.5	<1.0	2.8	1.2	NA	NA	NA	NA	NA	NA	NA
PHENANTHRINE+ANTHRECENE	PPM	32	1400	3	<1	<1	150	<1	1.6	<1	NA	NA	NA	NA	NA	NA	NA
BENZO(B)+BENZO(K) FLUORANTHENE	PPM	8	120	<1	<1	<1	200	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA
INDENO(123-CD)PYRENE+DIBENZO - (AB)ANTHRACENE	PPM	<1	270	<1	<1	<1	7	<1	<1	<1	NA	NA	NA	NA	NA	NA	NA
O-CRESOL	PPM	0.04	3.4	ND	0.02	ND	0.19	0.05	ND	ND	NA	NA	NA	NA	NA	NA	NA
M- and P-CRESOL	PPM	0.006	ND	ND	0.08	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA
3&4-CHLOROPHENOL	PPM	0.44	17.5	0.06	ND	ND	1.7	0.32	ND	ND	NA	NA	NA	NA	NA	NA	NA
2,3,4,5-TETRACHLOROPHENOL	PPM	4.9	256	ND	0.40	ND	0.23	4.7	0.06	0.25	NA	NA	NA	NA	NA	NA	NA
2,3,4,6-TETRACHLOROPHENOL	PPM	0.24	ND	ND	ND	ND	ND	ND	1.0	ND	<1	<10	<10	NA	NA	NA	NA
2,3,5,6-TETRACHLOROPHENOL	PPM	ND	4.0	ND	0.58	0.11	0.33	0.55	ND	0.46	NA	NA	NA	NA	NA	NA	NA
2,4-D	PPM	<10	<10	<10	<10	<10	10.0	160.0	<10	<10	NA	NA	NA	NA	NA	NA	NA
PENTACHLOROPHENOL	PPM	<1	<1	<1	<1	0.31	6.9	5.1	<1	<1	<1	<10	<10	NA	NA	NA	NA

NOTES: NA = COMPOUND NOT ANALYZED FOR.
ND = COMPOUND NOT DETECTED; INSTRUMENT DETECTION LIMIT NOT REPORTED.
< = COMPOUND BELOW THE DETECTION LIMIT SPECIFIED.
PPM = PARTS PER MILLION.


WILLAMETTE RIVER
BURLINGTON NORTHERN R.R.
N.W. ST. HELENS ROAD
NORTH DOANE LAKE
SS-11A/11B
SS-12A/12B
SS-9
SS-10
SS-8
SS-4A/4B
SS-1
SS-2
SS-3
SS-5
SS-6
SS-7A/7B
LEGEND
SS1
SOIL SAMPLE LOCATION
N
E
S
W
0 100 200 300 400 500
NORTH DOANE'S LAKE SITE INVESTIGATION
LOCATION OF SOIL SAMPLES
CAMP DRESSER & McKEE INC
2300 15th STREET
SUITE 400
DENVER, COLORADO 80202
CDM
SHEET NO.
2-13
CDM 8453-110

2.4 CONTAMINANT CHARACTERISTICS

Polynuclear aromatic hydrocarbons and aromatics related to residual tars comprise the major chemical group of concern found in the vicinity of the North Doane's Lake site. This section describes various physiochemical and biological aspects of PNA's (e.g., volatility, solubility, bioavailability) related to their transport and fate and discusses their toxicity. It is important to note that PNA's are a diverse class of compounds consisting of substituted and unsubstituted polycyclic and heterocyclic aromatic rings which vary widely in their physicochemical properties and toxicity. As a group, they are widely distributed in the environment, having been detected in low concentrations in animal and plant tissue, sediment, soil, air, surface water, treated drinking water, industrial effluents, and ground water. Particularly high concentrations of PNA's are associated with coke production, catalytic cracking of petroleum, carbon black, coal tar pitch, asphalt, and any high-temperature pyrolytic processes involving compounds of carbon and hydrogen.

Physicochemical Characteristics

Table 2-5 lists major PNA's, their physicochemical properties and their biodegradability. Many of these PNA's, including benzene, have been found on the North Doane's Lake site. Most of the compounds have low vapor pressures (vapor pressure is an indicator of volatility). The compound benzene is an exception, with a vapor pressure of 75 mm Hg at 20°C (i.e., it is highly volatile). Solubility of the PNA compounds in water is typically very low. Their densities range from slightly less to slightly more than that of water. The tendency of most PNA compounds to adsorb onto soil particles is extremely high, as indicated by high values for their log octanol/water partition coefficients. Benzene sorbs somewhat less readily than the rest of the compounds.

PNAs are all potentially biodegradable compounds (Tabak et al., 1981). Two primary mechanisms act to remove PAHs from the environment: (1) microbial

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TABLE 2-5

PHYSICOCHEMICAL DESCRIPTION OF POLYNUCLEAR AROMATIC HYDROCARBONS

Substance	Ambient Physical State	Mol. Wt.	Melt. Pt. (°C)	Boil. Pt. (°C) (at 1 atm)	Vapor Pressure (@20°C, mm Hg)	Solubility (mg/l @20°C)	Density (water=1)	Log Octanol/ Water Partition Coefficent	Biodegradability[a]
Acenaphthene	white crystalline solid	154.0	95	279	10 @ 131°C	3.93	1.02	4.33	Rapid
Acenaphthylene	yellow plates	152.2	92-93	265-275	10^{-3}-10^{-2}	3.9	0.898	4.07	Rapid
Anthracene	pale green solid, aromatic odor	178.2	217	340	$2x10^{-4}$	0.073	1.28	4.45	Moderate
Benzene	colorless liquid, aromatic odor	78.0	6	80	75	1,800.0	0.899	2.13	Rapid
Benzo(a)anthracene	colorless leaflets or plates	228.3	162	435(sublimes)	$5x10^{-9}$	0.014	NA	5.61	Moderate
Benzo(b)fluoranthene	colorless needles	252.3	168	NA	10^{-11}-10^{-6}	insoluble	NA	6.57	Moderate
Benzo(k)fluoranthene	-	252.3	217	480	10^{-10}	0.0008	NA	6.84	Slight
Benzo(g,h,i)perylene	-	276.3	222	NA	10^{-10}	0.00026	NA	7.23	Slight
Benzo(a)pyrene	yellowish crystals, faint aroma	252.3	179	<360	$5x10^{-9}$	0.0038	NA	6.04	Slight
Chrysene (1,2-Benzophenanthrene)	crystals	228.3	254	448	10^{-11}-10^{-6}	0.002	1.274	5.61	Slight
Dibenz(a,h)anthracene	colorless, crystalline solid	278.3	(sublimes) 266	NA	10^{-10}	0.0005	1.282	5.97	Slight
Dibenzofuran	crystalline solid	168.2	87	287	NA	slightly soluble	1.088	NA	Rapid
Fluoranthene	colorless solid, needles	202.2	120	367	0.01	0.26	1.252	5.33	Moderate
Fluorene	white flakes	166.2	116-117	293-295	10^{-3}-10^{-2}	1.69-1.98	1.203	4.18	Moderate
Indeno(1,2,3-cd)pyrene	yellow plates or needles/greenish yellow solution	276.3	162-164	NA	10^{-10}	0.0002	NA	7.66	Slight
2-Methylnaphthalene	solid	142.0	34	241	NA	insoluble	1.006	NA	Moderate
4-Methylphenol	colorless solid, or liquid, sweet tarry odor	108.0	12-35	195-230	0.11-0.25	19,000 - 25,000	1.03-1.05	NA	NA
Naphthalene	white crystalline, volatile flakes strong coal tar odor	128.0	74-80	218	0.05	30.0	1.145	3.37	Rapid
Phenanthrene	colorless solid, faint aroma	178.2	101	340	$6.8x10^{-4}$	1.29	1.063	4.46	Rapid
Pyrene	bright yellow solid, odorless	202.3	151	<360	$7x10^{-7}$	0.135	1.271	5.32	Moderate

[a]Biodegradability classes indicate degree of degradation for solutions with concentrations less than 300 ug/l, as follows:

Rapid : half-life of a few hours to several days
Moderate: half-life of a few days to a few weeks
Slight : half-life of several weeks to several months

For solutions with concentrations greater than 300 ug/l, biodegradation may proceed at a much slower rate, or not at all.
NA - Not Available.

degradation and (2) photochemical oxidation (Suess, 1976; Lee et al., 1978). Compounds which are easily and rapidly biodegraded (i.e., in a few hours or days) include acenaphthene, acenaphthylene, benzene, dibenzofuran, naphthalene, and phenanthrene. Compounds which are persistent, requiring large amounts of time (i.e., weeks or months) or specialized conditions for biodegradation include benzo(k)fluoranthene, benzo(g,h,i)perylene, benzo(a)pyrene, chrysene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene. The ease of biodegradation generally decreases with increasing molecular weight of the compounds. Products of the biodegradation process (metabolites) generally include hydroxylated derivatives of the PNA's. Benzene degrades to catechols (USEPA, 1979). Biodegradability also depends strongly on concentration and nutrient availability.

Photochemical oxidation, particularly of the higher molecular weight compounds, is an important process in removing PAHs from the atmospheric and shallow surface water environments. In the atmosphere, photooxidation acts rapidly to degrade PAH compounds (Suess, 1976). During photolysis, singlet oxygen is the oxidant and the reaction products are quinones. The short wavelengths required for photooxidation can penetrate into the top few meters of water bodies. This degradation process will only act on constituents which have been transported to a water surface or the reasonably transparent water layer directly underlying a water surface. PNA compounds which are especially prone to degradation by photooxidation include anthracene, benzo(a) anthracene, benzo(a)pyrene, and fluoranthene.

Migration of PAHs from the site through the soil, atmosphere, ground water and surface water runoff can occur but is dependent upon the physiochemical properties of the particular PAHs involved. In each of these environments, reactions may also occur to degrade the PNA's into non-hazardous compounds. These degradation processes and the rates at which they occur will determine the eventual impact of the PNA's on their surroundings. Section 2.5 discusses potential migration pathways and potential receptors at the North Doanes Lake site.

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Toxicity

Many PAH compounds are known to be carcinogenic to animals and probably to man (USEPA, 1980). The primary routes of exposure are through ingestion of contaminated water and contaminated aquatic organisms. Secondary routes of exposure include inhalation and absorption through skin tissues. High concentrations of PNA's can have immediate toxic effects ranging from headaches, photosensitivity, and dizziness to central nervous system effects, blindness, cerebral edema, and respiratory failure (Stutz et al., 1982; Cincinnati University and Ohio Dept. of Health, 1978).

Aquatic organisms exhibit a wide range of sensitivity to PNA compounds. Acute toxicity to aquatic life may occur at concentrations as low as 300 ug/l for salt water species (USEPA, 1980), although certain bacteria will actively metabolize PNA'a at concentrations of 10 mg/l or more (Tabak et al., 1981). Aquatic organisms will biaccumulate most PNA's, with an average bioconcentration potential of 30-fold. Individual species may bioconcentrate certain PNA compounds more than 100,000 times (USEPA, 1980). Extensive bioaccumulation in animals is not likely to occur, due to natural excretion as well as metabolism of PNA compounds. Some compounds, like benzo(a)pyrene, are able to stimulate their own metabolism in test populations (USEPA, 1980).

Benzene is a known human carcinogen and a number of the detected or expected PNA's present on site are documented to have produced tumors in experimental animals. Benzo(a)pyrene is a potent initiator of skin tumors. The carcinogenic compounds will thus be of primary concern during any endangerment assessment. Current information on the carcinogenic potency of PNA's indicate that the 10^{-5} cancer risk level for a daily dermal or oral exposure is between 4 and 100 nano-grams for a 70 Kg person. Standards currently being evaluated by EPA for the Safe Drinking Water Act for total PAHs in drinking water are 2.8 ng/l (parts per trillion). Limits for benzene under these regulations are proposed at 5 ppb.

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2.5 MIGRATION PATHWAYS

Potential migration pathways which may cause exposure to human populations or the environment must be considered in evaluating the potential hazards at a site such as North Doane's Lake. Contaminants present on site likely occur as separate phase bodies of tar and liquid hydrocarbons in the subsurface, as mixtures of soil and tar, in solution in ground water, and adsorbed on lampblack. Exposure pathways of potential concern include surface and ground water, direct contact with or ingestion of contaminated soil or sediment, aquatic food chain exposure, and airborn transport of suspended matter. Each of these pathways is discussed in following paragraphs.

The contaminants of concern can be transported in surface runoff either as dissolved or suspended material. As previously discussed, the lower molecular weight compounds such as acenaphthene, acenaphthylene, fluorene, phenanthrene and naphthalene have solubilities in excess of 1 mg/l and thus may be transported in solution. Benzene and related light aromatics are highly soluble. The higher molecular weight PNA's tend to be adsorbed onto particulate matter and thus are more likely to be transported as suspended material. Once deposited, the physical properties of tar and tar-soil mixtures tend to be cohesive and agglomerate to a size not generally suitable to entrainment in moving water. Lampblack, which would contain smaller concentration of the PNAs is more amenable to transport as suspended material where it is exposed at the surface, however, PNAs are tightly bound and have a low availability in this matrix. During the early operating life of the gasification facility, tars released in the waste water as emulsions may have been transported great distances downstream.

The reach of the Willamette River adjacent to and down stream of the site is an actively dredged shipping channel. The adjacent dock facilities still remaining on site and the U.S. Corps of Engineer facility immediately down stream are also actively dredged. These activities are likely to have

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disturbed and mobilized tar contaminated sediments that may have been present from tar discharged between 1913 and 1941.

Transport of the PNA's in the subsurface environment may be as dissolved constituents in ground water that comes in contact with the tar, or as separate phase flow where the tar moves as an immiscible phase independent of ground water flow. The mobility of most of the PNAs in solution, particularly the high molecular weight compounds, is low due to their low solubility and the tendency to be adsorbed on abundant organic material present in sediments of this type. Separate phase immiscible flow may take place either as a fluid plug moving downward to a permeability boundary, if higher in density than water, or moving along the top of the water table if sufficient light oils are present. The bulk of the tar waste on site was a high density, viscoelastic material that is expected to be nearly immobile. It is expected that at least some lighter hydrocarbons may be present based on notations in old geotechnical exploration boring logs. Constituents moving with ambient ground water flow will discharge within a short distance downgradient of the site to the Willamette River. The higher density immiscible fluids, if mobile, will tend to move only a short vertical distance due to the interbedded nature of the materials on site. This interbedding of contrasting permeability material will result is a greater degree of movement laterally with a more limited vertical extent of movement. Due to probable discharge of subsurface flow from the basalt to the alluvium, movement of dissolved contaminants from the alluvial ground water to the regional basalt aquifer is highly unlikely. Even in the unlikely case of an immiscible hydrocarbon migrating downward to the basalt/alluvium contact, the structural orientation of the fractured upper flow surfaces on the individual basalt units dip toward the river, limiting the potential for migration of the dense fluids into the basalt zones. Since gravitational forces drive the dense fluid, the plug will tend to migrate to the lowest elevation along a permeability contrast such as the basalt contact.

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Transport of contaminants via air, either as a gas or associated with suspended particulate matter is expected to be negligible. Several of the lower molecular weight compounds, especially benzene, are subject to volatilization when exposed to the atmosphere. Due to the long period of time that the site has been relatively undisturbed, it is expected that the near surface source of volatiles, if originally present, has likely been depleted. Suspension of particulate matter with adsorbed PNA's is possible if sources are exposed at the surface during dry periods, but for the same reasons discussed relating to surface water, this exposure pathway is expected to be minor due to the physical nature of the tar.

An additional potential exposure pathway is via dermal contact or ingestion of contaminated material exposed at land surface. Consumption of bottom feeding fish from the vicinity of the site could also serve as a pathway, if tars from past practices are still present in river sediments near the water/sediment interface in significant concentration. As mentioned previously, due to dredging activities and limited tar discharge during the last 15 years of plant operations, any tar-contaminated sediments that may have been present are likely to have been disturbed and mobilized.

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FINAL DRAFT

3.0 SITE CHARACTERIZATION PLAN

The objective of this site characterization plan is to confirm the presence of expected contaminants and qualitatively assess their areal and vertical extent. Site data are also required in order to complete the analysis of transport pathways and to identify sensitive receptors for endangerment assessments. These analyses are focused on waste products associated with the former Portland Gas and Coke manufactured gas facility. The southeast portion of the study area has potentially been impacted by contamination known to exist upgradient in the Northwest Portland industrial area, however, since this contamination is not related to on-site activities, no additional investigations are proposed. This characterization is designed to determine if a significant risk to human populations or the environment is potentially present, rather than collecting data to support detailed remedial design. Sufficient data collection is planned for support of initial screening of remedial alternatives, including the no action alternative if necessary. In order to meet these objectives, investigation and sampling of surface and sub-surface soils, ground water, surface water and river sediments are proposed. Specific details of field and laboratory investigations will be addressed in a Sampling Plan and a Quality Assurance Plan to be prepared as the initial step in implementation of this site characterization plan. These plans will identify potentially relevant standards that may affect detection limits required to define contaminated areas.

change

change

3.1 ANALYSIS OF SAMPLES

Screening methods for PNA compounds using an on-site field laboratory will be implemented to allow sample results to guide the field sampling program. This will allow more accurate and cost-effective delineation of contamination on site. The primary contaminants of concern at the site are PNAs, thus a selective total PNA procedure will be used for field screening analysis. PNAs will be extracted from soil samples using acetonitrile and

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analyzed for total PNA using a UV fluorescence spectrophotometer, yielding an estimate of total PNAs that is comparable to summing individual PNAs reported in high performance liquid chromatography (HPLC) or gas chromatographic (GC) methods. Detection limits for a soil matrix are about 10 mg/kg total PNAs for this screening method. Since results will be available in the field approximately an hour after sample collection, real-time decisions will be made to optimize sample network design and minimize redundant samples. Approximately 10 percent of the samples will be split and analyzed in a certified laboratory for confirmation of screening results. The on-site screening will also be used to select representative samples for full priority pollutant analyses. This screening type approach with laboratory confirmation of a small sub-set of samples is consistent with the approach used by EPA at many Superfund sites.

Laboratory confirmation analysis of PNAs will be conducted using either GC (method 8100) or HPLC (method 8310) techniques. The PNAs will be extracted from the soil matrix using an acetonitrile/methylene chloride mixture or another appropriate solvent. These methods are adequate for differentiating "clean" from "contaminated" samples. In highly contaminated samples, lower concentration PNA's may be overestimated by up to two orders of magnitude. Several highly contaminated samples will be analyzed using GS/MS (Gas Chromatograph/Mass Spectrometer) methods to quantify these PNAs. Clean-up techniques will be utilized on oily samples to minimize analytical interferences. Analysis of priority pollutants including volatiles, semi-volatiles and pesticides will be conducted on a sub-set of the surface and sub-surface soil samples, sediments and waters, These analyses will be conducted in accordance with SW-846 (USEPA, 1982) for soil and sediment samples and with 40 CFR Part 136 published in the Federal Register on October 26, 1984 for water samples. Laboratories will be selected from those certified under the EPA contract laboratory program.

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3.2 SURFACE SOIL CHARACTERIZATION

Since the the primary contaminants of concern at the site have a significant potential risk associated with dermal contact and respiration, a surface and near surface soil sampling program will be conducted to define those areas that may have contaminated material exposed at the surface. The sampling locations are designed to characterize variability in each area of the site, with a higher sampling density in those area with the greatest variability and the highest probability of near surface contamination. Visual evidence of gross tar contamination will be noted and the sample locations modified in the field to allow delineation of contaminated area boundaries. Extensive, multiple analyses of obviously contaminated areas will not be conducted. Actual field locations for sampling will be modified to select locations exhibiting visual evidence of contamination such as stains or vegetation stress close to the pre-selected sites. As discussed in section 3.1, rapid field screening techniques will be used to analyze composite soil samples collected in the upper one foot of soil at each site. All samples collected will be screened for total PNA compounds. Ten percent of these samples will be analyzed for individual PNA compounds at a certified laboratory using HPLC or GC methods. Three of the samples with indicated presence of PNA from the field screening will be submitted to a certified laboratory for analysis of the full spectrum of priority pollutants including volatiles, semi-volatiles, pesticides and metals. In addition, areas potentially affected by spent oxide disposal will be analyzed for pH, cyanide and total iron. A maximum of about 52 near surface soil samples are anticipated at the approximate locations shown on Figure 3-14. The location of three existing shallow soil sampling sites are shown for reference.

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change

72 change

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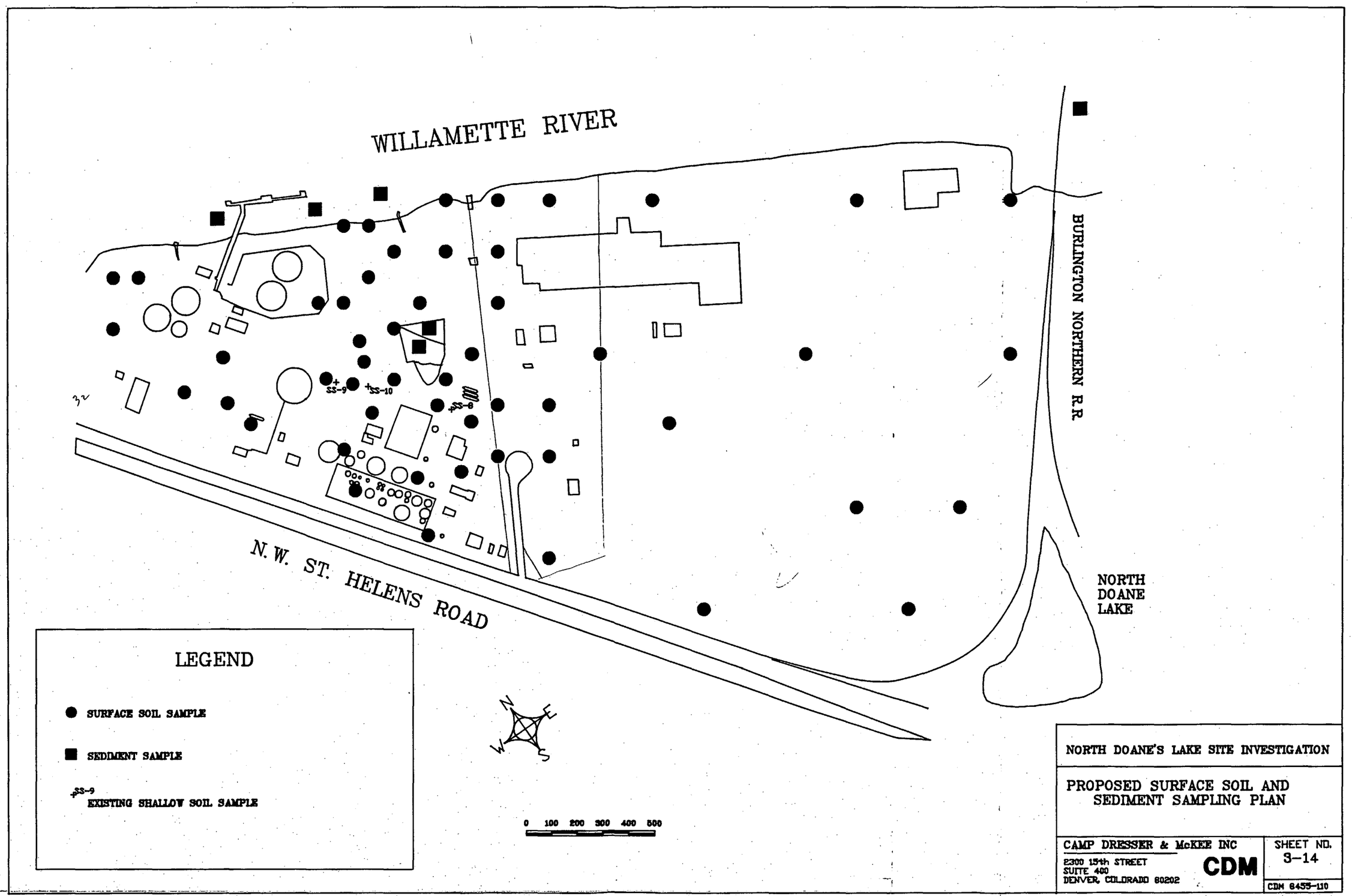
WILLAMETTE RIVER
BURLINGTON NORTHERN R.R.
NORTH DOANE LAKE
N.W. ST. HELENS ROAD
SS-9
SS-10
SS-8
LEGEND
SURFACE SOIL SAMPLE
SEDIMENT SAMPLE
SS-9
EXISTING SHALLOW SOIL SAMPLE
N
E
S
W
0 100 200 300 400 500
NORTH DOANE'S LAKE SITE INVESTIGATION
PROPOSED SURFACE SOIL AND SEDIMENT SAMPLING PLAN
CAMP DRESSER & McKEE INC
2300 15th STREET
SUITE 400
DENVER, COLORADO 80202
CDM
SHEET NO.
3-14
CDM 8455-110

3.3 SUBSURFACE SOIL CHARACTERIZATION

A subsurface drilling and sampling program is proposed to allow collection of samples in areas potentially affected by waste disposal activities. It known that large quantities of tar have been blended with soil and buried on site within the triangular area shown on Figure 2-11 defined by the current fuel storage area, the Wacker process building and the Kopplers lease area. A limited amount of drilling is planned at the site of the old tar ponds to confirm the current physical state of the materials and to allow collection of tar samples. Other borings are planned outside the boundaries of the area to define areal extent, allow well installation and assess the degree of movement of material that has taken place. Exploration of fill and waste pile areas is planned to determine if they contain contaminated materials. change

Subsurface soil sampling will be conducted by drilling with either cable tool or hollow stem auger techniques with drive samplers used for actual sample collection. Due to the complexity of the site geology and the degree of control on migration potential by changes in lithology, near-continuous drive samples will be collected as the boring is advanced. Care will be taken to avoid inducement of movement of contamination vertically by use of double casing through contaminated zones. Most borings will be advanced to a depth 10 feet below artificial fill in a consistent silt and clayey silt present through most of the site. On-site laboratory screening results will be used to aid decision making in the field on drilling depth. If PNAs are still detected at the initial target depth then the boring will be continued to a greater depth to define vertical extent of contamination. Other borings drilled for purposes of installing wells in the intermediate and deep alluvial aquifer zones will also be sampled. change

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The current proposed program does not address investigation of the deep alluvial aquifer zone due to the low probability of contamination reaching this zone. If the intermediate alluvial aquifer shows evidence of significant contamination investigation of the deep alluvial zone will be undertaken to determine if it has been affected by the on-site operations. added

Representative samples will be composited for each stratigraphic unit encountered or at five foot intervals in consistent strata for analysis of total PNA's using the field laboratory screening techniques. The presence of volatiles such as benzene will be qualitatively assessed by use of a UV photoionization detector. Certified laboratory confirmation of 10 percent of the samples for individual PNA compounds will be done. Several samples of tar waste will be collected for physical property analysis (viscosity, density) and a single analysis of volatile, semi-volatile and heavy metal priority pollutants. An additional five samples of subsurface soil material will also be analyzed in a certified laboratory for volatile, semi-volatile pesticide priority pollutants. Analysis of pH, total iron and cyanide will be conducted for areas potentially affected by spent oxide disposal.

Figure 3-15 provides the anticipated locations for subsurface borings. The boring program includes drilling and sampling at 16 individual sites including 5 sites where multiple wells will be installed. The distribution of these borings with approximate depth of investigation is as follows: change

- o shallow (30 ft depth) 11 sites 16 sites
- o intermediate (60 ft depth) 5 sites 3 sites

change deleted deep wells

This boring program will result in screening for total PNAs on about 125 200 change subsurface samples. Results from the field PNA screening will be be used to guide placement and depth of borings used to delineate areal and vertical extent of contamination. All borings not used for installation of monitoring wells will be properly plugged and abandoned in accordance with Oregon guidelines.

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3.4 RIVER SEDIMENT CHARACTERIZATION

Waste discharge practices at the manufactured gas facility prior to 1941 when settling ponds were built may have led to the deposition of tars in river sediments during that period. Active dredging in areas that may have been affected by this discharge has been conducted. Three river sediment be collected in near-shore areas adjacent to and downstream of past discharge locations. Two samples from existing on-site ponds will also be collected. In addition, one background sample upgradient of the manufactured gas facilities will be collected. Approximate locations for samples are shown on Figure 3-14. Certified laboratory analysis of individual PNA compounds will be performed using HPLC or GC techniques. Samples will be collected using an appropriate sediment sampler.

3.5 GROUND WATER CHARACTERIZATION

Ground water comprises the major pathway by which contaminants may migrate to the surface environment and potentially could provide a pathway for contamination of drinking water. Existing site boring data suggests that up to three potential aquifer units may exist in the unconsolidated deposits. These units include the artificial fill (shallow zone), sandy units occurring between 0 and -15 feet MSL (intermediate zone) and a lower sand between -30 and -50 feet MSL (deep zone). The intermediate zone aquifer does not appear to be present on the Wacker Property.

Monitoring wells will be installed to allow collection of samples from the shallow and intermediate zones, allow measurement of water levels for definition of ground water flow direction and to allow the conduct of single borehole permeability tests. All newly installed wells will be analyzed for individual PNA compounds, while four wells from each of the monitored aquifer zones will be analyzed for volatile, semi-volatile, pesticide and heavy metal priority pollutants at a certified laboratory. The primary emphasis in the well installation and monitoring program will be on the upper and intermediate aquifer zones, since these have the

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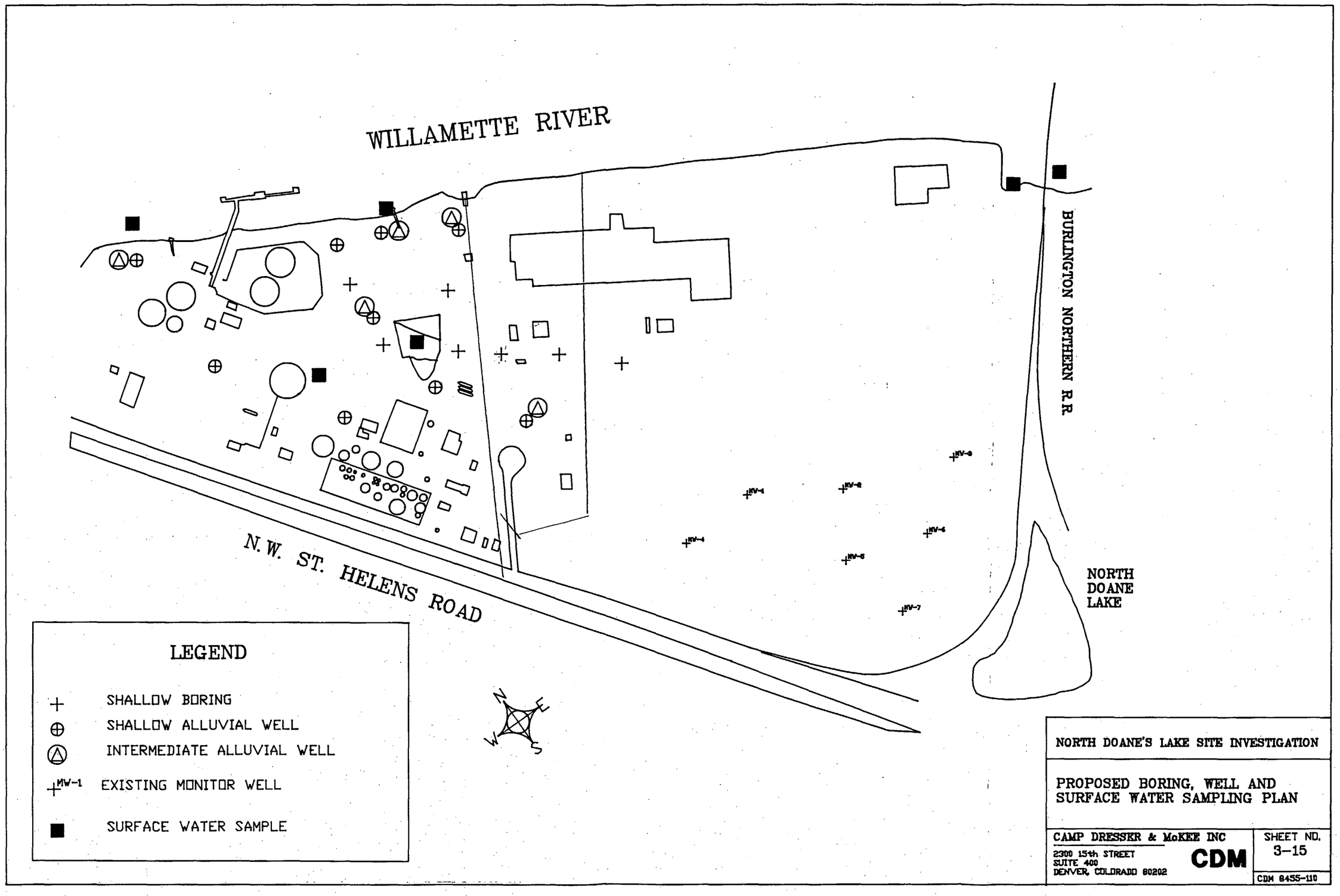
WILLAMETTE RIVER
BURLINGTON NORTHERN R.R.
N.W. ST. HELENS ROAD
NORTH DOANE LAKE
MW-1
MW-2
MW-3
MW-4
MW-5
MW-6
MW-7
MW-8
N
E
S
W
LEGEND
SHALLOW BORING
SHALLOW ALLUVIAL WELL
INTERMEDIATE ALLUVIAL WELL
MW-1 EXISTING MONITOR WELL
SURFACE WATER SAMPLE
NORTH DOANE'S LAKE SITE INVESTIGATION
PROPOSED BORING, WELL AND SURFACE WATER SAMPLING PLAN
CAMP DRESSER & McKEE INC
2300 15th STREET
SUITE 400
DENVER, COLORADO 80202
CDM
SHEET NO.
3-15
CDM 8455-110

highest potential to serve as a pathway for contaminant migration. The lower zone will not be investigated unless significant contamination of groundwater in the intermediate zone is detected. Locations of proposed wells are shown on Figure 3-15 along with the location of existing monitoring wells suitable for use in the program. The proposed well installation program includes 9 10 sites with a total of 9 shallow zone wells and 5 intermediate zone wells. Several existing shallow zone wells on the Wacker property will be included in the sampling program. A subset of 4 wells from each monitored aquifer will be analyzed for individual PNA compounds on a quarterly basis for one year to determine if seasonal water level fluctuation affects contaminant migration. All installed wells will be completed with fiberglas or stainless steel casing and screen due to the aggressive nature of the tar material that may degrade PVC casing.

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change

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deleted some wording

3.6 SURFACE WATER CHARACTERIZATION

A total of seven surface water samples will be collected for analysis of PNAs in the laboratory to determine if any on-site release of PNA compounds to surface water is taking place. Locations to be sampled are shown on Figure 3-15 and summarized below.

- Willamette River, upgradient of site
- Willamette River, high stage, downgradient near bank sample
- Willamette River, low stage, downgradient near bank sample
- Unnamed tributary stream draining through site
- Ponded water in LNG excavation
- Existing settling pond on-site
- Outflow of settling pond

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3.7 REPORTING

A comprehensive analysis of the site data and interpretation of potential risk to human populations and the environment will be presented. Existing data on geology, hydrology, aquatic ecology, water use and other information will be summarized along with results from site specific programs. The report will be formatted to address concerns identified in the letter from DEQ to Northwest Natural Gas company dated 15 August 1986 regarding general study needs for the Northern Doane's Lake Investigation.

The report will address in particular whether there is a need for any remedial action. This assessment will be based on potential risks associated with exposure pathways that may be active on site. If a significant risk is indicated, preliminary definition of a range of potentially applicable remedial alternative will be presented. The objective of the studies and report is not, however, preparation of Remedial Investigation/Feasibility Study documents that would be applicable at a Superfund site.

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APPENDIX A

(Logs of borings used in simplified geologic cross-sections)

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-1	SHEET 1 OF 2

SOIL BORING RECORD DRAWING

PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION (NAME GRADATION OR PLASTICITY PARTICLE SIZE DISTRIBUTION COLOR MOISTURE CONTENT RELATIVE DENSITY OR CONSISTENCY SOIL STRUCTURE MINERALOGY USCS GROUP SYMBOL)	SYMBOLIC LOG	COMMENTS (DEPTH OF CASING DRILLING RATE DRILLING FLUID LOSS TESTS AND INSTRUMENTATION)
								Grout to surface
								Top of bentonite at 2 1/2"
	5	5.0				SILT, low plasticity, medium gray with brown mottling, moist, soft (ML), fill.		Top of gravel at 5'
		6.5	S-1	18	1-1-1 (2)			Screen top at 7'
								Driller notes water at ±9';
	10	10.0				Upper 10" - SILT, same as S-1, some hydrocarbon odor (Jar 1 of 2), fill.		
		11.5	S-2	0	4-4-5 (9)	Lower 8" - SAND, poorly graded, fine sand, dark gray, wet compact (SP), heavily saturated with oil, strong odor (Jar 2 of 2), fill.		Prominent oily sheen and odor to cuttings between 10' and 15'
	15	15.0				SAND, poorly graded, fine sand, dark gray, wet, compact (SP), heavily saturated with oil, fill.		
		16.5	S-3	18	3-4-5 (9)			
	20	20.0				SAND, same as S-3, heavily saturated with oil, fill.		
		21.5	S-4	18	4-3-4 (7)			Screen bottom at 22'
								Driller notes 3 feet of heave at 25', had to wash out hole to clean out heave
	25	25.0				Upper 14" - SAND as in S-3 (SP), mild hydrocarbon odor, probably is slough from washing out heave and not representative.		Fill
		26.5	S-5	18	3-3-4	Lower 4" - SILT, low plasticity, medium brownish gray, moist, firm (ML), no noticeable hydrocarbon odor, probably native soil.		Native ±21'
								Sump bottom at 27'

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CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-1	SHEET 2 OF 2

SOIL BORING RECORD DRAWING

PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
	30	30.0				SILT, low plasticity, medium brownish gray, moist to wet, includes some sandy silt in upper 6", firm (ML), no noticeable hydrocarbon odor, native soil.		
		31.5	S-6	18	4-4-5 (9)			Bottom gravel at 31.5'
						END MW at 31.5 feet.		
								Worst samples
								S-2, Jar 2 of 2 and S-3 are equally bad, more sample in S-3 for testing.

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CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-2	SHEET 1 OF 2

SOIL BORING RECORD DRAWING

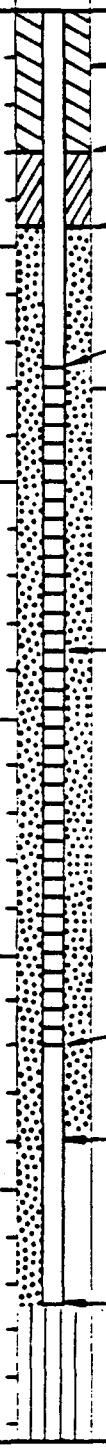
PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION (NAME GRADATION OR PLASTICITY PARTICLE SIZE DISTRIBUTION COLOR MOISTURE CONTENT RELATIVE DENSITY OR CONSISTENCY SOIL STRUCTURE MINERALOGY USCS GROUP SYMBOL)	COMMENTS (DEPTH OF CASING DRILLING RATE DRILLING FLUID LOSS TESTS AND INSTRUMENTATION)
	5	5.0				SAND, poorly graded, fine sand, brown, moist, loose (SP), fill.	
		6.5	S-1	18	1-2-3 (5)		
	10	10.0				NO RECOVERY; sample tube came up oily, strong hydrocarbon odor, sandy material on outside of sampler.	
		11.5	S-2	0	1-4-5		
	15	15.0				SAND, poorly graded, fine sand, chalk gray, wet, loose (SP), some lenses of silt; strong hydrocarbon odor, oily material observed on sample fill.	
		16.5	S-3	18	1-1-2 (3)		
	20	20.0				SANDY SILT, non-plastic, ~30% fill sand, medium to dark gray, wet, firm, (ML), strong hydrocarbon odor, noticeable oil in sample fill?	
		21.5	S-4	18	5-6-6 (12)		
	25	25.0				Upper 14" - SAND, as in S-3, includes strong hydrocarbon odor and visible oil in sample, material may be slough from drilling and washing out heaved zone, may not be representative of 25'-26.5' interval.	
		26.5	S-5	18	3-5-5 (10)	Lower 4" - SILT, low plasticity, medium grayish brown, firm, moist (ML), no apparent hydrocarbon, native.	



REV. 11 92 FORM D1886

SCOEPA00036712

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-2	SHEET 2 OF 2

SOIL BORING RECORD DRAWING

PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
	30							
		31.5	S-6	18	3-3-4 (7)	SILT, low plasticity, grayish brown, moist, firm (ML), no noticeable hydrocarbon odor, native soil.		
						END MW at 31.5 feet		
								Worst sample
								S-3, S-4 - about the same

REV. 11/93 FORM D1556

SCOEPA00036713

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-6	SHEET 1 OF 2

SOIL BORING RECORD DRAWING

PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

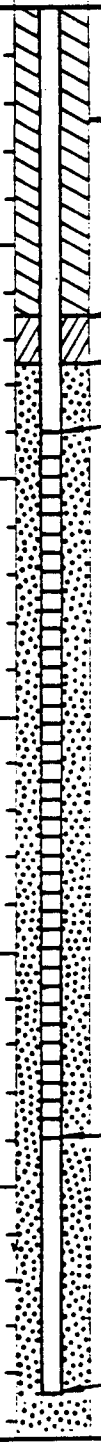
ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION (NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL)	COMMENTS (DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION)
	5	5.0					
		6.5	S-1	18	3-8-11 (19)	SAND, poorly graded, fine sand, less than 10% fine, brown, moist, compact (SP), fill.	
	10	10.0					
		11.5	S-2	18	10-10-11 (21)	Primarily sand, as in S-1, but with several 1-inch silt layers; lower 6" of sample has strong hydrocarbon odor to it.	
	15	15.0					
		16.5	S-3	18	1-1-2 (3)	SAND, as in S-1, except lower 6" have blackish discoloration and strong hydrocarbon odor; small oily splotches noticeable in soil.	
	20	20.0					
		21.5	S-4	18	3-3-5 (8)	Upper 6" - SAND as in S-1, have blackish discoloration and hydrocarbon odor, fill. Lower 12" - SILT, low plasticity, gray with brown mottling, firm (ML), hydrocarbon odor not noticeable.	
	25	25.0					
		26.5	S-5	18	9-26-26 (52)	SAND, as in S-1, but dark gray with mild hydrocarbon odor, material might be heaved sands and not representative of in-situ soil at 25'.	
	30	30.0					

SYMBOLIC LOG



Grout to surface

Bentonite to 6 1/2'

Sand to 7 1/2'

Top of screen at 9'

Driller notes water at ±12', coincident with appearance of "oily" odor from cuttings while drilling from 10-15'

A-rods came out of hold with unusual yellow discoloration from water at 20-25'

Bottom of screen at 24'

Driller notes 4' of heave after drilling to 25'; also, chain fell in hole, but was able to recover by retracting augers from hole; Augers moved during SPT from S-5, driller says no contact with sampler; why so high of an N value?

Sump to 29 1/2'

RE. 11 82 FORM D1586

SCOEPA00036714

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-767	SHEET 2 OF 2

SOIL BORING RECORD DRAWING

PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
		31.5	S-6	18	5-7-12 (19)	All 18" of soil in barrel is SAND, poorly graded, fine sand, less than 10% fine, medium to dark gray, wet, compact, (SP), probably heave or disturbed soil, not representative of 30' depth; mild hydrocarbon odor. 2" of soil in shoe of sampler is SANDY SILT, non-plastic, 30-50% fine sand, medium gray, wet, firm, (ML); no noticeable hydrocarbon odor, sandy silt is probably representative of in-situ soil.		Driller notes 3' of heave from 30-29' prior to sampling S-6; had to drill/wash out heave Sample choices S-3

REV. 11/82 FORM D1556

Received from Wacker

11/3/84

BORING LOG LEGEND:

SAMPLE TYPE:

- S – SPLIT-BARREL (ASTM D1586 UNLESS OTHERWISE NOTED)
- ST – SHELBY TUBE
- W – WASH SAMPLE
- OT – OSTERBERG TUBE
- NX – DIAMOND CORE BARREL

STANDARD PENETRATION TEST:

BLOWS – THE NUMBER OF BLOWS FOR THREE 6-INCH INCREMENTS REQUIRED FROM A 140-LB HAMMER FALLING 30 INCHES TO DRIVE A STANDARD 2-INCH O.D. SPLIT-BARREL SAMPLER (ASTM D1586)

"N" – THE SUM OF BLOWS FOR THE SECOND AND THIRD 6-INCH INCREMENTS. IF THE SAMPLER IS DRIVEN LESS THAN 18 INCHES, THEN "N" IS THE NUMBER OF BLOWS FOR THE LAST TWO 6-INCH INCREMENTS.

UNIFIED SOIL CLASSIFICATION SYMBOL:

GROUP SYMBOL AS PER ASTM D 2487

NOTES:

1. ALL BORINGS WERE DRILLED USING EITHER A TRUCK-MOUNTED CME-55 OR A CME-75 MUD ROTARY DRILL RIG, OWNED AND OPERATED BY KENNER DRILLING, INC., OF SHERWOOD, OREGON.
2. BORINGS WERE DRILLED FROM JUNE 28-30, AND ON JULY 1 AND 2, 1982.
3. ENGINEERING PROPERTIES OF SUBSURFACE MATERIALS ARE OPINION OF THE ENGINEER AND ENGINEERING GEOLOGIST, EXCEPT WHERE LABORATORY TESTING WAS CONDUCTED.
4. THE LOGS SHOW SUBSURFACE CONDITIONS ONLY AT THE TIME AND PLACE THAT THE BORINGS WERE MADE.
5. TRANSITIONS BETWEEN SOIL TYPES MAY BE GRADUAL AND ONLY APPROXIMATELY AT THE ELEVATIONS SHOWN. VARIATIONS MAY EXIST BETWEEN ADJACENT BORINGS.
6. STANDARD PENETRATION TESTS WERE TAKEN IN APPROXIMATE ACCORDANCE WITH ASTM D1586.
7. SAMPLES WERE EXAMINED IN THE FIELD AND VISUALLY CLASSIFIED IN APPROXIMATE ACCORDANCE WITH ASTM 2488.
8. WATER LEVELS MAY VARY WITH TIME.

CH2M HILL

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT Wacker Siltronics LOCATION

DRILLING METHOD Mud Rotary DRILLERS & EQUIPMENT D. Kenner of Oregon, Inc.; CME-55

ELEVATION 35.6 ft BORE HOLE B-100

WATER LEVEL not measured DATE: -- START: 6/29/82 FINISH: 6/30/82 INSPECTOR CWHL

DEPTH BELOW SURFACE (ft)	SAMPLE INTERVAL AND TYPE	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	STANDARD PENETRATION TEST RESULTS BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
0									Start drilling at 11:00 AM Begin drilling with drag bit
5	5.0 6.5	S-1	12	3-10-9	19	UPPER 3" SANDY SILT, SLIGHTLY PLASTIC, ABOUT 15% FINE SAND, GRAY, MOIST, LOOSE; FILL. LOWER 9" SILTY SAND, FINE SAND, 15-20% FINES, GRAY, WET, COMPACT, SOME PLANT FRAGMENTS; FILL.		ML SM	Driller notes strong petroleum odor at 5 to 10 ft
10	10.0 11.5	S-2	7	12-11-18	29	SILTY SAND, 10-15% GRAVEL TO ABOUT 1¼" FINE SAND, 25-30% FINES, MOIST, BLACK, STRONG HYDROCARBON ODOR, SOME RUBBERY DEBRIS AND PLANT REMAINS; FILL.		SM	Driller notes some gravel at 9 ft Rubbery debris and fine copper wire in cuttings from 10 to 15 ft.
15	15.0 16.5	S-3	2	12-24-11	35	SILTY SAND, SMALL RECOVERY BUT MATERIAL APPEARS SIMILAR TO S-2; FILL.		SM	Sampler bebounded during SPT for S-3 as if it were penetrating rubber (tires?)
20	20.0 21.5	S-4	14	1-1-1	2	UPPER 7" SILT, SLIGHTLY TO MODERATELY PLASTIC, DARK GRAY, WET, VERY SOFT, WOOD DEBRIS, HYDROCARBON ODOR; FILL? LOWER 7" - SILT, SLIGHTLY PLASTIC, MEDIUM GRAY WITH ORANGE BROWN MOTTLING, MOIST, VERY SOFT, SOME DECOMPOSED PLANT MATERIAL.		ML	
25	25.0 26.5	S-5	14	2-2-2	4	SILT, SIMILAR TO LOWER 7" OF S-4 EXCEPT CONSISTANCY IS SOFT.		ML	
30	28.0 30.0	ST-6	24	---	—	SILT MODERATELY TO HIGHLY PLASTIC, GRAY, MOIST, VERY SOFT.		MH	

SCOEPA00036717

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT Wacker Siltronics LOCATION Portland, Oregon
DRILLING METHOD Mud Rotary DRILLERS & EQUIPMENT D. Kenner of Oregon, Inc; CME-55
ELEVATION 35.6 ft BORE HOLE: B-100
WATER LEVEL not measured DATE: -- START: 6/29/82 FINISH: 6/30/82 INSPECTOR CW HL

DEPTH BELOW SURFACE (ft)	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
30	30.0–31.5	S-7	15	2-4-6	10	SILT, SLIGHTLY PLASTIC, LESS THAN 5% FINE SAND, GRAY, MOIST, FIRM TO STIFF.		ML	
35	35.0–36.5	S-8	18	1-1/12"	1	SILT SIMILAR TO S-7 EXCEPT FOR WOOD DEBRIS IN LOWER 4" AND FRAGMENTS OF DECOMPOSED PLANT MATERIAL THROUGHOUT SAMPLE.		ML	
	38.0–40.0	ST-9	24	---		SILT, SAME AS S-7 EXCEPT LENSES OF SAND AND GRAVEL		ML	
40	40.5	S-10	14	3-1-1	2	SANDY SILT, NONPLASTIC, ABOUT 15% FINE TO COARSE SAND, MEDIUM GRAY, VERY LOOSE DECOMPOSED WOOD FRAGMENTS THROUGHOUT SAMPLE, ABOUT 25% FINE SAND AND GRAVEL IN UPPER 3"; ORGANIC ODOR.		ML	
45	45.0–46.5	S-11	18	1-2-3	5	SILT, SLIGHTLY PLASTIC, BLUE-GREENISH GRAY, MOIST, FIRM.		ML	
50	50.0–51.5	S-12	18	3-3-3	6	SILT, SAME AS S-11.		ML	
55	55.0–56.5	S-13	16	2-5-10	15	SANDY SILT, NON PLASTIC, 15-20% FINE SAND, GRAY, MOIST, COMPACT.		ML	
60									

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT Wacker Siltronics LOCATION Portland, Oregon
DRILLING METHOD Mud Rotary DRILLERS & EQUIPMENT D. Kenner of Oregon; CME-55
ELEVATION 35.6 ft BORE HOLE: B-100
WATER LEVEL NOT MEASURED DATE: -- START: 6/29/82 FINISH: 6/30/82 INSPECTOR CWHL

DEPTH BELOW SURFACE (ft)	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
60	60.0–61.5	S-14	8	6-11-12	23	SILTY SAND FINE SAND, 30-35% FINES, BROWN, WET, COMPACT.		SM	
65	65.0–66.5	S-15	10	7-12-18	30	UPPER 3" SILT, MODERATELY PLASTIC, ABOUT 5% FINE SAND, BROWN, MOIST, STIFF. LOWER 7" SILTY SAND, FINE SAND, 20-25% FINES, BROWN, WET, COMPACT.		ML / SM	HOLE COLLAPSED FROM 65-85 FT ON NIGHT OF 6/29.
70	70.0–71.5	S-16	8	12-17-18	35	SAND, UNIFORMLY GRADED FINE SAND, 5-10% FINES, BROWN, WET, DENSE.		SP-SM	
75	75.0–76.5	S-17	8	9-16-17	33	SILTY SAND, FINE SAND, 12-15% FINES, BROWN, WET, DENSE.		SM	
80	80.0–81.5	S-18	8	10-17-17	34	SILTY SAND, SAME AS S-17, EXCEPT 20-25% FINES.		SM	
85	85.0–86.2	S-19	3	8-32-70/4"	102/14"	BASALT, HIGHLY WEATHERED TO SANDY GRAVEL, POORLY GRADED, GRAVEL TO AT LEAST 1 3/8", ABOUT 15% FINE TO COARSE SAND, 5-12% FINES, BROWN AND BLACK, MOIST, HARD.			END DRILLING @ 4:30 P.M. BEGIN DRILLING @ 7:30 AM CHANGE FROM DRAG BIT TO ROLLER BIT.
90									

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT Wacker Siltronics LOCATION Portland, Oregon

DRILLING METHOD Mud Rotary DRILLERS & EQUIPMENT D. Kramer of Oregon, Inc; CME-55

ELEVATION 35.6 ft BORE HOLE: B-100

WATER LEVEL Not Measured DATE: -- START: 6/29/82 FINISH: 6/30/82 INSPECTOR CWHL

DEPTH BELOW SURFACE (ft)	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	STANDARD PENETRATION TEST RESULTS BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
90	90.0 90.1	S-20	1.5	60/15	60/1.5	BASALT, WEATHERED, SAME AS S-19.			DRILLER NOTES VERY HARD MATERIAL AT 90' SAMPLER BOUNCES DURING 5' FOR S-20 FINISH DRILLING AT 8:45 A.M.
						END BORING AT 90.1 FEET			
95									

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER

SOIL BORING LOG

PROJECT Wacker Siltronics LOCATION Portland, Oregon
DRILLING METHOD Mud Rotary DRILLERS & EQUIPMENT D. Kenner of Oregon, Inc.; CME-55
ELEVATION 34.5 ft. BORE HOLE: B-101
WATER LEVEL not measured DATE: -- START: 6/28/82 FINISH: 6/29/82 INSPECTOR CW HL

DEPTH BELOW SURFACE (ft)	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
0						SILTY SAND AT SURFACE, BRICKS, WOOD DEBRIS, ETC, FILL.		SM	START DRILLING AT 1035 BEGIN DRILLING WITH A DRAG BIT.
5	5.0								
	6.5	S-1	0	2-1-1	3	NO RECOVERY.			DRILLER NOTES CHANGE FROM SILTY SAND TO SILT AT 6'.
10	10.0								
	11.5	S-2	3	5-4-5	9	SILTY SAND, FINE TO MEDIUM SAND, 20-30% FINES, BLACK, WET, LOOSE; FILL.		SM	
15	15.0								
	16.5	S-3	9	1-1-2	3	SANDY SILT, SLIGHTLY PLASTIC, FINE TO MEDIUM SAND, BLACK, WET, LOOSE, SOME ROUNDED GRAVELS TO ½" STRANDS OF COPPER WIRE IN SAMPLE, FILL, HYDROCARBON ODOR.		ML	RUBBER DEBRIS (TIRES) IN HOLE 15 TO 20'. DRILLER NOTES CLUMPS OF FINE COPPER WIRE IN CUTTINGS 15-20'.
20	20.0								
	21.5	S-4	13	3-3-3	6	LAYERED SILTY SAND AND SANDY SILT; SILTY SAND, FINE SAND, 25-35% FINES, DARK GRAY WET, LOOSE, LAYERS 1-3" THICK SANDY SILT SLIGHTLY PLASTIC, DARK GRAY, MOIST, LOOSE, LOCAL CONCENTRATION OF DECOMPOSED PLANT MATERIAL		SM, ML	DRILLER SUSPECTS LOG(S) AT ABOUT 20'.
25	25.0								
	26.5	S-5	18	1-4-5	9	SANDY SILT, SLIGHTLY PLASTIC, 10-15% FINE SAND, MOTTLED BROWN AND GRAY, MOIST, COMPACT, TRACES OF DECOMPOSED PLANT MATERIAL, HYDROCARBON ODOR.		ML	
30									

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT Wacker Siltronics LOCATION Portland, Oregon
DRILLING METHOD Mud Rotary DRILLERS & EQUIPMENT D. Kuller of Oregon, Inc.; CME-55
ELEVATION 34.5 ft BORE HOLE: B-101
WATER LEVEL Not measured DATE: -- START: 6/28/82 FINISH: 6/29/82 INSPECTOR CWHL

DEPTH BELOW SURFACE (ft)	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
30	30.0–31.5	S-6	16	1-1-1	2	SILT, SLIGHTLY PLASTIC, MEDIUM GRAY W/REDDISH BROWN MOTTLED, WET.		ML	
	33.0–35.0	ST-7	24	---	—	SILT, SIMILAR TO S-6 EXCEPT SLIGHTLY TO MODERATELY PLASTIC, BROWN COLOR.		ML	
35	36.5	S-8	18	4-5-9	14	SILT, SLIGHTLY TO MODERATELY PLASTIC, BROWN, MOIST, FIRM.		ML	
40	40.0–41.5	S-9	18	3-3-4	7	SILT, SIMILAR TO S-8, EXCEPT ABOUT 5% FINE SAND, SOFT TO FIRM.		ML	MIX MUD AT 41.5'.
45	45.0–46.5	S-10	12	3-6-10	16	UPPER 6" SILT, SIMILAR TO S-8 EXCEPT 5-10% FINE TO MEDIUM SAND, BROWN AND GRAY, SOFT. LOWER 6" SILTY SAND, FINE SAND, 25-30% FINES, BROWN, WET LOOSE TO COMPACT.		ML / SM	DRILLER NOTES SANDY MATERIAL AND SOFT DRILLING TO 50'.
50	50.0–51.5	S-11	18	3-8-13	21	SANDY SILT, NON PLASTIC, 12-15% FINE SAND, BROWN, WET, COMPACT.		ML	DRILLER NOTES HARDER DRILLING AT 45'.
55	55.0–56.5	S-12	6	11-23-28	51	SILTY SAND, FINE SAND, 10-15% FINES IN LOWER PART 30-40% FINES IN UPPER PART, BROWN, MOIST, DENSE, SEVERAL LENSES ≤ ½" OF SILT INTERBEDDED WITH THE SILTY SAND.		SM	
60									

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT Wacker Siltronics LOCATION Portland, Oregon
DRILLING METHOD Mud Rotary DRILLERS & EQUIPMENT D. Kramer of Oregon Inc; CME-55
ELEVATION 34.5 ft. BORE HOLE: B-101
WATER LEVEL not measured DATE: -- START: 6/28/82 FINISH: 6/29/82 INSPECTOR CWHL

DEPTH BELOW SURFACE (ft)	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
60	60.0–61.5	S-13	10	10-13-17	30	SANDY SILT, NON PLASTIC, ABOUT 40% FINE SAND, BROWN, MOIST, COMPACT.		ML	
65	65.0–66.5	S-14	8	13-21-25	46	SILTY SAND, FINE SAND, ABOUT 30% FINE, BROWN, WET, COMPACT.		SM	
70	70.0–71.5	S-15	9	30-41-39	70	SAND, UNIFORMLY GRADED FINE SAND, 5-12% FINES, BROWN, WET, VERY DENSE.		SP-SM	
75	75.0–76.5	S-16	8	35-55-39	94	SAND, SAME AS S-15.		SP-SM	
80	80.0–81.5	S-17	8	13-24-30	54	SAND, UNIFORMLY GRADED FINE SAND, ABOUT 5% FINES, BROWN, WET, DENSE.		SP	DRILLER NOTES VERY HARD MATERIAL AT 84 FT; UNABLE TO PENETRATE W/DRAG BIT; STOP TO TAKE SAMPLE S-18 END DRILLING @ 4:30 P.M. BEGIN DRILLING @ 8:00 AM CHANGE FROM DRAG BIT TO ROLLER BIT; MIX MUD. VERY HARD DRILLING AT 86' DRILLS AT RATE OF 30 MIN/FT. ANGULAR BLACK BASALT CHIPS IN CUTTINGS END DRILLING @ 9:40 AM
85	84.0–84.5	S-18	4	70/6"	70/6"	BASALT WEATHERED TO SANDY GRAVEL, POORLY GRADED GRAVEL TO 1 1/4", 30-40% FINE TO COARSE SAND, MOSTLY COARSE, LESS THAN 5% FINES, BROWN AND BLACK, DENSE.			
	87.0–87.5	S-19	5	78/6"	78/6"	BASALT, WEATHERED, SAME AS S-18.			
90						END BORING @ 87.5 FT			

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT Wacker Siltronics LOCATION Portland, Oregon
DRILLING METHOD Mud Rotary DRILLERS & EQUIPMENT D. Kenner of Oregon, Inc.; CME-55
ELEVATION 32.2 ft. BORE HOLE: B-102
WATER LEVEL not measured DATE: -- START: 7/1/82 FINISH: 7/1/82 INSPECTOR CWHL

DEPTH BELOW SURFACE (ft)	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
0									START DRILLING AT 955. BEGIN DRILLING WITH DRAG BIT.
5	5.0–6.5	S-1	7	1-2-2	4	SILT SLIGHTLY TO MODERATELY PLASTIC, ABOUT 5% FINE SAND, GRAY WITH REDDISH BROWN MOTTLING, MOIST SOFT, DISTINCT LAYERING 1/16-1/2" THICK.		ML	
10	10.0–11.5	S-2	9	4-8-9	17	SAND UNIFORMLY GRADED FINE SAND, LESS THAN 5% FINES, DARK GRAY, WET, HYDROCARBON ODOR.		SP	
15	15.0–16.5	S-3	0	2-1-3	4	NO RECOVERY.			
20	20.0–21.5	S-4	1	2-3-3	6	SILT NONPLASTIC, BLACK, WET, SOFT, STRONG HYDROCARBON ODOR.		ML	AT 19 FT CUTTINGS ARE SATURATED WITH OILY MATERIAL AND HAVE A STRONG HYDROCARBON ODOR.
25	25.0–26.5	S-5	10	1-1-1	2	SILT NONPLASTIC, LESS THAN 5% FINE SAND, MEDIUM GRAY, WET, LOOSE.		ML	
30									

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT Wacker Siltronics LOCATION Portland, Oregon
DRILLING METHOD Mud Rotary DRILLERS & EQUIPMENT D. Kenner of Oregon, Inc.; CME-55
ELEVATION 32.2 ft. BORE HOLE: B-102
WATER LEVEL not measured DATE: -- START: 7/1/82 FINISH: 7/1/82 INSPECTOR CW HL

DEPTH BELOW SURFACE (ft)	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
30	30.0–31.5	S-6	10	1-2-2	4	SILT, NON PLASTIC, ABOUT 5% FINE SAND, MEDIUM GRAY, WET, SOFT, FRAGMENTS OF DECOMPOSED PLANT MATERIAL		ML	MIX MUD AT 30'.
	33.0								
35	35.0	ST-7	24	---	—	SILT SIMILAR TO S-6 EXCEPT MODERATELY TO HIGHLY PLASTIC AND ORGANIC.		MH-OH	
	36.5	S-8	18	1-2-2	4	SILT SIMILAR TO S-6 EXCEPT NO SAND AND MODERATELY TO HIGHLY PLASTIC AND ORGANIC		MH-OH	
40	40.0								
	41.5	S-9	18	4-7-8	15	SILT, SIMILAR TO S-6, EXCEPT FOR LACK OF SAND, BLUE-GREEN COLOR AND STIFF.		ML	
45	45.0								
	46.5	S-10	18	2-2-2	4	SILT, SIMILAR TO S-6, EXCEPT SLIGHTLY PLASTIC AND ABSENCE OF SAND AND FRAGMENTS OF PLANTS		ML	
	48.0								
	50.0	ST-11	24	---	—	UPPER 18"-SILT, SAME AS S-10 LOWER 6"-SILTY SAND, SAME AS S-12.		ML, SM	LAST 6" OF ST-11 PUSHED VERY HARD
50	51.5	S-12	10	4-6-10	16	SILTY SAND, FINE SAND, 20-25% FINES, BROWN, WET, COMPACT.		SM	
55	55.0								
	56.5	S-13	18	2-5-6	11	SILT, NON PLASTIC, BROWN, WET, STIFF.		ML	
60									

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT Wacker Siltronics LOCATION Portland, Oregon
DRILLING METHOD Mud Rotary DRILLERS & EQUIPMENT D. Kenner of Oregon, Inc.; CME-55
ELEVATION 32.2 ft BORE HOLE: B-102
WATER LEVEL not measured DATE: — — START: 7/1/82 FINISH: 7/1/82 INSPECTOR CW HL

DEPTH BELOW SURFACE (ft)	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
60	60.0–61.5	S-14	18	3-11-20	31	SILTY SAND, FINE SAND, 20-25% FINES, BROWN, WET, COMPACT TO DENSE.		SM	
65	65.0–66.5	S-15	15	6-14-22	36	SILT, SLIGHT PLASTICITY, 5-10% FINE SAND, LOCAL CONCENTRATION OF FINE SAND WITHIN THE SILT, BROWN, MOIST, STIFF.		ML	
70	70.0–71.5	S-16	18	12-25-25	50	SILT, SIMILAR TO S-15, EXCEPT VERY STIFF.		ML	
75	75.0–76.5	S-17	9	11-28-29	57	SILTY SAND, FINE SAND, 15-20% FINES, BROWN, WET, VERY DENSE.		SM	DRILLER NOTES VERY HARD MATERIAL AT 79.5';
80	79.5–80.0	S-18	4	60/6"	60/6"	BASALT, WEATHERED TO SANDY GRAVEL, POORLY GRADED ANGULAR GRAVEL TO ABOUT 1", 30-40% FINE TO COARSE SAND, 5-12% FINES, BROWN AND BLACK, WET, DENSE.			SAMPLER BOUNCES DURING SPT FOR FINISH DRILLING AT 2:10 P.M.
85						END BORING AT 80.0 Feet.			

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT WACKER SILTRONIC LOCATION PORTLAND, OR

DRILLING METHOD MUD ROTARY; DRAG BIT DRILLERS & EQUIPMENT D. KENNER OF DR; CME-75

ELEVATION 34.6 FEET BORE HOLE: B-107

WATER LEVEL NOT MEASURED DATE: --- START: 7/1/82 FINISH: 7/1/82 INSPECTOR DLKI

DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
0									BEGIN DRILLING @ 11:10 A.M.
5	5.0–6.5	S-1	7	3-3-3	6	SAND, MEDIUM TO FINE, LESS THAN 5% FINES, ORANGE, MOIST, LOOSE; FILL?		SP	
10	10.0–11.5	S-2	14	6-7-9	16	SAND, MEDIUM TO FINE, LESS THAN 5% FINES, BLACK, MOIST, COMPACT; HYDROCARBON ODOR; FILL?		SP	DRILLER NOTES OIL @ 12 OR 13 FEET
15	15.0–16.5	S-3	8	3-3-7	10	SAND, SAME AS S-2; WOOD CHUNK AT BOTTOM OF SPLIT SPOON; FILL?		SP	DRILLER NOTES WOOD IN CUTTINGS.
20	20.0–21.5	S-4	14	1-2-3	5	SILT, MODERATELY PLASTIC, BLUE, MOIST, FIRM; OCCASSIONAL WOOD FRAGMENTS, HYDROCARBON ODOR.		ML	
25	25.0–26.5	S-5	18	1-1-1	2	SILT, NONPLASTIC, BLUE, WET, SOFT.		ML	DRILLER NOTES OUT OF OIL @ 22 OR 23 FEET, BUT STILL IN WOOD.
30									

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT WACKER SILTRONIC LOCATION PORTLAND, OR

DRILLING METHOD MUD ROTARY; DEAS BIT DRILLERS & EQUIPMENT D. KENNER OF OR; CME-75

ELEVATION 34.6 FEET BORE HOLE: B-107

WATER LEVEL NOT MEASURED DATE: --- START: 7/1/82 FINISH: 7/1/82 INSPECTOR DLKI

DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
30	30.0–32.0	ST-6	24	---	–	SILT, SAME AS S-7.		ML	
	33.5	S-7	18	1-2-4	6	SILT, NON PLASTIC, LESS THAN 5% VERY FINE SAND AND ORGANICS, BROWN, MOIST, FIRM; OCCASIONAL WOOD FRAGMENTS		ML	
35	35.0								
	37.0	ST-8	22	---	–	SILT, SAME AS S-9.		ML	
	38.5	S-9	18	3-4-5	9	SILT, SLIGHTLY TO MODERATELY PLASTIC, 5-12% VERY FINE SAND, BLUE AND ORANGE MOTTLED, WET, STIFF.		ML	
40	40.0								
	41.5	S-10	18	2-3-4	7	SILT, SLIGHTLY TO MODERATELY PLASTIC, 5-12% VERY FINE SAND, BROWN, WET, FIRM.		ML	
45	45.0								
	46.5	S-11	18	2-4-7	11	SILT, SLIGHTLY PLASTIC, BROWN, MOIST, STIFF.		ML	
50	50.0								
	51.5	S-12	18	5-9-10	19	SANDY SILT, NON PLASTIC, 20-30% VERY FINE SAND, BROWN, WET, COMPACT.		ML	
55	55.0								
	56.5	S-13	18	6-10-13	23	SANDY SILT, SAME AS S-12.		ML	
60									

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT WACKER SILTRONIC LOCATION PORTLAND, OR

DRILLING METHOD MUD ROTARY; DRAG BIT DRILLERS & EQUIPMENT D. KENNER OF OR; CME-75

ELEVATION 346 FEET BORE HOLE: B-107

WATER LEVEL NOT MEASURED DATE: --- START: 7/1/82 FINISH: 7/1/82 INSPECTOR DLKI

DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	STANDARD PENETRATION TEST RESULTS BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
60	60.0 61.5	S-14	18	8-15-20	35	SILT, NONPLASTIC, 12-15% VERY FINE SAND, BROWN, WET, HARD.		ML	
65									
70	70.0								
	71.5	S-15	13	19-19-21	40	SAND, VERY FINE, LESS THAN 5% FINES, BROWN, WET, DENSE.		SP	
	71.5	S-16	0	30-43-60/3"	103/3"	NO RECOVERY; probably basalt			END DRILLING @ 2:30 P.M.
						END BORING @ 71.5 ft			

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT WACKER SILTRONIC LOCATION PORTLAND, OR

DRILLING METHOD MUD ROTARY; DRAGBIT DRILLERS & EQUIPMENT D. KENNER DF DR; CME-75

ELEVATION 32.8 FEET BORE HOLE: B-105

WATER LEVEL NOT MEASURED DATE: --- START: 7/1/82 FINISH: 7/2/82 INSPECTOR DLKI

DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
0									BEGAN DRILLING @ 3:05 P.M.
5	5.0–6.5	S-1	13	1-1-1	2	SANDY SILT, NONPLASTIC, 12-20% VERY FINE SAND, 5-10% ORGANICS, ORANGE AND GRAY MOTTLING, WET, VERY LOOSE; OCCASSIONAL ROOTS; AT BOTTOM; FILL?		ML	
10	10.0–11.5	S-2	8	3-6-6	12	SAND, MEDIUM TO FINE, LESS THAN 5% FINES, BLACK, WET, LOOSE; HYDROCARBON ODOR, FILL?		SP	
15	15.0–16.5	S-3	11	3-2-3	5	SAND, SAME AS S-2, EXCEPT WITH OIL AT BOTTOM; FILL?		SP	
20	20.0–21.5	S-4	16	2-1-2	3	SILT, NONPLASTIC, 5-12% VERY FINE SAND, LESS THAN 5% ORGANICS, GRAY AND ORANGE MOTTLING, WET, SOFT; OCCASSIONAL WOOD FRAGMENTS		ML	DRILLER NOTES WOOD AT BOTTOM OF SAMPLER.
25	25.0–26.5	S-5	18	1-1-2	3	SILT, NONPLASTIC, 5-10% FINE SAND, GRAY, MOIST, SOFT; FRAGMENTS OF DECOMPOSED PLANT MATERIAL IN LOWER 9 INCHES OF SAMPLER		ML	END DRILLING @ 3:40 P.M.
30									

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT WACKER SILTRONIC LOCATION PORTLAND, OR
DRILLING METHOD MUD ROTARY; DRAGBIT DRILLERS & EQUIPMENT D. KEINER OF OR; CME-75
ELEVATION 32.8 FEET BORE HOLE: B-105
WATER LEVEL NOT MEASURED DATE: --- START: 7/1/82 FINISH: 7/2/82 INSPECTOR CWHL

DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
30	30.0–31.5	S-6	18	1-1-2	3	SILT, NONPLASTIC, LESS THAN 5% FINE SAND, GRAY, WET, SOFT; LENSE OF DECOMPOSED PLANT MATERIAL 3 INCHES FROM TOP, HYDROCARBON ODOR		ML	BEGAN DRILLING @ 7:45 A.M.
35	35.0–36.5	S-7	18	1-2-2	4	SILT, SLIGHTLY PLASTIC, GRAY, WET, SOFT.		ML	
40	40.0–41.5	S-8	18	3-6-8	14	SILT, SLIGHTLY TO MODERATELY PLASTIC, GREENISH GRAY, STIFF.		ML	
45	45.0–46.5	S-9	18	4-4-6	10	SILT, SLIGHTLY TO MODERATELY PLASTIC, 5-10% FINE SAND IN LOWER 9 INCHES, GREENISH GRAY IN UPPER PART, GRAY IN LOWER PART, MOIST, STIFF.		ML	
50	50.0–51.5	S-10	18	2-4-9	13	SILT, NONPLASTIC, LESS THAN 5% FINE SAND, BROWN, WET, COMPACT		ML	
55	55.0–56.5	S-11	18	2-4-8	12	SILT, SAME AS S-10		ML	
60									

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT WACKER SILTRONIC LOCATION PORTLAND, OR

DRILLING METHOD MUD ROTARY; DRAG BIT DRILLERS & EQUIPMENT D. KENNER OF OR; CME-75

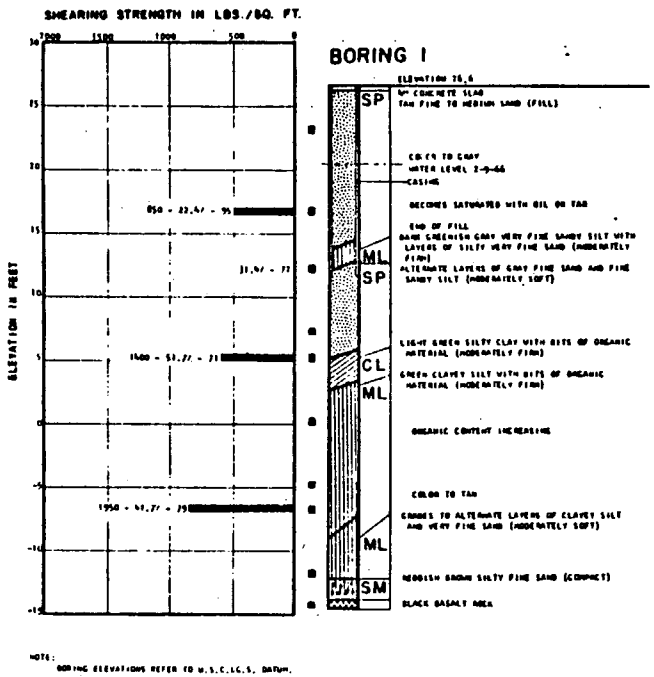
ELEVATION 32.8 FEET BORE HOLE: B-105

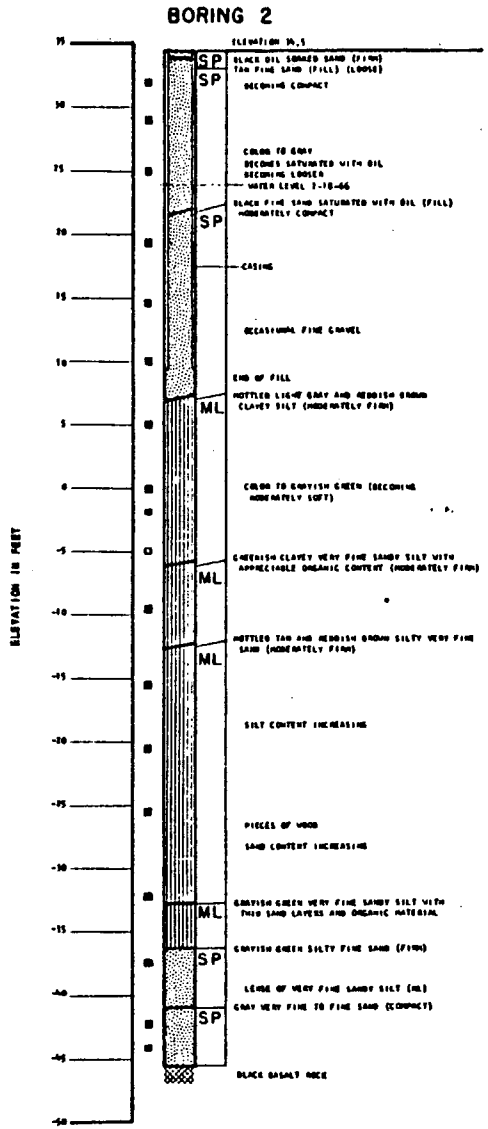
WATER LEVEL NOT MEASURED DATE: — — START: 7/1/82 FINISH: 7/2/82 INSPECTOR CWHL

DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	STANDARD PENETRATION TEST RESULTS BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
60	60.0								MIX MUD
	61.5	S-12	18	4-11-18	29	UPPER 12 INCHES SILT, SLIGHTLY PLASTIC, 5-10% FINE SAND, BROWN, MOIST, STIFF. LOWER 6 INCHES SILTY SAND, FINE SAND, 15-20% FINES, BROWN, WET, COMPACT.		ML SM	
65	65.0								
	66.5	S-13	18	6-10-14	24	SILTY SAND, FINE SAND, 20-25% FINES, BROWN, WET COMPACT.		SM	
70	70.0								
	71.5	S-14	15	9-23-22	45	UPPER 9 INCHES: SILTY SAND, SIMILAR TO S-13, EXCEPT 15-20% FINE SAND. LOWER 6 INCHES: SILT, SLIGHTLY PLASTIC, 10-15% FINE SAND, BROWN, MOIST, STIFF.		SM ML	
75	75.0								
	76.8	S-15	12	13-21-60/3"	81/9"	SILTY SAND WITH 1-2 INCH LAYERS OF SAND:		SM SP-SM	DRILLER NOTES VERY HARD DRILLING @ 76.5 FEET; CHANGE TO TRICONE BIT; SAMPLER BOUNCED DURING SPT FOR S-16
	76.5 76.7	S-16	2	60/2"	60/2"	SILTY SAND, FINE SAND, 20-25% FINES, BROWN, WET, COMPACT. SAND, UNIFORMLY GRADED, FINE SAND, 5-12% FINES, BROWN, WET, COMPACT. SAND, UNIFORMLY GRADED, FINE SAND, 5-12% FINES, WET, DENSE; PROBABLY CAVINGS ABOVE BASALT			FINISH DRILLING @ 9:55 A.M.
						END BORING @ 76.7 ft			

FORM D 1586 5/78

SCOEPA00036732

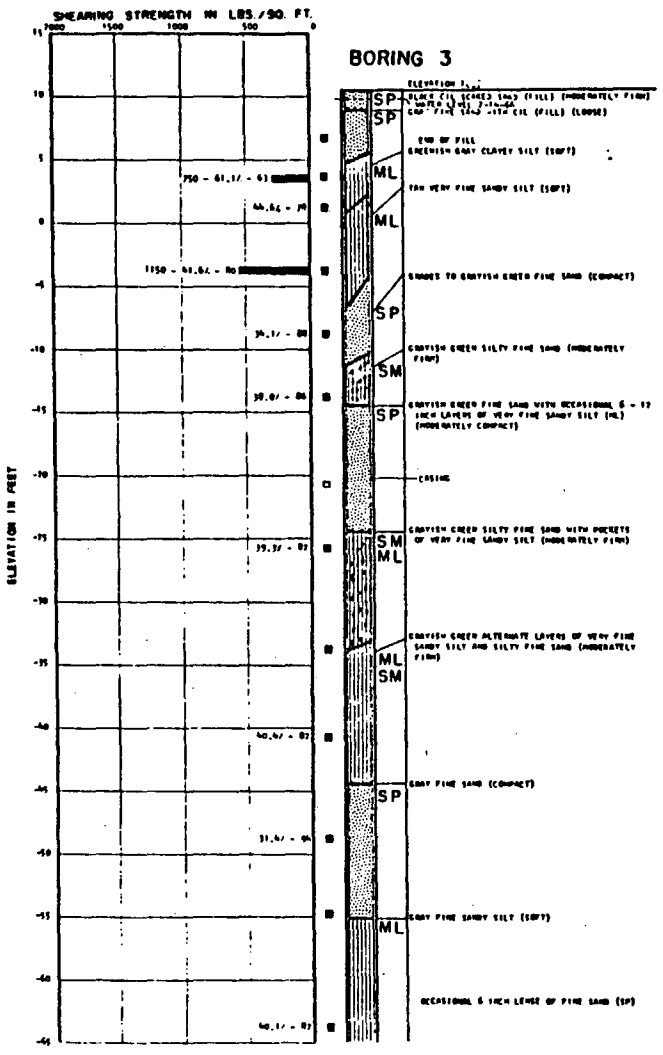


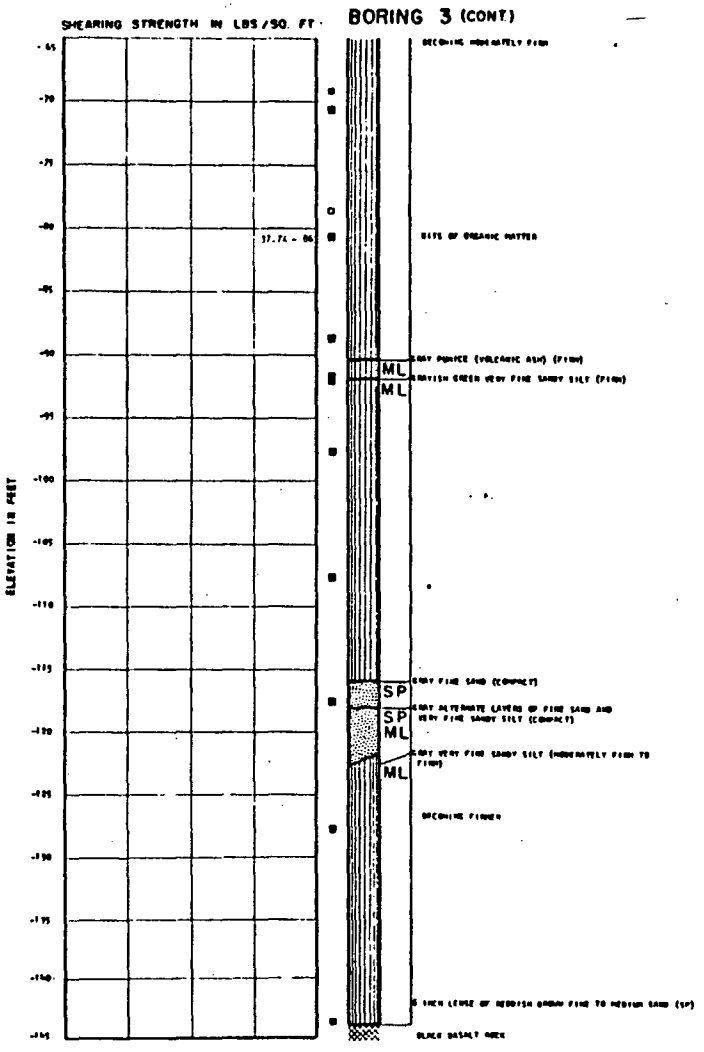


LOG OF BORINGS

DAMES & MOORE

PLATE A-1A



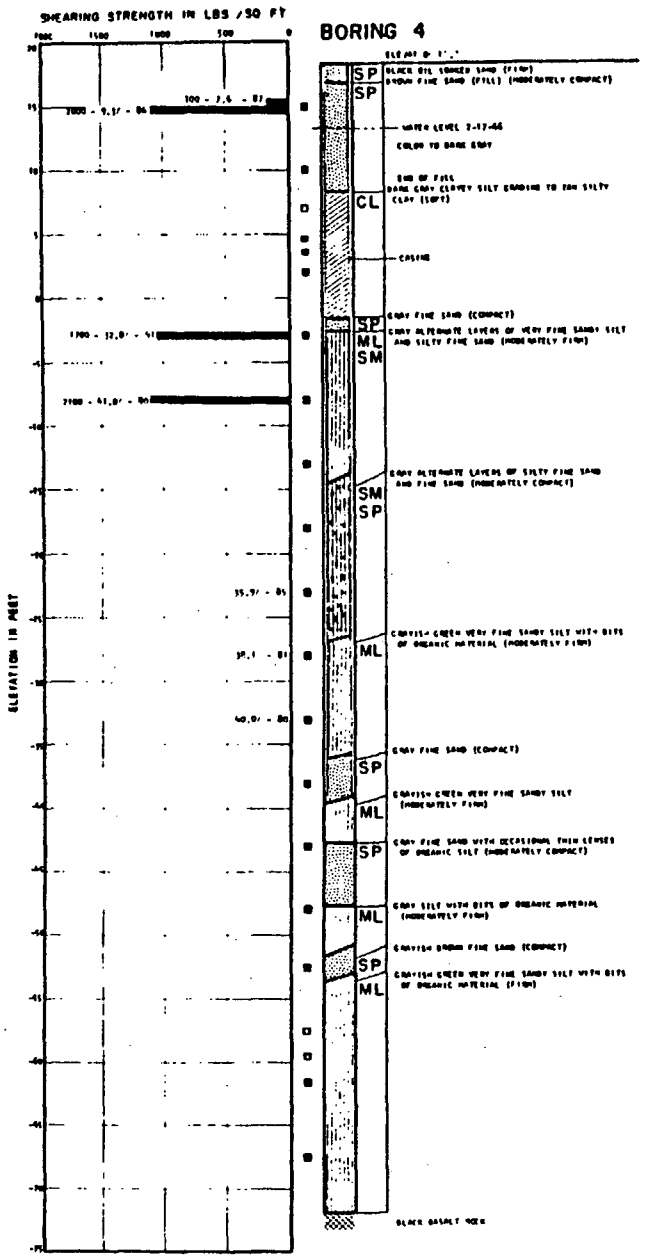


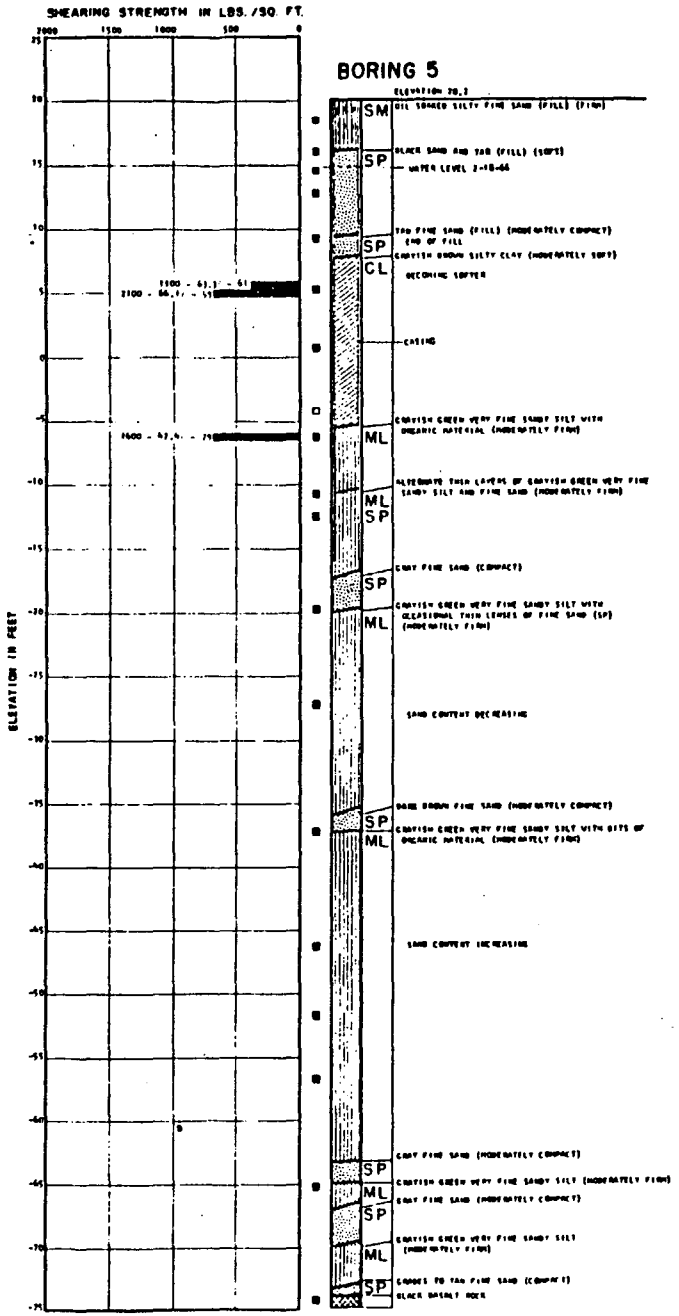
LOG OF BORINGS

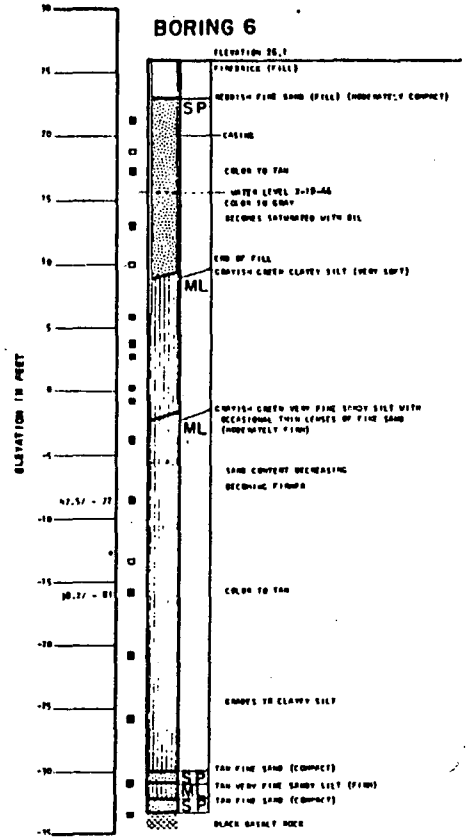
DAMES & MOORE

PLATE A-18

SCOEPA00036734







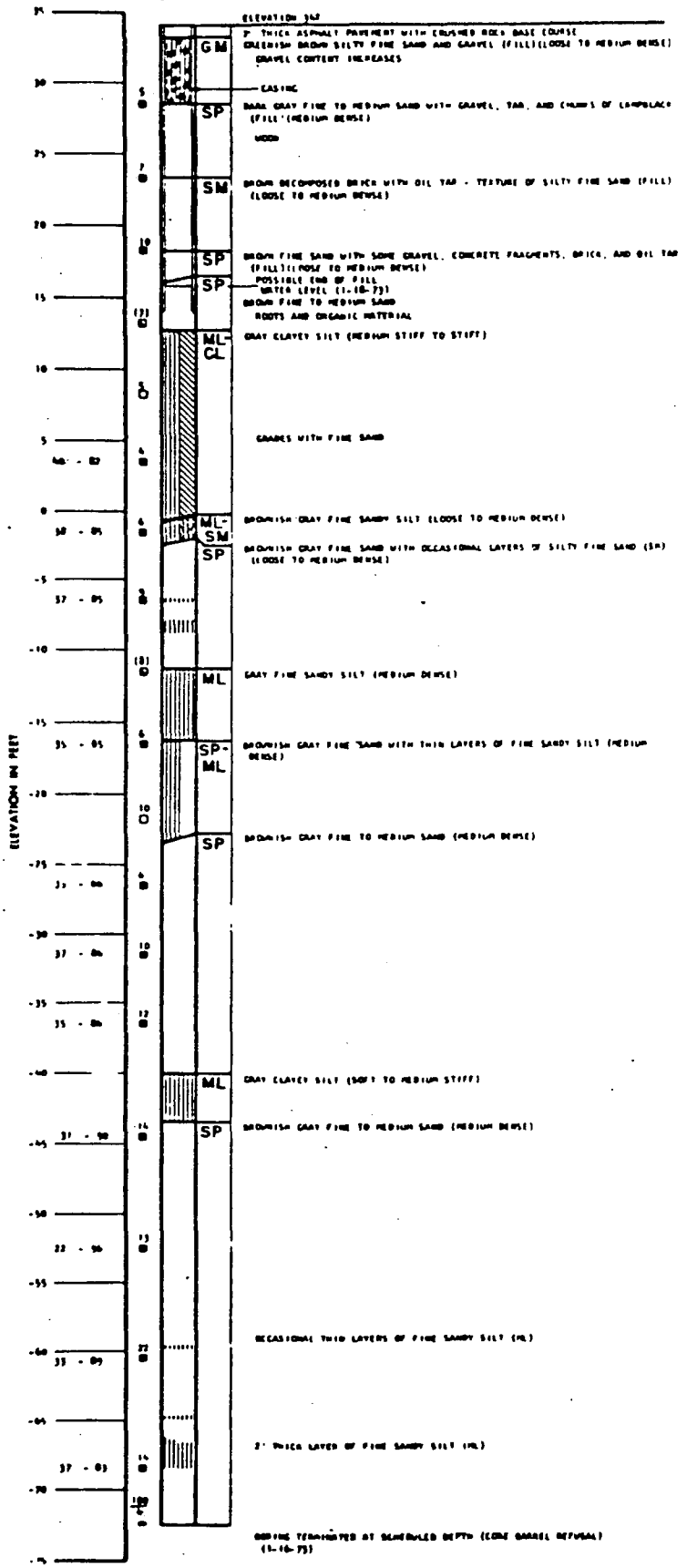
LOG OF BORINGS

DAMES & MOORE

PLATE A-IC

SCOEPA00036735

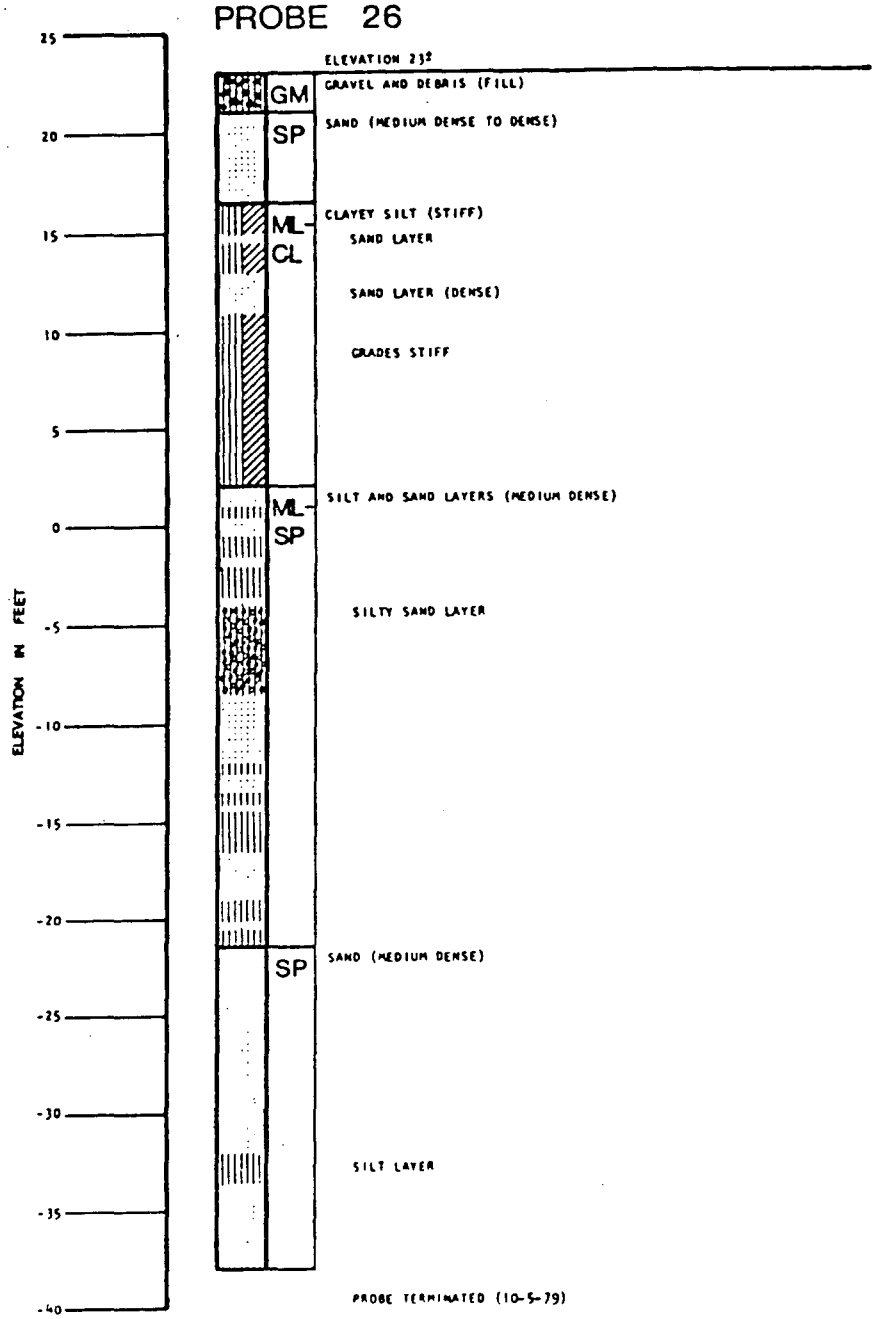
BORING 19



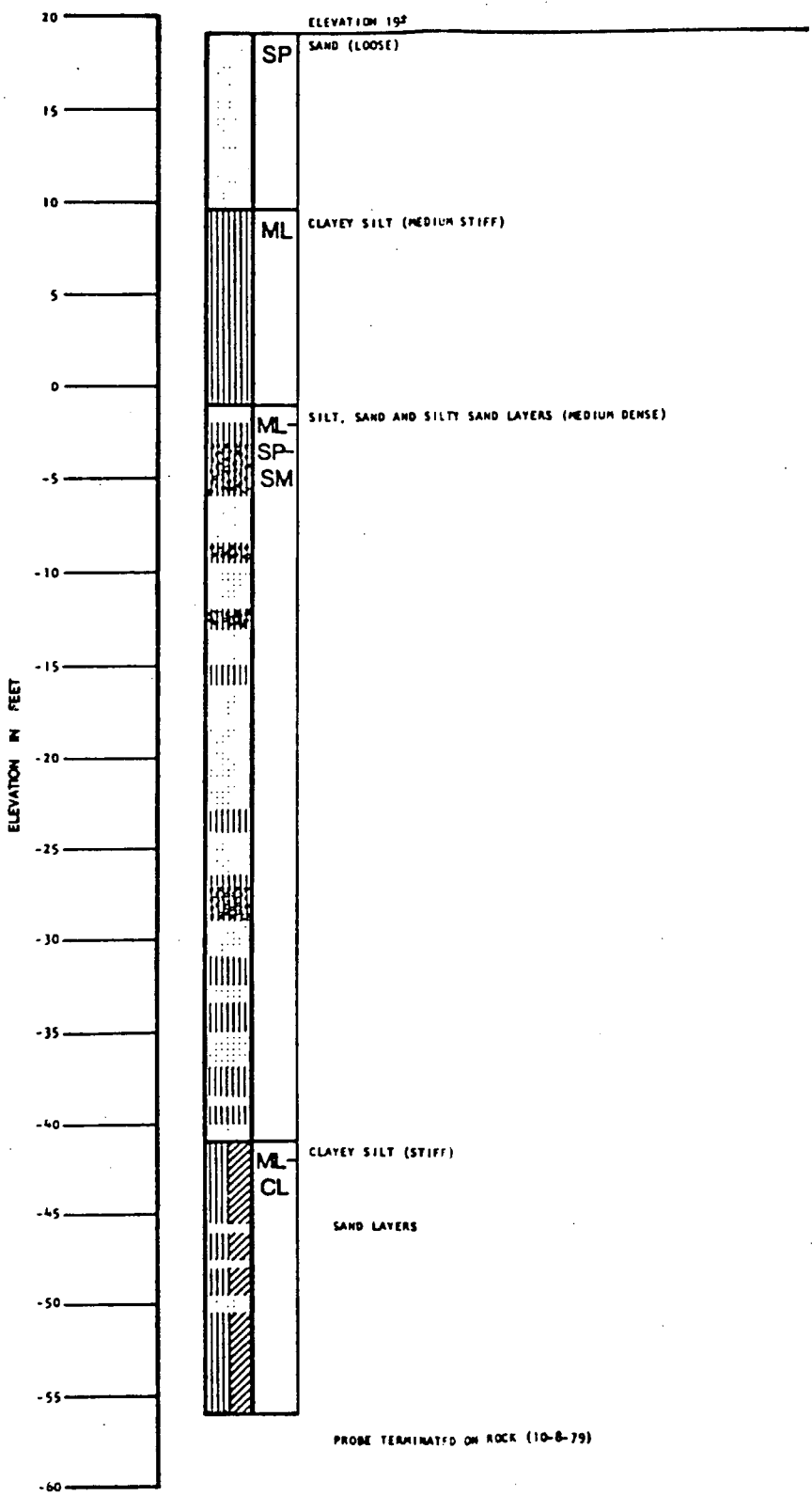
NOTE:

EXTENSION TO THE TEST IS NECESSARY FOR A PROPER ASSESSMENT OF SUBSURFACE CONDITIONS THIS BORING

PROBE 26

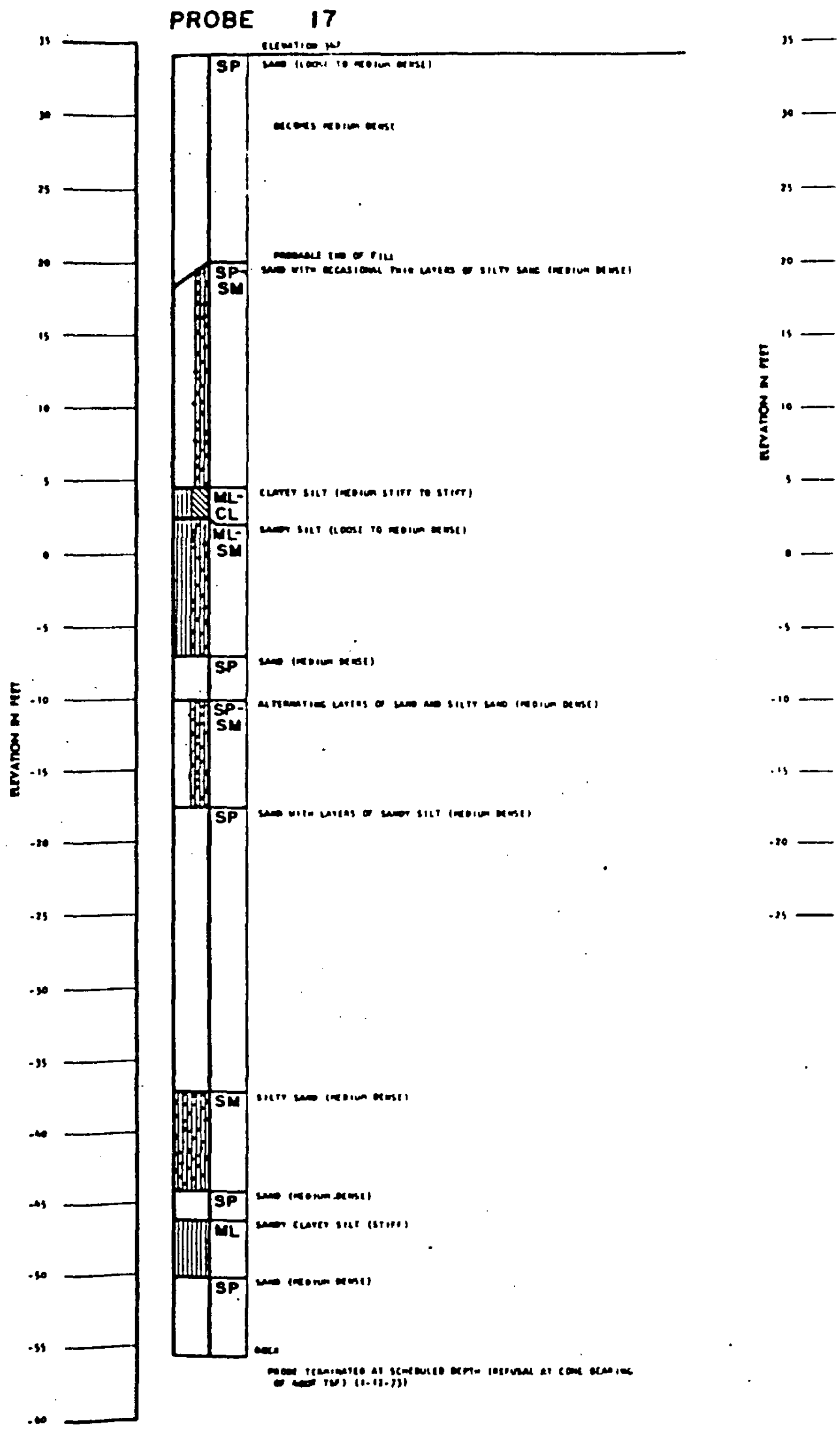

ELEVATION 23±
GM
GRAVEL AND DEBRIS (FILL)
SP
SAND (MEDIUM DENSE TO DENSE)
ML-CL
CLAYEY SILT (STIFF)
SAND LAYER
SAND LAYER (DENSE)
GRADES STIFF
ML-SP
SILT AND SAND LAYERS (MEDIUM DENSE)
SILTY SAND LAYER
SP
SAND (MEDIUM DENSE)
SILT LAYER
PROBE TERMINATED (10-5-79)
ELEVATION IN FEET
25
20
15
10
5
0
-5
-10
-15
-20
-25
-30
-35
-40

PROBE 25



LOG OF PROBE

DAMES & MOORE



NOTE:

DISCUSSION IN THE TEXT OF THIS REPORT IS NECESSARY FOR A PROPER UNDERSTANDING OF SUBSURFACE CONDITIONS REVEALED BY THE BORINGS.

APPENDIX B

Tentatively Identified Organic Compounds at Sample Sites

SAMPLE SITE GW-10 28 DEC 84

THE WATER SAMPLE WAS EXTRACTED IN METHYLENE CHLORIDE AND ANALYZED BY GC/MS. IN ADDITION TO THE PRIORITY POLLUTANT CHEMICALS, THE SAMPLE WAS SCANNED FOR ANY OTHER UNKNOWNS ABOVE THE DETECTION LIMIT OF 1.0 MG/L. THE FOLLOWING COMPOUNDS WERE TENTATIVELY IDENTIFIED WITH THE ESTIMATED CONCENTRATIONS SHOWN.

COMPOUND	MG/L
1,2-DIMETHYLBENZENE	160
2-METHYLNAPHTHALENE	8
9H-CARBAZOLE	20
4-METHYLPHENANTHRENE	2
3-METHYLPHENANTHRENE	5

SAMPLE SITE GW-11B 27 DEC 84

THE WATER SAMPLE WAS EXTRACTED IN METHYLENE CHLORIDE AND ANALYZED BY GC/MS. IN ADDITION TO THE PRIORITY POLLUTANT CHEMICALS, THE SAMPLE WAS SCANNED FOR ANY OTHER UNKNOWNS ABOVE THE DETECTION LIMIT OF 0.1 MG/L. THE FOLLOWING COMPOUNDS WERE TENTATIVELY IDENTIFIED WITH THE ESTIMATED CONCENTRATIONS SHOWN.

COMPOUND	MG/L
1,2-DIMETHYLBENZENE	22
1-ETHENYL-2-METHYLBENZENE	3
1,1'-BIPHENYL	2
1,7-DIMETHYLNAPHTHALENE	2
1,8-DIMETHYLNAPHTHALENE	2
9H-CARBAZOLE	10
3-METHYLPHENANTHRENE	2

SAMPLE SITE SW-4A 25 SEP 84

IN ADDITION TO THE PRIORITY POLLUTANT CHEMICALS, THE FOLLOWING COMPOUNDS WERE OBSERVED AT THE ESTIMATED CONCENTRATIONS SHOWN.

COMPOUND	MG/L
1,2-DIMETHYLBENZENE	0.2
1-ETHYNYL-4-METHYL-BENZENE	0.4
BENZO(B)THIOPHENE	0.3

SAMPLE SITE SW-4B

26 DEC 84

THE WATER SAMPLE WAS EXTRACTED IN METHYLENE CHLORIDE AND ANALYZED BY GC/MS. IN ADDITION TO THE PRIORITY POLLUTANT CHEMICALS, THE SAMPLE WAS SCANNED FOR ANY OTHER UNKNOWNS. THE FOLLOWING COMPOUNDS WERE TENTATIVELY IDENTIFIED WITH THE ESTIMATED CONCENTRATIONS SHOWN.

COMPOUND	MG/L
METHYLBENZENE	0.02
1,2-DIMETHYLBENZENE	0.11
ETHYLBENZENE	0.06
1-ETHYL-2-METHYLBENZENE	0.02
1-PROPYNYLBENZENE	0.29
1-PHENYLETHANONE	0.02
BENZO(B)THIOPHENE	0.17
2,3-DIHYDRO-1H-INDEN-1-ONE	0.02

SAMPLE SITE SS-8 25 SEP 84

IN ADDITION TO THE PRIORITY POLLUTANT CHEMICALS, THE FOLLOWING COMPOUNDS WERE OBSERVED AT THE ESTIMATED CONCENTRATIONS SHOWN.

COMPOUND	MG/KG
1-METHYLNAPHTHALENE	180
1,3-BENZENEDICARBØNITRILE	20
1,4-DIHYDRO-1,4-METHANONAPHTHALENE	120
1,1'-BIPHENYL	60
2-ETHYLNAPHTHALENE	20
1,7-DIMETHYLNAPHTHALENE	60
1,4-DIMETHYLNAPHTHALENE	35
2,7-DIMETHYLOCTANE	10
DIBENZOFURAN	230
1,3,6-TRIMETHYLNAPHTHALENE	20
2-METHYL-1,1'-BIPHENYL	30
(1,1'-BIPHENYL)-4-CARBOXALDEHYDE	70
9,10-DIHYDROPHENANTHRENE	20
DIBENZOTHIOPHENE	40
9H-CARBAZOLE	300
4-METHYLDIBENZOTHIOPHENE	30
4-METHYLPHENANTHRENE	70
2-METHYLPHENANTHRENE	130
2,5-DIMETHYLPHENANTHRENE	30
2,3-DIMETHYLPHENANTHRENE	30

SAMPLE SITE SS-9 25 SEP 84

IN ADDITION TO THE PRIORITY POLLUTANT CHEMICALS, THE FOLLOWING COMPOUNDS WERE OBSERVED AT THE ESTIMATED CONCENTRATIONS SHOWN.

COMPOUND	MG/KG
1-ETHYNYL-4-METHYL-BENZENE	60
BENZO(B)THIOPHENE	60
2-METHYLNAPHTHALENE	140
1,1'-BIPHENYL	120

SAMPLE SITE SS-10 27 DEC 84

THE WATER SAMPLE WAS EXTRACTED BY EPA RCRA PROCEDURE 3540 (ACETONE/HEXANE) AND ANALYZED BY GC/MS. IN ADDITION TO THE PRIORITY POLLUTANT CHEMICALS, THE SAMPLE WAS SCANNED FOR ANY OTHER UNKNOWNS ABOVE THE DETECTION LIMIT OF 1.0 MG/L. THE FOLLOWING COMPOUNDS WERE TENTATIVELY IDENTIFIED WITH THE ESTIMATED CONCENTRATIONS SHOWN.

COMPOUND	MG/KG
4-HYDROXY-4-METHYL-2-PENTANONE	80
1,2-DIMETHYLBENZENE	54
1,2,4-TRIMETHYLBENZENE	54
1-ETHENYL-2-METHYLBENZENE	36
1-PROPENYLBENZENE	165
2,3-DIHYDRO-4-METHYL-1H-INDENE	52
BENZO(B)THIOPHENE	200
2-METHYLNAPHTHALENE	960
1,1'-BIPHENYL	110
1,8-DIMETHYLBENZENE	150

WACKER SILTRONIC CORP.

Site Assessment Highlights

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SITE ASSESSMENT CHRONOLOGY

Date	Activity
10/2/84	Dr. Freiesleben, President of Wacker Siltronic announced intent to construct a large polysilicon production facility at the company's existing site on Front Avenue.
10/84	NWNG initiated meeting with Wacker Siltronic to discuss the possibility of contamination on a portion of the Wacker plant site caused by the old Portland Gas and Coke plant. NWNG was concerned that contamination could be in locations where polysilicon plant construction would occur.
11/5/84	Bruce DeBolt, attorney for NWNG, talked by telephone to Jim Ellis, Polysilicon Project Manager, in regard to development of list of environmental consultants who could make proposals for preliminary investigation for that portion of old Portland Gas and Coke site which was now Wacker Siltronic property.
11/84	During this month it was decided that NWNG and Wacker Siltronic would get proposals from the following environmental consultants: a.) Enserve Corp. b.) Radian Corp c.) Dames & Moore
1/8/85	Enserve Corp. presented their proposal for a preliminary site assessment to NWNG and Wacker Siltronic personnel.
1/24/85	Radian Corp. and Dames & Moore presented proposals for preliminary site assessment to NWNG and Wacker Siltronic in separate meetings on this day. Also on this day a joint decision was made to have Dames & Moore conduct a preliminary site assessment for an estimated cost of $30,000.
2/1/85	Dames & Moore sent a letter to Richard Bach, attorney representing NWNG, confirming their earlier proposal.
2/8/85	Proposed study by Dames and Moore was cancelled as a result of a telephone call from Mal Russ of Wacker Siltronic to Robert Ridgley of NWNG.
2/85	CH2M-Hill, who was already working with Wacker Siltronic on the design of the polysilicon production facility, was given site information which they did not previously possess, and asked to assist with the site problem as related to the construction of the new facility.

Site Assessment Chronology
Page 2

4/1 - 4/9/85	Seven (7) soil borings were drilled under the direction of CH2M-Hill personnel. Soil samples were recovered at 5-foot intervals. The depth of soil borings ranged from 31.5 feet to 41.5 feet, generally between 5 and 20 feet below fill material and into native soils.
4/10/85	Nine (9) of the worst soil samples were selected and sent out to procure laboratory analyses for oil and grease, phenols, volatiles, polynuclear aromatic hydrocarbons and E.P. toxicity. All samples were sent to Coffey Labs, Portland, Oregon.
5/14/85	Wacker Siltronic received soil analyses from Coffey Labs.
6/4/85	Wacker Siltronic asked CH2M-Hill to conduct air sampling/analysis in the various plant areas and at the monitoring wells. This plant area monitoring was done to insure that Wacker Siltronic employees were not being exposed to hazardous vapors.
6/12/85	Wacker Siltronic submitted an EPA form - "Notification of Hazardous Waste Site" to the EPA Region X office in Seattle with a copy to the DEQ.
6/14/85	Wacker Siltronic held a press conference at which Mal Russ announced that the polysilicon project had been placed 'on hold' due to environmental problems with the site. All of Wacker Siltronics' immediate neighbors in the Doane Lake Industrial area were informed of the announcement before the press release took place.
6/28/85	Miller, Nash, Wiener, Hager & Carlsen, Attorneys, representing Wacker Siltronic, sent out letters to all parties who were suspected as having impact on the contamination of the subject site. This letter advised of future plans and asked for cooperation in sharing the cost of an environmental assessment.
7/31 - 8/1/85	CH2M-Hill personnel procured eight (8) groundwater samples from seven (7) monitoring wells. These samples were sent to Lauck's Laboratories, Seattle for analyses of the 129 Priority Pollutants.
9/20/85	Wacker Siltronic received Groundwater Analysis Report from Lauck's Laboratories.

10/10/85 Wacker Siltronic sent a letter to DEQ stating that groundwater analyses indicated a very low level of critical contaminants. Because of this very low level, Wacker stated, that, in their opinion, no environmental or health threat is posed by the site and construction should commence with no future interference. The groundwater report was attached to this letter; DEQ was asked to concur with Wacker's opinion.

11/20/85 Janet Gillaspie, DEQ, indicated during a telephone conversation that the NWNG and Wacker Siltronic Sites were considered, by the EPA, to be Phase II of the Superfund activity now ongoing for the Gould site. Wacker Siltronic immediately asked for a meeting on 11/21/85 with Fred Hansen, Director of DEQ, to further discuss this subject.

11/21/85 During this meeting, Wacker Siltronic challenged the statement that the Siltronic site was on the Superfund List, because no data had been requested for the rating procedure. Fred Hansen indicated that the DEQ would look into this statement by the EPA and then contact Jim Ellis at Wacker Siltronic.

12/2/85 Janet Gillaspie, DEQ, called to indicate that the NWNG/Wacker Siltronic Site is <u>not</u> on a Superfund list. DEQ had simply misinterpreted this communication by the EPA. Janet added, however, that the EPA is intending to get the NWNG and Wacker Siltronic Sites on the Superfund list.

1/9/86 Received copy of letter written by Michael J. Downs of DEQ to Chuck Findley, Region X, EPA, indicating that decision has to be made as to which agency (DEQ or EPA) will administer assessment activity on Wacker Siltronic and adjacent sites.

JRE:ll
2/3/86

Wacker to build processing facility

By STEVE JENNING
of The Oregonian staff

924.1

Wacker Siltronic Corp., the manufacturer of high-technology silicon wafers, Monday announced plans to build an $80 million raw materials processing plant near its present Northwest Portland factory.

The plant, scheduled to open within three years, will add 200 new jobs to Wacker's 700-employee local work force. The plant will be the world's largest producer of polysilicon, an inorganic sandlike compound, which under heat and pressure, is turned into highly specialized glass cylinders at factories such as Wacker's Northwest Portland plant. The cylinders then are sliced into paper-thin wafers for use by the electronics industry.

Another 600 jobs will be created through a previously announced $85 million expansion of the company's existing factory. By 1990, Wacker employment in Oregon could reach 2,000 workers, said company president Werner Freiesleben.

"This is a basic microelectronics technology," Freiesleben said at a company-hosted luncheon at the Westin Benson Hotel. "Without it, there are no new electronics products."

Freiesleben said the polysilicon plant development reflects the European-owned company's confidence in the continued growth of the semiconductor industry. Semiconductors, or "chips," are small patches of silicon wafer upon which microelectronic circuitry is etched. The chips form the brains of modern computers.

Wacker is the U.S.-based subsidiary of the West German chemical conglomerate, Wacker-Chemitronic. The parent corporation is the world's largest producer of silicon wafer material.

Freiesleben said the plant's ultimate production capacity — 5,000 tons per year — is equal to the total, worldwide polysilicon demand. He said the plant initially will produce enough to service Portland's needs, now about 300 tons per year, and perhaps a bit more. He implied, however, that the factory rapidly would be selling to other customers, and in large volume.

Wacker, which opened its Portland wafer factory in 1980, had always planned to build a polysilicon plant as well "to make it (the wafer factory) a totally integrated operation." High demand from Far Eastern customers — primarily the Japanese — as well as the generally explosive resurgence of the U.S. semiconductor industry encouraged Wacker executives to build a much larger polysilicon plant than originally envisioned.

Freiesleben made the announcement during the company's first international sales conference here. Wacker had invited sales representatives from some 50 countries. Gov. Vic Atiyeh and Portland Mayor Frank Ivancie also attended Monday's luncheon.

Atiyeh, who recently returned from a Far East trade mission, noted plans by several Japanese companies to build electronics plants in the Portland area. He reminded listeners that Wacker had been one of the first foreign high-technology companies to commit a major manufacturing investment in the state.

"We are indeed glad to add to the international community coming here," he said. Speaking of the state's economic development efforts, Atiyeh said, "Oregon is moving in the fast track. Indeed, we are in the fast track. We have finally broken through."

Malcolm J. Russ, a Wacker executive vice president and the Portland plant's general manager, said the company expects to ship polysilicon from here beginning in 1987.

Wacker manufactures more than 50 percent of the world's polysilicon needs. The Portland plant is producing about 35 percent of the U.S. demand for silicon wafers.

Freiesleben said the company considered other locations for the plant, in particular two Canadian sites, which offered cheaper electric power. He said that the company's good experience in Portland (Wacker received the equivalent of a $14 million public subsidy to build here) and the state Legislature's recent decision eliminating the unitary tax assessment on multinational corporations swayed the decision toward Oregon during the last week.

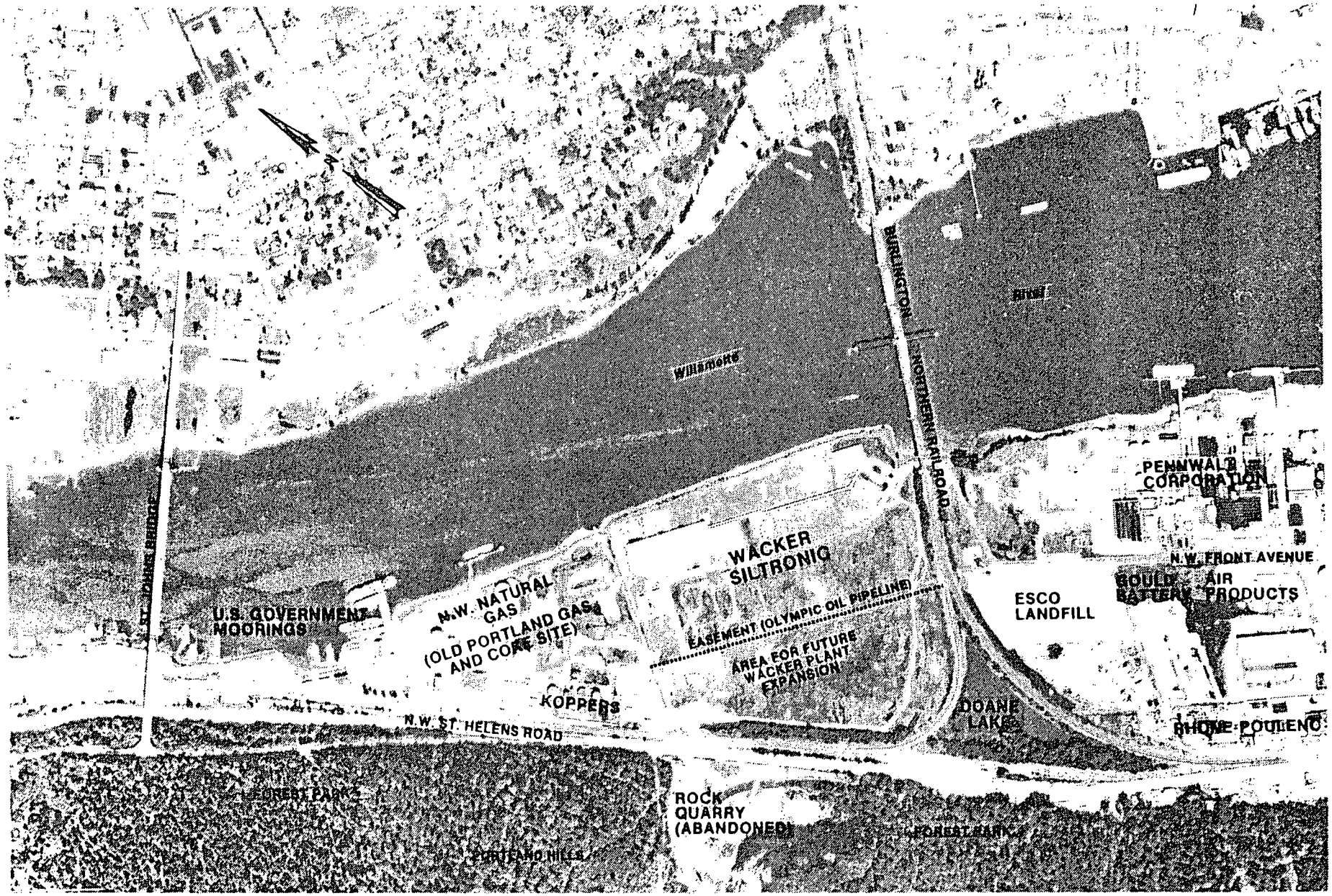
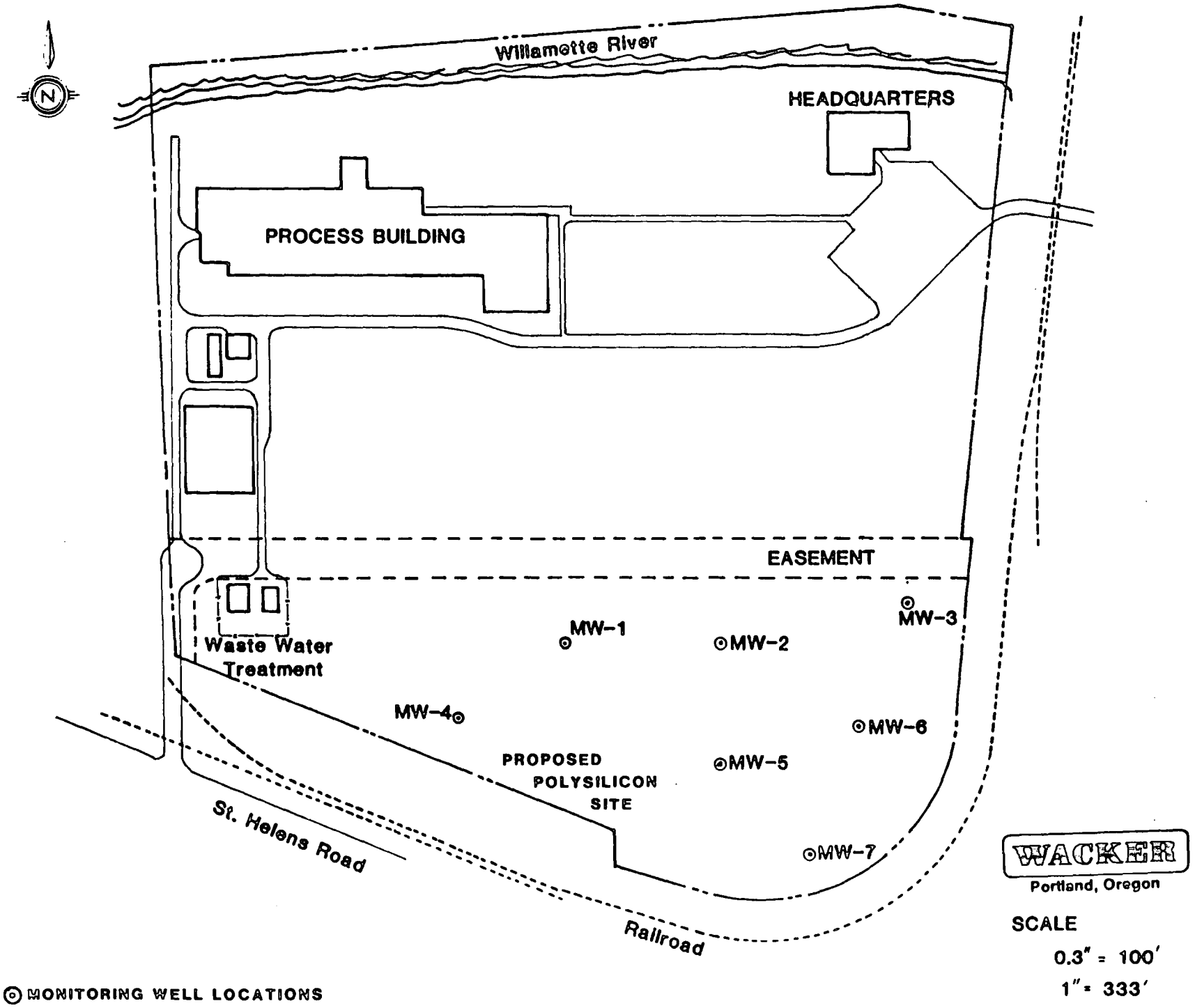


Figure 1 WACKER SILTRONIC PLANT AND SURROUNDING VICINITY (1983)

SCALE: 1" = 940 FEET (1 cm : 110 m)

Figure 1 - MONITORI ; WELL LOCATIONS ON PR OSED POLYSILICON SITE



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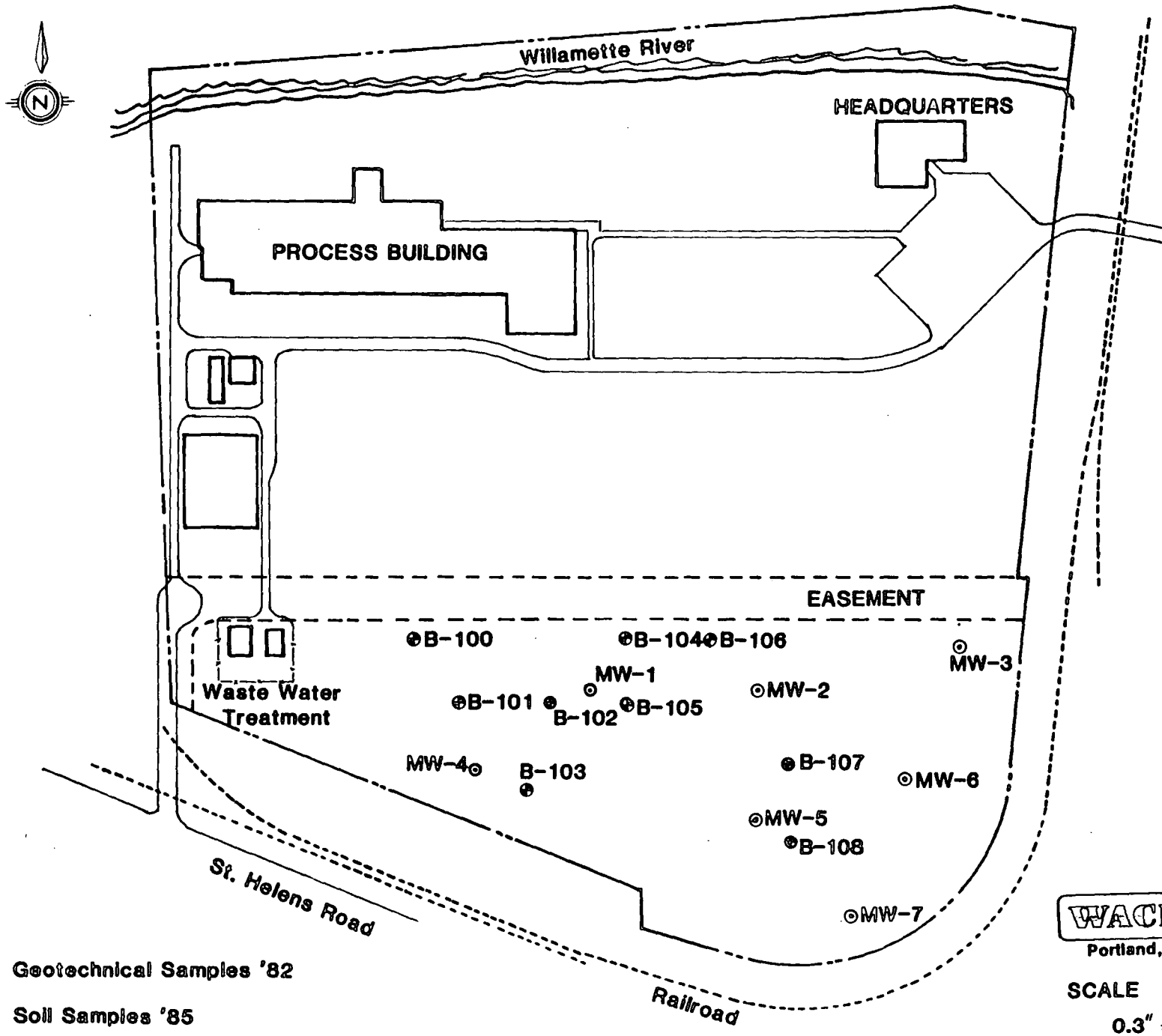

WACKER
Portland, Oregon

SCALE
0.3" = 100'
1" = 333'
Revised 4-10-85

SCOEPA00036755

Table 1
WACKER SILTRONIC, POLYSILICON PLANT SOILS INVESTIGATION
SOURCE: COFFEY LABORATORIES, INC./APRIL 30, 1985
RESULTS OF SOILS ANALYSIS

Chemical Compounds	MW-1, S-3 (15-16.5 ft)	MW-2, S-4 (20-21.5 ft)	MW-3, S-5 (25-26.5 ft)	MW-4, S-1 (5-6.5 ft)	MW-4, S-7 (35-36.5 ft)	MW-5, S-2 (10-11.5 ft)	MW-6, S-3 (15-16.5 ft)	MW-7, S-5 (25-26.5 ft)	MW-7, S-8 (40-41.5 ft)	Detection Limits	Reference Criteria
Organic Analyses											
o Volatile Compounds											
1,1,1-Trichloroethane	0.01	BD	BD	BD	BD	BD	BD	BD	BD	0.01	pp, PDW (*)
1,2-Dichloroethane	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.01	pp, PDW (*)
1,1,2,2-Tetrachloroethylene	2.2	11	BD	BD	BD	0.14	BD	BD	BD	0.05	
Toluene	1.2	20	0.11	BD	BD	0.20	BD	BD	BD	0.1	pp
Chlorobenzene	0.04	BD	BD	BD	BD	BD	BD	BD	BD	0.04	pp
Ethyl Benzene	17	5.4	BD	BD	BD	BD	BD	BD	0.05	0.04	pp
Xylene	146	116	BD	BD	BD	1.5	BD	2.8	1.2	1.0	
o Acid Extractables											
Phenol	0.35	3.1	0.20	0.30	0.17	0.07	0.05	0.06	0.08	NR	pp, SWQ
2-Chlorophenol	ND	7.8	0.08	0.26	ND	ND	0.13	ND	0.14	NR	pp, SWQ
2-Nitrophenol	ND	0.20	ND	ND	ND	ND	ND	ND	ND	NR	pp, SWQ
2,4-Dimethylphenol	ND	3.1	ND	ND	ND	0.22	0.17	ND	ND	NR	pp, SWQ
2,4-Dichlorophenol	ND	2.7	ND	ND	ND	0.24	ND	ND	ND	NR	pp, SWQ
2,4,6-Trichlorophenol	ND	ND	ND	ND	ND	0.22	ND	ND	ND	NR	pp, SWQ
2,4-Dinitrophenol	ND	ND	ND	ND	ND	0.81	ND	ND	ND	NR	pp, SWQ
Pentachlorophenol	ND	ND	ND	ND	0.31	6.9	5.1	ND	ND	NR	pp,SWQ,SHW
o Base Neutral Extractables											
Naphthalene	6.7	360	BD	BD	BD	230	BD	BD	BD	1	pp
Acenaphthalene	5.6	230	BD	BD	BD	24	BD	BD	BD	1	pp
Acenaphthene	8.0	560	BD	BD	BD	28	BD	BD	BD	1	pp
Fluorene	5.0	290	BD	BD	BD	20	BD	BD	BD	1	pp
Phenanthrine-Anthracene (***)	32	1,400	3	BD	BD	150	BD	1.6	BD	1	pp
Fluoranthene	16	530	BD	BD	BD	50	BD	1.1	BD	1	pp
Pyrene	18	550	BD	BD	BD	57	BD	1.2	BD	1	pp
Chrysene	12	92	BD	BD	BD	36	BD	1.7	BD	1	pp
Benzo (b) + Benzo (k) Fluoranthene (***)	8	120	BD	BD	BD	200	BD	BD	BD	1	pp
Benzo (a) pyrene	19	120	BD	BD	BD	100	BD	BD	BD	1	pp
Indeno (1,2,3-CD) Pyrene + Dibenzo (a,b) Anthracene (***)	BD	270	BD	BD	BD	7	BD	BD	BD	1	
Benzo (ghi) Perylene	BD	360	BD	BD	BD	25	BD	BD	BD	1	pp
o Pesticides (EP Toxicity)											
Gamma BHC (Lindane)	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.04	pp, SHW, PDW
Endrin	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.002	pp
Toxaphene	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	pp

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Table 1 (Continued)

Chemical Compounds	MW-1, S-3 (15-16.5 ft)	MW-2, S-4 (20-21.5 ft)	MW-3, S-5 (25-26.5 ft)	MW-4, S-1 (5-6.5 ft)	MW-4, S-7 (35-36.5 ft)	MW-5, S-2 (10-11.5 ft)	MW-6, S-3 (15-16.5 ft)	MW-7, S-5 (25-26.5 ft)	MW-7, S-8 (40-41.5 ft)	Detection Limits	Reference Criteria
Inorganic Analyses (EP Toxicity)											
Arsenic	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	pp,SHW,SWQ,PDW
Barium	0.05	0.11	0.05	0.09	BD	0.05	0.11	0.08	0.15	0.05	SHW, SWQ
Cadmium	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	pp,SHW,SWQ,PDW
Chromium	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	pp,SHW,SWQ,PDW
Lead	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	pp,SHW,SWQ,PDW
Mercury	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	pp,SHW,PDW
Selenium	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	pp,SHW,PDW
Silver	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	pp,SHW,PDW
Miscellaneous Analysis											
o non-PP Phenols/Cresols											
3 & 4-Chlorophenol	0.44	17.5	0.06	ND	ND	1.7	0.32	ND	ND	NR	SHW, SWQ
2,4,5-Trichlorophenol	ND	1.9	ND	ND	ND	ND	ND	ND	ND	NR	SHW, SWQ
2,3,4,5-Tetrachlorophenol	4.9	256	ND	0.40	ND	0.23	4.7	0.06	0.25	NR	SHW, SWQ
2,3,4,6-Tetrachlorophenol	0.24	ND	ND	ND	ND	ND	ND	1.0	ND	NR	SHW, SWQ
2,3,5,6-Tetrachlorophenol	ND	4.0	ND	0.58	0.11	0.33	0.55	ND	0.46	NR	SHW, SWQ
o-Cresol	0.04	3.4	ND	0.02	ND	0.19	0.05	ND	ND	NR	
m- and p-Cresol (***)	0.006	ND	ND	0.08	ND	ND	ND	ND	ND	NR	
o Non-PP Pesticides (EP Toxicity)											
Methoxychlor	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.1	SHW, PDW
2,4-D	BD	BD	BD	BD	BD	10.0	160.0	BD	BD	10	SHW, PDW
2,4,5-TP (Silvex)	BD	BD	BD	BD	BD	BD	BD	BD	BD	1	SHW, PDW
o Misc. Constituents/Parameters											
Oil and Grease	0.340%	0.1498%	0.0587%	0.914%	0.0304%	0.190%	0.0539%	0.0650%	0.0586%		

Unless otherwise specified, all units are mg/kg (mg/L).

pp Priority Pollutant
PDW National Interim Primary Drinking Water Regulations
PDW(*) Proposed N.I.P.D.W.R.
SHW State of Oregon Hazardous Waste Administrative Rules
SWQ State of Oregon Water Quality Administrative Rules
BD Parameter detected, but below analytical quantification limits.
ND Analyzed, but not detected.
NR Not reported.
(***) Reported as sum of two compounds.

PDR956.C31.2

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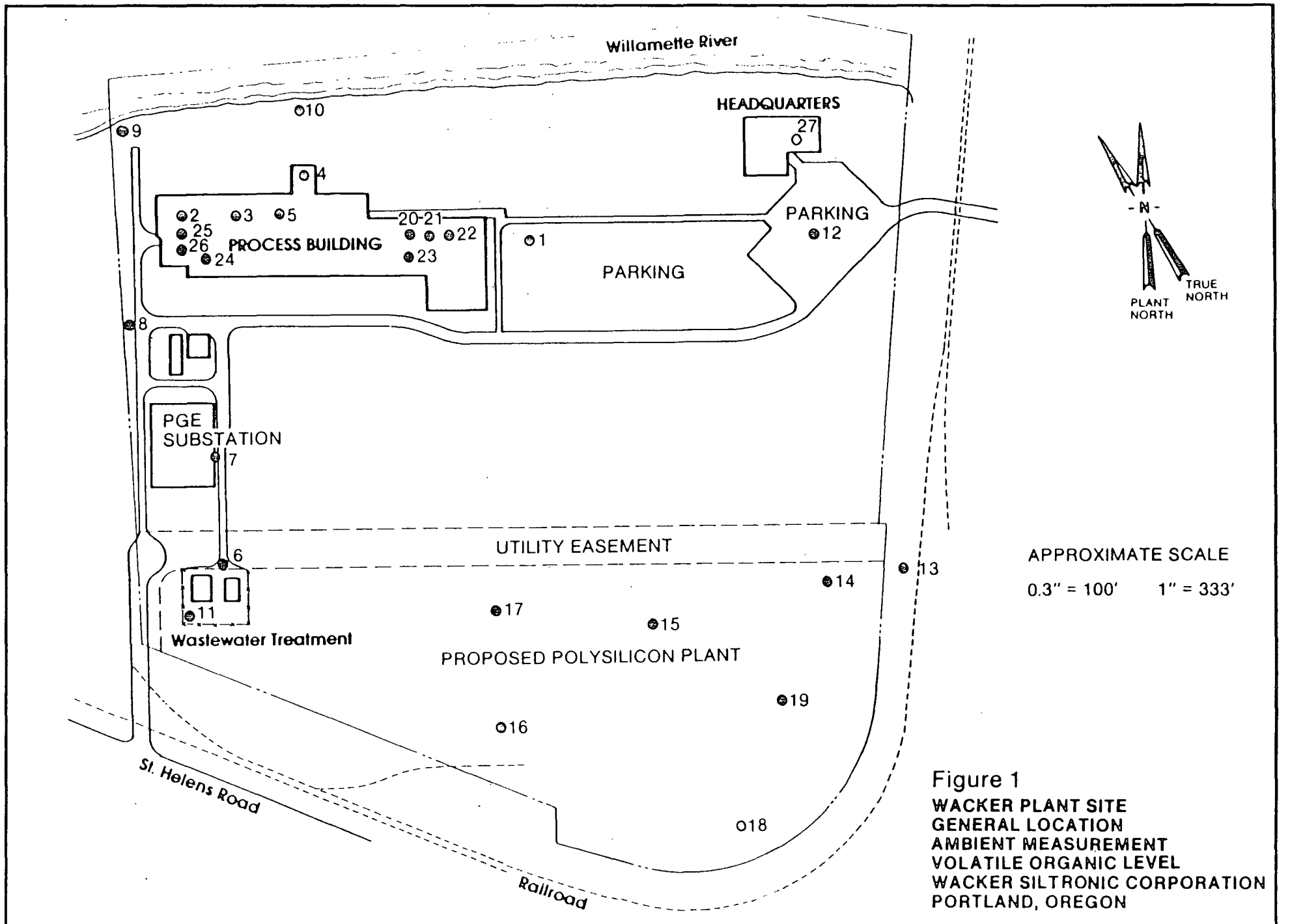


Figure 1
WACKER PLANT SITE
GENERAL LOCATION
AMBIENT MEASUREMENT
VOLATILE ORGANIC LEVEL
WACKER SILTRONIC CORPORATION
PORTLAND, OREGON

SCOEPA00036758

Table 1
SUMMARY OF MEASUREMENTS
OUTSIDE OF THE BUILDINGS

Location	Measurement (ppm) OVA[1]	HNU[2]
1. Visitor Parking Process Building	0.4	0.4
Process Building Roof		
2. Penthouse No. 1 air intake	0.4	0.4
3. Penthouse No. 2 air intake	0.4	0.4
4. Roof edge above polishing expansion	0.4	0.4
5. Penthouse No. 4 air intake	0.4	0.4
Inside Fence		
6. Wastewater treatment parking area	0.4	0.4
7. PGE substation	0.4	0.4
8. Fence line north of substation	0.4	0.4
9. NW corner Wacker property	0.4	0.4
10. River edge across from polishing	0.4	0.4
11. SW corner Wacker property	0.4	0.4
12. Visitor Parking Headquarter Building	0.4	0.4
South Side of Easement		
13. Power pole adjacent raised railroad tracks	0.4	0.4
14. Near MW-3[3]	0.4	0.4
15. Near MW-2[3]	0.4 <0.1 (Non-methane)	--
16. Near MW-4[3]	0.4 <0.1 (Non-methane)	--
17. Near MW-1[3]	0.4 <0.1 (Non-methane)	--
18. Near MW-7[3]	0.4 <0.1 (Non-methane)	--
19. Near MW-6[3]	0.4 <0.1 (Non-methane)	--

[1] Total hydrocarbon in terms of methane equivalents.

[2] Total non-methane hydrocarbons in terms of benzene equivalents.

[3] HNU battery weak, discontinued its use. Used the OVA in the GC mode to measure non-methane organic fraction of the sample air (explanation of GC mode provided in Sampling Procedures).

SCOEPA00036759

Table 2
SUMMARY OF MEASUREMENTS
INSIDE OF THE BUILDINGS

Location	Measurement (ppm) OVA[1]	Measurement (ppm) HNU[2]
Process Building		
20. Lobby/Security Station[3]	4.5	1.7
21. Lobby/Security Station[3]	4.6	2.0
22. Ground Level Expansion (behind lobby/security station)[3]	5.3	2.3
23. Main Corridor (across from lobby/ security station)[3]	0.4	0.4
24. Far End of Main Corridor (next to stairway to basement)[3]	2.1	1.7
25. Basement (center area)	0.9	0.6
26. Basement (next to stairway to ground level)	0.5	0.4
Headquarter Building		
27. Lobby/Visitors Waiting Area[4]	0.6	0.6

[1] Total hydrocarbon in terms of methane equivalents.

[2] Total non-methane hydrocarbons in terms of benzene equivalents.

[3] Measurements non-representative of normal plant building air because of interior finishing of the main floor expansion. Within the previous 7 days the walls had been painted and carpets installed. In addition, the kickboard had been glued in place less than 2 hours before performing the survey.

[4] Visitor lobby area carpeted.

SCOEPA00036760

RECEIVED
JUN 12 1985
WACKER SILTRONIC
ENGINEERING

CH2M HILL

MEMORANDUM

TO: Jim Ellis, Wacker Siltronic Corporation

FROM: Jack Payne, CH2M HILL

DATE: June 10, 1985

SUBJECT: Hydrocarbon Measurements From Wacker's Monitoring Wells

PROJECT: P19786.A0

COPY: Rick Reid, CH2M HILL

On June 4, 1985, Mark Boedigheimer and Jack Payne of CH2M HILL surveyed six of Wacker's seven monitoring wells located south of the easement for the presence of total hydrocarbons and total nonmethane hydrocarbons. The sampling procedures, quality assurance, and weather conditions were previously provided in our report regarding ambient hydrocarbon levels at the Wacker site.

Attached is a copy of the daily site investigation diary, which includes the recorded measured levels of hydrocarbons inside the monitoring wells.

Attachment

PDC118.042.1

CH2M HILL DAILY SITE INVESTIGATION DIARY

PROJECT NO. P197 86 A0

DAY: TUESDAY DATE: 060485 WORK PERIOD 8:20 A.M. P.M. TO 2:45 A.M. P.M. PAGE NO. 1

WEATHER _____ TEMP. MAX ____ °F: MIN ____ °F: PRECIPITATION _____

ONSITE PERSONNEL

JACK PAYNE - CH2M

MARK BOEDIGHEIMER - CH2M

PERFORM ORGANIC VAPOR MEASUREMENTS IN GROUND WATER MONITORING WELLS IN AREA FOR PROPOSED POLYPLANT

TIME	RECORD OF ONSITE ACTIVITIES
1:30pm	MW-3 (Removed Both Caps) - Static Conditions, Did not purge wells prior to taking measurements HNU battery dead. ~~0.0~~ 6.0 ppm OVA
1:40pm	MW-2 (Removed Both Caps) - Static Conditions, Did not purge wells prior to taking measurements greater than 1000 ppm OVA, HNU battery dead.
1:50pm	MW-4 (Removed Both Caps) - Static Conditions, Did not purge wells prior to taking measurements 6.0 ppm OVA (Methane) <0.1 ppm Non methane
2:00pm	MW-1 (Removed Both Caps) Static Conditions Did not purge wells prior to taking measurements 0.6 ppm OVA (Methane) <0.1 ppm Non methane
2:10pm	MW-7 (Removed Both Caps) Static Conditions Did not purge well prior to taking measurements

~~FIELD EQUIPMENT~~	~~HOURS OF USE~~	~~DATE OF CALIBRATION~~
1.4 ppm OVA (Methane) <0.1 ppm Non methane		
2:20pm MW-6 (Removed Both Caps) Static Conditions, Did not purge well prior to taking measurements 3.5 ppm OVA (Methane) <0.1 ppm Non methane		

Jack Payne 6/4/85

SIGNATURE DATE

FORM 211

Wacker Siltronic Corporation

WACKER

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

June 12, 1985

United States Environmental Protection Agency
Mail Stop 525
1200 Sixth Avenue
Seattle, Washington 98101

Dear Sirs:

Enclosed is a completed EPA form for notification of hazardous waste site.

Yours very truly,

WACKER SILTRONIC CORPORATION

Malcolm J. Russ
Executive Vice President

MJR:ds

Attachments (3)

cc: Mr. Fred Hansen, Director
Department of Enviromental Quality
Portland, Oregon

Mr. John Pittman
Mr. Jim Ellis

EPA Notification of Hazardous Waste Site

United States
Environmental Protection
Agency
Washington DC 20460

This initial notification information is required by Section 103(c) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 and must be mailed by June 9, 1981.

Please type or print in ink. If you need additional space, use separate sheets of paper. Indicate the letter of the item which applies.

A Person Required to Notify:
Enter the name and address of the person or organization required to notify.

Name: Wacker-Siltronic Corporation
Street: 7200 N.W. Front Avenue
City: Portland State: OR Zip Code: 97229

B Site Location:
Enter the common name (if known) and actual location of the site.

Name of Site: Wacker-Siltronic Corporation
Street: 7200 N.W. Front Avenue
City: Portland County: Mult. State: OR Zip Code: 97229

C Person to Contact:
Enter the name, title (if applicable), and business telephone number of the person to contact regarding information submitted on this form.

Name (Last, First and Title): Russ, Dr. Malcolm J., Executive Vice President
Phone: (503) 243-2020

D Dates of Waste Handling:
Enter the years that you estimate waste treatment, storage, or disposal began and ended at the site.

From (Year): unknown, but possibly as early as 1940's To (Year): present

E Waste Type: Choose the option you prefer to complete

Option 1: Select general waste types and source categories. If you do not know the general waste types or sources, you are encouraged to describe the site in Item I—Description of Site.

General Type of Waste:
Place an X in the appropriate boxes. The categories listed overlap. Check each applicable category.

1. ☒ Organics
2. ☐ Inorganics
3. ☒ Solvents
4. ☒ Pesticides
5. ☐ Heavy metals
6. ☐ Acids
7. ☐ Bases
8. ☐ PCBs
9. ☐ Mixed Municipal Waste
10. ☐ Unknown
11. ☐ Other (Specify)

Source of Waste:
Place an X in the appropriate boxes.

1. ☐ Mining
2. ☐ Construction
3. ☐ Textiles
4. ☐ Fertilizer
5. ☐ Paper/Printing
6. ☐ Leather Tanning
7. ☐ Iron/Steel Foundry
8. ☐ Chemical, General
9. ☐ Plating/Polishing
10. ☐ Military/Ammunition
11. ☐ Electrical Conductors
12. ☐ Transformers
13. ☐ Utility Companies
14. ☐ Sanitary/Refuse
15. ☐ Photofinish
16. ☐ Lab/Hospital
17. ☒ Unknown
18. ☒ Other (Specify) plant operations

Option 2: This option is available to persons familiar with the Resource Conservation and Recovery Act (RCRA) Section 3001 regulations (40 CFR Part 261).

Specific Type of Waste:
EPA has assigned a four-digit number to each hazardous waste listed in the regulations under Section 3001 of RCRA. Enter the appropriate four-digit number in the boxes provided. A copy of the list of hazardous wastes and codes can be obtained by contacting the EPA Region serving the State in which the site is located.

Form Approved
OMB No. 2000 0138

F Waste Quantity

Place an X in the appropriate boxes to indicate the facility types found at the site.

In the "total facility waste amount" space give the estimated combined quantity (volume) of hazardous wastes at the site using cubic feet or gallons.

In the "total facility area" space, give the estimated area size which the facilities occupy using square feet or acres.

Facility Type

1. ☐ Piles
2. ☐ Land Treatment
3. ☒ Landfill
4. ☒ Tanks
5. ☐ Impoundment
6. ☐ Underground Injection
7. ☐ Drums, Above Ground
8. ☐ Drums, Below Ground
9. ☐ Other (Specify) _____

Total Facility Waste Amount

cubic feet unknown

gallons unknown

Total Facility Area

square feet -----

acres in excess of 15 acres

G Known, Suspected or Likely Releases to the Environment:

Place an X in the appropriate boxes to indicate any known, suspected, or likely releases of wastes to the environment.

☐ Known ☒ Suspected ☐ Likely ☐ None

Note: Items H and I are optional. Completing these items will assist EPA and State and local governments in locating and assessing hazardous waste sites. Although completing the items is not required, you are encouraged to do so

H Sketch Map of Site Location: (Optional)

Sketch a map showing streets, highways, routes or other prominent landmarks near the site. Place an X on the map to indicate the site location. Draw an arrow showing the direction north. You may substitute a publishing map showing the site location.

See attached Exhibit A.

I Description of Site: (Optional)

Describe the history and present conditions of the site. Give directions to the site and describe any nearby wells, springs, lakes, or housing. Include such information as how waste was disposed and where the waste came from. Provide any other information or comments which may help describe the site conditions.

J Signature and Title:

The person or authorized representative (such as plant managers, superintendents, trustees or attorneys) of persons required to notify must sign the form and provide a mailing address (if different than address in Item A). For other persons providing notification, the signature is optional. Check the boxes which best describe the relationship to the site of the person required to notify. If you are not required to notify check "Other"

Name Malcolm J. Russ, Executive Vice President

Mailing Address:

Street P. O. Box 03180

City Portland State Or Zip Code 97203

Signature Malcolm J Russ Date 6/12/85

☒ Owner, Present
☐ Owner, Past
☐ Transporter
☐ Operator, Present
☐ Operator, Past
☐ Other

Toxic wastes to delay Wacker expansion

By STEVE JENNING
of The Oregonian staff

A planned, $80 million factory expansion at Wacker Siltronic Corp. is in jeopardy, company executives said Friday, pending further study of a surprise discovery of toxic chemical wastes found buried at the Northwest St. Helens Road construction site.

Engineers taking core samples for the new factory, an expansion of Wacker's existing, 820-employee polysilicon plant, have found old deposits of coal tar and oil byproducts, and in some cases constituents of herbicides and insecticides.

The planned expansion was the first of several scheduled at the Wacker site through the 1980s. By the end of the decade, the Wacker plant, wholly owned by West German-based Wacker Chemitronic GMBH, expected Portland employment to nearly double from current figures.

Polysilicon, a glasslike substance, is one of the basic materials in the high-technology industry. Wafers cut from polysilicon cylinders are used in the manufacture of semiconductor chips, the microelectronic circuitry that is the brains of modern computers.

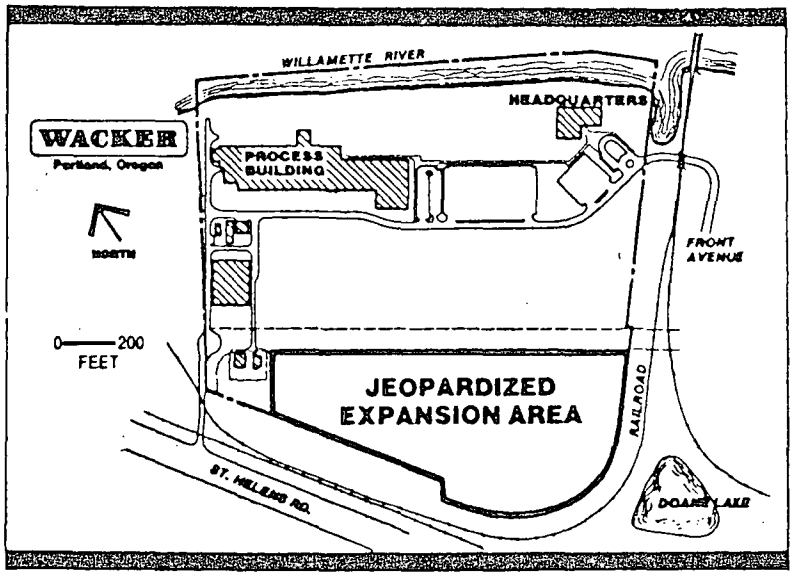
Malcolm J. Russ, Wacker Siltronics' executive vice president and Portland manager, said the new plant construction would be postponed from six to 12 months pending more engineering and research.

But Russ added that while "our initial reaction was one of some dismay, there are methods of proceeding with this and rendering it (the site) safe.

"So we are still optimistic," Russ said. "I want to underscore that."

Russ said he believes the new plant "will be built at this site. We're pretty sure we can build here."

He said that air samples have been taken in and around Wacker's existing, 5-year-old polysilicon plant, which is immediately east of the new factory site and bordered by the Willamette River. The readings taken by a company's engineering consultants determined that there were no airborne health hazards posed by the chemical deposits.



"In my personal opinion, I don't think we're dealing with large quantities," Russ said.

Although the company has been taking core drillings at the site for several weeks, the findings involving the toxic deposits are relatively recent, Russ said. State Department of Environmental Quality and federal Environmental Protection Agency officials were notified only this week.

"We've been alerted by the company that they've found some things, and that's about all we know," said Fred Hansen, DEQ director. "Right now, we're working with their consultant (CH2M-Hill, the engineering firm).

"The deposits are fairly deep down, and it certainly doesn't appear to be a danger to current employees," Hansen said. "We're hopeful that the problems will be minimal."

Wacker officials said the chemicals lie generally about 20 feet below the surface. They said the herbicide and insecticide related chemicals — they were termed chlorophenolics — were found in only two of seven holes, both near Doan Lake at the south corner of the plant site.

Preliminary indications were that the deposits were stable, a good sign for Wacker since some of the chemicals are believed to have been in the ground since the turn of the century.

"If it's 20 feet underground and it hasn't moved, then it hasn't done much damage," said Dr. Harold Osterud, a specialist in public health and preventive medicine at the Oregon Health Sciences University.

"But the potential is there," he said, noting that coal tars and some chlorophenols are known cancer-causing agents. "I would treat the situation with great care. People who would be doing the building could be at some risk."

Russ said engineers have guessed that the oil byproducts and coal tars are leftovers from a turn-of-the-century gas and coke plant once at the site. The chlorophenols probably came from a chemical plant adjacent to the Wacker land that closed in the early 1960s.

The EPA has estimated that there are between 3,000 and 5,000 toxic chemical sites nationally. A multibillion-dollar Superfund has been established to help clean up such illegal dumping grounds.

Both Hansen and Russ said there is a chance that no cleanup measures will be needed, although the site would have to be periodicially checked for leaks.

"We've made this public disclosure as soon as we discovered there could be a problem," Russ said. "When we talked to our plant workers today, there actually was some relief. They thought we were going to announce a layoff."

Russ referred to market conditions within the international semiconductor industry, which has been slumping for more than a year.

A worst-case situation requiring removal of the chemical could mean a massive excavation of the 84-acre site.

18

SCOEPA00036766

Wacker plant deferment points to other problems

By SPENCER HEINZ
of The Oregonian staff

The recent decision by Wacker Siltronic Corp. to postpone an $80 million expansion project, after learning its back yard was contaminated with someone else's renegade chemicals, served up this sudden reminder:

Wacker's Northwest Portland industrial neighborhood is a cradle for the region's production of toxic chemicals.

Although the government has tried to limit industrial littering, Oregon Department of Environmental Quality files document the dumping in past years of thousands of gallons of chemical wastes into the Willamette River and remnants of Doane Lake.

Once home to deer, raccoons and swampland willow trees, the area — about three miles northwest of downtown — now holds companies that over the last four decades have produced or handled quantities of creosote, flammable hydrogen gas, hydrochloric acid and dioxin-tainted chemicals. Dioxin was used in Agent Orange, the wartime defoliant.

The DEQ and Wacker — which has retained the engineering consulting firm of CH2M Hill to take soil samples in the proposed expansion area — will in the coming months try to identify the types, concentrations and sources of the chemicals found there.

CH2M Hill's preliminary report suggests contamination mostly with coal tar and the popular weedkiller 2,4-D, which was combined with the dioxin-tainted herbicide 2,4,5-T during the Vietnam War years to create Agent Orange. The preliminary report shows no evidence of 2,4,5-T or of its manufacturing byproduct, 2,3,7,8-TCDD, which the U.S. Environmental Protection Agency characterizes as one of the most toxic man-made chemicals.

Initial tests show 2,4-D present in one soil sample at a level of about 10 feet in a concentration of 10 parts per million; and in a second sample at a level of about 15 feet in a concentration of 150 parts per million.

Larry D. Patterson, a Department of Environmental Quality industrial waste engineer, said no standard applies directly to the concentration of 2,4-D in soil. The federal permissible limit of 2,4-D in drinking water is 100 parts per billion.

Authorities said the significance of those early figures was not clear because they did not directly demonstrate any contamination of ground water, which could carry the 2,4-D to living things.

Patterson said periodic checks of Willamette River water over the years showed no chemical seepage was reaching the river. The next step, he said, was to check for contamination of ground water.

Agency officials said it appeared the chemical was not a threat because of its depth and apparent lack of movement.

Janet A. Gillaspie, manager of the agency's northwest regional section, said her office would develop a plan with Wacker to determine accurate soil and water concentrations. She said a large-scale study should not be ruled out.

The Wacker neighborhood includes:

○ Koppers Company Inc. Organic Materials Division, 7540 N.W. St. Helens Road, which blends coal tars into the popular wood-preservative, creosote.

○ A fenced-off lot owned by Gould Inc., 5909 N.W. 61st Ave., which contains toxic lead-contaminated battery casings marked for cleanup under the federal Superfund program. Authorities in recent years have detected windblown lead dust in the area and pinpointed the 300-foot-long pile of battery casings as the source.

○ Pennwalt Corp., 6400 N.W. Front Ave., which produces caustic soda, hydrochloric acid, ammonia, sodium chlorate and hydrogen gas. The company opened in 1941 as Pennsylvania Salt Manufacturing Company of Washington and initially manufactured only sodium chlorate.

● Rhone-Poulenc Agrochemical Division, 6200 N.W. St. Helens Road. Opened in 1943 as Chipman Chemical Co. and purchased in 1967 by Rhodia Co., which later changed its name to Rhone-Poulenc, the plant in past years has dealt with hydrochloric acid, sulfuric acid and chlorine. Although its only product for the last three years has been the herbicide bromoxynil octanoate, which is sold to farmers for use on fields of wheat and corn under the brand name "Buctril," DEQ records show the company started producing the herbicide 2,4-D in 1956. Records show the company handled quantities of 2,4,5-T for about two years in the late 1950s.

The Environmental Protection Agency in 1984 examined the Rhone-Poulenc site and found no dioxin contamination on or near the plant.

Parts of the company ditches and ponds had been saturated with chemicals in past years.

"Initially, process wastes along the storm runoff were discharged to the river directly or were discharged into Doane's Lake which discharges into the river," Gillaspie wrote in an April 5, 1983 interoffice memorandum. "In the mid-1960s the department received complaints from fishermen that salmon from the river near the plant were tainted with a chemical taste. That taste was chlorinated phenols."

Glen D. Carter, an aquatic biologist and an employee of the Or-on environmental agency since .6, recalled his inspections of the old Chipman 2,4-D production plant.

"I'd get a splitting headache after about a half hour," he said. "The smell would saturate your clothes. You'd get home after work, your wife wouldn't let you in. She'd say leave your clothes outside."

Harry and Verna Butcher, both now 76, drew a financial settlement out of court from the Rhodia Co. after alleging that Verna Butcher experienced serious health problems when the wind blew Rhodia's emissions toward their home 10 miles away.

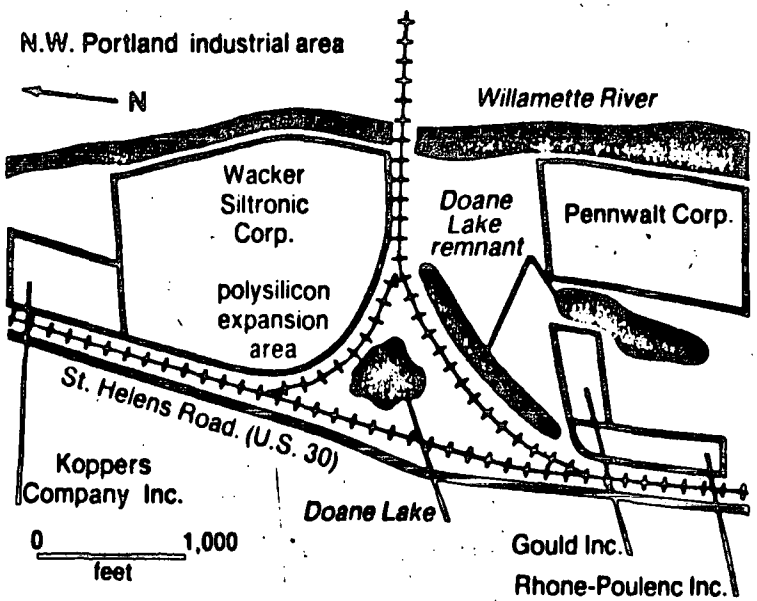
Michael Watson, a toxicologist with the regional EPA office in Seattle, said 2,4-D posed no exceptional threats to human health with proper use. He said questions remained about wh it caused birth defects in animal experiments with high doses. He said the mainstream scientific community did not consider it a cancer-causing agent.

Donald Meyer, production manager for the Rhone-Poulenc plant in Portland, emphasized that Rhone-Poulenc was complying with a DEQ directive to keep Doane Lake remnants free of contamination.

Meanwhile, Wacker and the DEQ are trying to figure the risks and costs of leftover poisons.

"The lesson is that what we in the past thought was not a problem, can turn out to be a problem," said the environmental agency's director, Frederic J. Hansen. "It's always harder to clean it up later."

Toxic neighbors



These are the locations of some of the toxic chemical-handling companies near Wacker Siltronic Corp. in a riverside industrial area of Northwest Portland. The companies are:

- Rhone-Poulenc Inc. Agrochemical Division, which until 3 years ago produced the herbicide 2,4-D and which now formulates the herbicide bromoxynil octanoate.
- Pennwalt Corp., which makes chemicals including ammonia, caustic soda, hydrochloric acid and hydrogen gas.
- Koppers Company Inc. Organic Materials Division, which blends creosote, and
- Gould Inc. property that contains toxic lead-contaminated battery casings marked for cleanup under the federal Superfund program.

The Oregonian

Wacker Siltronic Corporation

Wacker Siltronic Corporation
P. O. Box 03180
Portland, OR 97203
7200 N.W. Front Ave.
Portland, OR 97210
Phone (503) 243-2020
TWX 910-464-4777
FAX 503 226-0052

October 10, 1985

Mr. Larry Patterson
Industrial Wastewater Engineer
Department of Environmental Quality
Post Office Box 1760
Portland, Oregon 97207

Dear Larry:

Subject: Proposed Polysilicon Site - Groundwater Analyses

As part of an on-going site investigation, Wacker Siltronic Corporation arranged for CH2M-Hill and a drilling subcontractor, Geo Tech Explorations Inc. to install seven (7) monitoring wells on the subject site during April, 1985, (see attached Figure 1 for well locations). Soil samples, approximately 18 inches in length were removed from each 5-foot increment of penetration during the process of drilling the wells. All borings, 6 1/4 inches in diameter, were drilled to a depth of approximately 35-40 feet, and developed as ground water monitoring wells.

During April, a total of nine (9) soil samples were selected and analyzed to determine if chemicals of the following categories were in the soil:

a.) Polyaromatic hydrocarbons,
b.) Heavy metals,
c.) Selected pesticides, and,
d.) Petroleum products

The results of these soil analyses were submitted to the Department of Environmental Quality during June, 1985.

During July 31 and August 1, 1985 these same seven (7) monitoring wells were purged and sampled in accordance with EPA-approved procedures. Resulting groundwater samples were submitted to Laucks Testing Laboratories, Inc., Seattle, on August 1 to be analyzed for priority pollutants in accordance with Test Methods for Evaluating Solid Waste, (SW-846), U.S.E.P.A., 1982, Methods 8240 (volatile organics), 8270 (semi-volatile extractables), 8080, (pesticides and PCB's), 9010 (cyanide), and the 7000 series (metals analysis).

Phenol analyses were conducted in accordance with Method 4202, Methods for Chemical Analysis of Water & Wastes, U.S.E.P.A., March 1979.

A summary of these laboratory results is presented in the attached Table 1. Wacker Siltronic has reviewed these data carefully and has concluded that the low level of critical contaminants pose no threat to the environment and to human health and safety. We request that you concur in our view that there is no environmental or health threat so that we can resume design of construction projects for this site with assurance that we will have no interference to the future operations attributable to the existing environmental site conditions.

After you have had an opportunity to review the enclosed summary we would like to discuss it with you.

Very truly yours,

WACKER SILTRONIC CORPORATION

James R. Ellis

James R. Ellis
Polysilicon Project Manager

JRE:ll

Enclosure

cc: Jim Disorbo
Jim Harper
John Pittman
File

TABLE 1

Groundwater Analyses
Wacker Siltronic Corp.
Proposed Polysilicon Site
(Concentrations expressed in parts per million)

Inorganics	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7
Antimony	<.005	<.005	<.005	<.005	<.005	<.005	<.005
Arsenic	.005	<.005	.005	<.005	<.005	.010	<.005
Beryllium	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Cadmium	.003	.002	.001	.003	.002	.002	<.001
Chromium	.010	.008	.005	.009	.006	.006	.004
Copper	.002	.007	.001	.002	.002	.001	.004
Lead	.052	.040	.025	.049	.028	.030	.020
Mercury	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Nickel	.010	.007	.005	.011	.006	.006	.008
Selenium	<.005	<.005	<.005	<.005	<.005	<.005	<.005
Silver	<.001	<.001	<.001	<.001	<.001	<.001	.001
Thallium	<.005	<.005	<.005	<.005	<.005	<.005	<.005
Zinc	.026	.016	.017	.050	.011	.011	.047
Total Cyanide	.180	.058	.130	.930	.130	.040	.033
Total Phenol	.072	.013	.006	<.005	<.005	.030	<.005

SCOEPA00036770

TABLE 1

Groundwater Analyses
Wacker Siltronic Corp.
Proposed Polysilicon Site
(Concentrations expressed in parts per million)

Volatile Organics (by GC/MS)	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7
Chloromethane	<.010	<.001	<.001	<.001	<.001	<.001	<.001
Bromomethane	<.010	<.001	<.001	<.001	<.001	<.001	<.001
Vinyl Chloride	<.010	<.001	<.001	<.001	<.001	<.001	<.001
Chloroethane	<.010	<.001	<.001	<.001	<.001	<.001	<.001
Methylene Chloride	.088	T	T	T	.021	T	T
Acrolein	<.100	<.001	<.010	<.010	<.010	<.010	<.010
Acetone	.120	<.001	<.001	.021	.049	<.001	<.001
Acrylonitrile	<.100	<.001	<.010	<.010	<.010	<.010	<.010
Carbon Disulfide	<.010	<.001	<.001	<.001	<.001	<.001	<.001
1,1-Dichloroethylene	<.010	<.001	<.001	<.001	<.001	<.001	<.001
1,1-Dichloroethane	<.010	<.001	<.001	<.001	<.001	<.001	<.001
trans-1,2-Dichloroethylene	<.010	<.001	<.001	<.001	<.001	<.001	<.001
Chloroform	<.010	<.001	<.001	<.001	<.001	<.001	<.001
2-Butanone	<.010	<.001	<.001	<.001	<.001	<.001	<.001
1,2-Dichloroethane	<.010	<.001	<.001	<.001	<.001	<.001	<.001
1,1,1-Trichloroethane	<.010	<.001	<.001	<.001	<.001	<.001	<.001
Vinyl Acetate	<.010	<.001	<.001	<.001	<.001	<.001	<.001
Bromodichloromethane	<.010	<.001	<.001	<.001	<.001	<.001	<.001
Carbon Tetrachloride	<.010	<.001	<.001	<.001	<.001	<.001	<.001
1,2-Dichloropropane	<.010	<.001	<.001	<.001	<.001	<.001	<.001
Trichloroethylene	<.010	<.001	<.001	<.001	<.001	<.001	<.001
Benzene	1.100	.100	.039	<.001	<.001	1.200	<.001
Chlorodibromomethane	<.010	<.001	<.001	<.001	<.001	<.001	<.001
1,1,2-Trichloroethane	<.010	<.001	<.001	<.001	<.001	<.001	<.001
2-Chloroethyl vinyl ether	<.010	<.001	<.001	<.001	<.001	<.001	<.001
Bromoform	<.010	<.001	<.001	<.001	<.001	<.001	<.001
4-Methyl-2-pentanone	<.010	<.001	<.001	<.001	<.001	<.001	<.001
2-Hexanone	<.010	<.001	<.001	<.001	<.001	<.001	<.001
1,1,2,2,-Tetrachloroethane	<.010	<.001	<.001	<.001	<.001	<.001	<.001

SCOEPA00036771

TABLE 1

Groundwater Analyses
Wacker Siltronic Corp.
Proposed Polysilicon Site
(Concentrations expressed in parts per million)

Volatile Organics (Cont.)	MW-1	MW-2	MW-3	MW-4	MW-5	MW-66	MW-7
Tetrachloroethylene	<.010	<.001	<.001	<.001	<.001	<.001	<.001
Toluene	<.010	<.001	<.001	<.001	<.001	<.027	<.001
Chlorobenzene	<.010	<.001	<.001	<.001	<.001	<.001	<.001
trans-1,3-Dichloropropene	<.010	<.001	<.001	<.001	<.001	<.001	<.001
Ethylbenzene	.410	<.036	<.001	T	<.001	.390	<.001
cis1,3-Dichloropropene	<.010	<.001	<.001	<.001	<.001	<.001	<.001
Styrene	<.010	<.001	<.001	<.001	<.001	<.001	<.001
Total Xylenes	1.200	.032	T	.015	<.001	.430	<.001

TABLE 1

Groundwater Analyses
Wacker Siltronic Corp
Proposed Polysilicon Site
(Concentrations expressed in parts per million)

Extractables (by GC/MS)	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7
N-nitrosodimethylamine	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Bis(2-chloroethyl)ether	<.001	<.001	<.001	<.001	<.001	<.001	<.001
2-Chlorophenol	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Phenol	T	<.001	<.001	<.001	<.001	<.001	<.001
1,3-Dichlorobenzene	<.001	<.001	<.001	<.001	<.001	<.001	<.001
1,4-Dichlorobenzene	<.001	<.001	<.001	<.001	<.001	<.001	<.001
1,2-Dichlorobenzene	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Bis(2-chloroisopropyl)ether	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Hexachloroethane	<.001	<.001	<.001	<.001	<.001	<.001	<.001
N-nitroso-di-n-propylamine	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Nitrobenzene	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Isophorone	<.001	<.001	<.001	<.001	<.001	<.001	<.001
2-Nitrophenol	<.001	<.001	<.001	<.001	<.001	<.001	<.001
2,4-Dimethylphenol	.027	<.001	<.001	<.001	<.001	<.001	<.001
Bis(2-chloroethoxy)methane	<.001	<.001	<.001	<.001	<.001	<.001	<.001
2,4-Dichlorophenol	<.001	<.001	<.001	<.001	<.001	<.001	<.001
1,2,4-Trichlorobenzene	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Naphthalene	<.001	1.900	.600	.350	.058	2.100	T
Hexachlorobutadiene	<.001	<.001	<.001	<.001	<.001	<.001	<.001
4-Chloro-m-cresol	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Hexachlorocyclopentadiene	<.001	<.001	<.001	<.001	<.001	<.001	<.001
2,4,6-Trichlorophenol	<.001	<.001	<.001	<.001	<.001	<.001	<.001
2-Chloronaphthalene	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Acenaphthylene	.088	.200	T	T	.031	.032	<.001
Dimethylphthalate	<.001	<.001	<.001	<.001	<.001	<.001	<.001
2,6-Dinitrotoluene	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Acenaphthene	.270	.940	.086	.350	.054	.200	.019
2,4-Dinitrophenol	<.001	<.001	<.001	<.001	<.001	<.001	<.001

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TABLE 1

Groundwater Analyses
Wacker Siltronic Corp.
Proposed Polysilicon Site
(Concentrations expressed in parts per million)

Extractables, (Cont.)	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7
2,4-Dinitrotoluene	<.001	<.001	<.001	<.001	<.001	<.001	<.001
4-Nitrophenol	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Fluorene	.095	.440	.013	.053	.012	.035	<.001
4-Chlorophenyl phenyl ether	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Diethylphthalate	<.001	<.001	<.001	<.001	<.001	<.001	<.001
4,6-Dinitro-o-cresol	<.001	<.001	<.001	<.001	<.001	<.001	<.001
1,2-diphenylhydrazine	<.001	<.001	<.001	<.001	<.001	<.001	<.001
4-Bromophenyl phenyl ether	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Hexachlorobenzene	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Pentachlorophenol	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Phenanthrene	.180	1.630	.013	.028	.021	.056	T
Anthracene	.039	.630	T	T	T	T	<.001
Dibutylphthalate	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Fluoranthene	.072	1.300	T	.018	T	T	.023
Pyrene	.081	1.430	T	.014	.010	.010	.011
Benzidine	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Butyl benzyl phthalate	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Benzo(a)anthracene	.031	.480	T	T	T	T	.012
Chrysene	.036	.650	T	T	T	T	.015
3,3'-Dichlorobenzidine	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Bis(2-ethylhexyl)phthalate	T	.024	T	.013	T	T	T
N-nitrosodiphenylamine	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Di-n-octyl phthalate	T	<.001	T	T	T	<.001	T
Benzo(b)fluoranthene	.024	.400	<.001	T	T	T	T
Benzo(k)fluoranthene	T	.120	<.001	<.001	<.001	T	T
Benzo(a)pyrene	.040	.760	T	T	T	T	.010
Indeno(1,2,3-cd)pyrene	.020	.300	<.001	T	T	T	T
Dibenzo(ah)anthracene	<.001	T	<.001	<.001	<.001	<.001	<.001

SCOEPA00036774

TABLE 1

Groundwater Analyses
Wacker Siltronic Corp.
Proposed Polysilicon Site
(Concentrations expressed in parts per million)

Extractables. (Cont.)	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7
Benzo(ghi)perylene	.025	.370	<.001	T	T	T	T
Aniline	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Benzoic Acid	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Benzyl Alcohol	<.001	<.001	<.001	<.001	<.001	<.001	<.001
4-Chloroaniline	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Dibenzofuran	.077	.075	T	.088	T	.014	T
2-Methylnaphthalene	<.001	.260	.067	.019	.012	.041	<.001
2-Methylphenol	<.001	<.001	<.001	<.001	<.001	<.001	<.001
4-Methylphenol	<.001	<.001	<.001	<.001	<.001	<.001	<.001
2-Nitroaniline	<.001	<.001	<.001	<.001	<.001	<.001	<.001
3-Nitroaniline	<.001	<.001	<.001	<.001	<.001	<.001	<.001
4-Nitroaniline	<.001	<.001	<.001	<.001	<.001	<.001	<.001
2,4,5-Trichlorophenol	<.001	<.001	<.001	<.001	<.001	<.001	<.001

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TABLE 1

Groundwater Analyses
Wacker Siltronic Corp.
Proposed Polysilicon Site
(Concentrations expressed in parts per million)

Pesticides (by GC/ECD)	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7
alpha-BHC	<.0002	<.0002	<.00002	.00024	<.00002	.00006	<.00002
beta-BHC	<.0002	<.0002	<.00002	<.00002	<.00002	<.00002	<.00002
delta-BHC	<.0002	<.0002	<.00002	<.00002	<.00002	<.00002	<.00002
gamma-BHC (lindane)	<.0002	<.0002	<.00002	<.00002	<.00002	<.00002	<.00002
heptachlor	<.0002	<.0002	<.00002	<.00002	<.00002	<.00002	<.00002
aldrin	<.0002	<.0002	<.00002	<.00002	<.00002	<.00002	<.00002
heptachlor epoxide	<.0002	<.0002	<.00002	<.00002	<.00002	<.00002	<.00002
dieldrin	<.0002	<.0002	<.00002	<.00002	<.00002	<.00002	<.00002
4,4'-DDE	<.0002	<.0002	<.00002	<.00002	<.00002	<.00002	<.00002
4,4'-DDD	<.0004	<.0004	<.00004	<.00004	<.00004	<.00004	<.00004
endosulfan sulfate	<.0004	<.0004	<.00004	<.00004	<.00004	<.00004	<.00004
4,4'-DDT	<.0004	<.0004	<.00004	<.00004	<.00004	.00028	<.00004
chlordane	<.0004	<.0004	<.00004	<.00004	<.00004	<.00004	<.00004
alpha endosulfan	<.0004	<.0004	<.00004	<.00004	<.00004	<.00004	<.00004
beta endosulfan	<.0004	<.0004	<.00004	<.00004	<.00004	<.00004	<.00004
endrin	<.0004	<.0004	<.00004	<.00004	.00002	<.00004	<.00004
endrin aldehyde	<.0004	<.0004	<.00004	<.00004	<.00004	<.00004	<.00004
toxaphene	<.050	<.050	<.004	<.004	<.004	<.004	<.004
PCB 1016	<.010	<.010	<.001	<.001	<.001	<.001	<.001
PCB 1221	<.010	<.010	<.001	<.001	<.001	<.001	<.001
PCB 1232	<.010	<.010	<.001	<.001	<.001	<.001	<.001
PCB 1242	<.010	<.010	<.001	<.001	<.001	<.001	<.001
PCB 1248	<.010	<.010	<.001	<.001	<.001	<.001	<.001
PCB 1254	<.010	<.010	<.001	<.001	<.001	<.001	<.001
PCB 1260	<.010	<.010	<.001	<.001	<.001	<.001	<.001

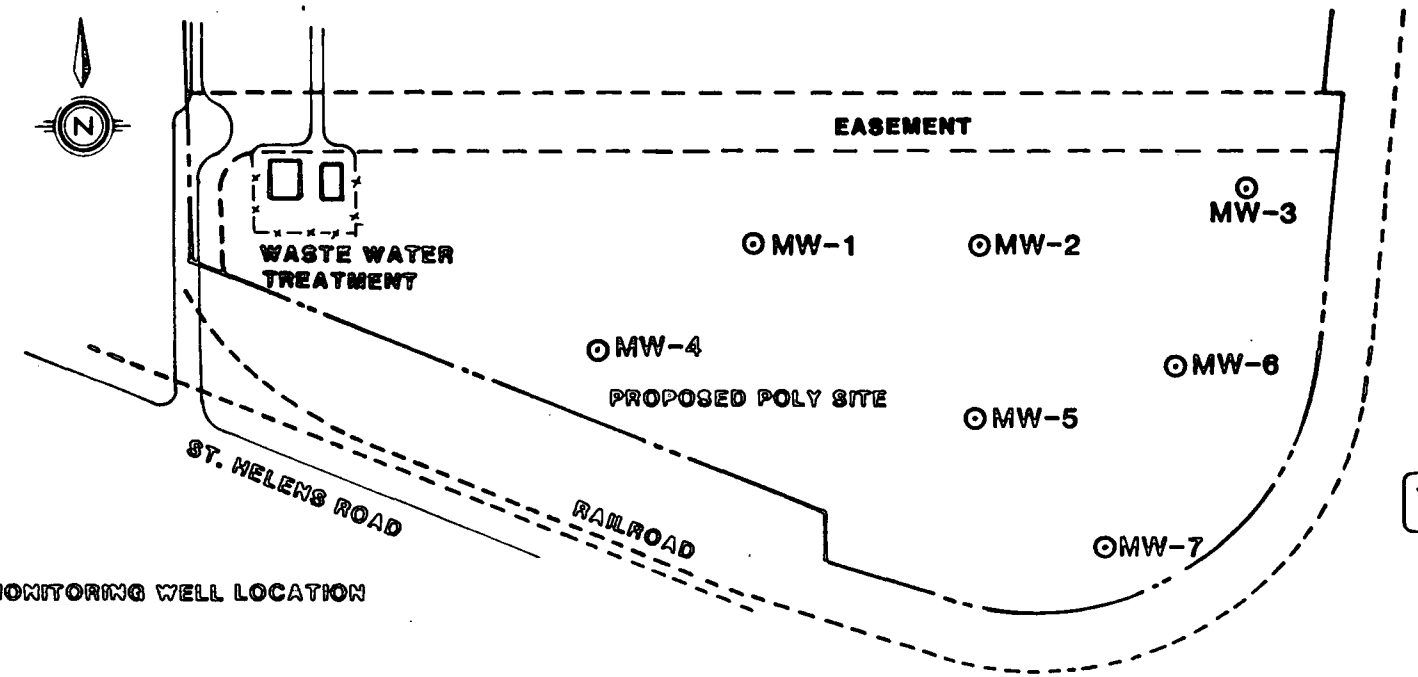
Key

< indicates "less than"
Trace = 1-10 ug/L

POLY SITE ASSESSMENT
PRELIMINARY EVALUATION - GROUNDWATER DATA

Table 1

PARAMETER \ MONITORING WELL	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7
LEAD	**			**			
TOTAL CYANIDE	*		*	**	*		
PESTICIDES	*	**		*		**	
POLYAROMATIC HYDROCARBONS	*	*	*	*	*	*	*
BENZENE	**	*	*			**	
XYLENE	*						



⊙ MONITORING WELL LOCATION

WACKER
Portland, Oregon

9-17-85 JRE

SCALE: 1" = 300'

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Notes

A. Assumption: Samples from monitoring wells represent water to be used directly, without dilution, for human consumption. Under these conditions, well samples shown in the attached table with an asterisk (*) or a double asterisk (**) would probably violate the most stringent water quality standard for the parameter indicated.

B. Assumption: Samples from monitoring wells represent water which will be diluted to a great, but unknown, extent before entering a public waterway.

Even with considerable dilution, well samples shown in the attached table with a double asterisk (**) might require further analyses of the indicated parameters according to the most stringent water quality standards. All samples shown with a double asterisk (**) exhibited concentrations in the approximate range of 1 ppm, with the highest concentration at 1.20 ppm for benzene in MW-6.

The above mentioned judgements must be considered speculative, as the extent of dilution between the monitoring well and a public waterway, such as the river, is unknown. It is also unknown, at this time, which water quality standard will be applied by the agencies.

The Oregonian

Sunday, September 29, 1985

EPA may expand Portland's Superfund site to adjacent industrial area

By SPENCER HEINZ
of The Oregonian staff

Faced with questions about the extent of chemical contamination near the Willamette River, the U.S. Environmental Protection Agency is considering expanding Portland's only Superfund site to include the surrounding Northwest industrial neighborhood.

The expansion could involve the properties of several businesses near an abandoned lot owned by Gould Inc at 5909 N.W. 61st Ave. The lot, surrounded with barbed wire, is littered with lead-contaminated battery casings. Concern about pollution problems beyond the Gould site prompted Wacker Siltronic Corp. to postpone an $80 million expansion project there earlier this summer.

Federal and state environmental officials said expanding the Superfund investigation was only one of several ways to tackle the problem. The Superfund Act gives the EPA broad authority to seek out responsible parties and force them to pay for investigating and cleaning up hazardous waste sites.

"Our effort is probably to build a multi-party investigation and cleanup program out there," said Michael F.Gearheard, director of the Oregon EPA office in Portland.

"We have not closed the door to looking at the entire Doane Lake industrial area," said Philip G. Millam, acting chief of the Superfund branch at the Seattle regional EPA office. "We are not bound by the physical boundaries of the Gould property in our investigation."

The comments reflect a growing awareness among federal and state officials that dangerous chemicals have been produced and used in the area for decades.

Located about three miles northwest of downtown Portland, the industrial area — which 50 years ago was home for deer and raccoons and swampland willow trees — includes the Rhone-Poulenc Agrochemical Division, which until three years ago produced the herbicide 2,4-D and now makes the herbicide bromoxynil octanoate; Pennwalt Corp., which makes ammonia, caustic soda, hydrochloric acid and hydrogen gas; and Koppers Company Inc. Organic Materials Division, which blends creosote.

Files in the Oregon Department of Environmental Quality document the dumping of thousands of gallons of wastes by predecessors of Rhone-Poulenc, 6200 N.W. St. Helens Road. Opened in 1943 as Chipman Chemical Co. and purchased in 1967 by Rhodia Co., which later changed its name to Rhone-Poulenc, the plant has dealt with chlorine, sulfuric and hydrochloric acids.

"Initially, process wastes along the storm runoff were discharged to the river directly or were discharged into Doane Lake, which discharges into the river," Janet A. Gillaspie, now manager of the Department of Environmental Quality's Northwest region, wrote in an April 5, 1983, interoffice memorandum.

In the mid-1960s, the department received complaints from fishermen that salmon from the river near the plant were tainted with a chemical taste. The cause was chlorinated phenols, Gillaspie wrote.

The EPA in 1982 placed the Gould property on the national priority list for investigation and cleanup under the Superfund program.

The Gould site holds a 300-foot-long pile of battery casings contaminated with lead dust that was left by previous owners of the property, NL Industries Inc. Authorities in recent years have detected windblown lead dust in the area. Health officials say ingestion of lead in sufficient quantities can affect the brain and central nervous system and cause mental retardation, among other serious effects.

Almost no cleanup work has occurred at the Gould site. The EPA announced this month that Gould and NL Industries Inc. had signed a consent order setting a Nov. 27 deadline for them to present the EPA with investigation plans and with a method for arriving at cleanup options. Gould, based in Rolling Meadows, Ill., manufactures electronic systems. NL Industries has headquarters in New York City and manufactures inorganic chemicals.

Oregon Rep. Les AuCoin is critical of the EPA's handling of the Gould site.

"It's taken three years for the EPA to get off its hands and hammer out an agreement with the company to produce a plan for cleanup," he said. AuCoin said he was astounded that nothing in the consent order called for Gould to remove the battery casings that were sitting on the ground. There is an economic loss as well as the public-health issue to consider, he said.

Gillaspie said her agency was gathering data from various sources on soil and water conditions at Wacker and nearby areas. The significance of early soil contamination levels was not clear because they did not directly demonstrate any poisoning of ground water, which could carry the 2,4-D to living organisms.

CLEANUP — Michael F. Gearheard is director of the Oregon office of the Environmental Protection Agency.

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A PRELIMINARY REPORT
SOIL INVESTIGATION FOR PROPOSED
POLYSILICON PLANT

WACKER SILTRONIC CORPORATION
PORTLAND, OREGON

CH2M HILL

Engineers
Planners
Economists
Scientists

A PRELIMINARY REPORT
SOIL INVESTIGATION FOR PROPOSED
POLYSILICON PLANT

WACKER SILTRONIC CORPORATION
PORTLAND, OREGON

Prepared By

CH2M HILL NORTHWEST, INC.
2020 S.W. Fourth Avenue
Portland, Oregon 97201

JUNE 1985
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INTRODUCTION

Wacker Siltronic Corporation contracted CH2M HILL to conduct a soil investigation on Wacker's property located in the Northwest Industrial area of Portland, Oregon. The purpose of the investigation was to evaluate subsurface conditions within a section of the vacant portion of the site as part of the preliminary engineering for the design and construction of the proposed polysilicon plant.

The subsurface investigation was initiated based on the presence (both past and current) of industrial manufacturing and processing facilities within the Doane Lake area and recent environmental regulations--the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the Resource Conservation and Recovery Act of 1976 (RCRA). Wacker was concerned that past or current management practices of industrial wastes within the Doane Lake area may have resulted in the presence of these materials or subsequent residues on Wacker's property, which would prevent or hinder the construction of the proposed polysilicon plant and future expansions of the existing manufacturing facilities.

This preliminary report describes the soil boring, sampling, and analytical procedures and construction of the groundwater monitoring wells. It also presents the results of the laboratory analyses, which indicate the presence of chemical constituents commonly associated with petroleum products, coal tar, and pesticides. Interpretation of the results presented in this report is beyond the scope of our contract and will be included as part of future work (i.e., site environmental assessment).

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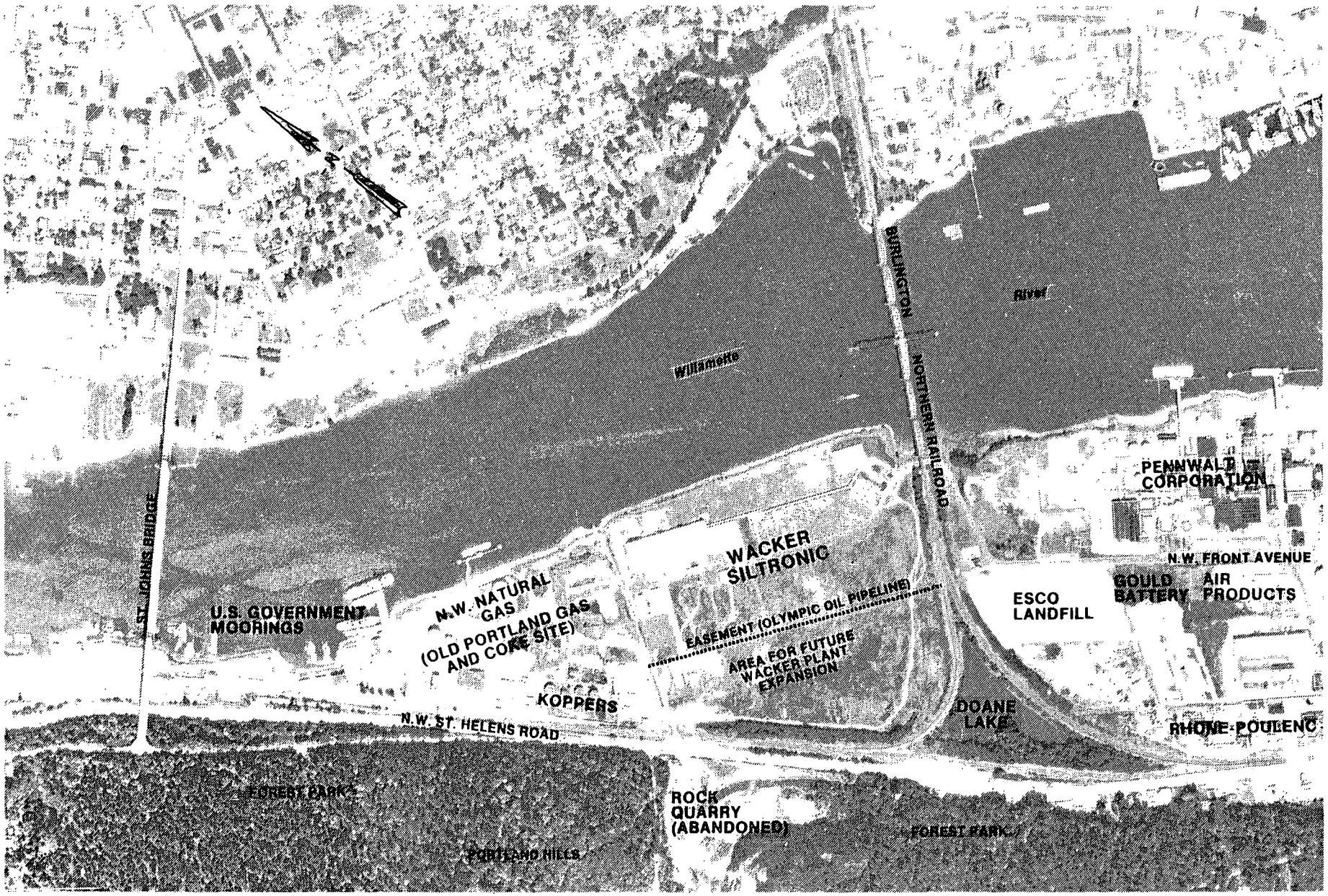

Figure 1 WACKER SILTRONIC PLANT AND SURROUNDING VICINITY (1983)

SCALE: 1" = 940 FEET (1 cm : 110 m)

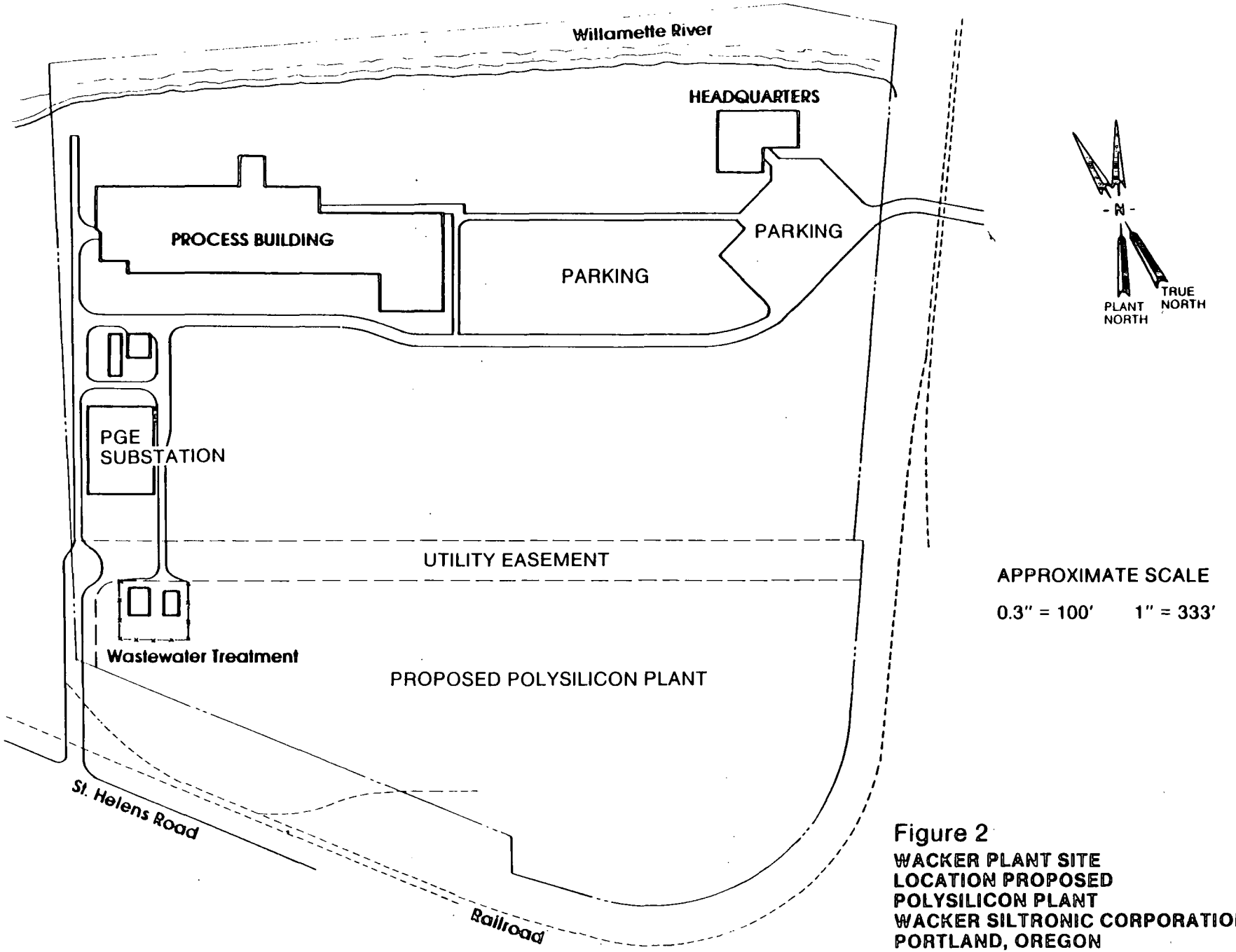

Figure 2
WACKER PLANT SITE
LOCATION PROPOSED
POLYSILICON PLANT
WACKER SILTRONIC CORPORATION
PORTLAND, OREGON

CH2M HILL

samples from seven soil borings, all of which were completed as monitoring wells. The locations of the borings/monitoring wells (designated MW-1 through MW-7) are shown in Figure 3. The soil borings were drilled and monitoring wells constructed by Geotech Explorations, Inc., of Beaverton, Oregon, under the field observation of a CH2M HILL hydrogeologist.

SOIL BORING AND SAMPLING

The seven soil borings were drilled using a CME-55 rotary drill rig and 6¼-inch (OD) hollow-stem augers. Soil samples were recovered at 5-foot intervals. Samples were recovered using a 2-inch split-spoon sampler following the requirements of the standard Penetration Test (ASTM D 1586). The sampler was driven 18 inches ahead of the auger bit to collect an undisturbed soil sample. The depth of soil borings ranged from 31.5 to 41.5 feet, generally between 5 and 20 feet below fill material and into native soils. The CH2M HILL hydrogeologist inspected, classified, and logged each borehole and soil sample in the field in approximate accordance with the Visual-Manual Procedure (ASTM D 2488). The log included a physical description of the soil type and a visual and odor estimate for the presence of contaminants. Sample intervals, soil types, and descriptions of the soil types and soil borings are provided in the soil boring record drawings presented in the appendix.

A composite soil sample from each split-spoon was placed in a clean 8-ounce glass jar. Each jar was filled to the top before it was sealed. The label that had been affixed to the sample container was then filled out. Information on the label included the facility name, the sample identification number, the name of the person collecting the sample, date and time of collection, and the location of the sample. The sample was then placed in a portable cooler until the end of each day when it was transferred via chain-of-custody record

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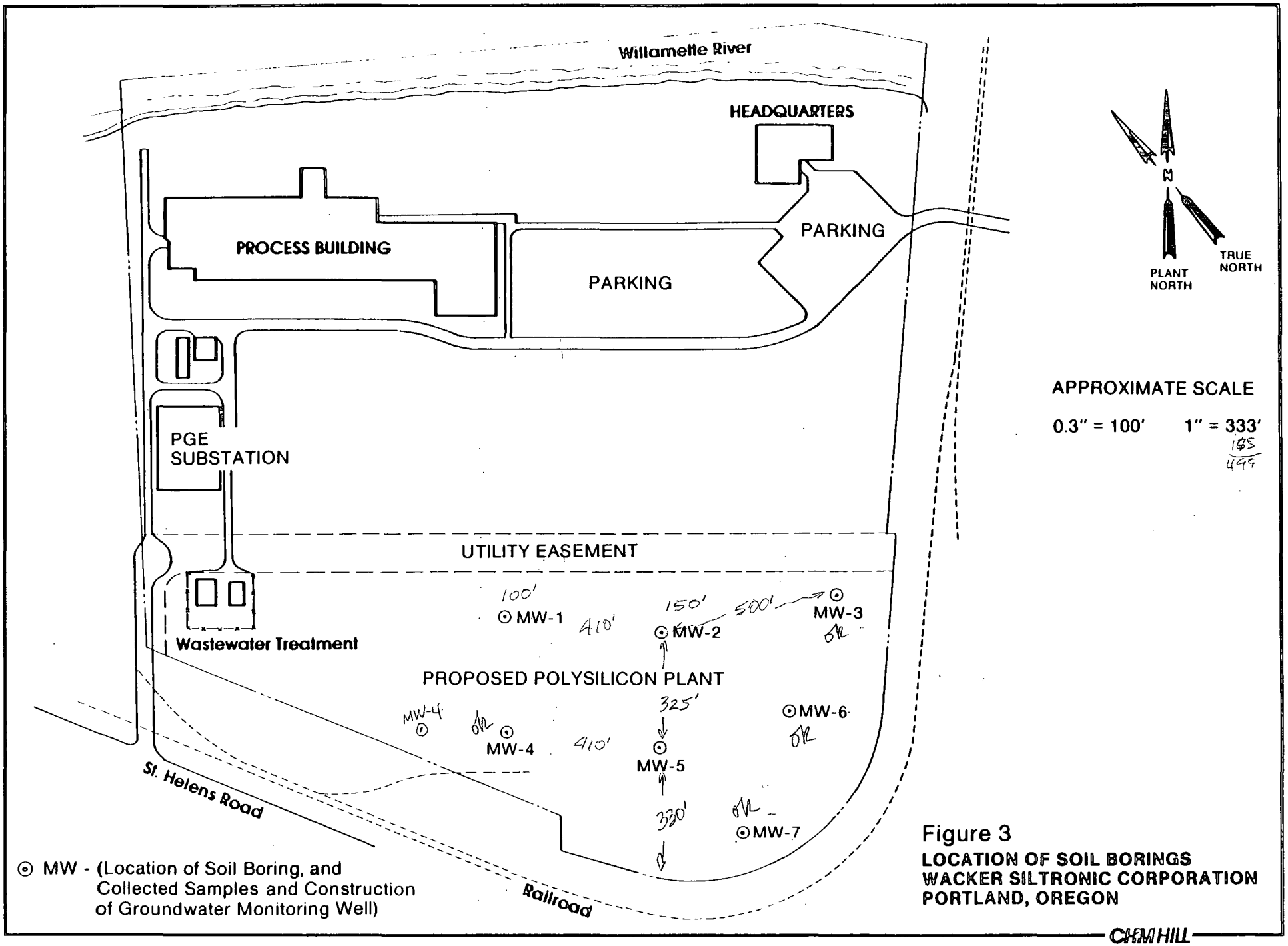

Figure 3
LOCATION OF SOIL BORINGS
WACKER SILTRONIC CORPORATION
PORTLAND, OREGON

CH2M HILL

to a refrigerator located inside the laboratory area of Wacker's wastewater treatment building. Chain-of-custody records were kept for every sample collected. Sample custody was maintained until the samples were relinquished directly to Wacker or an outside laboratory. A sample of the chain-of-custody form used is illustrated in the appendix.

All drilling equipment was thoroughly steam-cleaned before drilling each boring. Oil and grease and were not used at drill rod connection fittings to prevent contamination of the soil samples. The split-spoon soil sampler was decontaminated between each use. Decontamination steps included:

- Washing off grass, soil particles, mud smears, etc., in a bucket of tap water
- Washing in a 5 to 10 percent solution of trisodium phosphate (TSP) and tap water
- Two rinses in clean tap water
- One rinse each with distilled water and methanol

The same decontamination procedures were used for the stainless steel utensils used to transfer soil from the sampler to the jars. Utensils were stored in a new plastic bag until they were ready for use.

A number of quality control measures were performed in order to ensure that all data generated was of known precision, and accuracy and conformed to accepted procedures. Soil sample splits were collected at soil boring sites MW-2, -5, and -6. Several transfer blanks were also prepared to check for potential contamination of sample jars. Samples of water poured into the drill holes to hold back heaving sands were also collected.

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GROUNDWATER MONITORING WELL CONSTRUCTION

Seven groundwater monitoring wells were constructed by installing well screen casing assemblies into the completed drill holes.

Each assembly consisted of 2-inch diameter schedule 40 PVC. Well screens consisted of a 15-foot length of PVC with three rows of 0.010-inch machine-slotted openings. A 5-foot solid PVC sump was placed beneath each screen. Solid PVC casing was placed above the screen and extended to the ground surface. Casing lengths were connected by flush-threaded fittings; no solvents were used to connect PVC sections.

Each well screen interval was gravel-packed by pouring a coarse-grained sand into the annular space between the PVC and the hollow stem of the auger. As the auger was pulled up, the sand dropped out of the hollow stem into the well to envelop the well screen. After the sand pack was installed to 2 or 3 feet above the top of the well screen, the annular space between the PVC casing and the hollow stem was filled with 1 to 2 feet of pelletized bentonite followed by cement grout to the ground surface. A summary of the construction of each well is provided in the soil boring record drawings presented in the appendix.

Well heads were completed at approximately 2 feet above the ground surface with locking steel caps that were anchored 2 to 3 feet into the cement grout mixture. The monitoring wells were developed by the drilling contractor by blowing compressed air through an air line into the sump (tail pipe) located below the well screen. Development was considered complete when the return water became visibly less turbid. The PVC monitoring well assembly was thoroughly steam-cleaned before construction of each well. As a measure of additional quality assurance and control, samples of the sand filter

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pack material used for well construction were collected and saved.

LABORATORY ANALYSIS AND SOIL SAMPLE RESULTS

The field sample description generally provided the basis for selecting samples to be sent to the laboratory for chemical analysis. Samples in which contaminants were most apparent visually and by odor were selected for analysis. Also, at least one soil sample from each soil boring site was analyzed, as was at least one sample at every 5-foot depth (except at 30 feet) from the combination of all soil boring locations. Figure 4 shows the approximate vertical location of the collected soil samples for each monitoring well and identifies which samples were analyzed.

The selection of the chemical analyses to be performed on each soil sample was based on the past and current industrial chemical manufacturing and handling activities within the Doane Lake area (i.e., petroleum products, coal tar, creosote, pesticides, battery recycling, foundry process waste disposal). The following chemical analyses were performed on the selected soil samples by Coffey Laboratories, Inc. (located at 4914 N.E. 122nd Avenue, Portland, Oregon):

- Oil and grease
- Phenols
- Volatiles and polynuclear aromatic hydrocarbons
- E.P. toxicity for:
  - --pesticides
  - --herbicides
  - --arsenic
  - --barium
  - --cadmium
  - --chromium
  - --lead
  - --mercury
  - --selenium
  - --silver

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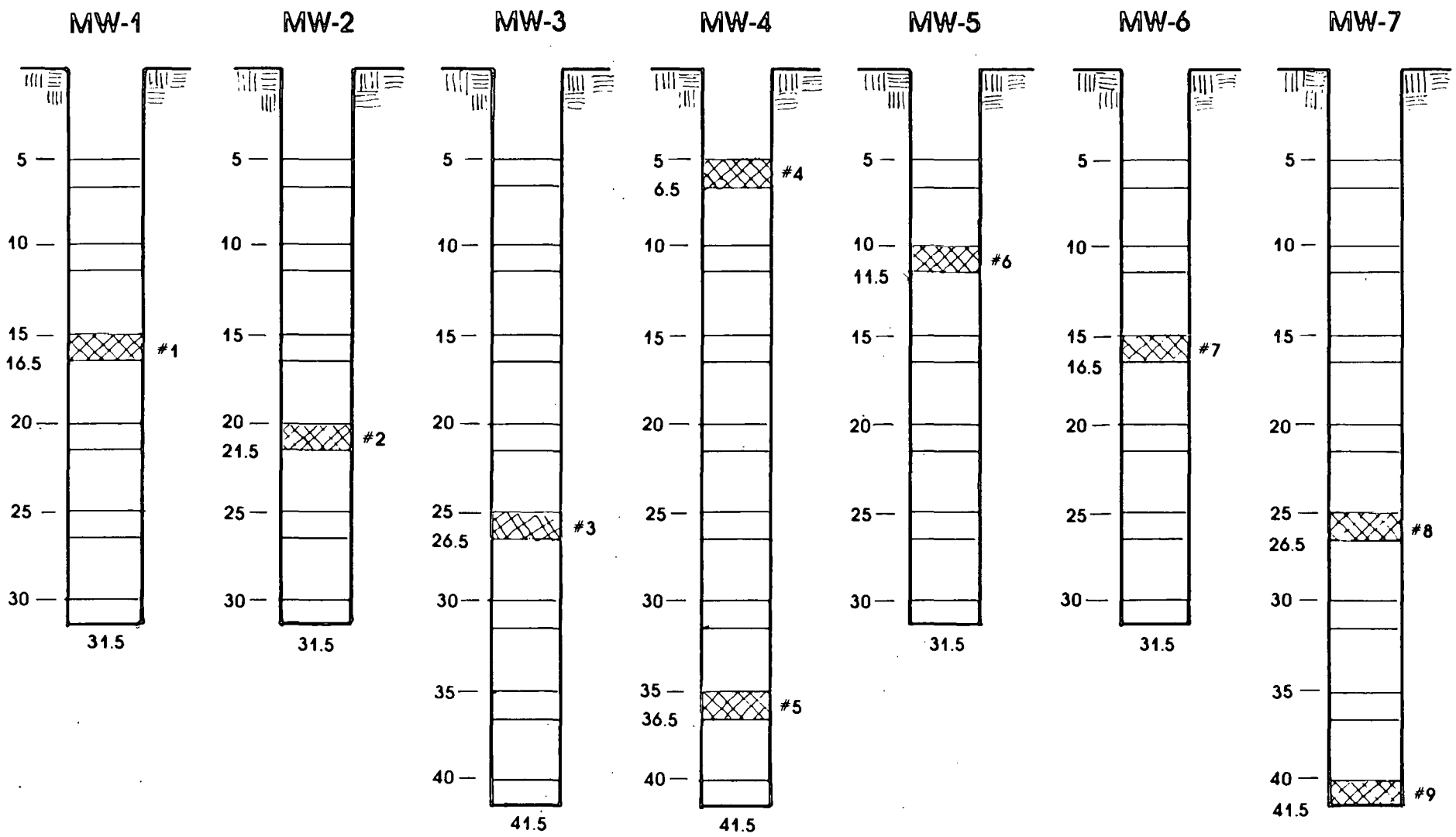


Analyzed Collected Soil Samples

(NOTE: Parallel lines denote soil samples. These were taken at 1.5 ft intervals starting every five feet)

Figure 4

GENERAL VERTICAL LOCATION COLLECTED SOIL SAMPLES WACKER SILTRONIC CORPORATION PORTLAND, OREGON

CH2M HILL

The results of the laboratory analysis are presented in Table 1. A copy of the Coffey Laboratories, Inc., report is included in the appendix.

The field samples were analyzed for phenols, pesticides, herbicides, metals, volatiles, and aromatic hydrocarbons by EPA methods (SW-846, EPA-602, 4-79-020); the oils and grease were measured by standard methods (method 503 D).

Laboratory quality assurance procedures included method blanks, duplicates for precision measurements, and spikes for accuracy measurements. The frequency of blank, duplicate, and spike measurements was at a minimum of 10 percent per set to meet the standard requirements. The data were evaluated in view of the QC findings and found acceptable.

A review of the laboratory analysis indicates that each soil boring location contained a mixture of substances commonly associated with petroleum products, coal tar, and pesticides. The following list summarizes the principal substances found in each of the seven borings:

- MW-1 PAHs, petroleum products
- MW-2 PAHs, petroleum products
- MW-3 petroleum products
- MW-4 petroleum products
- MW-5 PAHs, petroleum products, 2,4-D
- MW-6 petroleum products, 2,4-D
- MW-7 petroleum products

Interpretation of results presented in Table 1 is beyond the scope of this report and will be included as part of future work (i.e., site environmental assessment).

SCOEPA00036791

Table 1
WACKER SILTRONIC, POLYSILICON PLANT SOILS INVESTIGATION
SOURCE: COFFEY LABORATORIES, INC./APRIL 30, 1985
RESULTS OF SOILS ANALYSIS

Chemical Compounds	MW-1, S-3 (15-16.5 ft)	MW-2, S-4 (20-21.5 ft)	MW-3, S-5 (25-26.5 ft)	MW-4, S-1 (5-6.5 ft)	MW-4, S-7 (35-36.5 ft)	MW-5, S-2 (10-11.5 ft)	MW-6, S-3 (15-16.5 ft)	MW-7, S-5 (25-26.5 ft)	MW-7, S-8 (40-41.5 ft)	Detection Limits	Reference Criteria
Organic Analyses											
o Volatile Compounds											
1,1,1-Trichloroethane	0.01	BD	BD	BD	BD	BD	BD	BD	BD	0.01	pp, PDW (*)
1,2-Dichloroethane	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.01	pp, PDW (*)
1,1,2,2-Tetrachloroethylene	2.2	11	BD	BD	BD	0.14	BD	BD	BD	0.05	
Toluene	1.2	20	0.11	BD	BD	0.20	BD	BD	BD	0.1	pp
Chlorobenzene	0.04	BD	BD	BD	BD	BD	BD	BD	BD	0.04	pp
Ethyl Benzene	17	5.4	BD	BD	BD	BD	BD	BD	0.05	0.04	pp
o Acid Extractables											
Phenol	0.35	3.1	0.20	0.30	0.17	0.07	0.05	0.06	0.08	NR	pp, SWQ
2-Chlorophenol	ND	7.8	0.08	0.26	ND	ND	0.13	ND	0.14	NR	pp, SWQ
2-Nitrophenol	ND	0.20	ND	ND	ND	ND	ND	ND	ND	NR	pp, SWQ
2,4-Dimethylphenol	ND	3.1	ND	ND	ND	0.22	0.17	ND	ND	NR	pp, SWQ
2,4-Dichlorophenol	ND	2.7	0.09	0.26	ND	0.24	ND	ND	ND	NR	pp, SWQ
p-Chloro-m-cresol	ND	ND	ND	ND	ND	ND	ND	ND	ND	NR	pp
2,4,6-Trichlorophenol	ND	ND	ND	ND	ND	0.22	ND	ND	ND	NR	pp, SWQ
2,4-Dinitrophenol	ND	ND	ND	ND	ND	0.81	ND	ND	ND	NR	pp, SWQ
4-Nitrophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	NR	pp, SWQ
4,6-Dinitro-o-cresol	ND	ND	ND	ND	ND	ND	ND	ND	ND	NR	pp
Pentachlorophenol	ND	ND	ND	ND	0.31	6.9	5.1	ND	ND	NR	pp,SWQ,SHW
o Base Neutral Extractables											
Naphthalene	6.7	360	BD	BD	BD	230	BD	BD	BD	1	pp
Acenaphthalene	5.6	230	BD	BD	BD	24	BD	BD	BD	1	pp
Acenaphthene	8	560	BD	BD	BD	28	BD	BD	BD	1	pp
Fluorene	5	290	BD	BD	BD	20	BD	BD	BD	1	pp
Phenanthrine-Anthracene (***)	32	1,400	3	BD	BD	150	BD	1.6	BD	1	pp
Fluoranthene	16	530	BD	BD	BD	50	BD	1.1	BD	1	pp
Pyrene	18	550	BD	BD	BD	57	BD	1.2	BD	1	pp
Chrysene	12	92	BD	BD	BD	36	BD	1.7	BD	1	pp
Benzo (b) fluoranthene (***)	8	120	BD	BD	BD	200	BD	BD	BD	1	
Benzo (k) fluoranthene (***)	8	120	BD	BD	BD	200	BD	BD	BD	1	pp
Benzo (a) pyrene	19	120	BD	BD	BD	100	BD	BD	BD	1	pp
Indeno (1,2,3-CD) pyrene (***)	BD	270	BD	BD	BD	7	BD	BD	BD	1	
Dibenzo (a,b) anthracene (***)	BD	270	BD	BD	BD	7	BD	BD	BD	1	pp
Benzo (phi) perylene	BD	360	BD	BD	BD	25	BD	BD	BD	1	pp
o Pesticides (EP Toxicity)											
Gamma BHC (Lindane)	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.4	pp, SHW, PDW
Endrin	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.002	pp
Toxaphene	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.5	pp

PDR956.031.1

Table 1 (Continued)

Chemical Compounds	MW-1, S-3 (15-16.5 ft)	MW-2, S-4 (20-21.5 ft)	MW-3, S-5 (25-26.5 ft)	MW-4, S-1 (5-6.5 ft)	MW-4, S-7 (35-36.5 ft)	MW-5, S-2 (10-11.5 ft)	MW-6, S-3 (15-16.5 ft)	MW-7, S-5 (25-26.5 ft)	MW-7, S-8 (40-41.5 ft)	Detection Limits	Reference Criteria
Inorganic Analyses (EP Toxicity)											
Arsenic	BD	BD	BD	BD	BD	BD	BD	BD	BD	5.0	pp,SHW,SWQ,PD
Cadmium	BD	BD	BD	BD	BD	BD	BD	BD	BD	1.0	pp,SHW,SWQ,PD
Chromium	BD	BD	BD	BD	BD	BD	BD	BD	BD	5.0	pp,SHW,SWQ,PD
Lead	BD	BD	BD	BD	BD	BD	BD	BD	BD	5.0	pp,SHW,SWQ,PD
Mercury	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.2	pp,SHW,PDW
Selenium	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.1	pp,SHW,PDW
Silver	BD	BD	BD	BD	BD	BD	BD	BD	BD	5.0	pp,SHW,PDW
Miscellaneous Analysis											
o non-PP Phenols/Cresols											
3-Chlorophenol	0.44	17.5	0.06			1.7	0.32				SHW, SWQ
4-Chlorophenol	0.44	17.5	0.06			1.7	0.32				SHW, SWQ
2,4,5-Trichlorophenol		1.9									SHW, SWQ
2,3,4,5-Tetrachlorophenol	4.9	256		0.40		0.23	4.7	0.06	0.25		SHW, SWQ
2,3,4,6-Tetrachlorophenol	0.24							1			SHW, SWQ
2,3,5,6-Tetrachlorophenol		4.0	4	0.58	0.11	0.33	0.55	1	0.46		SHW, SWQ
o-Cresol	0.04	3.4		0.02		0.19	0.05				
m-Cresol (***)	0.006			0.08							
p-Cresol (***)	0.006			0.08							
o Non-PP Pesticides (EP Toxicity)											
Methoxychlor	BD	BD	BD	BD	BD	BD	BD	BD	BD	10	SHW, PDW
2,4-D	BD	BD	BD	BD	BD	10	160	BD	BD	10	SHW, PDW
2,4,5-TP (Silvex)	BD	BD	BD	BD	BD	BD	BD	BD	BD	1	SHW, PDW
o Non-PP Volatiles											
Xylene	146	116	BD	BD	BD	1.5	BD	2.8	1.2	1	
o Non-PP Inorganics											
Barium	BD	BD	BD	BD	BD	BD	BD	BD	BD	100	SHW, SWQ
o Misc. Constituents/Parameters											
Oil and Grease	0.340%	0.1498%	0.0587%	0.914%	0.0304%	0.190%	0.0539%	0.0650%	0.0586%		

Unless otherwise specified, all units are mg/kg (mg/L).

pp Priority Pollutant
PDW National Interim Primary Drinking Water Regulations
PDW(*) Proposed N.I.P.D.W.R.
SHW State of Oregon Hazardous Waste Administrative Rules
SWQ State of Oregon Water Quality Administrative Rules
BD Parameter detected, but below analytical quantification limits.
ND Analyzed, but not detected.
NR Not reported.
(***) Reported as sum of two compounds.

PDR956.031.2

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-1	SHEET 1 OF 2

SOIL BORING RECORD DRAWING

PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

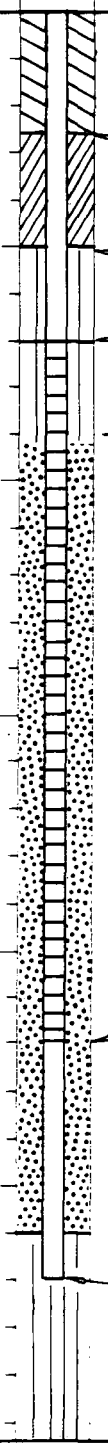
ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION (NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL)	COMMENTS (DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION)
	5	5.0				SILT, low plasticity, medium gray with brown mottling, moist, soft (ML), fill.	Top of gravel at 5'
		6.5	S-1	18	1-1-1 (2)		
	10	10.0				Upper 10" - SILT, same as S-1, some hydrocarbon odor (Jar 1 of 2), fill.	Driller notes water at ±9';
		11.5	S-2	0	4-4-5 (9)	Lower 8" - SAND, poorly graded, fine sand, dark gray, wet compact (SP), heavily saturated with oil, strong odor (Jar 2 of 2), fill.	Prominent oily sheen and odor to cuttings between 10' and 15'
	15	15.0				SAND, poorly graded, fine sand, dark gray, wet, compact (SP), heavily saturated with oil, fill.	
		16.5	S-3	18	3-4-5 (9)		
	20	20.0				SAND, same as S-3, heavily saturated with oil, fill.	
		21.5	S-4	10	4-3-4 (7)		Screen bottom at 22'
	25	25.0				Upper 14" - SAND as in S-3 (SP), mild hydrocarbon odor, probably is slough from washing out heave and not representative.	Drillor notes 3 foot of heave at 25', had to wash out hole to clean out heave
		26.5	S.5	18	3-3-4	Lower 4" - SILT, low plasticity, medium brownish gray, moist, firm (ML), no noticeable hydrocarbon odor, probably native soil.	FM Native ±21'
							Sump bottom at 27'

SYMBOLIC LOG



Grout to surface

Top of bentonite at 2 1/2"

Screen top at 7'

REV 11 82 FORM D1586

SCOEPA00036794

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-1	SHEET 2 OF 2

SOIL BORING RECORD DRAWING

PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
	30	30.0				SILT, low plasticity, medium brownish gray, moist to wet, includes some sandy silt in upper 6", firm (ML), no noticeable hydrocarbon odor, native soil.		
		31.5	S-6	18	4-4-5 (9)			Bottom gravel at 31.5'
						END MW at 31.5 feet.		
								Worst samples
								S-2, Jar 2 of 2 and S-3 are equally bad, more sample in S-3 for testing.

REV 11 82 FORM D1586

SCOEPA00036795

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-2	SHEET 1 OF 2

SOIL BORING RECORD DRAWING

PROJECT **WACKER SILTRONIC CORPORATION** LOCATION **PORTLAND, OREGON**

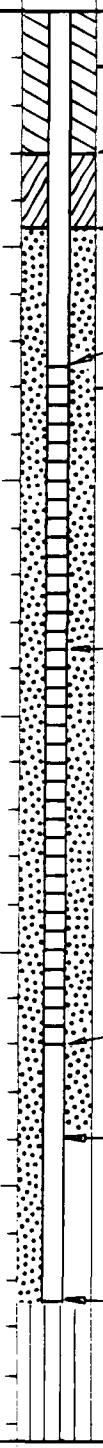
ELEVATION _____ DRILLING CONTRACTOR **GEOTECH EXPLORATIONS, BEAVERTON, OREGON**

DRILLING METHOD AND EQUIPMENT **CME-55, 6" HS AUGERS**

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION / DEPTH BELOW SURFACE (FT.)	SAMPLE: INTERVAL	SAMPLE: TYPE AND NUMBER	SAMPLE: RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
5	5.0					
	6.5	S-1	18	1-2-3 (5)	SAND, poorly graded, fine sand, brown, moist, loose (SP), fill.	
10	10.0					
	11.5	S-2	0	1-4-5	NO RECOVERY; sample tube came up oily, strong hydrocarbon odor, sandy material on outside of sampler.	
15	15.0					
	16.5	S-3	18	1-1-2 (3)	SAND, poorly graded, fine sand, chalk gray, wet, loose (SP), some lenses of silt; strong hydrocarbon odor, oily material observed on sample fill.	
20	20.0					
	21.5	S-4	18	5-6-6 (12)	SANDY SILT, non-plastic, ~30% fill sand, medium to dark gray, wet, firm, (ML), strong hydrocarbon odor, noticeable oil in sample fill?	
25	25.0					
	20.5	S-5	18	3-5-5 (10)	Upper 14" - SAND, as in S-3, includes strong hydrocarbon odor and visible oil in sample, material may be slough from drilling and washing out heaved zone, may not be representative of 25'-26.5' interval. Lower 4" - SILT, low plasticity, medium grayish brown, firm, moist (ML), no apparent hydrocarbon, native.	

SYMBOLIC LOG



Grout to surface

Top of bentonite at 3'

Top of gravel at 4 1/2'

Screen top at 7 1/2'

Driller notes water at ±8';

15' screen
2" schedule 40
10 slot PVC

Driller notes considerable degree of oiliness to cutting from 15'-25', more than in MW-1

Screen bottom at 22'

5' sump

Driller notes 2' heave at 25', had to wash out hole

Sump bottom at 27' 4"

REV 11 82 FORM D1586

SCOEPA00036796

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-2	SHEET 2 OF 2

SOIL BORING RECORD DRAWING

PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
	30	31.5	S-6	18	3-3-4 (7)	**SILT, low plasticity, grayish brown, moist, firm (ML), no noticeable hydrocarbon odor, native soil.**		
						END MW at 31.5 feet		
								Worst sample
								S-3, S-4 - about the same

REV 11 82 FORM D1536

SCOEPA00036797

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-3	SHEET 1 OF 2

SOIL BORING RECORD DRAWING

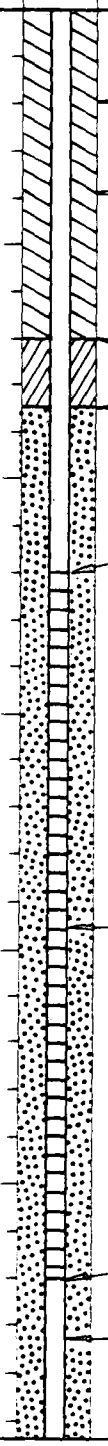
PROJECT **WACKER SILTRONIC CORPORATION** LOCATION **PORTLAND, OREGON**

ELEVATION _____ DRILLING CONTRACTOR **GEOTECH EXPLORATIONS, BEAVERTON, OREGON**

DRILLING METHOD AND EQUIPMENT **CME-55, 6" HS AUGERS**

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION (NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL)	SYMBOLIC LOG	COMMENTS (DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION)
	5	5.0						
		6.5	S-1	18	7-6-2 (8)	SAND, poorly graded, fine sand, ~15% fine, but some interlayers of silt, medium dense, dry, light brown, (SP), fill.		
	10	10.0						
		11.5	S-2	18	2-2-7 (9)	Interbedded silt and sand, sand same as above (SP), except gray, SILT, low plasticity, 10-15% sand, odor, light gray, moist, firm (ML), fill.		
	15	15.0						
		16.5	S-3	18	1-4-10 (14)	SAND, poorly graded, same as S-1, except strong hydrocarbon odor (SP), fill.		
	20	20.0						
		21.5	S-4	18	4-4-7 (11)	Interbedded silt and sand, same as S-2, except includes partially decomposed wood fragments and mild to strong hydrocarbon odor, wet, gray, fill.		
	25	25.0						
		26.5	S-5	18	5-6-6 (12)	SAND, poorly graded, fine sand, less than 10% fine, wet, medium to dark gray, compact (SP), strong hydrocarbon odor, fill.		
	30	30.0						



Silty topsoil, then sandy cuttings to 5'

Grout to surface

Cuttings change to dark gray silt at ±7'

7' top of bentonite soil

Top of sand pack 8 1/2'

Screen top 12'

Driller notes H_2O at ±15'

First notice hydrocarbon odor in cutting at 15'

15' schedule 40 2" 10 slot PVC screen

Screen bottom 27'

5'- 4" Sump

REV 11 82 FORM D1586

SCOEPA00036798

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-3	SHEET 2 OF 2

SOIL BORING RECORD DRAWING

PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION (NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL)	SYMBOLIC LOG	COMMENTS (DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION)
		31.5	S-6	18	4-5-5 (10)	**SAND, poorly graded, fine sand, some interbedded silt in lower 2-4", medium gray, wet, medium dense, strong hydrocarbon odor, fill.**		**Sump bottom at 32'- 4"**
								Bottom of fill at ±34 1/2'
	35	35.0				**Upper 14" - mixture of sand and silt, probably washed cavings.**		**Augered to 35' and driller noted 3' of heave; opted to remove check ball from sampler and jet it to sample position in hopes of getting recovery; sample may be disturbed; pumped fresh water into hole (sample of water table).**
		36.5	S-7	18	8-6-6 (12)	**Lower 4" - SILT, low plasticity, medium to dark gray, moist, firm (ML), slight hydrocarbon odor in upper 12", not noticeable in lower 6", sand and silt were mixed together in jar, silt is probably native soil.**		
	40	40.0				**Upper 12" - sand as in S-6, but is washed, probably is heaved material, discarded.**		
		41.5	S-8	6"	3-3-3 (9)	**Lower 6" - SILT, low plasticity, medium to dark gray, moist, firm (ML), probably native soil, no noticeable hydrocarbon odor.**		**Worst samples**
								Sample choices, any of S-3, S-4, S-5, S-6.

REV 11 82 FORM D 1556

SCOEPA00036799

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-4	SHEET 1 OF 2

SOIL BORING RECORD DRAWING

PROJECT **WACKER SILTRONIC CORPORATION** LOCATION **PORTLAND, OREGON**

ELEVATION _____ DRILLING CONTRACTOR **GEOTECH EXPLORATIONS, BEAVERTON, OREGON**

DRILLING METHOD AND EQUIPMENT **CME-55, 6" HS AUGERS**

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION (NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL)	SYMBOLIC LOG	COMMENTS (DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION)
								Hole is within 20' of abandoned natural gas line
								Grout 5' to surface
	5	5.0				Upper 9" - SAND, poorly graded, fine sand, brown, moist to wet, loose (SP).		Bentonite from 5-6'
		6.5	S-1	18	5-1-2 (3)	Lower 9" - SILT, non-plastic, 10-20% fine sand, dark gray, moist, soft (ML), fill.		Screen top at 6 1/2'
								Some gravel - like material at 8'
								Driller notes water at ±8';
	10	10.0				Upper 6" - SAND, same as S-1, maybe slough.		
		11.5	S-2	18	11-13-11 (24)	Lower 12" - SILT, same as above.		15' screen 10 slot 2" schedule 40 PVC
	15	15.0				SAND, poorly graded, fine sand, saturated, loose, (SP), maybe slough, possible mild odor of hydrocarbon.		
		16.5	S-3	6"	3-3-4 (7)			Piece wood jammed into end of shoe
	20	20.0				SILT, low plasticity, brownish gray, moist, firm, (ML), native soil; included pieces of wills, probably dragged into sample.		Fill ±20' Native
		21.5	S-4	18	1-4-4 (8)			Screen bottom at 21 1/2'
								5'- 4" Sump
	25	25.0				SILT, same as above.		
		20.5	S.5	12	4-4-4 (8)			Tailpiece bottom at 27'
								Bentonite from 27-28'
	30	30.0						Gravel to 41 1/2'

REV 11 82 FORM D1586

SCOEPA00036800

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-4	SHEET 2 OF 2

SOIL BORING RECORD DRAWING

PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION (NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL)	SYMBOLIC LOG	COMMENTS (DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION)
		31.5	S-6	18	4-5-4 (9)	SILT, low plasticity, gray with brown mottling, moist, firm (ML), includes some decomposed plant fragments.		
	35	35.0						
		36.5	S-7	8	2-3-8 (11)	SANDY SILT, non-plastic, 30-50% fine sand, brown, moist, firm (ML).		Gravel to 41 1/2'
	40	40.0						
		41.5	S-8	8		END MW at 41.5'		
								Worst samples
								None - all have clean appearance

REV 11 82 FORM D1586

SCOEPA00036801

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-5	SHEET 1 OF 2

SOIL BORING RECORD DRAWING

PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

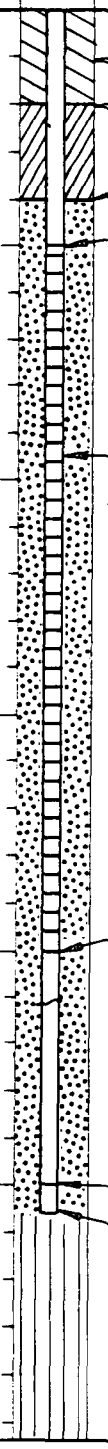
ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION / DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION (NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY USCS GROUP SYMBOL)	COMMENTS (DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS TESTS AND INSTRUMENTATION)
5	5.0					
	6.5	S-1	18	4-4-8 (12)	SAND, poorly graded, fine sands, brown and gray, some 1/2" silt lenses, moist, loose; includes some oil sheen and odor.	
10	10.0					
	11.5	S-2	18	6-6-8 (14)	SAND, poorly graded, fine sand, dark gray, wet, loose to compact, (SP), fill, saturated with oil (split samples taken, Jar 1 and Jar 2).	
15	15.0					
	16.5	S-3	18		SAND, same as S-2, except only has oily odor and occassional sheen in soil.	
20	20.0					
	21.5	S-4	18	3-4-5 (9)	SAND, same as S-2, excet has mild odor of oil; silt in top.	
25	25.0					
	26.5	S-5	9	3-5-10 (15)	SILT, low plasticity, 10-15% fine sand, medium gray with brown, yellow and reddish mottling, slightly moist, very stiff (ML), no noticeable hydrocarbon odor.	
30	30.0					

SYMBOLIC LOG



Grout to surface

Top of bentonite seals = 2'

Top of sand at 4'

Screen top at 5'

Dark gray sandy material in cuttings from 5'-10', noticeable oily smell and sheen

Driller notes water 5'-10'

Screen bottom at 20'

Silt in tip of sampler, for S-4 fill ±21

Native

Sump bottom at 25'

Tailpiece bottom at 25' - 4"

NOTE: Driller lost steel weight for tape in hole at 30 feet, not recovered.

REV 11 82 FORM D1586

SCOEPA00036802

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-5	SHEET 2 OF 2

SOIL BORING RECORD DRAWING

PROJECT **WACKER SILTRONIC CORPORATION** LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
		31.5	S-6	18	4-5-5 (10)	**SILT, low plasticity, about 10% fine sand, gray with brown mottling, moist, stiff (ML), no noticeable hydrocarbon odor.**		
						END MW at 31.5 foot.		
								Worst samples
								S-2 = worst S-3

REV 11 82 FORM D1586

SCOEPA00036803

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-6	SHEET 1 OF 2

SOIL BORING RECORD DRAWING

PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

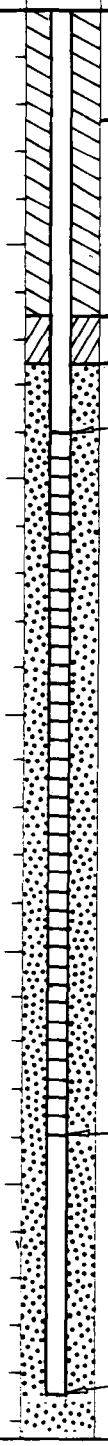
ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION / DEPTH BELOW SURFACE (FT.)	SAMPLE: INTERVAL	SAMPLE: TYPE AND NUMBER	SAMPLE: RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
5	5.0					
	6.5	S-1	10	3-8-11 (19)	SAND, poorly graded, fine sand, less than 10% fine, brown, moist, compact (SP), fill.	
10	10.0					
	11.5	S-2	10	10-10-11 (21)	Primarily sand, as in S-1, but with several 1-inch silt layers; lower 6" of sample has strong hydrocarbon odor to it.	
15	15.0					
	16.5	S-3	10	1-1-2 (3)	SAND, as in S-1, except lower 6" have blackish discoloration and strong hydrocarbon odor; small oily splotches noticeable in soil.	
20	20.0					
	21.5	S-4	10	3-3-5 (8)	Upper 6" - SAND as in S-1, have blackish discoloration and hydrocarbon odor, fill. Lower 12" - SILT, low plasticity, gray with brown mottling, firm (ML), hydrocarbon odor not noticeable.	
25	25.0					
	26.5	S-5	10	9-26-26 (52)	SAND, as in S-1, but dark gray with mild hydrocarbon odor, material might be heaved sands and not representative of in-situ soil at 25'.	
30	30.0					

SYMBOLIC LOG



Grout to surface

Bentonite to 6 1/2'

Sand to 7 1/2'

Top of screen at 9'

Driller notes water at ±12', coincident with appearance of "oily" odor from cuttings while drilling from 10-15'

A-rods came out of hold with unusual yellow discoloration from water at 20-25'

Bottom of screen at 24'

Driller notes 4' of heave after drilling to 25'; also, chain fell in hole, but was able to recover by retracting augers from hole; Augers moved during SPT from S-5, driller says no contact with sampler; why so high of an N value?

Sump to 29 1/2'

REV 11 82 FORM D1586

SCOEPA00036804

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-6	SHEET 1 OF 2

SOIL BORING RECORD DRAWING

PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

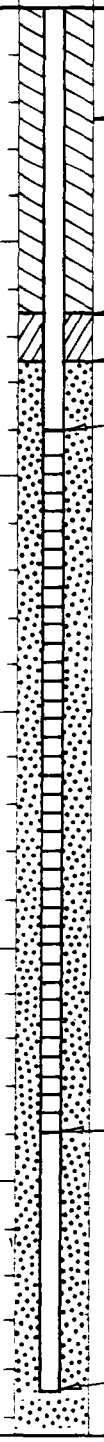
ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION / DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION (NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL)	COMMENTS (DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION)
5	5.0					
	6.5	S-1	10	3-8-11 (19)	SAND, poorly graded, fine sand, less than 10% fine, brown, moist, compact (SP), fill.	
10	10.0					
	11.5	S-2	18	10-10-11 (21)	Primarily sand, as in S-1, but with several 1-inch silt layers; lower 6" of sample has strong hydrocarbon odor to it.	
15	15.0					
	16.5	S-3	18	1-1-2 (3)	SAND, as in S-1, except lower 6" have blackish discoloration and strong hydrocarbon odor; small oily splotches noticeable in soil.	
20	20.0					
	21.5	S-4	10	3-3-5 (8)	Upper 6" - SAND as in S-1, have blackish discoloration and hydrocarbon odor, fill. Lower 12" - SILT, low plasticity, gray with brown mottling, firm (ML), hydrocarbon odor not noticeable.	
25	25.0					
	26.5	S-5	10	9-26-26 (52)	SAND, as in S-1, but dark gray with mild hydrocarbon odor, material might be heaved sands and not representative of in-situ soil at 25'.	
30	30.0					

SYMBOLIC LOG



Grout to surface

Bentonite to 6 1/2'

Sand to 7 1/2'

Top of screen at 9'

Driller notes water at ±12', coincident with appearance of "oily" odor from cuttings while drilling from 10-15'

A-rods came out of hold with unusual yellow discoloration from water at 20-25'

Bottom of screen at 24'

Driller notes 4' of heave after drilling to 25'; also, chain fell in hole, but was able to recover by retracting augers from hole; Augers moved during SPT from S-5, driller says no contact with sampler; why so high of an N value?

Sump to 29 1/2'

REV 11 82 FORM D1586

SCOEPA00036805

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-6	SHEET 2 OF 2

SOIL BORING RECORD DRAWING

PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
		31.5	S-6	10	5-7-12 (19)	All 18" of soil in barrel is SAND, poorly graded, fine sand, less than 10% fine, medium to dark gray, wet, compact, (SP), probably heave or disturbed soil, not representative of 30' depth; mild hydrocarbon odor. 2" of soil in shoe of sampler is SANDY SILT, non-plastic, 30-50% fine sand, medium gray, wet, firm, (ML); no noticeable hydrocarbon odor, sandy silt is probably representative of in-situ soil.		Driller notes 3' of heave from 30-29' prior to sampling S-6; had to drill/wash out heave
								Sample choices S-3

REV 11 82 FORM D1586

SCOEPA00036806

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-7	SHEET 1 OF 2

SOIL BORING RECORD DRAWING

PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

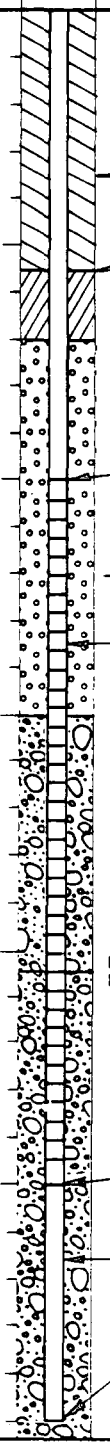
ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION / DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION (NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL)	COMMENTS (DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION)
5	5.0					
	6.5	S-1	12"	1-3-1 (4)	Lower 6" - SILT, low plasticity, moist, gray, soft (ML). Upper 6" - SAND, poorly graded, fine sand, brown, wet, loose, (SP), fill.	
10	10.0					
	11.5	S-2	14	5-9-11 (18)	SAND as in upper 6" of S-1, (SP), fill.	
15	15.0					
	16.5	S-3	18	2-1-5	SAND, same as upper 6" of S-1 (SP), fill.	
20	20.0					
	21.5	S-4	18	5-5-6 (11)	Upper 6" - sand as in upper 6" of S-1, (SP), fill; mild hydrocarbon odor. Lower 12" - SILT, low plasticity, medium brown with gray mottling, moist, firm, (ML); native soil.	
25	25.0					
	26.5	S-5	18	4-3-4 (7)	Upper 9" - SILT, low plasticity, medium brown with gray mottling, moist, firm, (ML). Lower 9" - SAND, poorly graded, fine sand, medium gray, wet, loose, (SP), strong hydrocarbon odor, visible blotches of oil (?) in both silt and sand.	
30	30.0					

SYMBOLIC LOG



COMMENTS:

- Grout to surface
- 5 1/2' top of bentonite
- Cavings around PVC 7-15'
- 10' of top of screen
- Driller notes water at ±12'
- 15' section 10 slot PVC wells
- During well construction, drill hole walls began squeezing in at 5' up to 7', sand was packed in auger and walls apparently squeezed in faster than sand could drop out; tried twice unsuccessfully to jet-out sand.
- 25' bottom screen
- 5'-4" Sump
- Bottom of Sump = 30'
- Driller notes heave at 30' ±4' of heave

REV 11 82 FORM D1586

SCOEPA00036807

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-7	SHEET 2 OF 2

SOIL BORING RECORD DRAWING

PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION (NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL)	SYMBOLIC LOG	COMMENTS (DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION)
		31.5	S-6	18	2-1-2 (3)	Lower 9" - SAND, poorly graded, fine, brown, wet, soft, (SP),. Upper 9" - SAND, very fine, brown, wet, loose, (SM); All has definite hydrocarbon (?) odor, not visible in soil, however. Sample may be distrubed, heave material.		Reamed out heaved area from 20 to 30' with wash water and tricone bit to clear auger. Backfill to 32'-4"
	35	35.0						
		36.5	S-7	18	3-5-5 (10)	SANDY SILT, low plasticity, 20-30% fine sand, medium brown, moist, soft, (ML); noticeable hydrocarbon (?) odor.		
	40	40.0						
		41.5	S-8	14"	8-11-17 (28)	Upper 7" - SILT, low plasticity, brown, wet, firm, (ML). Lower 7" - SILTY SAND, fine sand, about 30% fine, brown, wet, compact, (SM); both silt and sand have noticeable hydrocarbon (?) odor, no visible traces. END MW at 41.5 feet		Sample choices (Ranked from worst) *S-5 S-6 S-7 - S-8 (about the same) *amount of odor

REV 11 82 FORM D1536

SCOEPA00036808

CH2M HILL

CHAIN OF CUSTODY RECORD

PROJECT NUMBER	PROJECT NAME
LABORATORY	

STA. NO.	DATE	TIME	COMP	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS										REMARKS

SAMPLED BY AND TITLE *(SIGNATURE)*	DATE/TIME	RELINQUISHED BY: *(SIGNATURE)*	DATE/TIME	RECEIVED BY: *(SIGNATURE)*
RELINQUISHED BY: *(SIGNATURE)*	DATE/TIME	RECEIVED BY: *(SIGNATURE)*	RELINQUISHED BY: *(SIGNATURE)*	DATE/TIME	RECEIVED BY LAB: *(SIGNATURE)*

REMARKS

SAMPLE SHIPPED VIA
☐ UPS ☐ BUS
☐ FEDERAL EXPRESS

AIR BUS BILL NUMBER

DISTRIBUTION: WHITE — ORIGINAL ACCOMPANIES SHIPMENT, PINK — COPY TO COORDINATOR FIELD FILES, YELLOW — CLIENT

FORM 340

SCOEPA00036809

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

April 30, 1985
Log #A850410-I

Wacker Siltronics
P.O. Box 03180
Portland, Oregon 97203

Analyses Requested: Oil and Grease, Phenols, Volatiles, and Polynuclear Aromatic Hydrocarbons

Sample Identifications:
#1 - MW1, S-3 (15.0' - 16.5')
#2 - MW2, S-4 (20.0' - 21.5')
#3 - MW3, S-5 (25.0' - 26.5')
#4 - MW4, S-1 (5.0' - 6.5')
#5 - MW4, S-7 (35.0' - 36.5')
#6 - MW5, S-2 (10.0' - 11.5')
#7 - MW6, S-3 (15.0' - 16.5')
#8 - MW7, S-5 (25.0' - 26.5')
#9 - MW7, S-8 (40.0' - 41.5')

SAMPLE #	OIL AND GREASE
#1	0.340 %
#2	0.1498 %
#3	0.0587 %
#4	0.0914 %
#5	0.0304 %
#6	0.190 %
#7	0.0539 %
#8	0.0650 %
#9	0.0586 %

THIS REPORT CONTINUES

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

Wacker Siltro
Log #A850410-I

April 30, 1985
Page Two

PHENOL RESULTS

ANALYSIS	SAMPLE #1 RESULTS
Phenol	0.35
O-Cresol	0.04
3 & 4 Chlorophenol	0.44
2,3,4,6 Tetrachlorophenol	0.24
2,3,4,5 Tetrachlorophenol	4.9
M & P Cresol	0.006

	SAMPLE #2 RESULTS
Phenol	3.1
O-Cresol	3.4
3 & 4 Chlorophenol	17.5
2-Chlorophenol	7.8
2-Nitrophenol	0.20
2,4 Dimethylphenol	3.1
2,4 Dichlorophenol	2.7
2,4,5 Trichlorophenol	1.9
2,3,5,6 Tetrachlorophenol	4.0
2,3,4,5 Tetrachlorophenol	255

	SAMPLE #3 RESULTS
Phenol	0.20
3 & 4 Chlorophenol	0.06
2-Chlorophenol	0.08

	SAMPLE #4 RESULTS
Phenol	0.30
2-Chlorophenol	0.26
O-Cresol	0.02
M & P Cresol	0.08
2,3,5,6 Tetrachlorophenol	0.58
2,3,4,5 Tetrachlorophenol	0.40

	SAMPLE #5 RESULTS
Phenol	0.17
2,3,5,6 Tetrachlorophenol	0.11
Pentachlorophenol	0.31

Results reported in mg/kg

THIS REPORT CONTINUED

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

Wacker Siltronics
Log #A850410-I

April 30, 1985
Page Three

PHENOL RESULTS

ANALYSIS	SAMPLE #6 RESULTS
Phenol	0.07
O-Cresol	0.19
2,4 Dimethylphenol	0.22
2,4 Dichlorophenol	0.24
3 & 4 Chlorophenol	1.7
2,4,6 Trichlorophenol	0.22
2,3,5,6 Tetrachlorophenol	0.33
2,3,4,5 Tetrachlorophenol	0.23
2,4 Dinitrophenol	0.81
Pentachlorophenol	6.9

	SAMPLE #7 RESULTS
Phenol	0.05
O-Cresol	0.05
2-Chlorophenol	0.13
2,4 Dimethylphenol	0.17
3 & 4 Chlorophenol	0.32
2,3,5,6 Tetrachlorophenol	0.55
2,3,4,5 Tetrachlorophenol	4.7
Pentachlorophenol	5.1

	SAMPLE #8 RESULTS
Phenol	0.06
2,3,4,6 Tetrachlorophenol	1.0
2,3,4.5 Tetrachlorophenol	0.06

	SAMPLE #9 RESULTS
Phenol	0.08
2-Chlorophenol	0.14
2,3,5,6 Tetrachlorophenol	0.45
2,3,4,5 Tetrachlorophenol	0.25

Results reported in mg/kg

THIS REPORT CONTINUED

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

Wacker Siltronics
Log #A850410-I

April 30, 1995
Page Four

EP TOXICITY PESTICIDES

Results below apply to the water extract of soil samples. Water extracts performed as per EPA Specification of EP-Toxicity Method.

SAMPLE #	ENDRIN	LINDANE	METHOXYCHLOR	TOXAPHENE
#1	<0.002	<0.04	<0.1	<0.05
#2	<0.002	<0.04	<0.1	<0.05
#3	<0.002	<0.04	<0.1	<0.05
#4	<0.002	<0.04	<0.1	<0.05
#5	<0.002	<0.04	<0.1	<0.05
#6	<0.002	<0.04	<0.1	<0.05
#7	<0.002	<0.04	<0.1	<0.05
#8	<0.002	<0.04	<0.1	<0.05
#9	<0.002	<0.04	<0.1	<0.05
Allowed Limits	0.02	0.4	10	0.5

< denotes "less than"

Results expressed in mg/liter

EP TOXICITY HERBICIDES

SAMPLE #	2,4-D	2,4,5 TP (SILVEX)
#1	<10 (mg/liter)	<1 (mg/liter)
#2	<10	<1
#3	<10	<1
#4	<10	<1
#5	<10	<1
#6	10.0	<1
#7	190.0	<1
#8	<10	<1
#9	<10	<1

THIS REPORT CONTINUED

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

Wacker Siltronics
Log #A850410-I

April 30, 1985
Page Five

Subject: E P Toxicity Test.

Method of Analysis: Federal Register/Vol.45, No.98/Monday, May 19, 1980/ Rules and Regulations; Appendix II, Page 33127

Field Data: Samples were collected and delivered by the Client

ANALYSIS	#1	#2	#3	#4	#5
Arsenic	<0.05	<0.05	<0.05	<0.05	<0.05
Barium	0.05	0.11	0.05	0.09	<0.05
Cadmium	<0.05	<0.05	<0.05	<0.05	<0.05
Chromium	<0.05	<0.05	<0.05	<0.05	<0.05
Lead	<0.05	<0.05	<0.05	<0.05	<0.05
Mercury	<0.05	<0.05	<0.05	<0.05	<0.05
Selenium	<0.05	<0.05	<0.05	<0.05	<0.05
Silver	<0.05	<0.05	<0.05	<0.05	<0.05

ANALYSIS	#6	#7	#8	#9	Limit
Arsenic	<0.05	<0.05	<0.05	<0.05	5.0
Barium	0.05	0.11	0.08	0.15	100.0
Cadmium	<0.05	<0.05	<0.05	<0.05	1.0
Chromium	<0.05	<0.05	<0.05	<0.05	5.0
Lead	<0.05	<0.05	<0.05	<0.05	5.0
Mercury	<0.05	<0.05	<0.05	<0.05	0.2
Selenium	<0.05	<0.05	<0.05	<0.05	1.0
Silver	<0.05	<0.05	<0.05	<0.05	5.0

< denotes "less than"

Results expressed in mg/liter

THIS REPORT CONTINUED

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

Wacker Siltronic
Log #A850410-I

April 30, 1985
Page Six

VOLATILES (HEADSPACE ANALYSIS)

COMPOUND	#1	#2	#3	#4	#5
1,2-Dichloro-ethane	<0.01	<0.01	<0.01	<0.01	<0.01
1,1,1-Trichloro-ethane	0.01	<0.01	<0.01	<0.01	<0.01
Toluene	1.2	20	0.11	<0.1	<0.1
1,1,2,2 Tetra-chloroethylene	2.2	11	<0.05	<0.05	<0.05
Chlorobenzene	0.04	<0.04	<0.04	<0.04	<0.04
Ethyl Benzene	17.0	5.4	<0.04	<0.04	<0.04
Xylene	146	116	<1.0	<1.0	<1.0

COMPOUND	#6	#7	#8	#9
1,2-Dichloro-ethane	<0.01	<0.01	<0.01	<0.01
1,1,1-Trichloro-ethane	<0.01	<0.01	<0.01	<0.01
Toluene	0.20	<0.1	<0.1	<0.1
1,1,2,2 Tetra-chloroethylene	0.14	<0.05	<0.05	<0.05
Chlorobenzene	<0.04	<0.04	<0.04	<0.04
Ethyl Benzene	<0.04	<0.04	<0.04	0.05
Xylene	1.5	<1.0	2.8	1.2

< denotes "less than"

Results reported in mg/kg

Some interference was encountered due to naphthalene and some of the more volatile phenols and PNA s.

THIS REPORT CONTINUES

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

Wacker Siltronics
Log #A850410-I

April 30, 1985
Page Seven

POLYNUCLEAR AROMATIC HYDROCARBONS

COMPOUND	#1	#2	#3	#4	#5
Naphthalene	6.7	360	< 1	< 1	< 1
Acenaphthalene	5.6	230	< 1	< 1	< 1
Acenaphthene	8.0	560	< 1	< 1	< 1
Fluorene	5.0	290	< 1	< 1	< 1
Phenanthrine-Anthracene	32	1400	3	< 1	< 1
Fluoranthrene	16	530	< 1	< 1	< 1
Pyrene	18	550	< 1	< 1	< 1
Chrysene	12	92	< 1	< 1	< 1
Benzo(b) + Benzo(k) Fluoranthrene	8.0	120	< 1	< 1	< 1
Benzo(a)Pyrene	19	120	< 1	< 1	< 1
Indeno(1,2,3-CD) Pyrene+Dibenzo (a,b)Anthracene	< 1	270	< 1	< 1	< 1
Benzo(ghi)-Perylene	< 1	360	< 1	< 1	< 1

COMPOUND	#6	#7	#8	#9
Naphthalene	230	< 1	< 1	< 1
Acenaphthalene	24	< 1	< 1	< 1
Acenaphthene	28	< 1	< 1	< 1
Fluorene	20	< 1	< 1	< 1
Phenanthrine-Anthracene	150	< 1	1.6	< 1
Fluoranthrene	50	< 1	1.1	< 1
Pyrene	57	< 1	1.2	< 1
Chrysene	36	< 1	1.7	< 1
Benzo(b)+Benzo(k) Fluoranthrene	200	< 1	< 1	< 1
Benzo(a)Pyrene	100	< 1	< 1	< 1
Indeno(1,2,3-CD Pyrene+Dibenzo (a,b)Anthracene	7	< 1	< 1	< 1
Benzo(ghi)-Perylene	25	< 1	< 1	< 1

< denotes "less than"
Results reported in mg/Kg

Sincerely,

Susan M. Coffey

Susan M. Coffey,
President

SMC/db

A PRELIMINARY REPORT
SOIL INVESTIGATION FOR PROPOSED POLYSILICON PLANT

WACKER SILTRONIC CORPORATION
PORTLAND, OREGON

CH2M HILL

Engineers
Planners
Economists
Scientists

A PRELIMINARY REPORT
SOIL INVESTIGATION FOR PROPOSED
POLYSILICON PLANT

WACKER SILTRONIC CORPORATION
PORTLAND, OREGON

Prepared By

CH2M HILL NORTHWEST, INC.
2020 S.W. Fourth Avenue
Portland, Oregon 97201

JUNE 1985
P19786.A1.00

INTRODUCTION

Wacker Siltronic Corporation contracted CH2M HILL to conduct a soil investigation on Wacker's property located in the Northwest Industrial area of Portland, Oregon. The purpose of the investigation was to evaluate subsurface conditions within a section of the vacant portion of the site as part of the preliminary engineering for the design and construction of the proposed polysilicon plant.

The subsurface investigation was initiated based on the presence (both past and current) of industrial manufacturing and processing facilities within the Doane Lake area and recent environmental regulations--the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the Resource Conservation and Recovery Act of 1976 (RCRA). Wacker was concerned that past or current management practices of industrial wastes within the Doane Lake area may have resulted in the presence of these materials or subsequent residues on Wacker's property, which would prevent or hinder the construction of the proposed polysilicon plant and future expansions of the existing manufacturing facilities.

This preliminary report describes the soil boring, sampling, and analytical procedures and construction of the groundwater monitoring wells. It also presents the results of the laboratory analyses, which indicate the presence of chemical constituents commonly associated with petroleum products, coal tar, and pesticides. Interpretation of the results presented in this report is beyond the scope of our contract and will be included as part of future work (i.e., site environmental assessment).

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SITE DESCRIPTION

Wacker Siltronic Corporation is located in the northwest section of the City of Portland on the west bank of the Willamette River. The property, consisting of approximately 85 acres, is situated between the St. Johns Bridge and the Burlington Northern Railroad Bridge and is essentially rectangular in shape. Property boundaries are the Willamette River to the northeast; the Burlington Northern Railroad berm, which provides the approach to the railroad bridge, to the southwest; Burlington Northern track and adjacent N.W. St. Helens Road to the southwest; and the property line shared with Northwest Natural Gas and the Koppers Company to the northwest. Figure 1 shows the location of the Wacker property in relation to these landmarks and other industrial companies in the vicinity.

The project site is located in a vacant field about 400 feet south of Wacker's existing facilities, as shown in Figure 2. The site is bounded on the north by the existing Wacker plant, and is bordered on the south and east by Burlington Northern Railroad right-of-way. Underground utilities, consisting of oil, water, gasoline, natural gas, and sewer lines, as well as electric and telephone cables, are located in a 100-foot-wide easement on the north side of the site.

The site is relatively level with elevations ranging from about 40 feet National Geodetic Vertical Datum 1929 (NGVD) in the southern part to about 32 feet in the northern part. The local ground surface is deeply rutted with heavy machinery tracks and ditches. Wood debris, concrete, and other waste materials are present in small amounts across the field.

FIELD INVESTIGATION

The field investigation was performed from April 1 through 5, 8 and 9, 1985. The investigation involved collecting soil

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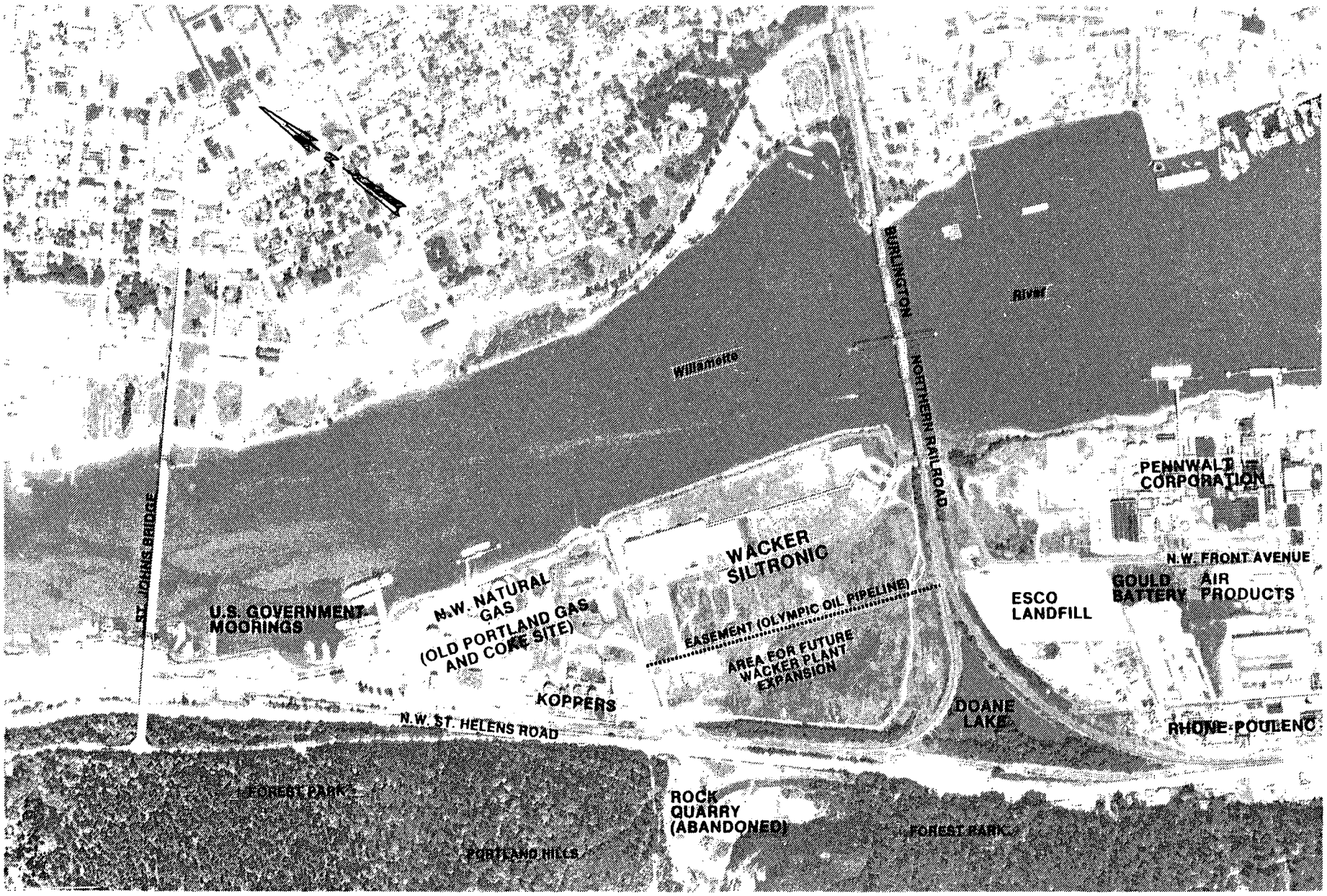

Figure 1 WACKER SILTRONIC PLANT AND SURROUNDING VICINITY (1983)

SCALE: 1" = 940 FEET (1 cm : 110 m)

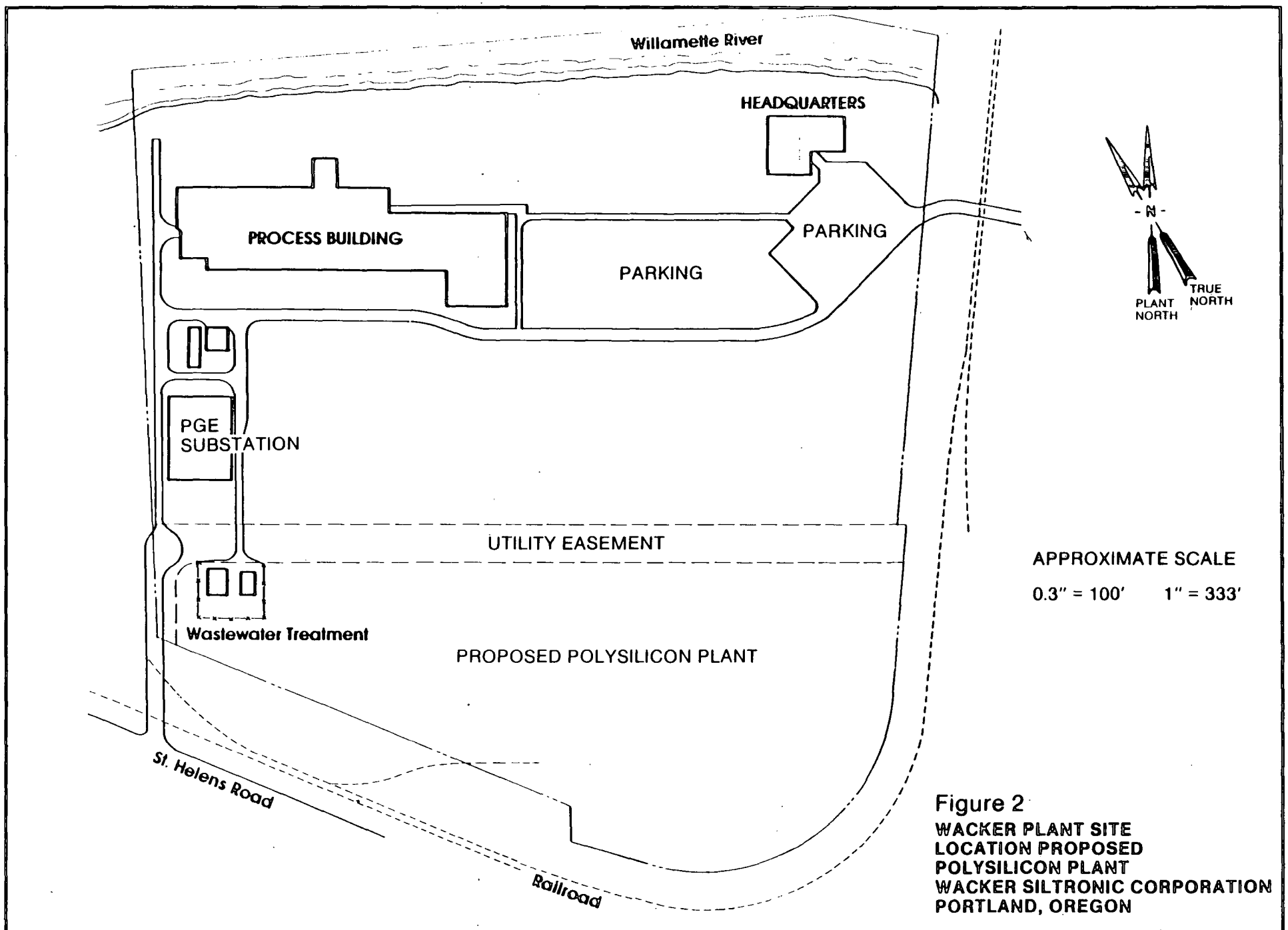

Figure 2
WACKER PLANT SITE
LOCATION PROPOSED
POLYSILICON PLANT
WACKER SILTRONIC CORPORATION
PORTLAND, OREGON

CH2M HILL

samples from seven soil borings, all of which were completed as monitoring wells. The locations of the borings/monitoring wells (designated MW-1 through MW-7) are shown in Figure 3. The soil borings were drilled and monitoring wells constructed by Geotech Explorations, Inc., of Beaverton, Oregon, under the field observation of a CH2M HILL hydrogeologist.

SOIL BORING AND SAMPLING

The seven soil borings were drilled using a CME-55 rotary drill rig and 6¼-inch (OD) hollow-stem augers. Soil samples were recovered at 5-foot intervals. Samples were recovered using a 2-inch split-spoon sampler following the requirements of the standard Penetration Test (ASTM D 1586). The sampler was driven 18 inches ahead of the auger bit to collect an undisturbed soil sample. The depth of soil borings ranged from 31.5 to 41.5 feet, generally between 5 and 20 feet below fill material and into native soils. The CH2M HILL hydrogeologist inspected, classified, and logged each borehole and soil sample in the field in approximate accordance with the Visual-Manual Procedure (ASTM D 2488). The log included a physical description of the soil type and a visual and odor estimate for the presence of contaminants. Sample intervals, soil types, and descriptions of the soil types and soil borings are provided in the soil boring record drawings presented in the appendix.

A composite soil sample from each split-spoon was placed in a clean 8-ounce glass jar. Each jar was filled to the top before it was sealed. The label that had been affixed to the sample container was then filled out. Information on the label included the facility name, the sample identification number, the name of the person collecting the sample, date and time of collection, and the location of the sample. The sample was then placed in a portable cooler until the end of each day when it was transferred via chain-of-custody record

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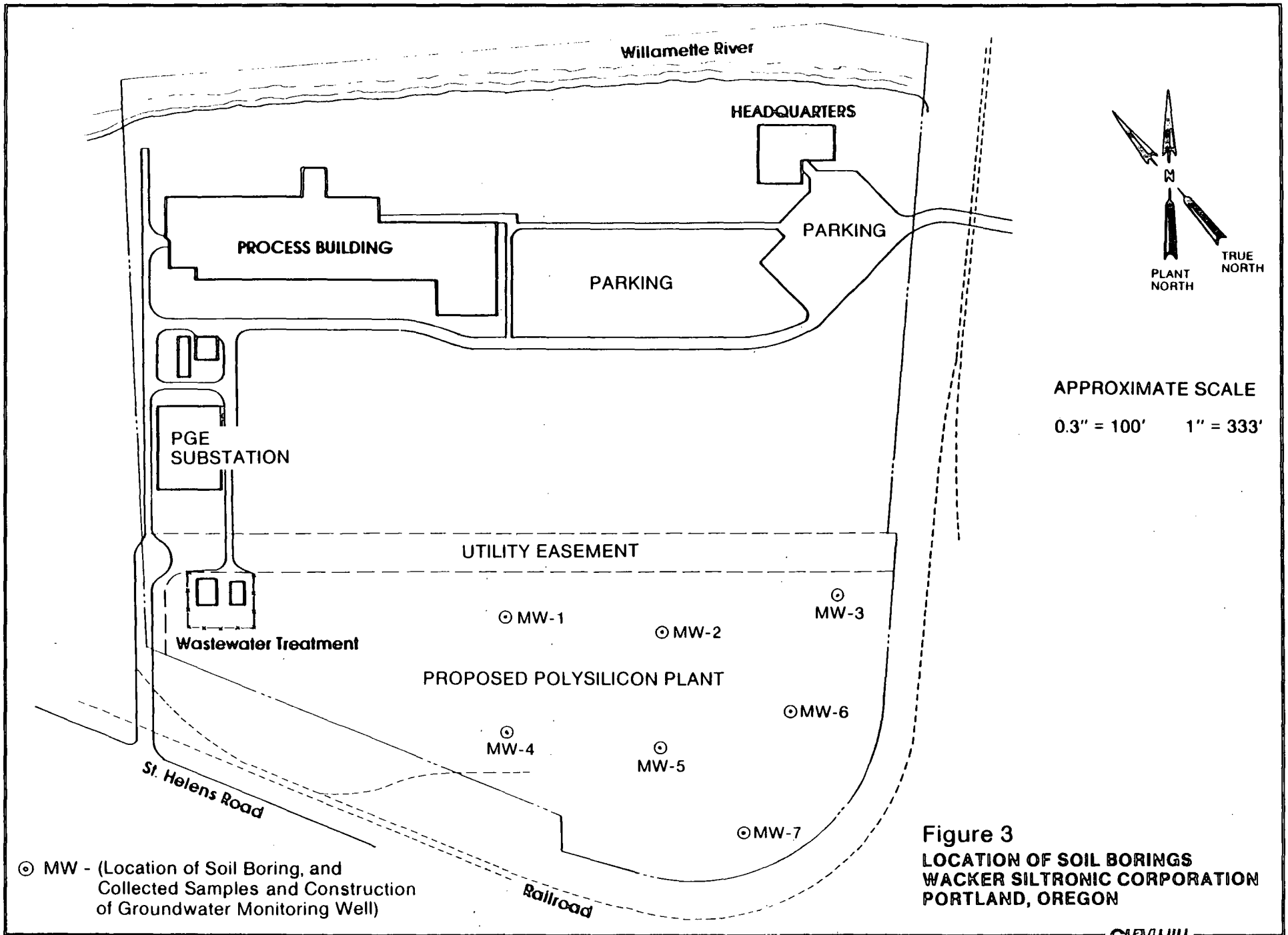

Figure 3
LOCATION OF SOIL BORINGS
WACKER SILTRONIC CORPORATION
PORTLAND, OREGON

to a refrigerator located inside the laboratory area of Wacker's wastewater treatment building. Chain-of-custody records were kept for every sample collected. Sample custody was maintained until the samples were relinquished directly to Wacker or an outside laboratory. A sample of the chain-of-custody form used is illustrated in the appendix.

All drilling equipment was thoroughly steam-cleaned before drilling each boring. Oil and grease were not used at drill rod connection fittings to prevent contamination of the soil samples. The split-spoon soil sampler was decontaminated between each use. Decontamination steps included:

- Washing off grass, soil particles, mud smears, etc., in a bucket of tap water
- Washing in a 5 to 10 percent solution of trisodium phosphate (TSP) and tap water
- Two rinses in clean tap water
- One rinse each with distilled water and methanol

The same decontamination procedures were used for the stainless steel utensils used to transfer soil from the sampler to the jars. Utensils were stored in a new plastic bag until they were ready for use.

A number of quality control measures were performed in order to ensure that all data generated was of known precision, and accuracy and conformed to accepted procedures. Soil sample splits were collected at soil boring sites MW-2, -5, and -6. Several transfer blanks were also prepared to check for potential contamination of sample jars. Samples of water poured into the drill holes to hold back heaving sands were also collected.

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GROUNDWATER MONITORING WELL CONSTRUCTION

Seven groundwater monitoring wells were constructed by installing well screen casing assemblies into the completed drill holes.

Each assembly consisted of 2-inch diameter schedule 40 PVC. Well screens consisted of a 15-foot length of PVC with three rows of 0.010-inch machine-slotted openings. A 5-foot solid PVC sump was placed beneath each screen. Solid PVC casing was placed above the screen and extended to the ground surface. Casing lengths were connected by flush-threaded fittings; no solvents were used to connect PVC sections.

Each well screen interval was gravel-packed by pouring a coarse-grained sand into the annular space between the PVC and the hollow stem of the auger. As the auger was pulled up, the sand dropped out of the hollow stem into the well to envelop the well screen. After the sand pack was installed to 2 or 3 feet above the top of the well screen, the annular space between the PVC casing and the hollow stem was filled with 1 to 2 feet of pelletized bentonite followed by cement grout to the ground surface. A summary of the construction of each well is provided in the soil boring record drawings presented in the appendix.

Well heads were completed at approximately 2 feet above the ground surface with locking steel caps that were anchored 2 to 3 feet into the cement grout mixture. The monitoring wells were developed by the drilling contractor by blowing compressed air through an air line into the sump (tail pipe) located below the well screen. Development was considered complete when the return water became visibly less turbid. The PVC monitoring well assembly was thoroughly steam-cleaned before construction of each well. As a measure of additional quality assurance and control, samples of the sand filter

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pack material used for well construction were collected and saved.

LABORATORY ANALYSIS AND SOIL SAMPLE RESULTS

The field sample description generally provided the basis for selecting samples to be sent to the laboratory for chemical analysis. Samples in which contaminants were most apparent visually and by odor were selected for analysis. Also, at least one soil sample from each soil boring site was analyzed, as was at least one sample at every 5-foot depth (except at 30 feet) from the combination of all soil boring locations. Figure 4 shows the approximate vertical location of the collected soil samples for each monitoring well and identifies which samples were analyzed.

The selection of the chemical analyses to be performed on each soil sample was based on the past and current industrial chemical manufacturing and handling activities within the Doane Lake area (i.e., petroleum products, coal tar, creosote, pesticides, battery recycling, foundry process waste disposal). The following chemical analyses were performed on the selected soil samples by Coffey Laboratories, Inc. (located at 4914 N.E. 122nd Avenue, Portland, Oregon):

- Oil and grease
- Phenols
- Volatiles and polynuclear aromatic hydrocarbons
- E.P. toxicity for:
  - --pesticides
  - --herbicides
  - --arsenic
  - --barium
  - --cadmium
  - --chromium
  - --lead
  - --mercury
  - --selenium
  - --silver

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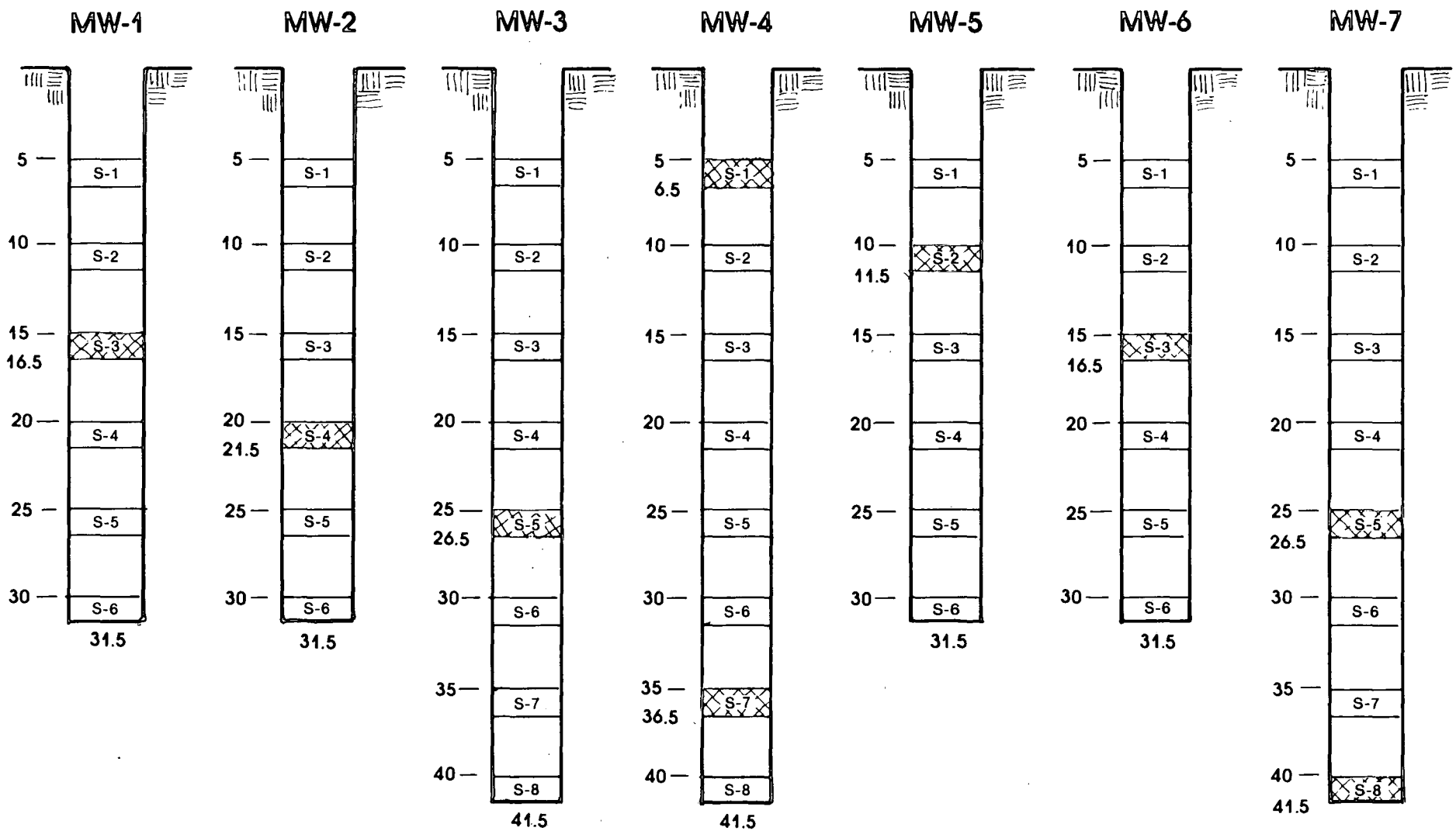

Analyzed Collected Soil Samples

(NOTE: Parallel lines denote soil samples. These were taken at 1.5 ft intervals starting every five feet)

Figure 4

GENERAL VERTICAL LOCATION COLLECTED SOIL SAMPLES
WACKER SILTRONIC CORPORATION
PORTLAND, OREGON

CH2M HILL

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The results of the laboratory analysis are presented in Table 1. A copy of the Coffey Laboratories, Inc., report is included in the appendix.

The field samples were analyzed for phenols, pesticides, herbicides, metals, volatiles, and aromatic hydrocarbons by EPA methods (SW-846, EPA-602, 4-79-020); the oils and grease were measured by standard methods (method 503 D).

Laboratory quality assurance procedures included method blanks, duplicates for precision measurements, and spikes for accuracy measurements. The frequency of blank, duplicate, and spike measurements was at a minimum of 10 percent per set to meet the standard requirements. The data were evaluated in view of the QC findings and found acceptable.

A review of the laboratory analysis indicates that each soil boring location contained a mixture of substances commonly associated with petroleum products, coal tar, and pesticides. The following list summarizes the principal substances found in each of the seven borings:

- MW-1 PAHs, petroleum products
- MW-2 PAHs, petroleum products
- MW-3 petroleum products
- MW-4 petroleum products
- MW-5 PAHs, petroleum products, 2,4-D
- MW-6 petroleum products, 2,4-D
- MW-7 petroleum products

Interpretation of results presented in Table 1 is beyond the scope of this report and will be included as part of future work (i.e., site environmental assessment).

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Table 1
WACKER SILTRONIC, POLYSILICON PLANT SOILS INVESTIGATION
SOURCE: COFFEY LABORATORIES, INC./APRIL 30, 1985
RESULTS OF SOILS ANALYSIS

Chemical Compounds	MW-1, S-3 (15-16.5 ft)	MW-2, S-4 (20-21.5 ft)	MW-3, S-5 (25-26.5 ft)	MW-4, S-1 (5-6.5 ft)	MW-4, S-7 (35-36.5 ft)	MW-5, S-2 (10-11.5 ft)	MW-6, S-3 (15-16.5 ft)	MW-7, S-5 (25-26.5 ft)	MW-7, S-8 (40-41.5 ft)	Detection Limits	Reference Criteria
Organic Analyses											
o Volatile Compounds											
1,1,1-Trichloroethane	0.01	BD	BD	BD	BD	BD	BD	BD	BD	0.01	pp, PDW (*)
1,2-Dichloroethane	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.01	pp, PDW (*)
1,1,2,2-Tetrachloroethylene	2.2	11	BD	BD	BD	0.14	BD	BD	BD	0.05	
Toluene	1.2	20	0.11	BD	BD	0.20	BD	BD	BD	0.1	pp
Chlorobenzene	0.04	BD	BD	BD	BD	BD	BD	BD	BD	0.04	pp
Ethyl Benzene	17	5.4	BD	BD	BD	BD	BD	BD	0.05	0.04	pp
Xylene	146	116	BD	BD	BD	1.5	BD	2.8	1.2	1.0	
o Acid Extractables											
Phenol	0.35	3.1	0.20	0.30	0.17	0.07	0.05	0.06	0.08	NR	pp, SWQ
2-Chlorophenol	ND	7.8	0.08	0.26	ND	ND	0.13	ND	0.14	NR	pp, SWQ
2-Nitrophenol	ND	0.20	ND	ND	ND	ND	ND	ND	ND	NR	pp, SWQ
2,4-Dimethylphenol	ND	3.1	ND	ND	ND	0.22	0.17	ND	ND	NR	pp, SWQ
2,4-Dichlorophenol	ND	2.7	ND	ND	ND	0.24	ND	ND	ND	NR	pp, SWQ
2,4,6-Trichlorophenol	ND	ND	ND	ND	ND	0.22	ND	ND	ND	NR	pp, SWQ
2,4-Dinitrophenol	ND	ND	ND	ND	ND	0.81	ND	ND	ND	NR	pp, SWQ
Pentachlorophenol	ND	ND	ND	ND	0.31	6.9	5.1	ND	ND	NR	pp,SWQ,SHW
o Base Neutral Extractables											
Naphthalene	6.7	360	BD	BD	BD	230	BD	BD	BD	1	pp
Acenaphthalene	5.6	230	BD	BD	BD	24	BD	BD	BD	1	pp
Acenaphthene	8.0	560	BD	BD	BD	28	BD	BD	BD	1	pp
Fluorene	5.0	290	BD	BD	BD	20	BD	BD	BD	1	pp
Phenanthrine-Anthracene (***)	32	1,400	3	BD	BD	150	BD	1.6	BD	1	pp
Fluoranthene	16	530	BD	BD	BD	50	BD	1.1	BD	1	pp
Pyrene	18	550	BD	BD	BD	57	BD	1.2	BD	1	pp
Chrysene	12	92	BD	BD	BD	36	BD	1.7	BD	1	pp
Benzo (b) + Benzo (k) Fluoranthene (***)	8	120	BD	BD	BD	200	BD	BD	BD	1	pp
Benzo (a) pyrene	19	120	BD	BD	BD	100	BD	BD	BD	1	pp
Indeno (1,2,3-CD) Pyrene + Dibenzo (a,b) Anthracene (***)	BD	270	BD	BD	BD	7	BD	BD	BD	1	
Benzo (ghi) Perylene	BD	360	BD	BD	BD	25	BD	BD	BD	1	pp
o Pesticides (EP Toxicity)											
Gamma BHC (Lindane)	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.04	pp, SHW, PDW
Endrin	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.002	pp
Toxaphene	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	pp

PDR956.031.1

Table 1 (Continued)

Chemical Compounds	MW-1, S-3 (15-16.5 ft)	MW-2, S-4 (20-21.5 ft)	MW-3, S-5 (25-26.5 ft)	MW-4, S-1 (5-6.5 ft)	MW-4, S-7 (35-36.5 ft)	MW-5, S-2 (10-11.5 ft)	MW-6, S-3 (15-16.5 ft)	MW-7, S-5 (25-26.5 ft)	MW-7, S-8 (40-41.5 ft)	Detection Limits	Reference Criteria
Inorganic Analyses (EP Toxicity)											
Arsenic	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	pp,SHW,SWQ,PDW
Barium	0.05	0.11	0.05	0.09	BD	0.05	0.11	0.08	0.15	0.05	SHW, SWQ
Cadmium	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	pp,SHW,SWQ,PDW
Chromium	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	pp,SHW,SWQ,PDW
Lead	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	pp,SHW,SWQ,PDW
Mercury	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	pp,SHW,PDW
Selenium	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	pp,SHW,PDW
Silver	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.05	pp,SHW,PDW
Miscellaneous Analysis											
o non-PP Phenols/Cresols											
3 & 4-Chlorophenol	0.44	17.5	0.06	ND	ND	1.7	0.32	ND	ND	NR	SHW, SWQ
2,4,5-Trichlorophenol	ND	1.9	ND	ND	ND	ND	ND	ND	ND	NR	SHW, SWQ
2,3,4,5-Tetrachlorophenol	4.9	256	ND	0.40	ND	0.23	4.7	0.06	0.25	NR	SHW, SWQ
2,3,4,6-Tetrachlorophenol	0.24	ND	ND	ND	ND	ND	ND	1.0	ND	NR	SHW, SWQ
2,3,5,6-Tetrachlorophenol	ND	4.0	ND	0.58	0.11	0.33	0.55	ND	0.46	NR	SHW, SWQ
o-Cresol	0.04	3.4	ND	0.02	ND	0.19	0.05	ND	ND	NR	
m- and p-Cresol (***)	0.006	ND	ND	0.08	ND	ND	ND	ND	ND	NR	
o Non-PP Pesticides (EP Toxicity)											
Methoxychlor	BD	BD	BD	BD	BD	BD	BD	BD	BD	0.1	SHW, PDW
2,4-D	BD	BD	BD	BD	BD	10.0	160.0	BD	BD	10	SHW, PDW
2,4,5-TP (Silvex)	BD	BD	BD	BD	BD	BD	BD	BD	BD	1	SHW, PDW
o Misc. Constituents/Parameters											
Oil and Grease	0.340%	0.1498%	0.0587%	0.914%	0.0304%	0.190%	0.0539%	0.0650%	0.0586%		

Unless otherwise specified, all units are mg/kg (mg/L).

pp Priority Pollutant
PDW National Interim Primary Drinking Water Regulations
PDW(*) Proposed N.I.P.D.W.R.
SHW State of Oregon Hazardous Waste Administrative Rules
SWQ State of Oregon Water Quality Administrative Rules
BD Parameter detected, but below analytical quantification limits.
ND Analyzed, but not detected.
NR Not reported.
(***) Reported as sum of two compounds.

SCOEPA00036831

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-1	SHEET 1 OF 2

SOIL BORING RECORD DRAWING

PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION (NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL)	SYMBOLIC LOG	COMMENTS (DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION)
	5	5.0				SILT, low plasticity, medium gray with brown mottling, moist, soft (ML), fill.		Grout to surface Top of bentonite at 2 1/2" Top of gravel at 5'
		6.5	S-1	18	1-1-1 (2)			Screen top at 7' Driller notes water at ±9';
	10	10.0				Upper 10" - SILT, same as S-1, some hydrocarbon odor (Jar 1 of 2), fill.		Prominent oily sheen and odor to cuttings between 10' and 15'
		11.5	S-2	0	4-4-5 (9)	Lower 6" - SAND, poorly graded, fine sand, dark gray, wet compact (SP), heavily saturated with oil, strong odor (Jar 2 of 2), fill.		
	15	15.0				SAND, poorly graded, fine sand, dark gray, wet, compact (SP), heavily saturated with oil, fill.		
		16.5	S-3	18	3-4-5 (9)			
	20	20.0				SAND, same as S-3, heavily saturated with oil, fill.		
		21.5	S-4	18	4-3-4 (7)			Screen bottom at 22' Driller notes 3 foot of heave at 25', had to wash out hole to clean out heave
	25	25.0				Upper 14" - SAND as in S-3 (SP), mild hydrocarbon odor, probably is slough from washing out heave and not representative.		Fill Native ±21'
		26.5	S-5	10	3-3-4	Lower 4" - SILT, low plasticity, medium brownish gray, moist, firm (ML), no noticeable hydrocarbon odor, probably native soil.		Sump bottom at 27'

REV 11 92 FORM D1586

SCOEPA00036832

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-1	SHEET 2 OF 2

SOIL BORING RECORD DRAWING

PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
	30	30.0						
		31.5	S-6	18	4-4-5 (9)	**SILT, low plasticity, medium brownish gray, moist to wet, includes some sandy silt in upper 6", firm (ML), no noticeable hydrocarbon odor, native soil.**		**Bottom gravel at 31.5'**
						END MW at 31.5 feet.		
								Worst samples
								S-2, Jar 2 of 2 and S-3 are equally bad, more sample in S-3 for testing.

REV 11 82 FORM D1586

SCOEPA00036833

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-2	SHEET 1 OF 2

SOIL BORING RECORD DRAWING

PROJECT **WACKER SILTRONIC CORPORATION** LOCATION **PORTLAND, OREGON**

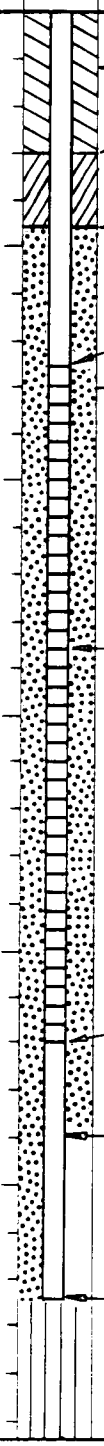
ELEVATION _____ DRILLING CONTRACTOR **GEOTECH EXPLORATIONS, BEAVERTON, OREGON**

DRILLING METHOD AND EQUIPMENT **CME-55, 6" HS AUGERS**

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION / DEPTH BELOW SURFACE (FT.)	SAMPLE: INTERVAL	SAMPLE: TYPE AND NUMBER	SAMPLE: RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
5	5.0				SAND, poorly graded, fine sand, brown, moist, loose (SP), fill.	
	6.5	S-1	18	1-2-3 (5)		
10	10.0				NO RECOVERY; sample tube came up oily, strong hydrocarbon odor, sandy material on outside of sampler.	
	11.5	S-2	0	1-4-5		
15	15.0				SAND, poorly graded, fine sand, chalk gray, wet, loose (SP), some lenses of silt; strong hydrocarbon odor, oily material observed on sample fill.	
	16.5	S-3	18	1-1-2 (3)		
20	20.0				SANDY SILT, non-plastic, ~30% fill sand, medium to dark gray, wet, firm, (ML), strong hydrocarbon odor, noticeable oil in sample fill?	
	21.5	S-4	18	5-6-6 (12)		
25	25.0				Upper 14" - SAND, as in S-3, includes strong hydrocarbon odor and visible oil in sample, material may be slough from drilling and washing out heaved zone, may not be representative of 25'-26.5' interval.	
	26.5	S-5	18	3-5-5 (10)	Lower 4" - SILT, low plasticity, medium grayish brown, firm, moist (ML), no apparent hydrocarbon, native.	

SYMBOLIC LOG



Grout to surface

Top of bentonite at 3'

Top of gravel at 4 1/2'

Screen top at 7 1/2'

Driller notes water at ±8';

15' screen
2" schedule 40
10 slot PVC

Driller notes considerable degree of oiliness to cutting from 15'-25', more than in MW-1

Screen bottom at 22'

5' sump

Driller notes 2' heave at 25', had to wash out hole

Sump bottom at 27' 4"

REV 11 82 FORM D1556

SCOEPA00036834

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-2	SHEET 2 OF 2

SOIL BORING RECORD DRAWING

PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
	30							
		31.5	S-6	18	3-3-4 (7)	**SILT, low plasticity, grayish brown, moist, firm (ML), no noticeable hydrocarbon odor, native soil.**		
						END MW at 31.5 feet		
								Worst sample
								S-3, S-4 - about the same

REV 11 82 FORM D1586

SCOEPA00036835

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-3	SHEET 1 OF 2

SOIL BORING RECORD DRAWING

PROJECT **WACKER SILTRONIC CORPORATION** LOCATION **PORTLAND, OREGON**

ELEVATION _____ DRILLING CONTRACTOR **GEOTECH EXPLORATIONS, BEAVERTON, OREGON**

DRILLING METHOD AND EQUIPMENT **CME-55, 6" HS AUGERS**

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION (NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL)	SYMBOLIC LOG	COMMENTS (DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION)
	5	5.0						Silty topsoil, then sandy cuttings to 5'
		6.5	S-1	18	7-6-2 (8)	SAND, poorly graded, fine sand, ~15% fine, but some interlayers of silt, medium dense, dry, light brown, (SP), fill.		Grout to surface
								Cutting change to dark gray silt at ±7'
								7' top of bentonite soil
								Top of sand pack 8 1/2'
	10	10.0						
		11.5	S-2	18	2-2-7 (9)	Interbedded silt and sand, sand same as above (SP), except gray, SILT, low plasticity, 10-15% sand, odor, light gray, moist, firm (ML), fill.		Screen top 12'
	15	15.0						Driller notes H_2O at ±15'
		16.5	S-3	18	1-4-10 (14)	SAND, poorly graded, same as S-1, except strong hydrocarbon odor (SP), fill.		First notice hydrocarbon odor in cutting at 15'
	20	20.0						15' schedule 40 2" 10 slot PVC screen
		21.5	S-4	18	4-4-7 (11)	Interbedded silt and sand, same as S-2, except includes partially decomposed wood fragments and mild to strong hydrocarbon odor, wet, gray, fill.		
	25	25.0						
		26.5	S-5	18	5-6-6 (12)	SAND, poorly graded, fine sand, less than 10% fine, wet, medium to dark gray, compact (SP), strong hydrocarbon odor, fill.		Screen bottom 27'
								5'- 4" Sump
	30	30.0						

REV 11 82 FORM D1586

SCOEPA00036836

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-3	SHEET 2 OF 2

SOIL BORING RECORD DRAWING

PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
		31.5	S-6	18	4-5-5 (10)	SAND, poorly graded, fine sand, some interbedded silt in lower 2-4", medium gray, wet, medium dense, strong hydrocarbon odor, fill.		
								Sump bottom at 32'- 4"
								Bottom of fill at ±34 1/2'
	35	35.0				Upper 14" - mixture of sand and silt, probably washed cavings.		Augered to 35' and driller notes 3' of heave; opted to remove check ball from sampler and jet it to sample position in hopes of getting recovery; sample may be disturbed; pumped fresh water into hole (sample of water taken).
		30.5	S-7	18	8-6-6 (12)	Lower 4" - SILT, low plasticity, medium to dark gray, moist, firm (ML), slight hydrocarbon odor in upper 12", not noticeable in lower 6", sand and silt were mixed together in jar, silt is probably native soil.		
	40	40.0						
		41.5	S-8	6"	3-3-3 (9)	Upper 12" - sand as in S-6, but is washed, probably is heaved material, discarded. Lower 6" - SILT, low plasticity, medium to dark gray, moist, firm (ML), probably native soil, no noticeable hydrocarbon odor.		
								Worst samples
								Sample choices, any of S-3, S-4, S-5, S-6.

REV 11 82 FORM D-556

SCOEPA00036837

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-4	SHEET 1 OF 2

SOIL BORING RECORD DRAWING

PROJECT **WACKER SILTRONIC CORPORATION** LOCATION PORTLAND, OREGON

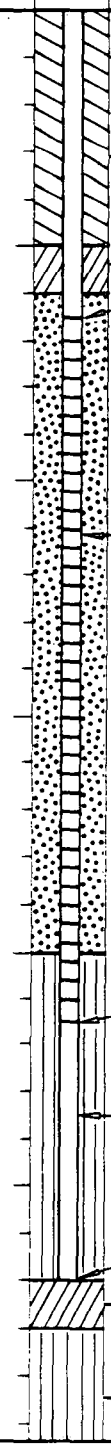
ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION / DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION (NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL)	COMMENTS (DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION)
5	5.0				Upper 9" - SAND, poorly graded, fine sand, brown, moist to wet, loose (SP).	
	6.5	S-1	18	5-1-2 (3)	Lower 9" - SILT, non-plastic, 10-20% fine sand, dark gray, moist, soft (ML), fill.	
10	10.0				Upper 6" - SAND, same as S-1, maybe slough.	
	11.5	S-2	18	11-13-11 (24)	Lower 12" - SILT, same as above.	
15	15.0				SAND, poorly graded, fine sand, saturated, loose, (SP), maybe slough, possible mild odor of hydrocarbon.	
	16.5	S-3	6"	3-3-4 (7)		
20	20.0				SILT, low plasticity, brownish gray, moist, firm, (ML), native soil; included pieces of wills, probably dragged into sample.	
	21.5	S-4	18	1-4-4 (8)		
25	25.0				SILT, same as above.	
	26.5	S-5	12	4-4-4 (8)		
30	30.0					

SYMBOLIC LOG



Hole is within 20' of abandoned natural gas line

Grout 5' to surface

Bentonite from 5'-6'

Screen top at 6 1/2'

Some gravel - like material at 8'

Driller notes water at ±8';

15' screen 10 slot 2" schedule 40 PVC

Piece wood jammed into end of shoe

Fill ±20'
Native

Screen bottom at 21 1/2'

5'- 4" Sump

Tailpiece bottom at 27'

Bentonite from 27-28'

Gravel to 41 1/2'

REV 11 82 FORM D1586

SCOEPA00036838

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-4	SHEET 2 OF 2

SOIL BORING RECORD DRAWING

PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION (NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL)	SYMBOLIC LOG	COMMENTS (DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION)
		31.5	S-6	18	4-5-4 (9)	**SILT, low plasticity, gray with brown mottling, moist, firm (ML), includes some decomposed plant fragments.**		
	35	35.0						
		36.5	S-7	8	2-3-8 (11)	**SANDY SILT, non-plastic, 30-50% fine sand, brown, moist, firm (ML).**		**Gravel to 41 1/2'**
	40	40.0						
		41.5	S-8	8				
						END MW at 41.5'		

Worst samples

None - all have clean appearance

REV 11 82 FORM D1586

SCOEPA00036839

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-5	SHEET 1 OF 2

SOIL BORING RECORD DRAWING

PROJECT **WACKER SILTRONIC CORPORATION** LOCATION PORTLAND, OREGON

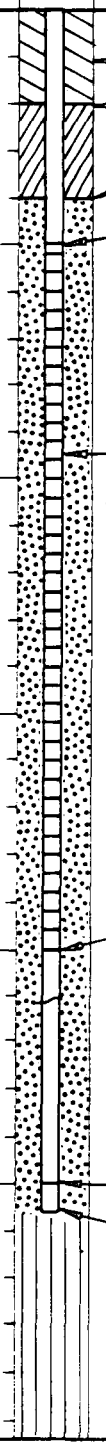
ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION (NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL)	COMMENTS (DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION)
	5	5.0				SAND, poorly graded, fine sands, brown and gray, some 1/2" silt lenses, moist, loose; includes some oil sheen and odor.	Screen top at 5'
		6.5	S-1	18	4-4-8 (12)		Dark gray sandy material in cuttings from 5'-10', noticeable oily smell and sheen
	10	10.0				SAND, poorly graded, fine sand, dark gray, wet, loose to compact, (SP), fill, saturated with oil (split samples taken, Jar 1 and Jar 2).	Driller notes water 5'-10'
		11.5	S-2	18	6-6-8 (14)		
	15	15.0				SAND, same as S-2, except only has oily odor and occassional sheen in soil.	
		16.5	S-3	18			
	20	20.0				SAND, same as S-2, excet has mild odor of oil; silt in top.	Screen bottom at 20'
		21.5	S-4	18	3-4-5 (9)		Silt in tip of sampler, for S-4 fill ±21 Native
	25	25.0				SILT, low plasticity, 10-15% fine sand, medium gray with brown, yellow and reddish mottling, slightly moist, very stiff (ML), no noticeable hydrocarbon odor.	Sump bottom at 25'
		26.5	S-5	9	3-5-10 (15)		Tailpiece bottom at 25' - 4"
	30	30.0					NOTE: Driller lost steel weight for tape in hole at 30 feet, not recovered.

SYMBOLIC LOG



Grout to surface

Top of bentonite seals = 2'

Top of sand at 4'

REV 11 82 FORM D1586

SCOEPA00036840

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-5	SHEET 2 OF 2

SOIL BORING RECORD DRAWING

PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE: INTERVAL	SAMPLE: TYPE AND NUMBER	SAMPLE: RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
		31.5	S-6	19	4-5-5 (10)	**SILT, low plasticity, about 10% fine sand, gray with brown mottling, moist, stiff (ML), no noticeable hydrocarbon odor.**		
						END MW at 31.5 foot.		
								Worst samples
								S-2 = worst S-3

REV 11 82 FORM D1586

SCOEPA00036841

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-6	SHEET 1 OF 2

SOIL BORING RECORD DRAWING

PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

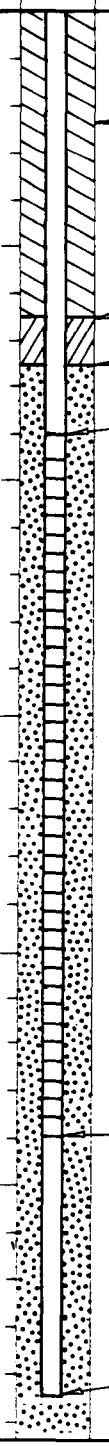
ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION (NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL)	COMMENTS (DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION)
	5	5.0					
		6.5	S-1	10	3-8-11 (19)	SAND, poorly graded, fine sand, less than 10% fine, brown, moist, compact (SP), fill.	
	10	10.0					
		11.5	S-2	10	10-10-11 (21)	Primarily sand, as in S-1, but with several 1-inch silt layers; lower 6" of sample has strong hydrocarbon odor to it.	
	15	15.0					
		16.5	S-3	10	1-1-2 (3)	SAND, as in S-1, except lower 6" have blackish discoloration and strong hydrocarbon odor; small oily splotches noticeable in soil.	
	20	20.0					
		21.5	S-4	10	3-3-5 (8)	Upper 6" - SAND as in S-1, have blackish discoloration and hydrocarbon odor, fill. Lower 12" - SILT, low plasticity, gray with brown mottling, firm (ML), hydrocarbon odor not noticeable.	
	25	25.0					
		26.5	S-5	10	9-26-26 (52)	SAND, as in S-1, but dark gray with mild hydrocarbon odor, material might be heaved sands and not representative of in-situ soil at 25'.	
	30	30.0					

SYMBOLIC LOG



Grout to surface

Bentonite to 6 1/2'

Sand to 7 1/2'

Top of screen at 9'

Driller notes water at ±12', coincident with appearance of "oily" odor from cuttings while drilling from 10-15'

A-rods came out of hold with unusual yellow discoloration from water at 20-25'

Bottom of screen at 24'

Driller notes 4' of heave after drilling to 25'; also, chain fell in hole, but was able to recover by retracting augers from hole; Augers moved during SPT from S-5, driller says no contact with sampler; why so high of an N value?

Sump to 29 1/2'

REV 11 82 FORM D1586

SCOEPA00036842

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-6	SHEET 2 OF 2

SOIL BORING RECORD DRAWING

PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
		31.5	S-6	10	5-7-12 (19)	All 18" of soil in barrel is SAND, poorly graded, fine sand, less than 10% fine, medium to dark gray, wet, compact, (SP), probably heave or disturbed soil, not representative of 30' depth; mild hydrocarbon odor. 2" of soil in shoe of sampler is SANDY SILT, non-plastic, 30-50% fine sand, medium gray, wet, firm, (ML); no noticeable hydrocarbon odor, sandy silt is probably representative of in-situ soil.		Driller notes 3' of heave from 30-29' prior to sampling S-6; had to drill/wash out heave
								Sample choices S-3

REV 11 82 FORM D1586

SCOEPA00036843

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-6	SHEET 2 OF 2

SOIL BORING RECORD DRAWING

PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE: INTERVAL	SAMPLE: TYPE AND NUMBER	SAMPLE: RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
		31.5	S-6	18	5-7-12 (19)	All 18" of soil in barrel is SAND, poorly graded, fine sand, less than 10% fine, medium to dark gray, wet, compact, (SP), probably heave or disturbed soil, not representative of 30' depth; mild hydrocarbon odor. 2" of soil in shoe of sampler is SANDY SILT, non-plastic, 30-50% fine sand, medium gray, wet, firm, (ML); no noticeable hydrocarbon odor, sandy silt is probably representative of in-situ soil.		Driller notes 3' of heave from 30-29' prior to sampling S-6; had to drill/wash out heave
								Sample choices S-3

REV 11 82 FORM D1586

SCOEPA00036844

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-7	SHEET 1 OF 2

SOIL BORING RECORD DRAWING

PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION (NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL)	SYMBOLIC LOG	COMMENTS (DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION)
	5	5.0						Grout to surface
		6.5	S-1	12"	1-3-1 (4)	Lower 6" - SILT, low plasticity, moist, gray, soft (ML). Upper 6" - SAND, poorly graded, fine sand, brown, wet, loose, (SP), fill.		5 1/2' top of bentonite; Cavings around PVC 7-15'
	10	10.0						10' of top of screen
		11.5	S-2	14	5-9-11 (18)	SAND as in upper 6" of S-1, (SP), fill.		Driller notes water at ±12'; 15' section 10 slot PVC wells
	15	15.0						
		16.5	S-3	18	2-1-5	SAND, same as upper 6" of S-1 (SP), fill.		During well construction, drill hole walls began squeezing in at 5' up to 7', sand was packed in auger and walls apparently squeezed in faster than sand could drop out; tried twice unsuccessfully to jet-out sand.
	20	20.0						
		21.5	S-4	18	5-5-6 (11)	Upper 6" - sand as in upper 6" of S-1, (SP), fill; mild hydrocarbon odor. Lower 12" - SILT, low plasticity, medium brown with gray mottling, moist, firm, (ML); native soil.		Fill; Native ±
	25	25.0						25' bottom screen
		26.5	S-5	18	4-3-4 (7)	Upper 9" - SILT, low plasticity, medium brown with gray mottling, moist, firm, (ML). Lower 9" - SAND, poorly graded, fine sand, medium gray, wet, loose, (SP), strong hydrocarbon odor, visible blotches of oil (?) in both silt and sand.		5'-4" Sump; Bottom of Sump = 30'; Driller notes heave at 30' ±4' of heave
	30	30.0						

REV 11 82 FORM D1586

SCOEPA00036845

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-7	SHEET 2 OF 2

SOIL BORING RECORD DRAWING

PROJECT WACKER SILTRONIC CORPORATION LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION (NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL)	SYMBOLIC LOG	COMMENTS (DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION)
		31.5	S-6	10	2-1-2 (3)	Lower 9" - SAND, poorly graded, fine, brown, wet, soft, (SP),. Upper 9" - SAND, very fine, brown, wet, loose, (SM); All has definite hydrocarbon (?) odor, not visible in soil, however. Sample may be disturbed, heave material.		Reamed out heaved area from 26 to 30' with wash water and tricone bit to clear auger. Backfill to 32'-4"
	35	35.0						
		36.5	S-7	18	3-5-5 (10)	SANDY SILT, low plasticity, 20-30% fine sand, medium brown, moist, soft, (ML); noticeable hydrocarbon (?) odor.		
	40	40.0				Upper 7" - SILT, low plasticity, brown, wet, firm, (ML).		
		41.5	S-8	14"	8-11-17 (28)	Lower 7" - SILTY SAND, fine sand, about 30% fine, brown, wet, compact, (SM); both silt and sand have noticeable hydrocarbon (?) odor, no visible traces. END MW at 41.5 feet		Sample choices (Ranked from worst) *S-5 S-6 S-7 - S-8 (about the same) *amount of odor

REV 11 82 FORM D1556

SCOEPA00036846

CH2M HILL

CHAIN OF CUSTODY RECORD

PROJECT NUMBER	PROJECT NAME
LABORATORY	

STA. NO.	DATE	TIME	COMP	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS										REMARKS

SAMPLED BY AND TITLE *(SIGNATURE)*	DATE/TIME	RELINQUISHED BY: *(SIGNATURE)*	DATE/TIME	RECEIVED BY: *(SIGNATURE)*
RELINQUISHED BY: *(SIGNATURE)*	DATE/TIME	RECEIVED BY: *(SIGNATURE)*	RELINQUISHED BY: *(SIGNATURE)*	DATE/TIME	RECEIVED BY LAB: *(SIGNATURE)*

REMARKS

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FORM 340

SCOEPA00036847

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

April 30, 1985
Log #A850410-I

Wacker Siltronics
P.O. Box 03180
Portland, Oregon 97203

Analyses Requested: Oil and Grease, Phenols, Volatiles, and Polynuclear Aromatic Hydrocarbons

Sample Identifications:
#1 - MW1, S-3 (15.0' - 16.5')
#2 - MW2, S-4 (20.0' - 21.5')
#3 - MW3, S-5 (25.0' - 26.5')
#4 - MW4, S-1 (5.0' - 6.5')
#5 - MW4, S-7 (35.0' - 36.5')
#6 - MW5, S-2 (10.0' - 11.5')
#7 - MW6, S-3 (15.0' - 16.5')
#8 - MW7, S-5 (25.0' - 26.5')
#9 - MW7, S-8 (40.0' - 41.5')

SAMPLE #	OIL AND GREASE
#1	0.340 %
#2	0.1498 %
#3	0.0587 %
#4	0.0914 %
#5	0.0304 %
#6	0.190 %
#7	0.0539 %
#8	0.0650 %
#9	0.0586 %

THIS REPORT CONTINUES

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

Wacker Siltro
Log #A850410-I

April 30, 1985
Page Two

PHENOL RESULTS

ANALYSIS	SAMPLE #1 RESULTS
Phenol	0.35
O-Cresol	0.04
3 & 4 Chlorophenol	0.44
2,3,4,6 Tetrachlorophenol	0.24
2,3,4,5 Tetrachlorophenol	4.9
M & P Cresol	0.006

	SAMPLE #2 RESULTS
Phenol	3.1
O-Cresol	3.4
3 & 4 Chlorophenol	17.5
2-Chlorophenol	7.8
2-Nitrophenol	0.20
2,4 Dimethylphenol	3.1
2,4 Dichlorophenol	2.7
2,4,5 Trichlorophenol	1.9
2,3,5,6 Tetrachlorophenol	4.0
2,3,4,5 Tetrachlorophenol	256

	SAMPLE #3 RESULTS
Phenol	0.20
3 & 4 Chlorophenol	0.06
2-Chlorophenol	0.08

	SAMPLE #4 RESULTS
Phenol	0.30
2-Chlorophenol	0.26
O-Cresol	0.02
M & P Cresol	0.08
2,3,5,6 Tetrachlorophenol	0.58
2,3,4,5 Tetrachlorophenol	0.40

	SAMPLE #5 RESULTS
Phenol	0.17
2,3,5,6 Tetrachlorophenol	0.11
Pentachlorophenol	0.31

Results reported in mg/kg

THIS REPORT CONTINUED

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

Wacker Siltronics
Log #A850410-I

April 30, 1985
Page Three

PHENOL RESULTS

ANALYSIS	SAMPLE #6 RESULTS
Phenol	0.07
O-Cresol	0.19
2,4 Dimethylphenol	0.22
2,4 Dichlorophenol	0.24
3 & 4 Chlorophenol	1.7
2,4,6 Trichlorophenol	0.22
2,3,5,6 Tetrachlorophenol	0.33
2,3,4,5 Tetrachlorophenol	0.23
2,4 Dinitrophenol	0.81
Pentachlorophenol	6.9

	SAMPLE #7 RESULTS
Phenol	0.05
O-Cresol	0.05
2-Chlorophenol	0.13
2,4 Dimethylphenol	0.17
3 & 4 Chlorophenol	0.32
2,3,5,6 Tetrachlorophenol	0.55
2,3,4,5 Tetrachlorophenol	4.7
Pentachlorophenol	5.1

	SAMPLE #8 RESULTS
Phenol	0.06
2,3,4,6 Tetrachlorophenol	1.0
2,3,4.5 Tetrachlorophenol	0.06

	SAMPLE #9 RESULTS
Phenol	0.08
2-Chlorophenol	0.14
2,3,5,6 Tetrachlorophenol	0.45
2,3,4,5 Tetrachlorophenol	0.25

Results reported in mg/kg

THIS REPORT CONTINUED

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

Wacker Siltronics
Log #A850410-I

April 30, 1985
Page Four

EP TOXICITY PESTICIDES

Results below apply to the water extract of soil samples. Water extracts performed as per EPA Specification of EP-Toxicity Method.

SAMPLE #	ENDRIN	LINDANE	METHOXYCHLOR	TOXAPHENE
#1	<0.002	<0.04	<0.1	<0.05
#2	<0.002	<0.04	<0.1	<0.05
#3	<0.002	<0.04	<0.1	<0.05
#4	<0.002	<0.04	<0.1	<0.05
#5	<0.002	<0.04	<0.1	<0.05
#6	<0.002	<0.04	<0.1	<0.05
#7	<0.002	<0.04	<0.1	<0.05
#8	<0.002	<0.04	<0.1	<0.05
#9	<0.002	<0.04	<0.1	<0.05
Allowed Limits	0.02	0.4	10	0.5

< denotes "less than"

Results expressed in mg/liter

EP TOXICITY HERBICIDES

SAMPLE #	2,4-D	2,4,5 TP (SILVEX)
#1	<10 (mg/liter)	<1 (mg/liter)
#2	<10	<1
#3	<10	<1
#4	<10	<1
#5	<10	<1
#6	10.0	<1
#7	150.0	<1
#8	<10	<1
#9	<10	<1

THIS REPORT CONTINUED

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

Wacker Siltronics
Log #A850410-I

April 30, 1985
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Subject: E P Toxicity Test.

Method of Analysis: Federal Register/Vol.45, No.98/Monday, May 19, 1980/ Rules and Regulations; Appendix II, Page 33127

Field Data: Samples were collected and delivered by the Client

ANALYSIS	#1	#2	#3	#4	#5
Arsenic	<0.05	<0.05	<0.05	<0.05	<0.05
Barium	0.05	0.11	0.05	0.09	<0.05
Cadmium	<0.05	<0.05	<0.05	<0.05	<0.05
Chromium	<0.05	<0.05	<0.05	<0.05	<0.05
Lead	<0.05	<0.05	<0.05	<0.05	<0.05
Mercury	<0.05	<0.05	<0.05	<0.05	<0.05
Selenium	<0.05	<0.05	<0.05	<0.05	<0.05
Silver	<0.05	<0.05	<0.05	<0.05	<0.05

ANALYSIS	#6	#7	#8	#9	Limit
Arsenic	<0.05	<0.05	<0.05	<0.05	5.0
Barium	0.05	0.11	0.08	0.15	100.0
Cadmium	<0.05	<0.05	<0.05	<0.05	1.0
Chromium	<0.05	<0.05	<0.05	<0.05	5.0
Lead	<0.05	<0.05	<0.05	<0.05	5.0
Mercury	<0.05	<0.05	<0.05	<0.05	0.2
Selenium	<0.05	<0.05	<0.05	<0.05	1.0
Silver	<0.05	<0.05	<0.05	<0.05	5.0

< denotes "less than"

Results expressed in mg/liter

THIS REPORT CONTINUED

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

Wacker Siltronic
Log #A850410-I

April 30, 1985
Page Six

VOLATILES (HEADSPACE ANALYSIS)

COMPOUND	#1	#2	#3	#4	#5
1,2-Dichloro-ethane	<0.01	<0.01	<0.01	<0.01	<0.01
1,1,1-Trichloro-ethane	0.01	<0.01	<0.01	<0.01	<0.01
Toluene	1.2	20	0.11	<0.1	<0.1
1,1,2,2 Tetra-chloroethylene	2.2	11	<0.05	<0.05	<0.05
Chlorobenzene	0.04	<0.04	<0.04	<0.04	<0.04
Ethyl Benzene	17.0	5.4	<0.04	<0.04	<0.04
Xylene	146	116	<1.0	<1.0	<1.0

COMPOUND	#6	#7	#8	#9
1,2-Dichloro-ethane	<0.01	<0.01	<0.01	<0.01
1,1,1-Trichloro-ethane	<0.01	<0.01	<0.01	<0.01
Toluene	0.20	<0.1	<0.1	<0.1
1,1,2,2 Tetra-chloroethylene	0.14	<0.05	<0.05	<0.05
Chlorobenzene	<0.04	<0.04	<0.04	<0.04
Ethyl Benzene	<0.04	<0.04	<0.04	0.05
Xylene	1.5	<1.0	2.8	1.2

< denotes "less than"

Results reported in mg/kg

Some interference was encountered due to naphthalene and some of the more volatile phenols and PNA s.

THIS REPORT CONTINUES

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

Wacker Siltronics
Log #A850410-I

April 30, 1985

POLYNUCLEAR AROMATIC HYDROCARBONS

COMPOUND	#1	#2	#3	#4	#5
Naphthalene	6.7	360	< 1	< 1	< 1
Acenaphthalene	5.6	230	< 1	< 1	< 1
Acenaphthene	8.0	560	< 1	< 1	< 1
Fluorene	5.0	290	< 1	< 1	< 1
Phenanthrine-Anthracene	32	1400	3	< 1	< 1
Fluoranthrene	16	530	< 1	< 1	< 1
Pyrene	18	550	< 1	< 1	< 1
Chrysene	12	92	< 1	< 1	< 1
Benzo(b) + Benzo(k) Fluoranthrene	8.0	120	< 1	< 1	< 1
Benzo(a)Pyrene	19	120	< 1	< 1	< 1
Indeno(1,2,3-CD) Pyrene+Dibenzo (a,b)Anthracene	< 1	270	< 1	< 1	< 1
Benzo(ghi)-Perylene	< 1	360	< 1	< 1	< 1

COMPOUND	#6	#7	#8	#9
Naphthalene	230	< 1	< 1	< 1
Acenaphthalene	24	< 1	< 1	< 1
Acenaphthene	28	< 1	< 1	< 1
Fluorene	20	< 1	< 1	< 1
Phenanthrine-Anthracene	150	< 1	1.6	< 1
Fluoranthrene	50	< 1	1.1	< 1
Pyrene	57	< 1	1.2	< 1
Chrysene	36	< 1	1.7	< 1
Benzo(b)+Benzo(k) Fluoranthrene	200	< 1	< 1	< 1
Benzo(a)Pyrene	100	< 1	< 1	< 1
Indeno(1,2,3-CD Pyrene+Dibenzo (a,b)Anthracene	7	< 1	< 1	< 1
Benzo(ghi)-Perylene	25	< 1	< 1	< 1

< denotes "less than"
Results reported in mg/kg

Sincerely,

Susan M. Coffey

Susan M. Coffey
President

SMC/db

CH2M HILL
engineers
planners
economists
scientists

COPY

August 10, 1982

P16058.BO

Wacker-Chemie
Department U
Postfach 1140, 8263 Werk Burghausen
West Germany

Attention: Mr. Herbert Schmid

Gentlemen:

Subject: Preliminary Geotechnical Exploration
Proposed Wacker Poly Plant

We are pleased to submit this report summarizing our geotechnical exploration for the proposed Wacker Poly Plant in Portland, Oregon. The report contains the results of our field exploration and laboratory analyses, and presents preliminary foundation recommendations.

We appreciate the opportunity to work with you on this project. If you have any questions regarding this report, or if we may be of further assistance, please contact us.

Sincerely,

Deanne L. Kasai

Deanne L. Kasai
Staff Geotechnical Engineer

Richard S. Reid

Richard Reid
Project Manager

480.002.1

Portland Office
200 S.W. Market Street, 12th Floor, Portland, Oregon 97201 503/224-9190 Cable: CH2M HILL

WACKER

LETTER OF TRANSMITTAL

Wacker Siltronic Corporation
7200 NW Front Avenue
P.O. Box 83180
Portland, OR 97283-0180
(503) 243-2020
FAX (503) 241-7559

TO: MFA

FROM: Tom McCue

ATTN: Jim Maul

DATE: March 7, 2003

PHONE:

WACKER PROJECT NO.

SUBJECT: Preliminary Geotechnical Exploration
Proposed Wacker Poly Plant

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1	3/7/03	CH2MHill Preliminary Geotechnical Exploration for Proposed Wacker Poly Plant Dated August 10, 1982

REMARKS:

COPY TO: File Copy
Tom McCue

WSC-Poly Plant Geo Tech 3-7-03.doc

Dames & Moore
1220 S.W. Morrison Street
Portland, Oregon 97205
(503) 228-7688

LETTER OF TRANSMITTAL

TO: Wacker-Siltronic
P.O. Box 03180
Portland, OR 97203

DATE: October 28, 1986

PROJECT NAME:

ATTENTION: Mr. James R. Ellis

JOB NO: 14232-001-05

SUBJECT: CH2M HILL Report

YOUR ORDER NO:

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BY C. F. Kienle

C. F. Kienle

PRELIMINARY GEOTECHNICAL EXPLORATION

for the

PROPOSED WACKER POLY PLANT

PORTLAND, OREGON

Prepared for

WACKER-CHEMIE

BURGHAUSEN, WEST GERMANY

by

CH2M HILL

200 S.W. Market Street
Portland, Oregon 97201

August 1982

Project No. P16058.BO

480.003.1

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SCOEPA00036859

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SCOEPA00036860

PRELIMINARY GEOTECHNICAL EXPLORATION
PROPOSED WACKER POLY PLANT

INTRODUCTION

Purpose and Scope

This report presents the results of our preliminary geotechnical exploration for the proposed Wacker Poly Plant, which will be adjacent to the existing Wacker Siltronic Corporation Plant in Portland, Oregon. The purpose of our exploration was to evaluate subsurface conditions at the site and to make preliminary foundation recommendations for support of the proposed facilities.

The scope of our work included:

- Reviewing existing data and reports of previous preload performance.
- Conducting a drilling program, consisting of nine soil borings, to explore subsurface conditions at the site.
- Performing laboratory testing on selected soil samples collected from soil borings.
- Developing preliminary foundation recommendations based on geotechnical evaluation of subsurface information and laboratory test results.
- Preparing this report summarizing our findings.

Limitations

The analysis and recommendations contained in this report are based on data obtained from soil borings, existing reports, and current geotechnical engineering practice. This report has been prepared to assist in the evaluation of the proposed site and to assist in the design of this project. Soil borings indicate soil conditions only at specific locations and times, and only to the depths penetrated. They do not necessarily reflect soil or strata variations that may exist between boring locations. If variations in subsurface conditions different from those described are noted during the course of excavation and construction, reevaluation of the exploration and design analysis will be necessary. The conclusions and recommendations contained in this report should be reevaluated in the event that changes are made in the nature or design of the structures, or if the structures are relocated outside the explored area.

SCOEPA00036861

This report has been prepared for the exclusive use of Wacker-Chemie, Burghausen, West Germany, for specific application to the subject site, in accordance with generally accepted geotechnical engineering practices. No other warranty, expressed or implied, is made.

Site Description

The project site is located in a vacant field about 400 feet south of Wacker Siltronic Corporation's existing facilities in northwest Portland, Oregon (Figures 1 and 2). The site is bounded on the north by the existing Wacker Plant, and is bordered on the south and east by the SP&S railway's right-of-way. Underground utilities, consisting of oil, water, gasoline, natural gas, and sewer lines, as well as electric and telephone cables, are present in a 100-foot-wide easement on the north side of the site (Figure 2).

The site is relatively level with elevations ranging from about 40 feet National Geodetic Vertical Datum 1929 (NGVD) in the southern part to about 32 feet in the northern part. The ground surface is locally deeply rutted with heavy machinery tracks and ditches. Wood debris, concrete, and other waste materials are present in small concentrations across the field.

We understand that two generations of hydraulic fill material have been placed on the site during the past 25 years. Fill was first placed 20 to 25 years ago, and again sometime during the past 10 years. The most recent fill is about 5 feet thick. Overall fill thickness is probably 15 to 20 feet.

The existing Wacker Siltronic Plant was successfully preloaded to reduce post-construction building settlements. The first stages of preloading began on August 22, 1978, and the eleventh and final stage was placed on October 10, 1978. Preload removal began on September 9, 1978, and subsequent removal of each stage was authorized after review of settlement monitoring data. Preload removal was authorized after predicted settlement was achieved or primary settlement was complete. The last stage was removed by January 5, 1979. The measured settlements of the settlement plates varied between zero and 13.8 inches. This difference was attributed to differential fill heights and the variable nature of the subsurface materials (CH2M HILL, 1979).

Based on U.S. Army Corps of Engineers' data, the 100-year flood level at the project site is 27.7 feet NGVD. The 50-year flood elevation is 25.8 feet.

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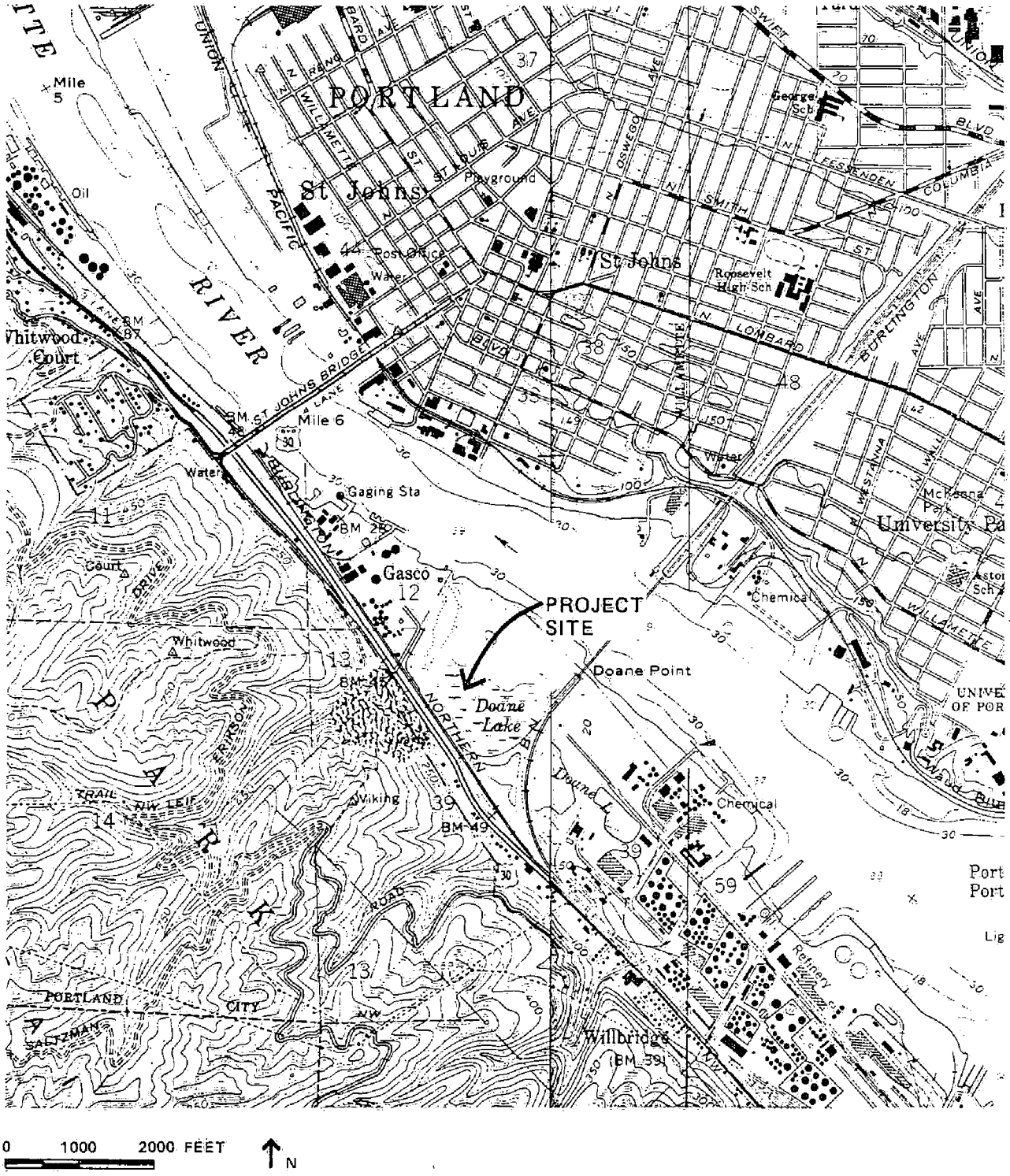

FIGURE 1
VICINITY MAP
Wacker Siltronics Corporation
August 1982

CH2M HILL

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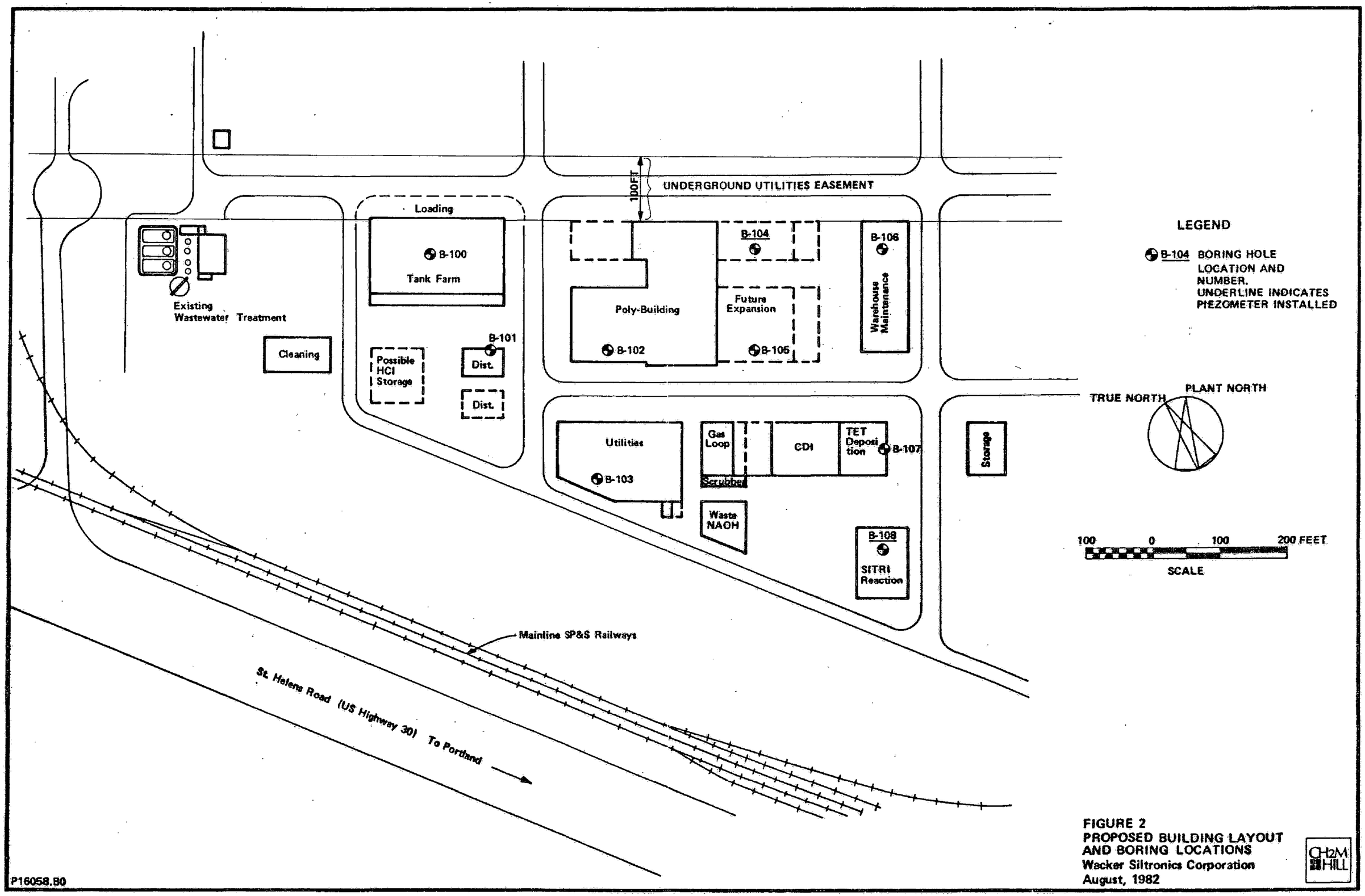

FIGURE 2
PROPOSED BUILDING LAYOUT
AND BORING LOCATIONS
Wacker Siltronics Corporation
August, 1982

CH2M HILL

Project Description

The proposed Poly Plant will consist of the following facilities: Distillation Tower, Tank Farm, Poly Deposition Building, Warehouse, Utility Area, Gas Loop, Scrubber, CDI, Tet-Deposition Building, Sitri Reaction, and miscellaneous storage areas (Figure 2). All structures will tentatively be constructed with slab-on-grade, concrete walls, and column footings. There are several structures that will exceed two stories in height, the Distillation Tower, the Poly Deposition Building, the Gas Loop structure, the Sitri Reaction structure, and the Tet-Deposition Building. No basements are planned. The structural loads used in the foundation analysis are shown in Table 1. These loads approximate the total live load plus dead load of the structure divided by the footprint area of the structure; isolated column loads will probably be heavier, while floor slab loads will probably be lighter. The design structural loads should be used for analysis during final design.

Table 1

STRUCTURAL LOADS

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EXPLORATION

Geology

The project site is located on the northwest edge of the northwest-trending structural depression known as the Willamette Valley. The physiography of this part of the

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Willamette Valley is dominated by the northwest-trending Portland Hills (also known as the Tualatin Mountains) and the flood plain of the Willamette River. The project area is situated between the base of the Portland Hills (about 0.1 mile to the southwest) and the Willamette River (about 0.3 mile to the northeast).

Beneath artificial fill material, the uppermost geologic unit at the site is unconsolidated alluvium deposited by the Willamette River. In the project area, the alluvium is composed of silt, sand, and combinations of these materials. Columbia River Basalt occurs at depths less than 100 feet beneath the site. Massive flows of Columbia River Basalt are exposed in the walls of the abandoned quarry located immediately southwest of the site.

The northeastern front of the Portland Hills forms a linear escarpment that persists for at least 50 miles in the Portland area. Investigators have speculated about the origin of the linear mountain front for many years. It has been explained as part of a large fold by Trimble (1963), and as the result of normal faulting by Schlicker et al. (1964) and by Balsillie and Beeson (1971). Gravity surveys by Beeson et al. (1974) support the concept of a right lateral strike slip fault with several hundred feet of vertical displacement. However, direct geologic or seismic evidence for a fault along the northeast flank of the Portland Hills has not yet been identified.

Seismic Considerations

The site is located in a region of low to moderate historic seismicity. The largest earthquake to occur within the Portland area since 1841 was a 1962 event with an estimated Richter magnitude of 5 that locally developed a Modified Mercalli (M.M.) Intensity of VII (Berg and Baker, 1963). The epicenter was in the area of the Columbia River about 9 miles northeast of the site. In January and May of 1968, two earthquakes of Richter magnitude 3.7 and 3.8, respectively, occurred in the same general area as the 1962 event and produced M.M. intensities of IV in Portland (Hammond et al., 1974).

Distant earthquakes have also been felt in the Portland area. In 1949, the Richter magnitude 7.1 Olympia, Washington, earthquake produced an intensity VI in Portland. In 1965, a Richter magnitude 6.5 earthquake near Tacoma, Washington, developed an intensity V in Portland. The epicenters of these events were more than 100 miles north of the project area. Events originating about 150 miles offshore from Oregon have produced intensities of IV in Portland (Hammond et al., 1974).

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Perkins et al. (1980) have developed seismic risk maps for the Pacific Northwest based on the estimated probability of maximum bedrock acceleration expected from earthquakes occurring within the region. These maps show that for the Portland area there is a 90 percent probability that bedrock accelerations will not exceed 0.15 g (where g is the acceleration of gravity) in 50 years. This corresponds to an earthquake with a recurrence interval of approximately 500 years. These maps also show that for the Portland area, there is a 90 percent probability that bedrock accelerations will not exceed 0.07 g in 10 years. This corresponds to an earthquake with a recurrence interval of approximately 100 years.

To establish a design earthquake and to determine probable site response, a detailed seismic evaluation would be required. Based on our experience, we believe that a detailed study is not warranted for this site. Therefore, we recommend using the applicable provisions of the Uniform Building Code (1979), Seismic Zone 2, for design.

Liquefaction Potential

We made a brief review of liquefaction potential at the site using the simplified procedure developed by Seed and Idris (1971), and the Standard Penetration Test results (see Appendix A). Following site improvement by use of preloads, we believe that soil liquefaction will be unlikely for bedrock accelerations less than about 0.07 g, which corresponds to an earthquake with a recurrence interval of about 100 years. However, bedrock accelerations of about 0.15 g (corresponding to the 500-year event) may cause local liquefaction at the site. To fully evaluate liquefaction potential, a detailed site response analysis would be required. We believe that this type of analysis is probably not warranted.

Field Exploration

Our field exploration program consisted of nine exploratory soil borings, numbered B-100 through B-108. The locations of borings are shown on Figure 2, and boring logs are presented in Appendix A. The borings were drilled by Donald A. Kenner Drilling of Oregon, Inc., of Sherwood, Oregon. The drilling program was observed in the field by a CH2M HILL geotechnical engineer and engineering geologist. Field work was performed from June 28 through July 2, 1982.

Boring locations and elevations were determined by surveying methods based on NGVD. The soil borings were drilled using two drill rigs on the site. Borings B-100, 101, 102, and 103 were drilled using a CME-55 rotary drill

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rig, while borings B-104, 105, 106, 107, and 108 were drilled with a CME-75 rotary drill rig. In all borings except B-104 and B-108, bentonite drilling mud was used to remove cuttings and to prevent sidewalls from collapsing. An organic polymer drilling fluid (Revert) was used in borings B-104 and B-108 where piezometers were installed. The soil borings were advanced to depths ranging from 69.5 to 100.0 feet. Borings were ended when bedrock was encountered.

Representative samples of materials encountered in the borings were generally obtained at 5-foot intervals with a standard 2-inch outside diameter split-spoon sampler, following the requirements of the Standard Penetration Test (ASTM D 1586). This test is used to characterize the consistency or density of in-place soil by measuring penetration resistance expressed as "blow counts," or "N-value." The blow count is the number of blows required to advance a standard split-spoon sampler 6 inches with a 140-pound hammer falling 30 inches. The sampler is driven 18 inches, and the blow count is recorded for each 6-inch increment. The sum of the second and third increments is referred to as the N-value. Low N-values indicate soft or loose deposits, while high N-values are evidence of hard or dense materials. After the sampler has been driven and the blow counts recorded, the sampler is withdrawn from the boring to recover a disturbed soil sample.

Soil samples were examined in the field and visually classified in approximate accordance with the visual-manual procedure for description of soils (ASTM D 2488). Sampling intervals and classification of soil samples are presented in the boring logs in Appendix A. Field soil boring logs were revised as necessary based on laboratory testing and office examination.

Shelby tube samples were recovered from all borings except B-105. Shelby tube samples provide relatively undisturbed soil samples that are suitable for laboratory testing. The samples were obtained using 3-inch-diameter, thin-walled, seamless steel tubes that are 30 inches long (ASTM D 1587). The tubes were pushed 24 inches into the undisturbed soil in one continuous stroke without rotation using hydraulic pressure. Intervals where Shelby tube samples were recovered are shown on the boring logs in Appendix A.

Open standpipe piezometers were installed at borings B-104 and B-108 to permit monitoring of water levels. Piezometers consist of a slotted PVC tip, 1-1/2 inches in diameter and 18 inches long, connected to a 3/4-inch inside diameter riser pipe that extends 12 to 18 inches above the ground surface. The annular space around the piezometer tips

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was gravel-packed with 3/8-inch-diameter pea gravel. The zone of gravel packing was then sealed with bentonite, and the borings were backfilled to the ground surface. The position of piezometer tips and the zone of gravel pack are described on the boring logs in Appendix A.

Water level measurements were made at borings B-104 and B-108 and are reported on the boring logs. Water levels were not recorded in other borings because drilling mud in the borings did not permit useful measurements to be made.

Laboratory Testing

Selected samples of the silt were tested in CH2M HILL's Portland laboratory for natural moisture content, liquid limits, and plastic limits. The results of these tests are shown in Appendix B. Classification of selected samples was also performed in the laboratory to confirm our visual field classification of the soils.

Consolidation tests were performed on relatively undisturbed samples of the silt layer to determine the compressibility of the soil. Samples for consolidation testing were obtained using a thin-wall tube sampler. The results of these tests are shown in Appendix B.

FINDINGS

Subsurface Conditions

The generalized subsurface soil conditions, described from the ground surface downward, are presented in the following discussion. This information was determined from the information on the soil boring logs in Appendix A. The soil descriptions are generalized for correlation purposes.

- Fill: This material is composed of sand, sandy silt, and silt, with minor gravelly sand in B-103. Sand is the predominant constituent in most of the fill, but silt is the dominant component in the northeastern part of the site at borings B-104 and B-106. The fill is usually dark gray or black in color, and it is moist to wet. Copper wire and rubber were present in fill in the western part of the project area, and chunks of wood were recovered in several other borings. A strong hydrocarbon odor was evident in most samples recovered from the lower half of the fill, and oil was observed in some samples. N-values of the fill ranged from 5 to 49 in the sandy and gravelly material, and from

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1 to 16 in the silts and sandy silts. The fill material is about 15 to 20 feet thick.

- Silt: This unit is composed of silt with lesser amounts of sand and interbedded lenses of silty sand. The silt is generally nonplastic or of low plasticity, but the unit includes zones of silt with moderate to high plasticity. The deposit locally contains as much as 20 to 30 percent fine sand and minor gravel. Color is variable, ranging from brown to shades of gray and blue, with occasional orange-brown mottling. The material is moist to wet. The silt contains fragments of decomposed plant material that is locally abundant. Wood fragments and oil were recovered in the upper part of the unit.

  The silt is very soft to hard in consistency. N-values range from less than 1 to 54. Thickness of the silt ranges from 32 to 77 feet, and averages about 40. The thickest deposits occur in the eastern part of the site, at borings B-104 and B-106. The thinnest part of the unit is in the southern part, at borings B-103 and B-108.

- Sand and Silty Sand: Sandy deposits occur in discontinuous and uneven layers on top of bedrock material (described below). Sand is uniformly graded fine sand with 5 to 12 percent fines, brown or black, and compact to very dense. Silty sand is poorly graded fine sand with 12 to 30 percent fines, brown or black, wet, and compact to dense. Minor lenses of silt are interbedded with the sand and silty sand. The deposits sometimes grade into a gravelly sand at the very bottom of the unit. N-values range from 24 to 94. Thickness of the sandy deposits ranges from about 5 to 20 feet. The sandy material is absent at borings B-104 and B-106.

- Basalt: Samples of Columbia River Basalt were recovered from most of the borings. In the western part of the site, the basalt was weathered to a sandy gravel. In the eastern part, the basalt appeared unweathered. N-values for weathered basalt ranged from 105 blows for 10 inches of penetration to 60 blows for 6 inches. N-values for unweathered basalt were about 60 blows for 0.5 inch of penetration. The depth to the bedrock surface beneath the project area ranges from nearly 100 feet in the northern part of the site to about 70 feet in the southernmost part of the site at boring B-108.

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Groundwater Conditions

Water levels were recorded at borings B-104 and B-108 where piezometers were installed. Measured water levels on July 23, 1982, are 16.1 and 18.8 feet below the ground surface for B-104 and B-108, respectively. These water levels correspond to elevation 15.5 feet in B-104 and 17.1 feet in B-108. If water-bearing zones communicate with the Willamette River, then fluctuations in the river level could influence water levels beneath the site. For design, assume water levels could rise to the 100-year flood elevation of 27.7 feet.

Reported water levels are representative for only the specific locations explored. Water levels between borings B-104 and B-108, and for other locations on the site, might differ. The water levels reported for borings B-104 and B-108 can be expected to change with time.

DISCUSSION

The soil beneath the proposed structures must provide adequate bearing capacity and limit differential settlement to a tolerable amount. Bearing capacity failure occurs when small increases in the imposed soil pressure cause large or sudden foundation movements. Settlement failure occurs when the imposed soil pressure produces more settlement than the structure can handle.

Settlement

Potential settlement was analyzed based on review of field measurements of preloads placed in 1978 and on the review of laboratory consolidation test data from the compressible strata. In general, the total settlement caused by applying a load to a soil mass consists of two components: primary and secondary settlement.

Primary settlement occurs in fine-grained soils, usually clay, as the result of water in the soil slowly being squeezed out by the applied load. Soil mechanics theories are used to estimate the magnitude and rate of this type of settlement.

Secondary settlement also occurs in fine-grained soils. Its cause is not well understood, but it is thought to be related to gradual readjustment of the soil particles under long-term loading. This type of settlement occurs at a constantly decreasing rate as long as the load is applied to the soil. There are no reliable methods available to accurately predict the magnitude or the rate of secondary settlement. However, empirical formulas are available to estimate the amount of secondary settlement.

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From our experience with silt soils in this region, settlements are often overestimated unless special care is taken to distinguish between primary and secondary consolidation. The loading branch of the consolidation curves presented in Appendix B has been corrected to reduce this tendency to overestimate by showing void ratio at completion of primary consolidation. The rebound portion of the curve was not corrected in this manner.

The magnitude of consolidation settlement is controlled by the compressibility and thickness of the foundation soil, the applied foundation load, and the size of the loaded area. A superimposed load on a large area will influence the soil to a greater depth than a superimposed load on a smaller area. As a consequence, consolidation settlement will probably be greater for a superimposed load on a large area than for a superimposed load on a small area.

In the northeastern part of the site, the consolidating strata is composed of 10 feet of a soft, nonplastic organic silt; 50 feet of a soft to firm, nonplastic to moderately plastic silt; and 40 feet of a hard, nonplastic silt. Without site improvements, we predict primary settlement from a slab with a 300-psf load to be 10 inches and to occur in 30 days. We also predict secondary settlement over the life of the building could range from 1 to 2 inches. This would produce total settlements of 11 to 12 inches. We predict primary settlement under a 1,000-psf load for 3- and 8-foot-square footings to be 4 and 8 inches, respectively. This settlement will occur in 30 days. Secondary settlement for these footings will be between 1 and 2 inches resulting in total settlements of 5 to 6 inches and 9 to 10 inches, respectively.

In the western part of the site, the consolidating strata is composed of 40 feet of a soft to firm, nonplastic to highly plastic silt. This strata is located beneath a 20-foot-thick strata of sand and silty sand. Without site improvements, we predict primary settlement from a slab with a 2,000-psf load to be 15 inches and to occur in 30 days. Secondary settlement will be about 1 inch. We predict primary settlement under a 2,000-psf load for 3- and 8-foot-square footings to be approximately 1 inch. Secondary settlements will be approximately 1 inch. Primary settlement under a 1,000-psf load for a 50- by 50-foot slab will be approximately 4 inches, and secondary settlement will be about 1 to 2 inches.

Preloads can be used to cause predicted settlement to occur before structure loads are in place. Based on our analysis, a preload applying a pressure approximately equal to anticipated structure loads will cause primary

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settlement in about 30 days. We have assumed a preload fill density of 110 pounds per cubic foot (pcf). The preload should be monitored using periodic surveys of settlement plates so that predicted behavior can be compared with actual behavior.

By increasing the height of preload (surcharge), a predicted amount of settlement can be forced to occur in a shorter amount of time. If a preload and surcharge are left in place longer than the amount of time required to cause the desired amount of primary settlement, then the additional settlement caused will serve to compensate, or offset, some of the effects of secondary settlement. Therefore, preload and surcharge design must consider:

- Settlement properties of the consolidating stratum (enables prediction of primary and secondary settlement)
- Time available to leave the preload and surcharge in place
- Desired magnitude of secondary settlement to be offset

Allowable Bearing Pressure

Allowable bearing pressure was analyzed for two types of bearing materials, silt and silty sand. Allowable bearing pressures increase as the depth of footing below final grade increases and as the footing width increases. With site improvements, the maximum allowable bearing pressure for the two types of bearing materials are shown in Table 2. This bearing pressure may be increased by 33 percent for short-term loads such as those from earthquake and wind.

Table 2

ALLOWABLE BEARING PRESSURE

Bearing Material	Average Corrected N-Value	Minimum Depth of Footing (ft)	Minimum Footing Width (ft)	Allowable Bearing Pressure (psf)
Silt	3	3.0	3	1,500
Silty sand	9	1.5	3	2,000

The allowable bearing pressure on the silt can be increased by overexcavating and replacing with compacted granular backfill.

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Dynamic Consolidation

Dynamic consolidation is a method for improving the engineering properties of in-place soil. The method consists of dropping a weight of up to 30 tons from heights up to 150 feet. The repeated high-energy impacts at the ground surface propagates shock waves, which densifies the soil to depths up to 60 feet. In saturated and unsaturated silt and fine sand, the shock causes partial soil liquefaction followed by rapid consolidation. Dynamic consolidation increases soil strength and decreases soil compressibility because of the soil densification that is achieved.

The primary variables that affect the depth of soil improvements when using dynamic consolidation are the soil type and the location of the groundwater table. Dynamic consolidation is less effective below the groundwater table and on plastic soils. At this site, the estimated depth of recommended soil improvements is about 30 to 40 feet below the ground surface.

We do not recommend using dynamic consolidation for improvement of soils at this site for the following reasons:

- Vibration levels could disturb crystal growth at the existing facility.
- Dynamic consolidation is relatively expensive compared to preloading.
- Local contractors are not familiar with the techniques and methods used in dynamic consolidation.
- Preloads have proved an effective method of soil improvement at the existing plant.
- Dynamic consolidation may be unable to significantly improve site soils to the depths required.

FOUNDATION RECOMMENDATIONS

Preload

To control post-construction settlement, we recommend preloading the site with an earthfill embankment. This will cause primary settlement and part of secondary settlement to occur before construction of the buildings. At this time, we recommend using a 20-foot-thick preload for the Distillation Tower and Tank Farm areas, a 5-foot-thick preload for the Warehouse area, and a 10-foot-thick preload for the other structures. These preloads should be left in place for approximately 30 days. Since the time to the end of primary consolidation is fairly short, the preload could be moved around the site in a rotating

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fashion. Earth for the preload will probably need to be obtained offsite. This material could be used later to construct landscaping berms around the site or for the tank farm berm.

To minimize the amount of imported granular material required for preloads, it will probably be most economic to consider use of individual preloads at each structure site. However, an individual preload will cause settlement to occur in areas outside of its footprint because of the distribution of stress increases in the consolidating strata caused by the presence of the preload. Therefore, care must be exercised in selecting the footprint dimensions of an individual preload. We recommend using the following guidelines to plan the sequence of preload construction and removal at this site:

- If no structures or future improvements are within 70 feet of the structure site being preloaded, the top of the preload should extend beyond the building footprint a distance equal to the height of the preload.

- The above criterion should also be used for adjacent sites that are preloaded before structures are built.

- If structures or future improvements are within 70 feet of the structure site being preloaded, the top of the preload should extend 30 feet beyond the building footprint. The toe of the subsequent preload should not be closer than 30 feet to the structure in place.

- The toe of the preload should be at least 30 feet from utilities in the existing easement.

These guidelines should be considered preliminary. Each individual preload should be evaluated during design based on design structural loads and final building locations.

Estimates of secondary (or post-construction) settlement following preload and surcharge are subject to considerable engineering judgment. First, the exact time the preload will be left in place is not yet known. Second, the exact shape of settlement versus time plots made from settlement plate data will assist in predicting secondary settlement. However, in advance of preload monitoring data, we anticipate that secondary settlements following preload at this site will be 1 to 2 inches over the life of the facility. This amount of secondary settlement is comparable to settlements estimated for the existing plant. This amount of secondary settlement is expected to be fairly uniform for structures that are uniformly loaded.

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Some differential settlement may occur between structures, particularly if the structures differ substantially in configuration or in applied load.

Piles

Pile support for structures is an alternative to preloading. However, pile foundations will add considerable construction cost, particularly if structural floor slabs are required.

To control differential settlement, we recommend using driven piles for support of the Distillation Tower and other settlement sensitive structures. A summary of allowable pile loads is presented in Table 3. Piles should be spaced no closer than three pile diameters. The bearing strata for the piles is basalt. The observed depth of this strata varies from 70 to 100 feet across the site. Depending on final structural locations, additional borings may be required to more clearly locate the bearing strata for a more accurate determination of pile lengths.

Table 3

ALLOWABLE PILE LOADS

Pile Type	Size	Allowable Compressive Load (tons)	Allowable Lateral Load (tons)	Vertical and Horizontal Deflections
Prestressed concrete $f_c' = 700$ psi $f_{pc} = 1{,}200$ psi	12"x12" square	120	2.5	Acceptable
	14"x14" square	175	8.0	Acceptable
Steel pipe (open end) A36 $f_s = 21{,}600$ psi	12-3/4" diameter 3/8" wall	140	4.6	Acceptable
	16" diameter 3/8" wall	180	7.4	Acceptable

Notes: Depth to fixity is equal to 7.5 feet.

A downdrag of 20 tons is incorporated in the allowable compressive loads.

Piles are coated to reduce downdrag.

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The pile types and allowable loads shown in Table 3 should be considered preliminary information. The final selection of pile type depends on material availability and determination of the most economic pile type for the actual structural loads. The design allowable compressive loads should consider the effects of downdrag caused by the actual layout and extent of preloads and any ongoing secondary settlement. The effects of vibrations generated during driving should also be examined. If vibration limitations are severe, displacement piles such as the prestressed concrete piles shown should not be used. Restriction of vibration levels may require the use of jetting or preboring for displacement piles.

The existing Wacker Plant soils were moderately corrosive. The corrosion potential of the soils at the proposed site should be examined during design.

General Considerations

Before beginning any work at the site, a thorough survey of existing utilities should be made to determine their exact locations. Any existing utilities under the proposed structures should be abandoned or rerouted before construction. If utilities are abandoned, the ends should be plugged. If they are removed, granular backfill should be placed and compacted as recommended later in this report.

Strip all organic materials from the ground surface before preload or foundation construction. These strippings should be removed from the site. Excavate the surface soil and proofroll the bearing surface with a loaded dump truck or a similar heavy vehicle to detect soft or loose zones. These zones, if encountered, should be excavated and backfilled with compacted granular material. The granular material should conform to the State of Oregon Standard Specifications for aggregate base with a maximum size of 1 inch. It should be compacted to at least 90 percent relative compaction.[1]

Before placement of formwork and concrete, a leveling course at least 6 inches thick should be placed and compacted immediately below the proposed foundation. The leveling course should conform to the State of Oregon Standard Specifications for aggregate base with a maximum size of 3/4 inch. It should be compacted to at least 90 percent relative compaction.

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[1]Relative compaction is defined as the ratio, expressed as a percentage, of the in-place field dry density after compaction to the maximum dry density as determined in the laboratory by ASTM D1557.

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Surface water should be controlled and diverted from excavations. If soil is softened by water standing in excavations, remove this soil and replace it with compacted granular material as recommended above.

To a large degree, foundation performance is dependent on construction quality control. Therefore, we recommend that CH2M HILL be retained to observe excavations and subgrade preparation for foundations. This will serve to best identify soil conditions exposed during construction, and to determine whether or not they differ from those conditions assumed in forming our recommendations.

Construction Considerations

The preload should be monitored with settlement plates to determine whether the preload is performing as expected. If the settlement rate is slower than anticipated, it may be necessary to increase the height of fill or the preload duration. We recommend the geotechnical engineer be consulted before preload removal.

Additional Work

The analyses and recommendations contained in this report should be considered preliminary. If the proposed construction proceeds as described in this report, and preloading is selected for site improvement, then additional subsurface exploration will probably not be required. However, if the structures are relocated outside the explored area or if the type of construction changes, then additional subsurface exploration will probably be required. Also, if settlement considerations should dictate widespread use of piles, additional borings and a test pile program may be necessary. In any event, geotechnical design memoranda should be prepared describing specific site improvement and foundation recommendations for each structure before final design.

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A

APPENDIX A

BORING LOGS

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BORING LOG LEGEND:

SAMPLE TYPE:

- S – SPLIT-BARREL (ASTM D1586 UNLESS OTHERWISE NOTED)
- ST – SHELBY TUBE
- W – WASH SAMPLE
- OT – OSTERBERG TUBE
- NX – DIAMOND CORE BARREL

STANDARD PENETRATION TEST:

BLOWS – THE NUMBER OF BLOWS FOR THREE 6-INCH INCREMENTS REQUIRED FROM A 140-LB HAMMER FALLING 30 INCHES TO DRIVE A STANDARD 2-INCH O.D. SPLIT-BARREL SAMPLER (ASTM D1586)

"N" – THE SUM OF BLOWS FOR THE SECOND AND THIRD 6-INCH INCREMENTS. IF THE SAMPLER IS DRIVEN LESS THAN 18 INCHES, THEN "N" IS THE NUMBER OF BLOWS FOR THE LAST TWO 6-INCH INCREMENTS.

UNIFIED SOIL CLASSIFICATION SYMBOL:

GROUP SYMBOL AS PER ASTM D 2487

NOTES:

1. ALL BORINGS WERE DRILLED USING EITHER A TRUCK-MOUNTED CME-55 OR A CME-75 MUD ROTARY DRILL RIG, OWNED AND OPERATED BY KENNER DRILLING, INC., OF SHERWOOD, OREGON.
2. BORINGS WERE DRILLED FROM JUNE 28-30, AND ON JULY 1 AND 2, 1982.
3. ENGINEERING PROPERTIES OF SUBSURFACE MATERIALS ARE OPINION OF THE ENGINEER AND ENGINEERING GEOLOGIST, EXCEPT WHERE LABORATORY TESTING WAS CONDUCTED.
4. THE LOGS SHOW SUBSURFACE CONDITIONS ONLY AT THE TIME AND PLACE THAT THE BORINGS WERE MADE.
5. TRANSITIONS BETWEEN SOIL TYPES MAY BE GRADUAL AND ONLY APPROXIMATELY AT THE ELEVATIONS SHOWN. VARIATIONS MAY EXIST BETWEEN ADJACENT BORINGS.
6. STANDARD PENETRATION TESTS WERE TAKEN IN APPROXIMATE ACCORDANCE WITH ASTM D1586.
7. SAMPLES WERE EXAMINED IN THE FIELD AND VISUALLY CLASSIFIED IN APPROXIMATE ACCORDANCE WITH ASTM 2488.
8. WATER LEVELS MAY VARY WITH TIME.

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PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT Wacker Siltronics LOCATION

DRILLING METHOD Mud Rotary DRILLERS & EQUIPMENT D. Kenner of Oregon, Inc.; CME-55

ELEVATION 35.6 ft BORE HOLE B-100

WATER LEVEL not measured DATE: -- START: 6/29/82 FINISH: 6/30/82 INSPECTOR CWHL

DEPTH BELOW SURFACE (ft)	SAMPLE INTERVAL AND TYPE	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	STANDARD PENETRATION TEST RESULTS BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
0									Start drilling at 11:00AM Begin drilling with drag bit
5	5.0 6.5	S-1	12	3-10-9	19	UPPER 3" SANDY SILT, SLIGHTLY PLASTIC, ABOUT 15% FINE SAND, GRAY, MOIST, LOOSE; FILL. LOWER 9" SILTY SAND, FINE SAND, 15-20% FINES, GRAY, WET, COMPACT, SOME PLANT FRAGMENTS; FILL.		ML SM	Driller notes strong petroleum odor at 5 to 10 ft
10	10.0 11.5	S-2	7	12-11-18	29	SILTY SAND, 10-15% GRAVEL TO ABOUT 1¼" FINE SAND, 25-30% FINES, MOIST, BLACK, STRONG HYDROCARBON ODOR, SOME RUBBERY DEBRIS AND PLANT REMAINS; FILL.		SM	Driller notes some gravel at 9 ft Rubbery debris and fine copper wire in cuttings from 10 to 15 ft.
15	15.0 16.5	S-3	2	12-24-11	35	SILTY SAND, SMALL RECOVERY BUT MATERIAL APPEARS SIMILAR TO S-2; FILL.		SM	Sampler bebounded during SPT for S-3 as if it were penetrating rubber (tires?)
20	20.0 21.5	S-4	14	1-1-1	2	UPPER 7" - SILT, SLIGHTLY TO MODERATELY PLASTIC, DARK GRAY, WET, VERY SOFT, WOOD DEBRIS, HYDROCARBON ODOR; FILL? LOWER 7" - SILT, SLIGHTLY PLASTIC, MEDIUM GRAY W/ORANGE BROWN MOTTLING, MOIST, VERY SOFT, SOME DECOMPOSED PLANT MATERIAL.		ML	
25	25.0 26.5	S-5	14	2-2-2	4	SILT, SIMILAR TO LOWER 7" OF S-4 EXCEPT CONSISTANCY IS SOFT.		ML	
	28.0	ST-6	24	---	—	SILT MODERATELY TO HIGHLY PLASTIC, GRAY, MOIST, VERY SOFT.		MH	
30	30.0								

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT Wacker Siltronics LOCATION Portland, Oregon
DRILLING METHOD Mud Rotary DRILLERS & EQUIPMENT D. Kenner of Oregon, Inc.; CME-55
ELEVATION 35.6 ft. BORE HOLE: 8-100
WATER LEVEL not measured DATE: -- START: 6/29/82 FINISH: 6/30/82 INSPECTOR CWHL

DEPTH BELOW SURFACE (ft)	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
30	30.0–31.5	S-7	15	2-4-6	10	SILT, SLIGHTLY PLASTIC, LESS THAN 5% FINE SAND, GRAY, MOIST, FIRM TO STIFF.		ML	
35	35.0–36.5	S-8	18	1-1/12"	1	SILT SIMILAR TO S-7 EXCEPT FOR WOOD DEBRIS IN LOWER 4" AND FRAGMENTS OF DECOMPOSED PLANT MATERIAL THROUGHOUT SAMPLE.		ML	
	38.0–40.0	ST-9	24	---		SILT SAME AS S-7 EXCEPT LENSES OF SAND AND GRAVEL		ML	
40	41.5	S-10	14	3-1-1	2	SANDY SILT, NONPLASTIC, ABOUT 15% FINE TO COARSE SAND, MEDIUM GRAY, VERY LOOSE DECOMPOSED WOOD FRAGMENTS THROUGHOUT SAMPLE, ABOUT 25% FINE SAND AND GRAVEL IN UPPER 3", ORGANIC ODOR.		ML	
45	46.5	S-11	18	1-2-3	5	SILT, SLIGHTLY PLASTIC, BLUE-GREENISH GRAY, MOIST, FIRM.		ML	
50	51.5	S-12	18	3-3-3	6	SILT, SAME AS S-11.		ML	
55	56.5	S-13	16	2-5-10	15	SANDY SILT, NON PLASTIC, 15-20% FINE SAND, GRAY, MOIST, COMPACT.		ML	
60									

SCOEPA00036884

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT Wacker Siltronics LOCATION Portland, Oregon
DRILLING METHOD Mud Rotary DRILLERS & EQUIPMENT D. Kenner of Oregon; CME-55
ELEVATION 35.6 ft BORE HOLE: B-100
WATER LEVEL not measured DATE: — — START: 6/29/82 FINISH: 6/30/82 INSPECTOR CWHL

DEPTH BELOW SURFACE (ft)	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
60	60.0–61.5	S-14	8	6-11-12	23	SILTY SAND FINE SAND, 30-35% FINES, BROWN, WET, COMPACT.		SM	
65	65.0–66.5	S-15	10	7-12-18	30	UPPER 3" SILT, MODERATELY PLASTIC, ABOUT 8% FINE SAND, BROWN, MOIST, STIFF. LOWER 7" SILTY SAND, FINE SAND, 20-25% FINES, BROWN, WET, COMPACT.		ML / SM	HOLE COLLAPSED FROM 65-85 FT ON NIGHT OF 6/29.
70	70.0–71.5	S-16	8	12-17-18	35	SAND, UNIFORMLY GRADED FINE SAND, 5-10% FINES, BROWN, WET, DENSE.		SP-SM	
75	75.0–76.5	S-17	8	9-16-17	33	SILTY SAND, FINE SAND, 12-15% FINES, BROWN, WET, DENSE.		SM	
80	80.0–81.5	S-18	8	10-17-17	34	SILTY SAND, SAME AS S-17, EXCEPT 20-25% FINES.		SM	
85	85.0–86.2	S-19	3	8-32-70/4"	102/14"	BASALT, HIGHLY WEATHERED TO SANDY GRAVEL, POORLY GRADED, GRAVEL TO AT LEAST 1 3/8", ABOUT 15% FINE TO COARSE SAND, 5-12% FINES, BROWN AND BLACK, MOIST, HARD.			END DRILLING @ 4:30 P.M. BEGIN DRILLING @ 7:30 AM CHANGE FROM DRAG BIT TO ROLLER BIT.
90									

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT Wacker Siltronics LOCATION Portland, Oregon

DRILLING METHOD Mud Rotary DRILLERS & EQUIPMENT D. Kenner of Oregon, Inc.; CME-55

ELEVATION 35.6 ft BORE HOLE: B-100

WATER LEVEL not measured DATE: -- START: 6/29/82 FINISH: 6/30/82 INSPECTOR CWHL

DEPTH BELOW SURFACE (ft)	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	STANDARD PENETRATION TEST RESULTS BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
90	90.0 90.1	S-20	1.5	60/1.5	60/1.5	BASALT, WEATHERED, SAME AS S-19.			DRILLER NOTES VERY HARD MATERIAL AT 90' SAMPLER BOUNCES DURING 5' FOR S-20
						END BORING AT 90.1 FEET			FINISH DRILLING AT 8:45 A.M.
95									

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER

SOIL BORING LOG

PROJECT Wacker Siltronics LOCATION Portland, Oregon
DRILLING METHOD Mud Rotary DRILLERS & EQUIPMENT D. Kenner of Oregon, Inc.; CME-55
ELEVATION 34.5 ft. BORE HOLE: B-101
WATER LEVEL not measured DATE: -- START: 6/28/82 FINISH: 6/29/82 INSPECTOR CW HL

DEPTH BELOW SURFACE (ft)	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
0						SILTY SAND at SURFACE, BRICKS, WOOD DEBRIS, ETC, FILL.		SM	START DRILLING AT 1035. BEGIN DRILLING WITH A DRAG BIT.
5	5.0					NO RECOVERY.			DRILLER NOTES CHANGE FROM SILTY SAND TO SILT AT 6'.
	6.5	S-1	0	2-1-1	3				
10	10.0					SILTY SAND, FINE TO MEDIUM SAND, 20-30% FINES, BLACK, WET, LOOSE; FILL.		SM	
	11.5	S-2	3	5-4-5	9				
15	15.0					SANDY SILT, SLIGHTLY PLASTIC, FINE TO MEDIUM SAND, BLACK, WET, LOOSE, SOME ROUNDED GRAVELS TO 1/2" STRANDS OF COPPER WIRE IN SAMPLE, FILL, HYDROCARBON ODOR.		ML	RUBBER DEBRIS (TIRES?) IN HOLE 15 TO 20'. DRILLER NOTES CLUMPS OF FINE COPPER WIRE IN CUTTINGS 15-20'.
	16.5	S-3	9	1-1-2	3				
20	20.0					LAYERED SILTY SAND AND SANDY SILT; SILTY SAND, FINE SAND, 25-35% FINES, DARK GRAY WET, LOOSE, LAYERS 1-3" THICK SANDY SILT SLIGHTLY PLASTIC, DARK GRAY, MOIST, LOOSE, LOCAL CONCENTRATION OF DECOMPOSED PLANT MATERIAL.		SM, ML	DRILLER SUSPECTS LOG(S) AT ABOUT 20'.
	21.5	S-4	13	3-3-3	6				
25	25.0					SANDY SILT, SLIGHTLY PLASTIC, 10-15% FINE SAND, MOTTLED BROWN AND GRAY, MOIST, COMPACT, TRACES OF DECOMPOSED PLANT MATERIAL, HYDROCARBON ODOR.		ML	
	26.5	S-5	18	1-4-5	9				
30									

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CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT Wacker Siltronics LOCATION Portland, Oregon
DRILLING METHOD Mud Rotary DRILLERS & EQUIPMENT D. Kuhler of Oregon, Inc.; CME-55
ELEVATION 34.5 ft BORE HOLE: B-101
WATER LEVEL not measured DATE: -- START: 6/28/82 FINISH: 6/29/82 INSPECTOR CWHL

DEPTH BELOW SURFACE (ft)	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
30	30.0–31.5	S-6	16	1-1-1	2	SILT, SLIGHTLY PLASTIC, MEDIUM GRAY W/REDDISH BROWN MOTTLED, WET.		ML	
	33.0–35.0	ST-7	24	---	—	SILT, SIMILAR TO S-6 EXCEPT SLIGHTLY TO MODERATELY PLASTIC, BROWN COLOR.		ML	
35	36.5	S-8	18	4-5-9	14	SILT, SLIGHTLY TO MODERATELY PLASTIC, BROWN, moist, FIRM.		ML	
40	40.0–41.5	S-9	18	3-3-4	7	SILT, SIMILAR TO S-8, EXCEPT ABOUT 5% FINE SAND, SOFT TO FIRM.		ML	MIX MUD AT 41.5!
45	45.0–46.5	S-10	12	3-6-10	16	UPPER 6" SILT, SIMILAR TO S-8 EXCEPT 5-10% FINE TO MEDIUM SAND, BROWN AND GRAY, SOFT. LOWER 6" SILTY SAND, FINE SAND, 25-30% FINES, BROWN, WET LOOSE TO COMPACT.		ML / SM	DRILLER NOTES SANDY MATERIAL AND SOFT DRILLING TO 50'.
50	50.0–51.5	S-11	18	3-8-13	21	SANDY SILT, NON PLASTIC, 12-15% FINE SAND, BROWN; WET, COMPACT.		ML	
55	55.0–56.5	S-12	6	11-23-28	51	SILTY SAND, FINE SAND, 10-15% FINES IN LOWER PART 30-40% FINES IN UPPER PART, BROWN, MOIST, DENSE, SEVERAL LENSES ≤ 1/2" OF SILT INTERBEDDED WITH THE SILTY SAND.		SM	DRILLER NOTES HARDER DRILLING AT 45'.
60									

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT Wacker Siltronics LOCATION Portland, Oregon
DRILLING METHOD Mud Rotary DRILLERS & EQUIPMENT D. Kenner of Oregon, Inc.; CME-55
ELEVATION 34.5 ft BORE HOLE: B-101
WATER LEVEL not measured DATE: -- START: 6/28/82 FINISH: 6/29/82 INSPECTOR CWHL

DEPTH BELOW SURFACE (ft)	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
60	60.0–61.5	S-13	10	10-13-17	30	SANDY SILT, NON PLASTIC, ABOUT 40% FINE SAND, BROWN, MOIST, COMPACT.		ML	
65	65.0–66.5	S-14	8	13-21-25	46	SILTY SAND, FINE SAND, ABOUT 30% FINE, BROWN, WET, COMPACT.		SM	
70	70.0–71.5	S-15	9	30-41-39	70	SAND, UNIFORMLY GRADED FINE SAND, 5-12% FINES, BROWN, WET, VERY DENSE.		SP-SM	
75	75.0–76.5	S-16	8	35-55-39	94	SAND, SAME AS S-15.		SP-SM	
80	80.0–81.5	S-17	8	13-24-30	54	SAND, UNIFORMLY GRADED FINE SAND, ABOUT 5% FINES, BROWN, WET, DENSE.		SP	DRILLER NOTES VERY HARD MATERIAL AT 84 FT; UNABLE TO PENETRATE W/DRAG BIT; STOP TO TAKE SAMPLE S-18 END DRILLING @ 4:30 P.M. BEGIN DRILLING @ 8:00 AM CHANGE FROM DRAG BIT TO ROLLER BIT; MIX MUD. VERY HARD DRILLING AT 86' DRILLS AT RATE OF 30 MIN/FT. ANGULAR BLACK BASALT CHIPS IN CUTTINGS - END DRILLING @ 9:40 AM
85	84.0–84.5	S-18	4	70/6"	70/6"	BASALT WEATHERED TO SANDY GRAVEL, POORLY GRADED GRAVEL TO 1 1/4" 30-40% FINE TO COARSE SAND, MOSTLY COARSE, LESS THAN 5% FINES, BROWN AND BLACK, DENSE.			
	87.0–87.5	S-19	5	78/6"	78/6"	BASALT, WEATHERED, SAME AS S-18.			
90						END BORING @ 87.5 FT			

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT Wacker Siltronics LOCATION Portland, Oregon

DRILLING METHOD Mud Rotary DRILLERS & EQUIPMENT D. Kenner of Oregon, Inc.; CME-55

ELEVATION 32.2 ft. BORE HOLE: B-102

WATER LEVEL not measured DATE: -- START: 7/1/82 FINISH: 7/1/82 INSPECTOR CWHL

DEPTH BELOW SURFACE (ft)	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	STANDARD PENETRATION TEST RESULTS BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
0									START DRILLING AT 955. BEGIN DRILLING WITH DRAG BIT.
5	5.0–6.5	S-1	7	1-2-2	4	SILT SLIGHTLY TO MODERATELY PLASTIC, ABOUT 5% FINE SAND, GRAY WITH REDDISH BROWN MOTTLING, MOIST SOFT, DISTINCT LAYERING 1/16-1/2" THICK.		ML	
10	10.0–11.5	S-2	9	4-8-9	17	SAND UNIFORMLY GRADED FINE SAND, LESS THAN 5% FINES, DARK GRAY, WET, HYDROCARBON ODOR.		SP	
15	15.0–16.5	S-3	0	2-1-3	4	NO RECOVERY.			
20	20.0–21.5	S-4	1	2-3-3	6	SILT NONPLASTIC, BLACK, WET, SOFT, STRONG HYDROCARBON ODOR.		ML	AT 19 FT CUTTINGS ARE SATURATED WITH OILY MATERIAL AND HAVE A STRONG HYDROCARBON ODOR.
25	25.0–26.5	S-5	10	1-1-1	2	SILT NONPLASTIC, LESS THAN 5% FINE SAND, MEDIUM GRAY, WET, LOOSE.		ML	
30									

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT Wacker Siltronics LOCATION Portland, Oregon

DRILLING METHOD Mud Rotary DRILLERS & EQUIPMENT D. Kenner of Oregon, Inc.; CME-55

ELEVATION 32.2 ft. BORE HOLE: B-102

WATER LEVEL not measured DATE: -- START: 7/1/82 FINISH: 7/1/82 INSPECTOR CW HL

DEPTH BELOW SURFACE (ft)	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	STANDARD PENETRATION TEST RESULTS BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
30	30.0–31.5	S-6	10	1-2-2	4	SILT, NON PLASTIC, ABOUT 5% FINE SAND, MEDIUM GRAY, WET, SOFT, FRAGMENTS OF DECOMPOSED PLANT MATERIAL		ML	MIX MUD AT 30'.
	33.0								
35	35.0	ST-7	24	---	—	SILT SIMILAR TO S-6 EXCEPT MODERATELY TO HIGHLY PLASTIC AND ORGANIC.		MH-OH	
	36.5	S-8	18	1-2-2	4	SILT SIMILAR TO S-6 EXCEPT NO SAND AND MODERATELY TO HIGHLY PLASTIC AND ORGANIC.		MH-OH	
40	40.0–41.5	S-9	18	4-7-8	15	SILT SIMILAR TO S-6, EXCEPT FOR LACK OF SAND, BLUE-GREEN COLOR AND STIFF.		ML	
45	45.0–46.5	S-10	18	2-2-2	4	SILT SIMILAR TO S-6 EXCEPT SLIGHTLY PLASTIC AND ABSENCE OF SAND AND FRAGMENTS OF PLANTS		ML	
	48.6								
50	50.0	ST-11	24	---	—	UPPER 18"-SILT, SAME AS S-10 LOWER 6"-SILTYSAND, SAME AS S-12.		ML, SM	LAST 6" OF ST-11 PUSHED VERY HARD
	51.5	S-12	10	4-6-10	16	SILTYSAND, FINE SAND, 20-25% FINES, BROWN, WET, COMPACT.		SM	
55	56.0–56.5	S-13	18	2-5-6	11	SILT, NON PLASTIC, BROWN, WET, STIFF.		ML	
60									

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT Wacker Siltronics LOCATION Portland, Oregon
DRILLING METHOD Mud Rotary DRILLERS & EQUIPMENT D. Kenner of Oregon, Inc.; CME-55
ELEVATION 32.2 ft BORE HOLE: B-102
WATER LEVEL not measured DATE: — — START: 7/1/82 FINISH: 7/1/82 INSPECTOR CW HL

DEPTH BELOW SURFACE (ft)	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
60	60.0–61.5	S-14	18	3-11-20	31	SILTY SAND, FINE SAND, 20-25% FINES, BROWN, WET, COMPACT TO DENSE.		SM	
65	65.0–66.5	S-15	15	6-14-22	36	SILT, SLIGHT PLASTICITY, 5-10% FINE SAND, LOCAL CONCENTRATION OF FINE SAND WITHIN THE SILT, BROWN, MOIST, STIFF.		ML	
70	70.0–71.5	S-16	18	12-25-25	50	SILT, SIMILAR TO S-15, EXCEPT VERY STIFF.		ML	
75	75.0–76.5	S-17	9	11-28-29	57	SILTY SAND, FINE SAND, 15-20% FINES, BROWN, WET, VERY DENSE.		SM	DRILLER NOTES VERY HARD MATERIAL AT 79.5'
80	79.5–80.0	S-18	4	60/6"	60/6"	BASALT, WEATHERED TO SANDY GRAVEL, POORLY GRADED ANGULAR GRAVEL TO ABOUT 1", 30-40% FINE TO COARSE SAND, 5-12% FINES, BROWN AND BLACK, WET, DENSE.			SAMPLER BOUNCES DURING SPT FOR FINISH DRILLING AT 2:10 P.M.
85						END BORING AT 80.0 Feet.			

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CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT Wacker Siltronics LOCATION Portland, Oregon

DRILLING METHOD Mud Rotary DRILLERS & EQUIPMENT D. Kenner of Oregon Inc; CME-55

ELEVATION 35.8 ft BORE HOLE: B-103

WATER LEVEL not measured DATE: — — START: 6/30/82 FINISH: 7/1/82 INSPECTOR CW HL

DEPTH BELOW SURFACE (ft)	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
0									START DRILLING AT 10:20 BEGIN DRILLING WITH A DRAG BIT.
5	5.0								
	6.5	S-1	7	1-3-3	6	SILT, SLIGHTLY PLASTIC, ABOUT 5% FINESAND, DARK GRAY, MOIST, FIRM; FILL?		ML	
10	10.0								
	11.5	S-2	7	14-19-30	49	SAND, POORLY GRADED FINE TO MEDIUM SAND, 5-12% FINES BROWN, WET, DENSE; FILL.		SP-SM	ROUGH DRILLING AT ABOUT 11.5'; CHANGE FROM DRAG BIT TO ROLLER BIT, DRILLER NOTES GRAVELLY MATERIAL TO 15'.
15	15.0								
	16.5	S-3	4	6-7-6	13	GRAVELLY SAND, POORLY GRADED 10-15% GRAVEL TO 1" FINE TO COARSE SAND, 5-12% FINES, BROWN, WET, COMPACT, FILL?		SP-SM	ROUGH DRILLING TO 19'; THEN SOFTER MATERIAL.
20	20.0								
	21.5	S-4	1	3-4-3	7	SILT SLIGHTLY PLASTIC, DARK GRAY, WET, SOFT TO FIRM.		ML	REMOVE ROLLER BIT, ATTACH DRAG BIT.
	23.0								
	25.0	ST-5	0	— — —	—	NO RECOVERY; TUBE SMEARED WITH BROWN SILT			ST-6 WAS PUSHED VERY SLOWLY; STIFF MATERIAL
25	26.5	S-6	18	3-7-8	15	SILT, SLIGHTLY TO MODERATELY PLASTIC, BROWN, MOIST, STIFF TO VERY STIFF.		ML	
	28.0								
30	30.0	ST-7	18	— — —	—	SILT, SAME AS S-6		ML	

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT Wacker Siltronics LOCATION Portland, Oregon

DRILLING METHOD Mud Rotary DRILLERS & EQUIPMENT D. Kenner of Oregon, Inc.; CME-55

ELEVATION 35.8 ft. BORE HOLE: B-103

WATER LEVEL DIT measured DATE: -- START: 4/30/82 FINISH: 7/1/82 INSPECTOR CW HL

DEPTH BELOW SURFACE (ft)	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	STANDARD PENETRATION TEST RESULTS BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
30	30.0–31.5	S-8	18	2-2-3	5	SILT, SLIGHTLY PLASTIC, BROWN, MOIST, SOFT TO FIRM.		ML	
35	35.0–36.5	S-9	10	3-7-9	16	SILTY SAND, FINE SAND, 25-30% FINES, BROWN, WET, COMPACT.		SM	
40	40.0–41.5	S-10	18	2-2-3	5	SILT, NON PLASTIC, LESS THAN 5% FINE SAND, BROWN, MOIST, SOFT TO FIRM.		ML	
	43.0–45.0	ST-11	24	---	—	SILT, SAME as S-10		ML	LAST 6" OF S-11 WERE VERY STIFF.
45	46.5	S-12	18	3-5-8	13	SILT, SAME AS S-10		ML	
50	51.5	S-13	24	4-9-9	18	SILT, SIMILAR TO S-10 EXCEPT 5-10% FINE SAND.		ML	
	54.5	ST-14	18	---	—	SILT, SAME AS S-10		ML	ST-14 WAS PUSHED FOR ONLY AN 18" DRIVE, MATERIAL WAS TOO HARD FOR 24" PUSH.
55	56.0	S-15	10	4-6-20	26	SAND, FINE SAND, 5-10% FINES BROWN, WET COMPACT		SP-SM	
60									

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT Wacker Siltronics LOCATION Portland, Oregon
DRILLING METHOD Mud Rotary DRILLERS & EQUIPMENT D. Kenner of Oregon, Inc.; CME-55
ELEVATION 35.8 ft BORE HOLE: B-103
WATER LEVEL Not Measured DATE: -- START: 6/30/82 FINISH: 7/1/82 INSPECTOR CWHL

DEPTH BELOW SURFACE (ft)	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
60	60.0–61.5	S-16	13	8-15-23	38	SILT, NON PLASTIC, LESS THAN 5% FINE SAND, BROWN, WET, DENSE		ML	
65	65.0–66.5	S-17	8	11-21-22	43	SAND, UNIFORMLY GRADED, FINE SAND, LESS THAN 5% FINES, BROWN, WET, DENSE.		SP	
70	70.0–71.5	S-18	8	16-28-26	54	SAND, SAME AS S-17		SP	
75	75.0–76.5	S-19	8	20-42-45	87	SAND SIMILAR TO S-17, EXCEPT 5-10% FINES		SP-SM	DRILLER NOTES VERY HARD MATERIAL AT 76.5'. END DRILLING @ 3:40 P.M. BEGIN DRILLING @ 7:30 A.M. SLOW, ROUGH DRILLING TO 77.0 FT. END DRILLING @ 8:45 A.M.
	76.5–77.0								
	77.0	S-20	0	60/0.5"	60/0.5"	NO RECOVERY; PROBABLY WEATHERED BASALT			
80						END BORING AT 77.0 FEET			

SCOEPA00036895

CH2M HILL

PROJECT NUMBER P16058.B0.00

SOIL BORING LOG

PROJECT WACKER SILTRONIC LOCATION PORTLAND, OR

DRILLING METHOD REVERT ROTARY, DRAG BIT DRILLERS & EQUIPMENT D. KENNER OF OR CME-75

ELEVATION 31.7 FEET BORE HOLE: B-104

WATER LEVEL 16.1 ft DATE: 7/23/82 START: 6/30/82 FINISH: 6/30/82 INSPECTOR DLKI

DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	STANDARD PENETRATION TEST RESULTS BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
0									START DRILLING @ 7:55 A.M. BEGAN DRILLING WITH A DRAG BIT
5	5.0								
	6.5	S-1	11	1-2-2	4	SILT, SLIGHTLY TO MODERATELY PLASTIC, LESS THAN 5% VERY FINE SAND AND ORGANICS, MOTTLED GRAY AND BROWN, DAMP, FILL?, SOFT; OCCASSIONAL ROOTS.		ML	
10	10.0								
	11.5	S-2	11	1-1/12"	1	SANDY SILT, NONPLASTIC, 20-30% VERY FINE SAND, 5-10% ORGANICS, BLUE, WET, VERY LOOSE; FILL?		ML	
15	15.0								
	16.5	S-3	11	0-2-1	3	SANDY SILT, NONPLASTIC, 20-30% VERY FINE SAND, BLUE, MOIST, VERY LOOSE; OIL, OCCASSIONAL WOOD FRAGMENTS, HYDROCARBON ODOR, FILL?		ML	DRILLER NOTES FIRMER MATERIAL @ 17.5 FEET.
20	20.0								
	21.5	S-4	17	2-2-2	4	SANDY SILT, NONPLASTIC, 15-20% VERY FINE SAND, 5-10% ORGANICS, BLUE, MOIST, VERY LOOSE.		ML	
25	25.0								
	26.5	S-5	18	1-2-2	4	SILT, NONPLASTIC, LESS THAN 5% VERY FINE SAND, LESS THAN 5% ORGANICS, BLUE, WET, SOFT. OCCASSIONAL WOOD FRAGMENTS.		ML	DRILLER NOTES FIRMER AND SOFTER DRILLING (POSSIBLE LENSES).
30									

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER P16058.B0.00

SOIL BORING LOG

PROJECT WACKER SILTRONIC LOCATION PORTLAND, OR

DRILLING METHOD REVERT ROTARY; DRAG BIT DRILLERS & EQUIPMENT D. KENNER OF OR, CME-75

ELEVATION 31.7 FEET BORE HOLE: B-104

WATER LEVEL 16.1 ft DATE: 7/23/82 START: 6/30/82 FINISH: 6/30/82 INSPECTOR DLKI

DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	STANDARD PENETRATION TEST RESULTS BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
30	30.0–31.5	S-6	16	1-1-2	3	SANDY SILT, NONPLASTIC, 15-20% VERY FINE SAND, 5-10% ORGANICS, BROWN, MOIST, VERY LOOSE; OCCASSIONAL WOOD FRAGMENTS.		ML	
35	35.0–37.0	ST-7	0	---	—	NO RECOVERY.			
	38.5	S-8	18	2-3-3	6	SANDY SILT, NONPLASTIC, 15-20% VERY FINE SAND, 5-10% ORGANICS, BLUE, WET, LOOSE; OCCASSIONAL WOOD FRAGMENTS.		ML	
40	40.0–41.5	S-9	18	1-1-2	3	SILT, SLIGHTLY TO MODERATELY PLASTIC, 5-10% ORGANICS, LESS THAN 5% VERY FINE SAND, GRAY, MOIST, SOFT; OCCASSIONAL WOOD FRAGMENTS		ML	
45	45.0–47.0	ST-10	0	---	—	NO RECOVERY.			MATERIAL SLIPPED OUT OF TUBE.
	48.5	S-11	14	2-3-4	7	SANDY SILT, NONPLASTIC, 20-30% VERY FINE SAND, 5-10% ORGANICS, BLUE, MOIST, LOOSE; OCCASSIONAL WOOD FRAGMENTS.		ML	
50	50.0–52.0	ST-12	24	---	—	SANDY SILT, SAME AS ABOVE		ML	
	53.5	S-13	18	4-7-8	15	SILT, NONPLASTIC, BLUE, MOIST, STIFF.		ML	
55	55.0–57.0	ST-14	24	---	—	SILT, SAME AS S-15.		ML	
	58.5	S-15	18	3-4-6	14	SILT, NONPLASTIC, 5-12% VERY FINE SAND, BROWN, WET, STIFF.		ML	
60									

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CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT WACKER SILTRONIC LOCATION PORTLAND, OR

DRILLING METHOD REVERT ROTARY; DRAG BIT DRILLERS & EQUIPMENT D. KENNER OF DR; CME-75

ELEVATION 31.7 FEET BORE HOLE: B-104

WATER LEVEL 16.1 ft DATE: 7/23/82 START: 6/30/82 FINISH: 6/30/82 INSPECTOR DLKI

DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	STANDARD PENETRATION TEST RESULTS BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
60	60.0 61.5	S-16	18	4-6-8	14	SANDY SILT, NONPLASTIC, 15-20% VERY FINE SAND, BROWN, WET, COMPACT.		ML	
65	65.0 66.5	S-17	14	5-8-17	25	SANDY SILT, NONPLASTIC, 20-30% VERY FINE SAND, BROWN, WET, COMPACT.		ML	
70	70.0 71.5	S-18	18	3-9-15	24	SILT, NONPLASTIC, LESS THAN 5% VERY FINE SAND, BROWN, WET, VERY STIFF.		ML	
75	75.0 76.5	S-19	18	6-14-26	40	SILT, SAME AS S-18, EXCEPT CONISTENCY IS HARD.		ML	
80	80.0 81.5	S-20	17	5-11-16	27	SILT, SAME AS S-18.		ML	
85	85.0 86.5	S-21	17	6-11-13	24	SILT, SAME AS S-18.		ML	
90									

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT WACKER SILTRONIC LOCATION PORTLAND, OR

DRILLING METHOD REVERT ROTARY; DRAG BIT DRILLERS & EQUIPMENT D. KENNER OF OR; CME-75

ELEVATION 31.7 FEET BORE HOLE: B-104

WATER LEVEL 16.1 ft DATE: 7/23/82 START: 6/30/82 FINISH: 6/30/82 INSPECTOR DLKI

DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
90									DRILLED TO 90 FEET, INSERTED SPLIT SPOON.
	92.0								
	93.5	S-22	8	2-2-3	5	SANDY SILT, NONPLASTIC, 20-30 % VERY FINE SAND, GRAY AND ORANGE, WET, LOOSE		ML	SPLIT SPOON DROPPED TO 92 FEET. DROVE SAMPLE @ 92 FEET
95	95.0								
	96.1	S-23 A B	12	6-22-60/1"	82/1"	BASALT, UNWEATHERED, FRACTURED, BLACK, HARD			END DRILLING @ 1:20 P.M.

END BORING @ 96.1 ft

NOTE: PIEZOMETER INSTALLED WITH 1.9-FT, 1½-INCH DIAMETER SLOTTED TIP 89.1 TO 91.0 FT; GRAVEL PACK, CONSISTING OF 3/8-INCH PEA GRAVEL FROM 96 TO 85 FT, FOLLOWED BY A 2-FOOT BENTONITE SEAL FROM 85 TO 83 FT; 3/4-INCH RISER PIPE INSTALLED FROM SLOTTED TIP TO ABOVE THE SURFACE; BORING WAS BACKFILLED FROM 83 FEET TO SURFACE WITH CUTTINGS AND PEA GRAVEL.

SCOEPA00036899

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT WACKER SILTRONIC LOCATION PORTLAND, OR
DRILLING METHOD MUD ROTARY; DRAGBIT DRILLERS & EQUIPMENT D. KENNER OF DR; CME-75
ELEVATION 32.8 FEET BORE HOLE: B-105
WATER LEVEL NOT MEASURED DATE: - - - START: 7/1/82 FINISH: 7/2/82 INSPECTOR DLKI

DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	STANDARD PENETRATION TEST RESULTS BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
0									BEGAN DRILLING @ 3:05 P.M.
5	5.0–6.5	S-1	13	1-1-1	2	SANDY SILT, NONPLASTIC, 12-20% VERY FINE SAND, 5-10% ORGANICS, ORANGE AND GRAY MOTTLING, WET, VERY LOOSE; OCCASSIONAL ROOTS; AT BOTTOM; FILL?		ML	
10	10.0–11.5	S-2	8	3-6-6	12	SAND, MEDIUM TO FINE, LESS THAN 5% FINES, BLACK, WET, LOOSE; HYDROCARBON ODOR, FILL?		SP	
15	15.0–16.5	S-3	11	3-2-3	5	SAND, SAME AS S-2, EXCEPT WITH OIL AT BOTTOM; FILL?		SP	
20	20.0–21.5	S-4	16	2-1-2	3	SILT, NON PLASTIC, 5-12% VERY FINE SAND, LESS THAN 5% ORGANICS, GRAY AND ORANGE MOTTLING, WET, SOFT; OCCASSIONAL WOOD FRAGMENTS.		ML	DRILLER NOTES WOOD AT BOTTOM OF SAMPLER.
25	25.0–26.5	S-5	18	1-1-2	3	SILT, NONPLASTIC, 5-10% FINE SAND, GRAY, MOIST, SOFT; FRAGMENTS OF DECOMPOSED PLANT MATERIAL IN LOWER 9 INCHES OF SAMPLER		ML	END DRILLING @ 3:40 P.M.
30									

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT WACKER SILTRONIC LOCATION PORTLAND, OR

DRILLING METHOD MUD ROTARY; DRAGBIT DRILLERS & EQUIPMENT D. KENNER OF OR; CME-75

ELEVATION 32.8 FEET BORE HOLE: B-105

WATER LEVEL NOT MEASURED DATE: --- START: 7/1/82 FINISH: 7/2/82 INSPECTOR CWHL

DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
30	30.0–31.5	S-6	18	1-1-2	3	SILT, NONPLASTIC, LESS THAN 5% FINE SAND, GRAY, WET, SOFT; LENSE OF DECOMPOSED PLANT MATERIAL 3 INCHES FROM TOP, HYDROCARBON ODOR		ML	BEGAN DRILLING, @ 7:45 A.M.
35	35.0–36.5	S-7	18	1-2-2	4	SILT, SLIGHTLY PLASTIC, GRAY, WET, SOFT.		ML	
40	40.0–41.5	S-8	18	3-6-8	14	SILT, SLIGHTLY TO MODERATELY PLASTIC, GREENISH GRAY, STIFF.		ML	
45	45.0–46.5	S-9	18	4-4-6	10	SILT, SLIGHTLY TO MODERATELY PLASTIC, 5-10% FINE SAND IN LOWER 9 INCHES, GREENISH GRAY IN UPPER PART, GRAY IN LOWER PART, MOIST, STIFF.		ML	
50	50.0–51.5	S-10	18	2-4-9	13	SILT, NONPLASTIC, LESS THAN 5% FINE SAND, BROWN, WET, COMPACT		ML	
55	55.0–56.5	S-11	18	2-4-8	12	SILT, SAME AS S-10		ML	
60									

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT WACKER SILTRONIC LOCATION PORTLAND, OR

DRILLING METHOD MUD ROTARY; DRAG BIT DRILLERS & EQUIPMENT D. KENNER OF OR; CME-75

ELEVATION 32.8 FEET BORE HOLE: B-105

WATER LEVEL NOT MEASURED DATE: --- START: 7/1/82 FINISH: 7/2/82 INSPECTOR CWHL

DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	STANDARD PENETRATION TEST RESULTS BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
60	60.0								MIX MUD
	61.5	S-12	18	4-11-18	29	UPPER 12 INCHES SILT, SLIGHTLY PLASTIC, 5-10% FINE SAND, BROWN, MOIST, STIFF. LOWER 6 INCHES SILTY SAND, FINE SAND, 15-20% FINES, BROWN, WET, COMPACT.		ML SM	
65	65.0								
	66.5	S-13	18	6-10-14	24	SILTY SAND, FINE SAND, 20-25% FINES, BROWN, WET COMPACT.		SM	
70	70.0								
	71.5	S-14	15	9-23-22	45	UPPER 9 INCHES: SILTY SAND, SIMILAR TO S-13, EXCEPT 15-20% FINE SAND. LOWER 6 INCHES: SILT, SLIGHTLY PLASTIC, 10-15% FINE SAND, BROWN, MOIST, STIFF.		SM ML	
75	75.0								
	76.8	S-15	12	13-21-60/3"	81/9"	SILTY SAND WITH 1-2 INCH LAYERS OF SAND: SILTY SAND, FINE SAND, 20-25% FINES, BROWN, WET, COMPACT. SAND, UNIFORMLY GRADED, FINE SAND, 5-12% FINES, BROWN, WET, COMPACT.		SM SP-SM	DRILLER NOTES VERY HARD DRILLING @ 76.5 FEET; CHANGE TO TRICONE BIT; SAMPLER BOUNCED DURING SPT FOR S-16
	76.5 76.7	S-16	2	60/2"	60/2"	SAND, UNIFORMLY GRADED, FINE SAND, 5-12% FINES, WET, DENSE; PROBABLY CAVINGS ABOVE BASALT			FINISH DRILLING @ 9:55 A.M.
						END BORING @ 76.7 ft			

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT WACKER SILTRONIC LOCATION PORTLAND, OR

DRILLING METHOD MUD ROTARY; DRAG BIT DRILLERS & EQUIPMENT D. KENNER OF OR; CME-75

ELEVATION 32.2 FEET BORE HOLE: B-106

WATER LEVEL NOT MEASURED DATE: --- START: 6/29/82 FINISH: 6/29/82 INSPECTOR DLKI

DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
0									BEGIN DRILLING @ 10:00 A.M.
5	5.0								
	6.4	S-1	17	1-1-1	2	SILT, SLIGHTLY TO MODERATELY PLASTIC, BROWN AND ORANGE MOTTLED, MOIST, FILL?, SOFT; OCCASSIONAL ROOTS AND WOOD; FILL?		ML	
	8.0								
	10.0	ST-2	22	---	-	SILT, SAME AS S-1.		ML	
10	11.5	S-3	0	1-1-2	3	NO RECOVERY.			SILT SMEARED ON SPLIT SPOON.
	15.0								DRILLER NOTES WOOD IN CUTTINGS FROM 13-15 FEET; COULD BE REASON FOR NO RECOVERY OF S-3.
15	16.5	S-4	14	0/12"-2	2	SILT, NONPLASTIC, 10-15% VERY FINE SAND, GRAY, MOIST, SOFT; OCCASSIONAL WOOD FRAGMENTS, HYDROCARBON ODOR; FILL?		ML	
	20.0								DRILLER NOTES OIL FROM 18-20 FEET.
20	21.5	S-5	16	3-4-6	10	SILT, NONPLASTIC, LESS THAN 5% VERY FINE SAND AND ORGANICS, GRAY, MOIST, STIFF; OCCASSIONAL ROOTS.		ML	
	25.0								
25	26.5	S-6	13	5-6-3	9	SAND, MEDIUM TO FINE, BLACK, WET, LOOSE.		SP	DRILLER NOTES FIRM DRILLING @ 26.5 FEET.
30									

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT WACKER SILTRONIC LOCATION PORTLAND, OR
DRILLING METHOD MUD ROTARY; DRAG BIT DRILLERS & EQUIPMENT D. KENNER OF OR; CME-75
ELEVATION 32.2 FEET BORE HOLE: B-106
WATER LEVEL NOT MEASURED DATE: --- START: 6/29/82 FINISH: 6/29/82 INSPECTOR DLKI

DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
30	30.0–32.0	ST-7	18	---	–	SILT, SAME AS S-8.		ML	DRILLER NOTES LAYERS OF FIRM AND SOFT DRILLING.
	33.5	S-8	18	2-2-5	7	SILT, NONPLASTIC, 5-12% VERY FINE SAND, 10-15% ORGANICS, BROWN, MOIST, FIRM; OCCASSIONAL WOOD FRAGMENTS.		ML	
35	35.0								
	36.5	S-9	18	1-1-2	3	SILT, SLIGHTLY TO MODERATELY PLASTIC, GRAY, MOIST, SOFT.		ML	
	38.0								
40	40.0	ST-10	0	---	–	NO RECOVERY.			
	42.0	ST-11	18	---	–	SILT, SAME AS S-12.		ML	
	43.5	S-12	18	3-3-5	8	SILT, NONPLASTIC, 5-12% VERY FINE SAND, 20-25% ORGANICS, GRAY, DAMP, FIRM; OCCASSIONAL WOOD.		ML	
45	45.0								
	47.0	ST-13	24	---	–	SILT, SAME AS S-14.		ML	WOODCHIP @ BOTTOM OF SHELBY TUBE.
	48.5	S-14	18	2-2-3	5	SILT, MODERATELY PLASTIC, GRAY, MOIST, FIRM; OCCASSIONAL WOOD FRAGMENTS.		ML	
50	50.0								
	51.5	S-15	18	2-2-6	8	SANDY SILT, 30-40% VERY FINE SAND, BLACK, WET, LOOSE.		ML	
55	55.0								
	56.0	S-16	11	7-9-8	17	SAND, LESS THAN 5% FINES, BLACK, MOIST, FIRM, GRADES TO SILT, MODERATELY PLASTIC, BROWN, MOIST, COMPACT; OCCASSIONAL ORGANICS.		SP ML	
60									

SCOEPA00036904

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT WACKER SILTRONIC LOCATION PORTLAND, OR
DRILLING METHOD MUD ROTARY; DRAG BIT DRILLERS & EQUIPMENT D. KENNER OF OR; CME-75
ELEVATION 32.2 FEET BORE HOLE: B-106
WATER LEVEL NOT MEASURED DATE: --- START: 6/29/82 FINISH: 6/29/82 INSPECTOR DLKI

DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
60	60.0–61.5	S-17	18	3-9-11	20	SILT, SLIGHTLY TO MODERATELY PLASTIC, BLUE, DAMP, VERY STIFF, GRADES TO SILT, NON-PLASTIC, 5-12% VERY FINE SAND, BLUE, DAMP, VERY STIFF.		ML	
65	65.0–66.5	S-18	18	6-14-22	36	SANDY SILT, NON PLASTIC, 15-20% VERY FINE SAND, BLUE, WET, DENSE.		ML	
70	70.0–71.5	S-19	18	4-6-15	21	SILT, NON PLASTIC, BROWN, WET, VERY STIFF. GRADES TO BLUE.		ML	
75	75.0–76.5	S-20	18	5-10-21	31	SILT, NON PLASTIC, 5-12% VERY FINE SAND, LIGHT BROWN, WET, HARD.		ML	
80	80.0–81.5	S-21	13	9-18-29	47	SILTY SAND, VERY FINE SAND, 20-30% FINES, LIGHT BROWN, WET, DENSE.		SM	
85	85.0–86.5	S-22	18	14-22-32	54	SILT, NON PLASTIC, 5-12% VERY FINE SAND, LIGHT BROWN, WET, HARD.		ML	
90									

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT WACKER SILTRONIC LOCATION PORTLAND, OR

DRILLING METHOD MUD ROTARY; DRAG BIT DRILLERS & EQUIPMENT D. KENNER OF OR; CME-75

ELEVATION 32.2 FEET BORE HOLE: B-106

WATER LEVEL NOT MEASURED DATE: --- START: 6/29/82 FINISH: 6/29/82 INSPECTOR DLKI

DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
90	90.0 91.5	S-23	18	5-9-12	21	SILT, NON PLASTIC, 5-12% VERY FINE SAND, LIGHT BROWN, WET, VERY STIFF.		ML	
95	95.0 96.5	S-24	2	7-10-11	21	SILT, SAME AS S-23.		ML	
	98.0 98.4	S-25	4.5	60/4.5"	60/45"	BASALT, UNWEATHERED, FRACTURED, BLACK, VERY HARD			DRILLER NOTES HARD DRILLING @ 98 FEET. CHANGED TO TRICONE BIT (4 7/8 INCHES). END DRILLING @ 3:50 P.M.
100	100.0 100.0	S-26	0	60/0.5"	60/05"	NO RECOVERY			
						END BORING @ 100.0 ft			

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT WACKER SILTRONIC LOCATION PORTLAND, OR

DRILLING METHOD MUD ROTARY; DRAG BIT DRILLERS & EQUIPMENT D. KENNER OF OR; CME-75

ELEVATION 34.6 FEET BORE HOLE: B-107

WATER LEVEL NOT MEASURED DATE: --- START: 7/1/82 FINISH: 7/1/82 INSPECTOR DLKI

DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
0									BEGIN DRILLING @ 11:10 A.M.
5	5.0–6.5	S-1	7	3-3-3	6	SAND, MEDIUM TO FINE, LESS THAN 5% FINES, ORANGE, MOIST, LOOSE; FILL?		SP	
10	10.0–11.5	S-2	14	6-7-9	16	SAND, MEDIUM TO FINE, LESS THAN 5% FINES, BLACK, MOIST, COMPACT; HYDROCARBON ODOR; FILL?		SP	DRILLER NOTES OIL @ 12 OR 13 FEET
15	15.0–16.5	S-3	8	3-3-7	10	SAND, SAME AS S-2; WOOD CHUNK AT BOTTOM OF SPLIT SPOON; FILL?		SP	DRILLER NOTES WOOD IN CUTTINGS.
20	20.0–21.5	S-4	14	1-2-3	5	SILT, MODERATELY PLASTIC, BLUE, MOIST, FIRM; OCCASSIONAL WOOD FRAGMENTS, HYDROCARBON ODOR.		ML	
25	25.0–26.5	S-5	18	1-1-1	2	SILT, NONPLASTIC, BLUE, WET, SOFT.		ML	DRILLER NOTES OUT OF OIL @ 22 OR 23 FEET, BUT STILL IN WOOD.
30									

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER P/6058.B0

SOIL BORING LOG

PROJECT WACKER SILTRONIC LOCATION PORTLAND, OR

DRILLING METHOD MUD ROTARY; DRAG BIT DRILLERS & EQUIPMENT D. KENNER OF OR; CME-75

ELEVATION 34.6 FEET BORE HOLE: B-107

WATER LEVEL NOT MEASURED DATE: --- START: 7/1/82 FINISH: 7/1/82 INSPECTOR DLKI

DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	STANDARD PENETRATION TEST RESULTS BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
30	30.0–32.0	ST-6	24	---	–	SILT, SAME AS S-7.		ML	
	33.5	S-7	18	1-2-4	6	SILT, NON PLASTIC, LESS THAN 5% VERY FINE SAND AND ORGANICS, BROWN, MOIST, FIRM; OCCASSIONAL WOOD FRAGMENTS		ML	
35	35.0–37.0	ST-8	22	---	–	SILT, SAME AS S-9.		ML	
	38.5	S-9	18	3-4-5	9	SILT, SLIGHTLY TO MODERATELY PLASTIC, 5-12% VERY FINE SAND, BLUE AND ORANGE MOTTLED, WET, STIFF.		ML	
40	40.0–41.5	S-10	18	2-3-4	7	SILT, SLIGHTLY TO MODERATELY PLASTIC, 5-12% VERY FINE SAND, BROWN, WET, FIRM.		ML	
45	45.0–46.5	S-11	18	2-4-7	11	SILT, SLIGHTLY PLASTIC, BROWN, MOIST, STIFF.		ML	
50	50.0–51.5	S-12	18	5-9-10	19	SANDY SILT, NON PLASTIC, 20-30% VERY FINE SAND, BROWN, WET, COMPACT.		ML	
55	55.0–56.5	S-13	18	6-10-13	23	SANDY SILT, SAME AS S-12.		ML	
60									

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT WACKER SILTRONIC LOCATION PORTLAND, OR

DRILLING METHOD MUD ROTARY; DRAG BIT DRILLERS & EQUIPMENT D. KENNER OF OR; CME-75

ELEVATION 346 FEET BORE HOLE: B-107

WATER LEVEL NOT MEASURED DATE: --- START: 7/1/82 FINISH: 7/1/82 INSPECTOR DLKI

DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	STANDARD PENETRATION TEST RESULTS BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
60	60.0 61.5	S-14	18	8-15-20	35	SILT, NONPLASTIC, 12-15% VERY FINE SAND, BROWN, WET, HARD.		ML	
65									
70	70.0 71.5	S-15	13	19-19-21	40	SAND, VERY FINE, LESS THAN 5% FINES, BROWN, WET, DENSE.		SP	
	71.5	S-16	0	30-43-60/3"	103/9"	NO RECOVERY; probably basalt			END DRILLING @ 2:30 P.M.
						END BORING @ 71.5 ft			

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT WACKER SILTRONIC LOCATION PORTLAND, OR

DRILLING METHOD REVERT ROTARY; DRAG BIT DRILLERS & EQUIPMENT D. KENNER OF OR; CME-75

ELEVATION 35.9 FEET BORE HOLE: B-108

WATER LEVEL 18.8 ft DATE: 7/23/82 START: 6/30/82 FINISH: 7/1/82 INSPECTOR DLKI

DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	STANDARD PENETRATION TEST RESULTS BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
0									BEGIN DRILLING @ 3:20 P.M.
5	5.0								
	6.5	S-1 A B	12	1-4-12	16	TOP: SILT, NONPLASTIC, LESS THAN 5% VERY FINE SAND, GRAY AND ORANGE MOTTLED, DRY, VERY STIFF. BOTTOM: SAND, MEDIUM TO FINE, LESS THAN 5% FINES, ORANGE, DRY, COMPACT; FILL?		ML SP	
10	10.0								
	11.5	S-2	12	3-8-9	17	SAND, MEDIUM TO FINE, LESS THAN 5% FINES, OCCASSIONAL GRAVEL TO 1 INCH MAX, BLACK, MOIST, COMPACT; FILL?		SP	
15	15.0								
	16.5	S-3	7	3-4-4	8	SAND, SAME AS S-2, EXCEPT WET, AND RELATIVE DENSITY IS LOOSE; FILL?		SP	
20	20.0								DRILLER NOTES CHANGE @ 18 FEET, WOOD CHUNKS.
	21.5	S-4	16	3-4-5	9	SILT, NONPLASTIC, ORANGE AND GRAY MOTTLING, MOIST, STIFF, OCCASSIONAL ROOTS.		ML	
25	25.0								
	27.0	ST-5	24	- - -	-	SILT, SAME AS S-6.		ML	
	28.5	S-6	18	2-2-3	5	SILT, SLIGHTLY PLASTIC, BROWN AND GRAY MOTTLING, MOIST, FIRM.		ML	END DRILLING @ 4:20 P.M.
30									

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT WACKER SILTRONIC LOCATION PORTLAND, OR

DRILLING METHOD REVERT ROTARY; DRAG BIT DRILLERS & EQUIPMENT D. KENNER OF OR; CME-75

ELEVATION 35.9 FEET BORE HOLE: B-108

WATER LEVEL 18.8 ft DATE: 7/23/82 START: 6/30/82 FINISH: 7/1/82 INSPECTOR DLKI

DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
30	30.0–32.0	ST-7	24	- - -	—	SILT, SAME AS S-8.		ML	BEGAN DRILLING @ 7:45 A.M.
	33.5	S-8	18	1-2-2	4	SILT, NONPLASTIC, 5-12% VERY FINE SAND, BROWN, MOIST, SOFT.		ML	
35	35.0–36.5	S-9	18	3-3-2	5	SILT, NON PLASTIC, LESS THAN 5% VERY FINE SAND, BROWN, WET, FIRM.		ML	
40	40.0–41.5	S-10	18	2-5-8	14	SILT, SAME AS S-9.		ML	
45	45.0–46.5	S-11	18	6-7-10	17	SANDY SILT, NONPLASTIC, 15-20% VERY FINE SAND, BROWN, WET, COMPACT.		ML	
50	50.0–51.5	S-12	14	7-15-14	29	SAND, MEDIUM TO FINE, LESS THAN 5% FINES, BROWN, WET, COMPACT.		SP	
55	55.0–56.5	S-13	14	6-8-16	24	SILTY SAND, FINE SAND, 10-15% FINES, BROWN, WET, COMPACT.		SM	
60									

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT WACKER SILTRONIC LOCATION PORTLAND, OR

DRILLING METHOD REVERT ROTARY; DRAG BIT DRILLERS & EQUIPMENT D. KENNER OF OR; CME-75

ELEVATION 35.9 FEET BORE HOLE: B-108

WATER LEVEL 18.8 ft DATE: 7/23/82 START: 6/30/82 FINISH: 7/1/82 INSPECTOR DLKI

DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
60	60.0 61.5	S-14	14	12-24-25	49	SAND, MEDIUM TO FINE, LESS THAN 5 % FINES, BLACK, WET, DENSE,		SP	
65									
	68.0								
	69.5	S-15	12	16-14-24	38	BASALT, SLIGHTLY WEATHERED, FRACTURED, HARD, BAACIC			END DRILLING @ 9:30 A.M.
70	69.5	S-16	0	60/1"	60/1"	NO RECOVERY			
						END BORING @ 69.5 ft			

NOTE: PIEZOMETER INSTALLED WITH A 1.9-FOOT, 1½-inch DIAMETER SLOTTED TIP FROM 65.6 TO 67.5 FT; GRAVEL PACK, CONSISTING OF 3/8-INCH PEA GRAVEL FROM 70 FEET TO 64 FEET; FOLLOWED BY A 2-FOOT BENTONITE SEAL FROM 64 TO 62 FEET; ¾-INCH RISER PIPE INSTALLED FROM SLOTTED TIP TO ABOUT 1.5 FEET ABOVE THE GROUND SURFACE; BORING WAS THEN BACKFILLED FROM 62 FEET TO SURFACE WITH CUTTINGS AND PEA GRAVEL.

SCOEPA00036912

B

APPENDIX B

LABORATORY TEST RESULTS

SCOEPA00036914

CH2M HILL

PROJECT NUMBER P16058.B0

SOILS CLASSIFICATION AND TEST SUMMARY

ASTM D2487

PROJECT DESCRIPTION: WACKER SILTRONIC

MATERIALS LABORATORY: CH2M HILL - PDX TYPE OF SAMPLE:

SAMPLE LOCATION: AS NOTED SAMPLE NO:

SAMPLE LOCATION	SAMPLE NUMBER	DEPTH INTERVAL (FEET)	DESCRIPTION OF MATERIAL	ASTM CLASSIFICATION	MOISTURE P.L. (%)	MOISTURE ω (%)	MOISTURE L.L. (%)	GRADATION, % PASSING 3"	1½"	# 4	#200	LABORATORY TESTS	
B-100	ST-6	28-30	GRAY PLASTIC SILT	MH	33	49	62					CONSOLIDATION	
B-100	S-11	45-46.5	GRAY PLASTIC SILT	ML	25	28	35						
B-101	ST-7	33-35	GRAY PLASTIC SILT	ML	28	35	40						
B-102	ST-7	33-35	DARK GRAY ORGANIC SILT	MH-OH	58	98	125						
B-104	ST-12	50-52	BROWN SILT	ML	NP	34	NP					CONSOLIDATION	
B-105	S-8	40-41.5	GRAY PLASTIC SILT	ML	29	36	41						
B-107	S-6	30-32	BROWN SILT	ML	NP	68	NP					CONSOLIDATION	

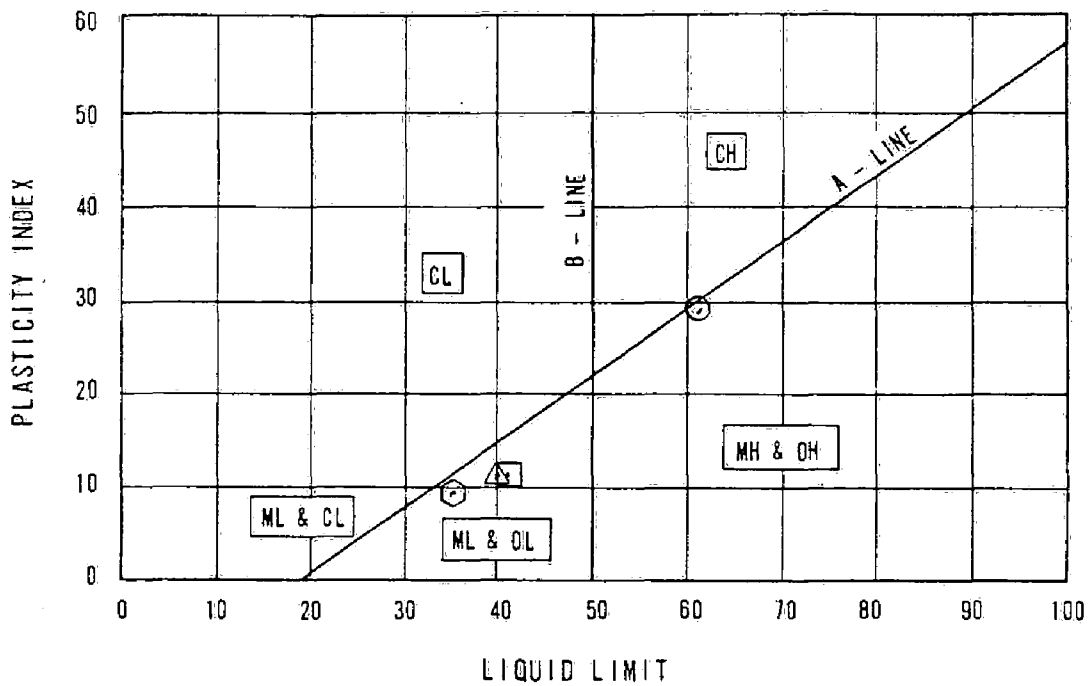
REMARKS: NP = NONPLASTIC

TESTED BY:	DATE:	COMPUTED BY:	DATE:	CHECKED BY:	DATE:

LAB FORM D2487P 2/78

SCOEPA00036915

PLASTICITY CHART

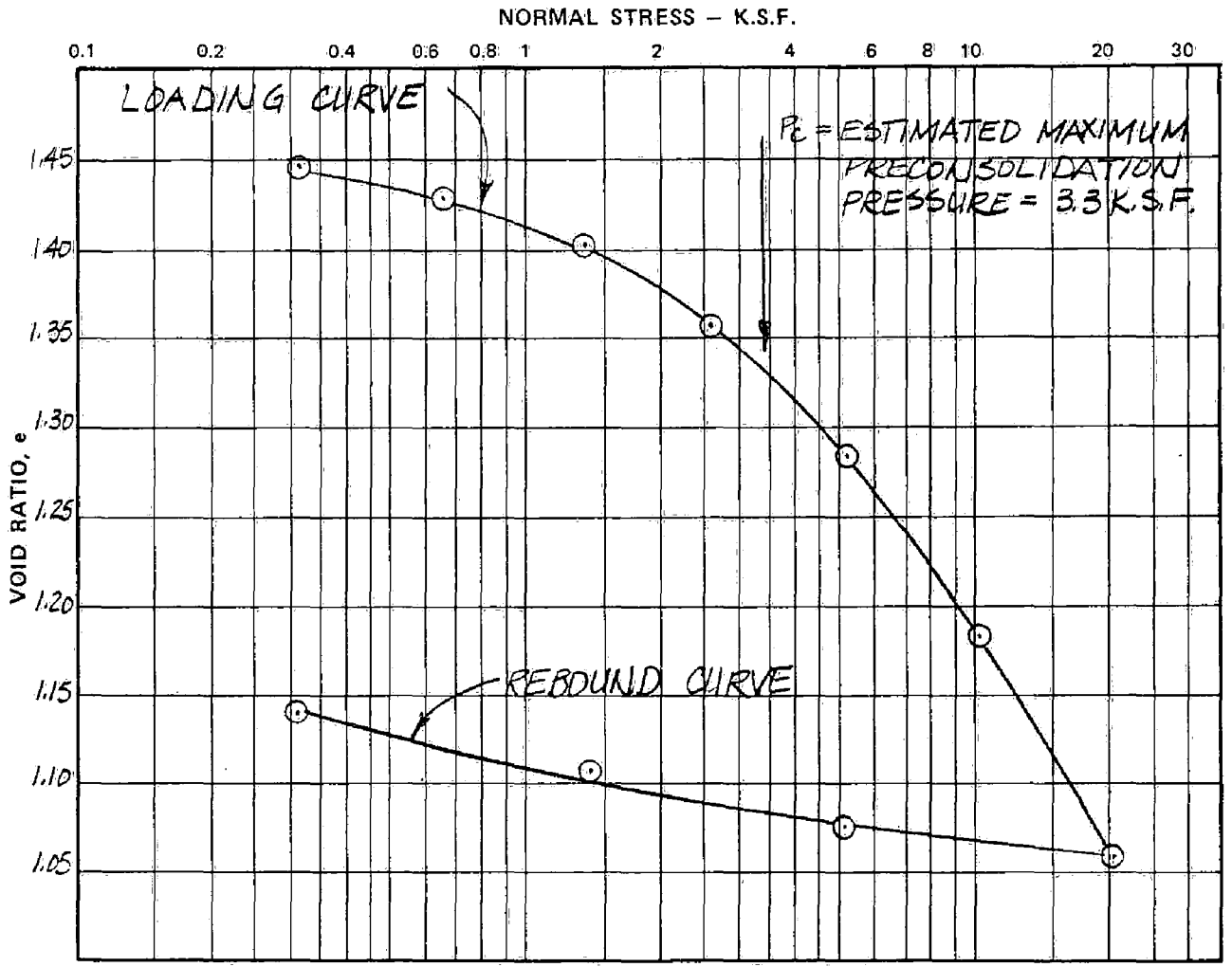


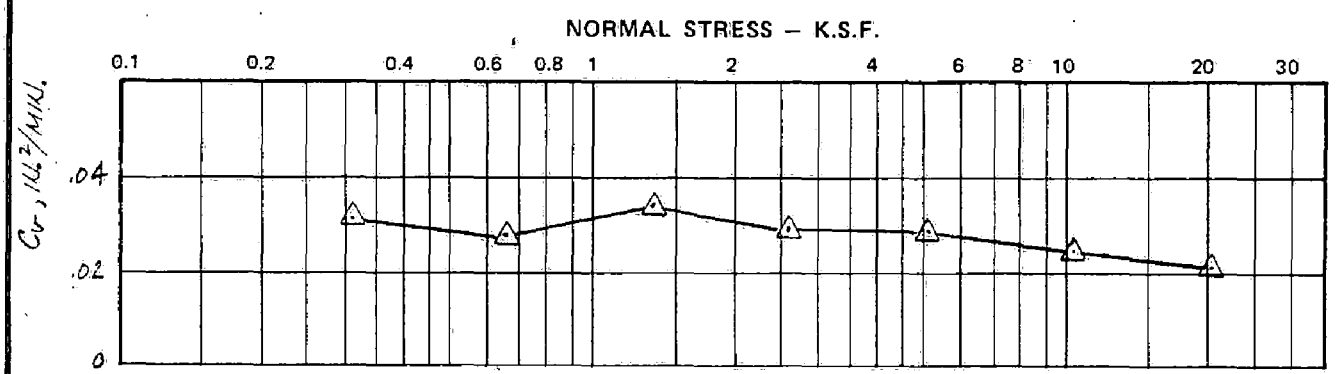
SYMBOL	SAMPLE	LIQUID LIMIT	PLASTICITY INDEX	NATURAL MOISTURE
⊙	B-100 ST-6	62	29	49
⬡	B-100 S-11	35	10	28
△	B-101 ST-7	40	12	35
⊡	B-105 S-8	41	12	36

PLASTICITY CHART
WACKER SILTRONICS
CORPORATION

P16058.B0

CH2M HILL





PLOT OF PRIMARY CONSOLIDATION

SAMPLE DATA:
GRAY SILT (MH)
DEPTH 28.0-30.0 FT.
INITIAL DIAMETER = 2.50 IN.
INITIAL HEIGHT = 1.00 IN.
INITIAL VOID RATIO = 1.46
NATURAL MOISTURE CONTENT = 55%
DRY DENSITY = 67.4 P.C.F.

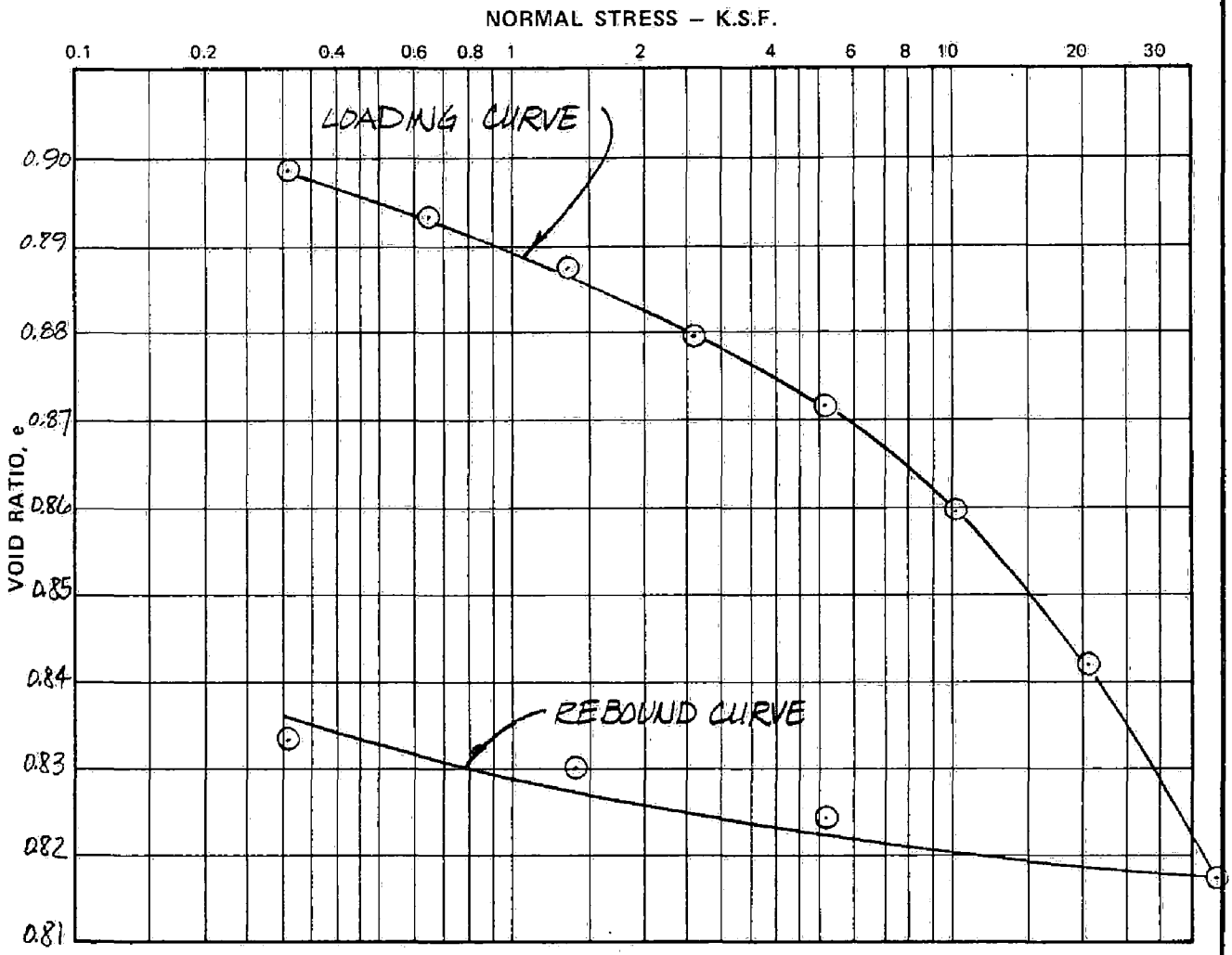
B-100 ST-6
CONSOLIDATION TEST
WACKER SILTRONICS CORPORATION

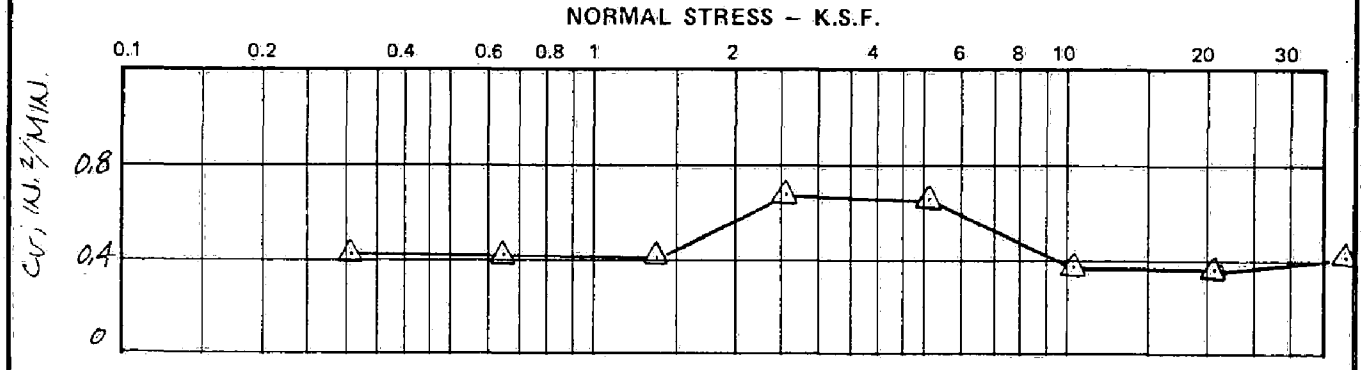
CH2M HILL

P16058.B0

FORM 70

SCOEPA00036917





PLOT OF PRIMARY CONSOLIDATION

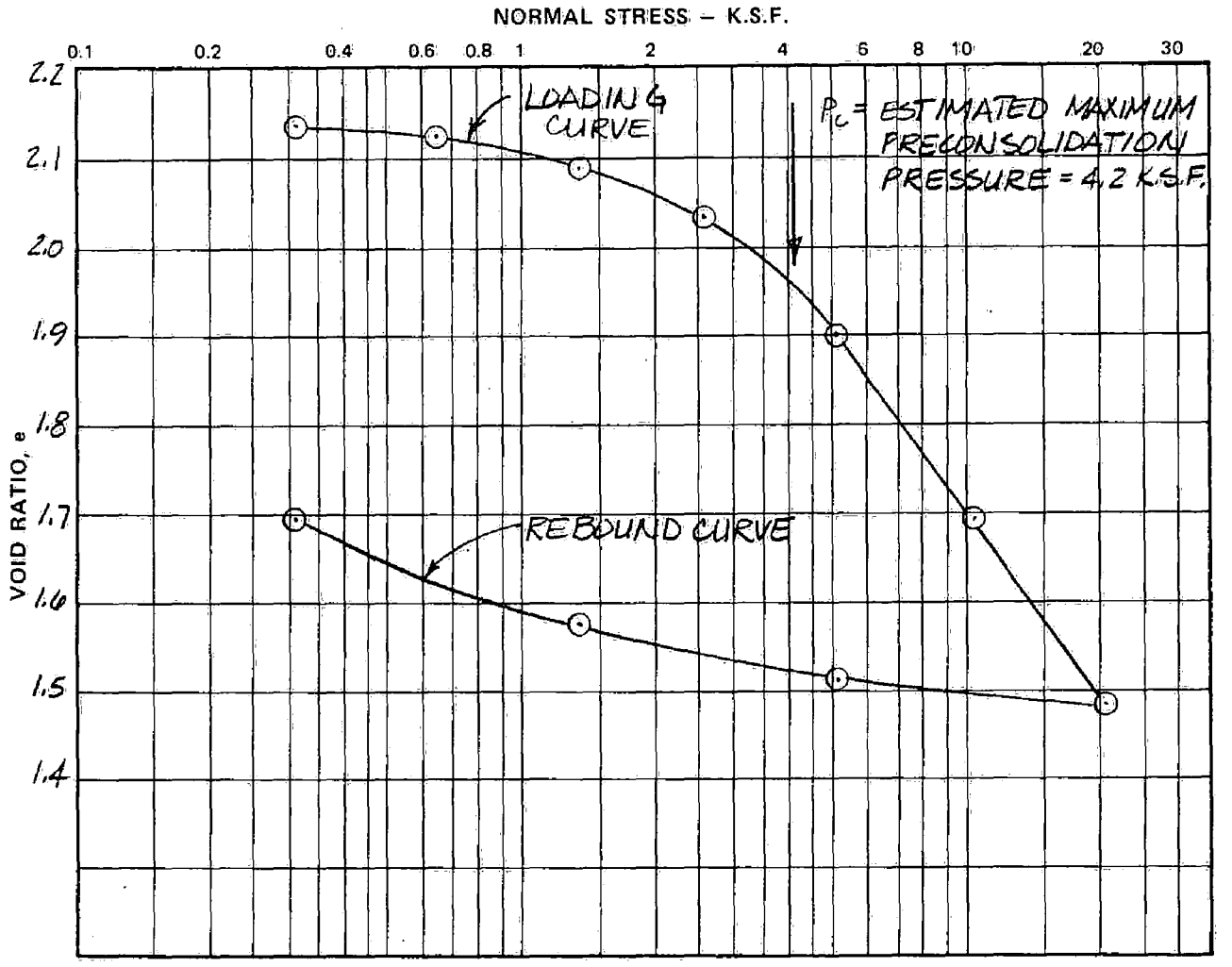
SAMPLE DATA:
MEDIUM BROWN SILT (ML)
DEPTH 50.0 -52.0 FT.
INITIAL DIAMETER = 2.50 IN.
INITIAL HEIGHT = 1.00 IN.
INITIAL VOID RATIO = 0.90
NATURAL MOISTURE CONTENT = 35%
DRY DENSITY = 87.1 P.C.F.

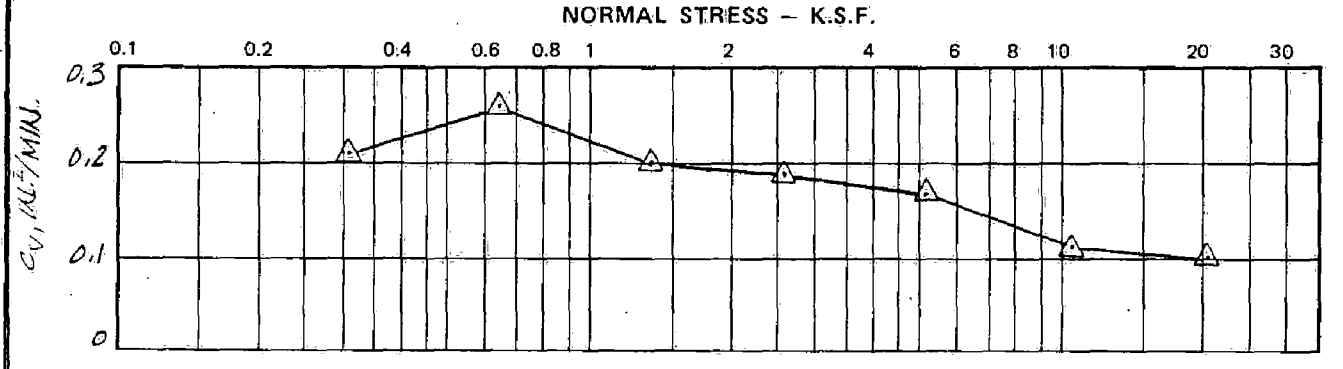
B-104 ST-12
CONSOLIDATION TEST
WACKER SILTRONICS CORPORATION

CH2M HILL

P16058.80

FORM 70





PLOT OF PRIMARY CONSOLIDATION

SAMPLE DATA:
MEDIUM BROWN SILT (ML)
DEPTH 30.0 - 32.0 FT.
INITIAL DIAMETER = 2.50 IN.
INITIAL HEIGHT = 1.0 IN.
INITIAL VOID RATIO = 2.16
NATURAL MOISTURE CONTENT = 75%
DRY DENSITY = 47.0 P.C.F.

B-107 ST-6
CONSOLIDATION TEST
WACKER SILTRONICS CORPORATION

CH2M HILL

P16058.80

FORM 70

SCOEPA00036919

A REPORT ON THE INVESTIGATION OF AMBIENT VOLATILE ORGANIC LEVELS

WACKER SILTRONIC CORPORATION
PORTLAND, OREGON

CH2M HILL

Engineers
Planners
Economists
Scientists

A REPORT ON THE INVESTIGATION OF AMBIENT VOLATILE ORGANIC LEVELS

WACKER SILTRONIC CORPORATION
PORTLAND, OREGON

Prepared by

CH2M HILL NORTHWEST, INC.
2020 S.W. FOURTH AVENUE
PORTLAND, OREGON 97201

JUNE 1985
P19786.A0.00

SCOEPA00036921

INTRODUCTION

Wacker Siltronic Corporation contracted CH2M HILL to conduct an air quality investigation at the Portland plantsite. The purpose of the investigation was to survey the level of volatile organic compounds in the ambient air at the site with respect to air quality standards.

The hydrocarbon measurements were performed on June 4, 1985, between 9:20 a.m. and 2:45 p.m. by Mr. Mark Boedigheimer, supervisor of laboratory field services from CH2M HILL's Corvallis, Oregon, office, and Mr. Jack Payne, project manager from CH2M HILL's Portland, Oregon, office.

Mr. James Ellis, polysilicon project manager of Wacker Siltronic Corporation, witnessed the plant survey.

The results of the survey, along with a brief description of the sampling procedures and quality assurance, are presented in this report.

SAMPLING PROCEDURE

Two types of analyzers were used to measure the organic concentration of air in this survey. These analyzers are:

- Organic Vapor Analyzer (OVA), manufactured by Century Systems, model OVA-128
- Portable Photo-Ionizer (HNU), manufactured by HNU Systems, model PI-101

SCOEPA00036922

These analyzers were used simultaneously to cross-reference the results from one another and to observe methane and non-methane organic content of the air. Measurements were made within the breathing zone at each sampling location.

A brief theory of operation for these analyzers is included here to provide an understanding of the application and the results of the measurements that were made.

THEORY OF OPERATION

OVA uses the principal of flame ionization detection (FID) as a means to measure organic compounds. The FID system consists of a diffusion flame supported by hydrogen and air that is free of ions and, therefore, non-conducting. When organic compounds are introduced via the sample air into the flame, ions are formed causing an increase in flame conductivity. The flame conductivity is related to a number of factors, but principally to the number of positively charged carbon atoms generated in the detector combustion process and the efficiency of combustion. The change in flame conductivity is measured by an electrometer, amplified and applied to the readout meter of the OVA.

When in use the analyzer is calibrated with methane (CH_4), thus the readings are reported in terms of methane equivalents. The OVA has a working range of 0 to 1,000 ppm with a sensitivity of 0.1 ppm between 0 and 10 ppm. In general, the OVA response for hydrocarbons other than methane, is between 50 and 250 percent of the response for methane. The analyzer has negligible or no response to permanent gases such as carbon monoxide and carbon dioxide, as well as any molecule which, because of its structure, does not produce ions in the detector flame.

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In application the OVA can be operated in two modes, referred to as the survey mode and the GC mode. In the survey mode the OVA acts as a total hydrocarbon analyzer by introducing the sample air directly to the detector. In the GC mode the analyzer functions as a rudimentary gas chromatograph (GC) where organic compounds can be separately detected. In practice the GC mode is commonly used to identify the methane from the non-methane organic fractions of the sample air. This technique is accomplished by introducing the sample air onto a GC column, allowing the methane fraction to pass through the column into the detector; then, by virtue of a backflush assembly, the non-methane organics are backflushed off the column onto the detector.

HNU is a portable, non-specific vapor/gas detector using the principal of photo-ionization to detect a wide variety of organic and some inorganic gases. The HNU detector consists of an ultraviolet light source and a pair of electrodes within its detector chamber. As sample air is drawn through the detector, compounds absorb photons and are ionized producing a change in the electrical field (current) within the detector. The resulting change in current is amplified and displayed on the HNU read-out meter.

The analyzer is calibrated with benzene (C_6H_6), therefore, the readings are reported in terms of benzene equivalents. The linear working range is up to 600 ppm with a sensitivity of 0.1 ppm between 0 and 20 ppm. Each compound has an individual response factor that varies between approximately 80 to 120 percent for most volatile hydrocarbons as compared to benzene.

The HNU analyzer used in this survey contained an ultraviolet lamp with an ionization energy of 10.2 electron volts (eV). Therefore, the analyzer would detect those compounds

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with ionization potentials less than 10.2 eV. These compounds include volatile hydrocarbons such as alkenes, ketones, olefins, aromatics, etc., but exclude light molecular weight alkanes (i.e., methane, ethane) and simple molecules such as carbon dioxide, carbon monoxide, nitrogen, and oxygen. Hence the HNU analyzer readings are generally interpreted as a measure of the non-methane organic content of the sample air.

When used simultaneously, the OVA and HNU analyzers provide a comprehensive survey of methane and non-methane organic content of the air. Use of two meters also provides some redundant analyses, with one meter serving as a cross-reference for the other meter.

METEOROLOGICAL CONDITIONS DURING SAMPLING

During the field investigation the weather at Wacker was dry and cloudy with patches of blue sky increasing through late morning-early afternoon. There was a light breeze coming upriver, from the west.

The local weather conditions (i.e., ambient temperature, light winds, and change in barometric pressure) were as ideal as one could want for conducting the field measurements and obtaining representative volatile organic levels at Wacker's property.

The U.S. Weather Bureau at the Portland International Airport reported the following weather conditions from 8:00 a.m. through 5:00 p.m. on June 4, 1985.

- Precipitation: 0 inches
- High/Low temperature: 71°F/57°F
- Cloud cover: overcast
- Wind speed: 0-7 mph

SCOEPA00036925

- Direction: north
- Barometric pressure:
  - Hour ending 8:00 a.m.: 30.08 inches Hg
  - Hour ending 5:00 p.m.: 29.97 inches Hg

QUALITY ASSURANCE

During the survey both the OVA and HNU were calibrated with zero air and span gases. The OVA calibration was performed by zeroing with zero grade air and spanning with a 92 ppm methane (CH_4) span gas standard. The HNU calibration was performed by zeroing with zero grade air and spanning with a 61 ppm benzene span gas standard.

Calibration was performed at the start of the survey, checked midway through the survey, and rechecked again at the end of the survey. The calibrations are included as part of the field data documentation, which is included in the appendix.

RESULTS

The general location of each sampling point is shown in Figure 1. The results of the survey are summarized in Tables 1 and 2.

All of the sampling locations surveyed outside of Wacker's buildings had readings on both the OVA and HNU of 0.4 ppm or less. The sample locations inside the buildings were, for the most part, less than 1 ppm for OVA (total hydrocarbons) and less than 0.7 ppm for HNU (nonmethane hydrocarbons). Samples measured above these levels are believed to be directly related to the interior finishing of the newly constructed addition to the process building.

The Oregon Department of Environmental Quality (DEQ) has one ambient air quality monitoring station that measures total

SCOEPA00036926

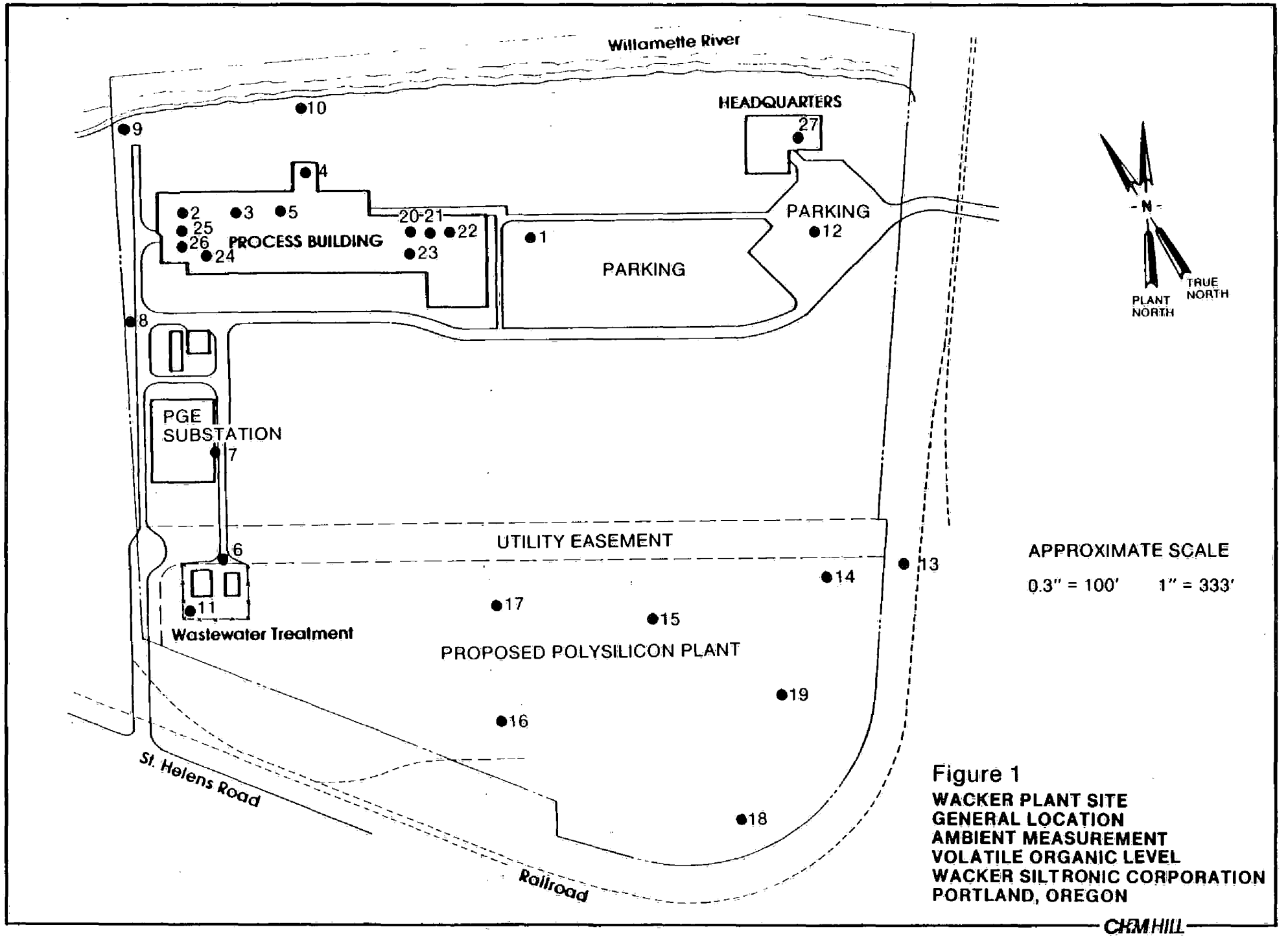

Figure 1
WACKER PLANT SITE
GENERAL LOCATION
AMBIENT MEASUREMENT
VOLATILE ORGANIC LEVEL
WACKER SILTRONIC CORPORATION
PORTLAND, OREGON

Table 1
SUMMARY OF MEASUREMENTS
OUTSIDE OF THE BUILDINGS

Location	Measurement (ppm) OVA[1]	Measurement (ppm) HNU[2]
1. Visitor Parking Process Building	0.4	0.4
Process Building Roof		
2. Penthouse No. 1 air intake	0.4	0.4
3. Penthouse No. 2 air intake	0.4	0.4
4. Roof edge above polishing expansion	0.4	0.4
5. Penthouse No. 4 air intake	0.4	0.4
Inside Fence		
6. Wastewater treatment parking area	0.4	0.4
7. PGE substation	0.4	0.4
8. Fence line north of substation	0.4	0.4
9. NW corner Wacker property	0.4	0.4
10. River edge across from polishing	0.4	0.4
11. SW corner Wacker property	0.4	0.4
12. Visitor Parking Headquarter Building	0.4	0.4
South Side of Easement		
13. Power pole adjacent raised railroad tracks	0.4	0.4
14. Near MW-3[3]	0.4	0.4
15. Near MW-2[3]	0.4 <0.1 (Non-methane)	--
16. Near MW-4[3]	0.4 <0.1 (Non-methane)	--
17. Near MW-1[3]	0.4 <0.1 (Non-methane)	--
18. Near MW-7[3]	0.4 <0.1 (Non-methane)	--
19. Near MW-6[3]	0.4 <0.1 (Non-methane)	--

[1] Total hydrocarbon in terms of methane equivalents.

[2] Total non-methane hydrocarbons in terms of benzene equivalents.

[3] HNU battery weak, discontinued its use. Used the OVA in the GC mode to measure non-methane organic fraction of the sample air (explanation of GC mode provided in Sampling Procedures).

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Table 2
SUMMARY OF MEASUREMENTS
INSIDE OF THE BUILDINGS

Location	Measurement (ppm) OVA[1]	HNU[2]
Process Building		
20. Lobby/Security Station[3]	4.5	1.7
21. Lobby/Security Station[3]	4.6	2.0
22. Ground Level Expansion (behind lobby/security station)[3]	5.3	2.3
23. Main Corridor (across from lobby/ security station)[3]	0.4	0.4
24. Far End of Main Corridor (next to stairway to basement)[3]	2.1	1.7
25. Basement (center area)	0.9	0.6
26. Basement (next to stairway to ground level)	0.5	0.4
Headquarter Building		
27. Lobby/Visitors Waiting Area[4]	0.6	0.6

[1] Total hydrocarbon in terms of methane equivalents.

[2] Total non-methane hydrocarbons in terms of benzene equivalents.

[3] Measurements non-representative of normal plant building air because of interior finishing of the main floor expansion. Within the previous 7 days the walls had been painted and carpets installed. In addition, the kickboard had been glued in place less than 2 hours before performing the survey.

[4] Visitor lobby area carpeted.

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hydrocarbon levels within the Portland Metropolitan area. A summary of the total hydrocarbon levels measured at these stations is presented in Table 3.

Table 3
TOTAL HYDROCARBON SUMMARY[a]
($\mu g/m^3$)[b]

Station Location	Year	Annual Arithmetic Means	Maximum 1-Hour Average
Portland (S.E. LaFayette)	1982	1,277	4,716
	1983	1,349	5,469

[a]Source: DEQ 1983 Air Quality Annual Report.
[b]Micrograms per cubic meter.

The total hydrocarbon concentration ranges presented in Table 3 in terms of methane (CH_4) equivalents are 0.7 to 0.9 ppm for the annual arithmetic means and 1.9 to 3.9 ppm for the maximum 1-hour average.

The outside ambient measurements throughout the Wacker site were all below the maximum 1-hour average and annual arithmetic mean levels measured by DEQ at its Portland monitoring station. Excluding the measurements that were apparently a reflection of interior construction activities, the measurements inside Wacker's buildings did not exceed DEQ annual average or maximum 1-hour average levels.

The federal government no longer has either a Primary (health) or Secondary (welfare) ambient air quality standard for hydrocarbons. The State of Oregon has a standard for hydrocarbons (nonmethane) of 160 $\mu g/m^3$ (3-hour averaging time). All six samples that specifically measured non-methane hydrocar-

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bons were less than 0.1 ppm, which is approximately equivalent to less than 150 $\mu g/m^3$ (methane equivalent). These measured levels were in compliance with Oregon's ambient air quality standard for nonmethane hydrocarbons.

SCOEPA00036931

CH2M HILL DAILY SITE INVESTIGATION DIARY

PROJECT NO. P 19786 AO

DAY TUESDAY DATE: 060485 WORK PERIOD 9:20 A.M. P.M. TO 2:45 A.M. P.M. PAGE NO. 1

WEATHER _____ TEMP. MAX ____ °F: MIN ____ °F: PRECIPITATION NONE

ONSITE PERSONNEL

JACK PAYNE - CH2M

MARK BOEDIGHEIMER - CH2M

JIM ELLIS - WACKER SILTRONIC

PROJECT: PERFORM AIR QUALITY INVESTIGATION OF AMBIENT ORGANIC VAPOR MEASUREMENTS

TIME	RECORD OF ONSITE ACTIVITIES
9:21am	Mark & Jack arrived at Wacker, signed in and met with Jim Ellis & John Pittman (Wacker) to review proposed sampling program
9:50am	Mark calibrated OVA and HNU sampling equipment. (Wacker Visitor Parking-Headquarters Local weather - heavy overcast, no precipitation, very light breeze. Flags at Wacker were limp. Breeze ~~winds~~ appear to be out of the West coming up and off river. No visible emission plumes or desernable odors were detected from either Wacker's process facilities and/or adjacent active industrial process properties (ie Pennwalt, NWNG, Koppers, Rhone Pol., M&B.
9:59am	First Field Measurement - Visitor parking plant process building. No auto movement, light variable breeze no desernable odors. 0.4 ppm HNU 0.4 ppm OVA

FIELD EQUIPMENT	HOURS OF USE	DATE OF CALIBRATION

SIGNATURE [signature] DATE 6/4/85

FORM 341

SCOEPA00036932

CH2M HILL DAILY SITE INVESTIGATION DIARY

PROJECT NO. P19786 AO

DAY: _____ DATE: _____ WORK PERIOD _____ A.M. P.M. TO _____ A.M. P.M. PAGE NO. 2

WEATHER _____ TEMP. MAX _____ °F: MIN _____ °F: PRECIPITATION _____

ONSITE PERSONNEL

Continuation From Page 1

TIME	RECORD OF ONSITE ACTIVITIES
10:00am	Span Check OVA 4.1 HNU 8.5 Done outside, covered entrance to plant process building
10:02 am	Main Lobby Plant Process Bldg (Where security HQ located. H.S ppm OVA 1.7 ppm HNU (No initial explanation for readings will sample again prior completion of sampling program)
10:04am	Main Corridor after passing through inside lobby doors 2.1 ppm OVA 1.7 ppm HNU
10:05 am	Far end of Corridor prior to going through doors to basement 0.9 ppm OVA 0.6 ppm HNU
10:06 am	Basement (approximately center of area) 0.5 ppm OVA 0.4 HNU (ppm)
10:07am	Basement close to exit up stairs 0.5 ppm OVA , 0.4 ppm HNU

~~FIELD EQUIPMENT~~	~~HOURS OF USE~~	~~DATE OF~~ CALIBRATION
10:08 am Outside Top Process Building Roof Penthouse #1 Louvered air intake 0.4 ppm OVA 0.4 ppm HNU		
10:17am Penthouse #2 Louvered air intake center 0.4 ppm OVA 0.4 ppm HNU		

Jackie Payne 6/4/85

SIGNATURE DATE

FORM 341

SCOEPA00036933

CH2M HILL DAILY SITE INVESTIGATION DIARY

PROJECT NO. P 19786 AO

DAY: _____ DATE: _____ WORK PERIOD _____ A.M. P.M. TO _____ A.M. P.M. PAGE NO. 3

WEATHER _____ TEMP. MAX _____ °F: MIN _____ °F: PRECIPITATION _____

ONSITE PERSONNEL

Continuation From Page 2

TIME	RECORD OF ONSITE ACTIVITIES
10:30am	Corner Roof Top, Directly Above Polish Expansion 0.4ppm HNU, 0.4ppm OVA
10:45am	Roof Top Penthouse #4 0.4 ppm HNU, 0.4ppm OVA Slight Breeze Upriver
10:50am	Inside Second Floor New Unoccupied Engineers Office. Inside area unfinished, still interior construction 0.8 ppm OVA, 0.7 ppm HNU
11:05am	Wackers Fence Adjacent NWNG Property at intersection road from process building to St Helens Rd. Very Slight Breeze moving upriver 0.4 ppm OVA 0.4ppm HNU
11:10am	Corner Wacker Property / NWNG / River 0.4ppm OVA, 0.4 ppm HNU
11:12am	Wacker Property, River Edge across from poly polishing. 0.4ppm OVA 0.4ppm HNU
11:18am	Gravel Parking Area in Front Wackers Wastewater Treatment Plant By Strip Chart Circular Recorder FH 39-49 (flow Indicator transmitter 0.4ppm OVA 0.4ppm HNU

~~FIELD EQUIPMENT~~	~~HOURS OF USE~~	~~DATE OF CALIBRATION~~

SIGNATURE _____ DATE 6/4/85

FORM 341

SCOEPA00036934

CH2M HILL DAILY SITE INVESTIGATION DIARY

PROJECT NO. P19786AO

DAY: _____ DATE: _____ WORK PERIOD _____ A.M. P.M. TO _____ A.M. P.M. PAGE NO. 4

WEATHER _____ TEMP. MAX _____ °F: MIN _____ °F: PRECIPITATION _____

ONSITE PERSONNEL

Continuation From Page 3

TIME	RECORD OF ONSITE ACTIVITIES
11:20am	Corner Wacker Fence in wastewater treatment area across from Koppers, Slight Breeze 0.4 ppm OVA 0.4 HNU
11:22am	Next to PGE substation 0.4 ppm OVA 0.4 ppm HNU
11:26am	Lobby process building where security located (previously took a reading at 10:02 am 2.0 ppm HNU, 4.6 ppm OVA
11:28	Main Floor - expanded building adjacent to lobby. No door open between both areas 5.3 OVA (ppm) 2.3 ppm HNU
	CH2M Construction Manager (Greg Young) and Hoffman's construction manager happened to be in the area. They said the main floor building had carpets installed less than a week ago. Walls

FIELD EQUIPMENT	HOURS OF USE	DATE OF CALIBRATION
had been painted about a week ago. And the kick boards (bottom walls to floors) recently glued this morning. Apparent (only) explanation why lobby area had levels significantly different than rest of building and outside areas		

SIGNATURE _____ DATE 6/4/95

FORM 341

SCOEPA00036935

CH2MHILL DAILY SITE INVESTIGATION DIARY

PROJECT NO. P19786 A0

DAY: _____ DATE: _____ WORK PERIOD _____ A.M. P.M. TO _____ A.M. P.M. PAGE NO. 5

WEATHER _____ TEMP. MAX _____ °F: MIN _____ °F: PRECIPITATION _____

ONSITE PERSONNEL

Continuation From Page 4

TIME	RECORD OF ONSITE ACTIVITIES
11:35am	Administration (Headquarter) Building Lobby Visitor Waiting Area. Reading taken over carpet 0.6ppm OVA, 0.6ppm HNU
	Shut Down Sample Measurements For Lunch. Hooked up Battery Chargers for Portable Units.
12:50pm	Returned From Lunch
1:15pm	Headquarters Parking Lot (Visitors). Sunny Skies 50% Cloud Cover Little Breeze Some Flag Movement
	Recharged OVA with H_2
	Calibrated Both instruments
	HNU - 61ppm - Span 8.5
	OVA 92ppm Span 4.1
	Measurement Parking Lot Air - No Vehicular Traffic

~~FIELD EQUIPMENT~~	~~HOURS OF USE~~	~~DATE OF CALIBRATION~~
OVA 0.4ppm HNU 0.4ppm		

1:19. South Side of Easement
Olympia Pipeline Co. Adjacent To Power Pole To Vents
River Side 0.9 ppm OVA 0.4ppm HNU
St. Helens Road Side 0.6ppm OVA 0.4ppm HNU

SIGNATURE [signature] DATE 6/4/85

FORM 341

SCOEPA00036936

CH2M HILL DAILY SITE INVESTIGATION DIARY

PROJECT NO. P 19786-A0

DAY: _____ DATE: __/__/__ WORK PERIOD ____ A.M. P.M. TO ____ A.M. P.M. PAGE NO. 6

WEATHER _____ TEMP. MAX ____ °F: MIN ____ °F: PRECIPITATION _____

ONSITE PERSONNEL

Continuation From Page 5

TIME	RECORD OF ONSITE ACTIVITIES
1:20pm	Adjacent To Power Pole, Close to RR enbankment NWNG Vent 0.4ppm HNU, 0.4ppm OVA
1:30pm	Adjacent To MW-3 (Well capped) 0.4 ppm OVA 0.4 ppm HNU
1:40pm	Adjacent To MW-2 (Well capped) 0.4ppm OVA HNU battery dead. Use OVA for both methane & other organic vapors (total) and non methane. Non methane <0.1ppm
1:50pm	Adjacent To MW-4. (Well capped) 0.4ppm OVA (Includes methane) <0.1ppm Non methane
2:00pm	Adjacent To MW-1 (Well capped) 0.4ppm OVA (Includes methane) <0.1 ppm Non methane

~~FIELD EQUIPMENT~~	~~HOURS OF USE~~	~~DATE OF CALIBRATION~~
2:10pm Adjacent To MW-5 (Well capped) 0.4ppm OVA (Includes methane) <0.1 ppm Non methane		
2:20pm Adjacent To MW-6 (Well capped) 0.4ppm OVA (Includes methane <0.1ppm Non methane		

SIGNATURE [signature] DATE 6/4/85

FORM 341

SCOEPA00036937

CH2M HILL DAILY SITE INVESTIGATION DIARY

PROJECT NO. P19786 AO

DAY: _____ DATE: | | | | | | WORK PERIOD ____ A.M. P.M. TO ____ A.M. P.M. PAGE NO. 7

WEATHER _____ TEMP: MAX ____ °F: MIN ____ °F: PRECIPITATION _____

ONSITE PERSONNEL

Continuation From Page 6

TIME	RECORD OF ONSITE ACTIVITIES
	Sample measurements discontinued 2:30pm.
	Note
	The previous 6 pages of recorded field measurements are at descrete points. In addition to these points, The operator of the equipment (Mark Boed) had the equipment operating while walking from point to point throughout the sampling program. Throughout the program he periodically checked both the OVA and HNU (when working) and never noticed any readings outside of the building or in any pipes greater than 50.0 ppm for OVA or HNU
	COMPLETION FIELD NOTES

FIELD EQUIPMENT	HOURS OF USE	DATE OF CALIBRATION

SIGNATURE [signature] DATE 6/4/95

FORM 341

SCOEPA00036938

WACKER SILTRONIC CORPORATION

Site Assessment
Groundwater-Chemical Analyses

August, 1985

SCOEPA00036939

CH2M HILL

TRANSMITTAL

From: Jack Payne
2020 SW 4th Ave 2d Floor
Portland Oregon 97201

To: Wacker Siltronic Corporation
P.O. Box 03180
Portland Oregon 97203

Date: 19 Sept 85

Our Project No: P197786A1.00

Attn: Jim Ellis

IF MATERIAL RECEIVED IS NOT AS LISTED, PLEASE NOTIFY US AT ONCE

Re: Groundwater Sample Results

WE ARE SENDING YOU

☒ ATTACHED ☐ UNDER SEPARATE COVER VIA

☐ SHOP DRAWINGS ☐ TRACINGS

☐ PRINTS ☐ CATALOGS

☐ DOCUMENTS ☐ COPY OF LETTER

☐ SPECIFICATIONS ☒ Laboratory Results from Laucks Testing Lab. Inc. Dated 9/16/85

COPIES	DATE	ITEM

REMARKS Jim! Here are the results (this is the original). Laucks sent us a copy which I will keep. Please advise if/when need our further assistance

Jack

RECEIVED
SEP 20 1985
WACKER SILTRONIC ENGINEERING

COPY TO File

FORM 6
REV 6/81

SCOEPA00036940

Laucks
Testing Laboratories, Inc.
940 South Harney St., Seattle, Washington 98108 (206) 767-5060

Certificate

Chemistry, Microbiology, and Technical Services

CLIENT: CH2M Hill
2020 S.W. 4th Ave. 2nd Floor
Portland, OR 97201
ATTN: Jack Payne

LABORATORY NO. 92259
DATE: Sept. 16, 1985
Wacker PO# 52499

REPORT ON: WATER

SAMPLE IDENTIFICATION: Samples submitted 8/01/85 and identified as shown below

1) MW-3 7/31/85 1555
2) MW-6 7/31/85 1650
* 3) MW-7 7/31/85 1725
4) MW-1 8/01/85 1425
5) MW-4 8/01/85 1455
6) MW-2 8/01/85 1550
7) MW-5 8/01/85 1620

* Analyzed in duplicate with exception of volatile organics fraction.

TESTS PERFORMED AND RESULTS:

Samples were analyzed for priority pollutants in accordance with Test Methods for Evaluating Solid Waste, (SW-846), U.S.E.P.A., 1982, Methods 8240 (volatile organics), 8270 (semi-volatile extractables), 8080 (pesticides and PCB's), 9010 (cyanide), and the 7000 series (metals analysis). Phenol analysis was in accordance with Method 420.2, Methods for Chemical Analysis of Water & Wastes, U.S.E.P.A., March, 1979.

parts per billion (ug/L)

Inorganics	MW-3 1	MW-6 2	MW-7 3a	3b	MW-1 4	MW-4 5
Antimony	<5.	<5.	<5.	<5.	<5.	<5.
Arsenic	5.	10.	<5.	<5.	5.	<5.
Beryllium	<1.	<1.	<1.	<1.	<1.	<1.
Cadmium	1.	2.	<1.	<1.	3.	3.
Chromium	5.	6.	4.	3.	10.	9.
Copper	1.	1.	4.	2.	2.	2.
Lead	25.	30.	20.	16.	52.	49.
Mercury	<1.	<1.	<1.	<1.	<1.	<1.
Nickel	5.	6.	8.	7.	10.	11.

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Laucks
Testing Laboratories, Inc.
940 South Harney St., Seattle, Washington 98108 (206)767-5060

Certificate

Chemistry, Microbiology, and Technical Services

CH2M Hill

LABORATORY NO. 92259

parts per billion (ug/L)

Inorganics	MW-3 1	MW-6 2	MW-7 3a	3b	MW-1 4	MW-4 5
Selenium	<5.	<5.	<5.	<5.	<5.	<5.
Silver	<1.	<1.	1.	1.	<1.	<1.
Thallium	<5.	<5.	<5.	<5.	<5.	<5.
Zinc	17.	11.	47.	37.	26.	50.
Total Cyanide	130.	40.	33.	35.	180.	930.
Total Phenol	6.	30.	<5.	<5.	72.	<5.

Inorganics	MW-2 6	MW-5 7	Method Blank
Antimony	<5.	<5.	<5.
Arsenic	<5.	<5.	<5.
Beryllium	<1.	<1.	<1.
Cadmium	2.	2.	<1.
Chromium	8.	6.	<2.
Copper	7.	2.	1.
Lead	40.	28.	<5.
Mercury	<1.	<1.	<1.
Nickel	7.	6.	<5.
Selenium	<5.	<5.	<5.
Silver	<1.	<1.	<1.
Thallium	<5.	<5.	<5.
Zinc	16.	11.	3.
Total Cyanide	58.	130.	<5.
Total Phenol	13.	<5.	<5.

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LABORATORY NO. 92259

parts per billion (ug/L)

Volatile Organics (by GC/MS)	MW-3 1	MW-6 2	MW-7 3	MW-1 4	MW-4 5
Chloromethane	<1.	<1.	<1.	<10.	<1.
Bromomethane	<1.	<1.	<1.	<10.	<1.
Vinyl Chloride	<1.	<1.	<1.	<10.	<1.
Chloroethane	<1.	<1.	<1.	<10.	<1.
Mehthylene Chloride	Trace	Trace	Trace	88.	Trace
Acrolein	<10.	<10.	<10.	<100.	<10.
*Acetone	<1.	<1.	<1.	120.	21.
Acrylonitrile	<10.	<10.	<10.	<100.	<10.
*Carbon Disulfide	<1.	<1.	<1.	<10.	<1.
1,1-Dichloroethylene	<1.	<1.	<1.	<10.	<1.
1,1-Dichloroethane	<1.	<1.	<1.	<10.	<1.
trans-1,2-Dichloroethylene	<1.	<1.	<1.	<10.	<1.
Chloroform	<1.	<1.	<1.	<10.	<1.
*2-Butanone	<1.	<1.	<1.	<10.	<1.
1,2-Dichloroethane	<1.	<1.	<1.	<10.	<1.
1,1,1-Trichloroethane	<1.	<1.	<1.	<10.	<1.
*Vinyl Acetate	<1.	<1.	<1.	<10.	<1.
Bromodichloromethane	<1.	<1.	<1.	<10.	<1.
Carbon Tetrachloride	<1.	<1.	<1.	<10.	<1.
1,2-Dichloropropane	<1.	<1.	<1.	<10.	<1.
Trichloroethylene	<1.	<1.	<1.	<10.	<1.
Benzene	39.	1200.	<1.	1100.	<1.
Chlorodibromomethane	<1.	<1.	<1.	<10.	<1.
1,1,2-Trichloroethane	<1.	<1.	<1.	<10.	<1.
2-Chloroethyl vinyl ether	<1.	<1.	<1.	<10.	<1.
Bromoform	<1.	<1.	<1.	<10.	<1.
*4-Methyl-2-pentanone	<1.	<1.	<1.	<10.	<1.
*2-Hexanone	<1.	<1.	<1.	<10.	<1.
1,1,2,2-Tetrachloroethane	<1.	<1.	<1.	<10.	<1.
Tetrachloroethylene	<1.	<1.	<1.	<10.	<1.
Toluene	<1.	27.	<1.	<10.	<1.
Chlorobenzene	<1.	<1.	<1.	<10.	<1.
trans-1,3-Dichloropropene	<1.	<1.	<1.	<10.	<1.
Ethylbenzene	<1.	390.	<1.	410.	Trace

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parts per billion (ug/L)

Volatile Organics (by GC/MS)	MW-3 1	MW-6 2	MW-7 3	MW-1 4	MW-4 5
cis-1,3-Dichloropropene	<1.	<1.	<1.	<10.	<1.
Styrene	<1.	<1.	<1.	<10.	<1.
Total xylenes	Trace	430.	<1.	1200.	15.

	MW-2 6	MW-5 7	Field Blank	Method Blank
Chloromethane	<1.	<1.	<1.	<1.
Bromomethane	<1.	<1.	<1.	<1.
Vinyl Chloride	<1.	<1.	<1.	<1.
Chloroethane	<1.	<1.	<1.	<1.
Mehthylene Chloride	Trace	21.	Trace	Trace
Acrolein	<1.	<10.	<10.	<10.
*Acetone	<1.	49.	Trace	Trace <1
Acrylonitrile	<1.	<10.	<10.	<10.
*Carbon Disulfide	<1.	<1.	<1.	<1.
1,1-Dichloroethylene	<1.	<1.	<1.	<1.
1,1-Dichloroethane	<1.	<1.	<1.	<1.
trans-1,2-Dichloroethylene	<1.	<1.	<1.	<1.
Chloroform	<1.	<1.	<1.	<1.
*2-Butanone	<1.	<1.	<1.	<1.
1,2-Dichloroethane	<1.	<1.	<1.	<1.
1,1,1-Trichloroethane	<1.	<1.	<1.	<1.
*Vinyl Acetate	<1.	<1.	<1.	<1.
Bromodichloromethane	<1.	<1.	<1.	<1.
Carbon Tetrachloride	<1.	<1.	<1.	<1.
1,2-Dichloropropane	<1.	<1.	<1.	<1.
Trichloroethylene	<1.	<1.	<1.	<1.
Benzene	100.	<1.	<1.	<1.
Chlorodibromomethane	<1.	<1.	<1.	<1.
1,1,2-Trichloroethane	<1.	<1.	<1.	<1.
2-Chloroethyl vinyl ether	<1.	<1.	<1.	<1.
Bromoform	<1.	<1.	<1.	<1.

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	MW-2 6	MW-5 7	Field Blank	Method Blank
*4-Methyl-2-pentanone	<1.	<1.	<1.	<1.
*2-Hexanone	<1.	<1.	<1.	<1.
1,1,2,2-Tetrachloroethane	<1.	<1.	<1.	<1.
Tetrachloroethylene	<1.	<1.	<1.	<1.
Toluene	<1.	<1.	<1.	<1.
Chlorobenzene	<1.	<1.	<1.	<1.
trans-1,3-Dichloropropene	<1.	<1.	<1.	<1.
Ethylbenzene	36.	<1.	<1.	<1.
cis-1,3-Dichloropropene	<1.	<1.	<1.	<1.
Styrene	<1.	<1.	<1.	<1.
Total xylenes	32.	<1.	<1.	<1.

Extractables (by GC/MS)	MW-3 1	MW-6 2	MW-7 3a	3b	MW-1 4
N-nitrosodimethylamine	<1.	<1.	<1.	<1.	<1.
Bis(2-chloroethyl)ether	<1.	<1.	<1.	<1.	<1.
2-Chlorophenol	<1.	<1.	<1.	<1.	<1.
Phenol	<1.	<1.	<1.	<1.	Trace
1,3-Dichlorobenzene	<1.	<1.	<1.	<1.	<1.
1,4-Dichlorobenzene	<1.	<1.	<1.	<1.	<1.
1,2-Dichlorobenzene	<1.	<1.	<1.	<1.	<1.
Bis(2-chloroisopropyl)ether	<1.	<1.	<1.	<1.	<1.
Hexachloroethane	<1.	<1.	<1.	<1.	<1.
N-nitroso-di-n-propylamine	<1.	<1.	<1.	<1.	<1.
Nitrobenzene	<1.	<1.	<1.	<1.	<1.
Isophorone	<1.	<1.	<1.	<1.	<1.
2-Nitrophenol	<1.	<1.	<1.	<1.	<1.
2,4-Dimethylphenol	<1.	<1.	<1.	<1.	27.

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Extractables (by GC/MS)	MW-3 1	MW-6 2	MW-7 3a	3b	MW-1 4
Bis(2-chloroethoxy)methane	<1.	<1.	<1.	<1.	<1.
2,4-Dichlorophenol	<1.	<1.	<1.	<1.	<1.
1,2,4-Trichlorobenzene	<1.	<1.	<1.	<1.	<1.
Naphthalene	600.	2100.	Trace	<1.	<1.
Hexachlorobutadiene	<1.	<1.	<1.	<1.	<1.
4-Chloro-m-cresol	<1.	<1.	<1.	<1.	<1.
Hexachlorocyclopentadiene	<1.	<1.	<1.	<1.	<1.
2,4,6-Trichlorophenol	<1.	<1.	<1.	<1.	<1.
2-Chloronaphthalene	<1.	<1.	<1.	<1.	<1.
Acenaphthylene	Trace	32.	<1.	<1.	88.
Dimethylphthalate	<1.	<1.	<1.	<1.	<1.
2,6-Dinitrotoluene	<1.	<1.	<1.	<1.	<1.
Acenaphthene	86.	200.	19.	14.	270.
2,4-Dinitrophenol	<1.	<1.	<1.	<1.	<1.
2,4-Dinitrotoluene	<1.	<1.	<1.	<1.	<1.
4-Nitrophenol	<1.	<1.	<1.	<1.	<1.
Fluorene	13.	35.	<1.	Trace	95.
4-Chlorophenyl phenyl ether	<1.	<1.	<1.	<1.	<1.
Diethylphthalate	<1.	<1.	<1.	<1.	<1.
4,6-Dinitro-o-cresol	<1.	<1.	<1.	<1.	<1.
1,2-Diphenylhydrazine	<1.	<1.	<1.	<1.	<1.
4-Bromophenyl phenyl ether	<1.	<1.	<1.	<1.	<1.
Hexachlorobenzene	<1.	<1.	<1.	<1.	<1.
Pentachlorophenol	<1.	<1.	<1.	<1.	<1.
Phenanthrene	13.	56.	Trace	Trace	180.
Anthracene	Trace	Trace	<1.	<1.	39.
Dibutylphthalate	<1.	<1.	<1.	Trace	<1.
Fluoranthene	Trace	Trace	23.	13.	72.
Pyrene	Trace	10.	11.	Trace	81.
Benzidine	<1.	<1.	<1.	<1.	<1.
Butyl benzyl phthalate	<1.	<1.	<1.	<1.	<1.
Benzo(a)anthracene	Trace	Trace	12.	Trace	31.
Chrysene	Trace	Trace	15.	10.	36.
3,3'-Dichlorobenzidine	<1.	<1.	<1.	<1.	<1.

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Extractables (by GC/MS)	MW-3 1	MW-6 2	MW-7 3a	3b	MW-1 4
Bis(2-ethylhexyl)phthalate	Trace	Trace	Trace	Trace	Trace
N-nitrosodiphenylamine	<1.	<1.	<1.	<1.	<1.
Di-n-octyl phthalate	Trace	<1.	Trace	<1.	Trace
Benzo(b)fluoranthene	<1.	Trace	Trace	Trace	24.
Benzo(k)fluoranthene	<1.	Trace	Trace	Trace	Trace
Benzo(a)pyrene	Trace	Trace	10.	Trace	40.
Indeno(1,2,3-cd)pyrene	<1.	Trace	Trace	Trace	20.
Dibenzo(ah)anthracene	<1.	<1.	<1.	<1.	<1.
Benzo(ghi)perylene	<1.	Trace	Trace	Trace	25.
*Aniline	<1.	<1.	<1.	<1.	<1.
*Benzoic Acid	<1.	<1.	<1.	<1.	<1.
*Benzyl Alcohol	<1.	<1.	<1.	<1.	<1.
*4-Chloroaniline	<1.	<1.	<1.	<1.	<1.
*Dibenzofuran	Trace	14.	Trace	Trace	77.
*2-Methylnaphthalene	67.	41.	<1.	<1.	<1.
*2-Methylphenol	<1.	<1.	<1.	<1.	<1.
*4-Methylphenol	<1.	<1.	<1.	<1.	<1.
*2-Nitroaniline	<1.	<1.	<1.	<1.	<1.
*3-Nitroaniline	<1.	<1.	<1.	<1.	<1.
*4-Nitroaniline	<1.	<1.	<1.	<1.	<1.
*2,4,5-Trichlorophenol	<1.	<1.	<1.	<1.	<1.

Extractables (by GC/MS)	MW-4 5	MW-2 6	MW-5 7	Method Blank
N-nitrosodimethylamine	<1.	<1.	<1.	<1.
Bis(2-chloroethyl)ether	<1.	<1.	<1.	<1.
2-Chlorophenol	<1.	<1.	<1.	<1.
Phenol	<1.	<1.	<1.	<1.
1,3-Dichlorobenzene	<1.	<1.	<1.	<1.

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Extractables (by GC/MS)	MW-4 5	MW-2 6	MW-5 7	Method Blank
1,4-Dichlorobenzene	<1.	<1.	<1.	<1.
1,2-Dichlorobenzene	<1.	<1.	<1.	<1.
Bis(2-chloroisopropyl)ether	<1.	<1.	<1.	<1.
Hexachloroethane	<1.	<1.	<1.	<1.
N-nitroso-di-n-propylamine	<1.	<1.	<1.	<1.
Nitrobenzene	<1.	<1.	<1.	<1.
Isophorone	<1.	<1.	<1.	<1.
2-Nitrophenol	<1.	<1.	<1.	<1.
2,4-Dimethylphenol	<1.	<1.	<1.	<1.
Bis(2-chloroethoxy)methane	<1.	<1.	<1.	<1.
2,4-Dichlorophenol	<1.	<1.	<1.	<1.
1,2,4-Trichlorobenzene	<1.	<1.	<1.	<1.
Naphthalene	350.	1900.	58.	<1.
Hexachlorobutadiene	<1.	<1.	<1.	<1.
4-Chloro-m-cresol	<1.	<1.	<1.	<1.
Hexachlorocyclopentadiene	<1.	<1.	<1.	<1.
2,4,6-Trichlorophenol	<1.	<1.	<1.	<1.
2-Chloronaphthalene	<1.	<1.	<1.	<1.
Acenaphthylene	Trace	200.	31.	<1.
Dimethylphthalate	<1.	<1.	<1.	<1.
2,6-Dinitrotoluene	<1.	<1.	<1.	<1.
Acenaphthene	350.	940.	54.	<1.
2,4-Dinitrophenol	<1.	<1.	<1.	<1.
2,4-Dinitrotoluene	<1.	<1.	<1.	<1.
4-Nitrophenol	<1.	<1.	<1.	<1.
Fluorene	53.	440.	12.	<1.
4-Chlorophenyl phenyl ether	<1.	<1.	<1.	<1.
Diethylphthalate	<1.	<1.	<1.	<1.
4,6-Dinitro-o-cresol	<1.	<1.	<1.	<1.
1,2-Diphenylhydrazine	<1.	<1.	<1.	<1.
4-Bromophenyl phenyl ether	<1.	<1.	<1.	<1.
Hexachlorobenzene	<1.	<1.	<1.	<1.

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Extractables (by GC/MS)	MW-4 5	MW-2 6	MW-5 7	Method Blank
Pentachlorophenol	<1.	<1.	<1.	<1.
Phenanthrene	28.	1630.	21.	<1.
Anthracene	Trace	630.	Trace	<1.
Dibutylphthalate	<1.	<1.	<1.	<1.
Fluoranthene	18.	1300.	Trace	<1.
Pyrene	14.	1430.	10.	<1.
Benzidine	<1.	<1.	<1.	<1.
Butyl benzyl phthalate	<1.	<1.	<1.	<1.
Benzo(a)anthracene	Trace	480.	Trace	<1.
Chrysene	Trace	650.	Trace	<1.
3,3'-Dichlorobenzidine	<1.	<1.	<1.	<1.
Bis(2-ethylhexyl)phthalate	13.	24.	Trace	Trace
N-nitrosodiphenylamine	<1.	<1.	<1.	<1.
Di-n-octyl phthalate	Trace	<1.	Trace	<1.
Benzo(b)fluoranthene	Trace	400.	Trace	<1.
Benzo(k)fluoranthene	<1.	120.	<1.	<1.
Benzo(a)pyrene	Trace	760.	Trace	<1.
Indeno(1,2,3-cd)pyrene	Trace	300.	Trace	<1.
Dibenzo(ah)anthracene	<1.	Trace	<1.	<1.
Benzo(ghi)perylene	Trace	370.	Trace	<1.
*Aniline	<1.	<1.	<1.	<1.
*Benzoic Acid	<1.	<1.	<1.	<1.
*Benzyl Alcohol	<1.	<1.	<1.	<1.
*4-Chloroaniline	<1.	<1.	<1.	<1.
*Dibenzofuran	88.	75.	Trace	<1.
*2-Methylnaphthalene	19.	260.	12.	<1.
*2-Methylphenol	<1.	<1.	<1.	<1.
*4-Methylphenol	<1.	<1.	<1.	<1.
*2-Nitroaniline	<1.	<1.	<1.	<1.
*3-Nitroaniline	<1.	<1.	<1.	<1.
*4-Nitroaniline	<1.	<1.	<1.	<1.
*2,4,5-Trichlorophenol	<1.	<1.	<1.	<1.

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Pesticides (by GC/ECD)	MW-3 1	MW-6 2	MW-7 3a	3b	MW-1 4
	parts per billion (ug/L)				
alpha-BHC	<0.02	0.06	<0.02	<0.02	<0.2
beta-BHC	<0.02	<0.02	<0.02	<0.02	<0.2
delta-BHC	<0.02	<0.02	<0.02	<0.02	<0.2
gamma-BHC (lindane)	<0.02	<0.02	<0.02	<0.02	<0.2
heptachlor	<0.02	<0.02	<0.02	<0.02	<0.2
aldrin	<0.02	<0.02	<0.02	<0.02	<0.2
heptachlor epoxide	<0.02	<0.02	<0.02	<0.02	<0.2
dieldrin	<0.02	<0.02	<0.02	0.02	<0.2
4,4'-DDE	<0.02	<0.02	<0.02	<0.02	<0.2
4,4'-DDD	<0.04	<0.04	<0.04	<0.04	<0.4
endosulfan sulfate	<0.04	<0.04	<0.04	<0.04	<0.4
4,4'-DDT	<0.04	0.28	<0.04	<0.04	<0.4
chlordane	<0.04	<0.04	<0.04	<0.04	<0.4
alpha endosulfan	<0.04	<0.04	<0.04	<0.04	<0.4
beta endosulfan	<0.04	<0.04	<0.04	<0.04	<0.4
endrin	<0.04	<0.04	<0.04	<0.04	<0.4
endrin aldehyde	<0.04	<0.04	<0.04	<0.04	<0.4
toxaphene	<4.	<4.	<4.	<4.	<50.
PCB 1016	<1.	<1.	<1.	<1.	<10.
PCB 1221	<1.	<1.	<1.	<1.	<10.
PCB 1232	<1.	<1.	<1.	<1.	<10.
PCB 1242	<1.	<1.	<1.	<1.	<10.
PCB 1248	<1.	<1.	<1.	<1.	<10.
PCB 1254	<1.	<1.	<1.	<1.	<10.
PCB 1260	<1.	<1.	<1.	<1.	<10.

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Pesticides (by GC/ECD)	MW-4 5	MW-2 6	MW-5 7	Method Blank
alpha-BHC	0.24	<0.2	<0.02	<0.02
beta-BHC	<0.02	<0.2	<0.02	<0.02
delta-BHC	<0.02	<0.2	<0.02	<0.02
gamma-BHC (lindane)	<0.02	<0.2	<0.02	<0.02
heptachlor	<0.02	<0.2	<0.02	<0.02
aldrin	<0.02	<0.2	<0.02	<0.02
heptachlor epoxide	<0.02	<0.2	<0.02	<0.02
dieldrin	<0.02	<0.2	<0.02	<0.02
4,4'-DDE	<0.02	<0.2	<0.02	<0.02
4,4'-DDD	<0.04	<0.4	<0.04	<0.04
endosulfan sulfate	<0.04	<0.4	<0.04	<0.04
4,4'-DDT	<0.04	<0.4	<0.04	<0.04
chlordane	<0.04	<0.4	<0.04	<0.04
alpha endosulfan	<0.04	<0.4	<0.04	<0.04
beta endosulfan	<0.04	<0.4	<0.04	<0.04
endrin	<0.04	<0.4	0.02	<0.04
endrin aldehyde	<0.04	<0.4	<0.04	<0.04
toxaphene	<4.	<50.	<4.	<4.
PCB 1016	<1.	<10.	<1.	<1.
PCB 1221	<1.	<10.	<1.	<1.
PCB 1232	<1.	<10.	<1.	<1.
PCB 1242	<1.	<10.	<1.	<1.
PCB 1248	<1.	<10.	<1.	<1.
PCB 1254	<1.	<10	<1.	<1.
PCB 1260	<1.	<10.	<1.	<1.

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Key

< indicates "less than"
Trace = 1-10 ug/L
*—Additional compounds from the EPA's Hazardous Substances List.

Respectfully submitted,

Laucks Testing Laboratories, Inc.

J. M. Owens

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APPENDIX A

Surrogate Recovery Quality Control Report

Listed below are surrogate (chemically similar) compounds utilized in the analysis of volatile compounds. The surrogates are added to every sample prior to analysis to monitor for matrix effects and purging efficiency. The control limits represent the 95% confidence interval established in our laboratory through repetitive analysis of these sample types.

parts per billion (ug/L)

Sample No.	Surrogate Compound	Spike Level	Spike Found	% Recovery	Control Limit
1	d4-1,2-Dichloroethane	50.0	48.6	97.2	77-120
1	dp-Toluene	50.0	49.7	99.4	86-119
1	p-Bromofluorobenzene	50.0	50.7	101.	85-121
2	d4-1,2-Dichloroethane	50.0	49.1	98.2	77-120
2	dp-Toluene	50.0	49.1	98.2	86-119
2	p-Bromofluorobenzene	50.0	51.2	102.	85-121
3	d4-1,2-Dichloroethane	50.0	48.7	97.4	77-120
3	dp-Toluene	50.0	49.3	98.6	86-119
3	p-Bromofluorobenzene	50.0	52.3	105.	85-121
4	d4-1,2-Dichloroethane	50.0	48.5	97.0	77-120
4	dp-Toluene	50.0	47.1	94.2	86-119
4	p-Bromofluorobenzene	50.0	50.1	100.	85-121

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Chemistry, Microbiology, and Technical Services

CH2M Hill

LABORATORY NO. 92259

parts per billion (ug/L)

Sample No.	Surrogate Compound	Spike Level	Spike Found	% Recovery	Control Limit
5	d4-1,2-Dichloroethane	50.0	48.2	96.4	77-120
5	dp-Toluene	50.0	47.9	95.8	86-119
5	p-Bromofluorobenzene	50.0	52.0	104.	85-121
6	d4-1,2-Dichloroethane	50.0	48.1	96.2	77-120
6	dp-Toluene	50.0	50.1	100.	86-119
6	p-Bromofluorobenzene	50.0	51.2	102.	85-121
7	d4-1,2-Dichloroethane	50.0	48.0	96.0	77-120
7	dp-Toluene	50.0	50.1	100.	86-119
7	p-Bromofluorobenzene	50.0	50.6	101.	85-121
FB	d4-1,2-Dichloroethane	50.0	48.9	97.8	77-120
FB	dp-Toluene	50.0	48.7	97.4	86-119
FB	p-Bromofluorobenzene	50.0	51.4	103.	85-121
MB	d4-1,2-Dichloroethane	50.0	48.5	97.0	77-120
MB	dp-Toluene	50.0	49.9	99.8	86-119
MB	p-Bromofluorobenzene	50.0	50.9	102.	85-121

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APPENDIX B

Surrogate Recovery Quality Control Report

Listed below are surrogate (chemically similar) compounds utilized in the analysis of organic compounds. The surrogates are added to every sample prior to extraction to monitor for matrix effects and sample processing errors. The control limits represent the 95% confidence interval established in our laboratory through repetitive analysis of these sample types.

parts per billion (ug/L)

Sample No.	Surrogate Compound	Spike Level	Spike Found	% Recovery	Control Limit
1	Dibutylchlorendate	1.000	0.510	51.0	48-136
2	Dibutylchlorendate	1.000	0.582	58.2	48-136
3a	Dibutylchlorendate	1.000	0.249	24.9	48-136 **
3b	Dibutylchlorendate	1.000	0.352	35.2	48-136 **
4	Dibutylchlorendate	1.000	0.400	40.0	48-136 *
5	Dibutylchlorendate	1.000	0.535	53.5	48-136
6	Dibutylchlorendate	1.000	0.491	49.1	48-136 *
7	Dibutylchlorendate	1.000	0.490	49.0	48-136
Blk	Dibutylchlorendate	1.000	0.995	99.5	48-136
MB	2-Fluorophenol	100.0	51.4	51.4	23-121
MB	2-Fluoroaniline	50.0	42.8	85.6	----
MB	d5-Phenol	100.0	39.6	39.6	15-103
MB	2-Bromophenol	100.0	74.5	74.5	----
MB	d5-Nitrobenzene	50.0	44.6	89.2	41-120

*Sample residue diluted out of quantitation range for surrogate
**Matrix interference

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parts per billion (ug/L)

Sample No.	Surrogate Compound	Spike Level	Spike Found	% Recovery	Control Limit
MB	2-Fluorobiphenyl	50.0	53.6	107.2	44-119
MB	2,4,6-Tribromophenol	100.0	94.8	94.8	10-130
MB	d14-p-Terphenyl	50.0	47.2	94.4	33-128
-1	2-Fluorophenol	101.5	0.	0.	23-121
-1	2-Fluoroaniline	50.8	43.2	85.0	----
-1	d5-Phenol	101.5	0.	0.	15-103
-1	2-Bromophenol	101.5	0.	0.	----
-1	d5-Nitrobenzene	50.8	47.7	93.8	41-120
-1	2-Fluorobiphenyl	50.8	45.1	88.8	44-119
-1	2,4,6-Tribromophenol	101.5	0.	0.	10-130
-1	d14-p-Terphenyl	50.8	40.5	79.8	33-128
-2	2-Fluorophenol	101.0	13.4	13.3 *	23-121
-2	2-Fluoroaniline	50.5	45.3	89.8	----
-2	d5-Phenol	101.0	13.9	13.8 *	15-103
-2	2-Bromophenol	101.0	42.6	42.2	----
-2	d5-Nitrobenzene	50.5	54.5	108.	41-120
-2	2-Fluorobiphenyl	50.5	61.6	122.	44-119
-2	2,4,6-Tribromophenol	101.0	33.8	33.5	10-130
-2	d14-p-Terphenyl	50.5	35.6	70.6	33-128
-3a	2-Fluorophenol	101.0	0.	0.	23-121
-3a	2-Fluoroaniline	50.5	43.0	85.2	----
-3a	d5-Phenol	101.0	0.	0.	15-103
-3a	2-Bromophenol	101.0	0.	0.	----
-3a	d5-Nitrobenzene	50.5	43.1	85.4	41-120
-3a	2-Fluorobiphenyl	50.5	48.2	95.6	44-119
-3a	2,4,6-Tribromophenol	101.0	0.	0.	10-130
-3a	d14-p-Terphenyl	50.5	24.7	49.1	33-128

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parts per billion (ug/L)

Sample No.	Surrogate Compound	Spike Level	Spike Found	% Recovery	Control Limit
-3b	2-Fluorophenol	101.5	0.	0.	23-121
-3b	2-Fluoroaniline	50.8	32.8	64.5	----
-3b	d5-Phenol	101.5	0.	0.	15-103
-3b	2-Bromophenol	---	---	---	----
-3b	d5-Nitrobenzene	50.8	31.2	61.4	41-120
-3b	2-Fluorobiphenyl	50.8	40.8	80.4	44-119
-3b	2,4,6-Tribromophenol	101.5	0.	0.	10-130
-3b	d14-p-Terphenyl	50.8	26.2	51.6	33-128
-4	2-Fluorophenol	101.5	31.4	30.9	23-121
-4	2-Fluoroaniline	50.8	36.9	72.6	----
-4	d5-Phenol	101.5	30.8	30.3	15-103
-4	2-Bromophenol	101.5	59.6	58.7	----
-4	d5-Nitrobenzene	50.8	67.5	132.8	41-120 @
-4	2-Fluorobiphenyl	50.8	75.1	147.8	44-119 @
-4	2,4,6-Tribromophenol	101.5	63.1	62.2	10-130
-4	d14-p-Terphenyl	50.8	23.2	45.6	33-128
-5	2-Fluorophenol	101.5	0.	0. *	23-121
-5	2-Fluoroaniline	50.8	45.3	89.2	----
-5	d5-Phenol	101.5	6.3	6.2 *	15-103
-5	2-Bromophenol	101.5	19.6	19.3 *	----
-5	d5-Nitrobenzene	50.8	46.4	91.4	41-120
-5	2-Fluorobiphenyl	50.8	54.6	107.4	44-119
-5	2,4,6-Tribromophenol	101.5	12.7	12.5 *	10-130
-5	d14-p-Terphenyl	50.8	37.0	72.8	33-128

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CH2M Hill

LABORATORY NO. 92259

parts per billion (ug/L)

Sample No.	Surrogate Compound	Spike Level	Spike Found	% Recovery	Control Limit
-6	2-Fluorophenol	100.0	68.7	68.7	23-121
-6	2-Fluoroaniline	50.0	22.3	44.6 *	----
-6	d5-Phenol	100.0	51.9	51.9	15-103
-6	2-Bromophenol	100.0	59.3	59.3	----
-6	d5-Nitrobenzene	50.0	0. *	0. *	41-120
-6	2-Fluorobiphenyl	50.0	14.2	28.3 *	44-119
-6	2,4,6-Tribromophenol	100.0	69.3	69.3	10-130
-6	d14-p-Terphenyl	50.0	9.5	19.0 *	33-128
-7	2-Fluorophenol	101.5	0.	0.	23-121
-7	2-Fluoroaniline	50.8	43.9	86.4	----
-7	d5-Phenol	101.5	0.	0.	15-103
-7	2-Bromophenol	101.5	0.	0.	----
-7	d5-Nitrobenzene	50.8	45.4	89.4	41-120
-7	2-Fluorobiphenyl	50.8	44.6	87.8	44-119
-7	2,4,6-Tribromophenol	101.5	0.	0.	10-130
-7	d14-p-Terphenyl	50.8	26.7	52.6	33-128

Key

FB = Field Blank
MB = Method Blank
* BAN surrogates were diluted to near detection limit for analysis.
@ Matrix interference

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Portland, OR 97230
Phone: (503) 254-1794

April 30, 1985
Log #A850410-I

Wacker Siltronics
P.O. Box 03180
Portland, Oregon 97203

Analyses Requested: Oil and Grease, Phenols, Volatiles, and Polynuclear Aromatic Hydrocarbons

Sample Identifications:
#1 - MW1, S-3 (15.0' - 16.5')
#2 - MW2, S-4 (20.0' - 21.5')
#3 - MW3, S-5 (25.0' - 26.5')
#4 - MW4, S-1 (5.0' - 6.5')
#5 - MW4, S-7 (35.0' - 36.5')
#6 - MW5, S-2 (10.0' - 11.5')
#7 - MW6, S-3 (15.0' - 16.5')
#8 - MW7, S-5 (25.0' - 26.5')
#9 - MW7, S-8 (40.0' - 41.5')

SAMPLE #	OIL AND GREASE
#1	0.340 %
#2	0.1498 %
#3	0.0587 %
#4	0.0914 %
#5	0.0304 %
#6	0.190 %
#7	0.0539 %
#8	0.0650 %
#9	0.0586 %

X 10,000 = ppm or mg/kg

THIS REPORT CONTINUES

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Wacker Siltronic
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April 30, 1985
Page Two

PHENOL RESULTS

ANALYSIS	SAMPLE #1 RESULTS
Phenol	0.35
O-Cresol	0.04
3 & 4 Chlorophenol	0.44
2,3,4,6 Tetrachlorophenol	0.24
2,3,4,5 Tetrachlorophenol	4.9
M & P Cresol	0.006

	SAMPLE #2 RESULTS
Phenol	3.1
O-Cresol	3.4
3 & 4 Chlorophenol	17.5
2-Chlorophenol	7.8
2-Nitrophenol	0.20
2,4 Dimethylphenol	3.1
2,4 Dichlorophenol	2.7
2,4,5 Trichlorophenol	1.9
2,3,5,6 Tetrachlorophenol	4.0
2,3,4,5 Tetrachlorophenol	256 ←

	SAMPLE #3 RESULTS
Phenol	0.20
3 & 4 Chlorophenol	0.06
2-Chlorophenol	0.05

	SAMPLE #4 RESULTS
Phenol	0.30
2-Chlorophenol	0.26
O-Cresol	0.02
M & P Cresol	0.08
2,3,5,6 Tetrachlorophenol	0.58
2,3,4,5 Tetrachlorophenol	0.40

	SAMPLE #5 RESULTS
Phenol	0.17
2,3,5,6 Tetrachlorophenol	0.11
Pentachlorophenol	0.31

Results reported in mg/Kg

THIS REPORT CONTINUED

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Wacker Siltronics
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Page Three

PHENOL RESULTS

ANALYSIS	SAMPLE #6 RESULTS
Phenol	0.07
O-Cresol	0.19
2,4 Dimethylphenol	0.22
2,4 Dichlorophenol	0.24
3 & 4 Chlorophenol	1.7
2,4,6 Trichlorophenol	0.22
2,3,5,6 Tetrachlorophenol	0.33
2,3,4,5 Tetrachlorophenol	0.23
2,4 Dinitrophenol	0.81
Pentachlorophenol	6.9

	SAMPLE #7 RESULTS
Phenol	0.05
O-Cresol	0.05
2-Chlorophenol	0.13
2,4 Dimethylphenol	0.17
3 & 4 Chlorophenol	0.32
2,3,5,6 Tetrachlorophenol	0.55
2,3,4,5 Tetrachlorophenol	4.7
Pentachlorophenol	5.1

	SAMPLE #8 RESULTS
Phenol	0.06
2,3,4,6 Tetrachlorophenol	1.0
2,3,4,5 Tetrachlorophenol	0.06

	SAMPLE #9 RESULTS
Phenol	0.08
2-Chlorophenol	0.14
2,3,5,6 Tetrachlorophenol	0.46
2,3,4,5 Tetrachlorophenol	0.25

Results reported in mg/Kg

THIS REPORT CONTINUED

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Page Four

EP TOXICITY PESTICIDES

Results below apply to the water extract of soil samples. Water extracts performed as per EPA Specification of EP-Toxicity Method.

SAMPLE #	ENDRIN	LINDANE	METHOXYCHLOR	TOXAPHENE
#1	<0.002	<0.04	<0.1	<0.05
#2	<0.002	<0.04	<0.1	<0.05
#3	<0.002	<0.04	<0.1	<0.05
#4	<0.002	<0.04	<0.1	<0.05
#5	<0.002	<0.04	<0.1	<0.05
#6	<0.002	<0.04	<0.1	<0.05
#7	<0.002	<0.04	<0.1	<0.05
#8	<0.002	<0.04	<0.1	<0.05
#9	<0.002	<0.04	<0.1	<0.05
Allowed Limits	0.02	0.4	10	0.5

< denotes "less than"

Results expressed in mg/liter

EP TOXICITY HERBICIDES

SAMPLE #	2,4-D	2,4,5 TP (SILVEX)
#1	<10 (mg/liter)	<1 (mg/liter)
#2	<10	<1
#3	<10	<1
#4	<10	<1
#5	<10	<1
#6	10.0	<1
#7	150.0	<1
#8	<10	<1
#9	<10	<1
Allowed Limits	10 mg/l	1.0 mg/l

hazardous per RCRA

hazardous per RCRA

THIS REPORT CONTINUED

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Log #A850410-I

April 30, 1985
Page Five

Subject: E P Toxicity Test.

Method of Analysis: Federal Register/Vol.45, No.98/Monday, May 19, 1980/ Rules and Regulations; Appendix II, Page 33127

Field Data: Samples were collected and delivered by the Client

ANALYSIS	#1	#2	#3	#4	#5
Arsenic	<0.05	<0.05	<0.05	<0.05	<0.05
Barium	0.05	0.11	0.05	0.09	<0.05
Cadmium	<0.05	<0.05	<0.05	<0.05	<0.05
Chromium	<0.05	<0.05	<0.05	<0.05	<0.05
Lead	<0.05	<0.05	<0.05	<0.05	<0.05
Mercury	<0.05	<0.05	<0.05	<0.05	<0.05
Selenium	<0.05	<0.05	<0.05	<0.05	<0.05
Silver	<0.05	<0.05	<0.05	<0.05	<0.05

ANALYSIS	#6	#7	#8	#9	Limit
Arsenic	<0.05	<0.05	<0.05	<0.05	5.0
Barium	0.05	0.11	0.08	0.15	100.0
Cadmium	<0.05	<0.05	<0.05	<0.05	1.0
Chromium	<0.05	<0.05	<0.05	<0.05	5.0
Lead	<0.05	<0.05	<0.05	<0.05	5.0
Mercury	<0.05	<0.05	<0.05	<0.05	0.2
Selenium	<0.05	<0.05	<0.05	<0.05	1.0
Silver	<0.05	<0.05	<0.05	<0.05	5.0

< denotes "less than"

Results expressed in mg/liter

THIS REPORT CONTINUED

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April 30, 1985
Page Six

VOLATILES (HEADSPACE ANALYSIS)

COMPOUND	#1	#2	#3	#4	#5
1,2-Dichloro-ethane	<0.01	<0.01	<0.01	<0.01	<0.01
1,1,1-Trichloro-ethane	0.01	<0.01	<0.01	<0.01	<0.01
Toluene	1.2	20	0.11	<0.1	<0.1
1,1,2,2 Tetra-chloroethylene	2.2	11	<0.05	<0.05	<0.05
Chlorobenzene	0.04	<0.04	<0.04	<0.04	<0.04
Ethyl Benzene	17.0	5.4	<0.04	<0.04	<0.04
Xylene	146	116	<1.0	<1.0	<1.0

COMPOUND	#5	#7	#8	#9
1,2-Dichloro-ethane	<0.01	<0.01	<0.01	<0.01
1,1,1-Trichloro-ethane	<0.01	<0.01	<0.01	<0.01
Toluene	0.20	<0.1	<0.1	<0.1
1,1,2,2 Tetra-chloroethylene	0.14	<0.05	<0.05	<0.05
Chlorobenzene	<0.04	<0.04	<0.04	<0.04
Ethyl Benzene	<0.04	<0.04	<0.04	0.05
Xylene	1.5	<1.0	2.8	1.2

< denotes "less than"

Results reported in mg/kg

Some interference was encountered due to naphthalene and some of the more volatile phenols and PNA's.

THIS REPORT CONTINUES

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April 30, 1985
Page Seven

POLYNUCLEAR AROMATIC HYDROCARBONS

COMPOUND	#1	#2	#3	#4	#5
Naphthalene	6.7	360	< 1	< 1	< 1
Acenaphthalene	5.6	230	< 1	< 1	< 1
Acenaphthene	8.0	560	< 1	< 1	< 1
Fluorene	5.0	290	< 1	< 1	< 1
Phenanthrine-Anthracene	32	1400	3	< 1	< 1
Fluoranthrene	16	530	< 1	< 1	< 1
Pyrene 4 Ring	18	550	< 1	< 1	< 1
Chrysene 4 Ring	12	92	< 1	< 1	< 1
Benzo(b) + Benzo(k) Fluoranthrene	8.0	120	< 1	< 1	< 1
Benzo(a)Pyrene	19	120	< 1	< 1	< 1
Indeno(1,2,3-CD) Pyrene+Dibenzo (a,b)Anthracene	< 1	270	< 1	< 1	< 1
Benzo(ghi)-Perylene	< 1	360	< 1	< 1	< 1

most likely hazardous material

COMPOUND	#6	#7	#8	#9
Naphthalene	230	< 1	< 1	< 1
Acenaphthalene	24	< 1	< 1	< 1
Acenaphthene	28	< 1	< 1	< 1
Fluorene	20	< 1	< 1	< 1
Phenanthrine-Anthracene	150	< 1	1.6	< 1
Fluoranthrene	50	< 1	1.1	< 1
Pyrene	57	< 1	1.2	< 1
Chrysene	36	< 1	1.7	< 1
Benzo(b)+Benzo(k) Fluoranthrene	200	< 1	< 1	< 1
Benzo(a)Pyrene	100	< 1	< 1	< 1
Indeno(1,2,3-CD Pyrene+Dibenzo (a,b)Anthracene	7	< 1	< 1	< 1
Benzo(ghi)-Perylene	25	< 1	< 1	< 1

< denotes "less than"
Results reported in mg/Kg

Sincerely,

Susan M. Coffey

Susan M. Coffey
President

SMC/db

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-1	SHEET 1 OF 2

SOIL BORING LOG

PROJECT **WACKER SILTRONICS** LOCATION **PORTLAND, OREGON**

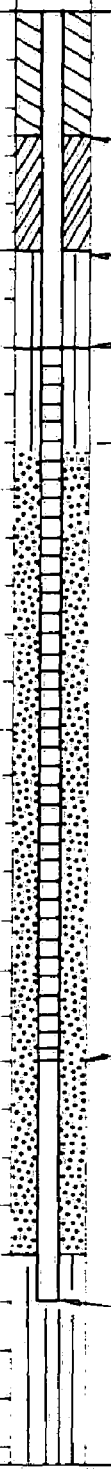
ELEVATION _____ DRILLING CONTRACTOR **GEOTECH EXPLORATIONS, BEAVERTON, OREGON**

DRILLING METHOD AND EQUIPMENT **CME-55, 6" HS AUGERS**

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6-6-6 (N)	SOIL DESCRIPTION (NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL)	COMMENTS (DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION)
	5	5.0				SILT, low plasticity, medium gray with brown mottling, moist, soft (ML), fill.	Top of gravel at 5'
		6.5	S-1	18	1-1-1 (2)		Screen top at 7'
	10	10.0				Upper 10" - SILT, same as S-1, some hydrocarbon odor (Jar 1 of 2), fill.	Driller notes water at ±9';
		11.5	S-2	0	4-4-5 (9)	Lower 8" - SAND, poorly graded, fine sand, dark gray, wet compact (SP), heavily saturated with oil, strong odor (Jar 2 of 2), fill.	Prominent oily sheen and odor to cuttings between 10' and 15'
	15	15.0				SAND, poorly graded, fine sand, dark gray, wet, compact (SP), heavily saturated with oil, fill.	
		16.5	S-3	18	3-4-5 (9)		
	20	20.0				SAND, same as S-3, heavily saturated with oil, fill.	
		21.5	S-4	18	4-3-4 (7)		Screen bottom at 22'
							Driller notes 3 feet of heave at 25', had to wash out hole to clean out heave
	25	25.0				Upper 14" - SAND as in S-3 (SP), mild hydrocarbon odor, probably is slough from washing out heave and not representative.	Fill Native ±21'
		26.5	S-5	18	3-3-4	Lower 4" - SILT, low plasticity, medium brownish gray, moist, firm (ML), no noticeable hydrocarbon odor, probably native soil.	Sump bottom at 27'

SYMBOLIC LOG



CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-1	SHEET 2 OF 2

SOIL BORING LOG

PROJECT WACKER SILTRONICS LOCATION PORTLAND, OREGON

ELEVATION DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE START FINISH LOGGER

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE: INTERVAL	SAMPLE: TYPE AND NUMBER	SAMPLE: RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
	30	30.0						
		31.5	S-6	18	4-4-5 (9)	**SILT, low plasticity, medium brownish gray, moist to wet, includes some sandy silt in upper 6", firm (ML), no noticeable hydrocarbon odor, native soil.**		**Bottom gravel at 31.5'**
						END MW at 31.5 feet.		
								Worst samples
								S-2, Jar 2 of 2 and S-3 are equally bad, more sample in S-3 for testing.

REV 11 82 FORM D7556

SCOEPA00036967

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-2	SHEET 1 OF 2

SOIL BORING LOG

PROJECT: WACKER SILTRONICS LOCATION: PORTLAND, OREGON

ELEVATION: DRILLING CONTRACTOR: GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT: CME-55, 6" HS AUGERS

WATER LEVEL AND DATE: START: FINISH: LOGGER:

ELEVATION	DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6-6-6 (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
	5	5.0						Grout to surface
								Top of bentonite at 3'
								Top of gravel at 4 1/2'
		6.5	S-1	18	1-2-3 (5)	SAND, poorly graded, fine sand, brown, moist, loose (SP), fill.		
								Screen top at 7 1/2'
								Driller notes water at ±8'
	10	10.0						
		11.5	S-2	0	1-4-5	NO RECOVERY; sample tube came up oily, strong hydrocarbon odor, sandy material on outside of sampler.		
								15' screen 2" schedule 40 10 slot PVC
	15	15.0						
		16.5	S-3	18	1-1-2 (3)	SAND, poorly graded, fine sand, chalk gray, wet, loose (SP), some lenses of silt; strong hydrocarbon odor, oily material observed on sample fill.		
								Driller notes considerabe degree of oiliness to cutting from 15'-25', more than in MW-1
	20	20.0						
		21.5	S-4	18	5-6-6 (12)	SANDY SILT, non-plastic, ~30% fill sand; medium to dark gray, wet, firm, (ML), strong hydrocarbon odor, noticeable oil in sample fill?		
								Screen bottom at 22'
								5' sump
	25	25.0						
		26.5	S-5	18	3-5-5 (10)	Upper 14" - SAND, as in S-3, includes strong hydrocarbon odor and visible oil in sample, material may be slough from drilling and washing out heaved zone, may not be representative of 25'-26.5' interval.		Driller notes 2' heave at 25', had to wash out hole
						Lower 4" - SILT, low plasticity, medium grayish brown, firm, moist (ML), no apparent hydrocarbon, native.		Sump bottom at 27' 4"

REV. 11 82 FORM D1586

SCOEPA00036968

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-2	SHEET 2 OF 2

SOIL BORING LOG

PROJECT **WACKER SILTRONICS** LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE: INTERVAL	SAMPLE: TYPE AND NUMBER	SAMPLE: RECOVERY	STANDARD PENETRATION TEST RESULTS 6-6-6 (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
	30	31.5	S-6	18	3-3-4 (7)	**SILT, low plasticity, grayish brown, moist, firm (ML), no noticeable hydrocarbon odor, native soil.**		
						END MW at 31.5 feet		
								Worst sample
								S-3, S-4 - about the same.

RE. 11-83 FORM D1586

SCOEPA00036969

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-3	SHEET 1 OF 2

SOIL BORING LOG

PROJECT WACKER SILTRONICS LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION (NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL)	SYMBOLIC LOG	COMMENTS (DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION)
	5	5.0						Silty topsoil, then sandy cuttings to 5'
								Grout to surface
		6.5	S-1	18	7-6-2 (8)	SAND, poorly graded, fine sand, ~15% fine, but some interlayers of silt, medium dense, dry, light brown, (SP), fill.		
								Cuttings change to dark gray silt at ±7'
								7' top of bentonite soil
								Top of sand pace 8 1/2'
	10	10.0						
		11.5	S-2	18	2-2-7 (9)	Interbedded silt and sand, sand same as above (SP), except gray, SILT, low plasticity, 10-15% sand, odor, light gray, moist, firm (ML), fill.		
								Screen top 12'
	15	15.0						Driller notes H_2O at ±15'
		16.5	S-3	18	1-4-10 (14)	SAND, poorly graded, same as S-1, except strong hydrocarbon odor (SP), fill.		First notice hydrocarbon odor in cutting at 15'
	20	20.0						15' schedule 40 2" 10 slot PVC screen
		21.5	S-4	18	4-4-7 (11)	Interbedded silt and sand, same as S-2, except includes partially decomposed wood fragments and mild to strong hydrocarbon odor, wet, gray, fill.		
	25	25.0						
		26.5	S-5	18	5-6-6 (12)	SAND, poorly graded, fine sand, less than 10% fine, wet, medium to dark gray, compact (SP), strong hydrocarbon odor, fill.		
								Screen bottom 27'
								5'-4" Sump
	30	30.0						

REV. 11 82 FORM D1586

SCOEPA00036970

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-3	SHEET 2 OF 2

SOIL BORING LOG

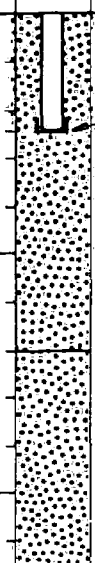
PROJECT **WACKER SILTRONICS** LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION (NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL)	SYMBOLIC LOG	COMMENTS (DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION)
		31.5	S-6	18	4-5-5 (10)	SAND, poorly graded, fine sand, some interbedded silt in lower 2-4", medium gray, wet, medium dense, strong hydrocarbon odor, fill.		Sump bottom at 32'- 4"
	35	35.0						Bottom of fill at ±34 1/2'
		36.5	S-7	18	6-6-6 (12)	Upper 14" - mixture of sand and silt, probably washed cavings. Lower 4" - SILT, low plasticity, medium to dark gray, moist, firm (ML), slight hydrocarbon odor in upper 12", not noticeable in lower 6", sand and silt were mixed together in jar, silt is probably native soil.		Augered to 35' and driller notes 3' of heave; opted to remove check ball from sampler and jet it to sample position in hopes of getting recovery; sample may be disturbed; pumped fresh water into hole (sample of water taken).
	40	40.0						
		41.5	S-8	6"	3-3-3 (9)	Upper 12" - sand as in S-6, but is washed; probably is heaved material, discarded. Lower 6" - SILT, low plasticity, medium to dark gray, moist, firm (ML), probably native soil, no noticeable hydrocarbon odor.		Worst samples. Sample choices, any of S-3, S-4, S-5, S-6.



REV 11/82 FORM D1586

SCOEPA00036971

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-4	SHEET 1 OF 2

SOIL BORING LOG

PROJECT **WACKER SILTRONICS** LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6-6-6 (N)	SOIL DESCRIPTION (NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL)	SYMBOLIC LOG	COMMENTS (DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION)
								Hole is within 20' of abandoned natural gas line
								Grout 5' to surface
	5	5.0				Upper 9" - SAND, poorly graded, fine sand, brown, moist to wet, loose (SP).		Bentonite from 5'-6'
		6.5	S-1	18	5-1-2 (3)	Lower 9" - SILT, non-plastic, 10-20% fine sand, dark gray, moist, soft (ML), fill.		Screen top at 6 1/2'
								Some gravel - like material at 8'
								Driller notes water at ±8';
	10	10.0				Upper 6" - SAND, same as S-1, maybe slough.		
		11.5	S-2	18	11-13-11 (24)	Lower 12" - SILT, same as above.		15' screen 10 slot 2" schedule 40 PVC
	15	15.0				SAND, poorly graded, fine sand, saturated, loose, (SP), maybe slough, possible mild odor of hydrocarbon.		
		16.5	S-3	6"	3-3-4 (7)			Piece wood jammed into end of shoe
	20	20.0				SILT, low plasticity, brownish gray, moist, firm, (ML), native soil; included pieces of wille, probably dragged into sample.		Fill ±20' Native
		21.5	S-4	18	1-4-4 (8)			Screen bottom at 21 1/2'
								5'- 4" Sump
	25	25.0				SILT, same as above.		
		26.5	S-5	12	4-4-4 (8)			Tailpiece bottom at 27'
								Bentonite from 27-28'
	30	30.0						Gravel to 41 1/2'

REV 11 82 FORM D1586

SCOEPA00036972

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-4	SHEET 2 OF 2

SOIL BORING LOG

PROJECT WACKER SILTRONICS LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION (NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL)	SYMBOLIC LOG	COMMENTS (DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION)
		31.5	S-6	18	4-5-4 (9)	SILT, low plasticity, gray with brown mottling, moist, firm (ML), includes some decomposed plant fragments.		
	35	35.0						
		36.5	S-7	8	2-3-8 (11)	SANDY SILT, non-plastic, 30-50% fine sand, brown, moist, firm (ML).		Gravel to 41 1/2'
	40	40.0						
		41.5	S-8	8		END MW at 41.5'		
								Worst samples None - all have clean appearance

REV. 11-82 FORM D-586

SCOEPA00036973

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-5	SHEET 1 OF 2

SOIL BORING LOG

PROJECT **WACKER SILTRONICS** LOCATION PORTLAND, OREGON

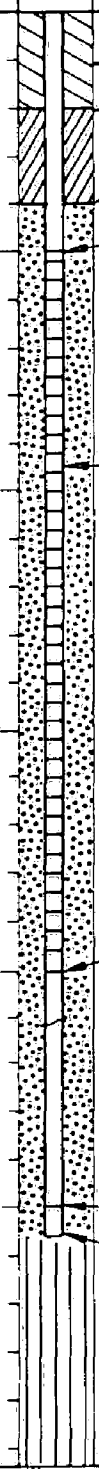
ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6-6-6 (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
	5	5.0					
		6.5	S-1	18	4-4-8 (12)	SAND, poorly graded, fine sands, brown and gray, some 1/2" silt lenses, moist, loose; includes some oil sheen and odor.	
	10	10.0					
		11.5	S-2	18	6-6-8 (14)	SAND, poorly graded, fine sand, dark gray, wet, loose to compact, (SP), fill, saturated with oil (split samples taken, Jar 1 and Jar 2).	
	15	15.0					
		16.5	S-3	18		SAND, same as S-2, except only has oily odor and occassional sheen in soil.	
	20	20.0					
		21.5	S-4	18	3-4-5 (9)	SAND, same as S-2, excet has mild odor of oil; silt in top.	
	25	25.0					
		26.5	S-5	9	3-5-10 (15)	SILT, low plasticity, 10-15% fine sand, medium gray with brown, yellow and reddish mottling, slightly moist, very stiff (ML), no noticeable hydrocarbon odor.	
	30	30.0					

SYMBOLIC LOG



COMMENTS:

- Grout to surface
- Top of bentonite scale = 2'
- Top of sand at 4'
- Screen top at 5'
- Dark gray sandy material in cuttings from 5'-10', noticeable oily smell and sheen
- Driller notes water 5'-10'
- Screen bottom at 20'
- Silt in tip of sampler, for S-4 fill ±21 Native
- Sump bottom at 25'
- Tailpiece bottom at 25' - 4"
- NOTE: Driller lost steel weight for tape in hole at 30 feet, not recovered.

REV. 11-82 FORM D1686

SCOEPA00036974

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-5	SHEET 2 OF 2

SOIL BORING LOG

PROJECT **WACKER SILTRONICS** LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE: INTERVAL	SAMPLE: TYPE AND NUMBER	SAMPLE: RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
		31.5	S-6	18	4-5-5 (10)	**SILT, low plasticity, about 10% fine sand, gray with brown mottling, moist, stiff (ML), no noticeable hydrocarbon odor.**		
						END MW at 31.5 feet.		
								Worst samples
								S-2 = worst
								S-3

REV. 11-82 FORM D1586

SCOEPA00036975

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-6	SHEET 1 OF 2

SOIL BORING LOG

PROJECT **WACKER SILTRONICS** LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION (NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL)	SYMBOLIC LOG	COMMENTS (DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION)
	5	5.0						Grout to surface
		6.5	S-1	18	3-8-11 (19)	SAND, poorly graded, fine sand, less than 10% fine, brown, moist, compact (SP), fill.		Bentonite to 6 1/2' Sand to 7 1/2' Top of screen at 9'
	10	10.0						
		11.5	S-2	18	10-10-11 (21)	Primarily sand, as in S-1, but with several 1-inch silt layers; lower 6" of sample has strong hydrocarbon odor to it.		Driller notes water at ±12', coincident with appearance of "oily" odor from cuttings while drilling from 10-15'
	15	15.0						
		16.5	S-3	18	1-1-2 (3)	SAND, as in S-1, except lower 6" have blackish discoloration and strong hydrocarbon odor; small oily splotches noticeable in soil.		
	20	20.0						
		21.5	S-4	18	3-3-5 (8)	Upper 6" - SAND as in S-1, have blackish discoloration and hydrocarbon odor, fill. Lower 12" - SILT, low plasticity, gray with brown mottling, firm (ML), hydrocarbon odor not noticeable.		A-rods came out of hold with unusual yellow discoloration from water at 20-25'
	25	25.0						Bottom of screen at 24'
		26.5	S-5	18	9-26-26 (52)	SAND, as in S-1, but dark gray with mild hydrocarbon odor, material might be heaved sands and not representative of in-situ soil at 25'.		Driller notes 4' of heave after drilling to 25'; also, chain fell in hole, but was able to recover by retracting augers from hole; Augers moved during SPT from S-5, driller says no contact with sampler; why so high of an N value?
	30	30.0						Sump to 29 1/2'

REV. 11-82 FORM D1556

SCOEPA00036976

CH2M HILL

P19436.A2 | MW-6 | SHEET 2 OF 2

SOIL BORING LOG

PROJECT WACKER SILTRONICS LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION (NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL)	SYMBOLIC LOG	COMMENTS (DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION)
		31.5	S-6	18"	5-7-12 (19)	All 18" of soil in barrel is SAND, poorly graded, fine sand, less than 10% fine, medium to dark gray, wet, compact, (SP), probably heave or disturbed soil, not representative of 30' depth; mild hydrocarbon odor. 2" of soil in shoe of sampler is SANDY SILT, non-plastic, 30-50% fine sand, medium gray, wet, firm, (ML); no noticeable hydrocarbon odor, sandy silt is probably representative of in-situ soil.		Driller notes 3' of heave from 30-29' prior to sampling S-6; had to drill/wash out heave
								Sample choices S-3

REV 11 82 FORM D1686

SCOEPA00036977

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-7	SHEET 1 OF 2

SOIL BORING LOG

PROJECT **WACKER SILTRONICS** LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION (NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL)	SYMBOLIC LOG	COMMENTS (DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION)
	5	5.0						Grout to surface
		6.5	S-1	12"	1-3-1 (4)	Lower 6" - SILT, low plasticity, moist, gray, soft (ML). Upper 6" - SAND, poorly graded, fine sand, brown, wet, loose, (SP), fill.		5 1/2' top of bentonite
	10	10.0						Cavings around PVC 7-15' 10' of top of screen
		11.5	S-2	14	5-9-11 (18)	SAND as in upper 6" of S-1, (SP), fill.		Driller notes water at ±12'
	15	15.0						15' section 10 slot PVC wells
		16.5	S-3	18	2-1-5	SAND, same as upper 6" of S-1 (SP), fill.		During well construction, drill hole walls began squeezing in at 5' up to 7', sand was packed in auger and walls apparently squeezed in faster than sand could drop out; tried twice unsuccessfully to jet-out sand.
	20	20.0						Fill Native ±
		21.5	S-4	18	5-5-6 (11)	Upper 6" - sand as in upper 6" of S-1, (SP), fill; mild hydrocarbon odor. Lower 12" - SILT, low plasticity, medium brown with gray mottling, moist, firm, (ML); native soil.		
	25	25.0						25' bottom screen
		26.5	S-5	18	4-3-4 (7)	Upper 9" - SILT, low plasticity, medium brown with gray mottling, moist, firm, (ML). Lower 9" - SAND, poorly graded, fine sand, medium gray, wet, loose, (SP), strong hydrocarbon odor, visible blotches of oil (?) in both silt and sand.		5'-4" Sump Bottom of Sump = 30' Driller notes heave at 30' ±4' of heave
	30	30.0						

REV 11 82 FORM D1586

SCOEPA00036978

CH2M HILL

PROJECT NUMBER	BORING NUMBER	
P19436.A2	MW-7	SHEET 2 OF 2

SOIL BORING LOG

PROJECT **WACKER SILTRONICS** LOCATION PORTLAND, OREGON

ELEVATION _____ DRILLING CONTRACTOR GEOTECH EXPLORATIONS, BEAVERTON, OREGON

DRILLING METHOD AND EQUIPMENT CME-55, 6" HS AUGERS

WATER LEVEL AND DATE _____ START _____ FINISH _____ LOGGER _____

ELEVATION	DEPTH BELOW SURFACE (FT.)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION (NAME, GRADATION OR PLASTICITY, PARTICLE SIZE DISTRIBUTION, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL)	SYMBOLIC LOG	COMMENTS (DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION)
		31.5	S-6	18	2-1-2 (3)	Lower 9" - SAND, poorly graded, fine, brown, wet, soft, (SP).. Upper 9" - SAND, very fine, brown, wet, loose, (SM); All has definite hydrocarbon (?) odor, not visible in soil, however. Sample may be distrubed, heave material.		Reamed out heaved area from 26 to 30' with wash water and tricone bit to clear auger. Backfill to 32'-4"
	35	35.0						
		36.5	S-7	18	3-5-5 (10)	SANDY SILT, low plasticity, 20-30% fine sand, medium brown, moist, soft, (ML); noticeable hydrocarbon (?) odor.		
	40	40.0				Upper 7" - SILT, low plasticity, brown, wet, firm, (ML).		
		41.5	S-8	14"	8-11-17 (28)	Lower 7" - SILTY SAND, fine sand, about 30% fine, brown, wet, compact, (SM); both silt and sand have noticeable hydrocarbon (?) odor, no visible traces. END MW at 41.5 feet		Sample choices (Ranked from worst) *S-5 S-6 S-7 - S-8 (about the same) *amount of odor

REV 11 82 FORM D1566

SCOEPA00036979

COFFEY LABORATORIES, INC.
4914 N.E. 122nd Ave.
Portland, OR 97230
Phone: (503) 254-1794

RECEIVED
ENGINEERING
MAY 10 1985
John L. Pittman
Wacker Siltronic

May 10, 1985

Wacker Siltronics
P. O. Box 03180
Portland, Oregon 97203

RE: Detection Limits

	Detection Limits mg/liter
Phenol	0.01
O-Cresol	0.02
3 & 4 Chlorophenol	0.03
2 - Chlorophenol	0.03
2 - Nitrophenol	0.04
2, 4 Dimethylphenol	0.03
2, 4 Dichlorophenol	0.04
2, 4, 5 Trichlorophenol	0.06
2, 3, 5, 6 Tetrachlorophenol	0.1
2, 3, 4, 5 Tetrachlorophenol	0.1
M & P Cresol	0.005

Sincerely,

Susan M. Coffey

Susan M. Coffey
President

SMC/jc

Wacker Siltronic Corporation

Wacker Siltronic Corporation
P.O. Box 03180
Portland, OR 97203
7200 N.W. Front Ave.
Portland, OR 97210
Phone (503) 243-2020
TWX 910-464-4777
FAX 503 226-0052

January 17, 1986

Mr. Renato C. Dulay
Field Representative
Northwest Region
Department of Environmental Quality
P. O. Box 1760
Portland, OR 97207

Dear Mr. Dulay:

Suglect: Annual TTO Analysis for
NPDES Permit No. 3647-J

As per Schedule B of the above referenced Waste Discharge Permit for our Portland facility, I am submitting the enclosed waste water analysis.

In accordance with 40 CFR 469.21(a) we are required to monitor all toxic organic compounds annually.

Northwest Testing Laboratories, Inc. of Portland, Oregon, performed an analysis of 26 TTO compounds. The only compound above tracer limits was Trichloroethylene (TCE), which we monitor for on a monthly basis. This sample was well below our limit of 1.37 mg/l.

Please call me at 243-2020, ext. 301 if you have any questions regarding this.

Very truly yours,

WACKER SILTRONIC CORPORATION

Murray M. Tilson, P.E.
Facilities Operations and
Environmental Supervisor

MMT:ll

Enclosure

cc: Greg Carr (w/encl)
Jim Ellis (w/encl)
Jim Harper (w/encl)
John Pittman (w/encl)
Jerry Schaeffer (w/encl)

NORTHWEST TESTING LABORATORIES, INC.

CONSTRUCTION INSPECTION
MATERIALS INSPECTION
CHEMICAL ANALYSIS
PHYSICAL TESTING

5405 N. Lagoon Avenue
P.O. Box 17126
Portland, Oregon 97217-0126
Phone: (503) 289-1778

NON-DESTRUCTIVE TESTING
WELDING CERTIFICATION
SOIL TESTING
ASSAYING

December 20, 1985

Wacker Siltronic Corp.
P.O. Box 03180
Portland, OR 97203

Attention: Mr. Greg Carr

Subject: Analysis on one (1) sample submited on 12-11-85, per your P.O. number 53746.

Item: Wastewater

Analysis:

Trichloroethylene	330 ppb
2,4,6 Trichlorophenol	<2.2 ppb
1,2,4 Trichlorobenzene	<2.2 ppb
Chloroform	<2.2 ppb
1,2 Dichlorobenzene	<5.0 ppb
1,3 Dichlorobenzene	<5.0 ppb
1,4 Dichlorobenzene	<5.0 ppb
1,1,1 Trichloroethane	<2.2 ppb
Methylenechloride	<5.0 ppb
Tetrachloroethylene	<1.0 ppb
2, Chlorophenol	<10.0 ppb
2,4 Dichloropheneol	<2.0 ppb
Pentachlorophenol	<0.8 ppb

Report No: 293284

Analysis: (cont.)

1,1 Dichloroethylene	<5.0 ppb
4, Nitrophenol	<210 ppb
2, Nitrophenol	<210 ppb
Phenol	<210 ppb
Napthalene	<210 ppb
Anthracene	<210 ppb
Isophorone	<210 ppb
Toluene	<210 ppb
Ethylbenzene	<210 ppb
1,2 Diphenylhydrazine	<210 ppb
Bis (2-ethylhexyl) phthalate	<210 ppb
Di-n-butyl Phthalate	<210 ppb
Butylbenzyl Phthalate	<210 ppb

Respectfully,
NORTHWEST TESTING LABORATORIES, INC.

Howard Holmes
Assistant Supervisor, Chemistry

Report No: 293284

Wacker Siltronic Corporation **WACKER**

Wacker Siltronic Corporation
P.O. Box 03180
Portland, OR 97203
7200 N.W. Front Ave.
Portland, OR 97210
Phone (503) 243-2020
TLX 4970339
FAX 503-226-0052

January 22, 1988

Mr. George Davis
Field Representative
Northwest Region
Department of Environmental Quality
811 S.W. 6th Ave.
Portland, OR 97204

Dear Mr. Davis:

Annual TTO Analysis for NPDES Permit No. 3647-J

As per Schedule B of the above referenced Waste Discharge Permit for our Portland facility, I am submitting the enclosed waste water analysis.

In accordance with 40 CFR 469.21 (a), we are required to monitor all toxic organic compounds annually.

Northwest Testing Laboratories, Inc., of Portland, Oregon, performed an analysis of 26 TTO compounds. Please call me at 243-2020, extension 301, if you have any questions regarding this report.

Very truly yours,

WACKER SILTRONIC CORPORATION

Murray M. Tilson, P.E.
Environmental Manager

MMT:dj

Enclosure (1) TTO Analysis from Northwest Testing Laboratories, Inc. dated January 20, 1988

cc: Greg Carr (w/encl)
John Pittman (w/encl)
Mike Pilkington (w/encl)
Tom Rothschild (wo/encl)

NORTHWEST TESTING LABORATORIES, INC.

CONSTRUCTION INSPECTION
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CHEMICAL ANALYSIS
PHYSICAL TESTING

5405 N. Lagoon Avenue
P.O. Box 17126
Portland, Oregon 97217-0126
Phone: (503) 289-1778

NON-DESTRUCTIVE TESTING
WELDING CERTIFICATION
SOIL TESTING
ASSAYING

January 20, 1988

Wacker Siltronic Corporation
P.O. Box 03180
Portland, Oregon 97203

Attn: Mr. Tom Rothschild

Subject: Analysis on one (1) sample submitted on 1-11-88 per your P.O. Number 69225-0.

Item: Wastewater 1-11-88 at 0820

Analysis:

Trichloroethylene	0.05 ppm
2,4,6 Trichlorophenol	<0.05 ppm
1,2,4 Trichlorobenzene	<0.05 ppm
Chloroform	<0.05 ppm
1,2 Dichlorobenzene	<0.05 ppm
1,3 Dichlorobenzene	<0.05 ppm
1,4 Dichlorobenzene	<0.05 ppm
1,1,1 Trichloroethane	<0.05 ppm
Methylenechloride	<0.05 ppm
Tetrachloroethylene	<0.05 ppm
2 Chlorophenol	<0.05 ppm
1,4 Dichlorophenol	<0.05 ppm
Pentachlorophenol	0.20 ppm

Report Number 311264

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Analysis: (continued)

1,1 Dichloroethylene	<0.05	ppm
4 Nitrophenol	<0.1	ppm
2 Nitrophenol	<0.1	ppm
Phenol	<0.1	ppm
Napthalene	<0.1	ppm
Anthracene	<0.1	ppm
Isophorone	<0.1	ppm
Toluene	<0.1	ppm
Ethylbenzene	<0.1	ppm
1,2 Diphenolhydrazine	<0.1	ppm
Bis (2-ethylhexyl) Phthalate	<0.1	ppm
Di-n-butyl Phthalate	<0.1	ppm
Butylbenzyl Phthalate	<0.1	ppm

Respectfully,
NORTHWEST TESTING LABORATORIES, INC.

Howard B. Holmes
Assistant Supervisor, Chemistry

Report Number 311264

NEIL GOLDSCHMIDT
GOVERNOR

Department of Environmental Quality

811 SW SIXTH AVENUE, PORTLAND, OREGON 97204-1334 PHONE (503) 229-5696

cc: John Pittman
Greg. Cox
Mike Fillington
Tony Rotkiewicz

January 27, 1988

Mr. Murray M. Tilson
Environmental Manager
Wacker Siltronic Corporation
P.O. Box 03180
Portland, Oregon 97203

Re: WQ-Multnomah Co.
Wacker Siltronic Corp.
Permit No. 3647-J

Dear Mr. Tilson:

This letter is to confirm our conversation on January 27, 1988 regarding Wacker's annual TTO analysis.

The results of the TTO analysis indicate that pentachlorophenol was detected at a level of 0.20 ppm. Wacker's NPDES permit requires that monthly monitoring be instituted for any TTO compounds confirmed to be present in the wastewater. Accordingly, the Department requests that Wacker's wastewater be tested for pentachlorophenol each month for six months, beginning in January, 1988. During this period Wacker should attempt to determine and eliminate the source of pentachlorophenol. If the source of pentachlorophenol cannot be eliminated and analysis results continue to indicate the presence of pentachlorophenol in the wastewater, the Department may require that monthly analysis for pentachlorophenol be continued after the initial six-month period. It might be worth noting that pentachlorophenol is commonly used as a wood preservative; any wooden structures the wastewater contacts may be possible sources.

Please submit copies of the analysis results to the Department (addressed to George Davis) as they become available. If you have any questions on this or any other matter, please contact me at 229-5393.

Sincerely,

George F. Davis

George F. Davis
Environmental Engineer
Northwest Region

cc: Water Quality Division, DEQ

DEQ-1

Wacker Siltronic Corporation

Wacker Siltronic Corporation
P.O. Box 03180
Portland, OR 97203
7200 N.W. Front Ave.
Portland, OR 97210
Phone (503) 243-2020
TLX 4970339
FAX 503-226-0052

May 5, 1988

Mr. George Davis
Field Representative
Northwest Region
Department of Environmental Quality
611 S.W. 6th Avenue
Portland, OR 97204

Subject: Pentachlorophenol Sampling

Dear Mr. Davis:

As per our telephone conversation last week, I am submitting data for the pentachlorophenol sample measured by Northwest Testing Laboratories, from a sample taken on 4/19/88. As with the previous three samples taken, the measured concentration of pentachlorophenol was <0.005 ppm in our combined effluent stream.

With confirmation that the April sample would measure less than <0.005 ppm in pentachlorophenol concentration, it was agreed that Wacker could discontinue sampling after the April sample.

Please call me at 243-2020, extension 301, if you have any questions regarding this.

Very truly yours,

WACKER SILTRONIC CORPORATION

Murray M. Tilson, P.E.
Environmental Manager

MMT:ll

Enclosure

cc: Greg Carr
Mike Pilkington
John Pittman

NORTHWEST TESTING LABORATORIES, INC.

CONSTRUCTION INSPECTION
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Portland, Oregon 97217-0126
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NON-DESTRUCTIVE TESTING
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April 29 1988

Wacker Siltronic
P.O. Box 03180
Portland, Oregon 97203

Attention: Thomas Rothschild

Subject: Analysis performed on one (1) sample received on 4/19/88, per your P.O. Number 71074.

REPORT:

Item: Combined Effluent, Water Sample 4/19/88 @ 1010 hours

Analysis:

	Pentachlorophenol ppm
Combined Effluent	< 0.005

Respectfully,
NORTHWEST TESTING LABORATORIES, INC.

Fred Thomas, Chemist

Howard B. Holmes
Assistant Supervisor, Chemistry

Report Number: 314182

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NORTHWEST TESTING LABORATORIES, INC.

CONSTRUCTION INSPECTION
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PHYSICAL TESTING

5405 N. Lagoon Avenue
P.O. Box 17126
Portland, Oregon 97217-0126
Phone: (503) 289-1778

NON-DESTRUCTIVE TESTING
WELDING CERTIFICATION
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ASSAYING

April 29 1988

Wacker Siltronic
P.O. Box 03180
Portland, Oregon 97203

Attention: Thomas Rothschild

Subject: Analysis performed on one (1) sample received on 4/19/88, per your P.O. Number 71074.

REPORT:

Item: Combined Effluent, Water Sample 4/19/88 @ 1010 hours

Analysis:

	Pentachlorophenol ppm
Combined Effluent	< 0.005

Respectfully,
NORTHWEST TESTING LABORATORIES, INC.

Fred Thomas, Chemist

Howard B. Holmes
Assistant Supervisor, Chemistry

Report Number: 314182

AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS AND ARE INTENDED FOR THE USE OF OUR CLIENTS ONLY NO OTHER PERSON

NORTHWEST TESTING LABORATORIES, INC.

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P.O. Box 17126
Portland, Oregon 97217-0126
Phone: (503) 289-1778

NON-DESTRUCTIVE TESTING
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SOIL TESTING
ASSAYING

April 12, 1988

Wacker Siltronic
P.O. Box 03180
Portland, Oregon 97203

Attention: Thomas Rothschild

Subject: Analysis performed on one (1) sample received on 3/29/88, per your P.O. Number 70576-0.

REPORT:

Item: Combined Effluent, Water Sample, 3/29/88

Analysis:

	Pentachlorophenol ppm
Combined Effluent	< 0.005

Respectfully,
NORTHWEST TESTING LABORATORIES, INC.

Fred Thomas, Chemist

Howard B. Holmes
Assistant Supervisor, Chemistry

Report Number: 313276

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NORTHWEST TESTING LABORATORIES, INC.

CONSTRUCTION INSPECTION
MATERIALS INSPECTION
CHEMICAL ANALYSIS
PHYSICAL TESTING

5405 N. Lagoon Avenue
P.O. Box 17126
Portland, Oregon 97217-0126
Phone: (503) 289-1778

NON-DESTRUCTIVE TESTING
WELDING CERTIFICATION
SOIL TESTING
ASSAYING

January 29, 1988

Wacker Siltronic
P.O. Box 03180
Portland, Oregon 97203

Attention: Thomas Rothschild

Subject: Analysis performed on two (2) samples received on 1/29/88, per your request.

REPORT:

Item: Water Samples

Analysis:

	Pentachlorophenol ppm
R.O.D.I. Water	<0.002
Combined Effluent	0.004

Respectfully,
NORTHWEST TESTING LABORATORIES, INC.

Fred Thomas

Fred Thomas, Chemist

Howard B. Holmes

Howard B. Holmes
Assistant Supervisor, Chemistry

Report Number: 311765

AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS AND ARE INTENDED FOR THE USE OF OUR CLIENTS ONLY. NO OTHER PERSON

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

Is your RETURN ADDRESS completed on the reverse side?

SENDER:
- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):
1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
HEATHER SCHUFF
DEQ-NW REGION
2020 S.W. 4th AVE - STE 400
PORTLAND, OR 97201-4987

4a. Article Number
P 494 544 855

4b. Service Type
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

7. Date of Delivery
APR 29 1997

5. Signature (Addressee)

6. Addressee's Address (Only if requested and fee is paid)

6. Signature (Agent)
DEQ/NWR

PS Form 3811, December 1991 - 4U.S. GPO: 1993—352-714 **DOMESTIC RETURN RECEIPT**

Thank you for using Return Receipt Service.

Eric Spiering M530
P 494 544 855

US Postal Service
Receipt for Certified Mail
No Insurance Coverage Provided.
Do not use for International Mail *(See reverse)*

Sent to DEQ-NW REGION-HEATHER SCHUFF	
Street & Number 2020 S.W. 4th - STE 400	
Post Office, State, & ZIP Code PORTLAND, OR. 97201-4987	
Postage	$ .55
Certified Fee	1.10
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Return Receipt Showing to Whom & Date Delivered	1.10
Return Receipt Showing to Whom, Date, & Addressee's Address	
TOTAL Postage & Fees	$ 1.75
Postmark or Date APR 28 1997	

PS Form 3800, April 1995

SCOEPA00036995

WACKER
Wacker Siltronic Corporatic

Mr. Timothy P. Dean
Permit Manager
Environmental Tech. II
City of Portland
Environmental Services
1211 SW 5th Avenue, Suite 800
Portland, OR 97204-3713

January 7, 1997
ER:001

RE: Waste Water Discharge due to Power Outage

Dear Mr. Dean:

Wacker Siltronic reported an overflow of untreated waste water to the sanitary sewer on December 25 and 26, 1996. Both of these overflows were the result of power failures, though we believe they were unrelated.

The first overflow upset lasted 10 minutes and began at 12:15 am 12/25/96. This overflow resulted from an air handling unit going to ground, which caused a power failure in the motor control center (MCC4C) which feeds the forwarding sump pumps. The forwarding pumps transfer waste water from Fab 1 to the waste water treatment plant. A failure of these pumps will cause the sump to reach high level and overflow to the sanitary drain. An overflow of approximately 1,000 gallons of waste waster was sent to the sanitary sewer and was reported to the Duty Officer at the Columbia Boulevard Treatment Plant. All of the waste water discharged met permit parameters.

The second overflow was an upset condition where all power was lost to the plant from 10:45-11:39 am, 12/26/96. Power was lost due to severe weather conditions. Wacker Siltronic is supplied with two power feeds into an onsite substation. Power was lost from both feeds when most of North and Northwest Portland was without power. A report is due from the utility.

Wacker has an uninterruptable power supply for alarm systems, life safety systems, and critical control systems. In addition, we have emergency generators which supply power to key pollution control equipment like emergency exhaust fans. When the power was lost we could not operate the ultra pure water system thus all water supply to the processes stopped limiting the amount of waste water which would be produced. City drinking water was automatically fed to the furnaces as Emergency cooling water to prevent meltdown. This cooling water drains to the waste water forwarding sump weak acid drain (WAD) system which in turn overflows to the organic waste water (OWW) and finally to the sanitary sewer.

The power outage lasted 54 minutes. The over flow to the sanitary sewer was estimated to last approximately 30 minutes at 200 gpm or 6,000 gals. An overflow of 18,000 gallons was reported to Miguel Santana, On-Duty Officer for Environmental Services with the City, 12/26/96. Since power was out to the recorder only the last 10 minutes of the outage was recorded until the system came back under control. Available head space and holding capacity in the WAD and OWW forwarding sumps reduced the actual overflow time. Additional confusion occurred when we discovered we have the wrong strip chart paper in the strip chart recorder. The chart paper reads 0-600 full-scale and the flow monitoring device is calibrated for 0-200 gpm. Grab samples were taken and analyzed for pH and fluoride during the over flow. pH was 6.87 and Fluoride was 0.35 mg/l. All of the permit parameters were met during the upset except that we were unable to send all waste water through the water treatment plant. Should you have any questions please call me at 241-7532.

Sincerely,

Thomas C. McCue

Thomas C. 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

Dames & Moore
1220 S.W. Morrison Street
Portland, Oregon 97205
(503) 228-7688

LETTER OF TRANSMITTAL

TO: Wacker-Siltronic
P.O. Box 03180
Portland, OR 97203

DATE: October 28, 1986

PROJECT NAME:

ATTENTION: Mr. James R. Ellis

JOB NO: 14232-001-05

SUBJECT: CH2M HILL Report

YOUR ORDER NO:

WE ARE SENDING YOU VIA Hand Delivered

THE FOLLOWING:

NO. OF COPIES	DESCRIPTION
1	Original report dated August 10, 1982 from CH2M HILL.

THESE ARE FOR

REMARKS:

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BY C. F. Kienle

C. F. Kienle

CH2M HILL
engineers
planners
economists
scientists

August 10, 1982

P16058.BO

Wacker-Chemie
Department U
Postfach 1140, 8263 Werk Burghausen
West Germany

Attention: Mr. Herbert Schmid

Gentlemen:

Subject: Preliminary Geotechnical Exploration
Proposed Wacker Poly Plant

We are pleased to submit this report summarizing our geotechnical exploration for the proposed Wacker Poly Plant in Portland, Oregon. The report contains the results of our field exploration and laboratory analyses, and presents preliminary foundation recommendations.

We appreciate the opportunity to work with you on this project. If you have any questions regarding this report, or if we may be of further assistance, please contact us.

Sincerely,

Deanne L. Kasai

Deanne L. Kasai
Staff Geotechnical Engineer

Richard S. Reid

Richard Reid
Project Manager

480.002.1

Portland Office
200 S.W. Market Street, 12th Floor, Portland, Oregon 97201 503/224-9190 Cable: CH2M HILL

PRELIMINARY GEOTECHNICAL EXPLORATION

for the

PROPOSED WACKER POLY PLANT

PORTLAND, OREGON

Prepared for

WACKER-CHEMIE

BURGHAUSEN, WEST GERMANY

by

CH2M HILL

200 S.W. Market Street
Portland, Oregon 97201

August 1982

Project No. P16058.BO

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PRELIMINARY GEOTECHNICAL EXPLORATION
PROPOSED WACKER POLY PLANT

INTRODUCTION

Purpose and Scope

This report presents the results of our preliminary geotechnical exploration for the proposed Wacker Poly Plant, which will be adjacent to the existing Wacker Siltronic Corporation Plant in Portland, Oregon. The purpose of our exploration was to evaluate subsurface conditions at the site and to make preliminary foundation recommendations for support of the proposed facilities.

The scope of our work included:

- Reviewing existing data and reports of previous preload performance.
- Conducting a drilling program, consisting of nine soil borings, to explore subsurface conditions at the site.
- Performing laboratory testing on selected soil samples collected from soil borings.
- Developing preliminary foundation recommendations based on geotechnical evaluation of subsurface information and laboratory test results.
- Preparing this report summarizing our findings.

Limitations

The analysis and recommendations contained in this report are based on data obtained from soil borings, existing reports, and current geotechnical engineering practice. This report has been prepared to assist in the evaluation of the proposed site and to assist in the design of this project. Soil borings indicate soil conditions only at specific locations and times, and only to the depths penetrated. They do not necessarily reflect soil or strata variations that may exist between boring locations. If variations in subsurface conditions different from those described are noted during the course of excavation and construction, reevaluation of the exploration and design analysis will be necessary. The conclusions and recommendations contained in this report should be reevaluated in the event that changes are made in the nature or design of the structures, or if the structures are relocated outside the explored area.

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This report has been prepared for the exclusive use of Wacker-Chemie, Burghausen, West Germany, for specific application to the subject site, in accordance with generally accepted geotechnical engineering practices. No other warranty, expressed or implied, is made.

Site Description

The project site is located in a vacant field about 400 feet south of Wacker Siltronic Corporation's existing facilities in northwest Portland, Oregon (Figures 1 and 2). The site is bounded on the north by the existing Wacker Plant, and is bordered on the south and east by the SP&S railway's right-of-way. Underground utilities, consisting of oil, water, gasoline, natural gas, and sewer lines, as well as electric and telephone cables, are present in a 100-foot-wide easement on the north side of the site (Figure 2).

The site is relatively level with elevations ranging from about 40 feet National Geodetic Vertical Datum 1929 (NGVD) in the southern part to about 32 feet in the northern part. The ground surface is locally deeply rutted with heavy machinery tracks and ditches. Wood debris, concrete, and other waste materials are present in small concentrations across the field.

We understand that two generations of hydraulic fill material have been placed on the site during the past 25 years. Fill was first placed 20 to 25 years ago, and again sometime during the past 10 years. The most recent fill is about 5 feet thick. Overall fill thickness is probably 15 to 20 feet.

The existing Wacker Siltronic Plant was successfully preloaded to reduce post-construction building settlements. The first stages of preloading began on August 22, 1978, and the eleventh and final stage was placed on October 10, 1978. Preload removal began on September 9, 1978, and subsequent removal of each stage was authorized after review of settlement monitoring data. Preload removal was authorized after predicted settlement was achieved or primary settlement was complete. The last stage was removed by January 5, 1979. The measured settlements of the settlement plates varied between zero and 13.8 inches. This difference was attributed to differential fill heights and the variable nature of the subsurface materials (CH2M HILL, 1979).

Based on U.S. Army Corps of Engineers' data, the 100-year flood level at the project site is 27.7 feet NGVD. The 50-year flood elevation is 25.8 feet.

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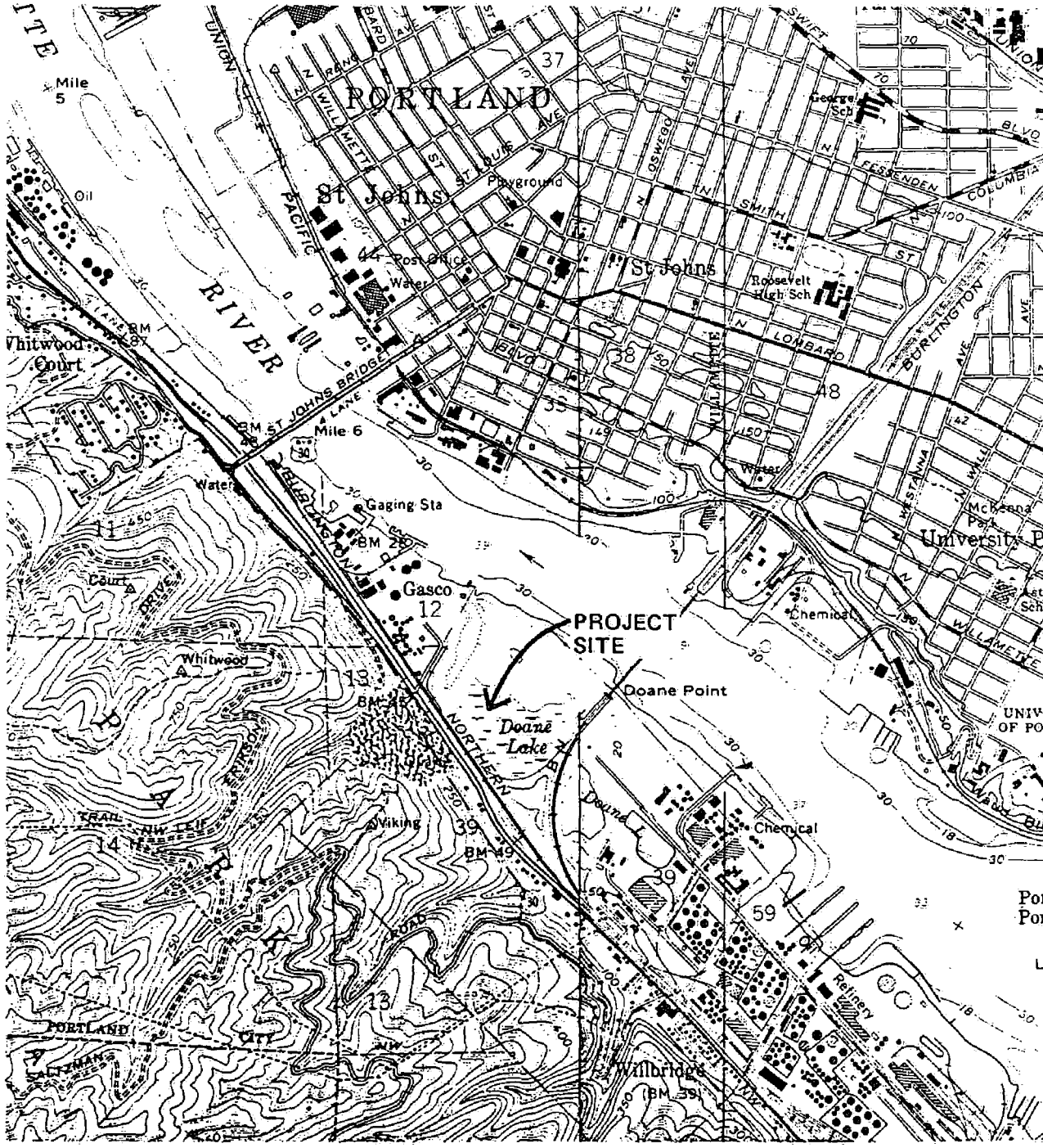

FIGURE 1
VICINITY MAP
Wacker Siltronics Corporation
August 1982

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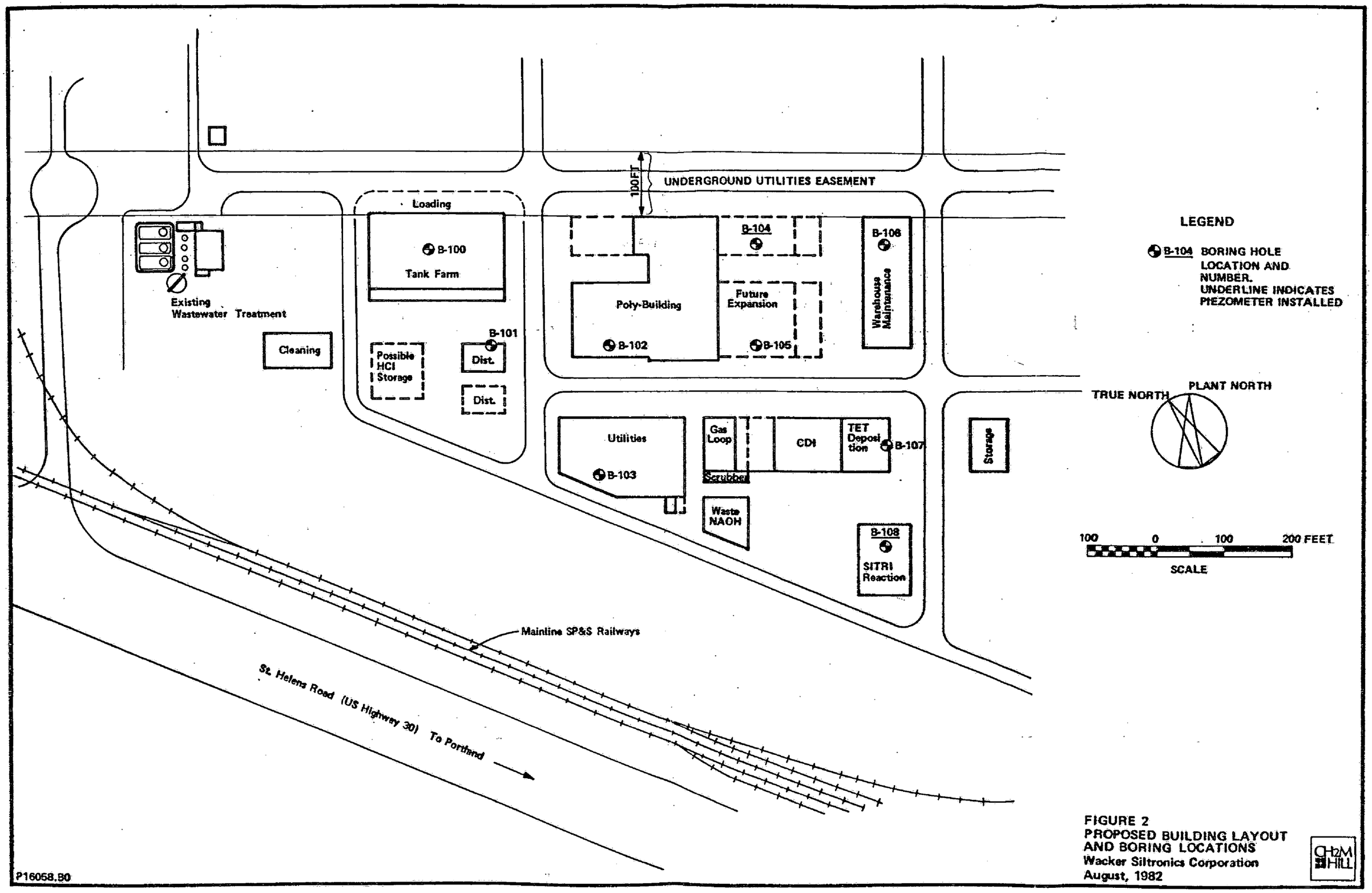

FIGURE 2
PROPOSED BUILDING LAYOUT AND BORING LOCATIONS
Wacker Siltronics Corporation
August, 1982

Project Description

The proposed Poly Plant will consist of the following facilities: Distillation Tower, Tank Farm, Poly Deposition Building, Warehouse, Utility Area, Gas Loop, Scrubber, CDI, Tet-Deposition Building, Sitri Reaction, and miscellaneous storage areas (Figure 2). All structures will tentatively be constructed with slab-on-grade, concrete walls, and column footings. There are several structures that will exceed two stories in height, the Distillation Tower, the Poly Deposition Building, the Gas Loop structure, the Sitri Reaction structure, and the Tet-Deposition Building. No basements are planned. The structural loads used in the foundation analysis are shown in Table 1. These loads approximate the total live load plus dead load of the structure divided by the footprint area of the structure; isolated column loads will probably be heavier, while floor slab loads will probably be lighter. The design structural loads should be used for analysis during final design.

Table 1

STRUCTURAL LOADS

Warehouse	300 psf*
Poly Deposition Building, Tet-Deposition Building, Sitri Reaction, Storage Tanks, Utility, Gas Loop, Scrubber, CDI	1,000-1,200 psf
Tank Farm, Distillation Tower	2,000 psf

*psf = pounds per square foot

Process considerations required that the Distillation Tower be designed to restrict the horizontal displacement at the top of the 98-foot columns to 1½ inches, maximum.

EXPLORATION

Geology

The project site is located on the northwest edge of the northwest-trending structural depression known as the Willamette Valley. The physiography of this part of the

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Willamette Valley is dominated by the northwest-trending Portland Hills (also known as the Tualatin Mountains) and the flood plain of the Willamette River. The project area is situated between the base of the Portland Hills (about 0.1 mile to the southwest) and the Willamette River (about 0.3 mile to the northeast).

Beneath artificial fill material, the uppermost geologic unit at the site is unconsolidated alluvium deposited by the Willamette River. In the project area, the alluvium is composed of silt, sand, and combinations of these materials. Columbia River Basalt occurs at depths less than 100 feet beneath the site. Massive flows of Columbia River Basalt are exposed in the walls of the abandoned quarry located immediately southwest of the site.

The northeastern front of the Portland Hills forms a linear escarpment that persists for at least 50 miles in the Portland area. Investigators have speculated about the origin of the linear mountain front for many years. It has been explained as part of a large fold by Trimble (1963), and as the result of normal faulting by Schlicker et al. (1964) and by Balsillie and Beeson (1971). Gravity surveys by Beeson et al. (1974) support the concept of a right lateral strike slip fault with several hundred feet of vertical displacement. However, direct geologic or seismic evidence for a fault along the northeast flank of the Portland Hills has not yet been identified.

Seismic Considerations

The site is located in a region of low to moderate historic seismicity. The largest earthquake to occur within the Portland area since 1841 was a 1962 event with an estimated Richter magnitude of 5 that locally developed a Modified Mercalli (M.M.) Intensity of VII (Berg and Baker, 1963). The epicenter was in the area of the Columbia River about 9 miles northeast of the site. In January and May of 1968, two earthquakes of Richter magnitude 3.7 and 3.8, respectively, occurred in the same general area as the 1962 event and produced M.M. intensities of IV in Portland (Hammond et al., 1974).

Distant earthquakes have also been felt in the Portland area. In 1949, the Richter magnitude 7.1 Olympia, Washington, earthquake produced an intensity VI in Portland. In 1965, a Richter magnitude 6.5 earthquake near Tacoma, Washington, developed an intensity V in Portland. The epicenters of these events were more than 100 miles north of the project area. Events originating about 150 miles offshore from Oregon have produced intensities of IV in Portland (Hammond et al., 1974).

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Perkins et al. (1980) have developed seismic risk maps for the Pacific Northwest based on the estimated probability of maximum bedrock acceleration expected from earthquakes occurring within the region. These maps show that for the Portland area there is a 90 percent probability that bedrock accelerations will not exceed 0.15 g (where g is the acceleration of gravity) in 50 years. This corresponds to an earthquake with a recurrence interval of approximately 500 years. These maps also show that for the Portland area, there is a 90 percent probability that bedrock accelerations will not exceed 0.07 g in 10 years. This corresponds to an earthquake with a recurrence interval of approximately 100 years.

To establish a design earthquake and to determine probable site response, a detailed seismic evaluation would be required. Based on our experience, we believe that a detailed study is not warranted for this site. Therefore, we recommend using the applicable provisions of the Uniform Building Code (1979), Seismic Zone 2, for design.

Liquefaction Potential

We made a brief review of liquefaction potential at the site using the simplified procedure developed by Seed and Idris (1971), and the Standard Penetration Test results (see Appendix A). Following site improvement by use of preloads, we believe that soil liquefaction will be unlikely for bedrock accelerations less than about 0.07 g, which corresponds to an earthquake with a recurrence interval of about 100 years. However, bedrock accelerations of about 0.15 g (corresponding to the 500-year event) may cause local liquefaction at the site. To fully evaluate liquefaction potential, a detailed site response analysis would be required. We believe that this type of analysis is probably not warranted.

Field Exploration

Our field exploration program consisted of nine exploratory soil borings, numbered B-100 through B-108. The locations of borings are shown on Figure 2, and boring logs are presented in Appendix A. The borings were drilled by Donald A. Kenner Drilling of Oregon, Inc., of Sherwood, Oregon. The drilling program was observed in the field by a CH2M HILL geotechnical engineer and engineering geologist. Field work was performed from June 28 through July 2, 1982.

Boring locations and elevations were determined by surveying methods based on NGVD. The soil borings were drilled using two drill rigs on the site. Borings B-100, 101, 102, and 103 were drilled using a CME-55 rotary drill

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rig, while borings B-104, 105, 106, 107, and 108 were drilled with a CME-75 rotary drill rig. In all borings except B-104 and B-108, bentonite drilling mud was used to remove cuttings and to prevent sidewalls from collapsing. An organic polymer drilling fluid (Revert) was used in borings B-104 and B-108 where piezometers were installed. The soil borings were advanced to depths ranging from 69.5 to 100.0 feet. Borings were ended when bedrock was encountered.

Representative samples of materials encountered in the borings were generally obtained at 5-foot intervals with a standard 2-inch outside diameter split-spoon sampler, following the requirements of the Standard Penetration Test (ASTM D 1586). This test is used to characterize the consistency or density of in-place soil by measuring penetration resistance expressed as "blow counts," or "N-value." The blow count is the number of blows required to advance a standard split-spoon sampler 6 inches with a 140-pound hammer falling 30 inches. The sampler is driven 18 inches, and the blow count is recorded for each 6-inch increment. The sum of the second and third increments is referred to as the N-value. Low N-values indicate soft or loose deposits, while high N-values are evidence of hard or dense materials. After the sampler has been driven and the blow counts recorded, the sampler is withdrawn from the boring to recover a disturbed soil sample.

Soil samples were examined in the field and visually classified in approximate accordance with the visual-manual procedure for description of soils (ASTM D 2488). Sampling intervals and classification of soil samples are presented in the boring logs in Appendix A. Field soil boring logs were revised as necessary based on laboratory testing and office examination.

Shelby tube samples were recovered from all borings except B-105. Shelby tube samples provide relatively undisturbed soil samples that are suitable for laboratory testing. The samples were obtained using 3-inch-diameter, thin-walled, seamless steel tubes that are 30 inches long (ASTM D 1587). The tubes were pushed 24 inches into the undisturbed soil in one continuous stroke without rotation using hydraulic pressure. Intervals where Shelby tube samples were recovered are shown on the boring logs in Appendix A.

Open standpipe piezometers were installed at borings B-104 and B-108 to permit monitoring of water levels. Piezometers consist of a slotted PVC tip, 1-1/2 inches in diameter and 18 inches long, connected to a 3/4-inch inside diameter riser pipe that extends 12 to 18 inches above the ground surface. The annular space around the piezometer tips

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was gravel-packed with 3/8-inch-diameter pea gravel. The zone of gravel packing was then sealed with bentonite, and the borings were backfilled to the ground surface. The position of piezometer tips and the zone of gravel pack are described on the boring logs in Appendix A.

Water level measurements were made at borings B-104 and B-108 and are reported on the boring logs. Water levels were not recorded in other borings because drilling mud in the borings did not permit useful measurements to be made.

Laboratory Testing

Selected samples of the silt were tested in CH2M HILL's Portland laboratory for natural moisture content, liquid limits, and plastic limits. The results of these tests are shown in Appendix B. Classification of selected samples was also performed in the laboratory to confirm our visual field classification of the soils.

Consolidation tests were performed on relatively undisturbed samples of the silt layer to determine the compressibility of the soil. Samples for consolidation testing were obtained using a thin-wall tube sampler. The results of these tests are shown in Appendix B.

FINDINGS

Subsurface Conditions

The generalized subsurface soil conditions, described from the ground surface downward, are presented in the following discussion. This information was determined from the information on the soil boring logs in Appendix A. The soil descriptions are generalized for correlation purposes.

- Fill: This material is composed of sand, sandy silt, and silt, with minor gravelly sand in B-103. Sand is the predominant constituent in most of the fill, but silt is the dominant component in the northeastern part of the site at borings B-104 and B-106. The fill is usually dark gray or black in color, and it is moist to wet. Copper wire and rubber were present in fill in the western part of the project area, and chunks of wood were recovered in several other borings. A strong hydrocarbon odor was evident in most samples recovered from the lower half of the fill, and oil was observed in some samples. N-values of the fill ranged from 5 to 49 in the sandy and gravelly material, and from

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1 to 16 in the silts and sandy silts. The fill material is about 15 to 20 feet thick.

- Silt: This unit is composed of silt with lesser amounts of sand and interbedded lenses of silty sand. The silt is generally nonplastic or of low plasticity, but the unit includes zones of silt with moderate to high plasticity. The deposit locally contains as much as 20 to 30 percent fine sand and minor gravel. Color is variable, ranging from brown to shades of gray and blue, with occasional orange-brown mottling. The material is moist to wet. The silt contains fragments of decomposed plant material that is locally abundant. Wood fragments and oil were recovered in the upper part of the unit.

  The silt is very soft to hard in consistency. N-values range from less than 1 to 54. Thickness of the silt ranges from 32 to 77 feet, and averages about 40. The thickest deposits occur in the eastern part of the site, at borings B-104 and B-106. The thinnest part of the unit is in the southern part, at borings B-103 and B-108.

- Sand and Silty Sand: Sandy deposits occur in discontinuous and uneven layers on top of bedrock material (described below). Sand is uniformly graded fine sand with 5 to 12 percent fines, brown or black, and compact to very dense. Silty sand is poorly graded fine sand with 12 to 30 percent fines, brown or black, wet, and compact to dense. Minor lenses of silt are interbedded with the sand and silty sand. The deposits sometimes grade into a gravelly sand at the very bottom of the unit. N-values range from 24 to 94. Thickness of the sandy deposits ranges from about 5 to 20 feet. The sandy material is absent at borings B-104 and B-106.

- Basalt: Samples of Columbia River Basalt were recovered from most of the borings. In the western part of the site, the basalt was weathered to a sandy gravel. In the eastern part, the basalt appeared unweathered. N-values for weathered basalt ranged from 105 blows for 10 inches of penetration to 60 blows for 6 inches. N-values for unweathered basalt were about 60 blows for 0.5 inch of penetration. The depth to the bedrock surface beneath the project area ranges from nearly 100 feet in the northern part of the site to about 70 feet in the southernmost part of the site at boring B-108.

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Groundwater Conditions

Water levels were recorded at borings B-104 and B-108 where piezometers were installed. Measured water levels on July 23, 1982, are 16.1 and 18.8 feet below the ground surface for B-104 and B-108, respectively. These water levels correspond to elevation 15.5 feet in B-104 and 17.1 feet in B-108. If water-bearing zones communicate with the Willamette River, then fluctuations in the river level could influence water levels beneath the site. For design, assume water levels could rise to the 100-year flood elevation of 27.7 feet.

Reported water levels are representative for only the specific locations explored. Water levels between borings B-104 and B-108, and for other locations on the site, might differ. The water levels reported for borings B-104 and B-108 can be expected to change with time.

DISCUSSION

The soil beneath the proposed structures must provide adequate bearing capacity and limit differential settlement to a tolerable amount. Bearing capacity failure occurs when small increases in the imposed soil pressure cause large or sudden foundation movements. Settlement failure occurs when the imposed soil pressure produces more settlement than the structure can handle.

Settlement

Potential settlement was analyzed based on review of field measurements of preloads placed in 1978 and on the review of laboratory consolidation test data from the compressible strata. In general, the total settlement caused by applying a load to a soil mass consists of two components: primary and secondary settlement.

Primary settlement occurs in fine-grained soils, usually clay, as the result of water in the soil slowly being squeezed out by the applied load. Soil mechanics theories are used to estimate the magnitude and rate of this type of settlement.

Secondary settlement also occurs in fine-grained soils. Its cause is not well understood, but it is thought to be related to gradual readjustment of the soil particles under long-term loading. This type of settlement occurs at a constantly decreasing rate as long as the load is applied to the soil. There are no reliable methods available to accurately predict the magnitude or the rate of secondary settlement. However, empirical formulas are available to estimate the amount of secondary settlement.

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From our experience with silt soils in this region, settlements are often overestimated unless special care is taken to distinguish between primary and secondary consolidation. The loading branch of the consolidation curves presented in Appendix B has been corrected to reduce this tendency to overestimate by showing void ratio at completion of primary consolidation. The rebound portion of the curve was not corrected in this manner.

The magnitude of consolidation settlement is controlled by the compressibility and thickness of the foundation soil, the applied foundation load, and the size of the loaded area. A superimposed load on a large area will influence the soil to a greater depth than a superimposed load on a smaller area. As a consequence, consolidation settlement will probably be greater for a superimposed load on a large area than for a superimposed load on a small area.

In the northeastern part of the site, the consolidating strata is composed of 10 feet of a soft, nonplastic organic silt; 50 feet of a soft to firm, nonplastic to moderately plastic silt; and 40 feet of a hard, nonplastic silt. Without site improvements, we predict primary settlement from a slab with a 300-psf load to be 10 inches and to occur in 30 days. We also predict secondary settlement over the life of the building could range from 1 to 2 inches. This would produce total settlements of 11 to 12 inches. We predict primary settlement under a 1,000-psf load for 3- and 8-foot-square footings to be 4 and 8 inches, respectively. This settlement will occur in 30 days. Secondary settlement for these footings will be between 1 and 2 inches resulting in total settlements of 5 to 6 inches and 9 to 10 inches, respectively.

In the western part of the site, the consolidating strata is composed of 40 feet of a soft to firm, nonplastic to highly plastic silt. This strata is located beneath a 20-foot-thick strata of sand and silty sand. Without site improvements, we predict primary settlement from a slab with a 2,000-psf load to be 15 inches and to occur in 30 days. Secondary settlement will be about 1 inch. We predict primary settlement under a 2,000-psf load for 3- and 8-foot-square footings to be approximately 1 inch. Secondary settlements will be approximately 1 inch. Primary settlement under a 1,000-psf load for a 50- by 50-foot slab will be approximately 4 inches, and secondary settlement will be about 1 to 2 inches.

Preloads can be used to cause predicted settlement to occur before structure loads are in place. Based on our analysis, a preload applying a pressure approximately equal to anticipated structure loads will cause primary

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settlement in about 30 days. We have assumed a preload fill density of 110 pounds per cubic foot (pcf). The preload should be monitored using periodic surveys of settlement plates so that predicted behavior can be compared with actual behavior.

By increasing the height of preload (surcharge), a predicted amount of settlement can be forced to occur in a shorter amount of time. If a preload and surcharge are left in place longer than the amount of time required to cause the desired amount of primary settlement, then the additional settlement caused will serve to compensate, or offset, some of the effects of secondary settlement. Therefore, preload and surcharge design must consider:

- Settlement properties of the consolidating stratum (enables prediction of primary and secondary settlement)
- Time available to leave the preload and surcharge in place
- Desired magnitude of secondary settlement to be offset

Allowable Bearing Pressure

Allowable bearing pressure was analyzed for two types of bearing materials, silt and silty sand. Allowable bearing pressures increase as the depth of footing below final grade increases and as the footing width increases. With site improvements, the maximum allowable bearing pressure for the two types of bearing materials are shown in Table 2. This bearing pressure may be increased by 33 percent for short-term loads such as those from earthquake and wind.

Table 2

ALLOWABLE BEARING PRESSURE

Bearing Material	Average Corrected N-Value	Minimum Depth of Footing (ft)	Minimum Footing Width (ft)	Allowable Bearing Pressure (psf)
Silt	3	3.0	3	1,500
Silty sand	9	1.5	3	2,000

The allowable bearing pressure on the silt can be increased by overexcavating and replacing with compacted granular backfill.

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Dynamic Consolidation

Dynamic consolidation is a method for improving the engineering properties of in-place soil. The method consists of dropping a weight of up to 30 tons from heights up to 150 feet. The repeated high-energy impacts at the ground surface propagates shock waves, which densifies the soil to depths up to 60 feet. In saturated and unsaturated silt and fine sand, the shock causes partial soil liquefaction followed by rapid consolidation. Dynamic consolidation increases soil strength and decreases soil compressibility because of the soil densification that is achieved.

The primary variables that affect the depth of soil improvements when using dynamic consolidation are the soil type and the location of the groundwater table. Dynamic consolidation is less effective below the groundwater table and on plastic soils. At this site, the estimated depth of recommended soil improvements is about 30 to 40 feet below the ground surface.

We do not recommend using dynamic consolidation for improvement of soils at this site for the following reasons:

- Vibration levels could disturb crystal growth at the existing facility.
- Dynamic consolidation is relatively expensive compared to preloading.
- Local contractors are not familiar with the techniques and methods used in dynamic consolidation.
- Preloads have proved an effective method of soil improvement at the existing plant.
- Dynamic consolidation may be unable to significantly improve site soils to the depths required.

FOUNDATION RECOMMENDATIONS

Preload

To control post-construction settlement, we recommend preloading the site with an earthfill embankment. This will cause primary settlement and part of secondary settlement to occur before construction of the buildings. At this time, we recommend using a 20-foot-thick preload for the Distillation Tower and Tank Farm areas, a 5-foot-thick preload for the Warehouse area, and a 10-foot-thick preload for the other structures. These preloads should be left in place for approximately 30 days. Since the time to the end of primary consolidation is fairly short, the preload could be moved around the site in a rotating

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fashion. Earth for the preload will probably need to be obtained offsite. This material could be used later to construct landscaping berms around the site or for the tank farm berm.

To minimize the amount of imported granular material required for preloads, it will probably be most economic to consider use of individual preloads at each structure site. However, an individual preload will cause settlement to occur in areas outside of its footprint because of the distribution of stress increases in the consolidating strata caused by the presence of the preload. Therefore, care must be exercised in selecting the footprint dimensions of an individual preload. We recommend using the following guidelines to plan the sequence of preload construction and removal at this site:

- If no structures or future improvements are within 70 feet of the structure site being preloaded, the top of the preload should extend beyond the building footprint a distance equal to the height of the preload.

- The above criterion should also be used for adjacent sites that are preloaded before structures are built.

- If structures or future improvements are within 70 feet of the structure site being preloaded, the top of the preload should extend 30 feet beyond the building footprint. The toe of the subsequent preload should not be closer than 30 feet to the structure in place.

- The toe of the preload should be at least 30 feet from utilities in the existing easement.

These guidelines should be considered preliminary. Each individual preload should be evaluated during design based on design structural loads and final building locations.

Estimates of secondary (or post-construction) settlement following preload and surcharge are subject to considerable engineering judgment. First, the exact time the preload will be left in place is not yet known. Second, the exact shape of settlement versus time plots made from settlement plate data will assist in predicting secondary settlement. However, in advance of preload monitoring data, we anticipate that secondary settlements following preload at this site will be 1 to 2 inches over the life of the facility. This amount of secondary settlement is comparable to settlements estimated for the existing plant. This amount of secondary settlement is expected to be fairly uniform for structures that are uniformly loaded.

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Some differential settlement may occur between structures, particularly if the structures differ substantially in configuration or in applied load.

Piles

Pile support for structures is an alternative to preloading. However, pile foundations will add considerable construction cost, particularly if structural floor slabs are required.

To control differential settlement, we recommend using driven piles for support of the Distillation Tower and other settlement sensitive structures. A summary of allowable pile loads is presented in Table 3. Piles should be spaced no closer than three pile diameters. The bearing strata for the piles is basalt. The observed depth of this strata varies from 70 to 100 feet across the site. Depending on final structural locations, additional borings may be required to more clearly locate the bearing strata for a more accurate determination of pile lengths.

Table 3

ALLOWABLE PILE LOADS

Pile Type	Size	Allowable Compressive Load (tons)	Allowable Lateral Load (tons)	Vertical and Horizontal Deflections
Prestressed concrete $f_c' = 700$ psi $f_{pc} = 1,200$ psi	12"x12" square	120	2.5	Acceptable
	14"x14" square	175	8.0	Acceptable
Steel pipe (open end) A36 $f_s = 21,600$ psi	12-3/4" diameter 3/8" wall	140	4.6	Acceptable
	16" diameter 3/8" wall	180	7.4	Acceptable

Notes: Depth to fixity is equal to 7.5 feet.

A downdrag of 20 tons is incorporated in the allowable compressive loads.

Piles are coated to reduce downdrag.

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The pile types and allowable loads shown in Table 3 should be considered preliminary information. The final selection of pile type depends on material availability and determination of the most economic pile type for the actual structural loads. The design allowable compressive loads should consider the effects of downdrag caused by the actual layout and extent of preloads and any ongoing secondary settlement. The effects of vibrations generated during driving should also be examined. If vibration limitations are severe, displacement piles such as the prestressed concrete piles shown should not be used. Restriction of vibration levels may require the use of jetting or preboring for displacement piles.

The existing Wacker Plant soils were moderately corrosive. The corrosion potential of the soils at the proposed site should be examined during design.

General Considerations

Before beginning any work at the site, a thorough survey of existing utilities should be made to determine their exact locations. Any existing utilities under the proposed structures should be abandoned or rerouted before construction. If utilities are abandoned, the ends should be plugged. If they are removed, granular backfill should be placed and compacted as recommended later in this report.

Strip all organic materials from the ground surface before preload or foundation construction. These strippings should be removed from the site. Excavate the surface soil and proofroll the bearing surface with a loaded dump truck or a similar heavy vehicle to detect soft or loose zones. These zones, if encountered, should be excavated and backfilled with compacted granular material. The granular material should conform to the State of Oregon Standard Specifications for aggregate base with a maximum size of 1 inch. It should be compacted to at least 90 percent relative compaction.[1]

Before placement of formwork and concrete, a leveling course at least 6 inches thick should be placed and compacted immediately below the proposed foundation. The leveling course should conform to the State of Oregon Standard Specifications for aggregate base with a maximum size of 3/4 inch. It should be compacted to at least 90 percent relative compaction.

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[1]Relative compaction is defined as the ratio, expressed as a percentage, of the in-place field dry density after compaction to the maximum dry density as determined in the laboratory by ASTM D1557.

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Surface water should be controlled and diverted from excavations. If soil is softened by water standing in excavations, remove this soil and replace it with compacted granular material as recommended above.

To a large degree, foundation performance is dependent on construction quality control. Therefore, we recommend that CH2M HILL be retained to observe excavations and subgrade preparation for foundations. This will serve to best identify soil conditions exposed during construction, and to determine whether or not they differ from those conditions assumed in forming our recommendations.

Construction Considerations

The preload should be monitored with settlement plates to determine whether the preload is performing as expected. If the settlement rate is slower than anticipated, it may be necessary to increase the height of fill or the preload duration. We recommend the geotechnical engineer be consulted before preload removal.

Additional Work

The analyses and recommendations contained in this report should be considered preliminary. If the proposed construction proceeds as described in this report, and preloading is selected for site improvement, then additional subsurface exploration will probably not be required. However, if the structures are relocated outside the explored area or if the type of construction changes, then additional subsurface exploration will probably be required. Also, if settlement considerations should dictate widespread use of piles, additional borings and a test pile program may be necessary. In any event, geotechnical design memoranda should be prepared describing specific site improvement and foundation recommendations for each structure before final design.

SCOEPA00037019

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SCOEPA00037020

APPENDIX A

BORING LOGS

SCOEPA00037021

BORING LOG LEGEND:

SAMPLE TYPE:

- S – SPLIT-BARREL (ASTM D1586 UNLESS OTHERWISE NOTED)
- ST – SHELBY TUBE
- W – WASH SAMPLE
- OT – OSTERBERG TUBE
- NX – DIAMOND CORE BARREL

STANDARD PENETRATION TEST:

BLOWS – THE NUMBER OF BLOWS FOR THREE 6-INCH INCREMENTS REQUIRED FROM A 140-LB HAMMER FALLING 30 INCHES TO DRIVE A STANDARD 2-INCH O.D. SPLIT-BARREL SAMPLER (ASTM D1586)

"N" – THE SUM OF BLOWS FOR THE SECOND AND THIRD 6-INCH INCREMENTS. IF THE SAMPLER IS DRIVEN LESS THAN 18 INCHES, THEN "N" IS THE NUMBER OF BLOWS FOR THE LAST TWO 6-INCH INCREMENTS.

UNIFIED SOIL CLASSIFICATION SYMBOL:

GROUP SYMBOL AS PER ASTM D 2487

NOTES:

1. ALL BORINGS WERE DRILLED USING EITHER A TRUCK-MOUNTED CME-55 OR A CME-75 MUD ROTARY DRILL RIG, OWNED AND OPERATED BY KENNER DRILLING, INC., OF SHERWOOD, OREGON.
2. BORINGS WERE DRILLED FROM JUNE 28-30, AND ON JULY 1 AND 2, 1982.
3. ENGINEERING PROPERTIES OF SUBSURFACE MATERIALS ARE OPINION OF THE ENGINEER AND ENGINEERING GEOLOGIST, EXCEPT WHERE LABORATORY TESTING WAS CONDUCTED.
4. THE LOGS SHOW SUBSURFACE CONDITIONS ONLY AT THE TIME AND PLACE THAT THE BORINGS WERE MADE.
5. TRANSITIONS BETWEEN SOIL TYPES MAY BE GRADUAL AND ONLY APPROXIMATELY AT THE ELEVATIONS SHOWN. VARIATIONS MAY EXIST BETWEEN ADJACENT BORINGS.
6. STANDARD PENETRATION TESTS WERE TAKEN IN APPROXIMATE ACCORDANCE WITH ASTM D1586.
7. SAMPLES WERE EXAMINED IN THE FIELD AND VISUALLY CLASSIFIED IN APPROXIMATE ACCORDANCE WITH ASTM 2488.
8. WATER LEVELS MAY VARY WITH TIME.

CH2M HILL

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT Wacker Siltronics LOCATION

DRILLING METHOD Mud Rotary DRILLERS & EQUIPMENT D. Kenner of Oregon, Inc.; CME-55

ELEVATION 35.6 ft BORE HOLE B-100

WATER LEVEL not measured DATE: -- START: 6/29/82 FINISH: 6/30/82 INSPECTOR CWHL

DEPTH BELOW SURFACE (ft)	SAMPLE: INTERVAL AND TYPE	SAMPLE: NUMBER	SAMPLE: RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS: BLOWS 6"-6"-6"	STANDARD PENETRATION TEST RESULTS: BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
0									Start drilling at 11:00AM Begin drilling with drag bit
5	5.0 6.5	S-1	12	3-10-9	19	UPPER 3" SANDY SILT, SLIGHTLY PLASTIC, ABOUT 15% FINE SAND, GRAY, MOIST, LOOSE; FILL. LOWER 9" SILTY SAND, FINE SAND, 15-20% FINES, GRAY, WET, COMPACT, SOME PLANT FRAGMENTS; FILL.		ML SM	Driller notes strong petroleum odor at 5 to 10 ft
10	10.0 11.5	S-2	7	12-11-18	29	SILTY SAND, 10-15% GRAVEL TO ABOUT 1¼" FINE SAND, 25-30% FINES, MOIST, BLACK, STRONG HYDROCARBON ODOR, SOME RUBBERY DEBRIS AND PLANT REMAINS; FILL.		SM	Driller notes some gravel at 9 ft Rubbery debris and fine copper wire in cuttings from 10 to 15 ft.
15	15.0 16.5	S-3	2	12-24-11	35	SILTY SAND, SMALL RECOVERY BUT MATERIAL APPEARS SIMILAR TO S-2; FILL.		SM	Sampler bebounded during SPT for S-3 as if it were penetrating rubber (tires?)
20	20.0 21.5	S-4	14	1-1-1	2	UPPER 7" SILT, SLIGHTLY TO MODERATELY PLASTIC, DARK GRAY, WET, VERY SOFT, WOOD DEBRIS, HYDROCARBON ODOR; FILL? LOWER 7" - SILT, SLIGHTLY PLASTIC, MEDIUM GRAY W/ORANGE BROWN MOTTLING, MOIST, VERY SOFT, SOME DECOMPOSED PLANT MATERIAL.		ML	
25	25.0 26.5	S-5	14	2-2-2	4	SILT, SIMILAR TO LOWER 7" OF S-4 EXCEPT CONSISTANCY IS SOFT.		ML	
30	28.0 30.0	ST-6	24	---	—	SILT MODERATELY TO HIGHLY PLASTIC, GRAY, MOIST, VERY SOFT.		MH	

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CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT Wacker Siltronics LOCATION Portland, Oregon
DRILLING METHOD Mud Rotary DRILLERS & EQUIPMENT D. Kenner of Oregon, Inc.; CME-55
ELEVATION 35.6 ft. BORE HOLE: B-100
WATER LEVEL not measured DATE: -- START: 6/29/82 FINISH: 6/30/82 INSPECTOR CW HL

DEPTH BELOW SURFACE (ft)	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
30	30.0–31.5	S-7	15	2-4-6	10	SILT, SLIGHTLY PLASTIC, LESS THAN 5% FINE SAND, GRAY, MOIST, FIRM TO STIFF.		ML	
35	35.0–36.5	S-8	18	1-1/12"	1	SILT SIMILAR TO S-7 EXCEPT FOR WOOD DEBRIS IN LOWER 4" AND FRAGMENTS OF DECOMPOSED PLANT MATERIAL THROUGHOUT SAMPLE.		ML	
	38.0					SILT SAME AS S-7 EXCEPT LENSES OF SAND AND GRAVEL		ML	
40	40.0–41.5	ST-9	24	---					
		S-10	14	3-1-1	2	SANDY SILT, NONPLASTIC, ABOUT 15% FINE TO COARSE SAND, MEDIUM GRAY, VERY LOOSE DECOMPOSED WOOD FRAGMENTS THROUGHOUT SAMPLE, ABOUT 25% FINE SAND AND GRAVEL IN UPPER 3"; ORGANIC ODOR.		ML	
45	45.0–46.5	S-11	18	1-2-3	5	SILT, SLIGHTLY PLASTIC, BLUE-GREENISH GRAY, MOIST, FIRM.		ML	
50	50.0–51.5	S-12	18	3-3-3	6	SILT, SAME AS S-11.		ML	
55	55.0–56.5	S-13	16	2-5-10	15	SANDY SILT, NON PLASTIC, 15-20% FINE SAND, GRAY, MOIST, COMPACT.		ML	
60									

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PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT Wacker Siltronics LOCATION Portland, Oregon
DRILLING METHOD Mud Rotary DRILLERS & EQUIPMENT D. Kenner of Oregon; CME-55
ELEVATION 35.6 ft BORE HOLE: B-100
WATER LEVEL not measured DATE: -- START: 6/29/82 FINISH: 6/30/82 INSPECTOR CWHL

DEPTH BELOW SURFACE (ft)	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	STANDARD PENETRATION TEST RESULTS BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
60	60.0–61.5	S-14	8	6-11-12	23	SILTY SAND FINE SAND, 30-35% FINES, BROWN, WET, COMPACT.		SM	
65	65.0–66.5	S-15	10	7-12-18	30	UPPER 3" SILT, MODERATELY PLASTIC, ABOUT 3% FINE SAND, BROWN, MOIST, STIFF. LOWER 7" SILTY SAND, FINE SAND, 20-25% FINES, BROWN, WET, COMPACT.		ML / SM	HOLE COLLAPSED FROM 65-85 FT ON NIGHT OF 6/29.
70	70.0–71.5	S-16	8	12-17-18	35	SAND, UNIFORMLY GRADED FINE SAND, 5-12% FINES, BROWN, WET, DENSE.		SP-SM	
75	75.0–76.5	S-17	8	9-16-17	33	SILTY SAND, FINE SAND, 12-15% FINES, BROWN, WET, DENSE.		SM	
80	80.0–81.5	S-18	8	10-17-17	34	SILTY SAND, SAME AS S-17, EXCEPT 20-25% FINES.		SM	
85	85.0–86.2	S-19	3	8-32-70/4"	102/14"	BASALT, HIGHLY WEATHERED TO SANDY GRAVEL, POORLY GRADED, GRAVEL TO AT LEAST 1 3/8", ABOUT 15% FINE TO COARSE SAND, 5-12% FINES, BROWN AND BLACK, MOIST, HARD.			END DRILLING @ 4:30 P.M. BEGIN DRILLING @ 7:30 AM CHANGE FROM DRAG BIT TO ROLLER BIT.
90									

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PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT Wacker Siltronics LOCATION Portland, Oregon
DRILLING METHOD Mud Rotary DRILLERS & EQUIPMENT D. Kenner of Oregon, Inc.; CME-55
ELEVATION 35.6 ft BORE HOLE: B-100
WATER LEVEL Not Measured DATE: -- START: 6/29/82 FINISH: 6/30/82 INSPECTOR CWHL

DEPTH BELOW SURFACE (ft)	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
90	90.0 90.1	S-20	1.5	60/15	60/1.5	BASALT, WEATHERED, SAME AS S-19.			DRILLER NOTES VERY HARD MATERIAL AT 90'
						END BORING AT 90.1 FEET			SAMPLER BOUNCES DURING 5' FOR S-20
									FINISH DRILLING AT 8:45 A.M.
95									

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PROJECT NUMBER

SOIL BORING LOG

PROJECT Wacker Siltronics LOCATION Portland, Oregon
DRILLING METHOD Mud Rotary DRILLERS & EQUIPMENT P. Kenner of Oregon, Inc.; CME-55
ELEVATION 34.5 ft. BORE HOLE: B-101
WATER LEVEL not measured DATE: -- START: 6/28/82 FINISH: 6/29/82 INSPECTOR CW HL

DEPTH BELOW SURFACE (ft)	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
0						SILTY SAND at SURFACE, BRICKS, WOOD DEBRIS, ETC., FILL.		SM	START DRILLING AT 1035. BEGIN DRILLING WITH A DRAG BIT.
5	5.0					NO RECOVERY.			DRILLER NOTES CHANGE FROM SILTY SAND TO SILT AT 6'.
	6.5	S-1	0	2-1-1	3				
10	10.0					SILTY SAND FINE TO MEDIUM SAND, 20-30% FINES, BLACK, WET, LOOSE; FILL.		SM	
	11.5	S-2	3	5-4-5	9				
15	15.0					SANDY SILT, SLIGHTLY PLASTIC FINE TO MEDIUM SAND, BLACK, WET, LOOSE, SOME ROUNDED GRAVELS TO ½" STRANDS OF COPPER WIRE IN SAMPLE, FILL, HYDROCARBON ODOR.		ML	RUBBER DEBRIS (TIRES?) IN HOLE 15 TO 20'. DRILLER NOTES CLUMPS OF FINE COPPER WIRE IN CUTTINGS 15-20'.
	16.5	S-3	9	1-1-2	3				
20	20.0					LAYERED SILTY SAND AND SANDY SILT; SILTY SAND, FINE SAND, 25-35% FINES, DARK GRAY WET, LOOSE, LAYERS 1-3" THICK SANDY SILT SLIGHTLY PLASTIC, DARK GRAY, MOIST, LOOSE, LOCAL CONCENTRATION OF DECOMPOSED PLANT MATERIAL.		SM, ML	DRILLER SUSPECTS LOG(S) AT ABOUT 20'.
	21.5	S-4	13	3-3-3	6				
25	25.0					SANDY SILT, SLIGHTLY PLASTIC, 10-15% FINE SAND, MOTTLED BROWN AND GRAY, MOIST, COMPACT, TRACES OF DECOMPOSED PLANT MATERIAL, HYDROCARBON ODOR.		ML	
	26.5	S-5	18	1-4-5	9				
30									

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PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT Wacker Siltronics LOCATION Portland, Oregon
DRILLING METHOD Mud Rotary DRILLERS & EQUIPMENT D. Kemler of Oregon, Inc.; CME-55
ELEVATION 34.5 ft BORE HOLE: B-101
WATER LEVEL not measured DATE: -- START: 6/28/82 FINISH: 6/29/82 INSPECTOR CWHL

DEPTH BELOW SURFACE (ft)	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
30	30.0–31.5	S-6	16	1-1-1	2	SILT, SLIGHTLY PLASTIC, MEDIUM GRAY W/REDDISH BROWN MOTTLED, WET.		ML	
	33.0–35.0	ST-7	24	---	—	SILT SIMILAR TO S-6 EXCEPT SLIGHTLY TO MODERATELY PLASTIC, BROWN COLOR.		ML	
35	36.5	S-8	18	4-5-9	14	SILT, SLIGHTLY TO MODERATELY PLASTIC, BROWN, moist, FIRM.		ML	
40	40.0–41.5	S-9	18	3-3-4	7	SILT, SIMILAR TO S-8, EXCEPT ABOUT 5% FINE SAND, SOFT TO FIRM.		ML	mix mud at 41.5'
45	45.0–46.5	S-10	12	3-6-10	16	UPPER 6" SILT, SIMILAR TO S-8 EXCEPT 5-10% FINE TO MEDIUM SAND, BROWN AND GRAY, SOFT. LOWER 6" SILTY SAND, FINE SAND, 25-30% FINES, BROWN, WET LOOSE TO COMPACT.		ML / SM	Driller notes sandy material and soft drilling to 50'.
50	50.0–51.5	S-11	18	3-8-13	21	SANDY SILT, NON PLASTIC, 12-15% FINE SAND, BROWN, WET, COMPACT.		ML	
55	55.0–56.5	S-12	6	11-23-28	51	SILTY SAND, FINE SAND, 10-15% FINES IN LOWER PART 30-40% FINES IN UPPER PART, BROWN, MOIST, DENSE, SEVERAL LENSES ≤ ½" OF SILT INTERBEDDED WITH THE SILTY SAND.		SM	Driller notes harder drilling at 45'.
60									

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PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT Wacker Siltronics LOCATION Portland, Oregon
DRILLING METHOD Mud Rotary DRILLERS & EQUIPMENT D. Kenner of Oregon, Inc.; CME-55
ELEVATION 34.5 ft. BORE HOLE: B-101
WATER LEVEL NOT MEASURED DATE: — — START: 6/28/82 FINISH: 6/29/82 INSPECTOR CWHL

DEPTH BELOW SURFACE (ft)	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
60	60.0–61.5	S-13	10	10-13-17	30	SANDY SILT, NON PLASTIC, ABOUT 40% FINE SAND, BROWN, MOIST, COMPACT.		ML	
65	65.0–66.5	S-14	8	13-21-25	46	SILTY SAND, FINE SAND, ABOUT 30% FINE, BROWN, WET, COMPACT.		SM	
70	70.0–71.5	S-15	9	30-41-39	70	SAND, UNIFORMLY GRADED FINE SAND, 5-12% FINES, BROWN, WET, VERY DENSE.		SP-SM	
75	75.0–76.5	S-16	8	35-55-39	94	SAND, SAME AS S-15.		SP-SM	
80	80.0–81.5	S-17	8	13-24-30	54	SAND, UNIFORMLY GRADED FINE SAND, ABOUT 5% FINES, BROWN, WET, DENSE.		SP	DRILLER NOTES VERY HARD MATERIAL AT 84 FT; UNABLE TO PENETRATE W/DRAG BIT; STOP TO TAKE SAMPLE S-18. END DRILLING @ 4:30 P.M. BEGIN DRILLING @ 8:00 AM. CHANGE FROM DRAG BIT TO ROLLER BIT; MIX MUD.
85	84.0–84.5	S-18	4	70/6"	70/6"	BASALT, WEATHERED TO SANDY GRAVEL, POORLY GRADED GRAVEL TO 1 1/4", 30-40% FINE TO COARSE SAND, MOSTLY COARSE, LESS THAN 5% FINES, BROWN AND BLACK, DENSE.			VERY HARD DRILLING AT 86' DRILLS AT RATE OF 30 MIN/FT. ANGULAR BLACK BASALT CHIPS IN CUTTINGS. END DRILLING @ 9:40 AM
	87.0–87.5	S-19	5	78/6"	78/6"	BASALT, WEATHERED, SAME AS S-18.			
90						END BORING @ 87.5 FT			

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CH2M HILL

PROJECT NUMBER P16058. B0

SOIL BORING LOG

PROJECT Wacker Siltronics LOCATION Portland, Oregon
DRILLING METHOD Mud Rotary DRILLERS & EQUIPMENT D. Kenner of Oregon, Inc; CME-55
ELEVATION 32.2 ft. BORE HOLE: B-102
WATER LEVEL not measured DATE: -- START: 7/1/82 FINISH: 7/1/82 INSPECTOR CWHL

DEPTH BELOW SURFACE (ft)	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	STANDARD PENETRATION TEST RESULTS BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
0									START DRILLING AT 955. BEGIN DRILLING WITH DRAG BIT.
5	5.0–6.5	S-1	7	1-2-2	4	SILT SLIGHTLY TO MODERATELY PLASTIC, ABOUT 5% FINE SAND, GRAY WITH REDDISH BROWN MOTTLING, MOIST SOFT, DISTINCT LAYERING 1/16-1/2" THICK.		ML	
10	10.0–11.5	S-2	9	4-8-9	17	SAND UNIFORMLY GRADED FINE SAND, LESS THAN 5% FINES, DARK GRAY, WET, HYDROCARBON ODOR.		SP	
15	15.0–16.5	S-3	0	2-1-3	4	NO RECOVERY.			
20	20.0–21.5	S-4	1	2-3-3	6	SILT NONPLASTIC, BLACK, WET, SOFT, STRONG HYDROCARBON ODOR.		ML	AT 19 FT CUTTINGS ARE SATURATED WITH OILY MATERIAL AND HAVE A STRONG HYDROCARBON ODOR.
25	25.0–26.5	S-5	10	1-1-1	2	SILT NONPLASTIC, LESS THAN 5%, FINE SAND, MEDIUM GRAY, WET, LOOSE.		ML	
30									

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CH2M HILL

PROJECT NUMBER P16058. B0

SOIL BORING LOG

PROJECT Wacker Siltronics LOCATION Portland, Oregon
DRILLING METHOD Mud Rotary DRILLERS & EQUIPMENT D. Kenner of Oregon, Inc.; CME-55
ELEVATION 32.2 ft. BORE HOLE: B-102
WATER LEVEL not measured DATE: -- START: 7/1/82 FINISH: 7/1/82 INSPECTOR CW HL

DEPTH BELOW SURFACE (ft)	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
30	30.0–31.5	S-6	10	1-2-2	4	SILT, NON PLASTIC, ABOUT 5% FINE SAND, MEDIUM GRAY, WET, SOFT, FRAGMENTS OF DECOMPOSED PLANT MATERIAL		ML	MIX MUD AT 30'.
	33.0–35.0	ST-7	24	---	—	SILT SIMILAR TO S-6 EXCEPT MODERATELY TO HIGHLY PLASTIC AND ORGANIC.		MH-OH	
35	36.5	S-8	18	1-2-2	4	SILT SIMILAR TO S-6 EXCEPT NO SAND AND MODERATELY TO HIGHLY PLASTIC AND ORGANIC		MH-OH	
40	41.5	S-9	18	4-7-8	15	SILT, SIMILAR TO S-6, EXCEPT FOR LACK OF SAND, BLUE-GREEN COLOR AND STIFF.		ML	
45	46.5	S-10	18	2-2-2	4	SILT, SIMILAR TO S-6, EXCEPT SLIGHTLY PLASTIC AND ABSENCE OF SAND AND FRAGMENTS OF PLANTS		ML	
	48.6–50.0	ST-11	24	---	—	UPPER 18"-SILT, SAME AS S-10 LOWER 6"-SILTYSAND, SAME AS S-12.		ML, SM	LAST 6" OF ST-11 PUSHED VERY HARD
50	51.5	S-12	10	4-6-10	16	SILTYSAND, FINE SAND, 20-25% FINES, BROWN, WET, COMPACT.		SM	
55	56.5	S-13	18	2-5-6	11	SILT, NON PLASTIC, BROWN, WET, STIFF.		ML	
60									

SCOEPA00037031

CH2M HILL

PROJECT NUMBER P/6058.B0

SOIL BORING LOG

PROJECT Wacker Siltronics LOCATION Portland, Oregon
DRILLING METHOD Mud Rotary DRILLERS & EQUIPMENT D. Kenner of Oregon, Inc.; CME-55
ELEVATION 32.2 ft BORE HOLE: B-102
WATER LEVEL not measured DATE: — — START: 7/1/82 FINISH: 7/1/82 INSPECTOR CW HL

DEPTH BELOW SURFACE (ft)	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	STANDARD PENETRATION TEST RESULTS BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
60	60.0–61.5	S-14	18	3-11-20	31	SILTY SAND, FINE SAND, 20-25% FINES, BROWN, WET, COMPACT TO DENSE.		SM	
65	65.0–66.5	S-15	15	6-14-22	36	SILT, SLIGHT PLASTICITY, 5-10% FINE SAND, LOCAL CONCENTRATION OF FINE SAND WITHIN THE SILT, BROWN, MOIST, STIFF.		ML	
70	70.0–71.5	S-16	18	12-25-25	50	SILT SIMILAR TO S-15, EXCEPT VERY STIFF.		ML	
75	75.0–76.5	S-17	9	11-28-29	57	SILTY SAND, FINE SAND, 15-20% FINES, BROWN, WET, VERY DENSE,		SM	DRILLER NOTES VERY HARD MATERIAL AT 79.5'
80	79.5–80.0	S-18	4	60/6"	60/6"	BASALT, WEATHERED TO SANDY GRAVEL, POORLY GRADED ANGULAR GRAVEL TO ABOUT 1", 30-40% FINE TO COARSE SAND, 5-12% FINES, BROWN AND BLACK, WET, DENSE.			SAMPLER BOUNCES DURING SPT FOR FINISH DRILLING AT 2:10 P.M.
85						END BORING AT 80.0 Feet.			

SCOEPA00037032

CH2M HILL

PROJECT NUMBER P1605B.B0

SOIL BORING LOG

PROJECT Wacker Siltronics LOCATION Portland, Oregon
DRILLING METHOD Mud Rotary DRILLERS & EQUIPMENT D. Kenner & Oregon Inc.; CME-55
ELEVATION 35.8 ft BORE HOLE: B-103
WATER LEVEL not measured DATE: — — START: 6/30/82 FINISH: 7/1/82 INSPECTOR CWHL

DEPTH BELOW SURFACE (ft)	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
0									START DRILLING AT 10:20 BEGIN DRILLING WITH A DRAG BIT.
5	5.0								
	6.5	S-1	7	1-3-3	6	SILT, SLIGHTLY PLASTIC, ABOUT 5% FINESAND, DARK GRAY, MOIST, FIRM; FILL?		ML	
10	10.0								
	11.5	S-2	7	14-19-30	49	SAND, POORLY GRADED FINE TO MEDIUM SAND, 5-12% FINES BROWN, WET, DENSE; FILL.		SP-SM	ROUGH DRILLING AT ABOUT 11.5'; CHANGE FROM DRAG BIT TO ROLLER BIT, DRILLER NOTES GRAVELLY MATERIAL TO 15'.
15	15.0								
	16.5	S-3	4	6-7-6	13	GRAVELLY SAND, POORLY GRADED, 10-15% GRAVEL TO 1", FINE TO COARSE SAND, 5-12% FINES, BROWN, WET, COMPACT, FILL?		SP-SM	ROUGH DRILLING TO 19'; THEN SOFTER MATERIAL
20	20.0								
	21.5	S-4	1	3-4-3	7	SILT SLIGHTLY PLASTIC, DARK GRAY, WET, SOFT TO FIRM.		ML	REMOVE ROLLER BIT, ATTACH DRAG BIT.
	23.0								
	25.0	ST-5	0	— — —	—	NO RECOVERY; TUBE SMEARED WITH BROWN SILT			ST-6 WAS PUSHED VERY SLOWLY; STIFF MATERIAL
25	26.5	S-6	18	3-7-8	15	SILT, SLIGHTLY TO MODERATELY PLASTIC, BROWN, MOIST, STIFF TO VERY STIFF.		ML	
	28.0								
	30.0	ST-7	18	— — —	—	SILT, SAME AS S-6		ML	
30									

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT Wacker Siltronics LOCATION Portland, Oregon
DRILLING METHOD Mud Rotary DRILLERS & EQUIPMENT D. Kenner of Oregon, Inc., CME-55
ELEVATION 35.8 ft. BORE HOLE: B-103
WATER LEVEL not measured DATE: -- START: 4/30/82 FINISH: 7/1/82 INSPECTOR CW.HL

DEPTH BELOW SURFACE (ft)	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	STANDARD PENETRATION TEST RESULTS BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
30	30.0								
	31.5	S-8	18	2-2-3	5	SILT, SLIGHTLY PLASTIC, BROWN, MOIST, SOFT TO FIRM.		ML	
35	35.0								
	36.5	S-9	10	3-7-9	16	SILTY SAND, FINE SAND, 25-30% FINES, BROWN, WET, COMPACT.		SM	
40	40.0								
	41.5	S-10	18	2-2-3	5	SILT, NON PLASTIC, LESS THAN 5% FINE SAND, BROWN, MOIST, SOFT TO FIRM.		ML	
	43.0								
						SILT, SAME as S-10		ML	LAST 6" OF S-11 WERE VERY STIFF.
45	45.0	ST-11	24	---	—				
	46.5	S-12	18	3-5-8	13	SILT, SAME AS S-10		ML	
50	50.0								
	51.5	S-13	24	4-9-9	18	SILT, SIMILAR TO S-10 EXCEPT 5-10% FINE SAND.		ML	
	53.0								
	54.5	ST-14	18	---	—	SILT, SAME AS S-10		ML	ST-14 WAS PUSHED FOR ONLY AN 18" DRIVE, MATERIAL WAS TOO HARD FOR 24" PUSH.
55	56.0	S-15	10	4-6-10	26	SAND, FINE SAND, 5-10% FINES BROWN, WET COMPACT		SP-SM	
60									

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT Wacker Siltronics LOCATION Portland, Oregon

DRILLING METHOD Mud Rotary DRILLERS & EQUIPMENT D. Kenner of Oregon Inc.; CME-55

ELEVATION 35.8 ft BORE HOLE: B-103

WATER LEVEL Not Measured DATE: -- START: 6/30/82 FINISH: 7/1/82 INSPECTOR CWHL

DEPTH BELOW SURFACE (ft)	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	STANDARD PENETRATION TEST RESULTS BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
60	60.0					SILT, NON PLASTIC, LESS THAN 5% FINE SAND, BROWN, WET, DENSE		ML	
	61.5	S-16	13	8-15-23	38				
65	65.0					SAND, UNIFORMLY GRADED, FINE SAND, LESS THAN 5% FINES, BROWN, WET, DENSE.		SP	
	66.5	S-17	8	11-21-22	43				
70	70.0					SAND, SAME AS S-17		SP	
	71.5	S-18	8	16-28-26	54				
75	75.0					SAND SIMILAR TO S-17, EXCEPT 5-10% FINES		SP-SM	DRILLER NOTES VERY HARD MATERIAL AT 76.5'
	76.5	S-19	8	20-42-45	87				
	77.0					NO RECOVERY; PROBABLY WEATHERED BASALT			END DRILLING @ 3:40 P.M. BEGIN DRILLING @ 7:30 AM. SLOW, ROUGH DRILLING TO 77.0 FT. END DRILLING @ 8:45 A.M.
	77.0	S-20	0	60/0.5"	60/0.5"				
						END BORING AT 77.0 FEET			
80									

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER P16058.80.00

SOIL BORING LOG

PROJECT WACKER SILTRONIC LOCATION PORTLAND, OR

DRILLING METHOD REVERT ROTARY; DRAG BIT DRILLERS & EQUIPMENT D. KENNER OF OR CME-75

ELEVATION 31.7 FEET BORE HOLE: B-104

WATER LEVEL 16.1 ft DATE: 7/23/82 START: 6/30/82 FINISH: 6/30/82 INSPECTOR DLKI

DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
0									START DRILLING @ 7:55 A.M. BEGAN DRILLING WITH A DRAG BIT
5	5.0								
	6.5	S-1	11	1-2-2	4	SILT, SLIGHTLY TO MODERATELY PLASTIC, LESS THAN 5% VERY FINE SAND AND ORGANICS, MOTTLED GRAY AND BROWN, DAMP, FILL?, SOFT; OCCASSIONAL ROOTS.		ML	
10	10.0								
	11.5	S-2	11	1-1/12"	1	SANDY SILT, NONPLASTIC, 20-30% VERY FINE SAND, 5-10% ORGANICS, BLUE, WET, VERY LOOSE; FILL?		ML	
15	15.0								
	16.5	S-3	11	0-2-1	3	SANDY SILT, NONPLASTIC, 20-30% VERY FINE SAND, BLUE, MOIST, VERY LOOSE; OIL, OCCASSIONAL WOOD FRAGMENTS, HYDROCARBON ODOR, FILL?		ML	DRILLER NOTES FIRMER MATERIAL @ 17.5 FEET.
20	20.0								
	21.5	S-4	17	2-2-2	4	SANDY SILT, NONPLASTIC, 15-20% VERY FINE SAND, 5-10% ORGANICS, BLUE, MOIST, VERY LOOSE.		ML	
25	25.0								
	26.5	S-5	18	1-2-2	4	SILT, NONPLASTIC, LESS THAN 5% VERY FINE SAND, LESS THAN 5% ORGANICS, BLUE, WET, SOFT. OCCASSIONAL WOOD FRAGMENTS.		ML	DRILLER NOTES FIRMER AND SOFTER DRILLING (POSSIBLE LENSES).
30									

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER P16058.B0.00

SOIL BORING LOG

PROJECT WACKER SILTRONIC LOCATION PORTLAND, OR
DRILLING METHOD REVERT ROTARY; DRAG BIT DRILLERS & EQUIPMENT D. KENNER OF OR, CME-75
ELEVATION 31.7 FEET BORE HOLE: B-104
WATER LEVEL 16.1 ft DATE: 7/23/82 START: 6/30/82 FINISH: 6/30/82 INSPECTOR DLKI

DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	STANDARD PENETRATION TEST RESULTS BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
30	30.0–31.5	S-6	16	1-1-2	3	SANDY SILT, NONPLASTIC, 15-20% VERY FINE SAND, 5-10% ORGANICS, BROWN, MOIST, VERY LOOSE; OCCASSIONAL WOOD FRAGMENTS.		ML	
35	35.0–37.0	ST-7	0	---	—	NO RECOVERY.			
	38.5	S-8	18	2-3-3	6	SANDY SILT, NONPLASTIC, 15-20% VERY FINE SAND, 5-10% ORGANICS, BLUE, WET, LOOSE; OCCASSIONAL WOOD FRAGMENTS.		ML	
40	40.0–41.5	S-9	18	1-1-2	3	SILT, SLIGHTLY TO MODERATELY PLASTIC, 5-10% ORGANICS, LESS THAN 5% VERY FINE SAND, GRAY MOIST, SOFT ; OCCASSIONAL WOOD FRAGMENTS		ML	
45	45.0–47.0	ST-10	0	---	—	NO RECOVERY.			MATERIAL SLIPPED OUT OF TUBE.
	48.5	S-11	14	2-3-4	7	SANDY SILT, NONPLASTIC, 20-30% VERY FINE SAND, 5-10% ORGANICS, BLUE, MOIST, LOOSE; OCCASSIONAL WOOD FRAGMENTS.		ML	
50	50.0–52.0	ST-12	24	---	—	SANDY SILT, SAME AS ABOVE		ML	
	53.5	S-13	18	4-7-8	15	SILT, NONPLASTIC, BLUE, MOIST, STIFF.		ML	
55	55.0–57.0	ST-14	24	---	—	SILT, SAME AS S-15.		ML	
	58.5	S-15	18	3-4-6	14	SILT, NONPLASTIC, 5-12% VERY FINE SAND, BROWN, WET, STIFF.		ML	
60									

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT WACKER SILTRONIC LOCATION PORTLAND, OR

DRILLING METHOD REVERT ROTARY; DRAG BIT DRILLERS & EQUIPMENT D. KENNER OF DR; CME-75

ELEVATION 31.7 FEET BORE HOLE: B-104

WATER LEVEL 16.1 ft DATE: 7/23/82 START: 6/30/82 FINISH: 6/30/82 INSPECTOR DLKI

DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
60	60.0								
	61.5	S-16	18	4-6-8	14	SANDY SILT, NONPLASTIC, 15-20% VERY FINE SAND, BROWN, WET, COMPACT.		ML	
65	65.0								
	66.5	S-17	14	5-8-17	25	SANDY SILT, NONPLASTIC, 20-30% VERY FINE SAND, BROWN, WET, COMPACT.		ML	
70	70.0								
	71.5	S-18	18	3-9-15	24	SILT, NONPLASTIC, LESS THAN 5% VERY FINE SAND, BROWN, WET, VERY STIFF.		ML	
75	75.0								
	76.5	S-19	18	6-14-26	40	SILT, SAME AS S-18, EXCEPT CONISTENCY IS HARD.		ML	
80	80.0								
	81.5	S-20	17	5-11-16	27	SILT, SAME AS S-18.		ML	
85	85.0								
	86.5	S-21	17	6-11-13	24	SILT, SAME AS S-18.		ML	
90									

SCOEPA00037038

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT WACKER SILTRONIC LOCATION PORTLAND, OR

DRILLING METHOD REVERT ROTARY; DRAG BIT DRILLERS & EQUIPMENT D. KENNER OF OR; CME-75

ELEVATION 31.7 FEET BORE HOLE: B-104

WATER LEVEL 16.1 ft DATE: 7/23/82 START: 6/30/82 FINISH: 6/30/82 INSPECTOR DLK

DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
90									DRILLED TO 90 FEET, INSERTED SPLIT SPOON. SPLIT SPOON DROPPED TO 92 FEET. DROVE SAMPLE @ 92 FEET END DRILLING @ 1:20 P.M.
	92.0								
	93.5	S-22	8	2-2-3	5	SANDY SILT, NONPLASTIC, 20-30 % VERY FINE SAND, GRAY AND ORANGE, WET, LOOSE		ML	
95	95.0								
	96.1	S-23 B A	12	6-22-60/1"	82/1"	BASALT, UNWEATHERED, FRACTURED, BLACK, HARD			
						END BORING @ 96.1 ft			

NOTE: PIEZOMETER INSTALLED WITH 1.9-FT, 1½-INCH DIAMETER SLOTTED TIP 89.1 TO 91.0 FT; GRAVEL PACK, CONSISTING OF 3/8-INCH PEA GRAVEL FROM 96 TO 85 FT, FOLLOWED BY A 2-FOOT BENTONITE SEAL FROM 85 TO 83 FT; 3/4-INCH RISER PIPE INSTALLED FROM SLOTTED TIP TO ABOVE THE SURFACE; BORING WAS BACKFILLED FROM 83 FEET TO SURFACE WITH CUTTINGS AND PEA GRAVEL.

SCOEPA00037039

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT WACKER SILTRONIC LOCATION PORTLAND, OR

DRILLING METHOD MUD ROTARY; DRAGBIT DRILLERS & EQUIPMENT D. KENNER OF OR; CME-75

ELEVATION 32.8 FEET BORE HOLE: B-105

WATER LEVEL NOT MEASURED DATE: - - - START: 7/1/82 FINISH: 7/2/82 INSPECTOR DLRI

DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
0									BEGAN DRILLING @ 3:05 P.M.
5	5.0–6.5	S-1	13	1-1-1	2	SANDY SILT, NONPLASTIC, 12-20% VERY FINE SAND, 5-10% ORGANICS, ORANGE AND GRAY MOTTLING, WET, VERY LOOSE; OCCASSIONAL ROOTS; AT BOTTOM; FILL?		ML	
10	10.0–11.5	S-2	8	3-6-6	12	SAND, MEDIUM TO FINE, LESS THAN 5% FINES, BLACK, WET, LOOSE; HYDROCARBON ODOR, FILL?		SP	
15	15.0–16.5	S-3	11	3-2-3	5	SAND, SAME AS S-2, EXCEPT WITH OIL AT BOTTOM; FILL?		SP	
20	20.0–21.5	S-4	16	2-1-2	3	SILT, NONPLASTIC, 5-10% VERY FINE SAND, LESS THAN 5% ORGANICS, GRAY AND ORANGE MOTTLING, WET, SOFT; OCCASSIONAL WOOD FRAGMENTS.		ML	DRILLER NOTES WOOD AT BOTTOM OF SAMPLER.
25	25.0–26.5	S-5	18	1-1-2	3	SILT, NONPLASTIC, 5-10% FINE SAND, GRAY, MOIST, SOFT; FRAGMENTS OF DECOMPOSED PLANT MATERIAL IN LOWER 9 INCHES OF SAMPLER		ML	
30									END DRILLING @ 3:40 P.M.

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT WACKER SILTRONIC LOCATION PORTLAND, OR
DRILLING METHOD MUD ROTARY; DRAGBIT DRILLERS & EQUIPMENT D. KENNER OF OR; CME-75
ELEVATION 32.8 FEET BORE HOLE: B-105
WATER LEVEL NOT MEASURED DATE: --- START: 7/1/82 FINISH: 7/2/82 INSPECTOR CWHL

DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS* (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
30	30.0–31.5	S-6	18	1-1-2	3	SILT, NONPLASTIC, LESS THAN 5% FINE SAND, GRAY, WET, SOFT; LENSE OF DECOMPOSED PLANT MATERIAL 3 INCHES FROM TOP, HYDROCARBON ODOR		ML	BEGAN DRILLING @ 7:45 A.M.
35	35.0–36.5	S-7	18	1-2-2	4	SILT, SLIGHTLY PLASTIC, GRAY, WET, SOFT.		ML	
40	40.0–41.5	S-8	18	3-6-8	14	SILT, SLIGHTLY TO MODERATELY PLASTIC, GREENISH GRAY, STIFF.		ML	
45	45.0–46.5	S-9	18	4-4-6	10	SILT, SLIGHTLY TO MODERATELY PLASTIC, 5-10% FINE SAND IN LOWER 9 INCHES, GREENISH GRAY IN UPPER PART, GRAY IN LOWER PART, MOIST, STIFF.		ML	
50	50.0–51.5	S-10	18	2-4-9	13	SILT, NONPLASTIC, LESS THAN 5% FINE SAND, BROWN, WET, COMPACT		ML	
55	55.0–56.5	S-11	18	2-4-8	12	SILT, SAME AS S-10		ML	
60									

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT WACKER SILTRONIC LOCATION PORTLAND, OR

DRILLING METHOD MUD ROTARY; DRAG BIT DRILLERS & EQUIPMENT D. KENNER OF OR; CME-75

ELEVATION 32.8 FEET BORE HOLE: B-105

WATER LEVEL NOT MEASURED DATE: --- START: 7/1/82 FINISH: 7/2/82 INSPECTOR CWHL

DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
60	60.0								
	61.5	S-12	18	4-11-18	29	UPPER 12 INCHES SILT, SLIGHTLY PLASTIC, 5-10% FINE SAND, BROWN, MOIST, STIFF. LOWER 6 INCHES SILTY SAND, FINE SAND, 15-20% FINES, BROWN, WET, COMPACT.		ML SM	MIX MUD
65	65.0								
	66.5	S-13	18	6-10-14	24	SILTY SAND, FINE SAND, 20-25% FINES, BROWN, WET COMPACT.		SM	
70	70.0								
	71.5	S-14	15	9-23-22	45	UPPER 9 INCHES: SILTY SAND, SIMILAR TO S-13, EXCEPT 15-20% FINE SAND. LOWER 6 INCHES: SILT, SLIGHTLY PLASTIC, 10-15% FINE SAND, BROWN, MOIST, STIFF.		SM ML	
75	75.0								
	76.6	S-15	12	13-21-60/3"	81/9"	SILTY SAND WITH 1-2 INCH LAYERS OF SAND:		SM SP-SM	DRILLER NOTES VERY HARD DRILLING @ 76.5 FEET; CHANGE TO TRICONE BIT; SAMPLER BOUNCED DURING SPT FOR S-16
	76.5 76.7	S-16	2	60/2"	60/2"	SILTY SAND, FINE SAND, 20-25% FINES, BROWN, WET, COMPACT. SAND, UNIFORMLY GRADED, FINE SAND, 5-12% FINES, BROWN, WET, COMPACT. SAND, UNIFORMLY GRADED, FINE SAND, 5-12% FINES, WET, DENSE; PROBABLY CAVINGS ABOVE BASALT			FINISH DRILLING @ 9:55 A.M.
						END BORING @ 76.7 ft			

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT WACKER SILTRONIC LOCATION PORTLAND, OR

DRILLING METHOD MUD ROTARY; DRAG BIT DRILLERS & EQUIPMENT D. KENNER OF OR; CME-75

ELEVATION 32.2 FEET BORE HOLE: B-106

WATER LEVEL NOT MEASURED DATE: --- START: 6/29/82 FINISH: 6/29/82 INSPECTOR DLKI

DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	STANDARD PENETRATION TEST RESULTS BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
0									BEGIN DRILLING @ 10:00 A.M.
5	5.0								
	6.4	S-1	18	1-1-1	2	SILT, SLIGHTLY TO MODERATELY PLASTIC, BROWN AND ORANGE MOTTLED, MOIST, FILL?, SOFT; OCCASSIONAL ROOTS AND WOOD; FILL?		ML	
	8.0								
	10.0	ST-2	22	---	-	SILT, SAME AS S-1. NO RECOVERY.		ML	
10	11.5	S-3	0	1-1-2	3				SILT SMEARED ON SPLIT SPOON
	15.0								DRILLER NOTES WOOD IN CUTTINGS FROM 13-15 FEET; COULD BE REASON FOR NO RECOVERY OF S-3.
15	16.5	S-4	14	0/12"-2	2	SILT, NONPLASTIC, 10-15% VERY FINE SAND, GRAY, MOIST, SOFT; OCCASSIONAL WOOD FRAGMENTS, HYDROCARBON ODOR; FILL?		ML	
	20.0								DRILLER NOTES OIL FROM 18-20 FEET.
20	21.5	S-5	16	3-4-6	10	SILT, NONPLASTIC, LESS THAN 5% VERY FINE SAND AND ORGANICS, GRAY, MOIST, STIFF; OCCASSIONAL ROOTS.		ML	
25	25.0								
	26.5	S-6	13	5-6-3	9	SAND, MEDIUM TO FINE, BLACK, WET, LOOSE.		SP	DRILLER NOTES FIRM DRILLING @ 26.5 FEET.
30									

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT WACKER SILTRONIC LOCATION PORTLAND, OR
DRILLING METHOD MUD ROTARY; DRAG BIT DRILLERS & EQUIPMENT D. KENNER OF OR; CME-75
ELEVATION 32.2 FEET BORE HOLE: B-106
WATER LEVEL NOT MEASURED DATE: --- START: 6/29/82 FINISH: 6/29/82 INSPECTOR DLKI

DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
30	30.0–32.0	ST-7	18	---	–	SILT, SAME AS S-8.		ML	DRILLER NOTES LAYERS OF FIRM AND SOFT DRILLING.
	33.5	S-8	18	2-2-5	7	SILT, NONPLASTIC, 5-12% VERY FINE SAND, 10-15% ORGANICS, BROWN, MOIST, FIRM; OCCASSIONAL WOOD FRAGMENTS.		ML	
35	35.0								
	36.5	S-9	18	1-1-2	3	SILT, SLIGHTLY TO MODERATELY PLASTIC, GRAY, MOIST, SOFT.		ML	
	38.0								
	40.0	ST-10	0	---	–	NO RECOVERY.			
40	42.0	ST-11	18	---	–	SILT, SAME AS S-12.		ML	
	43.5	S-12	18	3-3-5	8	SILT, NONPLASTIC, 5-12% VERY FINE SAND, 20-25% ORGANICS, GRAY, DAMP, FIRM; OCCASSIONAL WOOD.		ML	
45	45.0								
	47.0	ST-13	24	---	–	SILT, SAME AS S-14.		ML	WOODCHIP @ BOTTOM OF SHELBY TUBE.
	48.5	S-14	18	2-2-3	5	SILT, MODERATELY PLASTIC, GRAY, MOIST, FIRM; OCCASSIONAL WOOD FRAGMENTS.		ML	
50	50.0								
	51.5	S-15	18	2-2-6	8	SANDY SILT, 30-40% VERY FINE SAND, BLACK, WET, LOOSE.		ML	
55	55.0								
	56.0	S-16	11	7-9-8	17	SAND, LESS THAN 5% FINES, BLACK, MOIST, FIRM, GRADES TO SILT, MODERATELY PLASTIC, BROWN, MOIST, COMPACT; OCCASSIONAL ORGANICS.		SP ML	
60									

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT WACKER SILTRONIC LOCATION PORTLAND, OR
DRILLING METHOD MUD ROTARY; DRIG BIT DRILLERS & EQUIPMENT D. KENNER OF OR; CME-75
ELEVATION 32.2 FEET BORE HOLE: B-106
WATER LEVEL NOT MEASURED DATE: --- START: 6/29/82 FINISH: 6/29/82 INSPECTOR DLKI

DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
60	60.0–61.5	S-17	18	3-9-11	20	SILT, SLIGHTLY TO MODERATELY PLASTIC, BLUE, DAMP, VERY STIFF, GRADES TO SILT, NON-PLASTIC, 5-12% VERY FINE SAND, BLUE, DAMP, VERY STIFF.		ML	
65	65.0–66.5	S-18	18	6-14-22	36	SANDY SILT, NON PLASTIC, 15-20% VERY FINE SAND, BLUE, WET, DENSE.		ML	
70	70.0–71.5	S-19	18	4-6-15	21	SILT, NON PLASTIC, BROWN, WET, VERY STIFF. GRADES TO BLUE.		ML	
75	75.0–76.5	S-20	18	5-10-21	31	SILT, NON PLASTIC, 5-12% VERY FINE SAND, LIGHT BROWN, WET, HARD.		ML	
80	80.0–81.5	S-21	13	9-18-29	47	SILTY SAND, VERY FINE SAND, 20-30% FINES, LIGHT BROWN, WET, DENSE.		SM	
85	85.0–86.5	S-22	18	14-22-32	54	SILT, NON PLASTIC, 5-12% VERY FINE SAND, LIGHT BROWN, WET, HARD.		ML	
90									

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CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT WACKER SILTRONIC LOCATION PORTLAND, OR
DRILLING METHOD MUD ROTARY; DRAG BIT DRILLERS & EQUIPMENT D. KENNER OF OR; CME-75
ELEVATION 32.2 FEET BORE HOLE: B-106
WATER LEVEL NOT MEASURED DATE: --- START: 6/29/82 FINISH: 6/29/82 INSPECTOR DLKI

DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	STANDARD PENETRATION TEST RESULTS BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
90	90.0 91.5	S-23	18	5-9-12	21	SILT, NON PLASTIC, 5-12% VERY FINE SAND, LIGHT BROWN, WET, VERY STIFF.		ML	
95	95.0 96.5	S-24	2	7-10-11	21	SILT, SAME AS S-23.		ML	
	98.0 98.4	S-25	4.5	60/4.5"	60/4.5"	BASALT UNWEATHERED, FRACTURED, BLACK, VERY HARD			DRILLER NOTES HARD DRILLING @ 98 FEET. CHANGED TO TRICONE BIT (4 7/8 INCHES). END DRILLING @ 3:50 P.M.
100	100.0 100.0	S-26	0	60/0.5"	60/0.5"	NO RECOVERY			
						END BORING @ 100.0 ft			

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT WACKER SILTRONIC LOCATION PORTLAND, OR

DRILLING METHOD MUD ROTARY; DRAG BIT DRILLERS & EQUIPMENT D. KENNER OF OR; CME-75

ELEVATION 34.6 FEET BORE HOLE: B-107

WATER LEVEL NOT MEASURED DATE: --- START: 7/1/82 FINISH: 7/1/82 INSPECTOR DLKI

DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	STANDARD PENETRATION TEST RESULTS BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
0									BEGIN DRILLING @ 11:10 A.M.
5	5.0–6.5	S-1	7	3-3-3	6	SAND, MEDIUM TO FINE, LESS THAN 5% FINES, ORANGE, MOIST, LOOSE; FILL?		SP	
10	10.0–11.5	S-2	14	6-7-9	16	SAND, MEDIUM TO FINE, LESS THAN 5% FINES, BLACK, MOIST, COMPACT; HYDROCARBON ODOR; FILL?		SP	DRILLER NOTES OIL @ 12 OR 13 FEET
15	15.0–16.5	S-3	8	3-3-7	10	SAND, SAME AS S-2; WOOD CHUNK AT BOTTOM OF SPLIT SPOON; FILL?		SP	DRILLER NOTES WOOD IN CUTTINGS.
20	20.0–21.5	S-4	14	1-2-3	5	SILT, MODERATELY PLASTIC, BLUE, MOIST, FIRM; OCCASSIONAL WOOD FRAGMENTS, HYDROCARBON ODOR.		ML	
25	25.0–26.5	S-5	18	1-1-1	2	SILT, NONPLASTIC, BLUE, WET, SOFT.		ML	DRILLER NOTES OUT OF OIL @ 22 OR 23 FEET, BUT STILL IN WOOD.
30									

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CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT WACKER SILTRONIC LOCATION PORTLAND, OR

DRILLING METHOD MUD ROTARY; DRAG BIT DRILLERS & EQUIPMENT D. KENNER OF OR; CME-75

ELEVATION 34.6 FEET BORE HOLE: B-107

WATER LEVEL NOT MEASURED DATE: --- START: 7/1/82 FINISH: 7/1/82 INSPECTOR DLKI

DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	STANDARD PENETRATION TEST RESULTS BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
30	30.0								
	32.0	ST-6	24	---	–	SILT, SAME AS S-7.		ML	
	33.5	S-7	18	1-2-4	6	SILT, NON PLASTIC, LESS THAN 5% VERY FINE SAND AND ORGANICS, BROWN, MOIST, FIRM; OCCASIONAL WOOD FRAGMENTS		ML	
35	35.0								
	37.0	ST-8	22	---	–	SILT, SAME AS S-9.		ML	
	38.5	S-9	18	3-4-5	9	SILT, SLIGHTLY TO MODERATELY PLASTIC, 5-12% VERY FINE SAND, BLUE AND ORANGE MOTTLED, WET, STIFF		ML	
40	40.0								
	41.5	S-10	18	2-3-4	7	SILT, SLIGHTLY TO MODERATELY PLASTIC, 5-12% VERY FINE SAND, BROWN, WET, FIRM.		ML	
45	45.0								
	46.5	S-11	18	2-4-7	11	SILT, SLIGHTLY PLASTIC, BROWN, MOIST, STIFF.		ML	
50	50.0								
	51.5	S-12	18	5-9-10	19	SANDY SILT, NON PLASTIC, 20-30% VERY FINE SAND, BROWN, WET, COMPACT.		ML	
55	55.0								
	56.5	S-13	18	6-10-13	23	SANDY SILT, SAME AS S-12.		ML	
60									

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CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT WACKER SILTRONIC LOCATION PORTLAND, OR

DRILLING METHOD MUD ROTARY; DRAG BIT DRILLERS & EQUIPMENT D. KENNER OF OR; CME-75

ELEVATION 34.6 FEET BORE HOLE: B-107

WATER LEVEL NOT MEASURED DATE: --- START: 7/1/82 FINISH: 7/1/82 INSPECTOR DLKI

DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
60	60.0 61.5	S-14	18	8-15-20	35	SILT, NONPLASTIC, 12-15% VERY FINE SAND, BROWN, WET, HARD.		ML	
65									
70	70.0 71.5	S-15	13	19-19-21	40	SAND, VERY FINE, LESS THAN 5% FINES, BROWN, WET, DENSE.		SP	
	71.5	S-16	0	30-43-60/3"	103/3"	NO RECOVERY; probably basalt			END DRILLING @ 2:30 P.M.
						END BORING @ 71.5 ft			

FORM D 1586 5/78

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT WACKER SILTRONIC LOCATION PORTLAND, OR
DRILLING METHOD REVERT ROTARY; DRAG BIT DRILLERS & EQUIPMENT D. KENNER OF OR; CME-75
ELEVATION 35.9 FEET BORE HOLE: B-108
WATER LEVEL 18.8 ft DATE: 7/23/82 START: 6/30/82 FINISH: 7/1/82 INSPECTOR DLKI

DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
0									BEGIN DRILLING @ 3:20 P.M.
5	5.0								
	6.5	S-1 A B	12	1-4-12	16	TOP: SILT, NONPLASTIC, LESS THAN 5% VERY FINE SAND, GRAY AND ORANGE MOTTLED, DRY, VERY STIFF. BOTTOM: SAND, MEDIUM TO FINE, LESS THAN 5% FINES, ORANGE, DRY, COMPACT; FILL?		ML SP	
10	10.0								
	11.5	S-2	12	3-8-9	17	SAND, MEDIUM TO FINE, LESS THAN 5% FINES, OCCASSIONAL GRAVEL TO 1 INCH MAX, BLACK, MOIST, COMPACT; FILL?		SP	
15	15.0								
	16.5	S-3	7	3-4-4	8	SAND, SAME AS S-2 EXCEPT WET, AND RELATIVE DENSITY IS LOOSE; FILL?		SP	
20	20.0								DRILLER NOTES CHANGE @ 18 FEET, WOOD CHUNKS.
	21.5	S-4	16	3-4-5	9	SILT, NON PLASTIC, ORANGE AND GRAY MOTTLING, MOIST, STIFF, OCCASSIONAL ROOTS.		ML	
25	25.0								
	27.0	ST-5	24	---	-	SILT, SAME AS S-6.		ML	
	28.5	S-6	18	2-2-3	5	SILT, SLIGHTLY PLASTIC, BROWN AND GRAY MOTTLING, MOIST, FIRM.		ML	END DRILLING @ 4:20 P.M.
30									

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SCOEPA00037050

CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT WACKER SILTRONIC LOCATION PORTLAND, OR
DRILLING METHOD REVERT ROTARY; DRAG BIT DRILLERS & EQUIPMENT D. KENNER OF OR; CME-75
ELEVATION 35.9 FEET BORE HOLE: B-108
WATER LEVEL 18.8 ft DATE: 7/23/82 START: 6/30/82 FINISH: 7/1/82 INSPECTOR DLKI

DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
30	30.0–32.0	ST-7	24	- - -	—	SILT, SAME AS S-8.		ML	BEGAN DRILLING @ 7:45 A.M.
	33.5	S-8	18	1-2-2	4	SILT, NONPLASTIC, 5-12% VERY FINE SAND, BROWN, MOIST, SOFT.		ML	
35	35.0–36.5	S-9	18	3-3-2	5	SILT, NONPLASTIC, LESS THAN 5% VERY FINE SAND, BROWN, WET, FIRM.		ML	
40	40.0–41.5	S-10	18	2-5-8	14	SILT, SAME AS S-9.		ML	
45	45.0–46.5	S-11	18	6-7-10	17	SANDY SILT, NONPLASTIC, 15-20% VERY FINE SAND, BROWN, WET, COMPACT.		ML	
50	50.0–51.5	S-12	14	7-15-14	29	SAND, MEDIUM TO FINE, LESS THAN 5% FINES, BROWN, WET, COMPACT.		SP	
55	55.0–56.5	S-13	14	6-8-16	24	SILTY SAND, FINE SAND, 10-15% FINES, BROWN, WET, COMPACT.		SM	
60									

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CH2M HILL

PROJECT NUMBER P16058.B0

SOIL BORING LOG

PROJECT WACKER SILTRONIC LOCATION PORTLAND, OR

DRILLING METHOD REVERT ROTARY; DRAG BIT DRILLERS & EQUIPMENT D. KENNER OF OR; CME-75

ELEVATION 35.9 FEET BORE HOLE: B-108

WATER LEVEL 18.8 ft DATE: 7/23/82 START: 6/30/82 FINISH: 7/1/82 INSPECTOR DLKI

DEPTH BELOW SURFACE	SAMPLE INTERVAL	SAMPLE NUMBER	SAMPLE RECOVERY (INCHES)	STANDARD PENETRATION TEST RESULTS BLOWS 6"-6"-6"	STANDARD PENETRATION TEST RESULTS BPF "N"	SOIL DESCRIPTION (COLOR, RELATIVE DENSITY OR CONSISTENCY, MOISTURE, GRAIN SHAPE AND TYPE, STRUCTURE, CEMENTATION, ORGANICS, MATERIAL)	GRAPHIC LOG	UNIFIED SOIL CLASSIFICATION SYMBOL	COMMENTS (DRILLING PROGRESS, LOST CIRCULATION, TYPE OF DEPOSIT, PROBLEMS, ETC.)
60	60.0 61.5	S-14	14	12-24-25	49	SAND, MEDIUM TO FINE, LESS THAN 5 % FINES, BLACK, WET, DENSE.		SP	
65	68.0								
	69.5	S-15	12	16-14-24	38	BASALT, SLIGHTLY WEATHERED, FRACTURED, HARD, BLACK			END DRILLING @ 9:30 A.M.
70	69.5	S-16	0	60/1"	60/1"	NO RECOVERY			

END BORING @ 69.5 ft

NOTE: PIEZOMETER INSTALLED WITH A 1.9-FOOT, 1½-inch DIAMETER SLOTTED TIP FROM 65.6 TO 67.5 FT; GRAVEL PACK, CONSISTING OF 3/8-INCH PEA GRAVEL FROM 70 FEET TO 64 FEET; FOLLOWED BY A 2-FOOT BENTONITE SEAL FROM 64 TO 62 FEET; ¾-INCH RISER PIPE INSTALLED FROM SLOTTED TIP TO ABOUT 1.5 FEET ABOVE THE GROUND SURFACE; BORING WAS THEN BACKFILLED FROM 62 FEET TO SURFACE WITH CUTTINGS AND PEA GRAVEL.

FORM D 1586 5/78

APPENDIX B

LABORATORY TEST RESULTS

SCOEPA00037053

CH2M HILL

PROJECT NUMBER P16058.B0

SOILS CLASSIFICATION AND TEST SUMMARY

ASTM D2487

PROJECT DESCRIPTION: WACKER SILTRONIC

MATERIALS LABORATORY: CH2M HILL - PDX TYPE OF SAMPLE:

SAMPLE LOCATION: AS NOTED SAMPLE NO:

SAMPLE LOCATION	SAMPLE NUMBER	DEPTH INTERVAL (FEET)	DESCRIPTION OF MATERIAL	ASTM CLASSIFICATION	MOISTURE P.L. (%)	MOISTURE ω (%)	MOISTURE L.L. (%)	GRADATION, % PASSING 3"	1½"	#4	#200	LABORATORY TESTS		
B-100	ST-6	28-30	GRAY PLASTIC SILT	MH	33	49	62					CONSOLIDATION		
B-100	S-11	45-46.5	GRAY PLASTIC SILT	ML	25	28	35							
B-101	ST-7	33-35	GRAY PLASTIC SILT	ML	28	35	40							
B-102	ST-7	33-35	DARK GRAY ORGANIC SILT	MH-OH	58	98	125							
B-104	ST-12	50-52	BROWN SILT	ML	NP	34	NP					CONSOLIDATION		
B-105	S-8	40-41.5	GRAY PLASTIC SILT	ML	29	36	41							
B-107	S-6	30-32	BROWN SILT	ML	NP	68	NP					CONSOLIDATION		

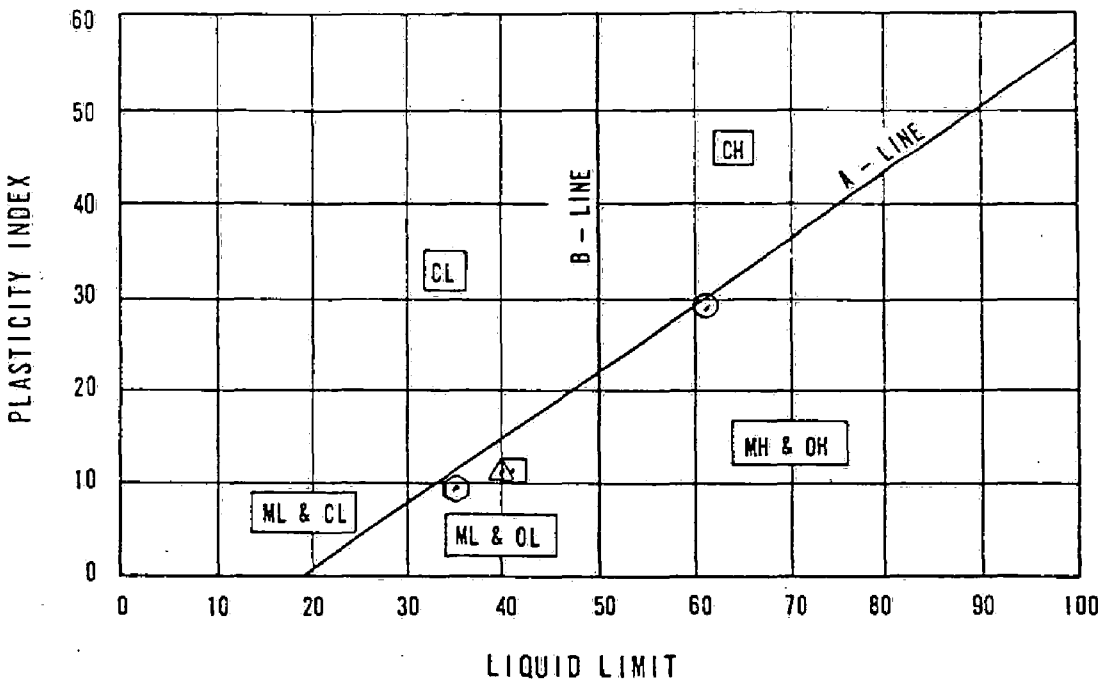
REMARKS: NP = NONPLASTIC

TESTED BY:	DATE:	COMPUTED BY:	DATE:	CHECKED BY:	DATE:

LAB FORM D2487P 2/78

SCOEPA00037054

PLASTICITY CHART



SYMBOL	SAMPLE	LIQUID LIMIT	PLASTICITY INDEX	NATURAL MOISTURE
⊙	B-100 ST-6	62	29	49
⬡	B-100 S-11	35	10	28
△	B-101 ST-7	40	12	35
⊡	B-105 S-8	41	12	36

PLASTICITY CHART
WACKER SILTRONICS
CORPORATION

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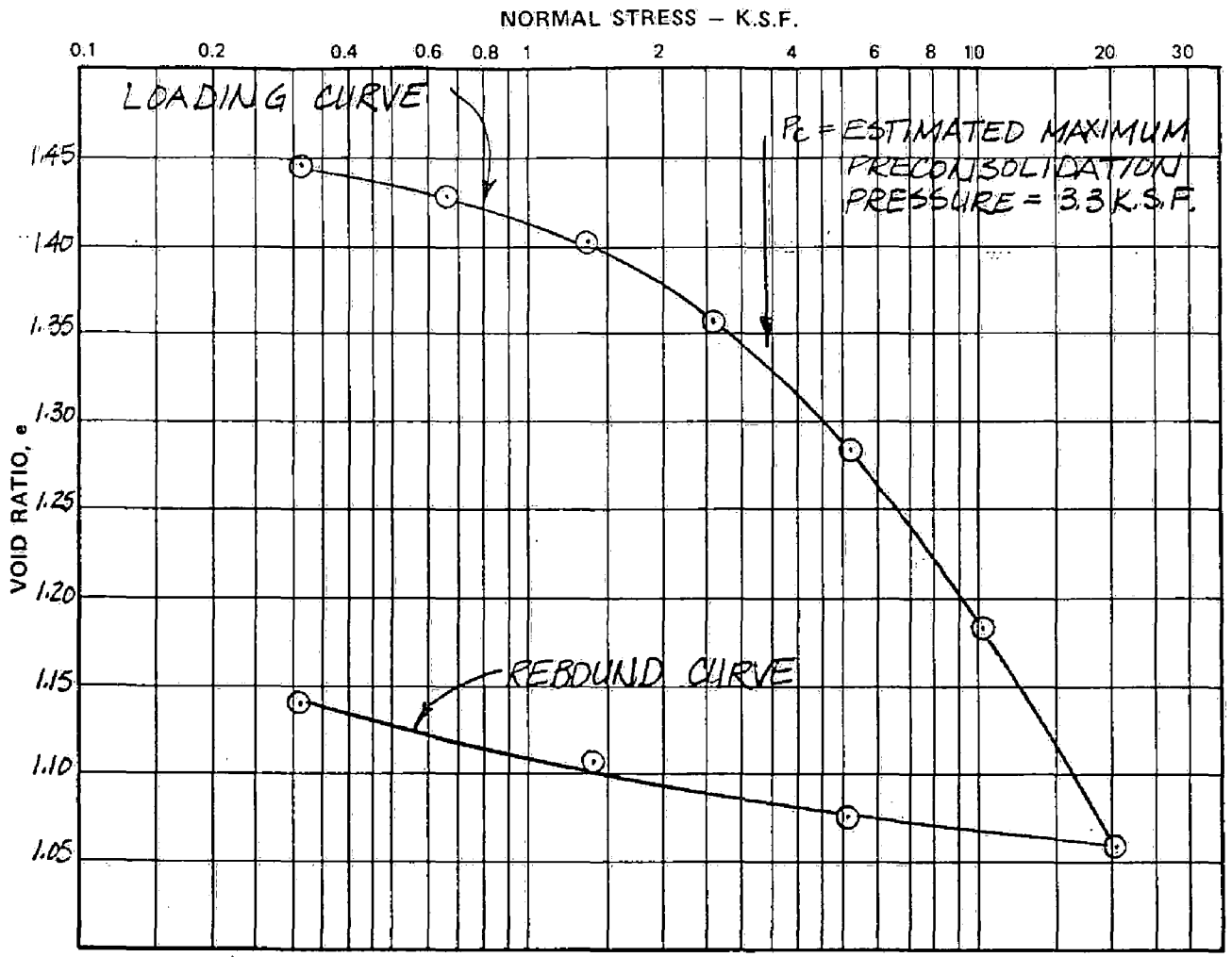
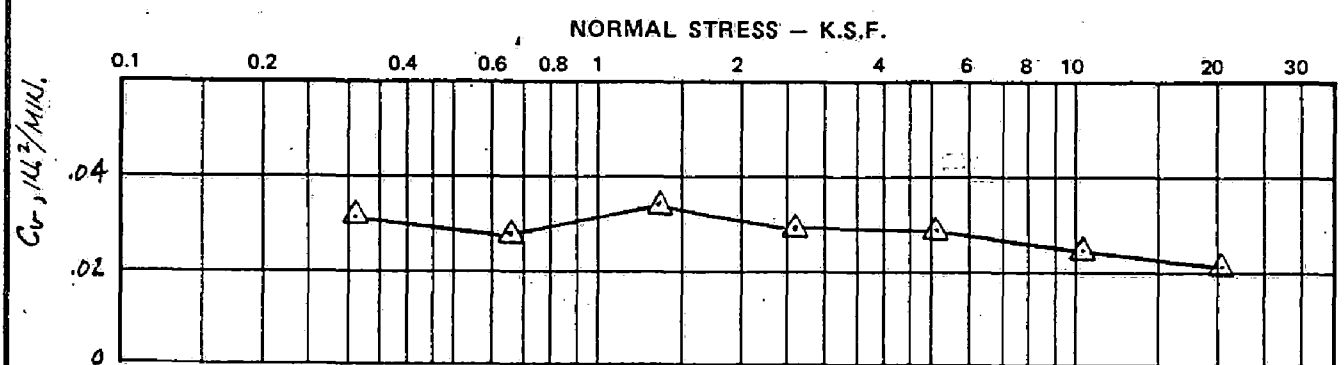
CH2M HILL





PLOT OF PRIMARY CONSOLIDATION

SAMPLE DATA:
GRAY SILT (MH)
DEPTH 28.0-30.0 FT.
INITIAL DIAMETER = 2.50 IN.
INITIAL HEIGHT = 1.00 IN.
INITIAL VOID RATIO = 1.46
NATURAL MOISTURE CONTENT = 55%
DRY DENSITY = 67.4 P.C.F.

B-100 ST-6
CONSOLIDATION TEST
WACKER SILTRONICS CORPORATION

CH2M HILL

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FORM 70

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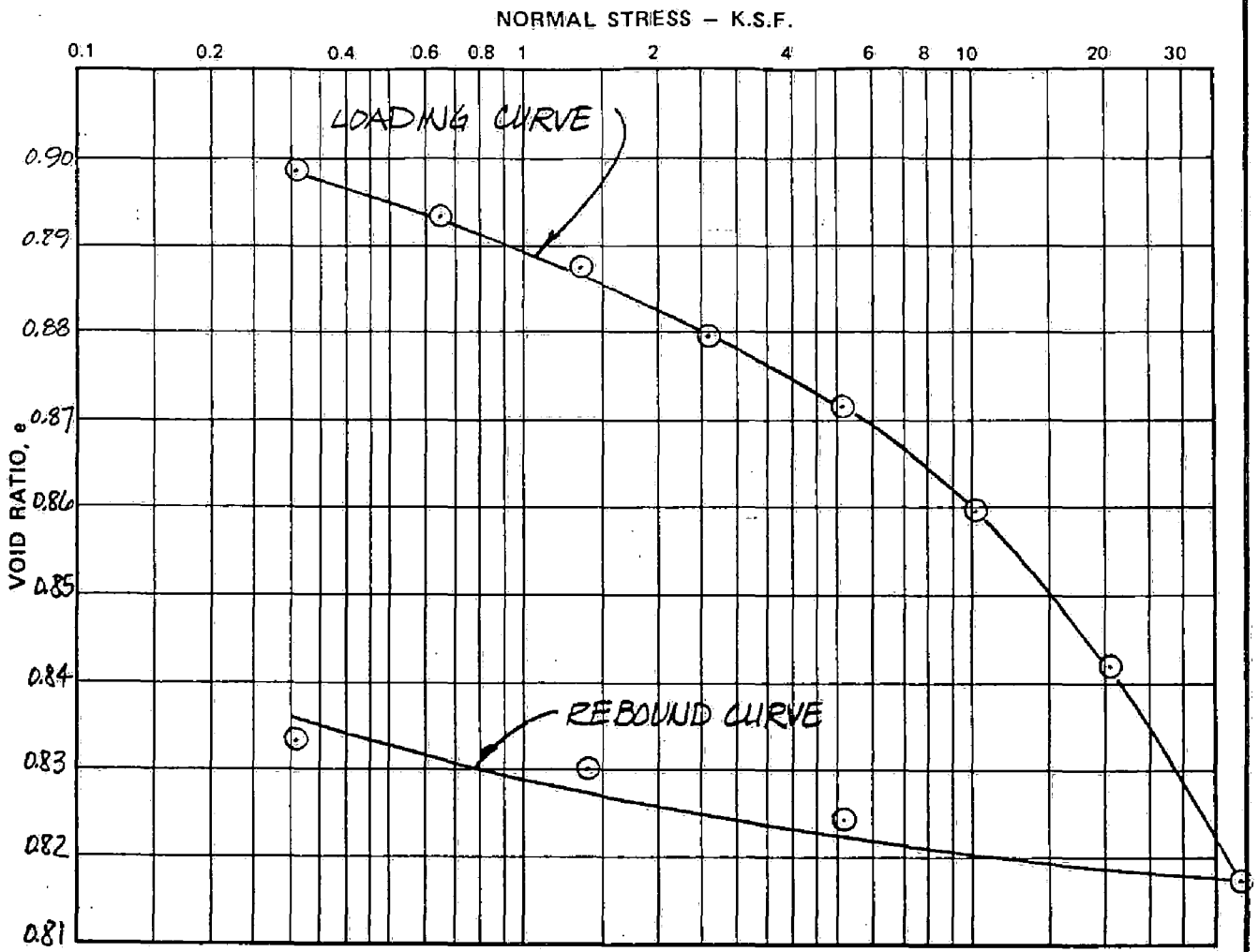

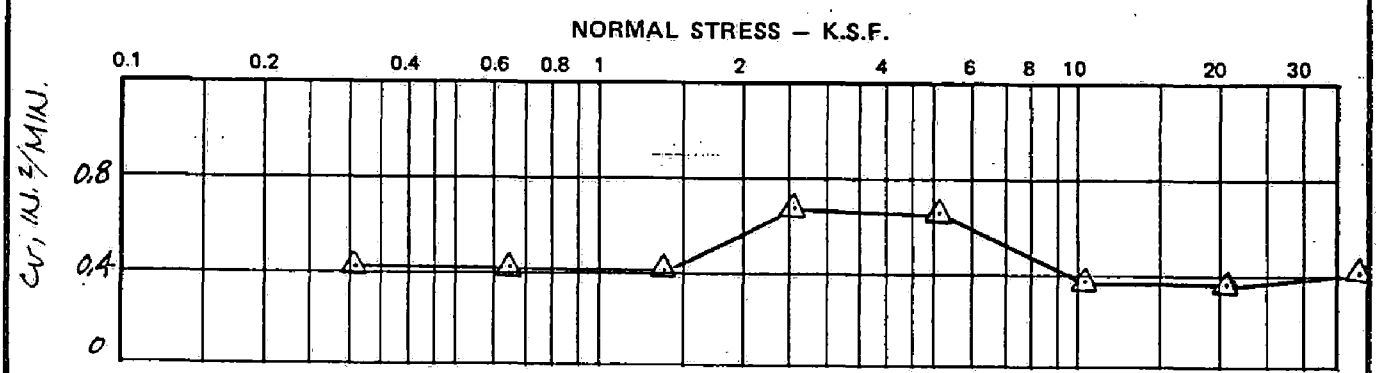

PLOT OF PRIMARY CONSOLIDATION

SAMPLE DATA:
MEDIUM BROWN SILT (ML)
DEPTH 50.0 - 52.0 FT.
INITIAL DIAMETER = 2.50 IN.
INITIAL HEIGHT = 1.00 IN.
INITIAL VOID RATIO = 0.90
NATURAL MOISTURE CONTENT = 35%
DRY DENSITY = 87.1 P.C.F.

B-104 ST-12
CONSOLIDATION TEST
WACKER SILTRONICS CORPORATION

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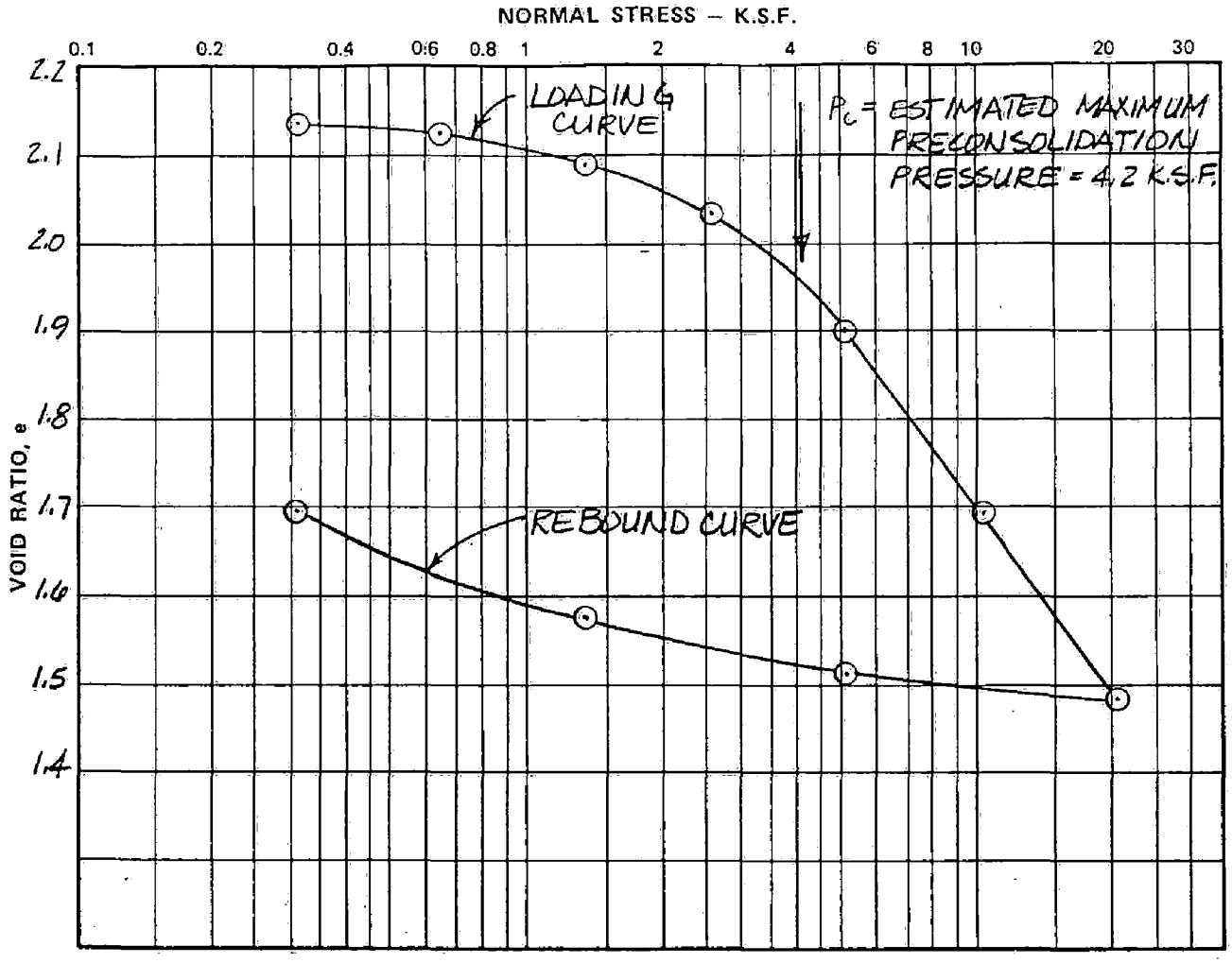
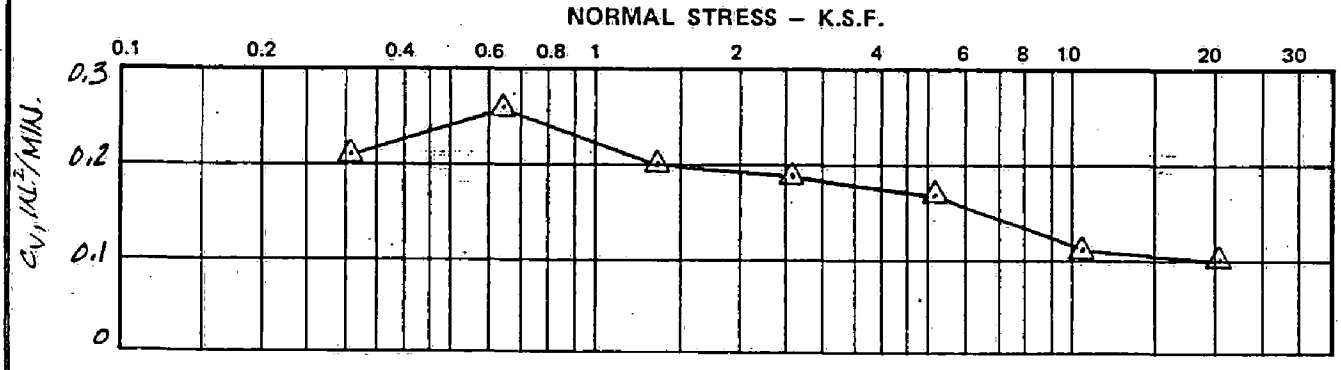
CH2M HILL

FORM 70





PLOT OF PRIMARY CONSOLIDATION

SAMPLE DATA:
MEDIUM BROWN SILT (ML)
DEPTH 30.0 - 32.0 FT.
INITIAL DIAMETER = 2.50 IN.
INITIAL HEIGHT = 1.0 IN.
INITIAL VOID RATIO = 2.16
NATURAL MOISTURE CONTENT = 75%
DRY DENSITY = 47.0 P.C.F.

B-107 ST-6
CONSOLIDATION TEST
WACKER SILTRONICS CORPORATION

CH2M HILL

P16058.80

FORM 70

CH2M HILL
engineers
planners
economists
scientists

CH2M HILL
200 S. W. Market St.
12th Floor
Portland, Oregon 97201
(503)224-9190
Telex: 36-0103 CH2M PTL

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file PDX 30452.BP

FINDINGS REPORT
GROUNDWATER AND
SOIL GAS INVESTIGATION

Prepared for
Wacker Siltronic Corporation
Portland, Oregon

Prepared by
CH2M HILL
Portland, Oregon

December 1990

PDX937.037.51.1

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(Continued)

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A. Selected Groundwater Elevation Contour Maps
B. Hydro Geo Chem, Inc., Final Report; October 24, 1990
C. Soil Gas Field Sampling Data Sheets
D. CH2M HILL Analytical Test Results

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INTRODUCTION

PURPOSE AND SCOPE

This Groundwater and Soil Gas Investigation Report has been prepared for Wacker Siltronic Corporation (Wacker), 7200 N.W. Front Avenue, Portland, Oregon (Figure 1). The original purpose of this investigation was to determine whether subsurface contamination found in the vicinity of the proposed Fab 2 Building site could be associated with the nearby Olympic pipeline. However, before beginning the field work, Wacker shifted the focus of the investigation away from specifically investigating the origin of contamination found below the Fab 2 Building site. Instead, Wacker instructed CH2M HILL to investigate selected groundwater and soil gas constituents adjacent to a 600-foot length of the utility corridor. The revised purpose of the investigation was to assess the possibility that the Olympic pipeline (lying within the utility corridor) is a source of hydrocarbon contamination within the 600-foot-long study area. The scope of work included the following tasks:

- Review readily available existing site soil and groundwater data
- Prepare a detailed work plan specifying sampling procedures and quality control practices
- Subcontract a specialty contractor to obtain and chemically analyze samples under the direction of CH2M HILL field staff
- Conduct the investigation and chemically analyze quality control samples
- Prepare this report summarizing the results of the investigation

BACKGROUND INFORMATION

Previous explorations at the Wacker site have revealed detectable concentrations of volatile organic compounds such as benzene, toluene, ethylbenzene, and xylene (BTEX), as well as polynuclear aromatic hydrocarbons (PAHs) such as naphthalene, acenaphthalene, and phenanthrene. The BTEX compounds are primary constituents of gasoline and are typically used as indicator compounds to detect hydrocarbon contamination in soil or groundwater. Some of the contamination detected in site samples may be associated with contaminated dredge fill previously placed on Wacker's property. The dredge fill is thought to contain coal-tar wastes, which would tend to be high in PAHs. Although BTEX compounds detected in site samples may be associated with coal-tar wastes, the Olympic pipeline carries fuels such as gasoline, diesel, and jet fuel that tend to be high in BTEX compounds and low in PAHs. Consequently, BTEX compounds were selected for use as indicator compounds for this groundwater and soil gas investigation. It should be noted that there has been at least one spill from the pipeline near Wacker's treatment plant (see Figure 1) in the past.

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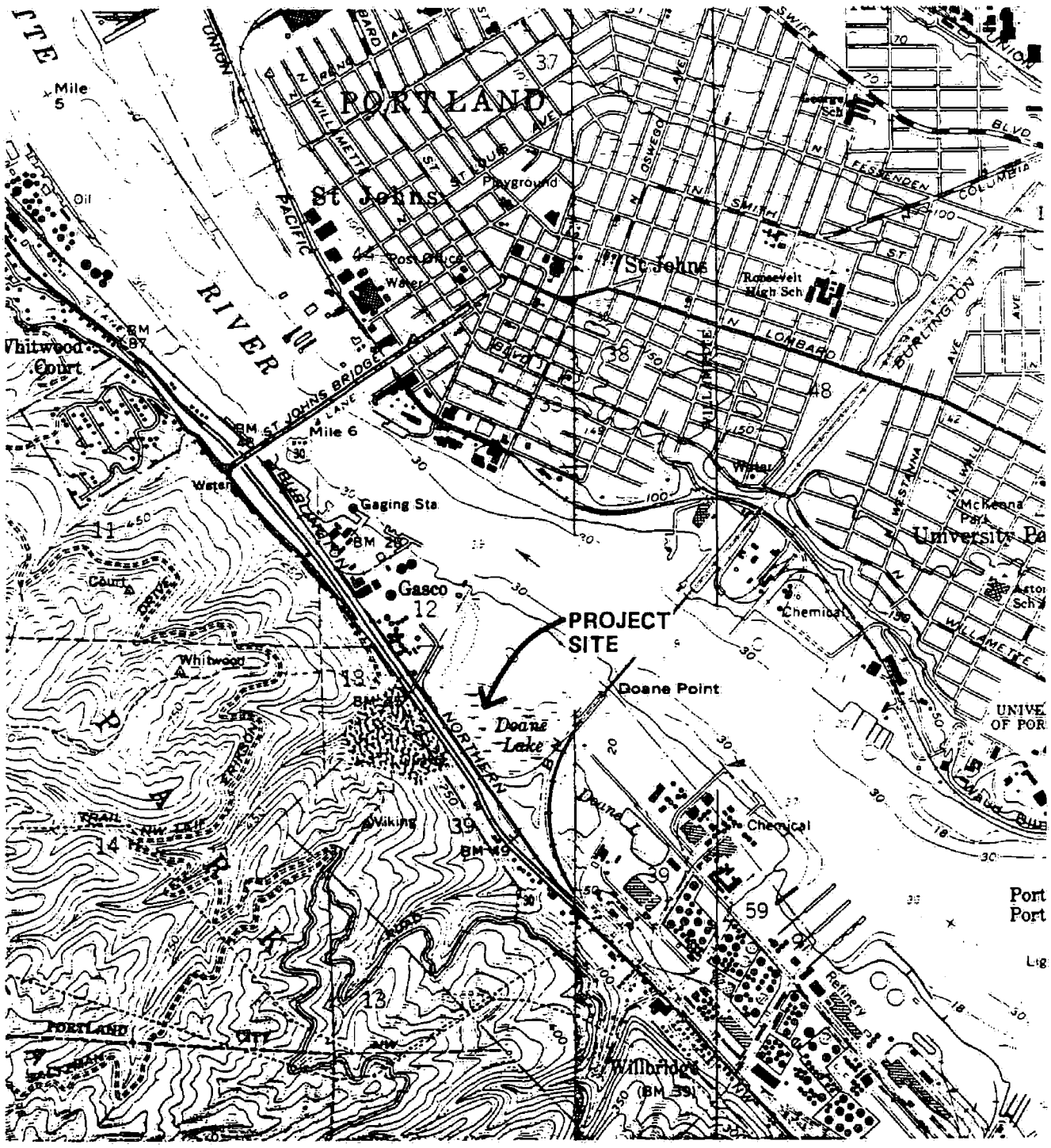

FIGURE 1
VICINITY MAP
Wacker Siltronic Corporation

As a result of these findings, a groundwater and soil gas investigation was undertaken by Wacker to explore the possibility that the Olympic pipeline is a source of hydrocarbon contamination found within the study area. This report presents a summary of the site soil and groundwater information, a description of the sampling location selection methodology, the analytical test results, and a discussion of the investigation findings.

SUBSURFACE CONDITIONS

GEOLOGY

The Wacker site is located on the northwest edge of the northwest-trending structural depression known as the Willamette Valley. The physiography of this part of the Willamette Valley is dominated by the northwest-trending Portland Hills and the flood plain of the Willamette River. The Wacker facility is situated between the base of the Portland Hills and the west bank of the Willamette River (Figure 1).

We understand that two generations of hydraulic fill have been placed on the site during the past 35 years. Fill was first placed 30 to 35 years ago and again sometime during the past 10 to 20 years. Beneath the imported hydraulic fill, the uppermost geologic unit at the site is unconsolidated alluvium deposited by the Willamette River. In the project area, the alluvium is composed of silt, sand, and combinations of these materials. Columbia River Basalt occurs at depths from approximately 85 feet to more than 200 feet beneath the site. Massive flows of Columbia River Basalt are exposed in the walls of the abandoned quarry located southwest of the site.

SOILS

The study area is located south of the Process Building along a 600-foot length of the utility corridor adjacent to the proposed Fab 2 Building site (Figure 2). The generalized soil stratigraphy in this area, described from the ground surface downward, is presented below. This information was obtained from soil boring logs for borings previously drilled at the site. The soil descriptions are generalized for correlation purposes.

Silt (Fill)

Grayish-brown fine sandy silt of soft consistency. The thickness of the silt layer ranges from about 5 to 12 feet near the study area.

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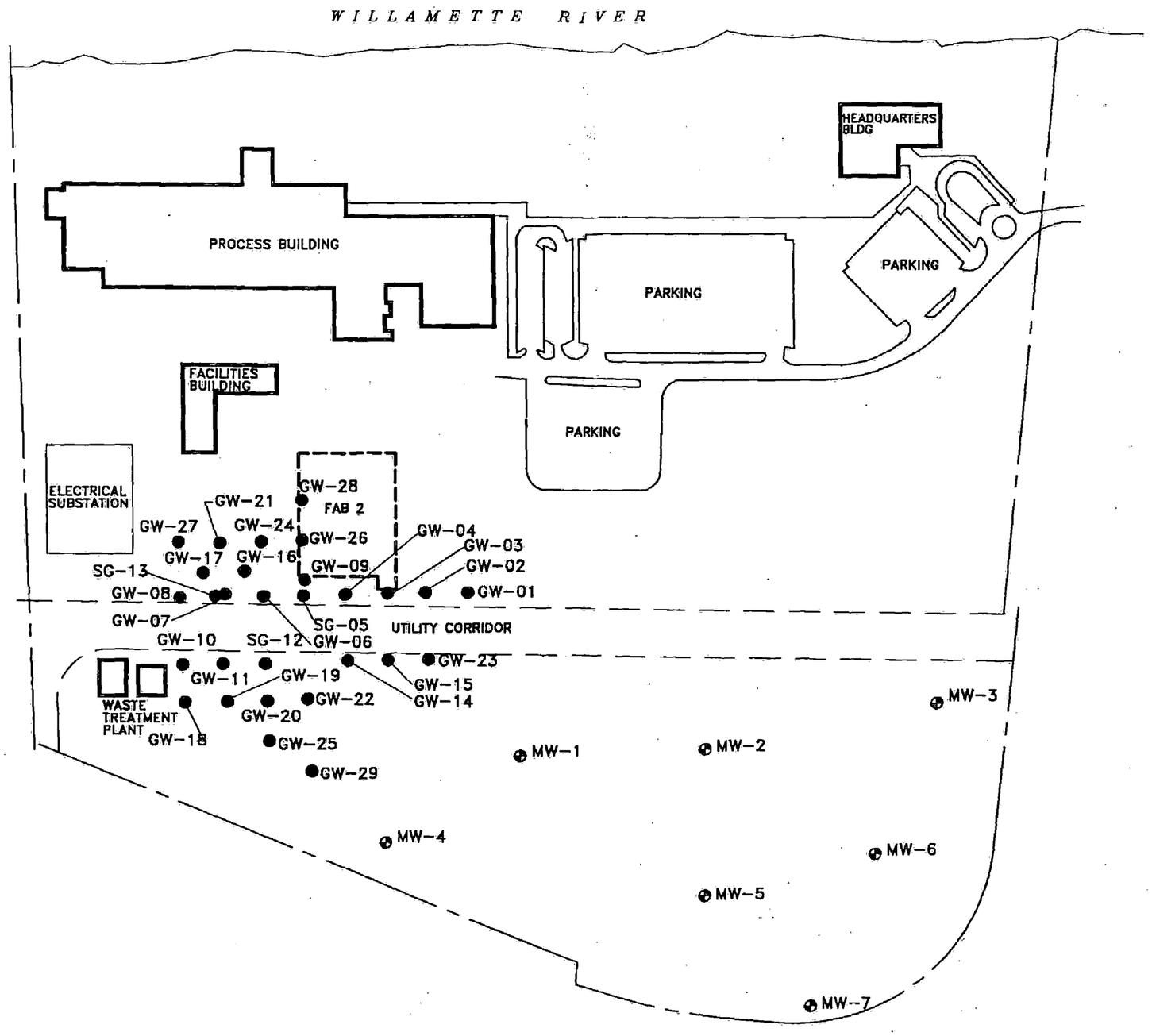

Figure 2
SITE PLAN
WACKER SILTRONIC CORPORATION
PORTLAND, OREGON

CH2M HILL

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Sand (Fill)

Brown fine to medium sand with traces of silt underlies the surface silt layer. The thickness of the sand layer ranges from about 10 to 25 feet near the study area.

Silt (Native)

Gray silt of soft to stiff consistency underlies the sand layer. The gray silt layer extends to the bottom of all soil borings drilled near the study area.

GROUNDWATER

Seven groundwater monitoring wells were previously installed southwest of the study area (Figure 2). All seven of the wells are located south of the utility corridor and screened within the sand layer and allow for monitoring of groundwater present in this shallow aquifer. Wacker has measured the depth to groundwater on a monthly basis at each of the seven wells since their construction. Only the last 5 years of data were available for CH2M HILL to review.

CH2M HILL constructed groundwater elevation contour maps for a number of the data sets; four of the contour maps are presented in Appendix A. These four contour maps were selected to show typical seasonal groundwater elevation trends. The monitoring well data indicate that the groundwater elevation within the sand layer historically has ranged from 15 to 20 feet above mean sea level. The groundwater elevation contour maps showing data between 1985 and 1990 indicate that flow directions in the area of the wells change seasonally from south-southeast in the winter toward the southeast-northeast in the summer months. Groundwater typically flows toward larger bodies of water; therefore, a northerly groundwater migration pattern is expected closer to the Willamette River. This information suggests that a groundwater divide is likely to be located between the monitoring wells and the Willamette River. Generally, the direction of groundwater flow north of the utility corridor appears to be toward a remnant of Doane Lake. North of the utility corridor, however, the direction of flow may be influenced by the Willamette River.

GROUNDWATER AND SOIL GAS SAMPLING INVESTIGATION

INVESTIGATIVE APPROACH

From October 10 to 16, 1990, a groundwater and soil gas investigation was conducted along a 600-foot length of the utility corridor adjacent to the proposed Fab 2 Building site (Figures 2 and 3). At Wacker's request, no sampling was conducted within the utility corridor itself. Also, because groundwater sample analytical test results are thought to provide better reliability than soil gas samples, this investigation sought to focus on the former technique. However, where groundwater samples could not be collected, a soil gas sample was collected to provide supplemental data.

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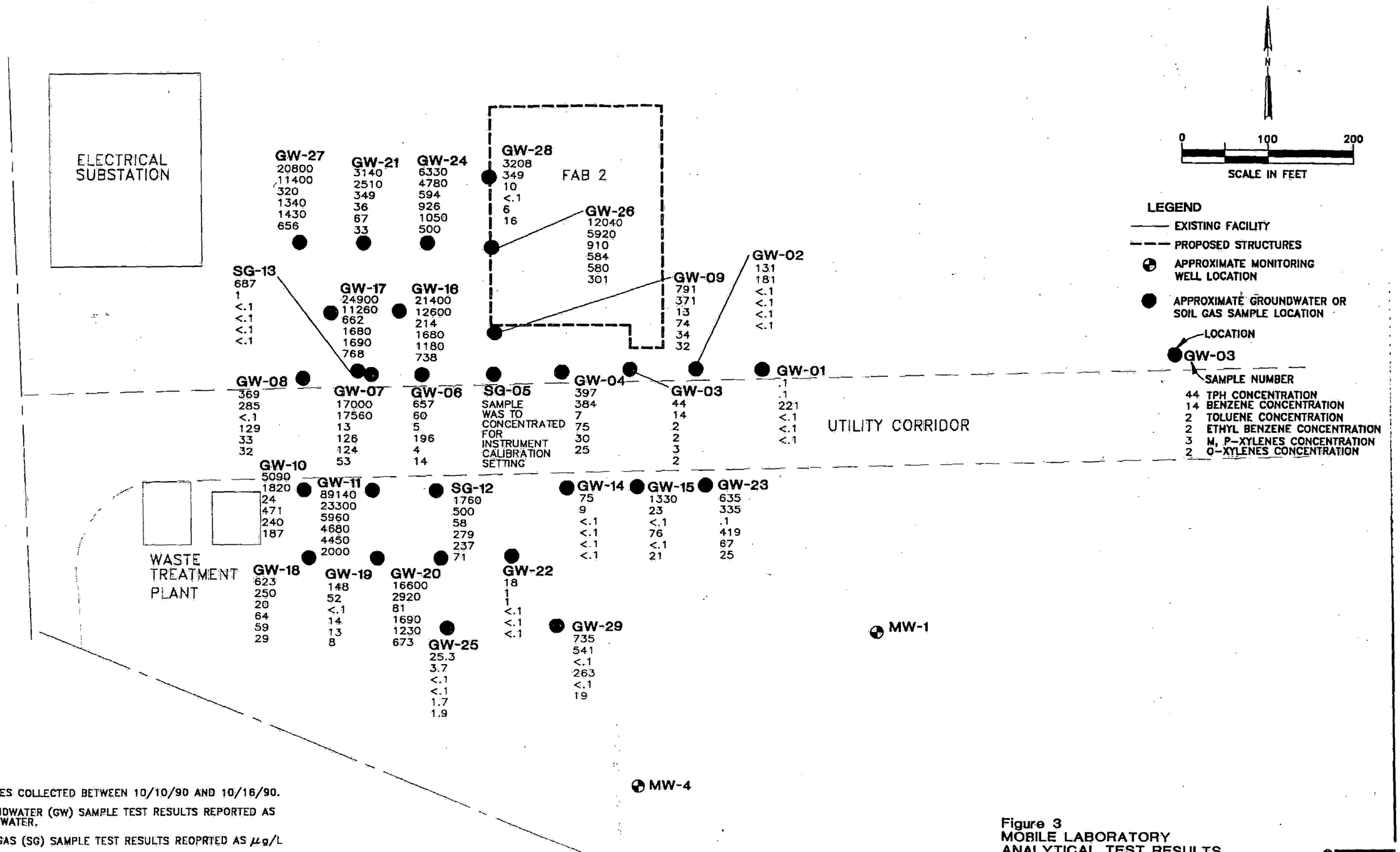

NOTES:

1. SAMPLES COLLECTED BETWEEN 10/10/90 AND 10/16/90.
2. GROUNDWATER (GW) SAMPLE TEST RESULTS REPORTED AS $\mu g/L$ WATER.
3. SOIL GAS (SG) SAMPLE TEST RESULTS REOPRTED AS $\mu g/L$ GAS.

Figure 3
MOBILE LABORATORY
ANALYTICAL TEST RESULTS
SOIL GAS AND GROUNDWATER SURVEY
WACKER SILTRONIC CORPORATION
PORTLAND, OREGON

CH2M HILL

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A CH2M HILL engineer was present in the field during the investigation to direct the sampling program and to review test data as they became available. Hydro Geo Chem, Inc. (HGC), was contracted to collect and analyze the samples in the field for this investigation.

In general, the investigation was conducted by collecting groundwater samples from just below the water table, located approximately 25 feet below ground surface. All samples were analyzed in the field for BTEX and total petroleum hydrocarbon (TPH) concentrations. Groundwater sampling procedures, equipment decontamination, analytical testing, quality control, and field safety procedures were all performed in accordance with CH2M HILL's October 1990 Work Plan. In addition, site restoration and waste management procedures were followed according to the Work Plan.

SAMPLING LOCATION SELECTION METHODOLOGY

The study area straddles the utility corridor, encompassing both its north and south sides. An initial sampling grid interval of 75 feet was used adjacent to both sides of the utility corridor. Based on initial field analytical test results, subsequent sample locations were modified to maximize data collection. When sample concentrations decreased in a consistent pattern away from a concentration high, the decision was made to discontinue further sampling in that area, thereby maximizing data collection. The study area was generally confined to within 250 feet on either side of the utility corridor. Figure 3 shows the actual soil gas and groundwater sampling locations and sample analytical test results obtained from the onsite laboratory.

As sampling proceeded east to west along the north side of the utility corridor, samples GW-1 through GW-8 were collected (Figure 3). The fifth sampling location proved problematic: a groundwater sample could not be retrieved because the bailer used for groundwater sampling became repeatedly stuck in the soil gas probe pipe. A soil gas sample was subsequently collected from this location. However, the test results for SG-5 provided limited information because the sample was too concentrated for the instrument calibration settings. Sample GW-09 was obtained at the southwest corner of the proposed Fab 2 Building site. This location was selected to augment the information obtained from the SG-5 location. In general, along the north side, the laboratory analyses indicated a trend of increasing TPH and benzene concentrations near the western portion of the study area. Sampling then continued on the south side of the corridor, where groundwater samples GW-10 and GW-11 were collected from the west end of the study area. As sampling proceeded eastward along this section of pipeline, groundwater retrieval became increasingly more difficult. A black, viscous oily substance encountered at the bottom of the soil gas probe impeded groundwater recovery altogether at location 12. However, a soil gas sample (SG-12) was successfully recovered at this location to supplement the data.

Because the TPH and benzene concentrations appeared to be elevated at location GW-07, the field team drove a sampling probe adjacent to location GW-07 in an attempt to collect a free product sample, if present, from the surface of the water table. The probe was driven to 25 feet and extracted 5 feet, thereby creating a void in the soil matrix into which

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groundwater could flow. The groundwater was allowed to recover overnight. The team returned to location 13 the following morning to find that the void below the probe rods had caved in. Again, a supplemental soil gas sample (SG-13) was collected at this site.

The sampling effort then returned to the south side of the corridor. The grid location 75 feet east of SG-12 was skipped in an attempt to avoid sampling in the black viscous substance found at location SG-12. Groundwater sample GW-14 was collected; it did not contain the black viscous substance that the samples collected farther west contained. After collecting GW-14, it appeared that BTEX concentrations decreased away from the western sampling locations. The decision was made to discontinue further investigation of this easternmost portion of the study area.

Intending to determine the BTEX distribution away from the corridor, the team crossed back to the north side of the pipeline to collect samples GW-16 and -17. Like sample GW-07, relatively elevated concentrations of BTEX were detected in these samples. The next step was to cross back over to the south side of location GW-11 to obtain further information. Samples GW-18, -19, and -20 were collected and, while they were being analyzed in the mobile laboratory, sample GW-21 was obtained from a location 75 feet north of locations GW-16 and GW-17. This sample (GW-21) was later determined to show a general decrease in BTEX concentration to the north of locations 16 and 17. Likewise, samples GW-18 and GW-19 were later determined to show a decreasing BTEX concentration pattern to the south of location GW-11, while sample GW-20 concentrations were relatively high.

In a similar manner, groundwater samples 21 through 29 were collected between October 14 and 16. The field team systematically collected and analyzed samples at locations around the peripheries of apparent high-concentration areas. A BTEX concentration distribution pattern developed as the sampling progressed (see Figures 4 and 5). The decision to terminate the sampling program was made when it became apparent that concentrations generally decreased away from the western section of the study area near the pipeline.

CONFIRMATORY SAMPLE COLLECTION

Three split groundwater samples were collected during the course of the investigation: one each from locations GW-4, -7, and -27. These samples were sent to the CH2M HILL laboratory in Redding, California, to confirm the results of the field analyses. Additionally, field duplicate and blank samples were collected and analyzed by Hydro Geo Chem in accordance with the Work Plan.

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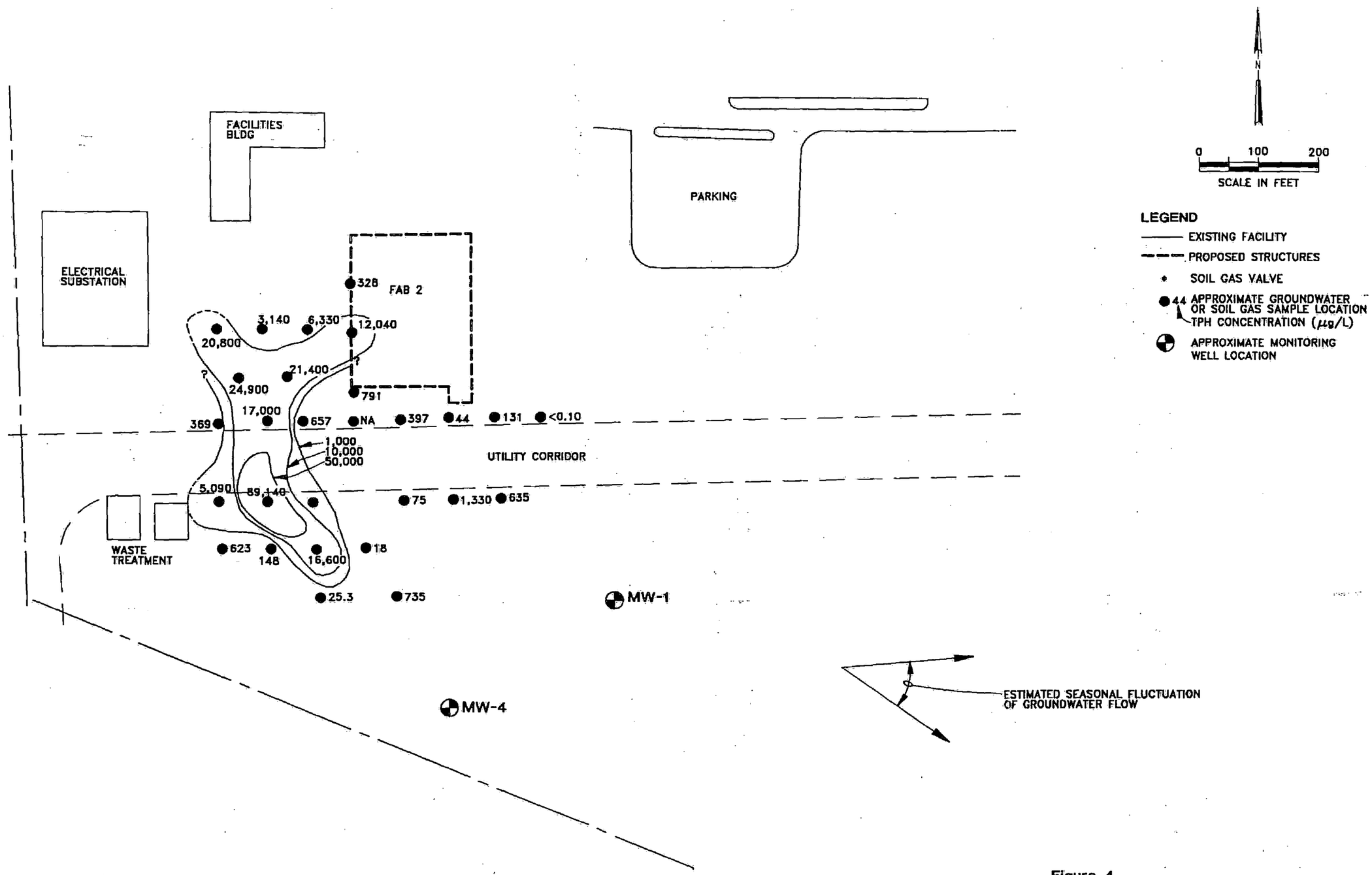

NOTES:
1. TPH VALUES SHOWN ARE µg/L UNITS
2. SAMPLES COLLECTED BETWEEN 10/10/90 AND 10/16/90

Figure 4
ESTIMATED GROUNDWATER TPH CONCENTRATION CONTOURS
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PORTLAND, OREGON

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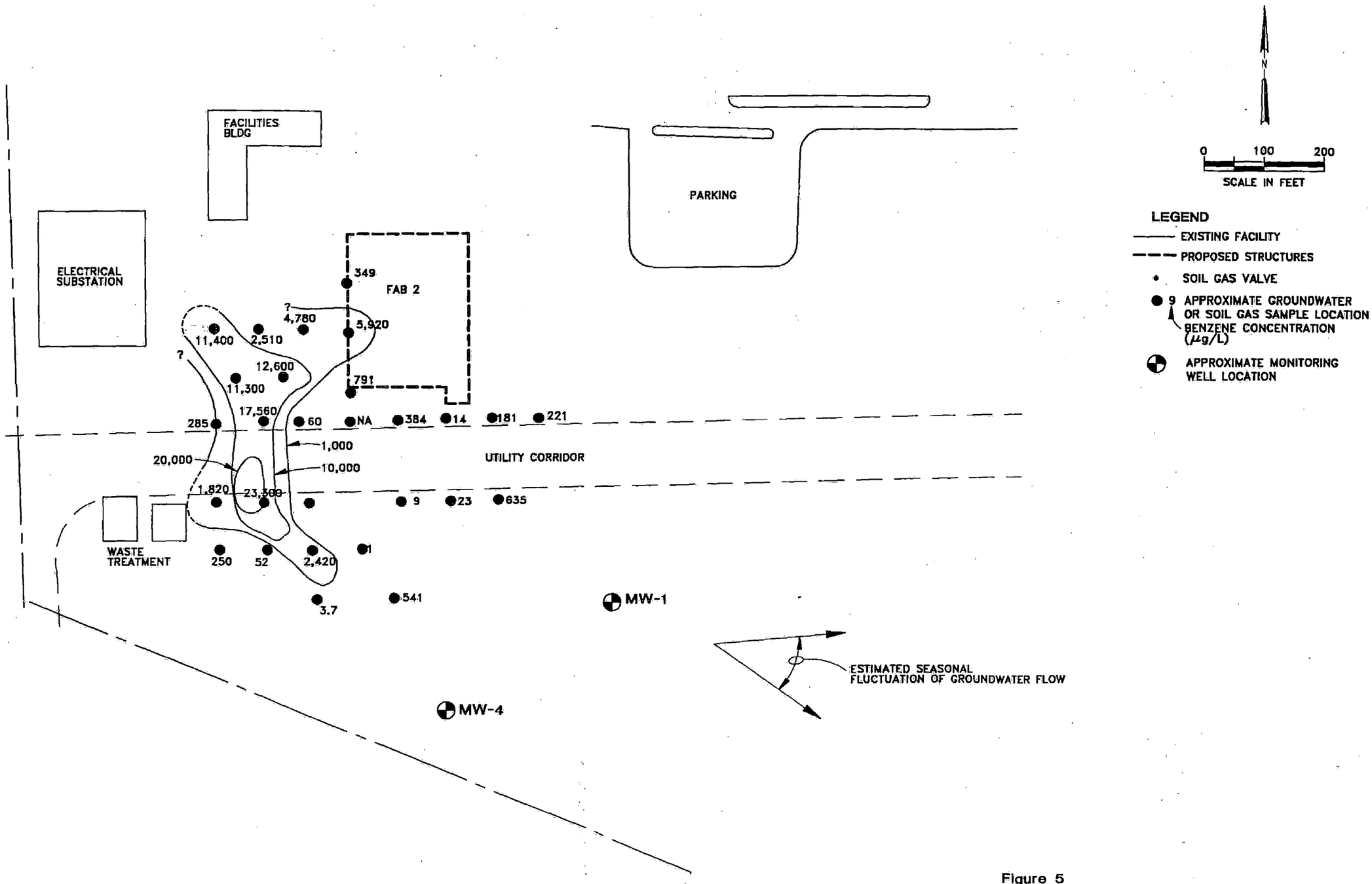

NOTES:
1. BENZENE VALUES SHOWN ARE µg/L UNITS
2. SAMPLES COLLECTED BETWEEN 10/10/90 AND 10/16/90

Figure 5
ESTIMATED GROUNDWATER BENZENE CONCENTRATION CONTOURS
WACKER SILTRONIC CORPORATION
PORTLAND, OREGON

CH2M HILL

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INVESTIGATION RESULTS

FIELD ANALYTICAL TEST RESULTS

Analytical results provided by Hydro Geo Chem's mobile laboratory unit are presented in Table 1 (see Appendix B for Hydro Geo Chem's report). The reported values for BTEX and TPH compounds are well above detection limits. In general, detected benzene concentrations ranged from 1 to 23,300 μg/L and TPH concentrations from 18 to 89,140 μg/L throughout the study area.

Concentration contour maps are presented in Figures 4 and 5 for TPH and benzene, respectively. The contours for toluene, ethylbenzene, and xylene generally follow the same trends shown in Figures 4 and 5. Both contour maps indicate a concentration high located around GW-11 and extending northward. Seasonal fluctuation in groundwater flow and a change in groundwater flow direction toward the Willamette River, north of the utility corridor, are possible explanations for the apparent BTEX migration toward the south.

QUALITY CONTROL ANALYSES

Hydro Geo Chem performed duplicate analyses in the field on 7 of the 29 samples collected. The test results for the duplicate analyses are reported in Table 1, along with the other mobile laboratory test results. As shown, the results of the duplicate analyses are fairly close in value, typically within one order of magnitude. The results also provide an indication of typical variations in test results for the analyses performed.

Analytical results for the three confirmatory samples are presented in Table 2. The CH2M HILL analytical data are shown in combination with the Hydro Geo Chem findings for comparison. Some variation between CH2M HILL laboratory and Hydro Geo Chem field findings is apparent. However, some variation of analytical data is expected when the field sampling methodology includes groundwater collection through driven soil-gas probes, as opposed to monitoring well purge and sample collection techniques. While the findings provide an indication of site conditions, they are limited to order-of-magnitude comparisons and, consequently, cannot be considered strictly quantitative values. It is CH2M HILL's opinion that the analytical findings from both laboratories fall within an acceptable range of variation (see Appendices C and D for the field sampling data sheets and CH2M HILL laboratory reports, respectively).

DISCUSSION OF FINDINGS

The data indicate elevated concentrations of BTEX and TPH surrounding locations GW-11 and GW-7 and appear to generally decrease in areas away from the detected concentration high. The concentrations of BTEX detected in the groundwater samples are typical of those associated with a gasoline spill or leak. Because the highest detected concentrations of BTEX and TPH are located adjacent to the utility corridor, this may be an indication

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

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

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Table 1
(Continued)

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

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Table 1
(Continued)

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

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

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

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

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TABLE 2
QUALITY CONTROL ANALYTICAL TEST RESULTS

Sample Location Number	Analytical Laboratory	Sample Collection Date	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	M,P - Xylene (µg/L)	O - Xylene (µg/L)	Total Xylenes (µg/L)	TPH (µg/L)	TFH(b) GAS (µg/L)
GW-04-A(a)	HYDRO GEO CHEM	10/11/90	391.00	< 0.10	68.00	23.00	22.00	45.00	406.00 (a)	
GW-04-B		10/11/90	384.00	7.10	75.00	30.00	25.00	55.00	397.00	
GW-04	CH2M HILL	10/11/90	280.00	9.80	80.00	N/A	N/A	70.00		1,300.00
GW-07	HYDRO GEO CHEM	10/11/90	17,560.00	13.10	126.00	124.00	52.60	176.60	17,000.00	
GW-07	CH2M HILL	10/11/90	8,400.00	100.00	770.00	N/A	N/A	540.00		19,000.00
GW-27-A	HYDRO GEO CHEM	10/15/90	10,300.00	627.00	1,220.00	1,250.00	597.00	1,847.00	16,300.00	
GW-27-B		10/15/90	11,400.00	320.00	1,340.00	1,430.00	656.00	2,086.00	20,800.00	
GW-27 **	CH2M HILL	10/15/90	18,000.00	280.00	1,070.00	N/A	N/A	490.00		40,000.00

(a)The letter "A" following the sample location number indicates field sample; "B" indicates a duplicate sample.
(b)CH2M HILL analyzed for TFH Gas and was recorded in mg/L units. This unit was converted to ug/L for comparison purposes (where 1.0 mg/L = .001 µg/L).

Notes:
** Due to the concentration of target compounds, GW-27 was diluted at 1:50 and then again at 1:100. Reporting limits have been adjusted accordingly.
< = analyte not detected at concentration posted.

All groundwater samples collected at 25 feet below ground surface.
CH2M HILL Lab samples analyzed using EPA Method 8015/8020. Hydro Geo Chem Mobile Lab samples analyzed using MODIFIED EPA Method 8015.

Detection Limits for Hydro Geo Chem groundwater samples = 0.10 µg/L.
N/A = Lab did NOT ANALYZE for this compound.

pdx937/002.wk1

that the source of BTEX contamination is located in that area. No free product was found (only slight sheens were observed in some of the samples) to conduct fingerprint analyses with the gas chromatographs to determine whether the source of BTEX is a gasoline leak from the pipeline. It is possible that if free product were present, it could be solubilizing the black, viscous substance (thought to be coal-tar-derived wastes) found at and near the GW-10, -11, and -12 sampling locations. This might change the character of both the coal tar and free gasoline if present. The results of the investigation may indicate the approximate location of the contamination source. However, the specific origin of the BTEX was not conclusively determined from the chemical concentrations or chromatograms. BTEX compounds are commonly used as indicator constituents to detect the presence of gasoline in soil and groundwater. Automotive gasolines contain more than 100 identifiable compounds and are variable in their contents. However, BTEX compounds are four major components of gasoline, as shown in Table 3. It should be noted that BTEX can be present in other chemical and petroleum products in addition to gasoline.

LIMITATIONS

This report has been prepared for the exclusive use of Wacker Siltronic Corporation for specific application to the Olympic Pipeline Soil Gas and Groundwater Sampling Survey in accordance with generally accepted engineering practice. No other warranty, express or implied, is made.

The analyses and recommendations contained in this report are based on the data obtained from groundwater and soil gas samples. The data indicate subsurface conditions only at specific locations and times, and only to the depths penetrated. They do not necessarily reflect strata variations that may exist among such locations.

CH2M HILL is not responsible for any claims, damages, or liability associated with interpretation of subsurface data or reuse of the subsurface data or engineering analyses without the express written authorization of CH2M HILL.

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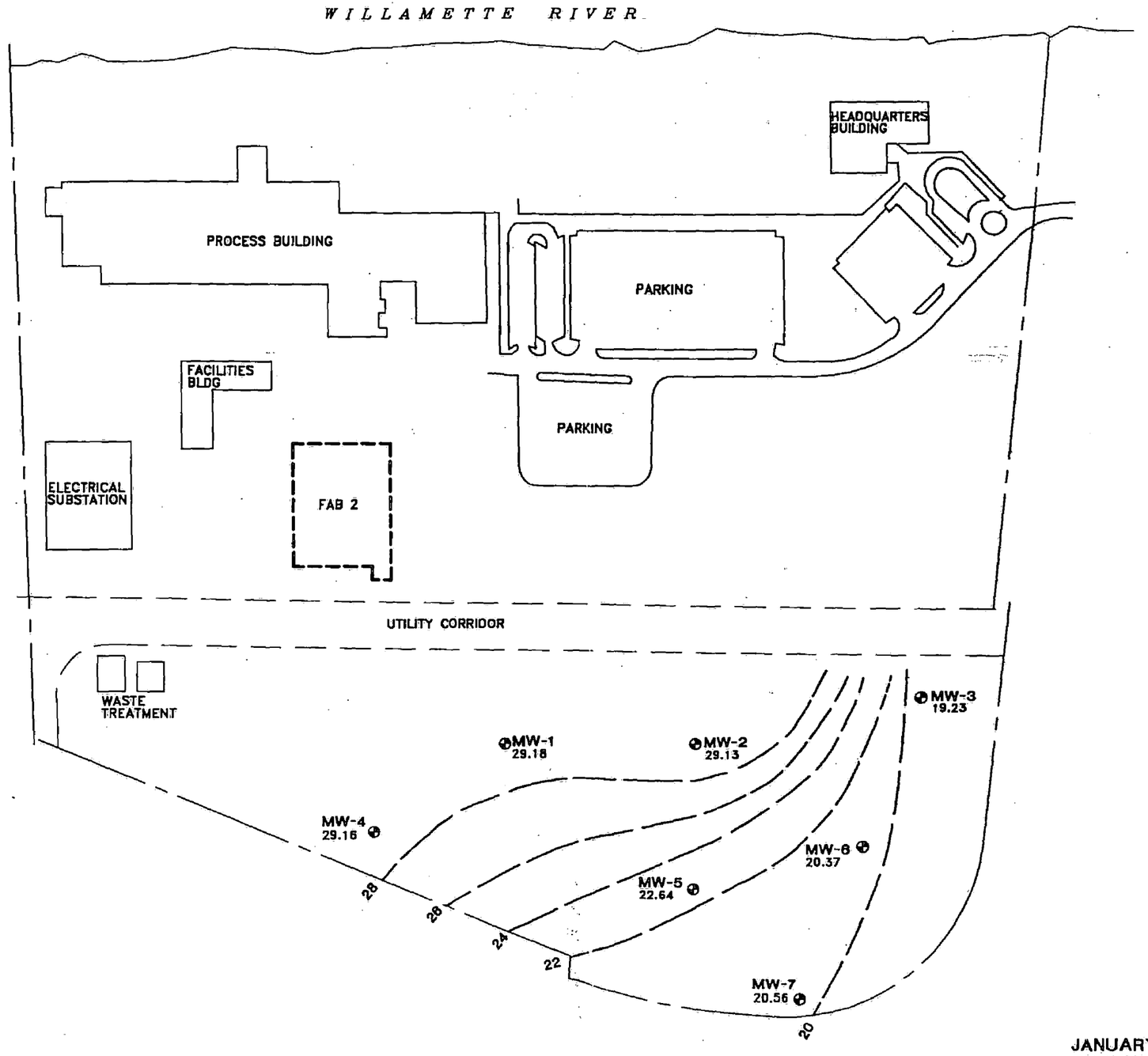
Table 3
TYPICAL BTEX CONCENTRATIONS IN GASOLINE (a)

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

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

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

12-17-90



N

0 100 200
SCALE IN FEET

LEGEND

- EXISTING FACILITY
- PROPOSED STRUCTURES
- APPROXIMATE MONITORING WELL LOCATION
- MW-3 — MONITORING WELL NUMBER
- 19.23 — MEASURED WATER LEVEL ELEVATION
- GROUNDWATER ELEVATION CONTOUR LINE

JANUARY 1988
GROUNDWATER ELEVATION CONTOURS
WACKER SILTRONIC CORPORATION
PORTLAND, OREGON

CH2M HILL

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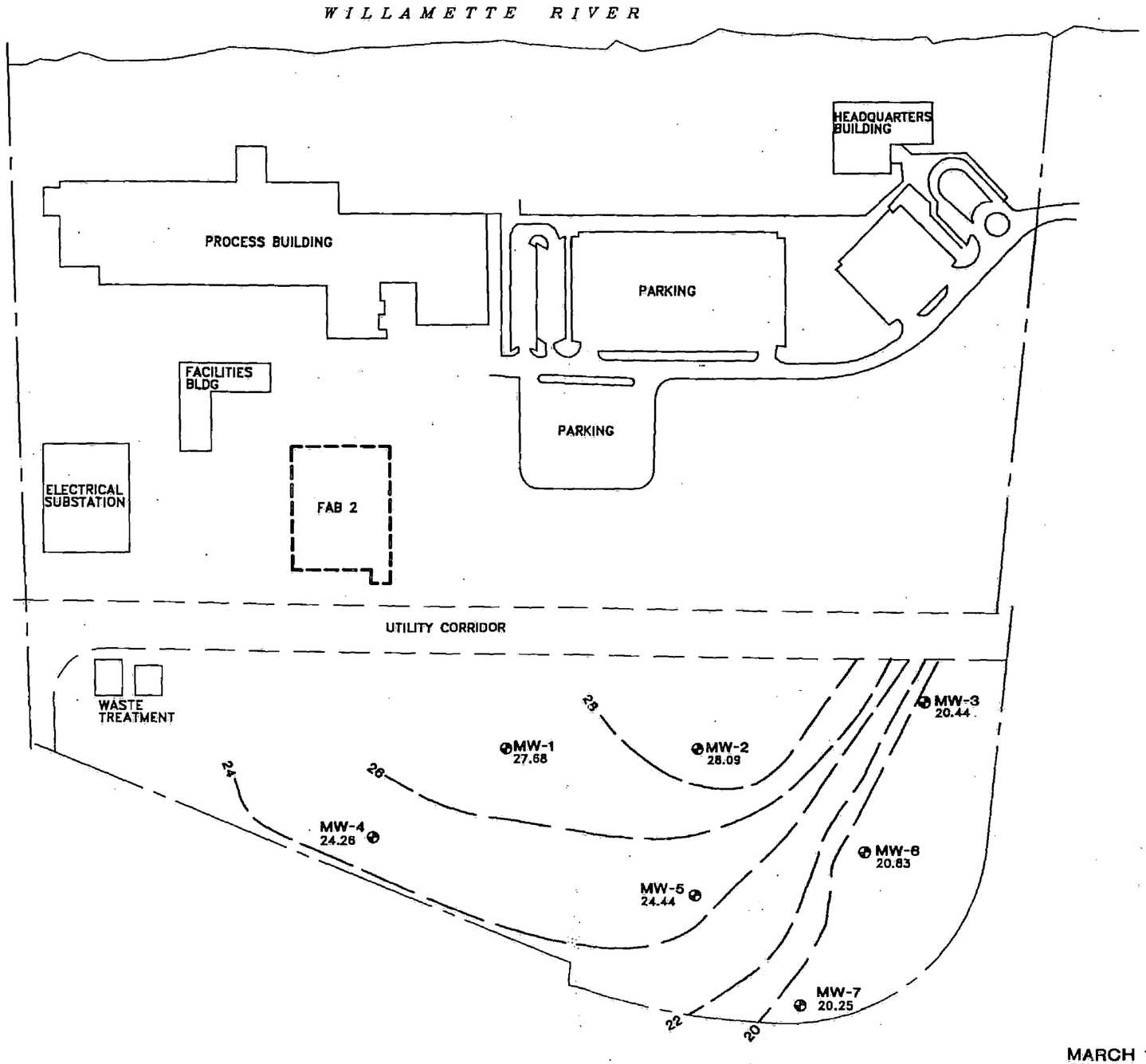
12-17-90



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SCALE IN FEET

LEGEND

- EXISTING FACILITY
- PROPOSED STRUCTURES
- APPROXIMATE MONITORING WELL LOCATION
- MW-3 — MONITORING WELL NUMBER
- 20.44 — MEASURED WATER LEVEL ELEVATION
- GROUNDWATER ELEVATION CONTOUR LINE

MARCH 1988
GROUNDWATER ELEVATION CONTOURS
WACKER SILTRONIC CORPORATION
PORTLAND, OREGON

CH2M HILL

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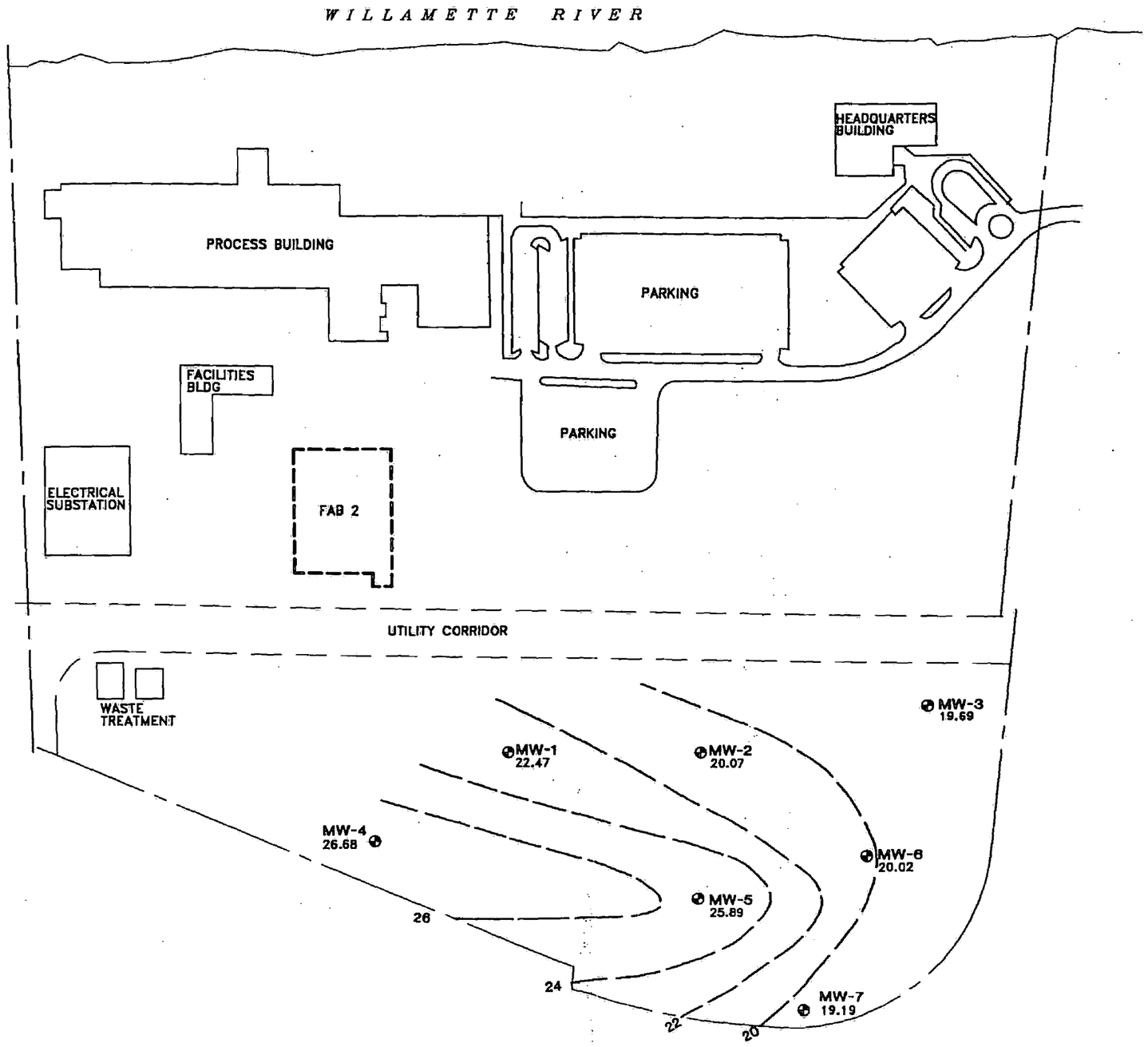

N

0 100 200
SCALE IN FEET

LEGEND

- EXISTING FACILITY
- PROPOSED STRUCTURES
- APPROXIMATE MONITORING WELL LOCATION
- MW-3 — MONITORING WELL NUMBER
- 19.69 — MEASURED WATER LEVEL ELEVATION
- GROUNDWATER ELEVATION CONTOUR LINE

JULY 1988
GROUNDWATER ELEVATION CONTOURS
WACKER SILTRONIC CORPORATION
PORTLAND, OREGON

CH2M HILL

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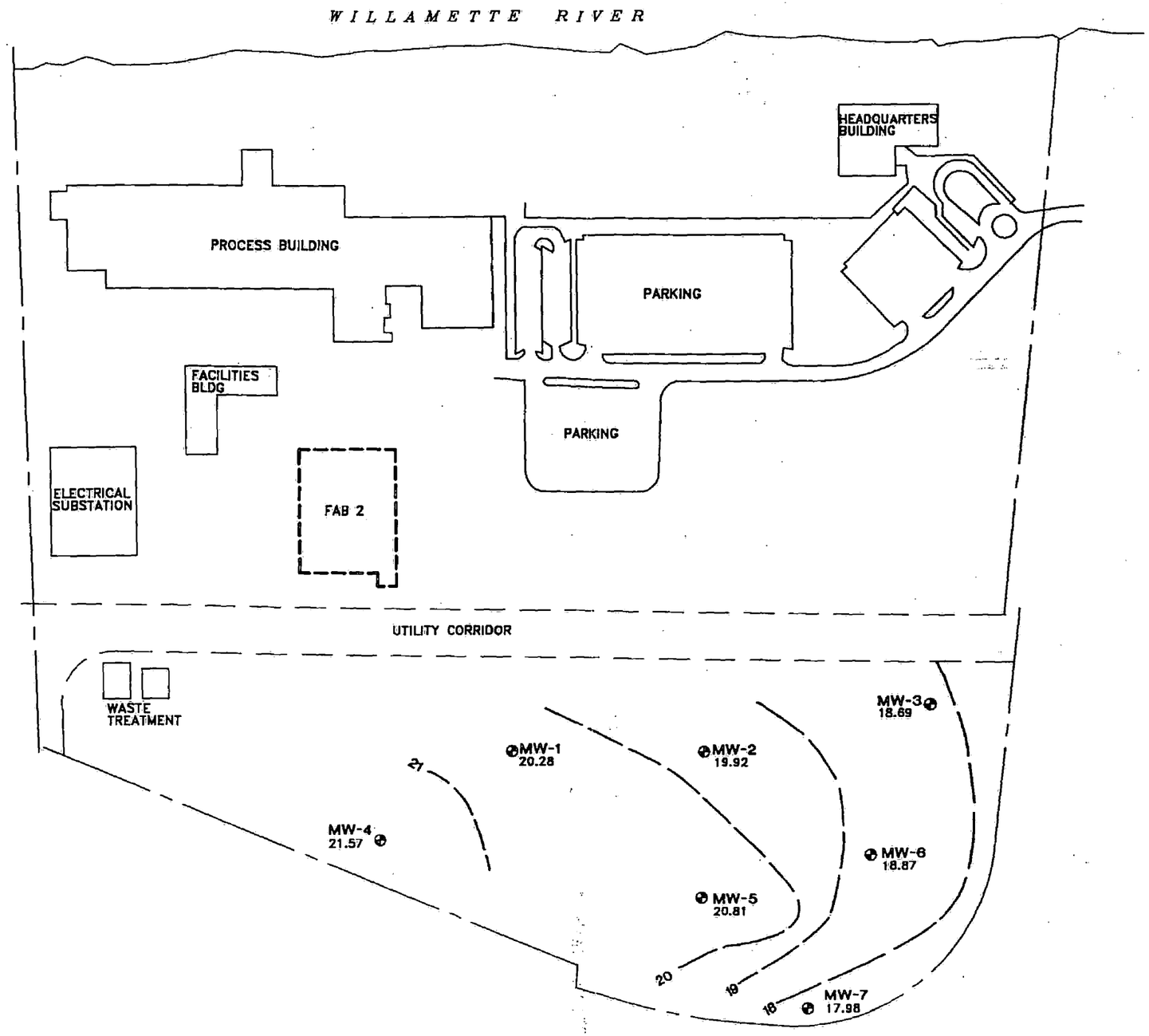

N

0 100 200
SCALE IN FEET

LEGEND

- EXISTING FACILITY
- PROPOSED STRUCTURES
- APPROXIMATE MONITORING WELL LOCATION
- MW-3 — MONITORING WELL NUMBER
- 18.69 — MEASURED WATER LEVEL ELEVATION
- GROUNDWATER ELEVATION CONTOUR LINE

OCTOBER 1986
GROUNDWATER ELEVATION CONTOURS ®
WACKER SILTRONIC CORPORATION
PORTLAND, OREGON

CH2M HILL

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SHALLOW GROUNDWATER AND SOIL GAS SURVEY OF THE WACKER FACILITY PORTLAND, OREGON

Submitted to

CH2M Hill
2020 SW 4th Avenue, 2nd Floor
Portland, Oregon 97201

Final Report

Submitted by

Hydro Geo Chem, Inc.
1430 North Sixth Avenue
Tucson, Arizona 85705

October 24, 1990

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SHALLOW GROUNDWATER AND SOIL GAS SURVEY OF THE WACKER FACILITY PORTLAND, OREGON

INTRODUCTION

This report presents the methods and results of a shallow groundwater and soil gas investigation for volatile organic compounds performed October 10-16, 1990 at the Wacker facility in Portland, Oregon. The investigation was conducted by Hydro Geo Chem, Inc. under contract to CH2M Hill. The investigation was designed to evaluate the near surface distribution of total petroleum hydrocarbons and selected aromatic hydrocarbons on the site.

BACKGROUND & THEORY

Soil gas surveys consist of the sampling and analysis of the soil gases that reside in the pore space of the unsaturated zone above the water table. Because many common organic compounds and industrial solvents exhibit significant vapor pressures and are relatively insoluble in water, their introduction into subsurface soils results in vapor phase permeation and transport. Should these chemicals reach the water table and travel with the groundwater, vapors will continue to emanate from the contaminated groundwater into overlying soil. Thus organic contamination of the subsurface or groundwater can be detected by measuring the concentration of volatile organics in the soil gas.

The concentration of a volatile organic compound (VOC) in soil gas is a complex function of the distribution of the organic compound and its interaction with the soil. This interaction depends on a number of soil parameters including

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soil particle size and mineralogy, the soil's natural and anthropogenic organic content, soil moisture, temperature, lithology, and heterogeneity.

Whatever the source of the VOC in soil gas, its concentration is representative of soils contamination at the point of measurement. Volatile organic contaminants are present in the gas phase in unsaturated pore spaces, in the water contained in the unsaturated soils, and sorbed on the soil particles. The total soils concentration is the sum of the VOC's contained in the three phases. The partitioning of the VOC between gas, liquid and solid phases is dependent on both the soil properties and the chemical properties of the organic compound. Thus, given the chemical properties of the VOC and measurements or reasonable estimates of relevant soil parameters, soil-gas data can be used to provide semi-quantitative estimates of soil contamination.

Since equilibrium between phases is generally rapid compared to the rate of gaseous diffusion, soil gas concentrations can be used to estimate the total soil concentration. The major uncertainties in estimating soil concentration directly from soil gas concentrations are the organic and moisture content of the soils. Chemical properties of particular organic compounds are well known, (i.e., vapor pressure, solubility), and the other relevant soil parameters (i.e., bulk density, porosity) have relatively little effect on soil concentration estimates. The following equation relates soil gas concentrations to total soil concentrations.

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$$\frac{C_g}{C_T} = \left[\frac{K_D \rho_b}{H_D} + \frac{\theta_w}{H_D} + (\theta_T - \theta_w)\right]^{-1}$$

Where C_g is the concentration in the gas [M/V air]

C_T is the concentration in the soil [M/V bulk volume soil]

K_D is the water-solid distribution coefficient [M/M solid/M/V water]

ρ_b is the bulk soil density [M/V solid]

H_D is the gas-water distribution coefficient [M/V air/M/V water]

θ_w is the water filled porosity

θ_T is the total porosity

The gas-water distribution coefficient (dimensionless Henry's law constant) is

$$H_D = C_g/C_w = H/RT \simeq \rho_g/S$$

where ρ_g is the saturated vapor density [M/V]

and S is the solubility [M/V].

H is the Henry's coefficient

R is the gas constant

T is the temperature in degrees Kelvin

The water-solid distribution coefficient is approximately

$$K_D = \frac{C_s}{C_w} \simeq \frac{K_{oc} \cdot \%OC}{100}$$

where C_s is the concentration in the solid (mg/gm)

C_w is the concentration in the water (mg/ml)

K_{oc} is the water-organic carbon distribution coefficient

%OC is the percent organic carbon in the soil

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Use of soil gas to infer concentrations of sources at distance (such as groundwater plumes) is necessarily much more qualitative. Soil gas data used in this manner is limited by the lack of information regarding the soil parameters interposed between the source and sampling point. It is therefore generally not possible to make quantitative estimates of groundwater concentrations from soil gas samples collected at distance from the saturated interface. Away from source areas (ie. underground storage tanks, surface spills etc.) where only the groundwater is providing a significant soil gas concentration, soil gas is often an excellent relative indicator of groundwater contamination. The effectiveness of soil gas surveys to delineate groundwater contamination, is, however, dependent on the depth to groundwater, contaminant concentration in the groundwater, and distribution of air permeabilities in the unsaturated zone.

SCOPE OF WORK

Groundwater samples were collected from 26 locations on the investigation site. In addition, three soil gas samples were also collected and analyzed on-site. Sampling locations were determined by a CH2M Hill on-site representative.

The volatile organic compounds that were analyzed at each of the sampling locations included the suite of aromatic compounds known as BTEX:

Benzene

Ethylbenzene

Toluene

Meta + Para Xylenes

Ortho Xylene

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and

Total hydrocarbons

These organic compounds were chosen for analysis because they are constituents of petroleum products.

METHODS AND INSTRUMENTATION

Sampling probes consisted of 1 3/8" OD, EW drill rod tipped by a loosely held hardened-steel disposable point. A probe was driven into the ground at each sampling location to a depth of 25 feet below land surface using a flatbed truck-mounted hydraulically-actuated drive point rig. The probe was then pulled up 6 inches to expose the sampling interval. Water samples were collected by dropping a stainless steel bailer down the pipe and filling a pre-weighed 40 ml. VOC vial liquid full with the captured sample. Soil gas samples were collected by attaching a regulated vacuum pump to the probe via a stainless steel adaptor. Three to five times the dead volume of the sampling train was purged to ensure that a representative soil gas sample would be collected. The samples were collected by withdrawing the soil gas from the probe using a Hydro Geo Chem designed, computerized mass-flow controller to regulate flow and measure volume sampled. The volatile organics were trapped and concentrated in a glass cartridge contained in a stainless steel housing. The concentrating cartridge was packed with three activated carbons, Carbotrap, Carbopak-B, and Carbosieve S-III, selected to quantitatively trap organics with widely different volatilities. After sampling, the cartridges were brought to the on-site mobile laboratory for analysis.

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Water samples were prepared for analysis by cooling the sample vial and transferring half the contents to another VOC vial. The sample volume was determined by weight. Using a purge and trap apparatus, helium was passed at 100 ml/min for 15 minutes through a needle inserted to the base of the VOC vial. The gas stream exiting from the VOC vial through another needle inserted above the water surface, purged the volatile components from the water and carried them to a carbon-packed glass trap.

Gas chromatographic techniques were used to identify and measure concentrations of the various compounds. The soil gas cartridges and cartridges used to trap the purge constituents from the water samples were desorbed at a temperature of 380 °C using a thermal desorption unit. Samples were injected by the desorber into a gas chromatograph equipped with a megabore capillary column and a photoionization detector (PID). A split from the thermal desorber was sent to a flame ionization detector (FID) for analysis of total hydrocarbons (including non-priority pollutant volatile organic compounds). Total hydrocarbons were calibrated to the sum of the calibrated aromatic hydrocarbons. Actual total hydrocarbon measurements are therefore dependent on the relative distribution of hydrocarbon compounds and their associated FID response. Total hydrocarbons for water are calibrated in the same manner, however measured concentrations are only representative of purgeable total hydrocarbons.

The make and model of the equipment used to perform these on-site analyses included:

Envirochem 850 Thermal Tube Desorber

Varian 3400 Gas Chromatograph

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Tracor 703 PID Detector

Varian Flame Ionization (FID) Detector

DB 624 30m Megabore column, J.W. Scientific

Spectra Physics 4400 Chrom Jet Integrator

QUALITY ASSURANCE/QUALITY CONTROL

Quality control and quality assurance were achieved through strict experimental protocol. Chain of custody procedures were observed. All parts of the collection system that come in contact with a sample were cleaned before each use. A systems blank and three calibration runs were performed at the beginning of each day and additional calibrations after every 10 samples.

Standards were prepared from stock mixtures of neat reagent grade compounds. The stock analyte mixture was prepared by weighing each compound addition to the mixture and weighing an aliquot volume of the final mixture to establish density (weight/volume). For preparation of daily soil gas standards, a measured volume of the standard mixture was injected into a nitrogen-filled 1-liter glass gas bottle through a septum side port. A measured volume of the resulting gas mixture was then injected into a 200-ml/min helium stream feeding a glass, carbon-packed concentrating cartridge. After two minutes the cartridge was transferred to the thermal desorber and analyzed exactly as the soil-gas samples.

For preparation of daily standards used for water analysis a measured volume of the standard mixture was injected into 10 ml of purge and trap grade methanol. An aliquot of the resulting methanol solution was then injected into

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20 ml of distilled water and purged and analyzed in the same manner as the actual water samples.

Prior to each day's sampling, atmospheric field blanks of the entire sampling apparatus were taken and analyzed to check background contamination in the sampling system and cartridges. In addition, serial duplicates were taken from 10% of the sample locations as a measure of reproducibility.

Detection limits were 0.01 micrograms or less per liter of soil gas and 0.10 micrograms per liter water for all compounds analyzed.

RESULTS

Table 1 presents the measured contaminant concentrations from each sampling location. Concentrations are reported in micrograms per liter (µg/l). Conversion of soil gas concentrations from µg/l (gas) to ppmV can be achieved by the following equation.

$$C_{ppmV} = C_{\mu g/l} \times RT/M_w P$$

where C_{ppmv} = soil gas concentration in ppmV

$C_{\mu g/l}$ = soil gas concentration in µg/l (gas)

R = 0.08205 L-Atm/deg-mole

T = °K

M_w = molecular wgt in grams

P = pressure in atmospheres

For most compounds C_{ppmV} is approximately 0.25 $C_{\mu g/l}$.

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TABLE 1
PRELIMINARY ANALYTICAL RESULTS
WACKER FACILITY, PORTLAND
CH2M-HILL
(UNITS OF CONCENTRATION, uG/L)

SAMPLE	COMMENT	BENZENE	TOLUENE	ETHYL BENZENE	M,P-XYLENE	O-XYLENE	TPH
EQUIPBLK	BAILER	<0.10	<0.10	<0.10	<0.10	<0.10	8.74
EQUIPBLK	BAILER	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
EQUIPBLK	BAILER	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
EQUIPBLK	BAILER	<0.10	<0.10	<0.10	<0.10	<0.10	7.30
EQUIPBLK	BAILER	<0.10	<0.10	<0.10	<0.10	<0.10	7.90
EQUIPBLK	BAILER	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
FB11OCT1	SOILGAS	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
FB12OCT1	SOILGAS	<0.01	<0.01	<0.01	<0.01	<0.01	0.60
FB13OCT1	SOILGAS	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
FB14OCT1	SOILGAS	<0.01	<0.01	<0.01	<0.01	<0.01	0.20
FB15OCT1	SOILGAS	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
GW01		221.00	<0.10	<0.10	<0.10	<0.10	<0.10
GW02		181.00	<0.10	<0.10	<0.10	<0.10	131.00
GW03		13.50	1.80	1.50	3.30	2.30	43.60
GW04-A	GASOLINE	391.00	<0.10	68.00	23.00	22.00	406.00
GW04-B		384.00	7.10	75.00	30.00	25.00	397.00
GW06	GAS/DIES	59.80	4.60	196.00	4.10	13.80	657.00
GW07		17560.00	13.10	126.00	124.00	52.60	17000.00
GW08	DIESEL	285.00	<0.10	129.00	33.10	32.30	369.00
GW09	GASOLINE	371.00	13.10	74.40	34.20	32.40	791.00
GW10	DIESEL	1820.00	23.90	471.00	240.00	187.00	5090.00
GW11-A	GAS/DIES	18100.00	3910.00	2520.00	2380.00	1130.00	56500.00
GW11-B		23300.00	5960.00	4680.00	4450.00	2000.00	89140.00
GW11-C		18470.00	5590.00	4510.00	4372.00	2050.00	88240.00
SG12	GASOLINE	500.00	58.20	279.00	237.00	70.80	1760.00
SG13	SOILGAS	1.28	<0.01	<0.01	<0.01	<0.01	687.00
SG14		8.60	<0.10	<0.10	<0.10	<0.10	74.70
GW15		23.20	<0.10	75.90	<0.10	21.30	1330.00
GW16	DIESEL	12600.00	214.00	1680.00	1180.00	738.00	21400.00
GW17-A	DIESEL	11300.00	662.00	1680.00	1690.00	768.00	24900.00
GW17-B		10930.00	574.00	1370.00	1410.00	632.00	19400.00
GW18	GASOLINE	250.00	20.40	64.20	58.50	28.80	623.00
GW19	GASOLINE	52.40	<0.10	13.00	12.60	8.00	148.00
GW20-A	DIESEL	2920.00	80.60	1690.00	1230.00	673.00	16600.00
GW20-B		3120.00	85.60	1720.00	1230.00	667.00	14500.00
GW21		2510.00	349.00	37.60	66.60	33.00	3140.00

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TABLE 1 (continued)
PRELIMINARY ANALYTICAL RESULTS
WACKER FACILITY, PORTLAND
CH2M-HILL
(UNITS OF CONCENTRATION, uG/L)

SAMPLE	COMMENT	BENZENE	TOLUENE	ETHYL BENZENE	M,P-XYLENE	O-XYLENE	TPH
GW22-A		<0.10	<0.10	<0.10	<0.10	<0.10	12.10
GW22-B		1.00	0.70	<0.10	<0.10	<0.10	18.10
GW23		335.00	<0.10	419.00	67.30	24.60	635.00
GW24	DIESEL	4780.00	594.00	926.00	1050.00	500.00	6330.00
GW25-A	DIESEL	<0.10	<0.10	<0.10	<0.10	<0.10	26.80
GW25-B		3.70	<0.10	<0.10	1.70	1.90	25.30
GW26	DIESEL	5920.00	910.00	584.00	580.00	301.00	12040.00
GW27-A	DIESEL	10300.00	627.00	1220.00	1250.00	597.00	16300.00
GW27-B		11400.00	320.00	1340.00	1430.00	656.00	20800.00
GW28		349.00	9.70	<0.10	6.20	16.20	328.00
GW29		541.00	<0.10	263.00	<0.10	19.40	735.00

FB = FIELD BLANK
A,B = DUPLICATE ANALYSIS

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HYDRO GEO CHEM, INC.

Sample # FB11OCT01 Date/Time 8:45/10-11-90 Data Base File CH2M.1

Location Description Wacker Silicon

Sampler's Signature [illegible] Soil ____ Water ____ Soil Gas ____

Weather Cloudy Air Temp.(°F) 48° Soil Temp.(°F) ____

Wind Direction & Speed Still Surface Conditions ____

Cartridge # A= ____ B= ____ Sample Size (ml) A= ____ B= ____

Adapter # ____ Probe Depth ____ Probe Volume (ml) 900

Purge Rate Full Purge Time 3 Minutes Purge Vacuum 20 "Hg

Sample Flow Rate 200 ml/min Sample Vacuum ("Hg) A= 10" B= ____

Notes high vacuum readings

Lab Receipt: Signature Scott J. Wightman Date/Time 0900 10/11/90

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	<.10		
Benzene	<.10		
Toluene	<.10		
Ethyl Benzene	<.10		
M,P-Xylenes	<.10		
O-Xylene	<.10		

HYDRO GEO CHEM, INC.

Sample # Equipment Blank Date/Time 0900 10/11/90 Data Base File CH2M.1

Location Description

Sampler's Signature Scott J. Wightman Soil ____ Water (Bailer) Soil Gas ____

Weather ____ Air Temp. (°F) ____ Soil Temp. (°F) ____

Wind Direction & Speed ____ Surface Conditions ____

Cartridge # A= ____ B= ____ Sample Size (ml) A= ____ B= ____

Adapter # ____ Probe Depth ____ Probe Volume (ml) ____

Purge Rate ____ Purge Time ____ Minutes Purge Vacuum ____ "Hg

Sample Flow Rate ____ ml/min Sample Vacuum ("Hg) A= ____ B= ____

Notes

Lab Receipt: Signature Scott J. Wightman Date/Time 0900 10/11/90

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	<.10		
Benzene	<.10		
Toluene	<.10		
Ethyl Benzene	<.10		
M,P-Xylenes	<.10		
O-Xylene	<.10		

HYDRO GEO CHEM, INC.

Sample # GW-01 Date/Time 10-10-90/1545 Data Base File CH2M.1

Location Description Walker S.E. Corner of fenced area

Sampler's Signature [illegible] Soil ___ Water X Soil Gas ___

Weather Partly Cloudy Air Temp.(°F) 70° Soil Temp.(°F) ___

Wind Direction & Speed Still Surface Conditions Gravel fill

Cartridge # A= B= Sample Size (ml) A= 40 B= 40

Adapter # ___ Probe Depth 25' Probe Volume (ml) ___

Purge Rate ___ Purge Time ___ Minutes Purge Vacuum ___ "Hg

Sample Flow Rate ___ ml/min Sample Vacuum ("Hg) A= B= ___

Notes ___

Lab Receipt: Signature Scott S. Nightingale Date/Time 1550 10/10/90

Compound	Concentration (ug/L) A	B	Notes
Total Hydros	<.10		
Benzene	<.10		
Toluene	221		
Ethyl Benzene	<.10		
M,P-Xylenes	<.10		
O-Xylene	<.10		

HYDRO GEO CHEM, INC.

Sample #GnLW-02 Date/Time 10-10-90 / 16:45 Data Base File CH2M.1

Location Description along southern fence approx 75' from eastern fence

Sampler's Signature [illegible] Soil ___ Water X Soil Gas ___

Weather Partly Cloudy Air Temp. (°F) 68° Soil Temp. (°F) ___

Wind Direction & Speed Still Surface Conditions Gravel fill

Cartridge # A= B= Sample Size (ml) A= 40 B= 40

Adapter # ___ Probe Depth 25' Probe Volume (ml) ___

Purge Rate ___ Purge Time ___ Minutes Purge Vacuum ___ "Hg

Sample Flow Rate ___ ml/min Sample Vacuum ("Hg) A= B= ___

Notes ___

Lab Receipt: Signature [illegible] Date/Time ___

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	131		
Benzene	181		
Toluene	<.10		
Ethyl Benzene	<.10		
M,P-Xylenes	<.10		
O-Xylene	<.10		

HYDRO GEO CHEM, INC.

Sample # GW-03 Date/Time 10:30 / 10-11-90 Data Base File CH2M.1

Location Description along southern fence approx 15' from eastern fence

Sampler's Signature [illegible] Soil ___ Water X Soil Gas ___

Weather Cloudy Air Temp. (°F) 50° Soil Temp. (°F) ___

Wind Direction & Speed Still Surface Conditions Gravel fill

Cartridge # A= B= Sample Size (ml) A= B=

Adapter # ___ Probe Depth 25' Probe Volume (ml) 4500

Purge Rate ___ Purge Time ___ Minutes Purge Vacuum ___ "Hg

Sample Flow Rate ___ ml/min Sample Vacuum ("Hg) A= B=

Notes ___

Lab Receipt: Signature Scott J. Wightman Date/Time ___

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	43.6		
Benzene	13.5		
Toluene	1.8		
Ethyl Benzene	1.5		
M,P-Xylenes	3.3		
O-Xylene	2.3		

HYDRO GEO CHEM, INC.

Sample # GW-04 Date/Time 10-11-90/ 11:15 Data Base File CH2M.1

Location Description along southern fence approx.

Sampler's Signature [illegible] Soil ___ Water X Soil Gas ___

Weather cloudy Air Temp. (°F) 55° Soil Temp. (°F) ___

Wind Direction & Speed Still Surface Conditions Gravel fill

Cartridge # A= B= Sample Size (ml) A= B=

Adapter # ___ Probe Depth 25' Probe Volume (ml) 4500

Purge Rate ___ Purge Time ___ Minutes Purge Vacuum ___ "Hg

Sample Flow Rate ___ ml/min Sample Vacuum ("Hg) A= B=

Notes slight petroleum odor

Lab Receipt: Signature [illegible] Date/Time 1125 10/11/90

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	406	~~384~~ 397	
Benzene	391	384	
Toluene	<.10	7.1	
Ethyl Benzene	68	75	
M,P-Xylenes	23	30	
O-Xylene	22	25	

RESAMPLE !

HYDRO GEO CHEM, INC.

Sample # SG-05 Date/Time 10-11-90/13:35 Data Base File CHZM.1

Location Description along southern fence ≈225' from eastern corner

Sampler's Signature [illegible] Soil ___ Water ___ Soil Gas X

Weather Clear Air Temp.(°F) 60°- Soil Temp.(°F) ___

Wind Direction & Speed SE 11 Surface Conditions Gravel fill

Cartridge # A= 11 B= 20 Sample Size (ml) A= 200ml B= 200.

Adapter # ___ Probe Depth 25' Probe Volume (ml) 4800

Purge Rate Full Purge Time 10 Minutes Purge Vacuum 2 "Hg

Sample Flow Rate 200 ml/min Sample Vacuum ("Hg) A= 2 B= 2

Notes ___

Lab Receipt: Signature [illegible] Date/Time 1400 10/11/90

Compound	Concentration (µg/L) A	Concentration (µg/L) B	Notes
Total Hydros			
Benzene			
Toluene			
Ethyl Benzene			RUN 1 WAS TOO CONCENTRATED, and
M,P-Xylenes			RUN 2 was bad cartridge
O-Xylene			

BOTH RUNS WERE NOT REPORTED

SCOEPA00037102

HYDRO GEO CHEM, INC.

Sample # GW-06 Date/Time 10-11-90/15:00 Data Base File CH2M.1

Location Description along northern fence ~ 150' from western fence

Sampler's Signature [illegible] Soil ____ Water X Soil Gas ____

Weather Clear Air Temp. (°F) 70° Soil Temp. (°F) ____

Wind Direction & Speed Still Surface Conditions Gravel fill

Cartridge # A= B= Sample Size (ml) A= 40 B= 40

Adapter # ____ Probe Depth 25' Probe Volume (ml) 4500

Purge Rate ____ Purge Time ____ Minutes Purge Vacuum ____ "Hg

Sample Flow Rate ____ ml/min Sample Vacuum ("Hg) A= B=

Notes Strong coal tar smell

Lab Receipt: Signature [illegible] Date/Time 1512 10/11/90

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	510		
Benzene	59.8		
Toluene	4.6		
Ethyl Benzene	196		
M,P-Xylenes	4.1		
O-Xylene	13.8		

HYDRO GEO CHEM, INC.

Sample # GW-07 Date/Time 10-11-90/1640 Data Base File CH2M.1

Location Description along southern fence ~75' from western fence

Sampler's Signature W. Oslp Soil ___ Water X Soil Gas ___

Weather Cloudy Air Temp. (°F) 65° Soil Temp. (°F) ___

Wind Direction & Speed Still Surface Conditions Gravel fill

Cartridge # A= B= Sample Size (ml) A= 40 B= ___

Adapter # ___ Probe Depth 25' BLS Probe Volume (ml) 4500

Purge Rate ___ Purge Time ___ Minutes Purge Vacuum ___ "Hg

Sample Flow Rate ___ ml/min Sample Vacuum ("Hg) A= B= ___

Notes very strong smell (of coal tar?)

Lab Receipt: Signature Scott S. Nightman Date/Time 1700 10/11/90

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	17000		
Benzene	17560		
Toluene	13.1		
Ethyl Benzene	126		
M,P-Xylenes	124		
O-Xylene	52.6		

HYDRO GEO CHEM, INC.

Sample # FB120CT01 Date/Time 10-12-90/8:30 Data Base File CHZM.1
Location Description Wacker Silicon Inc. Portland, Or.
Sampler's Signature W. O'Tilly Soil ____ Water ____ Soil Gas ____
Weather Cloudy Air Temp.(°F) ____ Soil Temp.(°F) ____
Wind Direction & Speed Still Surface Conditions ____
Cartridge # A= 06 B= ____ Sample Size (ml) A= 40 B= ____
Adapter # ____ Probe Depth ____ Probe Volume (ml) 900
Purge Rate Full Purge Time 3 Minutes Purge Vacuum 20 "Hg
Sample Flow Rate 200 ml/min Sample Vacuum ("Hg) A= 12 B= ____
Notes High Vacuums during Purge and Sampling Processes
Lab Receipt: Signature Scott W. Wightman Date/Time 0845 10/12/90

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	0.60		
Benzene	<.10		
Toluene	<.10		
Ethyl Benzene	<.10		
M,P-Xylenes	<.10		
O-Xylene	<.10		

HYDRO GEO CHEM, INC.

Sample # EQUIPMENT BLANK Date/Time 10/12/90 0900 Data Base File CH2M.1

Location Description

Sampler's Signature Scott J. Uleightman Soil ____ Water (Bailer) Soil Gas ____

Weather ____ Air Temp. (°F) ____ Soil Temp. (°F) ____

Wind Direction & Speed ____ Surface Conditions ____

Cartridge # A= ____ B= ____ Sample Size (ml) A= ____ B= ____

Adapter # ____ Probe Depth ____ Probe Volume (ml) ____

Purge Rate ____ Purge Time ____ Minutes Purge Vacuum ____ "Hg

Sample Flow Rate ____ ml/min Sample Vacuum ("Hg) A= ____ B= ____

Notes

Lab Receipt: Signature Scott J. Uleightman Date/Time 10/12/90 0900

Compound	Concentration (µg/L) A	Concentration (µg/L) B	Notes
Total Hydros	8.74	7.30	
Benzene	<.10	<.10	
Toluene	<.10	<.10	
Ethyl Benzene	<.10	<.10	
M,P-Xylenes	<.10	<.10	
O-Xylene	<.10	<.10	

HYDRO GEO CHEM, INC.

Sample # GW-08 Date/Time 10-11-90/17:43 Data Base File CH2M.1

Location Description along northern fence at western corner

Sampler's Signature [illegible] Soil ___ Water X Soil Gas ___

Weather Cloudy Air Temp.(°F) 60° Soil Temp.(°F) ___

Wind Direction & Speed SE, 11 Surface Conditions gravel

Cartridge # A= B= Sample Size (ml) A= 40 B=

Adapter # ___ Probe Depth 25' Probe Volume (ml) 4500

Purge Rate ___ Purge Time ___ Minutes Purge Vacuum ___ "Hg

Sample Flow Rate ___ ml/min Sample Vacuum ("Hg) A= B=

Notes Strong hydrocarbon odor

Lab Receipt: Signature Scott J. Hughman Date/Time 10/11/90 1745

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	369		
Benzene	285		
Toluene	<.10		
Ethyl Benzene	129		
M,P-Xylenes	33.1		
O-Xylene	32.3		

HYDRO GEO CHEM, INC.

Sample # GW-09 Date/Time 10-12-90/950 Data Base File CH2M.1

Location Description 50' North of Southern fence and ~150' east of western fe

Sampler's Signature [illegible] Soil ___ Water X Soil Gas ___

Weather Cloudy Air Temp. (°F) ___ Soil Temp. (°F) ___

Wind Direction & Speed Still Surface Conditions Gravel fill

Cartridge # A= B= Sample Size (ml) A= 40 B=

Adapter # ___ Probe Depth 25' Probe Volume (ml) 4500

Purge Rate ___ Purge Time ___ Minutes Purge Vacuum ___ "Hg

Sample Flow Rate ___ ml/min Sample Vacuum ("Hg) A= B=

Notes Slight hydrocarbon Smell.

Lab Receipt: Signature Scott J. Mightman Date/Time 0950 10/12/90

Compound	Concentration (ug/L) A	B	Notes
Total Hydros	804	~~331~~ 791	
Benzene	416	371	
Toluene	~~131~~ <.10	13.1	
Ethyl Benzene	~~1727~~ 131	74.4	
M,P-Xylenes	<.10	34.2	
O-Xylene	~~<.10~~ 4730	32.4	
	6		

SCOEPA00037108

HYDRO GEO CHEM, INC.

Sample # FB130CT01 Date/Time 10-13-90/8:31 Data Base File CH2M.1
Location Description Wacker Silicon, Portland, Or.
Sampler's Signature W Oltz Soil ____ Water ____ Soil Gas ____
Weather Cloudy Air Temp. (°F) ____ Soil Temp. (°F) ____
Wind Direction & Speed Still Surface Conditions ____
Cartridge # A= 11 B= ____ Sample Size (ml) A= 200 B= ____
Adapter # ____ Probe Depth ____ Probe Volume (ml) 900
Purge Rate Full Purge Time 3 Minutes Purge Vacuum 9 "Hg
Sample Flow Rate 200 ml/min Sample Vacuum ("Hg) A= 7" B= ____
Notes ____
Lab Receipt: Signature Scott J. Wightman Date/Time 10/13/90 0845

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	<.10	~~<.00~~ <.01	
Benzene	<.10	<.01	
Toluene	<.10	<.01	
Ethyl Benzene	<.10	<.01	
M,P-Xylenes	<.10	<.01	
O-Xylene	<.10	<.01	

SCOEPA00037109

HYDRO GEO CHEM, INC.

Sample # EQUIPMENT BLANK Date/Time 10/13/90 0800 Data Base File CH2M.1

Location Description

Sampler's Signature Scott Weightman Soil ____ Water (Bailer) Soil Gas ____

Weather ____ Air Temp. (°F) ____ Soil Temp. (°F) ____

Wind Direction & Speed ____ Surface Conditions ____

Cartridge # A= ____ B= ____ Sample Size (ml) A= ____ B= ____

Adapter # ____ Probe Depth ____ Probe Volume (ml) ____

Purge Rate ____ Purge Time ____ Minutes Purge Vacuum ____ "Hg

Sample Flow Rate ____ ml/min Sample Vacuum ("Hg) A= ____ B= ____

Notes

Lab Receipt: Signature Scott Weightman Date/Time 10/13/90 0800

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	<.10		
Benzene	<.10		
Toluene	<.10		
Ethyl Benzene	<.10		
M,P-Xylenes	<.10		
O-Xylene	<.10		

HYDRO GEO CHEM, INC.

Sample # GW-16 Date/Time 10-13-90/10:20 Data Base File CH2M.1

Location Description 75' North of Southern fence and 110' East of Western fence

Sampler's Signature W. Oslin Soil ___ Water X Soil Gas ___

Weather partly Cloudy Air Temp. (°F) 65° Soil Temp. (°F) ___

Wind Direction & Speed SE 1) Surface Conditions Gravel fill

Cartridge # A= B= Sample Size (ml) A= 40 B=

Adapter # ___ Probe Depth 25' Probe Volume (ml) 4500

Purge Rate ___ Purge Time ___ Minutes Purge Vacuum ___ "Hg

Sample Flow Rate ___ ml/min Sample Vacuum ("Hg) A= B=

Notes sample contains substantial amount of coal tar - smells str

Lab Receipt: Signature Scott J. Aughtman Date/Time 10/13/90 1050

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	21400*		
Benzene	12600		
Toluene	214		
Ethyl Benzene	1680		
M,P-Xylenes	1180		
O-Xylene	738		

SCOEPA00037111

HYDRO GEO CHEM, INC.

Sample # GW-17 Date/Time 10-13-90/11:15 Data Base File CH2M.1

Location Description 75' North of southern fence and 35' east of western fence

Sampler's Signature [illegible] Soil ___ Water X Soil Gas ___

Weather Partly Cloudy Air Temp. (°F) 65° Soil Temp. (°F) ___

Wind Direction & Speed SW 11 Surface Conditions Gravel Fill

Cartridge # A= B= Sample Size (ml) A= 40 B=

Adapter # ___ Probe Depth 25' Probe Volume (ml) 4500

Purge Rate ___ Purge Time ___ Minutes Purge Vacuum ___ "Hg

Sample Flow Rate ___ ml/min Sample Vacuum ("Hg) A= B=

Notes Sample contains substantial amount of coal tar - smells strong

Lab Receipt: Signature Scott J. Hughtman Date/Time 1132 10/13/90

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	24900	19350	
Benzene	11260	10925	
Toluene	662	574	
Ethyl Benzene	1680	1370	
M,P-Xylenes	1690	1410	
O-Xylene	768	632	

HYDRO GEO CHEM, INC.

Sample # GW-18 Date/Time 10-13-90/13:20 Data Base File CH2M.1

Location Description 25' ~~west of~~ east of western fence and 185' south of southern

Sampler's Signature [illegible] Soil ____ Water X Soil Gas ____

Weather partly cloudy Air Temp.(°F) 65° Soil Temp.(°F) ____

Wind Direction & Speed Still Surface Conditions ____

Cartridge # A= B= Sample Size (ml) A= 40 B= ____

Adapter # ____ Probe Depth 25' Probe Volume (ml) 4500

Purge Rate ____ Purge Time ____ Minutes Purge Vacuum ____ "Hg

Sample Flow Rate ____ ml/min Sample Vacuum ("Hg) A= B= ____

Notes strong fuel like odor.

Lab Receipt: Signature [illegible] Date/Time 10/13/90 1335

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	623		
Benzene	250		
Toluene	20.4		
Ethyl Benzene	64.2		
M,P-Xylenes	58.5		
O-Xylene	28.8		

HYDRO GEO CHEM, INC.

Sample # GW-19 Date/Time 10-13-90/1445 Data Base File CH2M.1

Location Description 100' East of Western fence and 185' South of Southern fence

Sampler's Signature W. Tilly Soil ___ Water X Soil Gas ___

Weather Cloudy Air Temp. (°F) 55 Soil Temp. (°F) ___

Wind Direction & Speed Still Surface Conditions Sod

Cartridge # A= B= Sample Size (ml) A= 40 B=

Adapter # ___ Probe Depth 25 Probe Volume (ml) 4500

Purge Rate ___ Purge Time ___ Minutes Purge Vacuum ___ "Hg

Sample Flow Rate ___ ml/min Sample Vacuum ("Hg) A= B=

Notes No odor but water is very black in color

Lab Receipt: Signature Scott Leighton Date/Time 1454 10/13/90

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	148		
Benzene	52.4		
Toluene	<.10		
Ethyl Benzene	13.8		
M,P-Xylenes	12.6		
O-Xylene	8.0		

HYDRO GEO CHEM, INC.

Sample # GW-15 Date/Time 10-12-90/18:07 Data Base File CH2M.1

Location Description 110' South of southern fence and 375' east of western

Sampler's Signature [illegible] Soil ____ Water X Soil Gas ____

Weather Cloudy, damp Air Temp. (°F) 50° Soil Temp. (°F) ____

Wind Direction & Speed Still Surface Conditions Sod.

Cartridge # A= B= Sample Size (ml) A= 40 B= ____

Adapter # ____ Probe Depth 25' Probe Volume (ml) 4500

Purge Rate ____ Purge Time ____ Minutes Purge Vacuum ____ "Hg

Sample Flow Rate ____ ml/min Sample Vacuum ("Hg) A= B= ____

Notes ____

Lab Receipt: Signature Scott J. Wightman Date/Time 10/12/90 1520

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	1330		
Benzene	23.2		
Toluene	<.10		
Ethyl Benzene	75.9		
M,P-Xylenes	<.10		
O-Xylene	21.3		

HYDRO GEO CHEM, INC.

Sample # SG-13 Date/Time 10-12-90/9:10 Data Base File CH2M.1
Location Description along northern fence 75' east of western fence.
Sampler's Signature [illegible] Soil ____ Water ____ Soil Gas X
Weather Partly Cloudy Air Temp. (°F) 60 Soil Temp. (°F) ____
Wind Direction & Speed Still Surface Conditions Gravel
Cartridge # A=100 B=UNKNOWN Sample Size (ml) A=200 B=~~UNKNOWN~~ 200
Adapter # ____ Probe Depth 25' Probe Volume (ml) 4500.
Purge Rate Full Purge Time 3 Minutes Purge Vacuum 8 "Hg
Sample Flow Rate 200 ml/min Sample Vacuum ("Hg) A= 4 B= 4
Notes Slight petrol smell noticable from probe end
Lab Receipt: Signature [illegible] Date/Time 10/13/90 ~~090~~ 0915

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	687		
Benzene	1.28		
Toluene	<.01		
Ethyl Benzene	<.01		
M,P-Xylenes	<.01		
O-Xylene	<.01		

HYDRO GEO CHEM, INC.

Sample # GW-14 Date/Time 10-12-90/17:20 Data Base File CH2M.1

Location Description 110' south of southern fence and 300' east of western fe

Sampler's Signature [illegible] Soil ____ Water X Soil Gas ____

Weather Cloudy, rainy Air Temp. (°F) ____ Soil Temp. (°F) ____

Wind Direction & Speed Still Surface Conditions ____

Cartridge # A= ____ B= ____ Sample Size (ml) A= 40 B= ____

Adapter # ____ Probe Depth 25' Probe Volume (ml) 4500

Purge Rate ____ Purge Time ____ Minutes Purge Vacuum ____ "Hg

Sample Flow Rate ____ ml/min Sample Vacuum ("Hg) A= ____ B= ____

Notes slight petrol. smell

Lab Receipt: Signature Scott J. Wightman Date/Time 10/12/90 1520

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	74.7		
Benzene	8.6		
Toluene	<.10		
Ethyl Benzene	<.10		
M,P-Xylenes	<.10		
O-Xylene	<.10		

HYDRO GEO CHEM, INC.

Sample # EQUIPMENT BLANK Date/Time 10/14/90 0900 Data Base File CH2M.1

Location Description

Sampler's Signature Scott J. Illightman Soil ____ Water (Bailer) Soil Gas ____

Weather ____ Air Temp. (°F) ____ Soil Temp. (°F) ____

Wind Direction & Speed ____ Surface Conditions ____

Cartridge # A= ____ B= ____ Sample Size (ml) A= ____ B= ____

Adapter # ____ Probe Depth ____ Probe Volume (ml) ____

Purge Rate ____ Purge Time ____ Minutes Purge Vacuum ____ "Hg

Sample Flow Rate ____ ml/min Sample Vacuum ("Hg) A= ____ B= ____

Notes

Lab Receipt: Signature Scott J. Illightman Date/Time 10/14/90 0900

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	<.10		
Benzene	<.10		
Toluene	<.10		
Ethyl Benzene	<.10		
M,P-Xylenes	<.10		
O-Xylene	<.10		

HYDRO GEO CHEM, INC.

Sample # GW-22 Date/Time 10-14-90/1030 Data Base File CH2M.1

Location Description 65' east of GW-20

Sampler's Signature [illegible] Soil ____ Water X Soil Gas ____

Weather Raining Air Temp.(°F) 60° Soil Temp.(°F) ____

Wind Direction & Speed Still Surface Conditions Sod

Cartridge # A= B= Sample Size (ml) A= 40 B= ____

Adapter # ____ Probe Depth 25' Probe Volume (ml) 4500

Purge Rate ____ Purge Time ____ Minutes Purge Vacuum ____ "Hg

Sample Flow Rate ____ ml/min Sample Vacuum ("Hg) A= B= ____

Notes ____

Lab Receipt: Signature Scott J. Wightman Date/Time 10/14/90 1040

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	12.1	18.1	
Benzene	<.10	1.0	
Toluene	<.10	0.7	
Ethyl Benzene	<.10	<.10	
M,P-Xylenes	<.10	<.10	
O-Xylene	<.10	<.10	

HYDRO GEO CHEM, INC.

Sample # GW-23 Date/Time 10-14-90/ 11:35 Data Base File CH2M.1

Location Description 75' east of GW-15

Sampler's Signature [illegible] Soil ___ Water X Soil Gas ___

Weather Rainy Air Temp. (°F) 55° Soil Temp. (°F) ___

Wind Direction & Speed Still Surface Conditions Sod

Cartridge # A= B= Sample Size (ml) A= 40 B=

Adapter # ___ Probe Depth 25' Probe Volume (ml) 4500

Purge Rate ___ Purge Time ___ Minutes Purge Vacuum ___ "Hg

Sample Flow Rate ___ ml/min Sample Vacuum ("Hg) A= B=

Notes ___

Lab Receipt: Signature Scott J. Wightman Date/Time 10/14/90 1130

Compound	Concentration (ug/L) A	B	Notes
Total Hydros	635		
Benzene	335		
Toluene	~~419~~ <.10		
Ethyl Benzene	~~414~~ 419		
M,P-Xylenes	67.3		
O-Xylene	24.6		

SCOEPA00037120

HYDRO GEO CHEM, INC.

Sample # GW-24 Date/Time 10-14-90/12:40 Data Base File CH2M.1

Location Description 140' North of GW-6

Sampler's Signature W. Oll[illegible] Soil ____ Water X Soil Gas ____

Weather Rain Air Temp.(°F) 56° Soil Temp.(°F) ____

Wind Direction & Speed S 4-11 Surface Conditions Gravel fill

Cartridge # A= B= Sample Size (ml) A= 40 B=

Adapter # ____ Probe Depth 25' Probe Volume (ml) 4500

Purge Rate ____ Purge Time ____ Minutes Purge Vacuum ____ "Hg

Sample Flow Rate ____ ml/min Sample Vacuum ("Hg) A= B=

Notes ____

Lab Receipt: Signature Scott J. Wightman Date/Time 10/14/90 1300

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	6330		
Benzene	4780		
Toluene	594		
Ethyl Benzene	926		
M,P-Xylenes	1050		
O-Xylene	500		

HYDRO GEO CHEM, INC.

Sample # FB15Oct01 Date/Time 10-15-90/11:47 Data Base File CH2M.1
Location Description Wacker Silicon, Portland, Or.
Sampler's Signature W.J.Tilp Soil ____ Water ____ Soil Gas ____
Weather Cloudy Air Temp.(°F) ____ Soil Temp.(°F) ____
Wind Direction & Speed Still Surface Conditions ____
Cartridge # A= 36 B= ____ Sample Size (ml) A= 200 B= ____
Adapter # ____ Probe Depth ____ Probe Volume (ml) 900
Purge Rate full Purge Time 3 Minutes Purge Vacuum 18 "Hg
Sample Flow Rate 200 ml/min Sample Vacuum ("Hg) A= 10 B= ____
Notes high vacuums — both Purge and Sample
Lab Receipt: Signature Scott J. Wightman Date/Time 10/15/90 1150

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	<.10		
Benzene	<.10		
Toluene	<.10		
Ethyl Benzene	<.10		
M,P-Xylenes	<.10		
O-Xylene	<.10		

HYDRO GEO CHEM, INC.

Sample # SG-12 Date/Time 10-12-90/15:00 Data Base File CH2M.1

Location Description 110 feet from southern fence 150' from western fence

Sampler's Signature W O'Neill Soil ___ Water ___ Soil Gas X

Weather Cloudy Air Temp. (°F) 55° Soil Temp. (°F) ___

Wind Direction & Speed SE, 17 Surface Conditions Gravel

Cartridge # A= 25 B= 16 Sample Size (ml) A= 50 B= 50

Adapter # ___ Probe Depth 25' Probe Volume (ml) 4500 ml

Purge Rate full Purge Time 10 Minutes Purge Vacuum 15 "Hg

Sample Flow Rate 200 ml/min Sample Vacuum ("Hg) A= 7 B= 7

Notes Very strong coal tar odor coming from probe

Lab Receipt: Signature Scott J. Naughton Date/Time 10/12/90 1530

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	1760		
Benzene	500		
Toluene	58.2		
Ethyl Benzene	279		
M,P-Xylenes	237		
O-Xylene	70.8		

HYDRO GEO CHEM, INC.

Sample # GW-10 Date/Time 10-12-90/11:40 Data Base File CH2M.1

Location Description South of utility corridor ≈ 10' along western fence

Sampler's Signature [illegible] Soil ___ Water X Soil Gas ___

Weather Cloudy Air Temp.(°F) 65 Soil Temp.(°F) ___

Wind Direction & Speed Still Surface Conditions Sod

Cartridge # A= B= Sample Size (ml) A= 40ml B= ___

Adapter # ___ Probe Depth 25' Probe Volume (ml) 4500

Purge Rate ___ Purge Time ___ Minutes Purge Vacuum ___ "Hg

Sample Flow Rate ___ ml/min Sample Vacuum ("Hg) A= B= ___

Notes Very Strong smell of Coal tar.

Lab Receipt: Signature Scott Leighton Date/Time 10/12/90 1150

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	5090		
Benzene	1820		
Toluene	23.9		
Ethyl Benzene	411		
M,P-Xylenes	240		
O-Xylene	187		

HYDRO GEO CHEM, INC.

Sample # GW-11 Date/Time 10-12-90/13:25 Data Base File CH2M.1

Location Description 110 feet south of southern fence 75' east of western fence.

Sampler's Signature [illegible] Soil ___ Water X Soil Gas ___

Weather Cloudy Air Temp. (°F) 55° Soil Temp. (°F) ___

Wind Direction & Speed Still Surface Conditions gravel

Cartridge # A= B= Sample Size (ml) A= 40 ml B=

Adapter # ___ Probe Depth 25' Probe Volume (ml) 4500

Purge Rate ___ Purge Time ___ Minutes Purge Vacuum ___ "Hg

Sample Flow Rate ___ ml/min Sample Vacuum ("Hg) A= B=

Notes Very Strong smell of coal tar - very black and sticky.

Lab Receipt: Signature Scott J. Leightman Date/Time 1341 10/12/90

Compound	Concentration (µg/L) A	Concentration (µg/L) B	Notes
Total Hydros	56500	89140	
Benzene	18100	23270	
Toluene	3910	5960	
Ethyl Benzene	2520	4680	
M,P-Xylenes	2380	4450	
O-Xylene	1130	2000	

HYDRO GEO CHEM, INC.

Sample # GW-2D Date/Time 10-13-90/15:55 Data Base File CH2M.1

Location Description 185' south of southern fence and 175' east of western fe

Sampler's Signature [illegible] Soil ___ Water X Soil Gas ___

Weather Cloudy Air Temp.(°F) ___ Soil Temp.(°F) ___

Wind Direction & Speed from SW 5 mph Surface Conditions gravel & sand

Cartridge # A= B= Sample Size (ml) A= 40 B=

Adapter # ___ Probe Depth 25' Probe Volume (ml) ___

Purge Rate ___ Purge Time ___ Minutes Purge Vacuum ___ "Hg

Sample Flow Rate ___ ml/min Sample Vacuum ("Hg) A= B=

Notes strong coal tar smell

Lab Receipt: Signature [illegible] Date/Time 10/13/90 1620

Compound	Concentration (µg/L) A	Concentration (µg/L) B	Notes
Total Hydros	16600	14500	
Benzene	2920	3120	
Toluene	80.6	85.6	
Ethyl Benzene	1690	1720	
M,P-Xylenes	1230	1230	
O-Xylene	673	667	

HYDRO GEO CHEM, INC.

Sample # GW-21 Date/Time 10-13-90/1735 Data Base File CH2M.1

Location Description 75' due north of GW-7

Sampler's Signature [illegible] Soil ___ Water X Soil Gas ___

Weather Cloudy Air Temp.(°F) 55° Soil Temp.(°F) ___

Wind Direction & Speed Still Surface Conditions Gravel fill

Cartridge # A= B= Sample Size (ml) A= 40 B= 40

Adapter # ___ Probe Depth 25 Probe Volume (ml) 4500

Purge Rate ___ Purge Time ___ Minutes Purge Vacuum ___ "Hg

Sample Flow Rate ___ ml/min Sample Vacuum ("Hg) A= B=

Notes ___

Lab Receipt: Signature [illegible] Date/Time 10/13/90 1745

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	3140		
Benzene	2510		
Toluene	349		
Ethyl Benzene	37.6		
M,P-Xylenes	66.6		
O-Xylene	33.0		

HYDRO GEO CHEM, INC.

Sample # FB140CT01 Date/Time 10-14-90/8:25 Data Base File CH2M.1

Location Description Wacker Silicon

Sampler's Signature [illegible] Soil ____ Water ____ Soil Gas ____

Weather Rainy Air Temp. (°F) 50 Soil Temp. (°F) ____

Wind Direction & Speed Still Surface Conditions ____

Cartridge # A= 25 B= ____ Sample Size (ml) A= 200 B= ____

Adapter # ____ Probe Depth ____ Probe Volume (ml) 900

Purge Rate Full Purge Time 3 Minutes Purge Vacuum 13 "Hg

Sample Flow Rate 200 ml/min Sample Vacuum ("Hg) A= 7 B= ____

Notes Purge Vacuum High

Lab Receipt: Signature Scott J. Wightman Date/Time 10/14/90 ~~0800~~ 0830

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	~~2.00~~ 0.20		
Benzene	<.10		
Toluene	<.10		
Ethyl Benzene	<.10		
M,P-Xylenes	<.10		
O-Xylene	<.10		

HYDRO GEO CHEM, INC.

Sample # GW-25 Date/Time 10-15-90/09:35 Data Base File CH2M.1

Location Description 150' south of utility corridor and 175' east of western fe

Sampler's Signature [illegible] Soil ___ Water ✓ Soil Gas ___

Weather Partly Cloudy Air Temp.(°F) 55 Soil Temp.(°F) ___

Wind Direction & Speed Still Surface Conditions Sod

Cartridge # A= B= Sample Size (ml) A= 40 B= ___

Adapter # ___ Probe Depth 25' Probe Volume (ml) 4500

Purge Rate ___ Purge Time ___ Minutes Purge Vacuum ___ "Hg

Sample Flow Rate ___ ml/min Sample Vacuum ("Hg) A= B= ___

Notes ___

Lab Receipt: Signature Scott J. Wightman Date/Time 0945 10/15/90

Compound	Concentration (µg/L) A	Concentration (µg/L) B	Notes
Total Hydros	26.8	25.3	
Benzene	<.10	3.7	
Toluene	<.10	<.10	
Ethyl Benzene	<.10	<.10	
M,P-Xylenes	<.10	1.7	
O-Xylene	<.10	1.9	

HYDRO GEO CHEM, INC.

Sample # GIN-26 Date/Time 10-15-90/10:45 Data Base File CH2M.1

Location Description West side of FAB II footprint 90' from SW corner (North)

Sampler's Signature W. [illegible] Soil ___ Water X Soil Gas ___

Weather Cloudy Air Temp.(°F) 60° Soil Temp.(°F) ___

Wind Direction & Speed SW Surface Conditions Gravel fill

Cartridge # A= B= Sample Size (ml) A= 40 B= ___

Adapter # ___ Probe Depth 25' Probe Volume (ml) 4500

Purge Rate ___ Purge Time ___ Minutes Purge Vacuum ___ "Hg

Sample Flow Rate ___ ml/min Sample Vacuum ("Hg) A= B= ___

Notes ___

Lab Receipt: Signature Scott J. Ulightman Date/Time 1053 10/15/90

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	12040		
Benzene	5920		
Toluene	910		
Ethyl Benzene	584		
M,P-Xylenes	580		
O-Xylene	301		

HYDRO GEO CHEM, INC.

Sample # GW-27 Date/Time 10-15-90/15:20 Data Base File CH2M.1

Location Description 150' North of southern fence — lined up with western corner

Sampler's Signature [illegible] Soil ___ Water X Soil Gas ___

Weather Cloudy Air Temp.(°F) 60° Soil Temp.(°F) ___

Wind Direction & Speed Still Surface Conditions Gravel fill

Cartridge # A= B= Sample Size (ml) A= 40 B= ___

Adapter # ___ Probe Depth 25' Probe Volume (ml) 4500

Purge Rate ___ Purge Time ___ Minutes Purge Vacuum ___ "Hg

Sample Flow Rate ___ ml/min Sample Vacuum ("Hg) A= B= ___

Notes ___

Lab Receipt: Signature Scott S. Lightsman Date/Time 1725 10/15/90

Compound	Concentration (µg/L) A	Concentration (µg/L) B	Notes
Total Hydros	16300	20800	
Benzene	10300	11400	
Toluene	627	320	
Ethyl Benzene	1220	1340	
M,P-Xylenes	1250	1430	
O-Xylene	597	656	

HYDRO GEO CHEM, INC.

Sample # GW-28 Date/Time 10-15-90/18:35 Data Base File CH2M.1

Location Description NW edge of FARII

Sampler's Signature W. Ohlsen Soil ___ Water X Soil Gas ___

Weather Clearing Air Temp.(°F) 50° Soil Temp.(°F) ___

Wind Direction & Speed Still Surface Conditions Gravel fill

Cartridge # A= B= Sample Size (ml) A= 40 B=

Adapter # ___ Probe Depth 25' Probe Volume (ml) ___

Purge Rate ___ Purge Time ___ Minutes Purge Vacuum ___ "Hg

Sample Flow Rate ___ ml/min Sample Vacuum ("Hg) A= B=

Notes ___

Lab Receipt: Signature Scott J. Wightman Date/Time 1853 10/15/90

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	328		
Benzene	349		
Toluene	9.7		
Ethyl Benzene	<.10		
M,P-Xylenes	6.2		
O-Xylene	16.2		

HYDRO GEO CHEM, INC.

Sample # GW-29 Date/Time 10-16-90/10:50 Data Base File CH2M.1

Location Description 120' east of GW-25

Sampler's Signature W D Thomas Soil ___ Water X Soil Gas ___

Weather Clear Air Temp.(°F) ___ Soil Temp.(°F) ___

Wind Direction & Speed From east 5 mph Surface Conditions Sod

Cartridge # A= B= Sample Size (ml) A=40 B=

Adapter # ___ Probe Depth 25' Probe Volume (ml) 4500

Purge Rate ___ Purge Time ___ Minutes Purge Vacuum ___ "Hg

Sample Flow Rate ___ ml/min Sample Vacuum ("Hg) A= B=

Notes

Lab Receipt: Signature [signature] Date/Time 1050 10/16/90

Compound	Concentration (µg/L) A	B	Notes
Total Hydros	735		
Benzene	541		
Toluene	<.10		
Ethyl Benzene	263		
M,P-Xylenes	<.10		
O-Xylene	19.4		

Engineers
Planners
Economists
Scientists

CASE NARRATIVE FOR BTEX

LABORATORY:	CH2M HILL	**CLIENT :**	Wacker Siltronics
CASE NO :	N/A	**CONTRACT NO.:**	N/A
LAB ID :	27823	**SDG # :**	N/A

I. RECEIPT

A. Date: October 13, 1990

B.

LAB ID	CLIENT ID	SAMPLE MATRIX	DATE SAMPLED	EXTRACTION DATE	ANALYSIS DATE
27823001	GW-7	Water	10/11/90	N/A	10/24/90
27823002	GW-4	Water	10/11/90	N/A	10/19/90

C. Documentation Exceptions : None encountered.

II. EXTRACTION

A. Holding Times: Medium level protocol was not performed, therefore, holding time is not applicable.

B. Extraction Exceptions : Not applicable.

III. ANALYSIS

A. Holding Times: Holding times were met.

B. Analytical Exceptions : Due to sample matrix, these samples were analyzed on a diluted basis. Reporting limits have been adjusted accordingly.

000001

jas20

IV. QUALITY CONTROL

A. Method Blank : A method blank is a laboratory generated sample used to determine the degree to which laboratory operations may cause false positive results for these samples. No target parameters were detected in the method blanks associated with these samples.

B. Surrogate Recoveries : Met acceptable QC limits.

C. Matrix Spike Results: Not applicable.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature. Diskette deliverables have not been provided for this data package.

Greg Jordan 10/25/90

Greg Jordan **Date**
GC Section Supervisor

Engineers
Planners
Economists
Scientists

METHOD: 8020
BTEX

Reference No: Method Blank

Sample Matrix: Water
Dilution Factor: 1

Date Analyzed: 10-19-90

Compound	Detection Limit	Method Blank Result	Units
Benzene	1.0	< 1.0	ug/l
Toluene	1.0	< 1.0	ug/l
Ethyl Benzene	1.0	< 1.0	ug/l
Total Xylenes	1.0	< 1.0	ug/l
Surrogate (SS)		107	% Rec.

SS - Surrogate Standard reported as percent recovery.
Fluorobenzene used as surrogate standard.

Comments:

Approved By: [signature]

000003

jas20

Engineers
Planners
Economists
Scientists

METHOD: 8020
BTEX

Reference No: Method Blank

Sample Matrix: Water
Dilution Factor: 1

Date Analyzed: 10-24-90

Compound	Detection Limit	Method Blank Result	Units
Benzene	1.0	< 1.0	ug/l
Toluene	1.0	< 1.0	ug/l
Ethyl Benzene	1.0	< 1.0	ug/l
Total Xylenes	1.0	< 1.0	ug/l
Surrogate (SS)		110	% Rec.

SS - Surrogate Standard reported as percent recovery.
Fluorobenzene used as surrogate standard.

Comments:

Approved By: Gary Jordan

jas20

CH2M HILL Redding Environmental Laboratory, 5090 Caterpillar Road, Redding, California 96003 916.244.5227

Engineers
Planners
Economists
Scientists

METHOD: 8020
BTEX

Client: Wacker Siltronics
Client Sample ID: GW-7

Sample Matrix: Water
Dilution Factor: 100

Reference No: 27823-1

Date Sampled: 10-11-90
Date Received: 10-13-90
Date Extracted: N/A
Date Analyzed: 10-24-90

Compound	Detection Limit	Sample Result	Units
Benzene	100	8400	ug/l
Toluene	100	100	ug/l
Ethyl Benzene	100	770	ug/l
Total Xylenes	100	540	ug/l
Surrogate (SS)		108	% Rec.

SS - Surrogate Standard reported as percent recovery.
Fluorobenzene used as surrogate standard.

Comments:

Approved By: Gary Jordan

jas20

000005

Engineers
Planners
CH2M HILL
Economists
Scientists

METHOD: 8020
BTEX

Client: Wacker Siltronics
Client Sample ID: GW-4

Sample Matrix: Water
Dilution Factor: 5

Reference No: 27823-2

Date Sampled: 10-11-90
Date Received: 10-13-90
Date Extracted: N/A
Date Analyzed: 10-19-90

Compound	Detection Limit	Sample Result	Units
Benzene	5.0	280	ug/l
Toluene	5.0	9.8	ug/l
Ethyl Benzene	5.0	80	ug/l
Total Xylenes	5.0	70	ug/l
Surrogate (SS)		106	% Rec.

SS - Surrogate Standard reported as percent recovery.
Fluorobenzene used as surrogate standard.

Comments:

Approved By: Gary Jonker

000006

jas20

Engineers
Planners
Economists
Scientists

CASE NARRATIVE FOR TFH GAS

LABORATORY:	CH2M HILL	**CLIENT :**	Wacker Siltronics
CASE NO :	N/A	**CONTRACT NO.:**	N/A
LAB ID :	27823	**SDG # :**	N/A

I. RECEIPT

A. Date: October 13, 1990

B.

LAB ID	CLIENT ID	SAMPLE MATRIX	DATE SAMPLED	EXTRACTION DATE	ANALYSIS DATE
27823001	GW-7	Water	10/11/90	N/A	10/18/90
27823002	GW-4	Water	10/11/90	N/A	10/18/90

C. Documentation Exceptions : None encountered.

II. EXTRACTION

A. Holding Times: Medium level protocol was not performed, therefore, holding time is not applicable.

B. Extraction Exceptions : Not applicable.

III. ANALYSIS

A. Holding Times: Holding times were met.

B. Analytical Exceptions : Due to sample matrix, the samples were analyzed on a diluted basis. Reporting limits have been adjusted accordingly.

000007

jas20

IV. QUALITY CONTROL

A. Method Blank : A method blank is a laboratory generated sample used to determine the degree to which laboratory operations may cause false positive results for these samples. No target parameters were detected in the method blank associated with these samples.

B. Surrogate Recoveries : Due to matrix interference, percent recovery for sample 27823-1 (GW-7) was below laboratory control limits.

C. Matrix Spike Results: Not applicable.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature. Diskette deliverables have not been provided for this data package.

Greg Jordan 10/25/90

Greg Jordan **Date**
GC Section Supervisor

000006

jas20

WLK 10/25/90

Engineers
Planners
CH2M HILL
Economists
Scientists

METHOD: 8015
TFH Gas

Reference No: Method Blank

Sample Matrix: Water
Dilution Factor: 1

Date Analyzed: 10-18-90

Compound	Detection Limit	Method Blank Result	Units
TFH Gas	0.1	< 0.1	mg/l
Surrogate (SS)		98	% Rec.

SS - Surrogate Standard reported as percent recovery.
Fluorobenzene used as surrogate standard.

Comments:

Approved By: Gary Jonker

000009

jas20

Engineers
Planners
CH2M HILL
Economists
Scientists

METHOD: 8015
TFH Gas

Client: Wacker Siltronics
Client Sample ID: GW-7

Sample Matrix: Water
Dilution Factor: 5

Reference No: 27823-1

Date Sampled: 10-11-90
Date Received: 10-13-90
Date Extracted: N/A
Date Analyzed: 10-18-90

Compound	Detection Limit	Sample Result	Units
TFH Gas	0.5	19	mg/l
Surrogate (SS)		27 *	% Rec.

SS - Surrogate Standard reported as percent recovery.
Fluorobenzene used as surrogate standard.

Comments: * Surrogate outside control limits.

Approved By: Jay Jonlan

000010

jas20

Engineers
Planners
CH2M HILL
Economists
Scientists

METHOD: 8015
TFH Gas

Client: Wacker Siltronics
Client Sample ID: GW-4

Sample Matrix: Water
Dilution Factor: 5

Reference No: 27823-2

Date Sampled: 10-11-90
Date Received: 10-13-90
Date Extracted: N/A
Date Analyzed: 10-18-90

Compound	Detection Limit	Sample Result	Units
TFH Gas	0.5	1.3	mg/l
Surrogate (SS)		95	% Rec.

SS - Surrogate Standard reported as percent recovery.
Fluorobenzene used as surrogate standard.

Comments:

Approved By: Gley Jonlm

000011

jas20

CH2M HILL QUALITY ANALYTICS

CHAIN OF CUSTODY RECORD

000012

PROJECT NUMBER	PROJECT NAME
PDX30452.B1	Wacker Siltronics

CLIENT NAME: Wacker

PROJECT MANAGER: Jill Bensen/PDX

COPY TO:

REQUESTED COMP. DATE: 10-25-90

SAMPLING REQUIREMENTS: SDWA ☐ NPDES ☐ RCRA ☐ OTHER ____

CLIENT ADDRESS AND PHONE NUMBER:

FOR LAB USE ONLY

LAB# 27823

LAB#

PROJECT NO.

ACK. | VERIFIED

QUOTE# | BS

NO. OF SAMP | PG | OF

STA NO.	DATE	TIME	COMP	GRAB	SOIL	SAMPLE DESCRIPTIONS (12 CHARACTERS)	# OF CONTAINERS	BTEX/TPH, Gasoline 8020/8015	LAB ID	REMARKS
	10/11/90	16:40	X			GW-7	1	X	1	HCl spiked B 10/10/90
	10/11	11:15	X			GW-4	1	X	2	HCl spiked B

VOAs not preserved per client. D. Lutz 10/15/90 B

SAMPLED BY AND TITLE	DATE/TIME	RELINQUISHED BY	DATE/TIME
David L. Lutz Cat Dy	10/11/90 1700	[signature]	10-12-90 1200
RECEIVED BY:	DATE/TIME	RELINQUISHED BY:	DATE/TIME
RECEIVED BY:	DATE/TIME	RELINQUISHED BY:	DATE/TIME
RECEIVED BY LAB: [signature]	DATE/TIME 10/13/90 1020	SAMPLE SHIPPED VIA UPS BUS FED-EX HAND OTHER ____	AIR BILL#

HAZWRAP/NEESA Y N

QC LEVEL 1 2 3

COC Y | ICE Y

ANA REQ Y | TEMP (60)

CUST SEAL Y | Ph —

SAMPLE COND. good

REMARKS

ENTERED INTO LIMS ____ COC REVIEWED ____

SCOEPA00037145

Engineers
Planners
Economists
Scientists

CASE NARRATIVE FOR BTEX & TFH GAS

LABORATORY:	CH2M HILL	**CLIENT :**	Wacker Siltronics
CASE NO :	N/A	**CONTRACT NO.:**	N/A
LAB ID :	27843	**SDG # :**	N/A

I. RECEIPT

A. Date: October 17, 1990

B.

LAB ID	CLIENT ID	SAMPLE MATRIX	DATE SAMPLED	EXTRACTION DATE	ANALYSIS DATE
27843001	GW-27	Water	10/15/90	N/A	10/23/90
27843001_DL	GW-27_DL	Water	10/15/90	N/A	10/24/90

C. Documentation Exceptions : None encountered.

II. EXTRACTION

A. Holding Times: Holding times were met.

B. Extraction Exceptions : None encountered.

III. ANALYSIS

A. Holding Times: Holding times were met.

B. Analytical Exceptions : Due to the concentration of target compounds, sample 27843001 (GW-27) was diluted at 1:50 and sample 27843001_DL (GW-27_DL) was diluted at 1:100. Reporting limits have been adjusted accordingly.

000001

IV. QUALITY CONTROL

A. Method Blank : A method blank is a laboratory generated sample used to determine the degree to which laboratory operations may cause false positive results for these samples. No target parameters were detected in the method blanks associated with these samples.

B. Surrogate Recoveries : Met acceptable QC limits.

C. Matrix Spike Results: Not applicable.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature. Diskette deliverables have not been provided for this data package.

Greg Jordan 10/25/90

Greg Jordan **Date**
GC Section Supervisor

kdh.c

WLK 10/25/90 000002

Engineers
Planners
Economists
Scientists

METHOD: BTEX & TFH Gas

Reference No: Method Blank

Sample Matrix: Water
Dilution Factor: 1

Date Analyzed: 10-23-90

Compounds	Detection Limit	Method Blank Result	Units
Benzene	1.0	< 1.0	ug/l
Toluene	1.0	< 1.0	ug/l
Ethyl Benzene	1.0	< 1.0	ug/l
Total Xylenes	1.0	< 1.0	ug/l
TFH Gas	0.1	< 0.1	mg/l
Surrogate (SS)		99	% Rec.

SS - Surrogate Standard reported as percent recovery.
Fluorobenzene surrogate standard.

Comments:

Approved By: Guy Jordan

000003

Engineers
Planners
CH2M HILL
Economists
Scientists

METHOD: BTEX & TFH Gas

Reference No: Method Blank

Sample Matrix: Water
Dilution Factor: 1

Date Analyzed: 10-24-90

Compounds	Detection Limit	Method Blank Result	Units
Benzene	1.0	< 1.0	ug/l
Toluene	1.0	< 1.0	ug/l
Ethyl Benzene	1.0	< 1.0	ug/l
Total Xylenes	1.0	< 1.0	ug/l
TFH Gas	0.1	< 0.1	mg/l
Surrogate (SS)		98	% Rec.

SS - Surrogate Standard reported as percent recovery.
Fluorobenzene surrogate standard.

Comments:

Approved By: Guy Jordan

000004

Engineers
Planners
CH2M HILL Economists
Scientists

METHOD: BTEX & TFH Gas

Client: Wacker Siltronics
Client Sample ID: GW-27

Sample Matrix: Water
Dilution Factor: 50

Reference No: 27843-1

Date Sampled: 10-15-90
Date Received: 10-17-90
Date Extracted: N/A
Date Analyzed: 10-23-90

Compounds	Detection Limit	Sample Result	Units
Benzene	50	23,000*	ug/L
Toluene	50	280	ug/L
Ethyl Benzene	50	1,070	ug/L
Total Xylenes	50	490	ug/L
TFH Gas	5.0	40	mg/L
Surrogate (SS)		111	% Rec.

SS - Surrogate Standard reported as percent recovery.
Fluorobenzene surrogate standard.

Comments: * Outside calibration range.

Dilution, due to the concentration of target compound(s).

Approved By: Guy Joseph

000005

Engineers
Planners
Economists
Scientists

METHOD: BTEX & TFH Gas

Client: Wacker Siltronics
Client Sample ID: GW-27_DL

Sample Matrix: Water
Dilution Factor: 100

Reference No: 27843-1_DL

Date Sampled: 10-15-90
Date Received: 10-17-90
Date Extracted: N/A
Date Analyzed: 10-24-90

Compounds	Detection Limit	Sample Result	Units
Benzene	100	18,000	ug/L
Toluene	100	220	ug/L
Ethyl Benzene	100	760	ug/L
Total Xylenes	100	1000	ug/L
TFH Gas	10	38	mg/L
Surrogate (SS)		101	% Rec.

SS - Surrogate Standard reported as percent recovery.
Fluorobenzene surrogate standard.

Comments: Dilution, due to the concentration of target compound(s).

Approved By: Gary Jonker

000006

CH2M HILL QUALITY ANALYTICS

CHAIN OF CUSTODY RECORD

PROJECT NUMBER	PROJECT NAME
PDX30452.B0	Wacker-Siltronics

CLIENT NAME: Wacker Siltronics

PROJECT MANAGER: Jill Benson/PDX

COPY TO:

REQUESTED COMP. DATE: 10-19-90 ASAP (without paying premium)

SAMPLING REQUIREMENTS: SDWA ☐ NPDES ☐ RCRA ☐ OTHER ____

CLIENT ADDRESS AND PHONE NUMBER:

ANALYSES REQUESTED: BTEX/TPH Gasoline 8020/8015

FOR LAB USE ONLY

LAB# 27843

LAB#

PROJECT NO.

ACK | VERIFIED

QUOTE# | BS

NO. OF SAMP | PG | OF

STA NO.	DATE	TIME	WATER GRAB	WATER COMP	SOIL	SAMPLE DESCRIPTIONS (12 CHARACTERS)	# OF CONTAINERS	BTEX/TPH Gasoline 8020/8015	LAB ID	REMARKS
	10/15/90	17:35	X			GW-27	2	X		HCl spiked HCl spiked

SAMPLED BY AND TITLE	DATE/TIME	RELINQUISHED BY	DATE/TIME
[illegible]	10-15-90/1745	[illegible]	10-16-90 1100
RECEIVED BY:	DATE/TIME	RELINQUISHED BY:	DATE/TIME
RECEIVED BY:	DATE/TIME	RELINQUISHED BY:	DATE/TIME
RECEIVED BY LAB: [illegible]	DATE/TIME 10/17/90 830	SAMPLE SHIPPED VIA: UPS BUS FED-EX HAND OTHER ____	AIR BILL#

HAZWRAP/NEESA Y N

QC LEVEL 1 2 3

COC Y | ICE Y

ANA REQ Y | TEMP (cool)

CUST SEAL Y | Ph —

SAMPLE COND. good

REMARKS: D

ENTERED INTO LIMS ____ COC REVIEWED ____

000007

SCOEPA00037152

Wacker Siltronic Corporation WACKER

Wacker Siltronic Corporation
P.O. Box 83180
Portland, OR 97283-0180
Phone (503) 243-2020
TDD (503) 241-7519

December 15, 1995 SER51:TM

Ms. Laurie J. McCulloch
Manager, Underground Storage Tank Section
Department of Environmental Quality
Northwest Region
2020 SW Fourth Ave., Suite 400
Portland, Oregon 97201-4987

RE: Wacker Siltronic Corporation Petroleum Contaminated Soil Treatment Report

Dear Ms. McCulloch:

Attached is the closure report required under condition 17 of the Solid Waste Letter of Authorization and Permit No.: PCSLA-NWR-95-004. This permit was issued for the onsite treatment of petroleum contaminated soils discovered during construction activities associated with facility expansion at Wacker Siltronic.

Your assistance during this process was greatly appreciated. Should you have any questions regarding this report or activities conducted during the treatment operation, please contact me, Tom McCue, at 241-7532.

Sincerely,

WACKER SILTRONIC CORPORATION

Thomas C. McCue

Thomas C. McCue
Environmental Manager

cc: John Pittman
Richard Rose-DEQ

PETROLEUM CONTAMINATED SOILS

TREATMENT REPORT

Prepared for

Wacker Siltronic Corporation

by

Deaver Environmental Group, Inc.

December 14, 1995

PETROLEUM CONTAMINATED SOILS TREATMENT REPORT

The following data is provided to comply with condition 17 of the Petroleum Contaminated Soil Treatment Permit (#PCSLA-NWR-95-004) issued to Wacker Siltronic Corporation by DEQ on April 17, 1995 and amended on May 12, 1995.

The maximum allowable contaminant levels in the treated soil are identified in amended Permit condition 4 as follows:

- 40 mg/kg for gasoline - by DEQ Method TPH-G
- 100 mg/kg for waste oil, heating oil and heavy oil contaminated soils - by DEQ Method TPH 418.1

The Soil Management Plan submitted by Wacker and approved by DEQ describes the sampling procedures that were used to collect soil samples for analysis and characterization. Once excavation of soils began and initial sample results indicated regulated levels of benzene were present, Wacker modified the Soil Management Plan to include on-site treatment of the contaminated soils using a thermal desorption unit operated by PEMCO, Inc. under Air Contaminant Discharge Permit No. 37-0492. Wacker also obtained a Solid Waste Letter Authorization for Treatment of PCS (Petroleum Contaminated Soils), Permit No. PCSLA-NWR-95-004 from DEQ,

Prior to bringing the Mobile Soil Remediation Unit (MSRU) onto the Wacker site, the soils were containerized in roll-off boxes, and each roll-off box was individually sampled. Based on the results of the analysis, the soil was either sent off-site to Oregon Waste Systems - Columbia Ridge Landfill, or sent to Oregon Hydrocarbon, Inc. for further management. Due to the higher levels of Benzene found in the soils, the MSRU was brought onto the site to process the contaminated soils. The same sampling methodology was used throughout the process, first with roll-off boxes and later with piles of contaminated soils prior to treating. Treated soils meeting the permit standards were sent to St. John's Landfill for use as clean cover material.

Final Soil Sampling Data

Following treatment, the soil was staged in 100 ton batches which were then sampled by the methods described below.

Analytical data for each "batch" of soil is summarized in the attached matrix (see Attachment 4).

Description of the Sampling Methods Used

The following procedure was used to collect representative samples from each roll-off box and pile of contaminated soil.

One representative sample was collected from each roll-off box using a systematic-random, two-dimensional sampling grid. Each box was consecutively numbered and divided into six grids. One-third of the sample volume was collected from grid locations identified as 1, 2 , and 3. Samples were collected using disposable stainless steel spoons, using a new spoon at each grid location. After each representative sample was collected it was labeled, then the sample jar was placed in a Ziploc bag and secured. Samples were placed in a cooler and cooled to 4°C. Chain-of-custody procedures were used for delivering the samples to the analytical laboratory.

Diagram of Sampling Locations

Refer to the attached Soil Management Plan for diagram of sampling grid.

Summary of the Treatment History and Disposal Recommendation

Sampling performed on the soil prior to treatment was for the purpose of making management/disposal determinations. The initial levels of contaminants found in the excavated soils were as follows:

Benzene -- from ND to 8.2 mg/kg
Diesel Compounds - from 60 to 30,000 mg/kg

Initially, batches of soil with benzene results less than 0.5 mg/L were approved for disposal at Oregon Waste Systems - Columbia Ridge Landfill or Oregon Hydrocarbon, Inc. After the MSRU was brought on-site, all soil was treated on-site by a thermal desorption process and volatilized hydrocarbon compounds were oxidized in a combustion chamber.

Contaminated soils processed through the MSRU were again sampled for management/disposal determination. Soils that were above the permitted treatment levels were reprocessed through the unit, and soils below the permitted treatment levels were sent to St. John's Landfill for use as clean cover material.

In total, 5,490.76 tons of contaminated soil were treated in the MSRU. All final treated soil was in compliance with the maximum allowable contaminated levels specified in the Solid Waste Letter Authorization for Treatment of PCS, as modified on May 12, 1995.

Attachments:

1) Treated Soil Summary (Final Soil Sampling Data)
2) Summary of Treatment History and Disposal Recommendation (Contaminated Soil Analysis)
3) Solid Waste Letter Authorization for Treatment of Petroleum Contaminated Soils
4) PCSLA Amendment - 5/12/95
5) Wacker Siltronic Soil Management Plan
6) Air Contaminant Discharge Permit No. 37-0492
7) ACDP No. 37-0492 Amendment - 3/14/95

ATTACHMENT 1

Treated Soil Summary

Box/ Pile #	Sample Date	Analysis Performed	TPH-418.1 Results (mg/Kg)	TPH-G Results (mg/Kg)	Disposition
1	4/17/95	TPH-418.1 Mod.; TPH-G	71	ND	St. John's Landfill
2	4/17/95	TPH-418.1 Mod.; TPH-G	11	ND	St. John's Landfill
3	4/18/95	TPH-418.1 Mod.; TPH-G	58	ND	St. John's Landfill
4	4/18/95	TPH-418.1 Mod.; TPH-G	71	ND	St. John's Landfill
5	4/19/95	TPH-418.1 Mod.; TPH-G	59	ND	St. John's Landfill
6	4/20/95	TPH-418.1 Mod.; TPH-G	110	10	Reprocessed
7	4/20/95	TPH-418.1 Mod.; TPH-G	10	ND	St. John's Landfill
8	5/18/95	TPH-418.1 Mod.; TPH-G	11	ND	St. John's Landfill
9	5/18/95	TPH-418.1 Mod.; TPH-G	9	ND	St. John's Landfill
10	5/19/95	TPH-418.1 Mod.; TPH-G	9	ND	St. John's Landfill
11	5/19/95	TPH-418.1 Mod.; TPH-G	9	ND	St. John's Landfill
12	5/20/95	TPH-418.1 Mod.; TPH-G	27	ND	St. John's Landfill
13	5/21/95	TPH-418.1 Mod.; TPH-G	41	ND	St. John's Landfill
14	5/21/95	TPH-418.1 Mod.; TPH-G	24	ND	St. John's Landfill
15	5/22/95	TPH-418.1 Mod.; TPH-G	18	ND	St. John's Landfill
16	5/22/95	TPH-418.1 Mod.; TPH-G	59	ND	St. John's Landfill
17	5/23/95	TPH-418.1 Mod.; TPH-G	12	ND	St. John's Landfill
18	5/24/95	TPH-418.1 Mod.; TPH-G	8	ND	St. John's Landfill
19	5/24/95	TPH-418.1 Mod.; TPH-G	100	ND	Reprocessed
20	5/25/95	TPH-418.1 Mod.; TPH-G	17	ND	St. John's Landfill
21	5/25/95	TPH-418.1 Mod.; TPH-G	8	ND	St. John's Landfill
22	5/26/95	TPH-418.1 Mod.; TPH-G	14	ND	St. John's Landfill
23	5/26/95	TPH-418.1 Mod.; TPH-G	12	ND	St. John's Landfill
24	5/30/95	TPH-418.1 Mod.; TPH-G	3600	ND	Reprocessed
25	5/31/95	TPH-418.1 Mod.; TPH-G	26	ND	Reprocessed
26	5/31/95	TPH-418.1 Mod.; TPH-G	43	ND	St. John's Landfill
27	6/1/95	TPH-418.1 Mod.; TPH-G	35	ND	St. John's Landfill
28	6/1/95	TPH-418.1 Mod.; TPH-G	60	ND	St. John's Landfill

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Treated Soil Summary

Box/ Pile #	Sample Date	Analysis Performed	TPH-418.1 Results (mg/Kg)	TPH-G Results (mg/Kg)	Disposition
29	6/1/95	TPH-418.1 Mod.; TPH-G	12	ND	Reprocessed
30	6/2/95	TPH-418.1 Mod.; TPH-G	24	ND	Reprocessed
31	6/2/95	TPH-418.1 Mod.; TPH-G	25	ND	St. John's Landfill
32	6/2/95	TPH-418.1 Mod.; TPH-G	31	ND	St. John's Landfill
33	6/5/95	TPH-418.1 Mod.; TPH-G	29	ND	St. John's Landfill
34	6/5/95	TPH-418.1 Mod.; TPH-G	29	ND	St. John's Landfill
35	6/5/95	TPH-418.1 Mod.; TPH-G	13	ND	St. John's Landfill
36	6/6/95	TPH-418.1 Mod.; TPH-G	17	ND	St. John's Landfill
37	6/6/95	TPH-418.1 Mod.; TPH-G	28	ND	St. John's Landfill
38	6/7/95	TPH-418.1 Mod.; TPH-G	21	ND	St. John's Landfill
39	6/7/95	TPH-418.1 Mod.; TPH-G	22	ND	St. John's Landfill
40	6/7/95	TPH-418.1 Mod.; TPH-G	43	ND	St. John's Landfill
41	6/9/95	TPH-418.1 Mod.; TPH-G	10	ND	St. John's Landfill
42	6/11/95	TPH-418.1 Mod.; TPH-G	37	19	St. John's Landfill
43	6/12/95	TPH-418.1 Mod.; TPH-G	58	ND	St. John's Landfill
44	6/13/95	TPH-418.1 Mod.; TPH-G	38	ND	St. John's Landfill
45	6/13/95	TPH-418.1 Mod.; TPH-G	33	ND	St. John's Landfill
46	6/14/95	TPH-418.1 Mod.; TPH-G	59	18	St. John's Landfill
47	6/14/95	TPH-418.1 Mod.; TPH-G	15	ND	St. John's Landfill
48	6/14/95	TPH-418.1 Mod.; TPH-G	31	ND	St. John's Landfill
49	6/15/95	TPH-418.1 Mod.; TPH-G	31	ND	St. John's Landfill
50	6/15/95	TPH-418.1 Mod.; TPH-G	40	ND	St. John's Landfill
51	6/16/95	TPH-418.1 Mod.; TPH-G	17	ND	St. John's Landfill
52	6/16/95	TPH-418.1 Mod.; TPH-G	28	12	St. John's Landfill
53	6/16/95	TPH-418.1 Mod.; TPH-G	13	ND	St. John's Landfill

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ATTACHMENT 2

Contaminated Soil Analysis

Box#	Sample I.D. #	Box ID #	Fill Date	Sample Date	Ship Date	Analysis Performed	Analytical Results	Disposition
1	94-500	173	12/8/94	12/16/94	1/6/95	TCLP (8), TCLP 1311 & 8240, TCLP 8150, TCLP 8720, TCLP Pesticides, Flash Pt., pH EPA-9040, TPH-G, TPH-D, TPH-418.1 MOD.	Diesel cmpds 6,100 mg/Kg; Benzene 0.025 mg/l	Oregon Waste Systems
2	94-501	164	12/19/94	12/19/94	1/6/95	TCLP (8), TCLP 1311 & 8240, TCLP 8150, TCLP 8720, TCLP Pesticides, Flash Pt., pH EPA-9040, TPH-G, TPH-D, TPH-418.1 MOD.	Diesel cmpds 71 mg/Kg; Benzene ND	Oregon Waste Systems
3	94-502	176	12/19/94	12/20/94	1/18/95	TCLP (8), TCLP 8240, TCLP 8150, TCLP 8720, TPH-G, TPH-D, TPH-418.1 MOD.	Diesel cmpds 150 mg/Kg; Benzene ND	Oregon Waste Systems
4	94-503	165	12/21/94	12/22/94	1/9/95	TCLP 8240, TPH-D	Diesel cmpds 6,300 mg/Kg; Benzene 0.06 mg/L	Oregon Waste Systems
5	94-504	163	12/22/94	12/22/94		TCLP 8240, TCLP (8), TPH-D, PAHS 8310, PCB'S 8081	Diesel cmpds 27,000 mg/Kg; Benzene 0.9 mg/L	On-site Treatment
6	95-505	172	12/27/94	1/10/95		TCLP 8240, TPH-D	Diesel cmpds 57mg/Kg; Benzene ND	NA
6	95-519	Resample		1/17/95		TCLP 1311 & 8240, TPH-D	Diesel cmpds 25,000 mg/Kg; Benzene 0.95 mg/L	NA
6	95-527	Resample		1/25/95		TCLP 8240	Benzene 2.4 mg/Kg	NA

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Contaminated Soil Analysis

Box#	Sample I.D. #	Box ID #	Fill Date	Sample Date	Ship Date	Analysis Performed	Analytical Results	Disposition
6	95-541	Resample		2/24/95		BTEX 8020	Benzene ND	On-site Treatment
7	95-506	910208	12/28/94	1/4/95	1/11/95	TCLP 8240, TPH-D	Diesel cmpds 3,300 mg/Kg; Benzene 0.2 mg/L	Oregon Waste Systems
8	95-507	161	1/4/95	1/4/95	1/27/95	TCLP 8240, TPH-D	Diesel cmpds 1,000 mg/Kg; Benzene 0.11 mg/L	Oregon Hydrocarbon
9	95-508	910206	1/4/95	1/4/95	1/10/95	TCLP 8240, TPH-D	Diesel cmpds 3,900 mg/Kg; Benzene 0.017 mg/L	Oregon Waste Systems
10	95-509	910214	1/4/95	1/4/95	1/10/95	TCLP 8240, TPH-D	Diesel cmpds 12,000 mg/Kg; Benzene 0.35 mg/L	Oregon Waste Systems
11	95-510	166	1/5/95	1/5/95	1/27/95	TCLP 8240, TPH-D	Diesel cmpds 25,000 mg/Kg; Benzene 0.4 mg/L	Oregon Hydrocarbon
12	95-515	420049	1/6/95	1/10/95	1/13/95	TCLP 8240, TPH-D	Diesel cmpds 30,000 mg/Kg; Benzene 0.2 mg/L	Oregon Waste Systems
13	95-511	910207	1/4/95	1/5/95	1/13/95	TCLP 8240, TPH-D	Diesel cmpds 8,900 mg/Kg; Benzene 0.18 mg/L	Oregon Waste Systems
14	95-512	174	1/5/95	1/6/95	1/27/95	TCLP 8240, TPH-D	Diesel cmpds 3,800 mg/Kg; Benzene ND	Oregon Hydrocarbon
15	95-513	910212	1/4/95	1/6/95	1/24/95	TCLP 8240, TPH-D	Diesel cmpds 2,400 mg/Kg; Benzene 0.018 mg/L	Oregon Waste Systems
16	95-520	910201	1/17/95	1/21/95		TCLP 8240, TPH-D	Diesel cmpds 1,500 mg/Kg; Benzene 0.019 mg/L	On-site Treatment

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Contaminated Soil Analysis

Box#	Sample I.D. #	Box ID #	Fill Date	Sample Date	Ship Date	Analysis Performed	Analytical Results	Disposition
17	94-502	(Split Box #3)	12/19/94	12/20/94	1/18/95	TCLP (8), TCLP 8240, TCLP 8150, TCLP 8720, TCLP PEST., FLASH PT., pH-EPA-9040, TPH-G, TPH-D, TPH-418.1 MOD.	Diesel cmpds 150 mg/Kg; Benzene ND	Oregon Waste Systems
18	95-523	134	1/18/95	1/18/95	1/30/95	TCLP 8240, TPH-D	Diesel cmpds 1,200 mg/Kg; Benzene ND	Oregon Hydrocarbon
19	95-521	125	1/17/95	1/17/95	1/27/95	TCLP 8240, TPH-D	Diesel cmpds 3,900 mg/Kg ; Benzene ND	Oregon Hydrocarbon
20	95-516	910210	1/12/95	1/21/95		TCLP 8240, TPH-D	Diesel cmpds 1,200 mg/Kg; Benzene ND	On-site Treatment
21	95-522	91030	1/17/95	1/17/95		TCLP 8240, TPH-D	Diesel cmpds 790 mg/Kg; Benzene ND	On-site Treatment
22	95-528	165	1/23/95	1/25/95	1/30/95	TCLP 8240, TPH-D	Diesel cmpds 3,800 mg/Kg; Benzene 0.07 mg/Kg	Oregon Hydrocarbon
23	95-534	169	1/24/95	1/27/95		TCLP 8240, TCLP 8270, TCLP (8), TCLP Pesticides, TCLP Herbicides, TPH-D	Diesel cmpds 2,300 mg/Kg; Benzene 1.4 mg/Kg	On-site Treatment
24	95-529	910202	1/21/95	1/25/95		TCLP 8240, TCLP 8270, TCLP 8150, TCLP (8), TCLP Pesticides, TPH-D, TPH-G, FP 1010, pH EPA-9040	Diesel cmpds 19,000 mg/Kg; Benzene 1.1 mg/Kg	On-site Treatment

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Contaminated Soil Analysis

Box#	Sample I.D. #	Box ID #	Fill Date	Sample Date	Ship Date	Analysis Performed	Analytical Results	Disposition
25	95-530	126	1/21/95	1/25/95		TCLP 8240, TPH-D, BETX	Diesel cmpds 18,000 mg/Kg; Benzene 5.0 mg/Kg	On-site Treatment
26	95-531	159	1/23/95	1/25/95		TCLP 8240, TPH-D, BTEX	Diesel cmpds 3,000 mg/Kg; Benzene 2.7 mg/Kg	On-site Treatment
27	95-532	124	1/23/95	1/25/95	1/30/95	TCLP 8240, TPH-D, BTEX	Diesel cmpds 15,000 mg/Kg; Benzene 0.11 mg/Kg	Oregon Hydrocarbon
28	95-525	129	1/23/95	1/25/95	1/30/95	TCLP 8240, TPH-D	Diesel cmpds 3,000 mg/Kg; Benzene 0.02 mg/Kg	Oregon Hydrcarbon
29	95-536	119	2/7/95	2/8/95		TCLP 8240, TPH-D	Diesel cmpds 1,500 mg/Kg; Benzene ND	On-Site Treatment
30	95-535	420417	unknown	1/31/95		TCLP 8240, TPH-D	Diesel cmpds 83 mg/Kg; Benzene ND	On-Site Treatment
31	95-537	910200	2/8/95	2/8/95		TCLP 8240, TPH-D	Diesel cmpds 630 mg/Kg; Benzene ND	On-Site Treatment
32	95-538	910310	2/8/95	2/8/95		TCLP 8240, TPH-D	Diesel cmpds 60 mg/Kg, Benzene ND	On-Site Treatment
33	95-539	165	2/20/95	2/21/95		TCLP 8240, TPH-D	Diesel cmpds 2,500 mg/Kg; Benzene 2.0 mg/Kg	On-Site Treatment
34	95-546	129	2/27/95	2/27/95		TCLP 8240, TPH-D	Diesel cmpds 390 mg/Kg; Benzene ND	On-Site Treatment
35	95-548	145	2/28/95	3/1/95		TCLP 8240, TPH-D	Diesel cmpds 96 mg/Kg; Benzene ND	On-Site Treatment
36	95-549	910215	2/28/95	3/1/95		TCLP 8240, TPH-D	Diesel cmpds 600 mg/Kg; Benzene ND	On-Site Treatment
37	95-550	168	2/28/95	3/2/95		TCLP 8240, TPH-D	Diesel cmpds 270 mg/Kg; Benzene ND	On-Site Treatment
38	95-551	135	1/25/95	3/2/95		TCLP 8240, TPH-D	Diesel cmpds 10,000 mg/Kg; Benzene 3.0 mg/Kg	On-Site Treatment

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Contaminated Soil Analysis

Box#	Sample I.D. #	Box ID #	Fill Date	Sample Date	Ship Date	Analysis Performed	Analytical Results	Disposition
39	95-552	173	3/14/95	3/15/95		TCLP 8240, TPH-D	Diesel cmpds 280 mg/Kg; Benzene 1.6 mg/Kg	On-Site Treatment
40	95-553	161	3/14/95	3/15/95		TCLP 8240, TPH-D	Diesel cmpds 25,000 mg/Kg; Benzene 4.1 mg/Kg	On-Site Treatment
41	95-554	166	3/14/95	3/15/95		TCLP 8240, TPH-D	Diesel cmpds 22,000 mg/Kg; Benzene 8.2 mg/Kg	On-Site Treatment
42	95-555	162	3/20/95	3/23/95		TCLP 8240, TPH-D	Diesel cmpds 8,100 mg/Kg; Benzene 0.34 mg/Kg	On-Site Treatment
43	95-556	176	3/21/95	3/23/95		TCLP 8240, TPH-D	Diesel cmpds 5,800 mg/Kg; Benzene 5.4 mg/Kg	On-Site Treatment
44	95-557	417	3/21/95	3/23/95		TCLP 8240, TPH-D	Diesel cmpds 2,200 mg/Kg; Benzene 2.2 mg/Kg	On-Site Treatment
45	95-558	H3	3/21/95	3/24/95		TCLP 8240, TPH-D	Diesel cmpds 6,300 mg/Kg; Benzene 5.56 mg/Kg	On-Site Treatment
46	95-559	H7	3/23/95	3/24/95		TCLP 8240, TPH-D	Diesel cmpds 7,200 mg/Kg; Benzene 0.32 mg/L	On-Site Treatment
47	95-560	164	3/23/95	3/23/95		TCLP 8240, TPH-D	Diesel cmpds 12,000 mg/Kg; Benzene 4.8 mg/Kg	On-Site Treatment
48	95-561	174	3/23/95	3/23/95		TCLP 8240, TPH-D	Diesel cmpds 16,000 mg/Kg; Benzene 0.31 mg/L	On-Site Treatment
49	95-562	H4	3/23/95	3/23/95		TCLP 8240, TPH-D	Diesel cmpds 6,300 mg/Kg; Benzene 0.19 mg/L	On-Site Treatment
50	95-563	118	3/23/95	3/24/95		TCLP 8240, TPH-D	Diesel cmpds 11,000 mg/Kg; Benzene 5.9 mg/Kg	On-Site Treatment
51	95-564	120	3/23/95	3/24/95		TCLP 8240, TPH-D	Diesel cmpds 12,000 mg/Kg; Benzene 2.0 mg/Kg	On-Site Treatment

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Box#	Sample I.D. #	Box ID #	Fill Date	Sample Date	Ship Date	Analysis Performed	Analytical Results	Disposition
52	95-565	130	3/24/95	3/27/95		TCLP 8240, TPH-D	Diesel cmpds 6,300 mg/Kg; Benzene 0.033 mg/Kg	On-Site Treatment
53	95-566	123	3/24/95	3/27/95		TCLP 8240, TPH-D	Diesel cmpds 12,000 mg/Kg; Benzene 0.88 mg/Kg	On-Site Treatment
Soil Piles								
	95-568			5/10/95		TPH-G, TPH-D, TPH 418.1	Gasoline 230 mg/Kg, Diesel 6,800 mg/Kg, TPH 1,300 mg/Kg	On-Site Treatment
	95-569			5/10/95		TPH-G, TPH-D, TPH 418.1	Gasoline 1,900 mg/Kg, Diesel 40,000 mg/Kg, TPH 4,600 mg/Kg, Benzene 0.82 mg/L	On-Site Treatment
	95-570			5/19/95		TPH-D, TPH 418.1	Diesel 46,000 mg/Kg, TPH 1,900 mg/Kg, Gasoline 1,400 mg/Kg, Benzene 5.0 mg/L	On-Site Treatment
	95-571			5/19/95		TPH-D, TPH 418.1	Diesel 45,000 mg/Kg, TPH 1,700 mg/Kg, Gasoline 900 mg/Kg, Benzene 3.1 mg/L	On-Site Treatment
	95-573			5/31/95		TPH-D, TPH 418.1	Diesel 6,800 mg/Kg, TPH 2,300 mg/Kg	On-Site Treatment
	95-574			5/31/95		TPH-D, TPH 418.2	Diesel 3,500 mg/Kg, TPH 1,000 mg/Kg	On-Site Treatment
	95-575			5/31/95		TPH-D, TPH 418.3	Diesel 24,000 mg/Kg, TPH 950 mg/Kg	On-Site Treatment

ATTACHMENT 3

Oregon

April 17, 1995

DEPARTMENT OF
ENVIRONMENTAL
QUALITY

NORTHWEST REGION

THOMAS C McCUE
WACKER SILTRONIC CORPORATION
PO BOX 83180
PORTLAND OR 97283-0180

RE: Solid Waste Letter Authorization
for Treatment of PCS
File No. NWR-SOIL-011
Permit No.: PCSLA-NWR-95-004
Permit Expiration Date: **July 17, 1995**

Dear Mr. McCue:

Your application and written Soil Management Plan to treat Petroleum Contaminated Soil (PCS) has been approved. Any required modifications to the treatment plan you submitted are included in the permit conditions listed below.

This permit specifically pertains to PCS generated from the treatment project identified as Wacker Siltronic Corp.; This letter permit authorizes you to conduct the soil treatment in accordance with the following conditions:

1. The treatment site is located at 7200 NW Front Avenue in Portland, Oregon.

2. Once treatment is complete, the treated soils will be transported to the St. Johns Landfill where it will be used as clean cover material.

3. Treatment will be accomplished by thermal treatment.

4. Treatment is to be conducted in accordance with the Soil Management Plan submitted by Thomas McCue, and as approved by the Department. The maximum contaminant level allowed after treatment is 40 mg/kg (by DEQ Method TPH-G) for gasoline, 100 mg/kg (by DEQ Method TPH-D) for diesel and mg/kg (by DEQ Method TPH 418.1) for waste oil, heating oil and heavy oil contaminated soils.

5. This permit does not authorize the violation of any state, federal, or local rules or regulations.

6. Adequate site security (e.g., fencing or equivalent) must be maintained to prevent unauthorized access to the treatment area at all times.

John A. Kitzhaber
Governor

2020 SW Fourth Avenue
Suite 400
Portland, OR 97201-4987
(503) 229-5263 Voice
TTY (503) 229-5471
DEQ-1

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

Laurie J. McCulloch
UST Section Manager
Northwest Region

enclosures

cc: Wacker Siltronic Corporation
Sandee Archer
PO Box 83180, Portland, OR 97283-0180

PEMCO
Robin Hillier
PO Box 11569, Portland, OR 97211

ATTACHMENT 4

Oregon

DEPARTMENT OF ENVIRONMENTAL QUALITY

NORTHWEST REGION

May 12, 1995

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, and 100 mg/kg (by DEQ Method TPH 418.1) for waste oil, heating oil and heavy oil contaminated soils.

5. This permit does not authorize the violation of any state, federal, or local rules or regulations.

6. Adequate site security (e.g., fencing or equivalent) must be maintained to prevent unauthorized access to the treatment area at all times.

John A. Kitzhaber
Governor

2020 SW Fourth Avenue
Suite 400
Portland, OR 97201-4987
(503) 229-5263 Voice
TTY (503) 229-5471

DEQ-1

ATTACHMENT 5

Introduction

Purpose of Document

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

Background

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

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

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

Excavation Activities

Soil Management

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

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

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

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

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

Training Requirements

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

Waste Characterization

Sampling Procedure

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

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

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

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

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

where,

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

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

Analytical Methods

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

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

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

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

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

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

CH2MHILL

1435FG01.DWG

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

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

Waste Disposal

Hazardous Waste

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

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Solid Waste

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

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

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

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

Disposal Costs

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

New Regulations

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

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

SCOEPA00037180

References

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

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

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

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

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

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

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

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

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

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

ATTACHMENT 6

File: left side All-Portable

AIR CONTAMINANT DISCHARGE PERMIT

Department of Environmental Quality
Northwest Region
2020 S.W. Fourth Avenue, Suite 400
Portland, OR 97201-4987
Telephone: (503) 229-5263

Issued in accordance with the provisions of ORS 468A.040 and based on the land use compatibility findings included in the permit record.

ISSUED TO:

PEMCO, Inc.
P.O. Box 11569
Portland, OR 97211

PLANT SITE LOCATION:

Portable - Various Locations

INFORMATION RELIED UPON:

Application No.: 14466
Received: 05/12/94

THIS PERMIT PREVIOUSLY ISSUED TO:

NA

LAND USE COMPATIBILITY STATEMENT:

Not Required For Portable Source

ISSUED BY THE DEPARTMENT OF ENVIRONMENTAL QUALITY

Tom Bispham

Tom Bispham, Northwest Region Administrator

SEP 13 1994

Dated

Source(s) Permitted to Discharge Air Contaminants:

TYPE OF FACILITY (FROM TABLE 4, OAR 340-28-1750)	STANDARD INDUSTRY CODE
75b. Soil Remediation Plants, portable	SIC: 1799

PERMITTED ACTIVITIES

The permittee is herewith allowed to discharge exhaust gases containing air contaminants only in accordance with the permit application and the limitations contained in this permit. Until such time as this permit expires or is modified or revoked, the permittee is herewith allowed to discharge exhaust gases from those processes and activities directly related or associated thereto in accordance with the requirements, limitations, and conditions of this permit from the air contaminant source(s) listed above.

Compliance with the specific requirements, limitations and conditions contained herein does not relieve the permittee from complying with all other laws, rules and standards administered by the Department, nor does it allow significant levels of emissions of air contaminants not limited in this permit or contained in the permit application.

PERFORMANCE STANDARDS AND EMISSION LIMITS

1. The permittee shall at all times maintain and operate all air contaminant generating processes and all air contaminant control equipment at full efficiency and effectiveness, such that the emissions of air contaminants are kept at the lowest practicable levels.

2. The permittee shall operate the Mobile Soil Remediation Unit's (MSRU) Thermal Oxidizer at a minimum of 1500°F to achieve a volatile organic compound (VOC) destruction removal efficiency (DRE) of 98%, based upon manufacturer's claims. The DRE shall be verified as required by condition 18 of this ACDP. An alternate operating temperature for the Thermal Oxidizer may be approved by the Department based upon the source test results.

3. Particulate emissions from any single air contaminant source shall not exceed:

   a. 0.10 grains per standard cubic foot, corrected to 12% CO_2 or 50% excess air, for sources installed, constructed, or modified after June 1, 1970; and
   b. An opacity equal to or greater than twenty percent (20%) for a period aggregating more than three (3) minutes in any one (1) hour, excluding uncombined water vapor, when the source is located outside Clackamas, Columbia, Multnomah, and Washington counties; or
   c. An opacity equal to or greater than twenty percent (20%) for a period aggregating more than thirty (30) seconds in any one (1) hour, excluding uncombined water vapor, when the source is located inside Clackamas, Columbia, Multnomah, or Washington counties.

4. The permittee shall not use any distillate fuel oil containing more than:

   a. 0.3 percent sulfur by weight for ASTM Grade 1.
   b. 0.5 percent sulfur by weight for ASTM Grade 2.

5. Particulate matter which is larger than 250 microns and which may be deposited upon the real property of another person shall not be emitted.

6. The permittee shall not operate the MSRU more than 4000 hours per year in either the Medford-Ashland AQMA or the Klamath Falls Urban Growth Area without:

   a. demonstrating that operation in excess of 4000 hours will not result in the emission of particulate matter or PM10, at or above the Significant Emission Rate (SER) for those pollutants (SER = five tons/year in these nonattainment areas);

OR

b. satisfying the requirements of New Source Review for sources in nonattainment areas (OAR 340-28-1930).

7. The permittee shall not allow the emission of odorous matter or other fugitive emissions so as to create nuisance conditions off the permittee's property. Nuisance conditions will be verified by Department personnel. The creation of nuisance conditions may, in addition to any other action the Department may take, result in a permit modification to require a compliance schedule to control the nuisance conditions.

8. The permittee shall take reasonable precautions to minimize the emissions of fugitive dust. Such reasonable precautions shall include, but not be limited to the following:

   a. Treating vehicular traffic areas of the plant site under the control of the permittee.
   b. Storing collected material from air pollution control equipment in a covered container or other method equally effective in preventing the material from becoming airborne during storage and transfer.
   c. Use of water sprays to eliminate fugitive emissions from storage and material transfer of petroleum contaminated soils and remediated soils.

PLANT SITE EMISSION LIMITS

9. Emissions of Particulate Matter on a plant site basis shall not exceed 4.9 tons per year or 2.7 pounds per hour within the Medford-Ashland AQMA or the Klamath Falls Urban Growth Area. Emissions of Particulate Matter on a plant site basis shall not exceed 5.1 tons per year or 2.7 pounds per hour in other parts of the state.

10. Emissions of PM_{10} (Particulate Matter less than ten microns in diameter) on a plant site basis shall not exceed 4.9 tons per year or 2.7 pounds per hour within the Medford-Ashland AQMA or the Klamath Falls Urban Growth Area. Emissions of PM10 on a plant site basis shall not exceed 5.1 tons per year or 2.7 pounds per hour in other parts of the state.

11. Emissions of Sulfur Dioxide on a plant site basis shall not exceed 34.2 tons per year or 16.3 pounds per hour.

12. Emissions of Nitrogen Oxides on a plant site basis shall not exceed 22.3 tons per year or 11.0 pounds per hour.

13. Emissions of Carbon Monoxide on a plant site basis shall not exceed 3.3 tons per year or 1.7 pounds per hour.

14. Emissions of Volatile Organic Compounds (VOC) on a plant site basis shall not exceed 17.0 tons per year or 20.1 pounds per hour.

    The PSEL is based on an average of 20 tons of contaminated soil processed per hour with an average maximum petroleum hydrocarbon contamination level of

10,000 ppm and an annual operating period of 4160 hours. See additional limits in condition 6 applicable to the Medford-Ashland AQMA and the Klamath Falls Urban Growth Area. Any increases above these levels must receive the prior approval of the Department.

AIR POLLUTION EPISODES

15. The permittee may elect to file a Source Emission Reduction Plan (SERP) with the Department in accordance with OAR 340-27-015, specifying the procedures the permittee will follow in the event an Air Pollution Alert, Warning, or Emergency Episode is declared by the Department for an Air Quality Maintenance Area and/or nonattainment area in which the source is located. The Source Emission Reduction Plan shall be available on the source premises for inspection by any authorized personnel.

16. In the event an Air Pollution Alert, Warning, or Emergency Episode is declared by the Department for an Air Quality Maintenance Area and/or nonattainment area in which the source is located, the permittee shall take actions appropriate to the declared Air Pollution Episode as listed in the Source Emission Reduction Plan on file with the Department, or with Oregon Administrative Rules 340, Division 27 "Air Pollution Emergencies" if no Source Emission Reduction Plan has been voluntarily filed with the Department.

    Air Pollution Episodes will be declared by the Department and information will be made available through the radio and television media.

OPERATIONAL AND MAINTENANCE PLAN

17. When the source is located within the Medford/Ashland AQMA the permittee shall at all times maintain appropriate Operational and Maintenance Plans, pursuant to OAR 340-30-044, and shall operate in conformance with those plans.

SOURCE TESTING REQUIREMENTS

18. By no later than February 15, 1995, unless an extension is approved by the Department, the permittee shall demonstrate that the MSRU is capable of operating at its maximum operating capacity in continuous compliance with Conditions 2., 3., and 9. through 14., by conducting a source test for Particulate, VOC, CO, and NO_x emissions. The source test shall be performed using petroleum hydrocarbon contaminated soil. The source test shall include the determination of the Destruction Removal Efficiency (DRE) of the MSRU at maximum operating rates.

    All tests shall be conducted in accordance with approved testing procedures on file at the Department. A pretest plan shall be submitted for approval, to the Source Test Coordinator at the Department's Northwest Regional Office (ODEQ Northwest Region, 2020 S.W. 4th Avenue, Suite 400, Portland, OR 97201), at least 15 days prior to testing. All test data and results shall be submitted to the Source Test Coordinator for review within 30 days after testing unless an alternate submission date is approved by the Department.

Only regular operating staff may adjust the combustion system and emission control parameters during the source performance tests and within two (2) hours prior to the tests. Any operating adjustments made during the source performance tests, which are a result of consultation during the tests with source testing personnel, equipment vendors or consultants, may render the source performance test invalid.

During the source test the following parameters shall be monitored and recorded:

a. opacity readings on the exhaust stack following the procedures of EPA Method 9
b. process operating parameters during the source test, including but not limited to:
   i. feed rate of petroleum contaminated soil into the unit
   ii. the hydrocarbon and metals contamination concentration of the pretreated soil, expressed in ppm
   iii. fuel usage, expressed in gal/hr
c. Operating parameters of emission control equipment, including but not limited to:
   i. the combustion temperature within the thermal oxidizer
   ii. the pressure drop across the baghouse
d. The level of hydrocarbon and metals contamination in the processed soil following thermal treatment shall also be determined through EPA 8240 - TCLP and TPH/HCID analytical methods.

SPECIAL CONDITIONS

19. The permittee shall notify the Department in writing of the date the new MSRU is started up. The notification shall be submitted no later than seven (7) days after startup.

20. The permittee shall be exempt from conditions 21, 26, and 27 when treating soil from the State of Oregon which is being processed in accordance with Oregon Administrative Rule 340-122-205 through 340-122-260 (Cleanup Rules for Leaking Petroleum Underground Storage Tank Systems).

21. The permittee is authorized to accept soil that contains only the following non-hazardous materials:

    a. Petroleum as defined in 40 CFR 280.12 (published July 1, 1991) "regulated substance, paragraph (b)"; and

    b. Other hydrocarbons and compounds of carbon, hydrogen, and oxygen that have a boiling point less than 700 F.

22. The permittee is prohibited from processing liquids and sludges or other materials which are not soil as defined by OAR 340-122-310 (5). Under no circumstances shall the permittee accept or process materials which have been blended so as to meet the soil definition criteria.

23. The permittee shall require an endorsed document from the generator as sufficient evidence for a determination of the nature and the condition of the

soil and its origin to assure that blending, for the purposes of either dilution or influencing the hazardous/non-hazardous determination, has not occurred.

- The permittee is prohibited from processing soils which contain materials that define the soils as hazardous in their State of origin.

- 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".

- The permittee is prohibited from accepting hazardous waste as defined in 40 CFR 261 (published July 1, 1991). A hazardous waste determination in accordance with OAR 340-102-011 shall be made by the permittee or the generator.

  Soils shall be subject to testing using EPA Method 8240, and the TCLP extract procedure (Method 1311). The extract shall be analyzed using the EPA methods specified in 40 CFR 261 Appendix III (published July 1, 1991). These soils shall be further subject to EPA 8080 testing to determine the potential presence of chlorinated/halogenated organic compounds including PCB's.

  The hazardous waste determination, including the prescribed test procedures, shall be performed by an independent laboratory.

7. In situations where spill related soils involve clean (not used in any process or mixed with any additional materials) diesel or motor oils and where the spill incident has become a reportable event in the State of Oregon, OAR 340-102-011(B) shall apply to the hazardous waste determination required under special condition 26.

   The reportable spill incident documents shall be included in the shipping manifest and shall be reviewed and maintained by the permittee. Copies of manifests and spill documents shall be reported as outlined in the monitoring and reporting requirements of this permit.

28. The permittee is prohibited from processing soils which contain chlorinated or halogenated contaminants such as solvent contaminated soils or PCB contaminated soils. For the purpose of definition, soils with a total halogen content of 1 ppm or less shall be recognized as categorically insignificant and may be processed by the permittee.

29. The permittee shall maintain isolation of all soils treated in accordance with condition 26. Isolation shall be maintained throughout the treatment process until the final transfer of the remediated soils to an offsite location.

30. The permittee shall maintain records of all soil testing results in a form which is suitable for inspection by Department personnel. Analytical results and the non-hazardous determination as required by condition 26. shall be approved by the permittee's authorized representative and certified by his/her signature on an appropriate letter of approval. The approval letter or document shall certify that adequate testing and chain of custody procedures

have been maintained and shall also include the endorsement of the individual responsible for QA as required in condition 32.

31. Soils which are non-RCRA Subtitle I in origin require shipping documents which will indicate their source location, ownership of the location, the soil hauler, volume of material, transfer locations, transfer dates, and final disposition location. Chain of Custody procedures and transfer authorizations shall be followed at all times.

32. The permittee is required to maintain an adequate Quality Assurance program to efficiently document the processing and disposition of petroleum contaminated soils. This QA plan should be submitted in final form to the Department no later than 90 days following the issuance of this permit. The QA plan should include the following provisions at a minimum:

    a. A physical examination of each arriving load prior to acceptance. The examination shall be performed and documented by a certified soil matrix cleanup supervisor in accordance with OAR 340-162-025(b).

    b. A Nonhazardous Waste Certification for each lot of contaminated soil received for processing. The certification shall be endorsed by the generator and verify the soil to be treated is classified as nonhazardous.

    c. Provision for extracting and proper storage of a composite sample of both pre-processed soil and post-processed soils. This would include adequate sample identification and chain of custody procedures.

    d. Random testing of post-processed non-RCRA Subtitle I soils.

    e. Correlation of all load documentation, test data, shipping documents, and final process authorization for each project.

    f. Determination of the final disposition of processed soils.

33. The permittee may remediate soils which do not comply with conditions 21, 26, and 27 on a case by case basis after receiving written approval from the Department in the form of an authorization letter, approved by the Regional Administrator of the region where the soils are to be processed.

34. The permittee shall maintain a log of all nuisance complaints received by the permittee during the operation of the facility. Documentation shall include date of contact, time of observed nuisance condition, description of nuisance condition, location of receptor, and status of plant operation during the observed period.

    Each reported nuisance condition shall be investigated by a plant representative immediately following the receipt of the complaint. A plant representative shall provide a response to the complainant within 24 hours.

35. The permittee shall obtain approval from the Department at least ten (10) days prior to operating the MSRU at a new location.

36. The permittee shall minimize fugitive odorous emissions by complying with the following conditions:

a. The MSRU and premises shall be kept clean and free of contaminated soils during hours the facility is not in operation. Exposed storage of untreated feed materials shall not be allowed.

b. All solid wastes shall be stored in a covered manner until disposed of offsite.

MONITORING REQUIREMENTS

37. The permittee shall effectively inspect and monitor the operation and maintenance of the plant and its associated air contaminant control facilities and shall implement the procedures necessary to monitor and record the following parameters. A collective record of all required monitoring data for the facility shall be maintained at the corporate office for a period of at least two years and shall be made available for inspection by the authorized representatives of the Department upon request. Continuous monitoring, where required, shall be conducted in accordance with a Department approved plan which must be submitted within sixty (60) days of permit issuance.

a. All operating and production parameters to be reported to the Department annually as required in Condition 38
b. Combustion temperature of the MSRU Thermal Oxidizer, recorded utilizing a Continuous Monitoring System
c. The quantity of soil treated on a daily basis.
d. Excess emissions records as defined in OAR 340-20-350 through 340-20-375 (recorded on occurrence)
e. A description of any maintenance to the air contaminant control system (recorded on occurrence)
f. The quantity and types of fuel used on a monthly basis
g. Number of hours of operation within the Medford-Ashland AQMA.
h. Number of hours of operation within the Klamath Falls Urban Growth Area

REPORTING REQUIREMENTS

38. The permittee shall submit to the Department by January 15 of each year this permit is in effect three (3) copies of the following information for the preceding calendar year:

a. Operating parameters:

i. Total quantity of soil remediated for the calendar year
ii. Total plant operating time (hours/year) at each location
iii. Greatest daily VOC emission for each calendar month (calculated using the greatest daily quantity of soil remediated for each month, an assumed 10,000 ppm petroleum hydrocarbon contamination concentration, and the DRE determined by the source test, combined with the calculated emission for the generator using an emission factor of 0.13 lbs/hr).
iv. Total VOC emissions for the calendar year (calculated using the total quantity of soil remediated for the calendar year, an

assumed 10,000 ppm petroleum hydrocarbon contamination concentration, and the DRE determined by the source test, combined with the calculated emission for the generator using an emission factor of 0.13 lbs/hr)

v. Amount of non-RCRA Subtitle I soil processed at each location and the corresponding soil characterization results from approved test methods as specified in the special conditions .

vi. Site(s) from which non-RCRA Subtitle I soil was obtained, including ownership, address, and Federal Employer Identification Number.

vii. The quantity and types of fuel used

viii. Number of hours operating within the Medford-Ashland AQMA.

ix. Number of hours operating within the Klamath Falls Urban Growth Area

b. A log of all planned and unplanned excess emissions in accordance with OAR 340-28-1440.

c. A summary of all nuisance complaints received during the year; by specifying the number of complaints on each date that complaints were received.

d. Explain any permanent changes made in the plant process or production which would effect air contaminant emissions, and indicate when changes were made.

e. List all major maintenance performed on air pollution equipment

f. The report shall be sent to the ODEQ Northwest Region, 2020 S.W. 4th Avenue, Suite 400, Portland, OR 97201, unless informed otherwise by the Department. The permit number must be prominently displayed on the report.

FEE SCHEDULE

39. The Annual Compliance Determination Fee for this permit is due on July 1 of each year this permit is in effect. An invoice indicating the amount, as determined by Department regulations, will be mailed prior to the above date. The fee shall be submitted to the Business Office of the Department in Portland (unless otherwise notified).

GENERAL CONDITIONS AND DISCLAIMERS

G1. The permittee shall allow Department of Environmental Quality representatives access to the plant site and pertinent records at all reasonable times for the purposes of making inspections, surveys, collecting samples, obtaining data, reviewing and copying air contaminant emission discharge records and otherwise conducting all necessary functions related to this permit in accordance with ORS 468.095.

G2. The permittee shall have available at the facility at all times a copy of the Air Contaminant Discharge Permit.

G3. The permittee is prohibited from conducting open burning.

G4. The permittee shall at all times conduct dust suppression measures to meet the requirements set forth in "Fugitive Emissions" and "Nuisance Conditions" in OAR 340-21-050 through 340-21-060. The requirements of OAR 340-30-440 shall be observed when operating in Clackamas, Columbia, Multnomah, and Washington counties. The requirements of OAR 340-30-043 shall be observed when operating in the Medford-Ashland AQMA.

G5. The permittee shall immediately (i.e. as soon as possible but in no case more than one hour after the beginning of the excess emission period) notify the Department by telephone or in person of any excess emissions which are of a nature that could endanger public health, in accordance with OAR 340-28-1430. Follow-up reporting shall be made in accordance with Department direction and OAR 340-28-1430(3) and 340-28-1440.

Notification shall be made to the appropriate regional or branch office. Current Departmental telephone numbers are:

Portland	229-5554	Medford	776-6010
Salem	378-8240	Coos Bay	269-2721
Bend	388-6146	Roseburg	440-3338
Pendleton	276-4063		

In the event of any excess emissions which are of a nature that could endanger public health and occur during nonbusiness hours, weekends, or holidays, the permittee shall immediately notify the Department by calling the Oregon Accident Response System (OARS). The current number is 1-800-452-0311.

G6. The permittee shall notify the Department in writing using a Departmental "Notice of Construction" form, or "Permit Application Form", and obtain approval in accordance with OAR 340-28-800 through 340-28-820 before:

a. Constructing or installing any new source of air contaminant emissions, including air pollution control equipment, or

b. Modifying or altering an existing source that may significantly affect the emission of air contaminants, or

c. Making any physical change which increases emissions, or

d. Changing the method of operation, the process, or the fuel use, or increasing the normal hours of operation to levels above those contained in the permit application and reflected in this permit and which result in increased emissions.

G7. Application for a modification of this permit must be submitted not less than 60 days prior to the source modification. A Filing Fee and an Application Processing Fee must be submitted with an application for the permit modification.

G8. The permittee shall notify the Department in writing using a Departmental "Permit Application Form" within 60 days after the following:

a. legal change of the registered name of the company with the Corporations Division of the State of Oregon, or

b. sale or exchange of the activity or facility.

Applicable Permit Fees must be submitted with an application for the name change.

G9. Application for renewal of this permit must be submitted not less than 60 days prior to the permit expiration date. A Filing Fee, an Application Processing Fee and an Annual Compliance Determination Fee must be submitted with the application for the permit renewal.

G10. The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state, or local laws or regulations.

G11. This permit is subject to revocation for cause as provided in OAR 340-14-045.

ALL INQUIRIES SHOULD BE DIRECTED TO:

Department of Environmental Quality
Northwest Region
2020 S.W. 4th Avenue, Suite 400
Portland, OR 97201
Telephone: (503) 229-5554

Doc. No. 370492.PMT

Department of Environmental Quality
Air Quality Division

AIR CONTAMINANT DISCHARGE PERMIT APPLICATION REVIEW REPORT

PEMCO, Inc.
P.O. Box 11569
Portland, OR 97211

PSEL CRED	SOURCE TEST	CMS	AMB MON	COMPL SCHED	SPEC COND	REPORT A	Q	M	EXCESS R	N	NSPS	NSR	PSD	NESHAPS	SIZE A1	A2	PUBL NOTC
	X	X			X	X				X						X	X

GENERAL BACKGROUND INFORMATION

1. PEMCO operates a Mobile Soil Remediation Unit (MSRU) which may be located at various sites throughout the state. The MSRU was built in 1993. The MSRU remediates petroleum contaminated soils utilizing a thermal treatment process. The process includes volatilizing hydrocarbons from the contaminated soils in a rotary dryer, whereby the volatilized hydrocarbons become incorporated into the system flue gas. The flue gas containing the contaminants, both gaseous and particulate, first passes through a thermal oxidizer for hydrocarbon destruction. The gases exit the thermal oxidizer, passing through an air to air cooler prior to being ducted to a baghouse for capture of the particulate emissions. The treated soil passes through a discharge system which cools and rehydrates the soil prior to discharge. Particulate captured by the baghouse is transferred to the discharge system where it is mixed into the remediated soil. Following treatment, the remediated soils may be returned to their original site, used as landfill caps, or used as road subgrade material.

   Petroleum contaminated soils are controlled through the DEQ Underground Storage Tank (UST) program. Removal and upgrade of leaking underground storage tanks under the RCRA Subtitle I program produces a substantial amount of petroleum contaminated soil. This soil is predominantly contaminated with gasoline and diesel fuels and is not suitable for disposal at unlined landfills due to the potential groundwater contamination. This thermal treatment process is a recognized method for reducing the diesel and gasoline contamination to acceptable levels, thus producing fill material for specific applications.

   In addition to Underground Storage Tank (UST) removal operations, the Department recognizes that this process may be an acceptable form of remediation for soils which are contaminated by non-hazardous materials outside of the UST program. In those cases the permit requires sufficient testing to identify the soil as non-hazardous prior to treatment. This permit does not allow the permittee to process soils contaminated with hazardous waste or soils that are characterized as

hazardous waste. Examples of applications outside the UST program are soils from above ground tank spills, soils contaminated from non-hazardous spills, soils from plant closures which have been identified as non-hazardous, etc. The permittee must follow a defined protocol for processing these soils.

The source is portable may be located in both attainment and nonattainment areas for Carbon Monoxide, Particulate (PM10), and Ozone (VOCs and NOx are ozone precursors). The source is an insignificant source of these pollutants.

A Land Use Compatibility Statement is not required for portable sources.

No other permits have been issued or are required by the Department of Environmental Quality for this source.

The compliance status of this facility will be established by the Department after permitted operation begins.

Air contaminant sources at this facility consist of the following:

a. One rotary dryer (serial no. 79-201) with thermal oxidizer and baghouse (combined serial no. 79-326), manufactured by Tarmac, Incorporated.
b. One Caterpillar Generator model TM4606-03 3412 with no emission controls, using approximately 8.5 gallons of diesel fuel per ton of soil processed.
c. Fugitives from material handling, transfer, and processing operations controlled by water sprays.

The proposed Air Contaminant Discharge Permit (ACDP) is a new permit for a new source.

ANT SITE EMISSION LIMIT (PSEL) INFORMATION

IGINAL PLANT SITE EMISSION LIMIT

The Baseline Emission Rate for this source is zero since it was constructed after 1978.

ANT SITE EMISSION LIMIT

. The normal operating schedule for the MSRU is 16 hrs/day x 5 days/wk x 52 wks/yr = 4160 hrs/yr.

0. The estimated maximum annual plant production is 83,200 tons of soil per year (20 TPH x 44160 hrs).

1. The maximum hourly plant production is 25 tons.

2. The normal hourly plant production is 20 tons.

3. The Plant Site Emission Limit for normal operation is greater than the baseline emission rate and is shown below.

Source	Particulate tons/yr (lbs/hr)	PM_{10} tons/yr (lbs/hr)	SO_x tons/yr (lbs/hr)	NO_x tons/yr (lbs/hr)	CO tons/yr (lbs/hr)	VOC tons/yr (lbs/hr)
Thermal Oxidizer	4.5 (2.4)	4.5 (2.4)	33.1 (15.8)	6.5 (3.4)	3.1 (1.6)	16.7 (20.0)
Generator	0.6 (0.3)	0.6 (0.3)	1.1 (0.5)	15.8 (7.6)	0.2 (0.1)	0.3 (0.1)
Fugitives	Not quantified			—		
Totals	5.1 (2.7)	5.1 (2.7)	34.2 (16.3)	22.3 (11.0)	3.3 (1.7)	17.0 (20.1))

Note: Annual and hourly emissions for SO_x were adjusted upward by a factor of 30% to account for the possibility of additional sulfur contained in petroleum contaminated soil.

The normal or average hydrocarbon concentration of petroleum contaminated soils was estimated to be approximately 5,000 ppm. The annual PSEL was determined based upon an estimated maximum average petroleum hydrocarbon contamination level of 10,000 ppm. The hourly PSEL was based upon an operational throughput of 25 TPH and a maximum petroleum hydrocarbon contamination level of 20,000 ppm.

Previous ACDPs issued by the Department for thermal desorption soil remediation units have included a PSEL for lead emissions. These past permits included source testing conditions which required that the soil used during the source test be gasoline contaminated with the resulting stack gas emissions being tested for lead. The corresponding test results demonstrated an average lead emission of 0.004 lbs/hour. This emission average, demonstrated by source testing, correlates well with estimated lead emissions which the Department had determined previously by calculation. The significant emission rate for lead is 1200 lbs/year. At 4160 hours of operation this MSRU would emit 17 lbs lead/year if all lots of soil remediated at the facility were gasoline contaminated. It has been conservatively estimated that less than 50% of the soil remediated will be contaminated with leaded gasoline. Consequently the Department has determined that although lead is emitted by this MSRU it is not emitted at levels which create significant concern. A PSEL for lead emissions as well as lead testing requirements are not included in this permit.

NIFICANT EMISSION RATE

The Plant Site Emission Limit increase over baseline is less than the Significant Emission Rate (SER) as defined in OAR 340-28-110(82) for all pollutants and is shown below. No further air quality analysis is required for these pollutants.

Pollutant	Baseline Emissions (tons/yr)	Current PSEL (tons/yr)	Increase (tons/yr)	SER (tons/yr)
Particulate	0	5.1	5.1	25
PM10	0	5.1	5.1	15
Sulfur Dioxide	0	34.2	34.2	40
Carbon Monoxide	0	3.3	3.3	100
Volatile Organic Compounds	0	17.0	17.0	40
NO_x	0	22.3	22.3	40

The following SERs for particulate matter and PM10 shall be applicable for the nonattainment portions of the Medford-Ashland Air quality Maintenance Area and the Klamath Falls Urban Growth Area:

Pollutant	Baseline Emissions (tons/yr)	Current PSEL (tons/yr)	Increase (tons/yr)	SER (tons/yr)
Particulate	0	4.9	4.9	5
PM10	0	4.9	4.9	5

PICALLY ACHIEVABLE CONTROL TECHNOLOGY

5. Specific emission standards have not been adopted for mobile soil remediation units. An analysis for compliance with the Highest and Best Practicable Treatment and Control (OAR 340-28-600 through 340-28-640) was performed which included a Typically Achievable Control Technology (TACT) determination for thermal desorption MSRUs. The United States Environmental Protection Agency publication EPA-600/R-92-124, *AIR EMISSIONS FROM THE TREATMENT OF SOILS CONTAMINATED WITH PETROLEUM FUELS AND OTHER SUBSTANCES* was consulted for the TACT determination. Rotary dryer type thermal desorption treatment systems were stated to have a destruction/removal efficiency (DRE) of 95.0 - 99.9%. Based upon this information, TACT for this type of treatment system was determined to be ≥ 95% DRE. Condition 2. of the ACDP recognizes a 98% DRE for this MSRU and is based upon the MSRU manufacturer's claim. Therefore, at 98% DRE, the permittee's MSRU was determined to meet TACT.

IR TOXICS

6. A review of toxic air pollutant emissions indicates that emissions of the compounds listed below would be less than the Department's respective

Significant Emission Rates. The following analysis is based upon a worst case scenario whereby it was assumed that all petroleum contaminated soil treated by the facility was contaminated with gasoline at 20,000 ppm. The analysis assumed that the BTEX compounds, as components of gasoline, were present at the maximum average percent as stated in Appendix I of the California Leaking Underground Storage Tank (LUST) manual *CHEMICAL COMPOSITION OF GASOLINE*.

Compound	Estimated Emission Rate	Significant Emission Rate
Benzene	1.16 tons/yr *	1.55 tons/yr
Ethyl Benzene	3.66 lbs/ 8 hr *	685 lbs/ 8 hr
Toluene	27.92 lbs/ 8 hr *	795 lbs/ 8 hr
O-xylenes	3.66 lbs/ 8 hr *	795 lbs/ 8 hr

* based on 40,000 lb contaminated soil/hr, two 8-hour shifts/day, 5 day/wk, 52 wk/yr

DDITIONAL REQUIREMENTS

7. Source testing requirements contained in the permit include a provision for testing by February 15, 1995, unless an extension is granted by the Department.

   Source testing for Sulfur Dioxide was not required because most of these emissions are attributed to the sulfur in the fuel oil used by the MSRU and can be calculated.

   This ACDP does not specify a minimum petroleum hydrocarbon contamination concentration requirement for soil used in the source test required in condition 16. of the permit. Soil contamination levels often vary substantially within the same treatment project. The permittee has estimated that normal petroleum hydrocarbon contamination concentrations for pretreated soils will have an average of approximately 5,000 ppm. The Department would prefer to get test results from the thermal treatment of soil which has an average contamination concentration of between 5,000 and 10,000 ppm, however, the Department will consider different levels of contamination if they can be justified by the permittee.

18. Continuous monitoring requirements contained in the permit include monitoring the operating temperature of the thermal oxidizer.

19. Special conditions contained in the permit include provisions for prohibiting the treatment of hazardous wastes, and a prohibition against blending of soils in order to meet acceptance criteria of the permit.

20. The source is required to submit reports to the Department annually.

21. The source is not subject to immediate (within one hour) reporting of excess emissions, except when the emissions may endanger public health.

. At the time of the ACDP application review this source was not subject to federal regulations for New Source Performance Standards (NSPS).

. At the time of the ACDP application review this source was not subject to federal regulations for New Source Review.

. At the time of the ACDP application review this source was not subject to federal regulations for Prevention of Significant Deterioration (PSD).

5. At the time of the ACDP application review this source was not subject to federal regulations for National Emissions Standards for Hazardous Air Pollutants (NESHAPS).

JBLIC NOTICE

5. The proposed permit was placed on public notice from August 6, 1994 to September 6 1994. No comments were received.

3G:EGW
eptember 9, 1994

PLANT SITE EMISSIONS DETAIL SHEET
Projected Emissions

Emission Point	Operating Parameters	Emission Factor Rate	Emission Factor Reference	Emissions lbs/hr	Emissions tons/yr
Thermal Oxidizer					
Particulate	20 TPH Ave./4160 hrs/yr 25 TPH Max.	2.17 lbs./hr	Mfr. Spec.	2.4	4.5
PM10	20 TPH Ave./4160 hrs/yr 25 TPH Max.	2.17 lbs./hr	Mfr. Spec.	2.4	4.5
SO_2*	172 gal diesel/hr	12.2 lb/hr	DEQ Factor (71 lbs/1000 gal)	15.8	33.1
NO_x	4,160 hrs/yr	3.11 lb/hr	Mfr. Spec.	3.4	6.5
CO	4,160 hrs/yr	1.50 lb/hr	Mfr. Spec.	1.6	3.1
VOC**	10,000 ppm max. average concentration in soil 20 TPH average	8 lbs/hr @ 98% DRE	EPA-600/R-92-124	20.0	16.7

Annual emission factors are based upon an average operating rate of 20 tons per hour, operating 16 hours per day, 5 days per week, and 52 weeks per year for a total of 4160 hours. The MSRU has a production capacity of 25 tons per hour.

* Annual and hourly emission rates for SO_2 were adjusted upward by a factor of 30% to account for additional sulfur contained in petroleum contaminated soil.

** Hourly emissions for VOCs were based on 25 tons of contaminated soil processed per hour with an

PLANT SITE EMISSIONS DETAIL SHEET
Projected Emissions

Emission Point	Operating Parameters	Emission Factor Rate	Emission Factor Reference	Emissions lbs/hr	Emissions tons/yr
average maximum petroleum hydrocarbon contamination level of 20,000 ppm.					
...nerator					
Particulate	4,160 hrs/yr	0.27 lb/hr	Mfr. Spec.	0.3	0.6
PM10	4,160 hrs/yr	0.27 lb/hr	Mfr. Spec.	0.3	0.6
SO_2	4,160 hrs/yr	0.54 lb/hr	Mfr. Spec.	0.5	1.1
NO_x	4,160 hrs/yr	7.6 lb/hr	Mfr. Spec.	7.6	15.8
CO	4,160 hrs/yr	0.1 lb/hr	Mfr. Spec.	0.1	0.2
VOC	4,160 hrs/yr	0.13 lb/hr	Mfr. Spec.	0.1	0.3

ATTACHMENT 7

Oregon

DEPARTMENT OF ENVIRONMENTAL QUALITY

NORTHWEST REGION

March 14, 1995

MS ROBIN HILLIER
PEMCO
PO BOX 11569
PORTLAND OR 97211

Re: AQ-Portable Unit
PEMCO
ACDP 37-0426

Dear Ms. Hillier:

The Oregon Department of Environmental Quality (Department) has received your letter dated February 28, 1995, requesting permission to receive and process approximately 1400 tons of petroleum (diesel/gasoline) contaminated soils from the Wacker Siltronic Corporation, located at 7200 N.W. Front Avenue, Portland, Oregon. A portion of this contaminated soil was determined to be classified as a hazardous waste due to the presence of benzene. This classification was principally based upon the method by which the petroleum contamination entered the soil rather than its hazardous nature.

Upon reviewing this request, the Hazardous Waste Section at the Department's Northwest Region has determined that the proposed remediation of this soil by thermal desorption is a suitable means of treatment in this instance and is allowable under the Hazardous Waste rules. Pursuant to condition 35. of Air Contaminant Discharge Permit No. 37-0426 (ACDP), the Department approves your request for an exemption to conditions 23, 24, and 26 of the ACDP, thereby allowing PEMCO to receive and process this soil.

If you have any questions or require assistance in this matter, please contact Mr. Greg Grunow at 229-5571.

Sincerely,

Tom Bispham
Administrator
Northwest Region

cc: Air Quality Division
Hazardous Waste Section, Northwest Region

2020 SW Fourth Avenue
Suite 400
Portland, OR 97201-4987
(503) 229-5263 Voice/TDD

DEQ-1

SCOEPA00037203

PEMCO

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

February 28, 1995

Ms. Wendy Waichler, Manager
Air Quality Division, Northwest Division
2020 SW Fourth Avenue, Suite 400
Portland, OR 97201

Re: Air Contaminant Discharge Permit No. 37-0426

Dear Ms. Waichler:

PEMCO requests the Department of Environmental Quality to grant an exception to conditions 23, 24, and 26 of the special conditions in PEMCO's ACDP No. 37-0426. The purpose of this request is to allow the use of PEMCO's Mobile Soil Remediation Unit-A to treat approximately 1400 tons of petroleum contaminated soil, some of which has been determined to be a hazardous waste due to the presence of benzene, a component of certain petroleum products.

This soil shall be treated onsite, at Wacker Siltronic Corp., 7200 N.W. Front Avenue in Portland. The duration of the thermal treatment is projected to be 7 - 10 days.

Thank you for your time and attention to this matter. Please contact me or Tom McCue of Wacker Siltronic Corp, 241-7532, if you have any questions.

Sincerely,
PEMCO

Robin Hillier, Coordinator
Soil Remediation Division

cc: Tom McCue, Wacker Siltronic Corp.

PACIFIC
ENVIRONMENTAL
LABORATORY INC.

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

March 25, 1991

RECEIVED
ENGINEERING
MAR 27 1991
John L. Pittman
Wacker Siltronic

CH2M Hill - Portland
2020 S.W. Fourth Avenue
Second Floor
Portland, OR 97201

Attn: Jill Bensen

Re: JOB #PDX31434.AO
PROJECT - Wacker Fab 2 Preload
PEL #91-0858

Enclosed is the lab report for your samples which were received on March 20, 1991.

I. Sample Description

One Soil Sample
One Water Sample

The samples were received under a chain of custody.

The samples were received in containers consistent with EPA protocol.

II. Quality Control

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

III. Analytical Results

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

Compounds not detected are listed under results as ND.

Sincerely,

Howard Holmes
Lab Manager

Howard Boorse
QA/QC Manager

cc: John Pittman, Wacker Siltronic Corp., Portland, OR

PACIFIC ENVIRONMENTAL LABORATORY INC.

PEL REPORT NUMBER: 91-0858
CLIENT: CH2M Hill - Portland
JOB REFERENCE: PDX31434.AO
PROJECT: Wacker Fab 2 Preload
DATE: March 25, 1991
ITEMS: One Soil Sample
One Water Sample

METHOD: 8015M
Soil results in mg/kg (ppm)
Water results in mg/L (ppm)
Carbon Range: C_6-C_{40}

Sample I.D.	Hydro-carbon	Carbon Range	Comments
OPL 1	3.6	C_{10}-C_{20}	d.
Lab Blank	ND	---	
Detection Limit	2.5	C_6-C_{24}	
Detection Limit	15	C_{24}-C_{40}	
OPL 2	ND	---	
Detection Limit	5	C_6-C_{24}	
Detection Limit	25	C_{24}-C_{40}	

d. In the range of #2 diesel

METHOD: BTEX per EPA 8020
Soil results in ug/kg (ppb)
Water results in ug/L (ppb)

Sample I.D.	Benzene	Toluene	Ethyl Benzene	Xylene	Detection Limit
OPL 1	1.4	1.0	3.3	4.8	1.0
OPL 2	ND	ND	ND	ND	2.0
Lab Blank	ND	ND	ND	ND	1.0

PACIFIC ENVIRONMENTAL LABORATORY INC.

PEL REPORT NUMBER: 91-0858
CLIENT: CH2M Hill - Portland
JOB REFERENCE: PDX31434.AO
PROJECT: Wacker Fab 2 Preload
DATE: March 25, 1991
ITEMS: One Soil Sample
One Water Sample

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

Compound	OPL 2	Lab Blank	Detection Limit
Acenaphthylene	ND	ND	0.70
Acenaphthene	ND	ND	0.70
Anthracene	0.92	ND	0.70
Benzo(a)anthracene	1.3	ND	0.70
Benzo(a)pyrene	1.4	ND	0.70
Benzo(b)fluoranthene	0.74	ND	0.70
Benzo(ghi)perylene	2.2	ND	0.70
Benzo(k)fluoranthene	ND	ND	0.70
Chrysene	2.9	ND	0.70
Dibenzo(ah)anthracene	ND	ND	0.70
Fluoranthene	3.1	ND	0.70
Fluorene	ND	ND	0.70
Indeno(1,2,3-cd)pyrene	1.9	ND	0.70
2-Methylnaphthalene	ND	ND	0.70
Naphthalene	1.2	ND	0.70
Phenanthrene	3.3	ND	0.70
Pyrene	4.5	ND	0.70

224-9190

Beeper LaTour 274-5859 ∴ 644-0660

CH2M HILL QUALITY ANALYTICS

CHAIN OF CUSTODY RECORD

PROJECT NUMBER	PROJECT NAME
PDX31434.A0	WACKER FAB 2 PIPELINE

CLIENT NAME: CH2M HILL/WACKER

PROJECT MANAGER: Jill Bensen

COPY TO: John Pittman, WACKER

REQUESTED COMP. DATE: RUSH OPL 1-2

SAMPLING REQUIREMENTS: SDWA ☐ NPDES ☐ RCRA ☐ OTHER ____

CLIENT ADDRESS AND PHONE NUMBER: 2020 SW 4th AVE, Portland OR 97201, 224-9190

ANALYSES REQUESTED

FOR LAB USE ONLY: LAB# 91-0858; LAB#; PROJECT NO.; ACK; VERIFIED; QUOTE#; BS; NO. OF SAMP; PG; OF

STA NO.	DATE	TIME	COMP	GRAB	SOIL	SAMPLE DESCRIPTIONS (12 CHARACTERS)	# OF CONTAINERS	BTEX & TPH 8020 8015	PAH'S 8270	LAB ID	REMARKS
OPL1	3.20.91			X		WATER	2	X	X		Jill Bensen
OPL2	3.20.91				X		2	X	X		Will call lab
Fill5	3.20.91				X		1				with PAH test #.
Fill6	↓				X		1				
Fill7					X		1				
Fill8	↓				X		1				

Composite into one sample for testing. (Test for BTEX, TPH & PAH's)

ALL SAMPLES WILL BE DISPOSED OF 30 DAYS AFTER RECEIPT

SAMPLED BY AND TITLE	DATE/TIME	RELINQUISHED BY	DATE/TIME
[signature]	3/20/91 8:30	[signature]	3/20/91 9
RECEIVED BY: [signature]	DATE/TIME 3/20/91 950	RELINQUISHED BY: George LaTour	DATE/TIME 3/20/91 9:50
RECEIVED BY:	DATE/TIME	RELINQUISHED BY:	DATE/TIME
RECEIVED BY LAB:	DATE/TIME	SAMPLE SHIPPED VIA UPS BUS FED-EX HAND OTHER ____	AIR BILL#

HAZWRAP/NEESA Y N; QC LEVEL 1 2 3; COC; ICE; ANA REQ; TEMP; CUST SEAL; Ph; SAMPLE COND.

REMARKS

ENTERED INTO LIMS ____ COC REVIEWED ____

REV 6/89 FORM 340

SCOEPA00037208