3.3

Cave Creek Landfill Aquifer Protection Permit Application

VOLUME 2
Appendices

Prepared for

Maricopa County
Solid Waste Management Department
February 17, 1994

Prepared by

Dames & Moore
7500 North Dreamy Draw Drive
Phoenix, Arizona 85020

APPENDICES

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APPENDIX A

CURRICULUM VITAE

RESUME

JOHN E. STUFFLEBEAN, P.E.
15033 N. 54th Place
Phoenix, Arizona 85254

Telephone: (602) 483-9615 (Home)
(602) 506-8726 (Office)
Date: May 1993

PERSONAL DATA

Birth Date:	April 13, 1954
Height and Weight:	6' 3" 180 pounds
Health:	Excellent
Family Status:	Wife - Lynda Stites (married 3-29-81)
	Son - Daniel Ross (born 12-7-84)
	Daughter - Mallory Ann (born 4-13-88)

Member of Christ Church United Methodist
High School Sunday School Teacher
Keyboard Accompanist to Youth Choir

Other interests include hiking, tennis, golf, and writing.

EDUCATION

Colorado State University, Fort Collins, Colorado 80523
B.S. in Civil Engineering with Highest Distinction
G.P.A. 3.91/4.00

University of Arizona, Tucson, Arizona 85721
M.S. in Environmental Engineering, Graduate Studies in Hydrology
G.P.A. 3.77/4.00

COLLEGE ACTIVITIES AND HONORS

Tau Beta Pi (officer)
Chi Epsilon (officer)
Phi Eta Sigma
American Society of Civil Engineers (Vice President)
Slide Rule - The CSU student engineering magazine
Feature editor in '73-'74
Managing editor in '74-'75
Editor in '75-'76
Tau Beta Pi Award
John R. Fraser Scholarship
Who's Who in American Universities

CAREER GOALS

Manage environmental programs and develop solutions to environmental problems, especially in the area of solid waste management. Develop a staff of competent and motivated employees operating effectively in comfortable working conditions.

"Investigation of Groundwater Quality in the Vicinity of an Inactive Landfill, Pima County, Arizona"
Focus Conference on Southwestern Ground Water Issues
National Water Well Association, 1986

"Camino del Cerro Landfill Clean-up Program"
Arizona Water Pollution Control Association Meeting, 1987

"Management of Hauled Liquid Waste in Pima County"
GRCDA National Conference, Vancouver, B.C., Canada, 1990

"Tangerine Road Sanitary Landfill"
Arizona Landfill Seminar, Phoenix, AZ, 1991
GRCDA State Chapter

"Tailor-made Transfer Station Wins Community Support"
World Wastes, August 1991 (Co-author)

"Regional Solid Waste Planning"
Arizona Landfill Seminar, 1993

"Waste Facility Siting"
National Association of Counties, 1993

Numerous speeches to community groups such as service organizations, churches, classes, and clubs.

EMPLOYMENT HISTORY

Solid Waste Director, Maricopa County Solid Waste Management Department
January 1993 to Present

Solid Waste Manager, Pima County Wastewater Management Department,
February 1988 to December 1992

Solid Waste Systems Design Manager, Civil Engineer, Senior Civil Engineering Assistant, and Civil Engineering Assistant, Pima County Wastewater Management Department, February 1980 to February 1988

Graduate Research Assistant, University of Arizona, Water Resources Research Center, 1978 to 1980

Curriculum Vitae

ALEXANDER W. GOURLAY

Title

Associate

Expertise

Geotechnical Investigation and Design
Earth Structures Design
Waste Management Design

Academic Background

M.S., Geotechnical Engineering, University of Texas at Austin (1984)

B.Sc. (Hon), Civil Engineering, Imperial College of Science and Technology, University of London, United Kingdom (1981)

Registrations

Civil, Arizona, 1989, No. 22867
Civil, California, 1991, No. C48297

Experience

Ten years of geotechnical and environmental engineering and construction, involving site investigation, engineering design, characterization of contaminated sites, remedial design, and construction. Mr. Gourlay has also been project engineer or manager for general engineering projects involving mining facilities, dams, landfills, roads, and site development. Mr. Gourlay joined Dames & Moore's Phoenix Office in 1984.

Civil, Geotechnical and Construction Engineering

- Cyprus Bagdad, Arizona - Project Manager for surface water control study, water balance, and fast-track stormwater management plan for Copper Creek Leach Dump.

- Cyprus Sierrita, Arizona - Project Manager and design engineer for Headwalls No. 3½ and No. 5. Tasks included geotechnical site investigation, hydrology, diversion design, BADCT evaluation, FML and seepage cutoff design, and construction management and inspection.

- Cyprus Mineral Park, Arizona - Project Manager and principal investigator for preliminary and final design of stormwater and process water management system, including diversion and collection ditches, a double-lined leachate collection pond, and single-lined flood basin. Responsibilities included BADCT demonstration.

- Confidential Copper Mine, Arizona - Project Manager and principal investigator for development of mine closure alternatives and cost estimates.

design, slope stability, and volumetrics. Tailings and water supply dams included FMLs on upstream face.

- Pamo Dam, Southern California - Borrow pit investigations, embankment and excavation volumetrics and foundation seepage analysis and pressure relief design for 260-foot high RCC dam.

Environmental Investigations and Remediation

- Project Engineer for development of remedial alternatives for City of Phoenix 19th Avenue Landfill. Alternatives addressed the need for landfill capping, erosion/washout prevention, and venting of landfill gas.

- Project Manager for a confidential project involving remediation of low concentration solvent contamination of soil. Remediation involved design, permitting, and operation of three soil vapor extraction blowers at an industrial facility in Tucson.

- Contract Manager for Tucson International Airport Area Remedial Project (TARP) well field design project. Dames & Moore's two-year project involves field investigation, ground-water modeling, design of a 6,000 gpm well field for remediation of chlorinated hydrocarbon contamination of ground water, preparation of drilling bid documents, and installation of the well field.

- City of Tucson - Project Director for Landfill Environmental Studies Program involving preliminary evaluation of environmental liabilities and compliance costs associated with 11 small- to medium-sized landfills previously operated by the City.

- Project Director for multiple routine chemical and waste management, regulatory support, inventory/audit, and technical support projects for major industrial client in Tucson.

- Project Director for numerous local hydrocarbon contamination projects involving evaluation, characterization and regulatory strategies

- Chem-Security System, Inc. - Final design and construction drawings for one million cubic yard double-lined hazardous waste landfill in Oregon. Responsible for site development and FML design.

- Confidential Client - Conceptual design of RCRA cell and waste excavation sequencing plan for federal Superfund site in Louisiana.

APPENDIX B

FINANCIAL CAPABILITY BACKUP

Maricopa County to include a letter from the appropriate authority verifying the County is capable of meeting the costs outlined in Appendix O.

APPENDIX C

EVIDENCE OF PROPER ZONING

City of Phoenix
PLANNING DEPARTMENT

September 21, 1993

Mr John Stufflebean, P.E.
Maricopa County Solid Waste Management Department
2901 West Durango Street
Phoenix, AZ 85331

Dear Mr. Stufflebean:

RE: Zoning Verification of 3955 East Carefree Highway

In response to a letter dated September 13, 1993, requesting zoning verification of the legally described property at 3955 East Carefree Highway, please be advised that this property is zoned RE-35; Single Family Residence District.

Enclosed is a copy of:

1) The RE-35 section of the Zoning Ordinance.

2) Chapter 9: Nonconformities, of the Zoning Ordinance.

3) A portion of zoning map R-10, with the subject property highlighted.

Landfills require A-2 Zoning with a Special Permit (Sec647.A.1.n) in the City of Phoenix unless established legally prior to annexation. The subject property will be a nonconforming landfill if legally established prior to annexation (January 20, 1985). Any alterations or expansion of the use or improvements on the subject property must comply with Chapter 9 of the Zoning Ordinance and may require a public hearing for approval. There are no pending zoning violations on file with the City of Phoenix regarding the subject property. Should you require additional zoning information, please contact John Beall at 262-7131.

Sincerely,

Mark A. Steele

Mark A. Steele, AICP
Principal Planner

SAM:JMB
A:\zvletter\zv92193

125 East Washington Street, Phoenix, Arizona 85004-2342 602-262-7131 FAX: 602-495-3793

Recycled Paper

APPENDIX D

PRODUCTION WELL ANALYTICAL RESULTS

WESTERN TECHNOLOGIES INC.

3737 East Broadway Road
P.O. Box 21387
Phoenix, Arizona 85036
(602) 437-3737

Maricopa County Landfill Department
3325 West Durango Street
Phoenix, Arizona 85009

October 7, 1985

Attn: Mr. Nick Sciarro
Landfill Administrator

Re: Water Analyses

Job No. 2174J173

Attached are chemical laboratory test reports for a water sample submitted for analyses by the Maricopa County Landfill Department. The water sample was obtained from the well located at the Cave Creek Landfill. Chemical analyses were performed for the following:

Volatile organic compounds
Semi-volatile extractable organic compounds
including base/neutral and acid extractables
Pesticide compounds

Analyses revealed that concentrations for all tested organic compounds were less than the method detection limit except for the following:

Organic Compound	Measured Concentration	State of Arizona Action Limit
Methylene Chloride	53.9 ug/l*	1.0 ug/l
Toluene	8.2 ug/l	14.3 mg/l*
Trichloroethylene (trichloroethene)	9.8 ug/l	5.0 ug/l

Note: ug/l = micrograms per liter equivalent to parts per billion

mg/l = milligrams per liter equivalent to parts per million

From the above, it appears that three industrial solvents were found in the water sample and that two of them, methylene chloride and trichloroethylene, exceeded the State drinking water action limit (standard).

Sincerely,
WESTERN TECHNOLOGIES INC.

R. Bruce Scott

R. Bruce Scott, P.E.
Director, Environmental and
Chemical Materials Management

cjc

Copies to: Addressee (3)

LABORATORY REPORT

Client	Maricopa County Landfill Department 3325 West Durango Phoenix, Arizona 85009 Attn: Tom Cantelme/Mike Nolan	Job No.	857380
		Lab./Invoice No.	2174W173-82
		Date of Report	10/3/85
		Reviewed By	Steven P. Hoppe
Project	Liquid waste sampling and analysis		
Location			
Material/Specimen	Water	Sampled By	MCLD/Personnel — Date --
Source		Submitted By	MCLD/Nolan — Date 9/19/85
Test Procedure	GC/MS	Authorized By	MCLD/Nolan — Date --

RESULTS

One sample was analyzed for volatile and semi-volatile extractable organic contaminants using combined gas chromatography/mass spectrometry according to EPA Methods 624 and 625, respectively. The results of these analyses are attached.

Maricopa County Landfill Department
Invoice No. 2174W173-82
Lab. No. 857380

Gas Chromatography/Mass Spectrometry
Organic Analysis Data Sheet
Volatile Compounds

Sample Number: 857380 (>1946)
Sample Identification:
Analysis Date: 9/27/85
Units: ug/L

CAS Number	Compound	Method Detection Limit	Concentration
107-02-8	Acrolein	---	<10.
107-13-1	Acrylonitrile	---	<10.
71-43-2	Benzene	4.4	<4.4
75-27-4	Bromodichloromethane	2.2	<2.2
75-25-2	Bromoform	4.7	<4.7
74-83-9	Bromomethane	---	<10.
56-23-5	Carbon tetrachloride	2.8	<2.8
108-90-7	Chlorobenzene	6.0	<6.0
75-00-3	Chloroethane	---	<10.
110-75-8	2-Chloroethylvinyl ether	---	<10.
67-66-3	Chloroform	1.6	<1.6
74-87-3	Chloromethane	---	<10.
124-48-1	Dibromochloromethane	3.1	<3.1
95-50-1	1,2-Dichlorobenzene	---	<10.
541-73-1	1,3-Dichlorobenzene	---	<10.
106-46-7	1,4-Dichlorobenzene	---	<10.
75-34-3	1,1-Dichloroethane	4.7	<4.7
107-06-2	1,2-Dichloroethane	2.8	<2.8
75-35-4	1,1-Dichloroethene	2.8	<2.8
156-60-5	trans-1,2-Dichloroethene	1.6	<1.6
78-87-5	1,2-Dichloropropane	6.0	<6.0
10061-01-5	cis-1,3-Dichloropropene	---	<10.
10061-02-6	trans-1,3-Dichloropropene	5.0	<5.0
100-41-4	Ethyl benzene	7.2	<7.2
75-09-2	Methylene chloride	2.8	53.9
79-34-5	1,1,2,2-Tetrachloroethane	6.9	<6.9
127-18-4	Tetrachloroethene	4.1	<4.1
108-88-3	Toluene	6.0	8.2
71-55-6	1,1,1-Trichloroethane	3.8	<3.8
79-00-5	1,1,2-Trichloroethane	5.0	<5.0
79-01-6	Trichloroethene	1.9	9.8
75-69-4	Trichlorofluoromethane	---	<10.
75-01-4	Vinyl chloride	---	<10.

Maricopa County Landfill Department
Invoice No. 2174W173-82
Lab. No. 857380

Gas Chromatography/Mass Spectrometry
Organic Analysis Data Sheet
Base/Neutral Extractable Compounds

Sample Number: 857380 (>1958)
Sample Identification:
Analysis Date: 9/30/85
Units: ug/L

CAS Number	Compound	Method Detection Limit	Concentration
83-32-9	Acenaphthene	1.9	<1.9
208-96-8	Acenaphthylene	3.5	<3.5
120-12-7	Anthracene	1.9	<1.9
56-55-3	Benzo (a) anthracene	7.8	<7.8
205-99-2	Benzo (b) fluoranthene	4.8	<4.8
207-08-9	Benzo (k) fluoranthene	2.5	<2.5
50-32-8	Benzo (a) pyrene	2.5	<2.5
191-24-2	Benzo (ghi) perylene	4.1	<4.1
85-68-7	Benzyl butyl phthalate	2.5	<2.5
111-44-4	Bis (2-chloroethyl) ether	5.7	<5.7
111-91-1	Bis (2-chloroethoxy) methane	5.3	<5.3
117-81-7	Bis (2-ethylhexyl) phthalate	2.5	<2.5
108-60-1	Bis (2-chloroisopropyl) ether	5.7	<5.7
101-55-3	4-Bromophenyl phenyl ether	1.9	<1.9
91-58-7	2-Chloronaphthalene	1.9	<1.9
7005-72-3	4-Chlorophenyl phenyl ether	4.2	<4.2
218-01-9	Chrysene	2.5	<2.5
53-70-3	Dibenzo (a,h) anthracene	2.5	<2.5
84-74-2	Di-n-butylphthalate	2.5	<2.5
541-73-1	1,3-Dichlorobenzene	1.9	<1.9
95-50-1	1,2-Dichlorobenzene	1.9	<1.9
106-46-7	1,4-Dichlorobenzene	4.4	<4.4
91-94-1	3,3'-Dichlorobenzidine	16.5	<16.5
84-66-2	Diethyl phthalate	22.	<22.
131-11-3	Dimethyl phthalate	1.6	<1.6
121-14-2	2,4-Dinitrotoluene	5.7	<5.7
606-20-2	2,6-Dinitrotoluene	1.9	<1.9
117-84-0	Di-n-octylphthalate	2.5	<2.5
206-44-0	Fluoranthene	2.2	<2.2
86-73-7	Fluorene	1.9	<1.9
118-74-1	Hexachlorobenzene	1.9	<1.9
87-68-3	Hexachlorobutadiene	0.9	<0.9
67-72-1	Hexachloroethane	1.6	<1.6
193-39-5	Indeno (1,2,3-cd) pyrene	3.7	<3.7
78-59-1	Isophorone	2.2	<2.2
91-20-3	Naphthalene	1.6	<1.6
98-95-3	Nitrobenzene	1.9	<1.9
621-64-7	N-Nitrosodi-n-propylamine	---	<10.
85-01-8	Phenanthrene	5.4	<5.4
129-00-0	Pyrene	1.9	<1.9
120-82-1	1,2,4-Trichlorobenzene	1.9	<1.9

Maricopa County Landfill Department
Invoice No. 2174W173-82
Lab. No. 857380

Gas Chromatography/Mass Spectrometry
Organic Analysis Data Sheet
Acid Extractable Compounds

Sample Number: 857380 (>1958)
Sample Identification:
Analysis Date: 9/30/85
Units: ug/L

CAS Number	Compound	Method Detection Limit	Concentratio
59-50-7	4-Chloro-3-methylphenol	3.0	<3.0
95-57-8	2-Chlorophenol	3.3	<3.3
120-83-2	2,4-Dichlorophenol	2.7	<2.7
105-67-9	2,4-Dimethylphenol	2.7	<2.7
51-28-5	2,4-Dinitrophenol	42.	<42.
534-52-1	2-Methyl-4,6-dinitrophenol	24.	<24.
88-75-5	2-Nitrophenol	3.6	<3.6
100-02-7	4-Nitrophenol	2.4	<2.4
87-86-5	Pentachlorophenol	3.6	<3.6
108-95-2	Phenol	1.5	<1.5
88-06-2	2,4,6-Trichlorophenol	2.7	<2.7

Maricopa County Landfill Department
Invoice No. 2174W173-82
Lab. No. 857380

Gas Chromatography/Mass Spectrometry
Organic Analysis Data Sheet
Pesticide Compounds

Sample Number: 857380 (>1958)
Sample Identification:
Analysis Date: 9/30/85
Units: ug/L

CAS Number	Compound	Method Detection Limit	Concentration
309-00-2	Aldrin	1.9	<1.9
319-85-7	-BHC	4.2	<4.2
319-86-8	-BHC	3.1	<3.1
57-74-9	Chlordane	---	<10.
72-54-8	4,4'-DDD	2.8	<2.8
72-55-9	4,4'-DDE	5.6	<5.6
50-29-3	4,4'-DDT	4.7	<4.7
60-57-1	Dieldrin	2.5	<2.5
1031-07-8	Endosulfan sulfate	5.6	<5.6
7421-93-4	Endrin aldehyde	---	<15.
76-44-8	Heptachlor	1.9	<1.9
1024-57-3	Heptachlor epoxide	2.2	<2.2
12674-11-2	PCB-1016	---	<50.
11104-28-2	PCB-1221	30.	<30.
11141-16-5	PCB-1232	---	<50.
53469-21-9	PCB-1242	---	<50.
12672-29-6	PCB-1248	---	<50.
11097-69-1	PCB-1254	36.	<36.
11096-82-5	PCB-1260	---	<50.
8001-35-2	Toxaphene	---	<50.

om

WESTERN TECHNOLOGIES INC.

3737 East Broadway Road
P.O. Box 21387
Phoenix, Arizona 85036
(602) 437-3737

Maricopa County Landfill Department
3325 West Durango Street
Phoenix, Arizona 85009

December 20, 1985

Attn: Mr. Nick Sciarro
Landfill Administrator

Re: Water Analyses

Job No. 2174J173

Attached are chemical analytical test results for a water sample submitted for analyses by the Maricopa County Landfill Department. Chemical analyses were performed for volatile organics utilizing gas chromatography/mass spectrometry in accordance with EPA Test Method 624.

Analyses revealed that concentrations for all tested organic compounds were less than the method detection limit.

Sincerely,
WESTERN TECHNOLOGIES INC.

R. Bruce Scott
12-20-85

R. Bruce Scott, P.E.
Director, Environmental and
Chemical Materials Management

bt

Copies to: Addressee (3)

WESTERN TECHNOLOGIES INC.

3737 East Broadway Road
P.O. Box 21387
Phoenix, Arizona 85036
(602) 437-3737

LABORATORY REPORT

Client	Maricopa County Landfill Department 3325 West Durango Phoenix, AZ 85009 Attn: Tom Cantelme/Mike Nolan	Job No.	8510216
		Lab./Invoice No.	2174W173-119
		Date of Report	12/10/85
		Reviewed By	Steven P. Neppe
Project	Liquid waste sampling and analysis		
Location			
Material/Specimen	Water	Sampled By	MCLD/Personnel — Date --
Source		Submitted By	MCLD/Personnel — Date 11/18/85
Test Procedure	EPA 624	Authorized By	-- — Date --

RESULTS

One water sample was received for analysis of volatile organic contaminants using combined gas chromatography/mass spectrometry according to EPA Method 624. The results of this analysis are attached.

Maricopa County Landfill Department
Invoice No. 2174W173-119
Lab. No. 8510216

Gas Chromatography/Mass Spectrometry
Organic Analysis Data Sheet
Volatile Compounds

Sample Number: 8510216 (>2235)
Sample Identification: Maricopa County
Analysis Date: 11/27/85
Units: ug/L

CAS Number	Compound	Method Detection Limit	Concentration
107-02-8	Acrolein	---	<10.
107-13-1	Acrylonitrile	---	<10.
71-43-2	Benzene	4.4	<4.4
75-27-4	Bromodichloromethane	2.2	<2.2
75-25-2	Bromoform	4.7	<4.7
74-83-9	Bromomethane	---	<10.
56-23-5	Carbon tetrachloride	2.8	<2.8
108-90-7	Chlorobenzene	6.0	<6.0
75-00-3	Chloroethane	---	<10.
110-75-8	2-Chloroethylvinyl ether	---	<10.
67-66-3	Chloroform	1.6	<1.6
74-87-3	Chloromethane	---	<10.
124-48-1	Dibromochloromethane	3.1	<3.1
95-50-1	1,2-Dichlorobenzene	---	<10.
541-73-1	1,3-Dichlorobenzene	---	<10.
106-46-7	1,4-Dichlorobenzene	---	<10.
75-34-3	1,1-Dichloroethane	4.7	<4.7
107-06-2	1,2-Dichloroethane	2.8	<2.8
75-35-4	1,1-Dichloroethene	2.8	<2.8
156-60-5	trans-1,2-Dichloroethene	1.6	<1.6
78-87-5	1,2-Dichloropropane	6.0	<6.0
10061-01-5	cis-1,3-Dichloropropene	---	<10.
10061-02-6	trans-1,3-Dichloropropene	5.0	<5.0
100-41-4	Ethyl benzene	7.2	<7.2
75-09-2	Methylene chloride	2.8	<2.8
79-34-5	1,1,2,2-Tetrachloroethane	6.9	<6.9
127-18-4	Tetrachloroethene	4.1	<4.1
108-88-3	Toluene	6.0	<6.0
71-55-6	1,1,1-Trichloroethane	3.8	<3.8
79-00-5	1,1,2-Trichloroethane	5.0	<5.0
79-01-6	Trichloroethene	1.9	<1.9
75-69-4	Trichlorofluoromethane	---	<10.
75-01-4	Vinyl chloride	---	<10.

Arizona Testing Laboratories
817 West Madison Street □ Phoenix, Arizona 85007 □ 602/254-6181

For: Maricopa County Landfill
Attn: Mr. Michael Nolin
3325 West Durango
Phoenix, Arizona 85041

Date: December 11, 1985

Lab. No.: 5128

Sample: Water

Marked: Well - Cave Creek

Received: 12-6-85 Test Taken

Submitted by: Same

REPORT OF LABORATORY TESTS

Method 601/602

Chloromethane	< 1 ppb
Bromomethane	< 1
Vinyl chloride	< 1
Chloroethane	< 1
Methylene chloride	2.6
1,1-Dichloroethene	< 1
1,1-Dichloroethane	< 1
trans-1,2-Dichloroethene	< 1
Chloroform	< 1
1,2-Dichloroethane	< 1
1,1,1-Trichloroethane	< 1
Carbon tetrachloride	< 1
Bromodichloromethane	< 1
1,2-Dichloropropane	< 1
trans-1,3-Dichloropropene	< 1
Trichloroethylene	< 1
Dibromochloramethane	< 1
1,1,2-Trichloroethane	< 1
cis-1,3-Dichloropropene	< 1
2-Chloroethylvinyl ether	< 1
Bromoform	< 1
1,1,2,2-Tetrachloroethane	< 1
Tetrachloroethylene Additional	3.3
Chlorobenzene	< 1
1,3-Dichlorobenzene	< 1
1,2-Dichlorobenzene	< 1
1,4-Dichlorobenzene	< 1
Benzene	< 1
Toluene	< 1
Ethylbenzene	< 1

< = less than

Respectfully submitted,

ARIZONA TESTING LABORATORIES

Robert J. Drake

Arizona Testing Laboratories
817 West Madison Street □ Phoenix, Arizona 85007 □ 602/254-6181

For: Maricopa County Landfill
Attn: Mr. Michael Nolan
3325 West Durango
Phoenix, Arizona 85009

Date: July 23, 1986

Lab. No.: 8567

Sample: Water

Marked: Cave Creek Well
Sampled: 7-16-86

Received: 7-16-86

Submitted by: same

REPORT OF LABORATORY TESTS

Method 601/602

	Well #1	Well #2
Methylene Chloride	2.9 ppb	3.4 ppb
Tetrachloroethylene	< 1	< 1
Trichloroethene	< 1	< 1
Toluene	< 1	< 1

< = less than

Respectfully submitted,

ARIZONA TESTING LABORATORIES

Robert J. Drake

Robert J. Drake

Arizona Testing Laboratories
817 West Madison Street □ Phoenix, Arizona 85007 □ 602/254-6181

For: Maricopa County Landfill
Attn: Mr. Michael Nolan
3325 West Durango
Phoenix, Arizona 85009

Date: August 12, 1986

Lab. No.: 8879

Sample: Water

Received: 8/4/86

Submitted by: Same

Marked: Sampled: 8-4-86, Well #1
Place: Cave Creek, Maricopa County

REPORT OF LABORATORY TESTS

METHOD 601/602

Chloromethane	< 1 ppb
Bromomethane	< 1
Vinyl chloride	< 1
Chloroethane	< 1
Methylene chloride	1.4
1,1-Dichloroethene	< 1
1,1-Dichloroethane	< 1
trans-1,2-Dichloroethene	< 1
Chloroform	< 1
1,2-Dichloroethane	< 1
1,1,1-Trichloroethane	< 1
Carbon tetrachloride	< 1
Bromodichloromethane	< 1
1,2-Dichloropropane	< 1
trans-1,3-Dichloropropene	< 1
Trichloroethylene	< 1
Dibromochloramethane	< 1
1,1,2-Trichloroethane	< 1
cis-1,3-Dichloropropene	< 1
2-Chloroethylvinyl ether	< 1
Bromoform	< 1
1,1,2,2-Tetrachloroethane	< 1
Tetrachloroethylene	< 1
Chlorobenzene	< 1
1,3-Dichlorobenzene	< 1
1,2-Dichlorobenzene	< 1
1,4-Dichlorobenzene	< 1
Benzene	2.3
Toluene	< 1
Ethylbenzene	< 1

< = less than

Respectfully submitted,
ARIZONA TESTING LABORATORIES

Arizona Testing Laboratories

817 West Madison Street □ Phoenix, Arizona 85007 □ 602/254-6181

For: Maricopa County Landfill
Attn: Mr. Nick Sciarro
3325 West Durango
Phoenix, Arizona 85009

Date: June 17, 1987

Lab. No.: 3581; 3620

Sample: Waste Water

Marked: Cave Creek Landfill

Received: 6/8 & 6/10/87

Submitted by: Pete Cullum & Shannon Gillespie

REPORT OF LABORATORY TESTS

Samples Marked:	C.C. 1 6-8-87 2:00PM	C.C. 2 6-10-87 12:45PM
Methylene Chloride	< 1. ppb	< 1. ppb
Toluene	< 1.	< 1.
Trichloroethylene	< 1.	< 1.
Tetrachloroethylene	< 1.	< 1.

< = less than

Respectfully submitted,

ARIZONA TESTING LABORATORIES

Robert J. Drake

Arizona Testing Laboratories

817 West Madison Street □ Phoenix, Arizona 85007 □ 602/254-6181

For: Maricopa County Landfill Dept.
Attn: Mr. Nick Sciarro
3325 West Durango Street
Phoenix, Arizona 85009

Date: 11-18-87

Lab. No.: 5679 (completed)

Sample: Water

Received: 10-23-87

Submitted by: Same

Marked: Cave Creek Monitoring Well
Sampled: 10-23-87
Sampler: Peter H. Cullum
P.O. #K20928

REPORT OF LABORATORY TESTS

Silver	<	0.02
Arsenic		0.010
Barium	<	0.5
Beryllium	<	0.01
Cadmium	<	0.005
Chromium	<	0.01
Copper	<	0.05
Iron		0.32
Mercury	<	0.001
Manganese	<	0.05
Lead	<	0.02
Tin	<	0.04
Selenium	<	0.005
Thallium	<	0.01
Vanadium	<	0.05
Zinc		0.16
Cobalt	<	0.05

< = less than the detection limit given

Respectfully submitted,

ARIZONA TESTING LABORATORIES

Robert J. Drake

Arizona Testing Laboratories

817 West Madison Street □ Phoenix, Arizona 85007 □ 602/254-6181

For: Maricopa County Landfill Dept.
Attn: Mr. Nick Sciarro
3325 West Durango Street
Phoenix, Arizona 85009

Date: October 30, 1987

Lab. No.: 5679

Sample: Water

Received: 10/23/87

Submitted by: Mr. Peter H. Cullum

Marked: Cave Creek Monitoring Well
Sampled: 10-23-87
Sampler: Peter H. Cullum
Location: Cave Creek Landfill
Your P.O. K20790

METHOD 8010/8020 **REPORT OF LABORATORY TESTS**

Chloromethane	< 0.5	ppb
Bromomethane	< 0.5	
Vinyl chloride	< 0.5	
Chloroethane	< 0.5	
Methylene chloride	< 0.5	
1,1-Dichloroethene	< 0.5	
1,1-Dichloroethane	< 0.5	
trans-1,2-Dichloroethene	< 0.5	
Chloroform	< 0.5	
1,2-Dichloroethane	< 0.5	
1,1,1-Trichloroethane	< 0.5	
Carbon tetrachloride	< 0.5	
Bromodichloromethane	< 0.5	
1,2-Dichloropropane	< 0.5	
trans-1,3-Dichloropropene	< 0.5	
Trichloroethylene	< 0.5	
Dibromochloromethane	< 0.5	
1,1,2-Trichloroethane	< 0.5	
cis-1,3-Dichloropropene	< 0.5	
2-Chloroethylvinyl ether	< 0.5	
Bromoform	< 0.5	
1,1,2,2-Tetrachloroethane	< 0.5	
Tetrachloroethylene	4.3	
Chlorobenzene	< 0.5	
1,3-Dichlorobenzene	< 0.5	
1,2-Dichlorobenzene	< 0.5	
1,4-Dichlorobenzene	< 0.5	
Benzene	< 0.5	
Toluene	< 0.5	
Ethylbenzene	< 0.5	

< = less than

Respectfully submitted,

ARIZONA TESTING LABORATORIES

Robert J. Drake

7/21/2011

CHAIN OF CUSTODY RECORD

JOB NO.

PROJECT NAME: MARICOPA

SAMPLERS: (SIGNATURE)

SAMPLE IDENT.	DATE	TIME	COMP	GRAB	SAMPLE LOCATION	NUMBER OF CONTAINERS	BFT Toxicity	TOTAL METALS	IN ORGANICS	TOC + VOC	Radioactivity	Fecal Coli	REMARKS (PHYSICAL APPEARANCE, etc.)	LAB I.D.
CAVE CREEK	5-25-88	1500		X	Cave Creek Landfill	9			X	X	X	X		

TEST METHOD

REQUEST TIME

48 HOURS 1 WEEKS

2 WEEKS 4 WEEKS

RELINQUISHED BY (SIGNATURE)	DATE, TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE, TIME	RECEIVED BY (SIGNATURE)
[illegible]	5/25/88 4:30p	C.M. Ruco			
RELINQUISHED BY (SIGNATURE)	DATE, TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE, TIME	RECEIVED BY (SIGNATURE)
RELINQUISHED BY (SIGNATURE)	DATE, TIME	RECEIVED FOR LABORATORY BY (SIGNATURE)	DATE, TIME	REMARKS	

Arizona Testing Laboratories

817 West Madison Street □ Phoenix, Arizona 85007 □ 602/254-6181

For: Maricopa County Landfill Department
Attn: Mr. Nick Sciarro
3325 West Durango Street
Phoenix, Arizona 85009

Date: 5-31-88

Lab. No.: 921201

Sample: Water

Received: 5-25-88

Submitted by: Same

Marked: Project Name: Maricopa County Landfill Department
Date: 5-25-88, @1500
Location: Cave Creek Landfill
Samplers: Don Spack/Joe Renteria

REPORT OF LABORATORY TESTS

GAS CHROMATOGRAPHY/MASS SPECTROMETRY
PURGEABLES

CAS Number			
74-87-3	Chloromethane	< 1.0	µg/L
74-83-9	Bromomethane	< 1.0	
75-01-4	Vinyl Chloride	< 1.0	
75-00-3	Chloroethane	< 1.0	
75-09-2	Methylene Chloride	< 1.0	
75-69-4	Trichlorofluoromethane	< 1.0	
75-35-4	1,1-Dichloroethylene	< 1.0	
75-34-3	1,1-Dichloroethane	< 1.0	
156-60-5	t-1,2-Dichloroethylene	< 1.0	
67-66-3	Chloroform	< 1.0	
107-06-2	1,2-Dichloroethane	< 1.0	
71-55-6	1,1,1-Trichloroethane	< 1.0	
56-23-5	Carbon Tetrachloride	< 1.0	
75-27-4	Dichlorobromomethane	< 1.0	
78-87-5	1,2-Dichloropropane	< 1.0	
10061-02-6	t-1,3-Dichloropropylene	< 1.0	
79-01-6	Trichloroethylene	< 1.0	
71-43-2	Benzene	< 1.0	
124-48-1	Dibromochloromethane	< 1.0	
79-00-5	1,1,2-Trichloroethane	< 1.0	
10061-01-5	c-1,3-Dichloropropylene	< 1.0	
110-75-8	2-Chloroethylvinyl Ether	< 1.0	
75-25-2	Bromoform	< 1.0	
79-34-5	1,1,2,2-Tetrachloroethane	< 1.0	
127-18-4	Tetrachloroethylene	< 1.0	
108-88-3	Toluene	< 1.0	
108-90-7	Chlorobenzene	< 1.0	
100-41-4	Ethylbenzene	< 1.0	
541-73-1	1,3-Dichlorobenzene	< 1.0	
95-50-1	1,2-Dichlorobenzene	< 1.0	
106-46-7	1,4-Dichlorobenzene	< 1.0	
107-02-8	Acrolein	< 1.0	
107-13-1	Acrylonitrile	< 1.0	

< = less than

Respectfully submitted,

ARIZONA TESTING LABORATORIES

Robert J. Drake

Groundwater Quality Protection Permit
Self-Monitoring Report Form
Arizona Department of Health Services

921201
SPECIMEN NO.

5/25/88
DATE REC'D AT LAB

Lab Name & Address — LAB ID NO. 0002

Arizona Testing Laboratories
817 West Madison Street
Phoenix, Arizona 85007

ADHS Permit No. _____

Sample Location Cave Creek Landfill

Facility Name & Mailing Address

Maricopa County Landfill Dept.
Attn: Mr. Nick Sciarro
3325 West Durango Street
Phoenix, Arizona 85009

SAMPLE COLLECTION INFORMATION

☒ Groundwater ☐ Vadose ☐ Waste Stream ☐ Pond
☐ Other _____

Sample Date 5/25/88 Sample Time 1500

Depth to Water _____ Feet below land surface
(Groundwater Samples Only)

Parameter Code: P72019

Collected By:

ADHS Use Only

S C

Parameter Name*	Storet Parameter Number	Laboratory Analysis Results	Parameter Name*	Storet Parameter Number	Laboratory Analysis Results
Arsenic +	P01002,	0.013 ,	Endrin[a]	P39390,	. ,
Barium +	P01007,	< 0.5 ,	Lindane[a]	P39782,	. ,
Cadmium +	P01027,	< 0.005 ,	MethoxyChlor[a]	P39480,	. ,
Chromium +	P01034,	< 0.01 ,	Toxaphene[a]	P39400,	. ,
Lead +	P01051,	< 0.01 ,	2,4-D[a]	P39730,	. ,
Mercury +	P71900,	< 0.001 ,	2,4,5-TP Silvex[a]	P39045,	. ,
Nitrate (N)	P00620,	2.0 ,	TTHM[a]	P82080,	. ,
Selenium +	P01147,	< 0.005 ,		,	. ,
Silver +	P01077,	< 0.02 ,		,	. ,
Fluoride	P00951,	0.4 ,		,	. ,
	,	. ,		,	.
Alkalinity	P00410,	230. ,		,	. ,
Calcium	P00916,	49. ,		,	. ,
Chloride	P00940,	16. ,		,	. ,
Copper +	P01042,	< 0.05 ,		,	. ,
Hardness	P00900,	210. ,	Radium-226/228[b]	P11503,	. ,
Iron +	P01045,	< 0.1 ,	Gross Alpha, Tot[b]	P01501,	. ,
Magnesium	P00927,	22. ,	— Count Error[b]	P01502,	. ,
Manganese +	P01055,	< 0.05 ,	Beta Activity[b]	P03501,	. ,
pH	P00403,	8.0 ,	Cesium-134[b]	P28414,	. ,
Sodium	P00929,	33. ,	Iodine-131[b]	P28301,	. ,
Sulfate	P00945,	22. ,	Strontium-90/89[b]	P01082,	. ,
TDS	P00500,	310. ,	Tritium[b]	P82126,	. ,
Zinc +	P01092,	0.15 ,	Uranium[b]	P22706,	. ,

*Units are mg/l unless otherwise noted.

[a]Units are µg/l
[b]Units are pCi/l

Send 3 copies of completed form to:
Arizona Department of Health Services
Office of Waste and Water Quality Mgmt.
Compliance Section
Room 304
1005 North Central
Phoenix, Arizona 85004

Comments: _____

Analysis Date 6/29/88

Analyst [signature]

Arizona Testing Laboratories

817 West Madison Street □ Phoenix, Arizona 85007 □ 602/254-6181

For: Maricopa County Landfill Dept.
Attn: Mr. Nick Sciarro
3325 West Durango Street
Phoenix, Arizona 85009

Date: June 29, 1988

Lab. No.: 921201

Sample: Groundwater

Marked: Cave Creek Landfill
5/25/88, 1500

Received: 5/25/88

Submitted by: Same

REPORT OF LABORATORY TESTS

Nitrite-N	< 0.02	mg/L
Total Nitrogen	2.0	
Total Kjeldahl-Nitrogen	< 0.02	
Ammonia-N	< 0.1	
Phosphate-P, Ortho	< 0.01	
Phosphate-P, Total	0.01	
Vanadium	< 0.05	
Molybdenum	< 0.05	
Aluminum	< 0.01	
Antimony	< 0.02	
Beryllium	< 0.01	
Cobalt	< 0.01	
Boron	0.050	
Silica	41.	
Lithium	< 0.05	
Nickel	< 0.05	
Thallium	< 0.01	
*Fecal Coliform Bacteria, MPN/100 ml	< 2.	

< = less than

*test started 5/25/88, 4:39 pm

Respectfully submitted,

ARIZONA TESTING LABORATORIES

Robert J. Drake

Arizona Testing Laboratories

817 West Madison Street □ Phoenix, Arizona 85007 □ 602/254-6181

For: Maricopa County Landfill Dept.
Attn: Mr. Nick Sciarro
3325 West Durango Street
Phoenix, ARizona 85009

Date: 6-6-88

Lab. No.: 921201

Sample: Groundwater

Marked: 5-25-88, @1500
Cave Creek Landfill

Received: 5-25-88

Submitted by: Same

REPORT OF LABORATORY TESTS

Total Organic Carbon	0.58	mg/L

Respectfully submitted,

ARIZONA TESTING LABORATORIES

Robert J. Drake

RECEIVED: 05/31/88 06/07/88 13:14:16

REPORT TO: Arizona Testing Laboratories
817 West Madison Street
Phoenix, AZ 85007

ATTEN: Robert Drake

CLIENT: AZ TEST LAB SAMPLES: 1
COMPANY: Arizona Testing Laboratories
FACILITY: 817 West Madison Street
Phoenix, AZ 85007

WORK ID: Environmental
TAKEN: 05/25/88
TRANS: UPS
TYPE: Water
P.O. #: 2773
INVOICE: under separate cover

PREPARED BY: Controls for Environmental Pollution, Inc.
1925 Rosina Street
Santa Fe, NM 87502

ATTEN:
PHONE: (505) 982-9841

CERTIFIED BY

CONTACT: GAIL 000758

Remainder of sample(s) for routine analysis will be disposed of three weeks from final report date. Sample(s) for bacteria analysis only, will be disposed of one day after final report. This is not applicable if other arrangements have been made.

SAMPLE IDENTIFICATION

01 #921201 Cave Crk Landfill

CEP, Inc. TEST CODES and NAMES used on this report

ALPHA1 Gross Alpha

Our reports are rendered upon the condition that they are not to be reproduced wholly or in part for advertising and/or other purposes over our signature or in connection with our name without special permission in writing

REPORT OF ANALYSIS

OUT OF STATE 800/545-2188

LAB # 88-05-590

SAMPLE IDENTIFICATION	DATE COLLECTED	TYPE OF ANALYSIS	pCi/liter
#921201 Cave Crk Landfill	05/25/88	Gross Alpha	<2

Our reports are rendered upon the condition that they are not to be reproduced wholly or in part for advertising and/or other purposes over our signature or in connection with our name without special permission in writing

CHAIN OF CUSTODY RECORD

JOB NO.

PROJECT NAME: Maricopa County

SAMPLERS: (SIGNATURE)

SAMPLE IDENT.	DATE	TIME	COMP	GRAB	SAMPLE LOCATION	NUMBER OF CONTAINERS	E.P. TOXICITY	TOTAL METALS	ORGANICS			REMARKS (PHYSICAL APPEARANCE, etc.)	LAB I.D.
Cove Crk	3/19/90	3:00		X	Cove Creek Landfill	7	see attached						205401

TEST METHOD

REQUEST TIME

48 HOURS 1 WEEKS

2 WEEKS 4 WEEKS

RELINQUISHED BY (SIGNATURE)	DATE/TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE/TIME	RECEIVED BY (SIGNATURE)
[signature]	3/20/90 4:00				
RELINQUISHED BY (SIGNATURE)	DATE/TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE/TIME	RECEIVED BY (SIGNATURE)
RELINQUISHED BY (SIGNATURE)	DATE/TIME	RECEIVED FOR LABORATORY BY (SIGNATURE)	DATE/TIME	REMARKS	
		[signature]	3/20/90 1600		

Arizona Testing Laboratories

810 East Hammond Lane □ Phoenix, Arizona 85034 □ 602/254-6181

For: Maricopa County Landfill Dept.
Attn: Nick Sciarro
3325 West Durango Street
Phoenix, Arizona 85009

Date: April 3, 1990

Lab. No.: 205401

Sample: Groundwater

Marked: Cave Creek Landfill
Sampled: 03/19/90, 3:00 p.m.

Received: 03/21/90

Submitted by: Same

REPORT OF LABORATORY TESTS

METHOD 601/602

Chloromethane	< 0.5	µg/L
Bromomethane	< 0.5	
Vinyl chloride	< 0.5	
Chloroethane	< 0.5	
Methylene chloride	< 0.5	
1,1-Dichloroethene	< 0.5	
1,1-Dichloroethane	< 0.5	
trans-1,2-Dichloroethene	< 0.5	
Chloroform	< 0.5	
1,2-Dichloroethane	< 0.5	
1,1,1-Trichloroethane	< 0.5	
Carbon tetrachloride	< 0.5	
Bromodichloromethane	< 0.5	
1,2-Dichloropropane	< 0.5	
trans-1,3-Dichloropropene	< 0.5	
Trichloroethylene	< 0.5	
Dibromochloromethane	< 0.5	
1,1,2-Trichloroethane	< 0.5	
cis-1,3-Dichloropropene	< 0.5	
2-Chloroethylvinyl ether	< 0.5	
Bromoform	< 0.5	
1,1,2,2-Tetrachloroethane	< 0.5	
Tetrachloroethylene	< 0.5	
Chlorobenzene	< 0.5	
1,3-Dichlorobenzene	< 0.5	
1,2-Dichlorobenzene	< 0.5	
1,4-Dichlorobenzene	< 0.5	
Benzene	< 0.5	
Toluene	< 0.5	
Ethylbenzene	< 0.5	

< = less than the detection limit given

APR 1990
RECEIVED
Maricopa County
Landfill
Dept.

Respectfully submitted,

ARIZONA TESTING LABORATORIES

Robert J. Drake

CHAIN OF CUSTODY RECORD

JOB NO.

PROJECT NAME: Maricopa County

SAMPLERS: (SIGNATURE) [signature]

SAMPLE IDENT.	DATE	TIME	COMP	GRAB	SAMPLE LOCATION	NUMBER OF CONTAINERS	E.P. TOXICITY	TOTAL METALS	ORGANICS	Endrin, Lindane, Toxaphene, Silvex, 2,4-D	REMARKS (PHYSICAL APPEARANCE, etc.)	LAB I.D.
Cave Crk	3/21/90	3:30		X	Cave Creek Landfill	1						205401

REQUEST TIME

48 HOURS 1 WEEKS

2 WEEKS 4 WEEKS

RELINQUISHED BY (SIGNATURE)	DATE, TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE, TIME	RECEIVED BY (SIGNATURE)
RELINQUISHED BY (SIGNATURE)	DATE, TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE, TIME	RECEIVED BY (SIGNATURE)
RELINQUISHED BY (SIGNATURE) [signature]	DATE, TIME 3/21/90 4:30	RECEIVED FOR LABORATORY BY (SIGNATURE) [signature]	DATE, TIME 3/21/90 16:30		

REMARKS: This is to complete the testing submitted 3/20/90 from Cave Crk since ATL personnel gave out the wrong bottles on 3/20/90.

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY
GROUNDWATER QUALITY PROTECTION PERMIT
SELF-MONITORING REPORT FORM

Lab No. 205401

Date Received: 3/21/90

PERMIT NO. G-

LAB PERFORMING ANALYSIS NAME AND ADDRESS

Arizona Testing Laboratories
810 East Hammond Lane
Phoenix, Arizona 85034

LAB ID NUMBER: 00002

SAMPLE DATE (MO DAY YEAR): 031990

ANALYSIS DATE (MO DAY YEAR): 042090

FACILITY NAME & MAILING ADDRESS

Maricopa County Landfill Dept.
Attn: Nick Sciarro
3325 West Durango Street
Phoenix, AZ 85009

SAMPLE COLLECTION POINT: Cave Creek

SAMPLE COLLECTION INFORMATION

X GROUNDWATER | VADOSE | WASTE STREAM | POND

DEPTH TO WATER

OTHER

COLLECTED BY

PARAMETER NAME	PARAMETER NUMBER	LABORATORY ANALYSIS RESULTS
ARSENIC	P01002	0.010
BARIUM	P01007	< 0.5
CADMIUM	P01027	< 0.005
CHROMIUM	P01034	< 0.01
LEAD	P01051	< 0.005
MERCURY	P71900	< 0.001
NITRATE (N)	P00620	1.8
SELENIUM	P01147	< 0.005
SILVER	P01077	< 0.02
FLUORIDE	P00951	0.4
ALKALINITY	P00410	
CALCIUM	P00916	
CHLORIDE	P00940	16
COPPER	P01042	
HARDNESS	P00900	
IRON	P01045	< 0.1
MAGNESIUM	P00927	
MANGANESE	P01055	< 0.05
PH	P00403	7.4
SODIUM	P00929	
SULFATE	P00945	25
TDS	P00500	330
ZINC	P01092	0.10

PARAMETER NAME	PARAMETER NUMBER	LABORATORY ANALYSIS RESULTS
ENDRIN*	P39390	< 0.1
LINDANE*	P39782	< 1.0
METHOXYCHLOR*	P39480	< 10.
TOXAPHENE*	P39400	< 1.0
2,4-D*	P39730	< 10.
2,4,5-TP SILVEX*	P39045	< 1.0
TTHM*	P82080	< 5.0
Aluminum		< 0.1
Antimony		< 0.01
Beryllium		< 0.01
Cobalt		< 0.01
Nickel		< 0.05
Thallium		< 0.01
Vanadium		< 0.05
Tin		< 0.02
RADIUM-226/228*	P11503	
GROSS ALPHA, TOT*	P01501	
-COUNT ERROR*	P01502	
BETA ACTIVITY*	P03501	
CESIUM-134*	P28414	
IODINE-131*	P28301	
STRONTIUM-90/89*	P01092	
TRITIUM*	P82125	
URANIUM*	P22706	

* UNITS ARE mg/l UNLESS OTHERWISE NOTED.
** PLEASE ATTACH ADDITIONAL SHEETS IF NECESSARY

< = less than the practical quantitation limit (PQL) given

*UNITS ARE UG/L
*UNITS ARE pCi/l

SEND 3 COPIES OF COMPLETED FORM TO:
ADEQ - COMPLIANCE SECTION, RM 300
2005 N. CENTRAL AVE.
PHOENIX, ARIZONA 85004

MAY 1990 RECEIVED Maricopa County Landfill Dept

ANALYST Robert J. Drake

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY
GROUNDWATER QUALITY PROTECTION PERMIT
SELF-MONITORING REPORT FORM

Lab No. 205401 Date Received: 3/21/90

PERMIT NO. G-[ ]-[ ]

LAB PERFORMING ANALYSIS NAME AND ADDRESS

Arizona Testing Laboratories
810 East Hammond Lane
Phoenix, Arizona 85034

LAB ID NUMBER: 00002

SAMPLE DATE (MO DAY YEAR): 031990

ANALYSIS DATE (MO DAY YEAR): 042090

FACILITY NAME & MAILING ADDRESS

Maricopa County Landfill Dept.
Attn: Nick Sciarro
3325 West Durango Street
Phoenix, AZ 85009

SAMPLE COLLECTION POINT: Cave Creek

SAMPLE COLLECTION INFORMATION

X GROUNDWATER | VADOSE | WASTE STREAM | POND

DEPTH TO WATER

OTHER

COLLECTED BY

PARAMETER NAME	PARAMETER NUMBER	LABORATORY ANALYSIS RESULTS
ARSENIC	P01002	0.010
BARIUM	P01007	< 0.5
CADMIUM	P01027	< 0.005
CHROMIUM	P01034	< 0.01
LEAD	P01051	< 0.005
MERCURY	P71900	< 0.001
NITRATE (N)	P00620	1.8
SELENIUM	P01147	< 0.005
SILVER	P01077	< 0.02
FLUORIDE	P00951	0.4
ALKALINITY	P00410	
CALCIUM	P00916	
CHLORIDE	P00940	16
COPPER	P01042	
HARDNESS	P00900	
IRON	P01045	< 0.1
MAGNESIUM	P00927	
MANGANESE	P01055	< 0.05
PH	P00403	7.4
SODIUM	P00929	
SULFATE	P00945	25
TDS	P00500	330
ZINC	P01092	0.10

PARAMETER NAME	PARAMETER NUMBER	LABORATORY ANALYSIS RESULTS
ENDRIN*	P39390	< 0.1
LINDANE*	P39782	< 1.0
METHOXYCHLOR*	P39480	< 10.
TOXAPHENE*	P39400	< 1.0
2,4-D*	P39730	< 10
2,4,5-TP SILVEX*	P39045	< 1.0
TTHM*	P82080	< 5.0
Aluminum		< 0.1
Antimony		< 0.01
Beryllium		< 0.01
Cobalt		< 0.01
Nickel		< 0.05
Thallium		< 0.01
Vanadium		< 0.05
Tin		< 0.02
RADIUM-226/228[b]	P11503	
GROSS ALPHA, TOT[b]	P01501	
-COUNT ERROR[b]	P01502	
BETA ACTIVITY[b]	P03501	
CESIUM-134[b]	P28414	
IODINE-131[b]	P28301	
STRONTIUM-90/89[b]	P01052	
TRITIUM[b]	P82125	
URANIUM[b]	P22705	

* UNITS ARE mg/l UNLESS OTHERWISE NOTED.
** PLEASE ATTACH ADDITIONAL SHEETS IF NECESSARY

< = less than the practical quantitation limit (PQL) given

[a]UNITS ARE UG/L
[b]UNITS ARE PCI/l

SEND 3 COPIES OF COMPLETED FORM TO:
ADEQ - COMPLIANCE SECTION, RM 300
2005 N. CENTRAL AVE.
PHOENIX, ARIZONA 85004

ANALYST Robert J. Drake

CHAIN OF CUSTODY RECORD

JOB NO.

PROJECT NAME: Maricopa County Landfill

SAMPLERS: (SIGNATURE) mike Schober

SAMPLE IDENT.	DATE 91	TIME	COMP	GRAB	SAMPLE LOCATION	NUMBER OF CONTAINERS	F.P. TOXICITY	TOTAL METALS	ORGANICS				REMARKS (PHYSICAL APPEARANCE, etc.)	LAB I.D.
Cave Creek P.W.	2/25	3:00		X	Cave Creek Landfill	3	X	X	X				1018169	

TEST METHOD

REQUEST TIME

48 HOURS 1 WEEKS

2 WEEKS 4 WEEKS

RELINQUISHED BY (SIGNATURE)	DATE, TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE, TIME	RECEIVED BY (SIGNATURE)
Mike Schober	2/24/91 930	RECEIVED FOR LABORATORY BY (SIGNATURE)	DATE, TIME		

REMARKS

Arizona Testing Laboratories

810 East Hammond Lane □ Phoenix, Arizona 85034 □ 602/254-6181

For: Maricopa County Landfill Dept.
Attn: Nick Sciarro
3325 West Durango Street
Phoenix, Arizona 85009

Date: April 2, 1991

Lab. No.: 91-101869

Sample: Waste

Marked: Cave Creek PW
Sampled: 02/25/91, 3:00 p.m.
P.O. #K32809

Received: 02/26/91

Submitted by: M. Scheber

REPORT OF LABORATORY TESTS

METHOD	ANALYSIS DATE		E.P. TOXICITY mg/L	ANALYSIS DATE	TOTAL METALS mg/kg
7060	03/14/91	Arsenic	< 0.2	03/19/91	< 1.0
6010	03/09/91	Barium	< 0.5	03/11/91	< 25.
6010	03/09/91	Cadmium	< 0.02	03/11/91	< 0.5
6010	03/09/91	Chromium	< 0.1	03/11/91	< 5.0
6010	03/09/91	Lead	< 0.2	03/11/91	< 5.0
7470	03/06/91	Mercury	< 0.05	03/07/91	< 0.1
7740	03/14/91	Selenium	< 0.1	03/19/91	< 0.5
6010	03/09/91	Silver	< 0.2	03/11/91	< 2.5
9040	03/16/91	pH 8.3			

< = less than the practical quantitation limit (PQL) given

Respectfully submitted,

ARIZONA TESTING LABORATORIES

Umesh Rao, Ph.D.

CHAIN OF CUSTODY

LABORATORY NAME	ADDRESS	CITY, STATE, ZIP CODE	PHONE NUMBER
Arizona Testing Lab	810 E. Hammond	Phoenix, AZ 85034	602) 254-6181
CLIENT NAME	**ADDRESS**	**CITY, STATE, ZIP CODE**	**PHONE NUMBER**
Solid Waste Management Dept.	2901 W. Durango Street	Phoenix, AZ 85009	(602) 269-2661

PROJECT NAME: CAVE CREEK PRODUCTION WELL

SAMPLER PRINT NAME: ANDY RICHARDSON

SIGNATURE: Andy P. Richardson

SAMPLE IDENT	DATE 1991	TIME	COMP	GRAB	SAMPLE DESCRIPTION (SOIL / WASTE / OIL / WATER / WASTEWATER / GROUNDWATER) LOCATION TAKEN	NO. OF CONTAINERS	E.P. TOXICITY/TCLP	TOTAL METALS	ORGANICS ( )	HYDROCARBONS	8010/8020	SOLVENT SCAN			SEE ATTACHED	LAB IDENTIFICATION
01 P.W. #1	11/20	1:40		X	GROUNDWATER — LOCATION TAKEN: CAVE CREEK LANDFILL	6		SEE	ATTACHED							109803
02					LOCATION TAKEN											
03					LOCATION TAKEN											
04					LOCATION TAKEN											
05					LOCATION TAKEN											
06					LOCATION TAKEN											
07					LOCATION TAKEN											
08					LOCATION TAKEN											
09					LOCATION TAKEN											
10					LOCATION TAKEN											

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
Andy P. Richardson	11/20/91	3:20	J Carr Stock				

REMARKS:

TWO WEEK TURN AROUND

COMPLETE TESTING IN: (CHECK ONE)

- [ ] EMERGENCY
- [ ] 48 HOURS
- [ ] ONE (1) WEEK
- [X] TWO (2) WEEKS
- [ ] FOUR (4) WEEKS

MARICOPA COUNTY

Arizona Testing Laboratories

810 East Hammond Lane □ Phoenix, Arizona 85034 □ 602/254-6181

For: Maricopa County Solid Waste
Attn: Nick Sciarro
2901 West Durango Street
Phoenix, Arizona 85009

Date: December 16, 1991

Lab. No.: 91-109803

Sample: Groundwater

Received: 11/20/91

Submitted by: A. Richardson

Marked: Cave Creek Production Well
P.W. #1
Sampled: 11/20/91, 1:40 p.m.
P.O. #B14093

REPORT OF LABORATORY TESTS

METHOD	ANALYSIS DATE			
150.1	11/21/91	pH	7.1	
160.1	11/22/91	Total Dissolved Solids	310.	mg/L
407A	11/26/91	Chloride	16.	
340.2	11/22/91	Fluoride	0.33	
375.4	11/26/91	Sulfate	26.	
300.0	11/21/91	Nitrate-N	1.4	

DEC 1991
RECEIVED
Maricopa County
Solid Waste
Management
Dept

Respectfully submitted,

ARIZONA TESTING LABORATORIES

Umesh Rao, Ph.D.

Arizona Testing Laboratories
810 East Hammond Lane □ Phoenix, Arizona 85034 □ 602/254-6181

For: Maricopa County Solid Waste
Attn: Nick Sciarro
2901 West Durango Street
Phoenix, Arizona 85009

Date: December 16, 1991

Lab. No.: 91-109803

Sample: Groundwater

Received: 11/20/91

Submitted by: A. Richardson

Marked: Cave Creek Production Well
P.W. #1
Sampled: 11/20/91, 1:40 p.m.
P.O. #B14093

REPORT OF LABORATORY TESTS

METHOD	ANALYSIS DATE				
200.7	12/03/91	Aluminum	<	0.10	mg/L
204.2	12/04/91	Antimony	<	0.020	
206.2	12/04/91	Arsenic	<	0.010	
200.7	12/03/91	Barium	<	0.50	
200.7	12/03/91	Beryllium	<	0.010	
213.2	12/04/91	Cadmium	<	0.0050	
218.2	12/05/91	Chromium	<	0.010	
219.2	12/04/91	Cobalt	<	0.010	
200.7	12/03/91	Iron	<	0.50	
239.2	12/04/91	Lead	<	0.0050	
200.7	12/03/91	Manganese	<	0.050	
245.1	11/25/91	Mercury	<	0.0010	
200.7	12/03/91	Nickel	<	0.10	
270.2	12/05/91	Selenium	<	0.0050	
272.2	12/05/91	Silver	<	0.020	
279.2	12/05/91	Thallium	<	0.020	
282.2	12/05/91	Tin	<	0.020	
200.7	12/03/91	Vanadium	<	0.050	
200.7	12/03/91	Zinc		0.24	

< = less than the practical quantitation limit (PQL) given

Respectfully submitted,

ARIZONA TESTING LABORATORIES

Umesh Rao, Ph.D.

Arizona Testing Laboratories
810 East Hammond Lane □ Phoenix, Arizona 85034 □ 602/254-6181

For: Maricopa County Solid Waste
Attn: Nick Sciarro
2901 West Durango Street
Phoenix, Arizona 85009

Date: December 16, 1991

Lab. No.: 91-109803

Sample: Groundwater

Received: 11/20/91

Submitted by: A. Richardson

Marked: Cave Creek Production Well
P.W. #1
Sampled: 11/20/91, 1:40 p.m.
P.O. #B14093

REPORT OF LABORATORY TESTS

***METHOD 501.1**

Chloroform	< 0.001	mg/L
Bromodichloromethane	< 0.001	
Dibromochloromethane	< 0.001	
Bromoform	< 0.001	
Total Trihalomethanes	< 0.005	

< = less than the practical quantitation limit (PQL) given

*Analysis Date: 11/29/91

Respectfully submitted,

ARIZONA TESTING LABORATORIES

Umesh Rao, Ph.D.

Arizona Testing Laboratories
810 East Hammond Lane □ Phoenix, Arizona 85034 □ 602/254-6181

For: Maricopa County Solid Waste
Attn: Nick Sciarro
2901 West Durnago Street
Phoenix, Arizona 85009

Date: December 16, 1991

Lab. No.: 91-109803

Sample: Groundwater

Received: 11/20/91

Submitted by: A. Richardson

Marked: Cave Creek Production Well
P.W. #1
Sampled: 11/20/91, 1:40 p.m.
P.O. #B14093

REPORT OF LABORATORY TESTS

METHOD 601/602 Analysis Date: 11/29/91

Dichlorodifluoromethane	< 1.0	µg/L
Chloromethane	< 1.0	
Vinyl chloride	< 1.0	
Bromomethane	< 1.0	
Chloroethane	< 1.0	
Trichlorofluoromethane	< 1.0	
1,1-Dichloroethene	< 1.0	
Methylene chloride	< 1.0	
trans-1,2-Dichloroethene	< 1.0	
1,1-Dichloroethane	< 1.0	
cis-1,2-Dichloroethene	< 1.0	
Chloroform	< 1.0	
1,1,1-Trichloroethane	< 1.0	
Carbon tetrachloride	< 1.0	
1,2-Dichloroethane	< 1.0	
Trichloroethene	< 1.0	
1,2-Dichloropropane	< 1.0	
Bromodichloromethane	< 1.0	
trans-1,3-Dichloropropene	< 1.0	
cis-1,3-Dichloropropene	< 1.0	
1,1,2-Trichloroethane	< 1.0	
Tetrachloroethene	< 1.0	
Dibromochloromethane	< 1.0	
Chlorobenzene	< 1.0	
2-Chloroethylvinyl ether	< 1.0	
Bromoform	< 1.0	
1,1,2,2-Tetrachloroethane	< 1.0	
1,3-Dichlorobenzene	< 1.0	
1,4-Dichlorobenzene	< 1.0	
1,2-Dichlorobenzene	< 1.0	
Benzene	< 1.0	
Toluene	< 1.0	
Ethylbenzene	< 1.0	
Xylene(s)	< 1.0	

< = less than the practical quantitation limit (PQL) given

Respectfully submitted,

ARIZONA TESTING LABORATORIES

Umesh Rao, Ph.D.

Arizona Testing Laboratories

810 East Hammond Lane □ Phoenix, Arizona 85034 □ 602/254-6181

For: Maricopa County Solid Waste
Attn: Nick Sciarro
2901 West Durango Street
Phoenix, Arizona 85009

Date: December 16, 1991

Lab. No.: 91-109803

Sample: Groundwater

Marked: Cave Creek Production Well
P.W. #1
Sampled: 11/20/91, 1:40 p.m.
P.O. #B14093

Received: 11/20/91

Submitted by: A. Richardson

REPORT OF LABORATORY TESTS

SDWA - PESTICIDES/HERBICIDES

*Endrin	<	0.0001	mg/L
*Lindane	<	0.001	
*Methoxychlor	<	0.01	
*Toxaphene	<	0.001	
**2,4-D	<	0.01	
**2.4.5-TP Silvex	<	0.001	

< = less than the practical quantitation limit (PQL) given

*Analysis Date: 11/29/91
**Analysis Date: 12/03/91

Respectfully submitted,

ARIZONA TESTING LABORATORIES

Umesh Rao, Ph.D.

CHAIN OF CUSTODY RECORD

CLIENT INFORMATION

Client Name:	Address:	City:	State:	Zip Code:	Phone Number:	Contact:
MARICOPA COUNTY SOLID WASTE					269-2661	

Project Identification:	Project Manager:	Name of Sampler (Please Print):	Sampler Signature:	Date:
CAVE CREEK		ANDY RICHARDSON	Andy P. Richardson	8/14/91

SAMPLE INFORMATION

Sample Description:

Soil___ Waste___ Other (Describe): _____

Water___ Oil___

Wastewater___ Groundwater X

No.	Sample Identification:	Date: 91	Time:	Comp	Grab	Sample Location:	Number of Containers	SAMPLE METHOD	ANALYSIS METHOD	Additional Tests Required	Laboratory Number
01	PROD. WELL #1	8/14	12:00		X	CAVE CREEK	6			SEE ATTACHED	10715
02											
03											
04											
05											
06											
07											
08											
09											
10											

LABORATORY

Arizona Testing Laboratories

817 West Madison Street ☐ Phoenix, Arizona 85007 ☐ 602/254-6181

SPECIAL INSTRUCTIONS

2 WEEK TURNAROUND

CUSTODY CHAIN

Relinquished By:	Date/Time:	Received By:	Date/Time:	Relinquished By:	Date/Time:	Received By:	Date/Time:
Andy P. Richardson	8/14/91 1:15	Lorraine Cook	8/14/91 1315				
Relinquished By:	Date/Time:	Received By:	Date/Time:	Relinquished By:	Date/Time:	Received By:	Date/Time:

Arizona Testing Laboratories

810 East Hammond Lane □ Phoenix, Arizona 85034 □ 602/254-6181

For: Maricopa County Landfill Dept.
Attn: Nick Sciarro
3325 West Durango Street
Phoenix, Arizona 85009

Date: August 21, 1991

Lab. No.: 91-107154

Sample: Groundwater

Received: 08/14/91

Submitted by: Andy Richardson

Marked: Cave Creek
Production Well #1
Sampled: 08/14/91, 12:00 p.m.
P.O. #B14093

REPORT OF LABORATORY TESTS

METHOD 601/602 Analysis Date: 08/15/91

Dichlorodifluoromethane	< 1.0	µg/L
Chloromethane	< 1.0	
Vinyl chloride	< 1.0	
Bromomethane	< 1.0	
Chloroethane	< 1.0	
Trichlorofluoromethane	< 1.0	
1,1-Dichloroethene	< 1.0	
Methylene chloride	< 1.0	
trans-1,2-Dichloroethene	< 1.0	
1,1-Dichloroethane	< 1.0	
1,1,1-Trichloroethane	< 1.0	
Carbon tetrachloride	< 1.0	
1,2-Dichloroethane	< 1.0	
Trichloroethene	< 1.0	
1,2-Dichloropropane	< 1.0	
trans-1,3-Dichloropropene	< 1.0	
cis-1,3-Dichloropropene	< 1.0	
1,1,2-Trichloroethane	< 1.0	
Tetrachloroethene	< 1.0	
Chlorobenzene	< 1.0	
2-Chloroethylvinyl ether	< 1.0	
1,1,2,2-Tetrachloroethane	< 1.0	
1,3-Dichlorobenzene	< 1.0	
1,4-Dichlorobenzene	< 1.0	
1,2-Dichlorobenzene	< 1.0	
Benzene	< 1.0	
Toluene	< 1.0	
Ethylbenzene	< 1.0	
Xylene(s)	< 1.0	

< = less than the practical quantitation limit (PQL) given

Respectfully submitted,

ARIZONA TESTING LABORATORIES

Umesh Rao, Ph.D.

Arizona Testing Laboratories

810 East Hammond Lane □ Phoenix, Arizona 85034 □ 602/254-6181

For: Maricopa County Landfill Dept.
Attn: Nick Sciarro
3325 West Durango Street
Phoenix, Arizona 85009

Date: August 21, 1991

Lab. No.: 91-107154

Sample: Groundwater

Received: 08/14/91

Submitted by: Andy Richardson

Marked: Cave Creek
Production Well #1
Sampled: 08/14/91, 12:00 p.m.
P.O. #B14093

REPORT OF LABORATORY TESTS

METHOD 501.1 Analysis Date: 08/15/91

Chloroform	< 0.001	mg/L
Bromodichloromethane	< 0.001	
Dibromochloromethane	< 0.001	
Bromoform	< 0.001	
Total Trihalomethanes	< 0.005	

< = less than the practical quantitation limit (PQL) given

AUG 1991
RECEIVED
Maricopa County
Landfill
Dept.

Respectfully submitted,

ARIZONA TESTING LABORATORIES

Umesh Rao, Ph.D.

Arizona Testing Laboratories

810 East Hammond Lane □ Phoenix, Arizona 85034 □ 602/254-6181

For: Maricopa County Landfill Dept.
Attn: Nick Sciarro
3325 West Durango Street
Phoenix, Arizona 85009

Date: August 28, 1991

Lab. No.: 91-107154

Sample: Groundwater

Marked: Cave Creek
Production Well #1
Sampled: 08/14/91, 12:00 p.m.
P.O. #B14093

Received: 08/14/91

Submitted by: Andy Richardson

REPORT OF LABORATORY TESTS

METHOD	ANALYSIS DATE				
150.1	08/15/91	pH		7.3	
160.1	08/16/91	*Total Dissolved Solids		310.	mg/L
407A	08/26/91	Chloride		16.	
340.2	08/16/91	Fluoride		0.5	
375.4	08/26/91	Sulfate		27.	
353.3	08/15/91	Nitrate-N		1.3	
200.7	08/23/91	Aluminum	<	0.1	
204.2	08/26/91	Antimony	<	0.02	
206.2	08/22/91	Arsenic		0.010	
200.7	08/22/91	Barium	<	0.5	
200.7	08/22/91	Beryllium	<	0.01	
213.1	08/26/91	Cadmium	<	0.005	
218.2	08/26/91	Chromium	<	0.01	
219.2	08/23/91	Cobalt	<	0.01	
200.7	08/22/91	Iron	<	0.1	
239.2	08/27/91	Lead	<	0.002	
200.7	08/22/91	Manganese	<	0.05	
245.1	08/20/91	Mercury	<	0.001	
200.7	08/22/91	Nickel	<	0.05	
270.2	08/23/91	Selenium	<	0.005	
272.2	08/27/91	Silver	<	0.02	
279.2	08/23/91	Thallium	<	0.01	
282.2	08/23/91	Tin	<	0.02	
200.7	08/22/91	Vanadium	<	0.05	
200.7	08/22/91	Zinc		0.21	

< = less than the practical quantitation limit given

*@ 180°C

Respectfully submitted,

ARIZONA TESTING LABORATORIES

Umesh Rao, Ph.D.

AUG 1991
RECEIVED
Maricopa County
Landfill
Dept.

Westech Laboratories Inc.

Phoenix • 3737 E. Broadway Rd. • AZ 85040 • (602) 437-1080 • fax 437-8706
Flagstaff • 2400 E. Huntington Dr. • AZ 86004 • (602) 774-8708 • fax 774-6469
El Paso • 10737 Gateway West #100 • TX 79935 • (915) 592-3591 • fax 592-3594

CHAIN OF CUSTODY RECORD

CLIENT: MARICOPA COUNTY SOLID WASTE	ADDRESS: 2401 W. DURANGO PHOENIX AZ
TELEPHONE: 506-2661	PROJECT: CAVE CREEK GROUNDWATER — JOB/P.O. NO: B2343

• REFER TO FEE SCHEDULE FOR ANALYSES SELECTION •

SAMPLER (SIGNATURE): Andy P. Richardson

SAMPLER (PLEASE PRINT): ANDY RICHARDSON

SAMPLE TYPE CODES: S – SOIL, W – WATER, O – OIL, G – SLUDGE, T – TRAVEL BLANK, F – FIELD BLANK, X – OTHE

REQUESTED ANALYSES

CLIENT SAMPLE IDENTIFICATION NUMBER	DATE	TIME	SAMPLE LOCATION	HOLD	COMPOSITE	GRAB	SAMPLE TYPE	NUMBER OF CONTAINERS	COMMENTS	LABORATORY SAMPLE IDENTIFICATION NUMBER
P.W. #1	7/22/92	1300	CAVE CREEK LANDFILL			X	W	11	GROUNDWATER	9210980
BLANK	7/21/92						T	1		9210992

CONSTITUENT	T.P.A. METHOD	LIMITS
ARSENIC	206.2 OR .3	0.05ppm
BARIUM	208.1	1.0ppm
CADMIUM	213.1	0.01ppm
CHROMIUM (TOTAL)	218.1 OR .2	0.05ppm
FLUORIDE	340.1-OR-.2	0.0ppm
LEAD	239.1 OR .2	0.05ppm
MERCURY	245.1 OR .2	0.002ppm
NITRATE (as N)	353.1,.2,.3	10.0ppm
SELENIUM	270.2-OR-.3	0.01ppm
SILVER	272.1 OR .2	0.05ppm
ENDRIN	D3086	0.0002ppm
LINDANE	D3086	0.001ppm
METHOXYCHLOR	D3086	0.1ppm
TOXAPHENE	D3086	0.005ppm
2,4-D	D3478	0.1ppm
2,4,5-TP (SILVEX)	D3478	0.01ppm
TTHM	501.1-OR-.2	0.1ppm
CHLORIDE	4070	N/A
IRON	236.1	N/A
MANGANESE	243.1	N/A
pH	150.1	0.10
SULFATE	340.1	N/A
TDS	160.1	N/A
ZINC	289.1	N/A
PURGEABLE ORGANICS	8010-602	1.0ppb
ALUMINUM	202.1	3.0ppm
ANTIMONY	204.1	3.0ppm
BERYLLIUM	210.1	0.2ppm
COBALT	219.1	1.0ppm
NICKEL	249.1	1.0ppm
THALLIUM	279.1	1.0ppm
TIN	282.1	5.0ppm
VANADIUM	286.1	4.0ppm

RELINQUISHED BY (SIGNATURE)	RECEIVED BY (SIGNATURE)	DATE	TIME	REMARKS
Andy P. Richardson	Grace A. Graham	7/22/92	14:30	
RELINQUISHED BY (SIGNATURE)	RECEIVED BY (SIGNATURE)	DATE	TIME	
RELINQUISHED BY (SIGNATURE)	RECEIVED BY (SIGNATURE)	DATE	TIME	
RELINQUISHED BY (SIGNATURE)	RECEIVED BY (SIGNATURE)	DATE	TIME	

623 White - Testing Laboratory; Yellow - Department Job File; Pink - Client

Westech Laboratories Inc.
The Quality People
Since 1955

3737 East Broadway Road
Phoenix, Arizona 85040
(602) 437-1080 • fax 437-8706

CLIENT MARICOPA COUNTY, SOLID WASTE MGMT.
ATTN: PETER CULLUM
PROJECT: CAVE CREEK GROUNDWATER
2901 WEST DURANGO STREET
PHOENIX, AZ 85009

SAMPLE NO. : 9210980
INVOICE NO.: 22121678
REPORT DATE: 08-17-92
REVIEWED BY: AGN
PAGE 1 OF 1

CLIENT SAMPLE ID : P.W. #1
SAMPLE TYPE .....: WATER
SAMPLED BY .....: A. RICHARDSON
SUBMITTED BY ....: A. RICHARDSON
SAMPLE SOURCE ...: CAVE CREEK LANDFILL

AUTHORIZED BY : P. CULLUM
CLIENT P.O. : B23433
SAMPLE DATE ...: 07-22-92
SUBMITTAL DATE : 07-22-92
EXTRACTION DATE: --

Inorganic Chemistry - Total Metals

DATA TABLE

Parameter	Result	Unit	Detection Limit	Analysis Date
Total Aluminum ....:	0.08	mg/L	0.05	08-04-92
Total Antimony ....:	<0.05	mg/L	0.05	08-04-92
Total Arsenic ....:	0.10	mg/L	0.05	08-04-92
Total Barium ....:	<0.05	mg/L	0.05	08-04-92
Total Beryllium ....:	<0.05	mg/L	0.05	08-04-92
Total Cadmium ....:	<0.010	mg/L	0.010	08-19-92
Total Chromium ....:	<0.05	mg/L	0.05	08-04-92
Total Cobalt ....:	<0.05	mg/L	0.05	08-04-92
Total Iron ....:	<0.05	mg/L	0.05	08-04-92
Total Lead ....:	<0.05	mg/L	0.05	08-04-92
Total Manganese ....:	<0.05	mg/L	0.05	08-04-92
Total Mercury ....:	<0.001	mg/L	0.001	07-23-92
Total Nickel ....:	<0.05	mg/L	0.05	08-04-92
Total Selenium ....:	<0.005	mg/L	0.005	08-06-92
Total Silver ....:	<0.05	mg/L	0.05	08-04-92
Total Tin ....:	0.15	mg/L	0.05	08-04-92
Total Thallium ....:	<0.10	mg/L	0.10	08-04-92
Total Vanadium ....:	<0.05	mg/L	0.05	08-04-92
Total Zinc ....:	0.10	mg/L	0.05	08-04-92

(1) Copy to Client

Westech Laboratories Inc.
The Quality People
Since 1955

3737 East Broadway Road
Phoenix, Arizona 85040
(602) 437-1080 • fax 437-8706

CLIENT MARICOPA COUNTY, SOLID WASTE MGMT.
ATTN: PETER CULLUM
PROJECT: CAVE CREEK GROUNDWATER
2901 WEST DURANGO STREET
PHOENIX, AZ 85009

SAMPLE NO. : 9210980
INVOICE NO.: 22121678
REPORT DATE: 08-17-92
REVIEWED BY: MY AGN
PAGE : 1 OF 1

CLIENT SAMPLE ID : P.W. #1
SAMPLE TYPE .....: WATER
SAMPLED BY .....: A. RICHARDSON
SUBMITTED BY ....: A. RICHARDSON
SAMPLE SOURCE ...: CAVE CREEK LANDFILL

AUTHORIZED BY : P. CULLUM
CLIENT P.O. : B23433
SAMPLE DATE ...: 07-22-92
SUBMITTAL DATE : 07-22-92
EXTRACTION DATE: --

Inorganic Non-Metals

D A T A T A B L E

Parameter	Result	Unit	Detection Limit	Analysis Date
Chloride .....:	17.	mg/L	1.0	07-22-92
Fluoride .....:	0.41	mg/L	0.10	07-31-92
Nitrate Nitrogen .....:	0.96	mg/L	0.50	07-22-92
pH .....:	7.48	S.U.	1.00	07-22-92
Sulfate .....:	21.	mg/L	5.0	07-22-92
Total Dissolved Solids .....:	320.	mg/L	2.0	07-28-92

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ATTN: PETER CULLUM
PROJECT: CAVE CREEK GROUNDWATER
2901 WEST DURANGO STREET
PHOENIX, AZ 85009

SAMPLE NO. : 9210980
INVOICE NO.: 22121678
REPORT DATE: 08-17-92
REVIEWED BY: MG AGN
PAGE : 1 OF 1

CLIENT SAMPLE ID : P.W. #1
SAMPLE TYPE .....: WATER
SAMPLED BY .....: A. RICHARDSON
SUBMITTED BY ....: A. RICHARDSON
SAMPLE SOURCE ...: CAVE CREEK LANDFILL
ANALYST .....: L. ANTONY

AUTHORIZED BY : P. CULLUM
CLIENT P.O. : B23433
SAMPLE DATE ...: 07-22-92
SUBMITTAL DATE : 07-22-92
EXTRACTION DATE: 07-30-92
ANALYSIS DATE .: 07-30-92

Method 501 - Trihalomethanes

DATA TABLE

Parameter	Result	Unit	Detection Limit
Bromodichloromethane .....:	<0.001	mg/L	0.001
Bromoform .....:	<0.001	mg/L	0.001
Chloroform .....:	<0.001	mg/L	0.001
Dibromochloromethane .....:	<0.001	mg/L	0.001
Total Trihalomethanes .....:	<0.004	mg/L	0.004

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Phoenix, Arizona 85040
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CLIENT MARICOPA COUNTY, SOLID WASTE MGMT.
ATTN: PETER CULLUM
PROJECT: CAVE CREEK GROUNDWATER
2901 WEST DURANGO STREET
PHOENIX, AZ 85009

SAMPLE NO. : 9210980
INVOICE NO.: 22121678
REPORT DATE: 08-17-92
REVIEWED BY: MG. AGN
PAGE : 1 OF 1

CLIENT SAMPLE ID : P.W. #1
SAMPLE TYPE .....: WATER
SAMPLED BY .....: A. RICHARDSON
SUBMITTED BY ....: A. RICHARDSON
SAMPLE SOURCE ...: CAVE CREEK LANDFILL
ANALYST .....: B. AGNEW

AUTHORIZED BY : P. CULLUM
CLIENT P.O. : B23433
SAMPLE DATE ...: 07-22-92
SUBMITTAL DATE : 07-22-92
EXTRACTION DATE: 07-24-92
ANALYSIS DATE .: 07-27-92

Safe Drinking Water Pesticides and Herbicides

DATA TABLE

Parameter	Result	Unit	Detection Limit
Endrin ..... :	<0.0002	mg/L	0.0002
Lindane ..... :	<0.004	mg/L	0.004
Methoxychlor ..... :	<0.1	mg/L	0.1
Toxaphene ..... :	<0.005	mg/L	0.005
2,4-D ..... :	<0.1	mg/L	0.1
2,4,5-TP (SILVEX) ..... :	<0.01	mg/L	0.01

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CLIENT MARICOPA COUNTY, SOLID WASTE MGMT.
ATTN: PETER CULLUM
PROJECT: CAVE CREEK GROUNDWATER
2901 WEST DURANGO STREET
PHOENIX, AZ 85009

SAMPLE NO. : 9210980
INVOICE NO.: 22121678
REPORT DATE: 08-17-92
REVIEWED BY: MG. AGN
PAGE 1 OF 1

CLIENT SAMPLE ID : P.W. #1
SAMPLE TYPE .....: WATER
SAMPLED BY .....: A. RICHARDSON
SUBMITTED BY ....: A. RICHARDSON
SAMPLE SOURCE ...: CAVE CREEK LANDFILL
ANALYST .....: L. ANTONY

AUTHORIZED BY : P. CULLUM
CLIENT P.O. : B23433
SAMPLE DATE ...: 07-22-92
SUBMITTAL DATE : 07-22-92
EXTRACTION DATE: 07-30-92
ANALYSIS DATE .: 07-30-92

Method 601 - Purgeable Halocarbons

DATA TABLE

Parameter	Result	Unit	Detection Limit
1,1,1-Trichloroethane .....:	<0.5	ug/L	0.5
1,1,2,2-Tetrachloroethane .....:	<0.5	ug/L	0.5
1,1,2,2-Tetrachloroethene .....:x	<0.5	ug/L	0.5
1,1,2-Trichloroethane .....:	<0.5	ug/L	0.5
1,1-Dichloroethane .....:	<0.5	ug/L	0.5
1,1-Dichloroethene .....:	<0.5	ug/L	0.5
1,2-Dichlorobenzene .....:	<1.0	ug/L	1.0
1,2-Dichloroethane .....:	<0.5	ug/L	0.5
1,2-Dichloropropane .....:	<0.5	ug/L	0.5
1,3-Dichlorobenzene .....:	<1.0	ug/L	1.0
1,4-Dichlorobenzene .....:	<1.0	ug/L	1.0
Bromodichloromethane .....:	<1.0	ug/L	1.0
Bromoform .....:	<1.0	ug/L	1.0
Bromomethane .....:	<1.0	ug/L	1.0
Carbon tetrachloride .....:	<0.5	ug/L	0.5
Chlorobenzene .....:	<1.0	ug/L	1.0
Chloroethane .....:	<1.0	ug/L	1.0
Chloroform .....:	<0.5	ug/L	0.5
Chloromethane .....:	<1.0	ug/L	1.0
cis 1,3-Dichloropropene .....:	<0.5	ug/L	0.5
Dibromochloromethane .....:	<1.0	ug/L	1.0
Dibromomethane .....:x	<1.0	ug/L	1.0
Dichlorodifluoromethane .....:	<1.0	ug/L	1.0
Dichloromethane .....:x	<5.0	ug/L	5.0
trans 1,2-Dichloroethene .....:	<1.0	ug/L	1.0
trans 1,3-Dichloropropene .....:	<1.0	ug/L	1.0
Trichloroethene(TCE) .....:	<0.5	ug/L	0.5
Trichlorofluoromethane .....:	<1.0	ug/L	1.0
Vinyl chloride .....:	<2.0	ug/L	2.0
2-Chloroethylvinyl ether .....:	<15.	ug/L	15.

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CLIENT MARICOPA COUNTY, SOLID WASTE MGMT.
ATTN: PETER CULLUM
PROJECT: CAVE CREEK GROUNDWATER
2901 WEST DURANGO STREET
PHOENIX, AZ 85009

SAMPLE NO. : 9210980
INVOICE NO.: 22121678
REPORT DATE: 08-17-92
REVIEWED BY: MC RLN
PAGE 1 OF 1

CLIENT SAMPLE ID : P.W. #1
SAMPLE TYPE .....: WATER
SAMPLED BY .....: A. RICHARDSON
SUBMITTED BY ....: A. RICHARDSON
SAMPLE SOURCE ...: CAVE CREEK LANDFILL
ANALYST .....: L. ANTONY

AUTHORIZED BY : P. CULLUM
CLIENT P.O. : B23433
SAMPLE DATE ...: 07-22-92
SUBMITTAL DATE : 07-22-92
EXTRACTION DATE: 07-30-92
ANALYSIS DATE .: 07-30-92

Method 602 - Purgeable Aromatics

DATA TABLE

Parameter	Result	Unit	Detection Limit
1,2-Dichlorobenzene .....:	<1.0	ug/L	1.0
1,3-Dichlorobenzene .....:	<1.0	ug/L	1.0
1,4-Dichlorobenzene .....:	<1.0	ug/L	1.0
Benzene .....:	<1.0	ug/L	1.0
Chlorobenzene .....:	<1.0	ug/L	1.0
Ethylbenzene .....:	<1.0	ug/L	1.0
Toluene .....:	<1.0	ug/L	1.0
Total Xylenes .....:	<0.3	ug/L	0.3

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Phoenix, Arizona 85040
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CLIENT MARICOPA COUNTY, SOLID WASTE MGMT.
ATTN: PETER CULLUM
PROJECT: CAVE CREEK GROUNDWATER
2901 WEST DURANGO STREET
PHOENIX, AZ 85009

SAMPLE NO. : 9210992
INVOICE NO.: 22121678
REPORT DATE: 08-17-92
REVIEWED BY: MG AGN
PAGE : 1 OF 1

CLIENT SAMPLE ID : TRAVEL BLANK
SAMPLE TYPE .....: D.I. WATER
SAMPLED BY .....: K. ST. CLAIR
SUBMITTED BY ....: A. RICHARDSON
SAMPLE SOURCE ...: WESTECH LABS.
ANALYST .....: L. ANTONY

AUTHORIZED BY : P. CULLUM
CLIENT P.O. : B23433
SAMPLE DATE ...: 07-21-92
SUBMITTAL DATE : 07-22-92
EXTRACTION DATE: 07-31-92
ANALYSIS DATE .: 07-31-92

Method 601 - Purgeable Halocarbons

D A T A T A B L E

Parameter	Result	Unit	Detection Limit
1,1,1-Trichloroethane .....:	<0.5	ug/L	0.5
1,1,2,2-Tetrachloroethane .....:	<0.5	ug/L	0.5
1,1,2,2-Tetrachloroethene .....:	<0.5	ug/L	0.5
1,1,2-Trichloroethane .....:	<0.5	ug/L	0.5
1,1-Dichloroethane .....:	<0.5	ug/L	0.5
1,1-Dichloroethene .....:	<0.5	ug/L	0.5
1,2-Dichlorobenzene .....:	<1.0	ug/L	1.0
1,2-Dichloroethane .....:	<0.5	ug/L	0.5
1,2-Dichloropropane .....:	<0.5	ug/L	0.5
1,3-Dichlorobenzene .....:	<1.0	ug/L	1.0
1,4-Dichlorobenzene .....:	<1.0	ug/L	1.0
Bromodichloromethane .....:	<1.0	ug/L	1.0
Bromoform .....:	<1.0	ug/L	1.0
Bromomethane .....:	<1.0	ug/L	1.0
Carbon tetrachloride .....:	<0.5	ug/L	0.5
Chlorobenzene .....:	<1.0	ug/L	1.0
Chloroethane .....:	<1.0	ug/L	1.0
Chloroform .....:	<0.5	ug/L	0.5
Chloromethane .....:	<1.0	ug/L	1.0
cis 1,3-Dichloropropene .....:	<0.5	ug/L	0.5
Dibromochloromethane .....:	<1.0	ug/L	1.0
Dibromomethane .....:	<1.0	ug/L	1.0
Dichlorodifluoromethane .....:	<1.0	ug/L	1.0
Dichloromethane .....:	<5.0	ug/L	5.0
trans 1,2-Dichloroethene .....:	<1.0	ug/L	1.0
trans 1,3-Dichloropropene .....:	<1.0	ug/L	1.0
Trichloroethene(TCE) .....:	<0.5	ug/L	0.5
Trichlorofluoromethane .....:	<1.0	ug/L	1.0
Vinyl chloride .....:	<2.0	ug/L	2.0
2-Chloroethylvinyl ether .....:	<15.	ug/L	15.

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CLIENT MARICOPA COUNTY, SOLID WASTE MGMT.
ATTN: PETER CULLUM
PROJECT: CAVE CREEK GROUNDWATER
2901 WEST DURANGO STREET
PHOENIX, AZ 85009

SAMPLE NO. : 9210992
INVOICE NO.: 22121678
REPORT DATE: 08-17-92
REVIEWED BY: M.S. AGN
PAGE 1 OF 1

CLIENT SAMPLE ID : TRAVEL BLANK
SAMPLE TYPE .....: D.I. WATER
SAMPLED BY .....: K. ST. CLAIR
SUBMITTED BY ....: A. RICHARDSON
SAMPLE SOURCE ...: WESTECH LABS.
ANALYST .....: L. ANTONY

AUTHORIZED BY : P. CULLUM
CLIENT P.O. : B23433
SAMPLE DATE ...: 07-21-92
SUBMITTAL DATE : 07-22-92
EXTRACTION DATE: 07-31-92
ANALYSIS DATE .: 07-31-92

Method 602 - Purgeable Aromatics

D A T A T A B L E

Parameter	Result	Unit	Detection Limit
1,2-Dichlorobenzene .....:	<1.0	ug/L	1.0
1,3-Dichlorobenzene .....:	<1.0	ug/L	1.0
1,4-Dichlorobenzene .....:	<1.0	ug/L	1.0
Benzene .....:	<1.0	ug/L	1.0
Chlorobenzene .....:	<1.0	ug/L	1.0
Ethylbenzene .....:	<1.0	ug/L	1.0
Toluene .....:	<1.0	ug/L	1.0
Total Xylenes .....:	<0.3	ug/L	0.3

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QUALITY CONTROL REPORT

QC IDENTIFIER .....: 24-072892-1
REFERENCE NOTEBOOK : WW-064
REFERENCE PAGE ....: 23

INSTRUMENT : Gravimetric
ANALYZED BY : A. JAIN
ANALYZED ON : 07-28-92

TEST DESCRIPTION ..: Total Dissolved Solids
TEST METHOD .....: 2540-C

SAMPLES IN THIS RUN: 9210853 9210854 9210889 9210890 9210964 9210967 9210968
9210969 9210980 9211001 9211002 9211003 9211139 9211140

REPLICATES -

SAMPLE NUMBER	PARAMETER	UNIT	RESULT	REPLICATE	RPD%
9210890	Total Dissolved Solids	mg/L	400.	392.	2.0
9211003	Total Dissolved Solids	mg/L	300.	305.	1.7

METHOD BLANKS -

PARAMETER	UNIT	RESULT
Total Dissolved Solids	mg/L	<2.0

NOTE -

1) NC: Not Calculable because result is < 5 times the MDL

2) NP: Not Practical because sample result is 4 times or more greater than spike added.

3) Percent Recovery is:

$$\frac{\text{Sample+Spike Result} - \text{Sample Result}}{\text{Spike Amount}} \times 100$$

4) Relative Percent Difference (RPD) is:

$$\frac{\text{Sample Result} - \text{Replicate Result}}{(\text{Sample Result} + \text{Replicate Result})/2} \times 100$$

WESTECH
LABORATORIES
INC.
QUALITY ASSURANCE OFFICER
Anne Nichols
DATE: 8/27/92

Westech Laboratories Inc.
The Quality People
Since 1955

3737 East Broadway Road
Phoenix, Arizona 85040
(602) 437-1080 • fax 437-8706

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 11-072292-6
REFERENCE NOTEBOOK : WW-065
REFERENCE PAGE ....: 20

INSTRUMENT : Beckman 32 pH Meter
ANALYZED BY : C. KOROGHLANIAN
ANALYZED ON : 07-22-92

TEST DESCRIPTION ..: pH
TEST METHOD .....: 4500-H+

'PLES IN THIS RUN: 9210964 9210967 9210968 9210969 9210980

CALIBRATION CHECK -

PARAMETER	UNIT	TRUE VALUE	FOUND VALUE	%RECOVERY
pH	S.U.	10.00	10.02	100.2
pH	S.U.	7.00	7.06	100.9

REPLICATES -

SAMPLE NUMBER	PARAMETER	UNIT	RESULT	REPLICATE	RPD%
.10980	pH	S.U.	7.48	7.52	0.5

NOTE -

1) NC: Not Calculable because result is < 5 times the MDL

2) NP: Not Practical because sample result is 4 times or more greater than spike added.

3) Percent Recovery is:

$$\frac{\text{Sample+Spike Result} - \text{Sample Result}}{\text{Spike Amount}} \times 100$$

4) Relative Percent Difference (RPD) is:

$$\frac{\text{Sample Result} - \text{Replicate Result}}{(\text{Sample Result} + \text{Replicate Result})/2} \times 100$$

APPENDIX E

MONITOR WELL ANALYTICAL RESULTS

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JUL 1993
RECEIVED
Dames & Moore Phx.

Cave Creek Landfill
CCMW-1 CCMW-2
Methods 8260
8010
8020
Inorganic - Non-Metals

CLIENT DAMES & MOORE
ATTN: DOUG BARTLETT
7500 NORTH DREAMY DRAW, SUITE 145
PHOENIX, AZ 85020

SAMPLE NO. : 9313962
INVOICE NO.: 22132089
REPORT DATE: 07-07-93
REVIEWED BY: AGN
PAGE : 1 OF 1

CLIENT SAMPLE ID : CCMW-2
SAMPLE TYPE .....: WATER
SAMPLED BY .....: R. HARKLAU
SUBMITTED BY ....: R. HARKLAU
SAMPLE SOURCE ...: CAVE CREEK LANDFILL

AUTHORIZED BY : D. BARTLETT
CLIENT P.O. : D16225
SAMPLE DATE ...: 06-14-93
SUBMITTAL DATE : 06-15-93
EXTRACTION DATE: --

Inorganic Chemistry - Non-Metals

DATA TABLE

Parameter	Result	Unit	Detection Limit	Analysis Date
Alkalinity, Total .....:	240.	mg/L	2.0	06-16-93
Chemical Oxygen Demand .....:	6.	mg/L	5.	06-21-93
Chloride .....:	20.	mg/L	1.0	06-15-93
Electrical Conductivity .....:	2300.	umhos/cm	0.5	06-16-93
Fluoride .....:	0.42	mg/L	0.10	06-18-93
Nitrate Nitrogen .....:	1.8	mg/L	0.50	06-15-93
Nitrogen, Total Kjeldahl .....:	<0.1	mg/L	0.1	06-18-93
pH .....:	7.69	S.U.	1.00	06-15-93
Sulfate .....:	20.	mg/L	5.0	06-15-93
Total Dissolved Solids .....:	300.	mg/L	5.	06-18-93
Total Organic Carbon .....:	1.9	mg/L	1.0	06-18-93
Total Organic Halogens .....:	<0.05	mg/L	0.05	06-21-93

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Managing Director

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CLIENT DAMES & MOORE
ATTN: DOUG BARTLETT
7500 NORTH DREAMY DRAW, SUITE 145
PHOENIX, AZ 85020

SAMPLE NO. : 9313962
INVOICE NO.: 22132089
REPORT DATE: 07-07-93
REVIEWED BY: AGN
PAGE : 1 OF 2

CLIENT SAMPLE ID : CCMW-2
SAMPLE TYPE .....: WATER
SAMPLED BY .....: R. HARKLAU
SUBMITTED BY ....: R. HARKLAU
SAMPLE SOURCE ...: CAVE CREEK LANDFILL
ANALYST .....: L. ANTONY

AUTHORIZED BY : D. BARTLETT
CLIENT P.O. : D16225
SAMPLE DATE ...: 06-14-93
SUBMITTAL DATE : 06-15-93
EXTRACTION DATE: 06-22-93
ANALYSIS DATE .: 06-22-93

Method 8260 - Volatile Organics

DATA TABLE

Parameter	Result	Unit	Detection Limit
1,1,1,2-Tetrachloroethane .....:	<2.0	ug/L	2.0
1,1,1-Trichloroethane .....:	<2.0	ug/L	2.0
1,1,2,2-Tetrachloroethane .....:	<2.0	ug/L	2.0
Tetrachloroethene (PCE) .....:	<2.0	ug/L	2.0
1,1,2-Trichloroethane .....:	<2.0	ug/L	2.0
1,1-Dichloroethane .....:	<2.0	ug/L	2.0
1,1-Dichloroethene .....:	<2.0	ug/L	2.0
1,1-Dichloropropene .....:	<2.0	ug/L	2.0
1,2-Dibromoethane (EDB) .....:	<5.0	ug/L	5.0
1,2,3-Trichlorobenzene .....:	<2.0	ug/L	2.0
1,2,3-Trichloropropane .....:	<2.0	ug/L	2.0
1,2,4-Trichlorobenzene .....:	<2.0	ug/L	2.0
1,2,4-Trimethylbenzene .....:	<2.0	ug/L	2.0
1,2-Dichlorobenzene .....:	<2.0	ug/L	2.0
1,2-Dichloroethane .....:	<2.0	ug/L	2.0
1,2-Dichloropropane .....:	<2.0	ug/L	2.0
1,3,5-Trimethylbenzene .....:	<2.0	ug/L	2.0
1,3-Dichlorobenzene .....:	<2.0	ug/L	2.0
1,3-Dichloropropane .....:	<2.0	ug/L	2.0
1,4-Dichlorobenzene .....:	<2.0	ug/L	2.0
2,2-Dichloropropane .....:	<2.0	ug/L	2.0
2-Chlorotoluene .....:	<2.0	ug/L	2.0
2-Hexanone .....:	<10.	ug/L	10.
4-Chlorotoluene .....:	<2.0	ug/L	2.0
4-Isopropyltoluene .....:	<2.0	ug/L	2.0
Acetone (2-Propanone) .....:	<20.	ug/L	20.
Benzene .....:	<2.0	ug/L	2.0
Bromobenzene .....:	<2.0	ug/L	2.0
Bromochloromethane .....:	<2.0	ug/L	2.0
Bromodichloromethane .....:	<2.0	ug/L	2.0

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Managing Director

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Phoenix, Arizona 85040
(602) 437-1080 • fax 437-8706

CLIENT DAMES & MOORE
ATTN: DOUG BARTLETT
7500 NORTH DREAMY DRAW, SUITE 145
PHOENIX, AZ 85020

SAMPLE NO. : 9313962
INVOICE NO.: 22132089
REPORT DATE: 07-07-93
REVIEWED BY: AGN

D A T A T A B L E (Cont.)

Parameter	Result	Unit	Detection Limit
Bromoform	<5.0	ug/L	5.0
Bromomethane	<5.0	ug/L	5.0
Carbon Tetrachloride	<2.0	ug/L	2.0
Chlorobenzene	<2.0	ug/L	2.0
Chloroethane	<2.0	ug/L	2.0
Chloroform	<2.0	ug/L	2.0
Chloromethane	<2.0	ug/L	2.0
cis 1,2-Dichloroethene	<2.0	ug/L	2.0
Dibromochloromethane	<2.0	ug/L	2.0
Dibromochloropropane (DBCP)	<10.	ug/L	10.
Dibromomethane	<2.0	ug/L	2.0
Dichlorodifluoromethane	<5.0	ug/L	5.0
Dichloromethane	<2.0	ug/L	2.0
Diethyl ether	<100.	ug/L	100.
1,1,2-Trichloro-1,2,2-Trifluoro-Ethane (Freon 113)	<2.0	ug/L	2.0
Ethylbenzene	<2.0	ug/L	2.0
Hexachlorobutadiene	<2.0	ug/L	2.0
Isopropylbenzene	<2.0	ug/L	2.0
Methyl Ethyl Ketone (2-Butanone)	<20.	ug/L	20.
Methyl iso-Butyl Ketone (4-Methyl-2-Pentanone)	<20.	ug/L	20.
Methyl tert-Butyl Ether	<20.	ug/L	20.
m-Xylene	<2.0	ug/L	2.0
Naphthalene	<5.0	ug/L	5.0
n-Butylbenzene	<2.0	ug/L	2.0
o-Xylene	<2.0	ug/L	2.0
Propylbenzene	<2.0	ug/L	2.0
p-Xylene	<2.0	ug/L	2.0
sec-Butylbenzene	<2.0	ug/L	2.0
Styrene	<2.0	ug/L	2.0
tert-Butylbenzene	<2.0	ug/L	2.0
Toluene	<2.0	ug/L	2.0
trans 1,2-Dichloroethene	<2.0	ug/L	2.0
Trichloroethene	<2.0	ug/L	2.0
Trichlorofluoromethane	<5.0	ug/L	5.0
Vinyl chloride	<5.0	ug/L	5.0

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PHOENIX, AZ 85020

SAMPLE NO. : 9313963
INVOICE NO.: 22132089
REPORT DATE: 07-07-93
REVIEWED BY: AGN
PAGE : 1 OF 2

CLIENT SAMPLE ID : CCMW-2
SAMPLE TYPE .....: SOIL
SAMPLED BY .....: R. HARKLAU
SUBMITTED BY ....: R. HARKLAU
SAMPLE SOURCE ...: CAVE CREEK LANDFILL
ANALYST .....: S. KUTA

AUTHORIZED BY : D. BARTLETT
CLIENT P.O. : D16225
SAMPLE DATE ...: 06-14-93
SUBMITTAL DATE : 06-15-93
EXTRACTION DATE: 07-01-93
ANALYSIS DATE .: 07-01-93

Method 8010 - Halogenated Volatile Organics

DATA TABLE

Parameter	Result	Unit	Detection Limit
Bromochloromethane	<50.	ug/Kg	50.
Bromodichloromethane	<50.	ug/Kg	50.
Bromoform	<50.	ug/Kg	50.
Bromomethane	<50.	ug/Kg	50.
Carbon tetrachloride	<25.	ug/Kg	25.
Chlorobenzene	<10.	ug/Kg	10.
Chloroethene	<50.	ug/Kg	50.
Chloroform	<25.	ug/Kg	25.
Chloromethane	<50.	ug/Kg	50.
Dibromochloromethane	<50.	ug/Kg	50.
1,2-Dichlorobenzene	<10.	ug/Kg	10.
1,3-Dichlorobenzene	<10.	ug/Kg	10.
1,4-Dichlorobenzene	<10.	ug/Kg	10.
Dichlorodifluoromethane	<50.	ug/Kg	50.
1,1-Dichloroethane	<25.	ug/Kg	25.
1,2-Dichloroethane	<25.	ug/Kg	25.
1,1-Dichloroethene	<25.	ug/Kg	25.
cis 1,2-Dichloroethene	<25.	ug/Kg	25.
trans 1,2-Dichloroethene	<50.	ug/Kg	50.
1,2-Dichloropropane	<25.	ug/Kg	25.
trans 1,3-Dichloropropene	<25.	ug/Kg	25.
cis 1,2-Dichloropropene	<25.	ug/Kg	25.
Dichloromethane	<250.	ug/Kg	250.
1,1,2,2-Tetrachloroethane	<25.	ug/Kg	25.
1,1,2,2-Tetrachloroethene	<25.	ug/Kg	25.
1,1,1-Trichloroethane	<25.	ug/Kg	25.
1,1,2-Trichloroethane	<25.	ug/Kg	25.
Trichloroethene	<25.	ug/Kg	25.
Trichlorofluoromethane	<50.	ug/Kg	50.
Vinyl chloride	<50.	ug/Kg	50.

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SAMPLE NO. : 9313963
INVOICE NO.: 22132089
REPORT DATE: 07-07-93
REVIEWED BY: AGN

D A T A T A B L E (Cont.)

Parameter	Result	Unit	Detection Limit
2-Chloroethylvinyl Ether .....:	<20.	ug/Kg	20.

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PHOENIX, AZ 85020

SAMPLE NO. : 9313963
INVOICE NO.: 22132089
REPORT DATE: 07-07-93
REVIEWED BY: AGN
PAGE : 1 OF 1

CLIENT SAMPLE ID : CCMW-2
SAMPLE TYPE .....: SOIL
SAMPLED BY .....: R. HARKLAU
SUBMITTED BY ....: R. HARKLAU
SAMPLE SOURCE ...: CAVE CREEK LANDFILL
ANALYST .....: S. KUTA

AUTHORIZED BY : D. BARTLETT
CLIENT P.O. : D16225
SAMPLE DATE ...: 06-14-93
SUBMITTAL DATE : 06-15-93
EXTRACTION DATE: 07-01-93
ANALYSIS DATE .: 07-01-93

Method 8020 - Aromatic Volatiles

DATA TABLE

Parameter	Result	Unit	Detection Limit
Chlorobenzene	<10.	ug/Kg	10.
1,2-Dichlorobenzene	<10.	ug/Kg	10.
1,3-Dichlorobenzene	<10.	ug/Kg	10.
1,4-Dichlorobenzene	<10.	ug/Kg	10.
Ethylbenzene	<10.	ug/Kg	10.
Toluene	<10.	ug/Kg	10.
Total Xylenes	<3.0	ug/Kg	3.0
Benzene	<10.	ug/Kg	10.

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SAMPLE NO. : 9313964
INVOICE NO.: 22132089
REPORT DATE: 07-07-93
REVIEWED BY: AGN
PAGE : 1 OF 1

CLIENT SAMPLE ID : CCMW-1
SAMPLE TYPE .....: WATER
SAMPLED BY .....: R. HARKLAU
SUBMITTED BY ....: R. HARKLAU
SAMPLE SOURCE ...: CAVE CREEK LANDFILL

AUTHORIZED BY : D. BARTLETT
CLIENT P.O. : D16225
SAMPLE DATE ...: 06-14-93
SUBMITTAL DATE : 06-15-93
EXTRACTION DATE: --

Inorganic Chemistry - Non-Metals

DATA TABLE

Parameter	Result	Unit	Detection Limit	Analysis Date
Alkalinity, Total .....:	250.	mg/L	2.0	06-16-93
Chemical Oxygen Demand .....:	<5.	mg/L	5.	06-21-93
Chloride .....:	13.	mg/L	1.0	06-15-93
Electrical Conductivity .....:	480.	umhos/cm	0.5	06-16-93
Fluoride .....:	0.49	mg/L	0.10	06-18-93
Nitrate Nitrogen .....:	2.0	mg/L	0.50	06-15-93
Nitrogen, Total Kjeldahl .....:	<0.1	mg/L	0.1	06-18-93
pH .....:	7.96	S.U.	1.00	06-15-93
Sulfate .....:	20.	mg/L	5.0	06-15-93
Total Dissolved Solids .....:	330.	mg/L	5.	06-18-93
Total Organic Carbon .....:	3.8	mg/L	1.0	06-18-93
Total Organic Halogens .....:	<0.05	mg/L	0.05	06-21-93

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SAMPLE NO. : 9313964
INVOICE NO.: 22132089
REPORT DATE: 07-07-93
REVIEWED BY: AGN
PAGE : 1 OF 2

CLIENT SAMPLE ID : CCMW-1
SAMPLE TYPE .....: WATER
SAMPLED BY .....: R. HARKLAU
SUBMITTED BY ....: R. HARKLAU
SAMPLE SOURCE ...: CAVE CREEK LANDFILL
ANALYST .....: L. ANTONY

AUTHORIZED BY : D. BARTLETT
CLIENT P.O. : D16225
SAMPLE DATE ...: 06-14-93
SUBMITTAL DATE : 06-15-93
EXTRACTION DATE: 06-22-93
ANALYSIS DATE .: 06-22-93

Method 8260 - Volatile Organics

DATA TABLE

Parameter	Result	Unit	Detection Limit
1,1,1,2-Tetrachloroethane .....:	<2.0	ug/L	2.0
1,1,1-Trichloroethane .....:	<2.0	ug/L	2.0
1,1,2,2-Tetrachloroethane .....:	<2.0	ug/L	2.0
Tetrachloroethene (PCE) .....:	<2.0	ug/L	2.0
1,1,2-Trichloroethane .....:	<2.0	ug/L	2.0
1,1-Dichloroethane .....:	<2.0	ug/L	2.0
1,1-Dichloroethene .....:	<2.0	ug/L	2.0
1,1-Dichloropropene .....:	<2.0	ug/L	2.0
1,2-Dibromoethane (EDB) .....:	<5.0	ug/L	5.0
1,2,3-Trichlorobenzene .....:	<2.0	ug/L	2.0
1,2,3-Trichloropropane .....:	<2.0	ug/L	2.0
1,2,4-Trichlorobenzene .....:	<2.0	ug/L	2.0
1,2,4-Trimethylbenzene .....:	<2.0	ug/L	2.0
1,2-Dichlorobenzene .....:	<2.0	ug/L	2.0
1,2-Dichloroethane .....:	<2.0	ug/L	2.0
1,2-Dichloropropane .....:	<2.0	ug/L	2.0
1,3,5-Trimethylbenzene .....:	<2.0	ug/L	2.0
1,3-Dichlorobenzene .....:	<2.0	ug/L	2.0
1,3-Dichloropropane .....:	<2.0	ug/L	2.0
1,4-Dichlorobenzene .....:	<2.0	ug/L	2.0
2,2-Dichloropropane .....:	<2.0	ug/L	2.0
2-Chlorotoluene .....:	<2.0	ug/L	2.0
2-Hexanone .....:	<10.	ug/L	10.
4-Chlorotoluene .....:	<2.0	ug/L	2.0
4-Isopropyltoluene .....:	<2.0	ug/L	2.0
Acetone (2-Propanone) .....:	<20.	ug/L	20.
Benzene .....:	<2.0	ug/L	2.0
Bromobenzene .....:	<2.0	ug/L	2.0
Bromochloromethane .....:	<2.0	ug/L	2.0
Bromodichloromethane .....:	<2.0	ug/L	2.0

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SAMPLE NO. : 9313964
INVOICE NO.: 22132089
REPORT DATE: 07-07-93
REVIEWED BY: AEN

DATA TABLE (Cont.)

Parameter	Result	Unit	Detection Limit
Bromoform	<5.0	ug/L	5.0
Bromomethane	<5.0	ug/L	5.0
Carbon Tetrachloride	<2.0	ug/L	2.0
Chlorobenzene	<2.0	ug/L	2.0
Chloroethane	<2.0	ug/L	2.0
Chloroform	<2.0	ug/L	2.0
Chloromethane	<2.0	ug/L	2.0
cis 1,2-Dichloroethene	<2.0	ug/L	2.0
Dibromochloromethane	<2.0	ug/L	2.0
Dibromochloropropane (DBCP)	<10.	ug/L	10.
Dibromomethane	<2.0	ug/L	2.0
Dichlorodifluoromethane	<5.0	ug/L	5.0
Dichloromethane	<2.0	ug/L	2.0
Diethyl ether	<100.	ug/L	100.
1,1,2-Trichloro-1,2,2-Trifluoro-Ethane (Freon 113)	<2.0	ug/L	2.0
Ethylbenzene	<2.0	ug/L	2.0
Hexachlorobutadiene	<2.0	ug/L	2.0
Isopropylbenzene	<2.0	ug/L	2.0
Methyl Ethyl Ketone (2-Butanone)	<20.	ug/L	20.
Methyl iso-Butyl Ketone (4-Methyl-2-Pentanone)	<20.	ug/L	20.
Methyl tert-Butyl Ether	<20.	ug/L	20.
m-Xylene	<2.0	ug/L	2.0
Naphthalene	<5.0	ug/L	5.0
n-Butylbenzene	<2.0	ug/L	2.0
o-Xylene	<2.0	ug/L	2.0
Propylbenzene	<2.0	ug/L	2.0
p-Xylene	<2.0	ug/L	2.0
sec-Butylbenzene	<2.0	ug/L	2.0
Styrene	<2.0	ug/L	2.0
tert-Butylbenzene	<2.0	ug/L	2.0
Toluene	<2.0	ug/L	2.0
trans 1,2-Dichloroethene	<2.0	ug/L	2.0
Trichloroethene	<2.0	ug/L	2.0
Trichlorofluoromethane	<5.0	ug/L	5.0
Vinyl chloride	<5.0	ug/L	5.0

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SAMPLE NO. : 9313965
INVOICE NO.: 22132089
REPORT DATE: 07-07-93
REVIEWED BY: AGN
PAGE : 1 OF 2

CLIENT SAMPLE ID : CCMW-1
SAMPLE TYPE .....: SOIL
SAMPLED BY .....: R. HARKLAU
SUBMITTED BY ....: R. HARKLAU
SAMPLE SOURCE ...: CAVE CREEK LANDFILL
ANALYST .....: S. KUTA

AUTHORIZED BY : D. BARTLETT
CLIENT P.O. : D16225
SAMPLE DATE ...: 06-14-93
SUBMITTAL DATE : 06-15-93
EXTRACTION DATE: 07-01-93
ANALYSIS DATE .: 07-01-93

Method 8010 - Halogenated Volatile Organics

DATA TABLE

Parameter	Result	Unit	Detection Limit
Bromochloromethane	<50.	ug/Kg	50.
Bromodichloromethane	<50.	ug/Kg	50.
Bromoform	<50.	ug/Kg	50.
Bromomethane	<50.	ug/Kg	50.
Carbon tetrachloride	<25.	ug/Kg	25.
Chlorobenzene	<10.	ug/Kg	10.
Chloroethene	<50.	ug/Kg	50.
Chloroform	<25.	ug/Kg	25.
Chloromethane	<50.	ug/Kg	50.
Dibromochloromethane	<50.	ug/Kg	50.
1,2-Dichlorobenzene	<10.	ug/Kg	10.
1,3-Dichlorobenzene	<10.	ug/Kg	10.
1,4-Dichlorobenzene	<10.	ug/Kg	10.
Dichlorodifluoromethane	<50.	ug/Kg	50.
1,1-Dichloroethane	<25.	ug/Kg	25.
1,2-Dichloroethane	<25.	ug/Kg	25.
1,1-Dichloroethene	<25.	ug/Kg	25.
cis 1,2-Dichloroethene	<25.	ug/Kg	25.
trans 1,2-Dichloroethene	<50.	ug/Kg	50.
1,2-Dichloropropane	<25.	ug/Kg	25.
trans 1,3-Dichloropropene	<25.	ug/Kg	25.
cis 1,2-Dichloropropene	<25.	ug/Kg	25.
Dichloromethane	<250.	ug/Kg	250.
1,1,2,2-Tetrachloroethane	<25.	ug/Kg	25.
1,1,2,2-Tetrachloroethene	<25.	ug/Kg	25.
1,1,1-Trichloroethane	<25.	ug/Kg	25.
1,1,2-Trichloroethane	<25.	ug/Kg	25.
Trichloroethene	<25.	ug/Kg	25.
Trichlorofluoromethane	<50.	ug/Kg	50.
Vinyl chloride	<50.	ug/Kg	50.

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REPORT DATE: 07-07-93
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D A T A T A B L E (Cont.)

Parameter	Result	Unit	Detection Limit
2-Chloroethylvinyl Ether .....:	<20.	ug/Kg	20.

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INVOICE NO.: 22132089
REPORT DATE: 07-07-93
REVIEWED BY: AGN
PAGE : 1 OF 1

CLIENT SAMPLE ID : CCMW-1
SAMPLE TYPE .....: SOIL
SAMPLED BY .....: R. HARKLAU
SUBMITTED BY ....: R. HARKLAU
SAMPLE SOURCE ...: CAVE CREEK LANDFILL
ANALYST .....: S. KUTA

AUTHORIZED BY : D. BARTLETT
CLIENT P.O. : D16225
SAMPLE DATE ...: 06-14-93
SUBMITTAL DATE : 06-15-93
EXTRACTION DATE: 07-01-93
ANALYSIS DATE .: 07-01-93

Method 8020 - Aromatic Volatiles

D A T A T A B L E

Parameter	Result	Unit	Detection Limit
Chlorobenzene	<10.	ug/Kg	10.
1,2-Dichlorobenzene	<10.	ug/Kg	10.
1,3-Dichlorobenzene	<10.	ug/Kg	10.
1,4-Dichlorobenzene	<10.	ug/Kg	10.
Ethylbenzene	<10.	ug/Kg	10.
Toluene	<10.	ug/Kg	10.
Total Xylenes	<3.0	ug/Kg	3.0
Benzene	<10.	ug/Kg	10.

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SAMPLE NO. : 9313966
INVOICE NO.: 22132089
REPORT DATE: 07-07-93
REVIEWED BY: AGN
PAGE : 1 OF 2

CLIENT SAMPLE ID : TRAVEL BLANK
SAMPLE TYPE .....: D.I. WATER
SAMPLED BY .....: WL/PERSONNEL
SUBMITTED BY ....: R. HARKLAU
SAMPLE SOURCE ...: WESTECH LABS
ANALYST .....: L. ANTONY

AUTHORIZED BY : D. BARTLETT
CLIENT P.O. : D16225
SAMPLE DATE ...: 06-11-93
SUBMITTAL DATE : 06-15-93
EXTRACTION DATE: 06-22-93
ANALYSIS DATE .: 06-22-93

Method 8260 - Volatile Organics

DATA TABLE

Parameter	Result	Unit	Detection Limit
1,1,1,2-Tetrachloroethane .....:	<2.0	ug/L	2.0
1,1,1-Trichloroethane .....:	<2.0	ug/L	2.0
1,1,2,2-Tetrachloroethane .....:	<2.0	ug/L	2.0
Tetrachloroethene (PCE) .....:	<2.0	ug/L	2.0
1,1,2-Trichloroethane .....:	<2.0	ug/L	2.0
1,1-Dichloroethane .....:	<2.0	ug/L	2.0
1,1-Dichloroethene .....:	<2.0	ug/L	2.0
1,1-Dichloropropene .....:	<2.0	ug/L	2.0
1,2-Dibromoethane (EDB) .....:	<5.0	ug/L	5.0
1,2,3-Trichlorobenzene .....:	<2.0	ug/L	2.0
1,2,3-Trichloropropane .....:	<2.0	ug/L	2.0
1,2,4-Trichlorobenzene .....:	<2.0	ug/L	2.0
1,2,4-Trimethylbenzene .....:	<2.0	ug/L	2.0
1,2-Dichlorobenzene .....:	<2.0	ug/L	2.0
1,2-Dichloroethane .....:	<2.0	ug/L	2.0
1,2-Dichloropropane .....:	<2.0	ug/L	2.0
1,3,5-Trimethylbenzene .....:	<2.0	ug/L	2.0
1,3-Dichlorobenzene .....:	<2.0	ug/L	2.0
1,3-Dichloropropane .....:	<2.0	ug/L	2.0
1,4-Dichlorobenzene .....:	<2.0	ug/L	2.0
2,2-Dichloropropane .....:	<2.0	ug/L	2.0
2-Chlorotoluene .....:	<2.0	ug/L	2.0
2-Hexanone .....:	<10.	ug/L	10.
4-Chlorotoluene .....:	<2.0	ug/L	2.0
4-Isopropyltoluene .....:	<2.0	ug/L	2.0
Acetone (2-Propanone) .....:	<20.	ug/L	20.
Benzene .....:	<2.0	ug/L	2.0
Bromobenzene .....:	<2.0	ug/L	2.0
Bromochloromethane .....:	<2.0	ug/L	2.0
Bromodichloromethane .....:	<2.0	ug/L	2.0

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PHOENIX, AZ 85020

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INVOICE NO.: 22132089
REPORT DATE: 07-07-93
REVIEWED BY: AGN
PAGE : 2 OF 2

DATA TABLE (Cont.)

Parameter	Result	Unit	Detection Limit
Bromoform	<5.0	ug/L	5.0
Bromomethane	<5.0	ug/L	5.0
Carbon Tetrachloride	<2.0	ug/L	2.0
Chlorobenzene	<2.0	ug/L	2.0
Chloroethane	<2.0	ug/L	2.0
Chloroform	<2.0	ug/L	2.0
Chloromethane	<2.0	ug/L	2.0
cis 1,2-Dichloroethene	<2.0	ug/L	2.0
Dibromochloromethane	<2.0	ug/L	2.0
Dibromochloropropane (DBCP)	<10.	ug/L	10.
Dibromomethane	<2.0	ug/L	2.0
Dichlorodifluoromethane	<5.0	ug/L	5.0
Dichloromethane	<2.0	ug/L	2.0
Diethyl ether	<100.	ug/L	100.
1,1,2-Trichloro-1,2,2-Trifluoro-Ethane (Freon 113)	<2.0	ug/L	2.0
Ethylbenzene	<2.0	ug/L	2.0
Hexachlorobutadiene	<2.0	ug/L	2.0
Isopropylbenzene	<2.0	ug/L	2.0
Methyl Ethyl Ketone (2-Butanone)	<20.	ug/L	20.
Methyl iso-Butyl Ketone (4-Methyl-2-Pentanone)	<20.	ug/L	20.
Methyl tert-Butyl Ether	<20.	ug/L	20.
m-Xylene	<2.0	ug/L	2.0
Naphthalene	<5.0	ug/L	5.0
n-Butylbenzene	<2.0	ug/L	2.0
o-Xylene	<2.0	ug/L	2.0
Propylbenzene	<2.0	ug/L	2.0
p-Xylene	<2.0	ug/L	2.0
sec-Butylbenzene	<2.0	ug/L	2.0
Styrene	<2.0	ug/L	2.0
tert-Butylbenzene	<2.0	ug/L	2.0
Toluene	<2.0	ug/L	2.0
trans 1,2-Dichloroethene	<2.0	ug/L	2.0
Trichloroethene	<2.0	ug/L	2.0
Trichlorofluoromethane	<5.0	ug/L	5.0
Vinyl chloride	<5.0	ug/L	5.0

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QUALITY CONTROL REPORT

QC IDENTIFIER .....: 13-061693-36
REFERENCE NOTEBOOK : WW-050
REFERENCE PAGE ....: 98

INSTRUMENT : Titration Methods
ANALYZED BY : E. BISSELL
ANALYZED ON : 06-16-93

TEST DESCRIPTION ..: Alkalinity,Total
TEST METHOD .....: 2320 B

SAMPLES IN THIS RUN: 9313675 9313695 9313724 9313773 9313774 9313811 9313812 9313813 9313814 9313815 9313816 9313817 9313818 9313819 9313820 9313821 9313822 9313823 9313824 9313825 9313826 9313827 9313828 9313829 9313830 9313831 9313832 9313833 9313834 9313835 9313850 9313950 9313958 9313962 9313964 9313995

REPLICATES -

SAMPLE NUMBER	PARAMETER	UNIT	RESULT	REPLICATE	RPD%
9313818	Alkalinity,Total	mg/L	140.	130.	7.4
9313828	Alkalinity,Total	mg/L	130.	130.	0.0
9313950	Alkalinity,Total	mg/L	190.	180.	5.4
9313964	Alkalinity,Total	mg/L	250.	250.	0.0

NOTE -

1) NC: Not Calculable because result is < 5 times the MDL

2) NP: Not Practical because sample result is 4 times or more greater than spike added.

3) Percent Recovery is:

$$\frac{\text{Sample+Spike Result} - \text{Sample Result}}{\text{Spike Amount}} \times 100$$

4) Relative Percent Difference (RPD) is:

$$\frac{\text{Sample Result} - \text{Replicate Result}}{(\text{Sample Result} + \text{Replicate Result})/2} \times 100$$

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DATE: 7/13/93

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QUALITY CONTROL REPORT

QC IDENTIFIER .....: 13-062193-17
REFERENCE NOTEBOOK : WW-089
REFERENCE PAGE ....: 46

INSTRUMENT : Titration Methods
ANALYZED BY : C. KOROGHLANIAN
ANALYZED ON : 06-21-93

TEST DESCRIPTION ..: Chemical Oxygen Demand
TEST METHOD .....: EPA 410.2

SAMPLES IN THIS RUN: 9313962 9313964

CALIBRATION CHECK -

PARAMETER	UNIT	TRUE VALUE	FOUND VALUE	%RECOVERY
Chemical Oxygen Demand	mg/L	50.00	49.69	99.4

SPIKES -

SAMPLE NUMBER	PARAMETER	UNIT	SAMPLE RESULT	SPIKE AMOUNT	SAMPLE+SPIKE RESULT	%RECOVERY
9313962	Chemical Oxygen Demand	mg/L	6.	100	102.01	96.0

NOTE -

1) NC: Not Calculable because result is < 5 times the MDL

2) NP: Not Practical because sample result is 4 times or more greater than spike added.

3) Percent Recovery is:

$$\frac{\text{Sample+Spike Result} - \text{Sample Result}}{\text{Spike Amount}} \times 100$$

4) Relative Percent Difference (RPD) is:

$$\frac{\text{Sample Result} - \text{Replicate Result}}{(\text{Sample Result} + \text{Replicate Result})/2} \times 100$$

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QUALITY CONTROL REPORT

QC IDENTIFIER .....: 17-061593-7
REFERENCE NOTEBOOK : WW-086
REFERENCE PAGE ....: 81

INSTRUMENT : Waters Ion Chromatography
ANALYZED BY : C. KOROGHLANIAN
ANALYZED ON : 06-15-93

TEST DESCRIPTION ..: Chloride
TEST METHOD .....: EPA 300.0

SAMPLES IN THIS RUN: 9313950 9313958 9313962 9313964 9313995 9314044

CALIBRATION CHECK -

PARAMETER	UNIT	TRUE VALUE	FOUND VALUE	%RECOVERY
Chloride	mg/L	5.00	5.336	106.7
Chloride	mg/L	5.00	5.224	104.5
Chloride	mg/L	5.00	5.077	101.5

REPLICATES -

SAMPLE NUMBER	PARAMETER	UNIT	RESULT	REPLICATE	RPD%
9313958	Chloride	mg/L	140.	141	0.7

SPIKES -

SAMPLE NUMBER	PARAMETER	UNIT	SAMPLE RESULT	SPIKE AMOUNT	SAMPLE+SPIKE RESULT	%RECOVERY
9313958	Chloride	mg/L	140.	100.45	246.48	106.0
9313962	Chloride	mg/L	20.	49.67	68.21	97.1

METHOD BLANKS -

PARAMETER	UNIT	RESULT
Chloride	mg/L	<1.0

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 17-061593-7
REFERENCE NOTEBOOK : WW-086
REFERENCE PAGE ....: 81

INSTRUMENT : Waters Ion Chromatography
ANALYZED BY : C. KOROGHLANIAN
ANALYZED ON : 06-15-93

NOTE -

1) NC: Not Calculable because result is < 5 times the MDL

2) NP: Not Practical because sample result is 4 times or more greater than spike added.

3) Percent Recovery is:

$$\frac{\text{Sample+Spike Result} - \text{Sample Result}}{\text{Spike Amount}} \times 100$$

4) Relative Percent Difference (RPD) is:

$$\frac{\text{Sample Result} - \text{Replicate Result}}{(\text{Sample Result} + \text{Replicate Result})/2} \times 100$$

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QUALITY CONTROL REPORT

QC IDENTIFIER .....: 20-061683-25
REFERENCE NOTEBOOK : WW-089
REFERENCE PAGE ....: 41

INSTRUMENT : Fisher Conductivity Meter Mod. 152
ANALYZED BY : C. KOROGHLANIAN
ANALYZED ON : 06-16-93

TEST DESCRIPTION ..: Electrical Conductivity
TEST METHOD .....: 2510B

SAMPLES IN THIS RUN: 9313811 9313812 9313813 9313814 9313815 9313816 9313817
9313818 9313819 9313820 9313821 9313822 9313823 9313824
9313825 9313826 9313827 9313828 9313829 9313830 9313831
9313832 9313833 9313834 9313835 9313962 9313964

CALIBRATION CHECK -

PARAMETER	UNIT	TRUE VALUE	FOUND VALUE	%RECOVERY
Electrical Conductivity	umho/cm	5000.	5100	102.0
Electrical Conductivity	umho/cm	1000.	1050	105.0
Electrical Conductivity	umho/cm	1000.	1050	105.0
Electrical Conductivity	umhos/cm	180	195	108.3

REPLICATES -

SAMPLE NUMBER	PARAMETER	UNIT	RESULT	REPLICATE	RPD%
9313828	Electrical Conductivity	umhos/cm	520.	520.	0.0
9313822	Electrical Conductivity	umhos/cm	520.	520.	0.0
9313831	Electrical Conductivity	umhos/cm	780.	820.	5.0

NOTE -

1) NC: Not Calculable because result is < 5 times the MDL

2) NP: Not Practical because sample result is 4 times or more greater than spike added.

3) Percent Recovery is:

$$\frac{\text{Sample+Spike Result} - \text{Sample Result}}{\text{Spike Amount}} \times 100$$

4) Relative Percent Difference (RPD) is:

$$\frac{\text{Sample Result} - \text{Replicate Result}}{(\text{Sample Result} + \text{Replicate Result})/2} \times 100$$

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QUALITY CONTROL REPORT

QC IDENTIFIER .....: 26-061893-3
REFERENCE NOTEBOOK : WW-078
REFERENCE PAGE ....: 14

INSTRUMENT : Ion Specific Electrode
ANALYZED BY : C. KOROGHLANIAN
ANALYZED ON : 06-18-93

TEST DESCRIPTION ..: Fluoride
TEST METHOD .....: 4500-F-C

SAMPLES IN THIS RUN: 9313724 9313746 9313773 9313774 9313850 9313950 9313958 9313962 9313964 9313995 9314044 9314057 9314058 9314059 9314234 9314235 9314303 9314304 9314305 9314328 9314331 9314333 9314334 9314335 9314337 9314338 9314339 9314352

CALIBRATION CHECK -

PARAMETER	UNIT	TRUE VALUE	FOUND VALUE	%RECOVERY
Fluoride	mg/L	1.000	1.076	107.6
Fluoride	mg/L	2.500	2.536	101.4
Fluoride	mg/L	1.000	1.090	109.0
Fluoride	mg/L	2.500	2.565	102.6
Fluoride	mg/L	1.000	1.044	104.4

REPLICATES -

SAMPLE NUMBER	PARAMETER	UNIT	RESULT	REPLICATE	RPD%
9313850	Fluoride	mg/L	2.7	2.81	4.0
9314044	Fluoride	mg/L	2.8	2.79	0.4
9314305	Fluoride	mg/L	4.6	4.63	0.7

SPIKES -

SAMPLE NUMBER	PARAMETER	UNIT	SAMPLE RESULT	SPIKE AMOUNT	SAMPLE+SPIKE RESULT	%RECOVERY
9313950	Fluoride	mg/L	0.65	2	2.576	96.3
9313774	Fluoride	mg/L	1.4	4	5.242	96.1

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 26-061893-3
REFERENCE NOTEBOOK : WW-078
REFERENCE PAGE ....: 14

INSTRUMENT : Ion Specific Electrode
ANALYZED BY : C. KOROGHLANIAN
ANALYZED ON : 06-18-93

NOTE -

1) NC: Not Calculable because result is < 5 times the MDL

2) NP: Not Practical because sample result is 4 times or more greater than spike added.

3) Percent Recovery is:

$$\frac{\text{Sample+Spike Result} - \text{Sample Result}}{\text{Spike Amount}} \times 100$$

4) Relative Percent Difference (RPD) is:

$$\frac{\text{Sample Result} - \text{Replicate Result}}{(\text{Sample Result} + \text{Replicate Result})/2} \times 100$$

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QUALITY CONTROL REPORT

QC IDENTIFIER .....: 17-061593-14
REFERENCE NOTEBOOK : WW-086
REFERENCE PAGE ....: 81

INSTRUMENT : Waters Ion Chromatography
ANALYZED BY : C. KOROGHLANIAN
ANALYZED ON : 06-15-93

TEST DESCRIPTION ..: Nitrate Nitrogen
TEST METHOD .....: 300.0

SAMPLES IN THIS RUN: 9313908 9313950 9313958 9313962 9313964 9313995 9314029 9314044

CALIBRATION CHECK -

PARAMETER	UNIT	TRUE VALUE	FOUND VALUE	%RECOVERY
Nitrate Nitrogen	mg/L	2.210	2.086	94.4
Nitrate Nitrogen	mg/L	2.210	2.095	94.8
Nitrate Nitrogen	mg/L	2.210	1.994	90.2

REPLICATES -

SAMPLE NUMBER	PARAMETER	UNIT	RESULT	REPLICATE	RPD%
9313958	Nitrate Nitrogen	mg/L	1.5	1.4	NC

SPIKES -

SAMPLE NUMBER	PARAMETER	UNIT	SAMPLE RESULT	SPIKE AMOUNT	SAMPLE+SPIKE RESULT	%RECOVERY
9313958	Nitrate Nitrogen	mg/L	1.5	30.62	30.84	95.8
9313962	Nitrate Nitrogen	mg/L	1.8	15.25	16.90	99.0

METHOD BLANKS -

PARAMETER	UNIT	RESULT
Nitrate Nitrogen	mg/L	<0.50

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 17-061593-14
REFERENCE NOTEBOOK : WW-086
REFERENCE PAGE ....: 81

INSTRUMENT : Waters Ion Chromatography
ANALYZED BY : C. KOROGHLANIAN
ANALYZED ON : 06-15-93

NOTE -

1) NC: Not Calculable because result is < 5 times the MDL

2) NP: Not Practical because sample result is 4 times or more greater than spike added.

3) Percent Recovery is:

$$\frac{\text{Sample+Spike Result} - \text{Sample Result}}{\text{Spike Amount}} \times 100$$

4) Relative Percent Difference (RPD) is:

$$\frac{\text{Sample Result} - \text{Replicate Result}}{(\text{Sample Result} + \text{Replicate Result})/2} \times 100$$

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QUALITY CONTROL REPORT

QC IDENTIFIER .....: 13-061893-27
REFERENCE NOTEBOOK : WW-083
REFERENCE PAGE ....: 36

INSTRUMENT : Titration Methods
ANALYZED BY : E. BISSELL
ANALYZED ON : 06-18-93

TEST DESCRIPTION ..: Nitrogen, Total Kjeldahl
TEST METHOD .....: 4500

SAMPLES IN THIS RUN: 9313707 9313751 9313752 9313753 9313754 9313755 9313756 9313762 9313763 9313765 9313766 9313773 9313774 9313790 9313792 9313804 9313888 9313908 9313962 9313964 9314062

CALIBRATION CHECK -

PARAMETER	UNIT	TRUE VALUE	FOUND VALUE	%RECOVERY
Nitrogen, Total Kjeldahl	mg/L	0.500	.5509	110.2
Nitrogen, Total Kjeldahl	mg/L	0.500	.4676	93.5
Nitrogen, Total Kjeldahl	mg/L	0.500	.4676	93.5
Nitrogen, Total Kjeldahl	mg	1.000	.9352	93.5

REPLICATES -

SAMPLE NUMBER	PARAMETER	UNIT	RESULT	REPLICATE	RPD%
9313790	Nitrogen, Total Kjeldahl	mg/L	<0.1	0.11	NC
9313908	Nitrogen, Total Kjeldahl	mg/L	0.6	0.56	6.9
9313756	Nitrogen, Total Kjeldahl	mg/L	12000.	12740.	6.0

SPIKES -

SAMPLE NUMBER	PARAMETER	UNIT	SAMPLE RESULT	SPIKE AMOUNT	SAMPLE+SPIKE RESULT	%RECOVERY
9313908	Nitrogen, Total Kjeldahl	mg/L	0.6	10.	10.108	95.1
9313765	Nitrogen, Total Kjeldahl	mg/L	8.2	.1	8.316	NP
9314062	Nitrogen, Total Kjeldahl	mg/L	0.2	10.	8.428	82.3

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 13-061893-27
REFERENCE NOTEBOOK : WW-083
REFERENCE PAGE ....: 36

INSTRUMENT : Titration Methods
ANALYZED BY : E. BISSELL
ANALYZED ON : 06-18-93

NOTE -

1) NC: Not Calculable because result is < 5 times the MDL

2) NP: Not Practical because sample result is 4 times or more greater than spike added.

3) Percent Recovery is:

$$\frac{\text{Sample+Spike Result} - \text{Sample Result}}{\text{Spike Amount}} \times 100$$

4) Relative Percent Difference (RPD) is:

$$\frac{\text{Sample Result} - \text{Replicate Result}}{(\text{Sample Result} + \text{Replicate Result})/2} \times 100$$

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QUALITY CONTROL REPORT

QC IDENTIFIER .....: 11-061593-20
REFERENCE NOTEBOOK : WW-085
REFERENCE PAGE ....: 29

INSTRUMENT : Beckman 32 pH Meter
ANALYZED BY : C. KOROGHLANIAN
ANALYZED ON : 06-15-93

TEST DESCRIPTION ..: pH
TEST METHOD .....: 4500-H+

SAMPLES IN THIS RUN: 9313962 9313964 9313995 9314025 9314026 9314027 9314028 9314044 9314057 9314058 9314059

CALIBRATION CHECK -

PARAMETER	UNIT	TRUE VALUE	FOUND VALUE	%RECOVERY
pH	S.U.	4.00	3.932	98.3
pH	S.U.	10.00	9.996	100.0

REPLICATES -

SAMPLE NUMBER	PARAMETER	UNIT	RESULT	REPLICATE	RPD%
9313995	pH	S.U.	7.72	7.75	0.4

NOTE -

1) NC: Not Calculable because result is < 5 times the MDL

2) NP: Not Practical because sample result is 4 times or more greater than spike added.

3) Percent Recovery is:

$$\frac{\text{Sample+Spike Result} - \text{Sample Result}}{\text{Spike Amount}} \times 100$$

4) Relative Percent Difference (RPD) is:

$$\frac{\text{Sample Result} - \text{Replicate Result}}{(\text{Sample Result} + \text{Replicate Result})/2} \times 100$$

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QUALITY CONTROL REPORT

QC IDENTIFIER .....: 17-061593-28
REFERENCE NOTEBOOK : WW-086
REFERENCE PAGE ....: 81

INSTRUMENT : Waters Ion Chromatography
ANALYZED BY : C. KOROGHLANIAN
ANALYZED ON : 06-15-93

TEST DESCRIPTION ..: Sulfate
TEST METHOD .....: 300.0

SAMPLES IN THIS RUN: 9313695 9313950 9313958 9313962 9313964 9313995 9314029 9314044

CALIBRATION CHECK -

PARAMETER	UNIT	TRUE VALUE	FOUND VALUE	%RECOVERY
Sulfate	mg/L	10.000	10.548	105.5
Sulfate	mg/L	10.000	10.867	108.7
Sulfate	mg/L	10.000	10.482	104.8

REPLICATES -

SAMPLE NUMBER	PARAMETER	UNIT	RESULT	REPLICATE	RPD%
9313950	Sulfate	mg/L	58.	62.6	7.6
9313958	Sulfate	mg/L	98.	100.	2.0

SPIKES -

SAMPLE NUMBER	PARAMETER	UNIT	SAMPLE RESULT	SPIKE AMOUNT	SAMPLE+SPIKE RESULT	%RECOVERY
9313958	Sulfate	mg/L	98.	137.96	243.82	105.7
9313962	Sulfate	mg/L	20.	49.97	66.31	92.7

METHOD BLANKS -

PARAMETER	UNIT	RESULT
Sulfate	mg/L	<5.0

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 17-061593-28
REFERENCE NOTEBOOK : WW-086
REFERENCE PAGE ....: 81

INSTRUMENT : Waters Ion Chromatography
ANALYZED BY : C. KOROGHLANIAN
ANALYZED ON : 06-15-93

NOTE -

1) NC: Not Calculable because result is < 5 times the MDL

2) NP: Not Practical because sample result is 4 times or more greater than spike added.

3) Percent Recovery is:

$$\frac{\text{Sample+Spike Result} - \text{Sample Result}}{\text{Spike Amount}} \times 100$$

4) Relative Percent Difference (RPD) is:

$$\frac{\text{Sample Result} - \text{Replicate Result}}{(\text{Sample Result} + \text{Replicate Result})/2} \times 100$$

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QUALITY CONTROL REPORT

QC IDENTIFIER .....: 24-061893-45
REFERENCE NOTEBOOK : WW-082
REFERENCE PAGE ....: 71

INSTRUMENT : Gravimetric
ANALYZED BY : E. BISSELL
ANALYZED ON : 06-18-93

TEST DESCRIPTION ..: Total Dissolved Solids
TEST METHOD .....: 2540-C

SAMPLES IN THIS RUN: 9313962 9313964 9313995 9314044 9314057 9314058 9314059 9314234 9314235 9314288 9314290 9314291 9314292 9314303 9314304 9314305 9314328 9314331 9314332 9314333 9314334 9314335 9314337 9314338

REPLICATES -

SAMPLE NUMBER	PARAMETER	UNIT	RESULT	REPLICATE	RPD%
9314058	Total Dissolved Solids	mg/L	1000.	1000	0.0
9314303	Total Dissolved Solids	mg/L	760	770	1.3
9314335	Total Dissolved Solids	mg/L	690	700	1.4
9314338	Total Dissolved Solids	mg/L	99	89	10.6

NOTE -

1) NC: Not Calculable because result is < 5 times the MDL

2) NP: Not Practical because sample result is 4 times or more greater than spike added.

3) Percent Recovery is:

$$\frac{\text{Sample+Spike Result} - \text{Sample Result}}{\text{Spike Amount}} \times 100$$

4) Relative Percent Difference (RPD) is:

$$\frac{\text{Sample Result} - \text{Replicate Result}}{(\text{Sample Result} + \text{Replicate Result})/2} \times 100$$

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QUALITY CONTROL REPORT

QC IDENTIFIER .....: 33-061893-16
REFERENCE NOTEBOOK : WW-023
REFERENCE PAGE ....: 66

INSTRUMENT : Dohrmann TOC Analyzer DC-80
ANALYZED BY : C. KOROGHLANIAN
ANALYZED ON : 06-18-93

TEST DESCRIPTION ..: Total Organic Carbon
TEST METHOD .....: EPA 415.1/SM 5310

SAMPLES IN THIS RUN: 9313962 9313964 9314050 9314051 9314052 9314053 9314303 9314304 9314305 9314331 9314333 9314335 9314336 9314337 9314338

CALIBRATION CHECK -

PARAMETER	UNIT	TRUE VALUE	FOUND VALUE	%RECOVERY
Total Organic Carbon	mg/L	40.0	40.72	101.8
Total Organic Carbon	mg/L	40.0	40.48	101.2
Total Organic Carbon	mg/L	50.000	46.69	93.4
Total Organic Carbon	mg/L	100.0	92.25	92.3

REPLICATES -

SAMPLE NUMBER	PARAMETER	UNIT	RESULT	REPLICATE	RPD%
9314053	Total Organic Carbon	mg/L	<1.0	<1.0	NC
9314335	Total Organic Carbon	mg/L	2.6	2.7	NC
9313962	Total Organic Carbon	mg/L	1.9	2.3	NC
9314303	Total Organic Carbon	mg/L	2.8	2.5	NC

SPIKES -

SAMPLE NUMBER	PARAMETER	UNIT	SAMPLE RESULT	SPIKE AMOUNT	SAMPLE+SPIKE RESULT	%RECOVERY
9314304	Total Organic Carbon	mg/L	1.0	25	26.9	103.6
9313962	Total Organic Carbon	mg/L	1.9	10	12.58	106.8

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 33-061893-16
REFERENCE NOTEBOOK : WW-023
REFERENCE PAGE ....: 66

INSTRUMENT : Dohrmann TOC Analyzer DC-80
ANALYZED BY : C. KOROGHLANIAN
ANALYZED ON : 06-18-93

NOTE -

1) NC: Not Calculable because result is < 5 times the MDL

2) NP: Not Practical because sample result is 4 times or more greater than spike added.

3) Percent Recovery is:

$$\frac{\text{Sample+Spike Result} - \text{Sample Result}}{\text{Spike Amount}} \times 100$$

4) Relative Percent Difference (RPD) is:

$$\frac{\text{Sample Result} - \text{Replicate Result}}{(\text{Sample Result} + \text{Replicate Result})/2} \times 100$$

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QUALITY CONTROL REPORT

QC IDENTIFIER .....: 43-062193-11
REFERENCE NOTEBOOK : WW-014
REFERENCE PAGE ....: 98

INSTRUMENT : Mitsubishi Kasei TOX-10 Sigma
ANALYZED BY : C. KOROGHLANIAN
ANALYZED ON : 06-21-93

TEST DESCRIPTION ..: Total Organic Halides
TEST METHOD .....: EPA 9020/D4744-89

SAMPLES IN THIS RUN: 9313851 9313962 9313964 9314303 9314304 9314305

CALIBRATION CHECK -

PARAMETER	UNIT	TRUE VALUE	FOUND VALUE	%RECOVERY
Total Organic Halides	ug	10.000	9.981	99.8
Total Organic Halides	ug	10.000	9.4055	94.1
Total Organic Halides	ug	10.000	9.7171	97.2

REPLICATES -

SAMPLE NUMBER	PARAMETER	UNIT	RESULT	REPLICATE	RPD%
9313851	Total Organic Halides	mg/L	7.6	9.2	19.0

SPIKES -

SAMPLE NUMBER	PARAMETER	UNIT	SAMPLE RESULT	SPIKE AMOUNT	SAMPLE+SPIKE RESULT	%RECOVERY
9314303	Total Organic Halides	mg/L	<0.05	10	9.9508	99.5

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 43-062193-11
REFERENCE NOTEBOOK : WW-014
REFERENCE PAGE ....: 98

INSTRUMENT : Mitsubishi Kasei TOX-10 Sigma
ANALYZED BY : C. KOROGHLANIAN
ANALYZED ON : 06-21-93

NOTE -

1) NC: Not Calculable because result is < 5 times the MDL

2) NP: Not Practical because sample result is 4 times or more greater than spike added.

3) Percent Recovery is:

$$\frac{\text{Sample+Spike Result} - \text{Sample Result}}{\text{Spike Amount}} \times 100$$

4) Relative Percent Difference (RPD) is:

$$\frac{\text{Sample Result} - \text{Replicate Result}}{(\text{Sample Result} + \text{Replicate Result})/2} \times 100$$

WESTECH
LABORATORIES
INC.
QUALITY ASSURANCE OFFICER
Anne Nichols
DATE: 7/13/93

Westech Laboratories Inc.
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QUALITY CONTROL REPORT

QC IDENTIFIER .....: 104-070193-1
REFERENCE NOTEBOOK : CH-150
REFERENCE PAGE ....: 13

INSTRUMENT : Perkin Elmer with Hall & PID.
ANALYZED BY : S. KUTA
ANALYZED ON : 07-01-93

TEST DESCRIPTION ..: 8010/8020 - Halogenated & Aromatic Volatile Organics
TEST METHOD .....: 8010/8020

SAMPLES IN THIS RUN: 9313963 9313965 9314250 9314295

CALIBRATION CHECK -

PARAMETER	UNIT	TRUE VALUE	FOUND VALUE	%RECOVERY
1,2-Dichloropropane	ug/L	10.	9.5	95.0
1,1,2,2-Tetrachloroethane	ug/L	10.	8.3	83.0
1,1-Dichloroethane	ug/L	10.	11.	110.0
1,1-Dichloroethene	ug/L	10.	11.	110.0
Bromoform	ug/L	10.	11.	110.0
Chlorobenzene	ug/L	10.	11.	110.0
Chloroform	ug/L	10.	11.	110.0
Chloromethane	ug/L	10.	11.	110.0
Ethylbenzene	ug/L	10.	12.	120.0
Toluene	ug/L	10.	12.	120.0
Vinyl chloride	ug/L	10.	11.	110.0
1,2-Dichloropropane	ug/L	10.	11.	110.0
1,1,2,2-Tetrachloroethane	ug/L	10.	8.6	86.0
1,1-Dichloroethane	ug/L	10.	10.	100.0
1,1-Dichloroethene	ug/L	10.	10.	100.0
Bromoform	ug/L	10.	10.	100.0
Chlorobenzene	ug/L	10.	12.	120.0
Chloroform	ug/L	10.	10.	100.0
Chloromethane	ug/L	10.	10.	100.0
Ethylbenzene	ug/L	10.	11.	110.0
Toluene	ug/L	10.	11.	110.0
Vinyl chloride	ug/L	10.	10.	100.0

REPLICATES -

SAMPLE NUMBER	PARAMETER	UNIT	RESULT	REPLICATE	RPD%
9313963	2-Chloroethylvinyl Ether	ug/Kg	<20.	<20.	NC
9313963	Bromochloromethane	ug/Kg	<50.	<50.	NC
9313963	Bromodichloromethane	ug/Kg	<50.	<50.	NC
9313963	Bromoform	ug/Kg	<50.	<50.	NC
9313963	Bromomethane	ug/Kg	<50.	<50.	NC
9313963	Carbon tetrachloride	ug/Kg	<25.	<25.	NC
9313963	Chlorobenzene	ug/Kg	<10.	<10.	NC

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 104-070193-1
REFERENCE NOTEBOOK : CH-150
REFERENCE PAGE ....: 13

INSTRUMENT : Perkin Elmer with Hall & PID.
ANALYZED BY : S. KUTA
ANALYZED ON : 07-01-93

REPLICATES -

SAMPLE NUMBER	PARAMETER	UNIT	RESULT	REPLICATE	RPD%
9313963	Chloroethene	ug/Kg	<50.	<50.	NC
9313963	Chloroform	ug/Kg	<25.	<25.	NC
9313963	Chloromethane	ug/Kg	<50.	<50.	NC
9313963	Dibromochloromethane	ug/Kg	<50.	<50.	NC
9313963	1,2-Dichlorobenzene	ug/Kg	<10.	<10.	NC
9313963	1,3-Dichlorobenzene	ug/Kg	<10.	<10.	NC
9313963	1,4-Dichlorobenzene	ug/Kg	<10.	<10.	NC
9313963	Dichlorodifluoromethane	ug/Kg	<50.	<50.	NC
9313963	1,1-Dichloroethane	ug/Kg	<25.	<25.	NC
9313963	1,2-Dichloroethane	ug/Kg	<25.	<25.	NC
9313963	1,1-Dichloroethene	ug/Kg	<25.	<25.	NC
9313963	cis 1,2-Dichloroethene	ug/Kg	<25.	<25.	NC
9313963	trans 1,2-Dichloroethene	ug/Kg	<50.	<50.	NC
9313963	1,2-Dichloropropane	ug/Kg	<25.	<25.	NC
9313963	1,3-Dichloropopane	ug/Kg	<25.	<25.	NC
9313963	2,2-Dichloropropane	ug/Kg	<25.	<25.	NC
9313963	Dichloromethane	ug/Kg	<250.	<250.	NC
9313963	1,1,2,2-Tetrachloroethane	ug/Kg	<25.	<25.	NC
9313963	Tetrachloroethene (PCE)	ug/Kg	<25.	<25.	NC
9313963	1,1,1-Trichloroethane	ug/Kg	<25.	<25.	NC
9313963	1,1,2-Trichloroethane	ug/Kg	<25.	<25.	NC
9313963	Trichloroethene	ug/Kg	<25.	<25.	NC
9313963	Trichlorofluoromethane	ug/Kg	<50.	<50.	NC
9313963	Vinyl chloride	ug/Kg	<50.	<50.	NC
9313963	Chlorobenzene	ug/Kg	<10.	<10.	NC
9313963	1,2-Dichlorobenzene	ug/Kg	<10.	<10.	NC
9313963	1,3-Dichlorobenzene	ug/Kg	<10.	<10.	NC
9313963	1,4-Dichlorobenzene	ug/Kg	<10.	<10.	NC
9313963	Ethylbenzene	ug/Kg	<10.	<10.	NC
9313963	Toluene	ug/Kg	<10.	<10.	NC
9313963	Total Xylenes	ug/Kg	<3.0	<3.0	NC
9313963	Benzene	ug/Kg	<10.	<10.	NC

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 104-070193-1
REFERENCE NOTEBOOK : CH-150
REFERENCE PAGE ....: 13

INSTRUMENT : Perkin Elmer with Hall & PID.
ANALYZED BY : S. KUTA
ANALYZED ON : 07-01-93

SPIKES -

SAMPLE NUMBER	PARAMETER	UNIT	SAMPLE RESULT	SPIKE AMOUNT	SAMPLE+SPIKE RESULT	%RECOVERY
9313963	Bromoform	ug/Kg	<50.	500.	520.	104.0
9313963	Chlorobenzene	ug/Kg	<10.	500.	500.	100.0
9313963	Chloromethane	ug/Kg	<50.	500.	430.	86.0
9313963	1,1-Dichloroethane	ug/Kg	<25.	500.	494.	98.8
9313963	1,1-Dichloroethene	ug/Kg	<25.	500.	470.	94.0
9313963	1,1,2,2-Tetrachloroethane	ug/Kg	<25.	500.	430.	86.0
9313963	Vinyl chloride	ug/Kg	<50.	500.	540.	108.0
9313963	Chlorobenzene	ug/Kg	<10.	500.	500.	100.0
9313963	Ethylbenzene	ug/Kg	<10.	500.	537.	107.4

METHOD BLANKS -

PARAMETER	UNIT	RESULT
Bromochloromethane	ug/L	<1.0
Bromodichloromethane	ug/L	<1.0
Bromoform	ug/L	<1.0
Bromomethane	ug/L	<1.0
Carbon tetrachloride	ug/L	<0.5
Chlorobenzene	ug/L	<1.0
Chloroethene	ug/L	<1.0
Chloroform	ug/L	<0.5
Chloromethane	ug/L	<1.0
Dibromochloromethane	ug/L	<1.0
1,2-Dichlorobenzene	ug/L	<1.0
1,3-Dichlorobenzene	ug/L	<1.0
1,4-Dichlorobenzene	ug/L	<1.0
Dichlorodifluoromethane	ug/L	<1.0
1,1-Dichloroethane	ug/L	<0.5
1,2-Dichloroethane	ug/L	<0.5
1,1-Dichloroethene	ug/L	<0.5
cis 1,2-Dichloroethene	ug/L	<0.5
trans 1,2-Dichloroethene	ug/L	<1.0
1,2-Dichloropropane	ug/L	<0.5
trans 1,3-Dichloropropene	ug/L	<0.5
cis 1,2-Dichloropropene	ug/L	<0.5

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 104-070193-1
REFERENCE NOTEBOOK : CH-150
REFERENCE PAGE ....: 13

INSTRUMENT : Perkin Elmer with Hall & PID.
ANALYZED BY : S. KUTA
ANALYZED ON : 07-01-93

METHOD BLANKS -

PARAMETER	UNIT	RESULT
Dichloromethane	ug/L	<5.0
1,1,2,2-Tetrachloroethane	ug/L	<0.5
1,1,2,2-Tetrachloroethene	ug/L	<0.5
1,1,1-Trichloroethane	ug/L	<0.5
1,1,2-Trichloroethane	ug/L	<0.5
Trichloroethene	ug/L	<0.5
Trichlorofluoromethane	ug/L	<1.0
Vinyl chloride	ug/L	<1.0
2-Chloroethylvinyl Ether	ug/L	<1.0
Chlorobenzene	ug/L	<1.0
1,2-Dichlorobenzene	ug/L	<1.0
1,3-Dichlorobenzene	ug/L	<1.0
1,4-Dichlorobenzene	ug/L	<1.0
Ethylbenzene	ug/L	<1.0
Toluene	ug/L	<1.0
Total Xylenes	ug/L	<0.3
Benzene	ug/L	<1.0

NOTE -

1) NC: Not Calculable because result is < 5 times the MDL

2) NP: Not Practical because sample result is 4 times or more greater than spike added.

3) Percent Recovery is:

$$\frac{\text{Sample+Spike Result} - \text{Sample Result}}{\text{Spike Amount}} \times 100$$

4) Relative Percent Difference (RPD) is:

$$\frac{\text{Sample Result} - \text{Replicate Result}}{(\text{Sample Result} + \text{Replicate Result})/2} \times 100$$

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Anne Nichols
DATE: 7/13/93

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QUALITY CONTROL REPORT

QC IDENTIFIER .....: 109-062293-1
REFERENCE NOTEBOOK :
REFERENCE PAGE ....:

INSTRUMENT : Hewlett Packard GC/MS Purge & Trap
ANALYZED BY : L. ANTONY
ANALYZED ON : 06-22-93

TEST DESCRIPTION ..: 624/8260/GC-MS Solvent Screen-Purgeables/Volatile Organics
TEST METHOD .....: 624/8260/GC-MS Solvent Screen

SAMPLES IN THIS RUN: 9313102 9313103 9313249 9313696 9313698 9313704 9313910 9313960 9313961 9313962 9313964 9313966 9314198

CALIBRATION CHECK -

PARAMETER	UNIT	TRUE VALUE	FOUND VALUE	%RECOVERY
1,2-Dichloropropane	ug/L	20.	23.	115.0
1,1,2,2-Tetrachloroethane	ug/L	20.	16.	80.0
1,1-Dichloroethane	ug/L	20.	16.	80.0
Bromoform	ug/L	20.	16.	80.0
Chlorobenzene	ug/L	20.	17.	85.0
Chloroform	ug/L	20.	15.	75.0
Ethylbenzene	ug/L	20.	16.	80.0
Toluene	ug/L	20.	16.	80.0
Vinyl chloride	ug/L	20.	16.	80.0
1,1,2,2-Tetrachloroethane	ug/L	20.	15.	75.0
1,1-Dichloroethane	ug/L	20.	16.	80.0
Bromoform	ug/L	20.	19.	95.0
Chloroform	ug/L	20.	17.	85.0
Chloromethane	ug/L	20.	21.	105.0
Ethylbenzene	ug/L	20.	16.	80.0
Toluene	ug/L	20.	15.	75.0
1,2-Dichloropropane	ug/L	20.	16.	80.0
1,1,2,2-Tetrachloroethane	ug/L	20.	18.	90.0
1,1-Dichloroethane	ug/L	20.	21.	105.0
1,1-Dichloroethene	ug/L	20.	25.	125.0
Bromoform	ug/L	20.	17.	85.0
Chlorobenzene	ug/L	20.	21.	105.0
Chloroform	ug/L	20.	18.	90.0
Ethylbenzene	ug/L	20.	19.	95.0
Toluene	ug/L	20.	21.	105.0
Vinyl chloride	ug/L	20.	21.	105.0

REPLICATES -

SAMPLE NUMBER	PARAMETER	UNIT	RESULT	REPLICATE	RPD%
9313962	1,1,2-Trichloro 1,2,2-Trifluoro	ug/L	<2.0	<2.0	NC
9313962	1,1,1-Trichloroethane	ug/L	<2.0	<2.0	NC

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 109-062293-1
REFERENCE NOTEBOOK :
REFERENCE PAGE ....:

INSTRUMENT : Hewlett Packard GC/MS Purge & Trap
ANALYZED BY : L. ANTONY
ANALYZED ON : 06-22-93

REPLICATES -

SAMPLE NUMBER	PARAMETER	UNIT	RESULT	REPLICATE	RPD%
9313962	1,1,2,2-Tetrachloroethane	ug/L	<2.0	<2.0	NC
9313962	Tetrachloroethene (PCE)	ug/L	<2.0	<2.0	NC
9313962	1,1,2-Trichloroethane	ug/L	<2.0	<2.0	NC
9313962	1,1-Dichloroethane	ug/L	<2.0	<2.0	NC
9313962	1,1-Dichloroethene	ug/L	<2.0	<2.0	NC
9313962	1,1-Dichloropropene	ug/L	<2.0	<2.0	NC
9313962	1,2-Dibromoethane (EDB	ug/L	<5.0	<5.0	NC
9313962	1,2,3-Trichlorobenzene	ug/L	<2.0	<2.0	NC
9313962	1,2,3-Trichloropropane	ug/L	<2.0	<2.0	NC
9313962	1,2,4-Trichlorobenzene	ug/L	<2.0	<2.0	NC
9313962	1,2,4-Trimethylbenzene	ug/L	<2.0	<2.0	NC
9313962	1,2-Dichlorobenzene	ug/L	<2.0	<2.0	NC
9313962	1,2-Dichloroethane	ug/L	<2.0	<2.0	NC
9313962	1,2-Dichloropropane	ug/L	<2.0	<2.0	NC
9313962	1,3,5-Trimethylbenzene	ug/L	<2.0	<2.0	NC
9313962	1,3-Dichlorobenzene	ug/L	<2.0	<2.0	NC
9313962	1,3-Dichloropropane	ug/L	<2.0	<2.0	NC
9313962	1,4-Dichlorobenzene	ug/L	<2.0	<2.0	NC
9313962	2,2-Dichloropropane	ug/L	<2.0	<2.0	NC
9313962	2-Chlorotoluene	ug/L	<2.0	<2.0	NC
9313962	2-Hexanone	ug/L	<10.	<10.	NC
9313962	4-Chlorotoluene	ug/L	<2.0	<2.0	NC
9313962	4-Isopropyltoluene	ug/L	<2.0	<2.0	NC
9313962	Acetone	ug/L	<20.	<20.	NC
9313962	Benzene	ug/L	<2.0	<2.0	NC
9313962	Bromobenzene	ug/L	<2.0	<2.0	NC
9313962	Bromochloromethane	ug/L	<2.0	<2.0	NC
9313962	Bromodichloromethane	ug/L	<2.0	<2.0	NC
9313962	Bromoform	ug/L	<5.0	<5.0	NC
9313962	Bromomethane	ug/L	<5.0	<5.0	NC
9313962	Carbon tetrachloride	ug/L	<2.0	<2.0	NC
9313962	Chlorobenzene	ug/L	<2.0	<2.0	NC
9313962	Chloroethane	ug/L	<2.0	<2.0	NC
9313962	Chloroform	ug/L	<2.0	<2.0	NC
9313962	Chloromethane	ug/L	<2.0	<2.0	NC
9313962	cis 1,2-Dichloroethene	ug/L	<2.0	<2.0	NC
9313962	Dibromochloromethane	ug/L	<2.0	<2.0	NC
9313962	Dibromochloropropane	ug/L	<10.	<10.	NC
9313962	Dibromomethane	ug/L	<2.0	<2.0	NC
9313962	Dichlorodifluoromethane	ug/L	<5.0	<5.0	NC
9313962	Dichloromethane	ug/L	<2.0	<2.0	NC

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 109-062293-1
REFERENCE NOTEBOOK :
REFERENCE PAGE ....:

INSTRUMENT : Hewlett Packard GC/MS Purge & Trap
ANALYZED BY : L. ANTONY
ANALYZED ON : 06-22-93

REPLICATES -

SAMPLE NUMBER	PARAMETER	UNIT	RESULT	REPLICATE	RPD%
9313962	Diethyl ether	ug/L	<100.	<100.	NC
9313962	Ethylbenzene	ug/L	<2.0	<2.0	NC
9313962	Hexachlorobutadiene	ug/L	<2.0	<2.0	NC
9313962	Isopropylbenzene	ug/L	<2.0	<2.0	NC
9313962	Methyl ethyl ketone	ug/L	<20.	<20.	NC
9313962	Methyl isobutyl ketone	ug/L	<20.	<20.	NC
9313962	Methyl tert-butyl ether	ug/L	<20.	<20.	NC
9313962	m-Xylene	ug/L	<2.0	<2.0	NC
9313962	Naphthalene	ug/L	<5.0	<5.0	NC
9313962	n-Butylbenzene	ug/L	<2.0	<2.0	NC
9313962	o-Xylene	ug/L	<2.0	<2.0	NC
9313962	Propylbenzene	ug/L	<2.0	<2.0	NC
9313962	p-Xylene	ug/L	<2.0	<2.0	NC
9313962	sec-Butylbenzene	ug/L	<2.0	<2.0	NC
9313962	Styrene	ug/L	<2.0	<2.0	NC
9313962	tert-Butylbenzene	ug/L	<2.0	<2.0	NC
9313962	Toluene	ug/L	<2.0	<2.0	NC
9313962	trans 1,2-Dichloroethene	ug/L	<2.0	<2.0	NC
9313962	Trichloroethene	ug/L	<2.0	<2.0	NC
9313962	Trichlorofluoromethane	ug/L	<5.0	<5.0	NC
9313962	Vinyl chloride	ug/L	<5.0	<5.0	NC
9313704	Acetone	ug/Kg	<50.	<50.	NC
9313704	Benzene	ug/Kg	<50.	<50.	NC
9313704	Butyl Acetate	ug/Kg	<50.	<50.	NC
9313704	Butyl Cellosolve	ug/Kg	<50.	<50.	NC
9313704	1-Butanol	ug/Kg	<50.	<50.	NC
9313704	2-Butanol	ug/Kg	<50.	<50.	NC
9313704	Carbon Disulfide	ug/Kg	<50.	<50.	NC
9313704	Carbon Tetrachloride	ug/Kg	<50.	<50.	NC
9313704	Cellosolve	ug/Kg	<50.	<50.	NC
9313704	Cellosolve Acetate	ug/Kg	<50.	<50.	NC
9313704	Chlorobenzene	ug/Kg	<50.	<50.	NC
9313704	Chloroform	ug/Kg	<50.	<50.	NC
9313704	Cyclohexanone	ug/Kg	<50.	<50.	NC
9313704	Dioxane	ug/Kg	<50.	<50.	NC
9313704	1,1-Dichloroethane	ug/Kg	<50.	<50.	NC
9313704	1,1-Dichloroethene	ug/Kg	<50.	<50.	NC
9313704	Misc. Hydrocarbons	ug/Kg	<50.	<50.	NC
9313704	1,2 Dichloroethane	ug/Kg	<50.	<50.	NC
9313704	Trans 1,2 Dichloroethene	ug/Kg	<50.	<50.	NC
9313704	Ethanol	ug/Kg	<50.	<50.	NC

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 109-062293-1
REFERENCE NOTEBOOK :
REFERENCE PAGE ....:

INSTRUMENT : Hewlett Packard GC/MS Purge & Trap
ANALYZED BY : L. ANTONY
ANALYZED ON : 06-22-93

SPIKES -

SAMPLE NUMBER	PARAMETER	UNIT	SAMPLE RESULT	SPIKE AMOUNT	SAMPLE+SPIKE RESULT	%RECOVERY
9313964	Chloroform	ug/L	<2.0	40.	30.	75.0
9313964	Ethylbenzene	ug/L	<2.0	40.	35.	87.5
9313964	Toluene	ug/L	<2.0	40.	33.	82.5
9313704	Chlorobenzene	ug/Kg	<50.	1000.	1000.	100.0
9313704	Chloroform	ug/Kg	<50.	1000.	850.	85.0
9313704	1,1-Dichloroethane	ug/Kg	<50.	1000.	890.	89.0
9313704	1,1-Dichloroethene	ug/Kg	<50.	1000.	1300.	130.0
9313704	Ethylbenzene	ug/Kg	<50.	1000.	1000.	100.0
9313704	Toluene	ug/Kg	<50.	1000.	1000.	100.0
9313704	1,1,2,2 Tetrachloroethane	ug/Kg	<50.	1000.	570.	57.0

METHOD BLANKS -

PARAMETER	UNIT	RESULT
1,1,1,2-Tetrachloroethane	ug/L	<2.0
1,1,1-Trichloroethane	ug/L	<2.0
1,1,2,2-Tetrachloroethane	ug/L	<2.0
Tetrachloroethene (PCE)	ug/L	<2.0
1,1,2-Trichloroethane	ug/L	<2.0
1,1-Dichloroethane	ug/L	<2.0
1,1-Dichloroethene	ug/L	<2.0
1,1-Dichloropropene	ug/L	<2.0
1,2-Dibromoethane (EDB)	ug/L	<5.0
1,2,3-Trichlorobenzene	ug/L	<2.0
1,2,3-Trichloropropane	ug/L	<2.0
1,2,4-Trichlorobenzene	ug/L	<2.0
1,2,4-Trimethylbenzene	ug/L	<2.0
1,2-Dichlorobenzene	ug/L	<2.0
1,2-Dichloroethane	ug/L	<2.0
1,2-Dichloropropane	ug/L	<2.0
1,3,5-Trimethylbenzene	ug/L	<2.0
1,3-Dichlorobenzene	ug/L	<2.0
1,3-Dichloropropane	ug/L	<2.0
1,4-Dichlorobenzene	ug/L	<2.0
2,2-Dichloropropane	ug/L	<2.0
2-Chlorotoluene	ug/L	<2.0
2-Hexanone	ug/L	<10.

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 109-062293-1
REFERENCE NOTEBOOK :
REFERENCE PAGE ....:

INSTRUMENT : Hewlett Packard GC/MS Purge & Trap
ANALYZED BY : L. ANTONY
ANALYZED ON : 06-22-93

METHOD BLANKS -

PARAMETER	UNIT	RESULT
4-Chlorotoluene	ug/L	<2.0
4-Isopropyltoluene	ug/L	<2.0
Acetone (2-Propanone)	ug/L	<20.
Benzene	ug/L	<2.0
Bromobenzene	ug/L	<2.0
Bromochloromethane	ug/L	<2.0
Bromodichloromethane	ug/L	<2.0
Bromoform	ug/L	<5.0
Bromomethane	ug/L	<5.0
Carbon Tetrachloride	ug/L	<2.0
Chlorobenzene	ug/L	<2.0
Chloroethane	ug/L	<2.0
Chloroform	ug/L	<2.0
Chloromethane	ug/L	<2.0
cis 1,2-Dichloroethene	ug/L	<2.0
Dibromochloromethane	ug/L	<2.0
Dibromochloropropane (DBCP)	ug/L	<10.
Dibromomethane	ug/L	<2.0
Dichlorodifluoromethane	ug/L	<5.0
Dichloromethane	ug/L	<2.0
Diethyl ether	ug/L	<100.
1,1,2-Trichloro-1,2,2-Trifluoro-	ug/L	<2.0
Ethylbenzene	ug/L	<2.0
Hexachlorobutadiene	ug/L	<2.0
Isopropylbenzene	ug/L	<2.0
Methyl Ethyl Ketone (2-Butanone)	ug/L	<20.
Methyl iso-Butyl Ketone (4-Methyl-	ug/L	<20.
Methyl tert-Butyl Ether	ug/L	<20.
m-Xylene	ug/L	<2.0
Naphthalene	ug/L	<5.0
n-Butylbenzene	ug/L	<2.0
o-Xylene	ug/L	<2.0
Propylbenzene	ug/L	<2.0
p-Xylene	ug/L	<2.0
sec-Butylbenzene	ug/L	<2.0
Styrene	ug/L	<2.0
tert-Butylbenzene	ug/L	<2.0
Toluene	ug/L	<2.0
trans 1,2-Dichloroethene	ug/L	<2.0
Trichloroethene	ug/L	<2.0
Trichlorofluoromethane	ug/L	<5.0
Vinyl chloride	ug/L	<5.0

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 109-062293-1
REFERENCE NOTEBOOK :
REFERENCE PAGE ....:

INSTRUMENT : Hewlett Packard GC/MS Purge & Trap
ANALYZED BY : L. ANTONY
ANALYZED ON : 06-22-93

NOTE -

1) NC: Not Calculable because result is < 5 times the MDL

2) NP: Not Practical because sample result is 4 times or more greater than spike added.

3) Percent Recovery is:

$$\frac{\text{Sample+Spike Result} - \text{Sample Result}}{\text{Spike Amount}} \times 100$$

4) Relative Percent Difference (RPD) is:

$$\frac{\text{Sample Result} - \text{Replicate Result}}{(\text{Sample Result} + \text{Replicate Result})/2} \times 100$$

WESTECH
LABORATORIES
INC.
QUALITY ASSURANCE OFFICER
Anne Nichols
DATE: 7/13/93

Westech Laboratories Inc.
The Quality People
Since 1955

3737 East Broadway Road
Phoenix, Arizona 85040
(602) 437-1080 • fax 437-8766

JUL 1993
Dames & Moore Phx

CLIENT DAMES & MOORE
ATTN: ROB HARKLAU
7500 NORTH DREAMY DRAW, SUITE 145
PHOENIX, AZ 85020

SAMPLE NO. : 9314574
INVOICE NO.: 22132193
REPORT DATE: 07-08-93
REVIEWED BY: AGW
PAGE : 1 OF 1

CLIENT SAMPLE ID : CCMW-2
SAMPLE TYPE .....: WATER
SAMPLED BY .....: R. HARKLAU
SUBMITTED BY ....: R. HARKLAU
SAMPLE SOURCE ...: CAVE CREEK LANDFILL
ANALYST .....: L. ANTONY

AUTHORIZED BY : R. HARKLAU
CLIENT P.O. : D16225
SAMPLE DATE ...: 06-22-93
SUBMITTAL DATE : 06-23-93
EXTRACTION DATE: 07-02-93
ANALYSIS DATE .: 07-02-93

REMARKS -

Sample run on GC/MS.

Method 501 - Trihalomethanes

DATA TABLE

Parameter	Result	Unit	Detection Limit
Bromodichloromethane .....:	<0.001	mg/L	0.001
Bromoform .....:	<0.001	mg/L	0.001
Chloroform .....:	<0.001	mg/L	0.001
Dibromochloromethane .....:	<0.001	mg/L	0.001
Total Trihalomethanes .....:	<0.001	mg/L	0.001

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M. Enchil
Managing Director

Westech Laboratories Inc.
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Phoenix, Arizona 85040
(602) 437-1080 • fax 437-8706

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ATTN: ROB HARKLAU
7500 NORTH DREAMY DRAW, SUITE 145
PHOENIX, AZ 85020

SAMPLE NO. : 9314574
INVOICE NO.: 22132193
REPORT DATE: 07-08-93
REVIEWED BY: AGN
PAGE : 1 OF 1

CLIENT SAMPLE ID : CCMW-2
SAMPLE TYPE .....: WATER
SAMPLED BY .....: R. HARKLAU
SUBMITTED BY ....: R. HARKLAU
SAMPLE SOURCE ...: CAVE CREEK LANDFILL
ANALYST .....: W. McCann

AUTHORIZED BY : R. HARKLAU
CLIENT P.O. : D16225
SAMPLE DATE ...: 06-22-93
SUBMITTAL DATE : 06-23-93
EXTRACTION DATE: 06-26-93
ANALYSIS DATE .: 07-08-93

Safe Drinking Water Pesticides and Herbicides

DATA TABLE

Parameter	Result	Unit	Detection Limit
Endrin	<0.0001	mg/L	0.0001
Lindane	<0.002	mg/L	0.002
Methoxychlor	<0.05	mg/L	0.05
Toxaphene	<0.0025	mg/L	0.0025
2,4-D	<0.05	mg/L	0.05
2,4,5-TP (SILVEX)	<0.005	mg/L	0.005

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Managing Director

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PHOENIX, AZ 85020

SAMPLE NO. : 9314574
INVOICE NO.: 22132193
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REVIEWED BY: AGN
PAGE : 1 OF 2

CLIENT SAMPLE ID : CCMW-2
SAMPLE TYPE .....: WATER
SAMPLED BY .....: R. HARKLAU
SUBMITTED BY ....: R. HARKLAU
SAMPLE SOURCE ...: CAVE CREEK LANDFILL
ANALYST .....: L. ANTONY

AUTHORIZED BY : R. HARKLAU
CLIENT P.O. : D16225
SAMPLE DATE ...: 06-22-93
SUBMITTAL DATE : 06-23-93
EXTRACTION DATE: 07-02-93
ANALYSIS DATE .: 07-02-93

REMARKS -

Sample run on GC/MS.

Method 601 - Purgeable Halocarbons

DATA TABLE

Parameter	Result	Unit	Detection Limit
1,1,1-Trichloroethane .....:	<0.5	ug/L	0.5
1,1,2,2-Tetrachloroethane .....:	<0.5	ug/L	0.5
1,1,2,2-Tetrachloroethene .....:	<0.5	ug/L	0.5
1,1,2-Trichloroethane .....:	<0.5	ug/L	0.5
1,1-Dichloroethane .....:	<0.5	ug/L	0.5
1,1-Dichloroethene .....:	<0.5	ug/L	0.5
1,2-Dichlorobenzene .....:	<1.0	ug/L	1.0
1,2-Dichloroethane .....:	<0.5	ug/L	0.5
1,2-Dichloropropane .....:	<0.5	ug/L	0.5
1,3-Dichlorobenzene .....:	<1.0	ug/L	1.0
1,4-Dichlorobenzene .....:	<1.0	ug/L	1.0
Bromodichloromethane .....:	<1.0	ug/L	1.0
Bromoform .....:	<1.0	ug/L	1.0
Bromomethane .....:	<1.0	ug/L	1.0
Carbon tetrachloride .....:	<0.5	ug/L	0.5
Chlorobenzene .....:	<1.0	ug/L	1.0
Chloroethane .....:	<1.0	ug/L	1.0
Chloroform .....:	<0.5	ug/L	0.5
Chloromethane .....:	<1.0	ug/L	1.0
cis 1,3-Dichloropropene .....:	<0.5	ug/L	0.5
Dibromochloromethane .....:	<1.0	ug/L	1.0
Dibromomethane .....:	<1.0	ug/L	1.0
Dichlorodifluoromethane .....:	<1.0	ug/L	1.0
Dichloromethane .....:	<5.0	ug/L	5.0
trans 1,2-Dichloroethene .....:	<1.0	ug/L	1.0
trans 1,3-Dichloropropene .....:	<1.0	ug/L	1.0

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Managing Director

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PHOENIX, AZ 85020

SAMPLE NO. : 9314574
INVOICE NO.: 22132193
REPORT DATE: 07-08-93
REVIEWED BY: AGN
PAGE : 2 OF 2

D A T A T A B L E (Cont.)

Parameter	Result	Unit	Detection Limit
Trichloroethene(TCE) .....:	<0.5	ug/L	0.5
Trichlorofluoromethane .....:	<1.0	ug/L	1.0
Vinyl chloride .....:	<2.0	ug/L	2.0
2-Chloroethylvinyl ether .....:	<15.	ug/L	15.

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INVOICE NO.: 22132193
REPORT DATE: 07-08-93
REVIEWED BY: AGN
PAGE : 1 OF 1

CLIENT SAMPLE ID : CCMW-2
SAMPLE TYPE .....: WATER
SAMPLED BY .....: R. HARKLAU
SUBMITTED BY ....: R. HARKLAU
SAMPLE SOURCE ...: CAVE CREEK LANDFILL
ANALYST .....: L. ANTONY

AUTHORIZED BY : R. HARKLAU
CLIENT P.O. : D16225
SAMPLE DATE ...: 06-22-93
SUBMITTAL DATE : 06-23-93
EXTRACTION DATE: 07-02-93
ANALYSIS DATE .: 07-02-93

REMARKS -

Sample run on GC/MS.

Method 602 - Purgeable Halocarbons

DATA TABLE

Parameter	Result	Unit	Detection Limit
1,2-Dichlorobenzene .....:	<1.0	ug/L	1.0
1,3-Dichlorobenzene .....:	<1.0	ug/L	1.0
1,4-Dichlorobenzene .....:	<1.0	ug/L	1.0
Benzene .....:	<1.0	ug/L	1.0
Chlorobenzene .....:	<1.0	ug/L	1.0
Ethylbenzene .....:	<1.0	ug/L	1.0
Toluene .....:	<1.0	ug/L	1.0
Total Xylenes .....:	<0.3	ug/L	0.3

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PHOENIX, AZ 85020

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INVOICE NO.: 22132193
REPORT DATE: 07-08-93
REVIEWED BY: AGN
PAGE : 1 OF 1

CLIENT SAMPLE ID : CCMW-2
SAMPLE TYPE .....: WATER
SAMPLED BY .....: R. HARKLAU
SUBMITTED BY ....: R. HARKLAU
SAMPLE SOURCE ...: CAVE CREEK LANDFILL
ANALYST .....: L. ANTONY

AUTHORIZED BY : R. HARKLAU
CLIENT P.O. : D16225
SAMPLE DATE ...: 06-22-93
SUBMITTAL DATE : 06-23-93
EXTRACTION DATE: 06-26-93
ANALYSIS DATE .: 07-03-93

Method 604 - Phenols

DATA TABLE

Parameter	Result	Unit	Detection Limit
2,4,6-Trichlorophenol .....:	<10.	ug/L	10.
2,4-Dichlorophenol .....:	<10.	ug/L	10.
2,4-Dinitrophenol .....:	<50.	ug/L	50.
Phenol .....:	<10.	ug/L	10.
2-Chlorophenol .....:	<10.	ug/L	10.
2-Nitrophenol .....:	<10.	ug/L	10.
Pentachlorophenol .....:	<15.	ug/L	15.
4-Chloro-3-methylphenol .....:	<20.	ug/L	20.
4-Nitrophenol .....:	<50.	ug/L	50.
2-Methyl-4,6-dinitrophenol .....:	<30.	ug/L	30.
2,4-Dimethylphenol .....:	<20.	ug/L	20.

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SAMPLE NO. : 9314574
INVOICE NO.: 22132193
REPORT DATE: 07-08-93
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PAGE : 1 OF 1

CLIENT SAMPLE ID : CCMW-2
SAMPLE TYPE .....: WATER
SAMPLED BY .....: R. HARKLAU
SUBMITTED BY ....: R. HARKLAU
SAMPLE SOURCE ...: CAVE CREEK LANDFILL

AUTHORIZED BY : R. HARKLAU
CLIENT P.O. : D16225
SAMPLE DATE ...: 06-22-93
SUBMITTAL DATE : 06-23-93
EXTRACTION DATE: --

Inorganic Chemistry - Total Metals

DATA TABLE

Parameter	Result	Unit	Detection Limit	Analysis Date
Total Aluminum	0.14	mg/L	0.05	06-29-93
Total Antimony	<0.05	mg/L	0.05	06-29-93
Total Arsenic	<0.05	mg/L	0.05	06-29-93
Total Barium	<0.05	mg/L	0.05	06-29-93
Total Beryllium	<0.05	mg/L	0.05	06-29-93
Total Cadmium	<0.010	mg/L	0.010	06-29-93
Total Chromium	<0.05	mg/L	0.05	06-29-93
Total Cobalt	<0.05	mg/L	0.05	06-29-93
Total Iron	1.2	mg/L	0.05	06-29-93
Total Lead	<0.05	mg/L	0.05	06-29-93
Total Manganese	0.08	mg/L	0.05	06-29-93
Total Mercury	<0.001	mg/L	0.001	07-08-93
Total Nickel	<0.05	mg/L	0.05	06-29-93
Total Selenium	<0.010	mg/L	0.010	06-29-93
Total Silver	<0.05	mg/L	0.05	06-29-93
Total Tin	<0.05	mg/L	0.05	07-09-93
Total Thallium	<0.10	mg/L	0.10	06-29-93
Total Vanadium	<0.05	mg/L	0.05	06-29-93
Total Zinc	2.2	mg/L	0.05	06-29-93

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SAMPLE NO. : 9314574
INVOICE NO.: 22132193
REPORT DATE: 07-08-93
REVIEWED BY: AGN
PAGE : 1 OF 1

CLIENT SAMPLE ID : CCMW-2
SAMPLE TYPE .....: WATER
SAMPLED BY .....: R. HARKLAU
SUBMITTED BY ....: R. HARKLAU
SAMPLE SOURCE ...: CAVE CREEK LANDFILL

AUTHORIZED BY : R. HARKLAU
CLIENT P.O. : D16225
SAMPLE DATE ...: 06-22-93
SUBMITTAL DATE : 06-23-93
EXTRACTION DATE: 07-08-93

Inorganic Chemistry - Non-Metals

DATA TABLE

Parameter	Result	Unit	Detection Limit	Analysis Date
Nitrate Nitrogen .....:	<0.50	mg/L	0.50	06-23-93

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M Gaskill
Managing Director

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CLIENT DAMES & MOORE
ATTN: ROB HARKLAU
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PHOENIX, AZ 85020

SAMPLE NO. : 9314575
INVOICE NO.: 22132193
REPORT DATE: 07-08-93
REVIEWED BY: AGN
PAGE : 1 OF 1

CLIENT SAMPLE ID : CCMW-1
SAMPLE TYPE .....: WATER
SAMPLED BY .....: R. HARKLAU
SUBMITTED BY ....: R. HARKLAU
SAMPLE SOURCE ...: CAVE CREEK LANDFILL
ANALYST .....: L. ANTONY

AUTHORIZED BY : R. HARKLAU
CLIENT P.O. : D16225
SAMPLE DATE ...: 06-22-93
SUBMITTAL DATE : 06-23-93
EXTRACTION DATE: 07-02-93
ANALYSIS DATE .: 07-02-93

REMARKS -

Sample run on GC/MS.

Method 501 - Trihalomethanes

DATA TABLE

Parameter	Result	Unit	Detection Limit
Bromodichloromethane .....:	<0.001	mg/L	0.001
Bromoform .....:	<0.001	mg/L	0.001
Chloroform .....:	<0.001	mg/L	0.001
Dibromochloromethane .....:	<0.001	mg/L	0.001
Total Trihalomethanes .....:	<0.001	mg/L	0.001

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SAMPLE NO. : 9314575
INVOICE NO.: 22132193
REPORT DATE: 07-08-93
REVIEWED BY: AGN
PAGE : 1 OF 1

CLIENT SAMPLE ID : CCMW-1
SAMPLE TYPE .....: WATER
SAMPLED BY .....: R. HARKLAU
SUBMITTED BY ....: R. HARKLAU
SAMPLE SOURCE ...: CAVE CREEK LANDFILL
ANALYST .....: W. MCCANN

AUTHORIZED BY : R. HARKLAU
CLIENT P.O. : D16225
SAMPLE DATE ...: 06-22-93
SUBMITTAL DATE : 06-23-93
EXTRACTION DATE: 06-26-93
ANALYSIS DATE .: 07-08-93

Safe Drinking Water Pesticides and Herbicides

DATA TABLE

Parameter	Result	Unit	Detection Limit
Endrin	<0.0001	mg/L	0.0001
Lindane	<0.002	mg/L	0.002
Methoxychlor	<0.05	mg/L	0.05
Toxaphene	<0.0025	mg/L	0.0025
2,4-D	<0.05	mg/L	0.05
2,4,5-TP (SILVEX)	<0.005	mg/L	0.005

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PHOENIX, AZ 85020

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INVOICE NO.: 22132193
REPORT DATE: 07-08-93
REVIEWED BY: AGN
PAGE : 1 OF 2

CLIENT SAMPLE ID : CCMW-1
SAMPLE TYPE .....: WATER
SAMPLED BY .....: R. HARKLAU
SUBMITTED BY ....: R. HARKLAU
SAMPLE SOURCE ...: CAVE CREEK LANDFILL
ANALYST .....: L. ANTONY

AUTHORIZED BY : R. HARKLAU
CLIENT P.O. : D16225
SAMPLE DATE ...: 06-22-93
SUBMITTAL DATE : 06-23-93
EXTRACTION DATE: 07-02-93
ANALYSIS DATE .: 07-02-93

REMARKS -

Sample run on GC/MS.

Method 601 - Purgeable Halocarbons

DATA TABLE

Parameter	Result	Unit	Detection Limit
1,1,1-Trichloroethane .....:	<0.5	ug/L	0.5
1,1,2,2-Tetrachloroethane .....:	<0.5	ug/L	0.5
1,1,2,2-Tetrachloroethene .....:	<0.5	ug/L	0.5
1,1,2-Trichloroethane .....:	<0.5	ug/L	0.5
1,1-Dichloroethane .....:	<0.5	ug/L	0.5
1,1-Dichloroethene .....:	<0.5	ug/L	0.5
1,2-Dichlorobenzene .....:	<1.0	ug/L	1.0
1,2-Dichloroethane .....:	<0.5	ug/L	0.5
1,2-Dichloropropane .....:	<0.5	ug/L	0.5
1,3-Dichlorobenzene .....:	<1.0	ug/L	1.0
1,4-Dichlorobenzene .....:	<1.0	ug/L	1.0
Bromodichloromethane .....:	<1.0	ug/L	1.0
Bromoform .....:	<1.0	ug/L	1.0
Bromomethane .....:	<1.0	ug/L	1.0
Carbon tetrachloride .....:	<0.5	ug/L	0.5
Chlorobenzene .....:	<1.0	ug/L	1.0
Chloroethane .....:	<1.0	ug/L	1.0
Chloroform .....:	<0.5	ug/L	0.5
Chloromethane .....:	<1.0	ug/L	1.0
cis 1,3-Dichloropropene .....:	<0.5	ug/L	0.5
Dibromochloromethane .....:	<1.0	ug/L	1.0
Dibromomethane .....:	<1.0	ug/L	1.0
Dichlorodifluoromethane .....:	<1.0	ug/L	1.0
Dichloromethane .....:	<5.0	ug/L	5.0
trans 1,2-Dichloroethene .....:	<1.0	ug/L	1.0
trans 1,3-Dichloropropene .....:	<1.0	ug/L	1.0

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PHOENIX, AZ 85020

SAMPLE NO. : 9314575
INVOICE NO.: 22132193
REPORT DATE: 07-08-93
REVIEWED BY: AGN

DATA TABLE (Cont.)

Parameter	Result	Unit	Detection Limit
Trichloroethene(TCE) .....:	<0.5	ug/L	0.5
Trichlorofluoromethane .....:	<1.0	ug/L	1.0
Vinyl chloride .....:	<2.0	ug/L	2.0
2-Chloroethylvinyl ether .....:	<15.	ug/L	15.

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CLIENT SAMPLE ID : CCMW-1
SAMPLE TYPE .....: WATER
SAMPLED BY .....: R. HARKLAU
SUBMITTED BY ....: R. HARKLAU
SAMPLE SOURCE ...: CAVE CREEK LANDFILL
ANALYST .....: L. ANTONY

AUTHORIZED BY : R. HARKLAU
CLIENT P.O. : D16225
SAMPLE DATE ...: 06-22-93
SUBMITTAL DATE : 06-23-93
EXTRACTION DATE: 07-02-93
ANALYSIS DATE .: 07-02-93

REMARKS -

Sample run on GC/MS.

Method 602 - Purgeable Halocarbons

DATA TABLE

Parameter	Result	Unit	Detection Limit
1,2-Dichlorobenzene .....:	<1.0	ug/L	1.0
1,3-Dichlorobenzene .....:	<1.0	ug/L	1.0
1,4-Dichlorobenzene .....:	<1.0	ug/L	1.0
Benzene .....:	<1.0	ug/L	1.0
Chlorobenzene .....:	<1.0	ug/L	1.0
Ethylbenzene .....:	<1.0	ug/L	1.0
Toluene .....:	<1.0	ug/L	1.0
Total Xylenes .....:	<0.3	ug/L	0.3

(2) Copies to Client

M. Enghil
Managing Director

Westech Laboratories Inc.
The Quality People
Since 1955

3737 East Broadway Road
Phoenix, Arizona 85040
(602) 437-1080 • fax 437-8706

CLIENT DAMES & MOORE
ATTN: ROB HARKLAU
7500 NORTH DREAMY DRAW, SUITE 145
PHOENIX, AZ 85020

SAMPLE NO. : 9314575
INVOICE NO.: 22132193
REPORT DATE: 07-08-93
REVIEWED BY: AGN
PAGE : 1 OF 1

CLIENT SAMPLE ID : CCMW-1
SAMPLE TYPE .....: WATER
SAMPLED BY .....: R. HARKLAU
SUBMITTED BY ....: R. HARKLAU
SAMPLE SOURCE ...: CAVE CREEK LANDFILL
ANALYST .....: L. ANTONY

AUTHORIZED BY : R. HARKLAU
CLIENT P.O. : D16225
SAMPLE DATE ...: 06-22-93
SUBMITTAL DATE : 06-23-93
EXTRACTION DATE: 06-26-93
ANALYSIS DATE .: 07-03-93

Method 604 - Phenols

DATA TABLE

Parameter	Result	Unit	Detection Limit
2,4,6-Trichlorophenol .....:	<10.	ug/L	10.
2,4-Dichlorophenol .....:	<10.	ug/L	10.
2,4-Dinitrophenol .....:	<50.	ug/L	50.
Phenol .....:	<10.	ug/L	10.
2-Chlorophenol .....:	<10.	ug/L	10.
2-Nitrophenol .....:	<10.	ug/L	10.
Pentachlorophenol .....:	<15.	ug/L	15.
4-Chloro-3-methylphenol .....:	<20.	ug/L	20.
4-Nitrophenol .....:	<50.	ug/L	50.
2-Methyl-4,6-dinitrophenol .....:	<30.	ug/L	30.
2,4-Dimethylphenol .....:	<20.	ug/L	20.

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Managing Director

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CLIENT DAMES & MOORE
ATTN: ROB HARKLAU
7500 NORTH DREAMY DRAW, SUITE 145
PHOENIX, AZ 85020

SAMPLE NO. : 9314575
INVOICE NO.: 22132193
REPORT DATE: 07-08-93
REVIEWED BY: AGN
PAGE : 1 OF 1

CLIENT SAMPLE ID : CCMW-1
SAMPLE TYPE .....: WATER
SAMPLED BY .....: R. HARKLAU
SUBMITTED BY ....: R. HARKLAU
SAMPLE SOURCE ...: CAVE CREEK LANDFILL

AUTHORIZED BY : R. HARKLAU
CLIENT P.O. : D16225
SAMPLE DATE ...: 06-22-93
SUBMITTAL DATE : 06-23-93
EXTRACTION DATE: --

Inorganic Chemistry - Total Metals

DATA TABLE

Parameter	Result	Unit	Detection Limit	Analysis Date
Total Aluminum .....:	0.13	mg/L	0.05	06-29-93
Total Antimony .....:	<0.05	mg/L	0.05	06-29-93
Total Arsenic .....:	<0.05	mg/L	0.05	06-29-93
Total Barium .....:	<0.05	mg/L	0.05	06-29-93
Total Beryllium .....:	<0.05	mg/L	0.05	06-29-93
Total Cadmium .....:	<0.010	mg/L	0.010	06-29-93
Total Chromium .....:	<0.05	mg/L	0.05	06-29-93
Total Cobalt .....:	<0.05	mg/L	0.05	06-29-93
Total Iron .....:	<0.05	mg/L	0.05	06-29-93
Total Lead .....:	<0.05	mg/L	0.05	06-29-93
Total Manganese .....:	0.06	mg/L	0.05	06-29-93
Total Mercury .....:	<0.001	mg/L	0.001	07-08-93
Total Nickel .....:	<0.05	mg/L	0.05	06-29-93
Total Selenium .....:	<0.010	mg/L	0.010	06-29-93
Total Silver .....:	<0.05	mg/L	0.05	06-29-93
Total Tin .....:	<0.05	mg/L	0.05	07-09-93
Total Thallium .....:	<0.10	mg/L	0.10	06-29-93
Total Vanadium .....:	<0.05	mg/L	0.05	06-29-93
Total Zinc .....:	2.0	mg/L	0.05	06-29-93

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Managing Director

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Phoenix, Arizona 85040
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CLIENT DAMES & MOORE
ATTN: ROB HARKLAU
7500 NORTH DREAMY DRAW, SUITE 145
PHOENIX, AZ 85020

SAMPLE NO. : 9314575
INVOICE NO.: 22132193
REPORT DATE: 07-08-93
REVIEWED BY: AGK
PAGE : 1 OF 1

CLIENT SAMPLE ID : CCMW-1
SAMPLE TYPE .....: WATER
SAMPLED BY .....: R. HARKLAU
SUBMITTED BY ....: R. HARKLAU
SAMPLE SOURCE ...: CAVE CREEK LANDFILL

AUTHORIZED BY : R. HARKLAU
CLIENT P.O. : D16225
SAMPLE DATE ...: 06-22-93
SUBMITTAL DATE : 06-23-93
EXTRACTION DATE: --

Inorganic Chemistry - Non-Metals

DATA TABLE

Parameter	Result	Unit	Detection Limit	Analysis Date
Nitrate Nitrogen .....:	<0.50	mg/L	0.50	06-23-93

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Managing Director

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QUALITY CONTROL REPORT

QC IDENTIFIER .....: 3-071593-1
REFERENCE NOTEBOOK : MT-083
REFERENCE PAGE ....: 56

INSTRUMENT : Varian 1475 Atomic Absorption
ANALYZED BY : D. HENZLER
ANALYZED ON : 07-15-93

TEST DESCRIPTION ..: Total and Total Recoverable Selenium
TEST METHOD .....: 270.2

SAMPLES IN THIS RUN: 9314574 9314575 9314762 9314763 9314764 9314765 9314766 9314767 9315106 9315107 9315355

CALIBRATION CHECK -

PARAMETER	UNIT	TRUE VALUE	FOUND VALUE	%RECOVERY
Total Selenium	ug/L	10.0	10.7	107.0
Total Selenium	ug/L	10.0	10.8	108.0
Total Selenium	ug/L	10.0	9.3	93.0

REPLICATES -

SAMPLE NUMBER	PARAMETER	UNIT	RESULT	REPLICATE	RPD%
9314766	Total Recoverable Selenium	ug/L	<2.0	<2.0	NC
9315355	Total Recoverable Selenium	ug/L	<2.0	<2.0	NC

SPIKES -

SAMPLE NUMBER	PARAMETER	UNIT	SAMPLE RESULT	SPIKE AMOUNT	SAMPLE+SPIKE RESULT	%RECOVERY
9314575	Total Selenium	mg/L	<0.010	0.020	0.020	100.0
9315355	Total Recoverable Selenium	ug/L	<2.0	20.0	21.6	108.0

METHOD BLANKS -

PARAMETER	UNIT	RESULT
Total Selenium	mg/L	<0.002

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 3-071593-1
REFERENCE NOTEBOOK : MT-083
REFERENCE PAGE ....: 56

INSTRUMENT : Varian 1475 Atomic Absorption
ANALYZED BY : D. HENZLER
ANALYZED ON : 07-15-93

NOTE -

1) NC: Not Calculable because result is < 5 times the MDL

2) NP: Not Practical because sample result is 4 times or more greater than spike added.

3) Percent Recovery is:

$$\frac{\text{Sample+Spike Result} - \text{Sample Result}}{\text{Spike Amount}} \times 100$$

4) Relative Percent Difference (RPD) is:

$$\frac{\text{Sample Result} - \text{Replicate Result}}{(\text{Sample Result} + \text{Replicate Result})/2} \times 100$$

WESTECH
LABORATORIES
INC.
QUALITY ASSURANCE OFFICER
Dave Nichols
DATE: 7/21/93

Westech Laboratories Inc.
The Quality People
Since 1955

3737 East Broadway Road
Phoenix, Arizona 85040
(602) 437-1080 • fax 437-8706

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 3-070793-2
REFERENCE NOTEBOOK : MT-083
REFERENCE PAGE ....: 49

INSTRUMENT : Varian 1475 Atomic Absorption
ANALYZED BY : M. TORRES
ANALYZED ON : 07-08-93

TEST DESCRIPTION ..: Total, Dissolved & TCLP Mercury
TEST METHOD .....: 245.1/7470

SAMPLES IN THIS RUN: 9314574 9314575 9314607 9314608 9314609 9314618 9314659 9314687 9314688 9314689 9314690 9314691 9314699 9314700 9314701 9314721 9314757 9314802 9314803 9314823 9314824 9314825 9314893

CALIBRATION CHECK -

PARAMETER	UNIT	TRUE VALUE	FOUND VALUE	%RECOVERY
Mercury	ug/L	4.0	4.3	107.5
Mercury	ug/L	4.0	4.06	101.5
Mercury	ug/L	4.0	4.0	100.0
Mercury	ug/L	4.0	4.02	100.5
Mercury	ug/L	4.0	3.90	97.5

REPLICATES -

SAMPLE NUMBER	PARAMETER	UNIT	RESULT	REPLICATE	RPD%
9314688	Total Mercury	mg/L	<0.001	<0.001	NC
9314701	Mercury (TCLP)	mg/L	<0.01	<0.01	NC

SPIKES -

SAMPLE NUMBER	PARAMETER	UNIT	SAMPLE RESULT	SPIKE AMOUNT	SAMPLE+SPIKE RESULT	%RECOVERY
9314609	Dissolved Mercury	ug/L	0.01	5.0	5.03	100.4
9314699	Total Mercury	mg/L	<0.0002	5.0	5.93	118.6
9314825	Mercury (TCLP)	mg/L	<0.01	5.0	5.23	104.6

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 3-070793-2
REFERENCE NOTEBOOK : MT-083
REFERENCE PAGE ....: 49

INSTRUMENT : Varian 1475 Atomic Absorption
ANALYZED BY : M. TORRES
ANALYZED ON : 07-08-93

METHOD BLANKS -

PARAMETER	UNIT	RESULT
Total Mercury	mg/L	<0.001

NOTE -

1) NC: Not Calculable because result is < 5 times the MDL

2) NP: Not Practical because sample result is 4 times or more greater than spike added.

3) Percent Recovery is:

$$\frac{\text{Sample+Spike Result} - \text{Sample Result}}{\text{Spike Amount}} \times 100$$

4) Relative Percent Difference (RPD) is:

$$\frac{\text{Sample Result} - \text{Replicate Result}}{(\text{Sample Result} + \text{Replicate Result})/2} \times 100$$

WESTECH
LABORATORIES
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QUALITY ASSURANCE OFFICER
Anna Pachek
DATE: 7/21/93

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Phoenix, Arizona 85040
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QUALITY CONTROL REPORT

QC IDENTIFIER .....: 102-070593-1
REFERENCE NOTEBOOK : 127
REFERENCE PAGE ....: 36-37

INSTRUMENT : H.P. GC w/Electron Capture Detector
ANALYZED BY : W. McCann
ANALYZED ON : 07-05-93

TEST DESCRIPTION ..: 505/508 - Pesticides/Organochlorine Pesticides
TEST METHOD .....: 505/508

SAMPLES IN THIS RUN: 9314029 9314050 9314051 9314052 9314536 9314574 9314575 9314656 9314657 9314658 9314751 9314752

CALIBRATION CHECK -

PARAMETER	UNIT	TRUE VALUE	FOUND VALUE	%RECOVERY
Aldrin	ug/L	5.0	4.5	90.0
Dieldrin	ug/L	5.0	4.5	90.0
Endrin	ug/l	5.0	5.3	106.0
Heptachlor Epoxide	ug/L	5.0	4.5	90.0
Lindane	ug/L	5.0	4.6	92.0
Aldrin	ug/L	5.0	5.5	110.0
Dieldrin	ug/L	5.0	5.3	106.0
Endrin	ug/l	5.0	4.5	90.0
Heptachlor Epoxide	ug/L	5.0	5.3	106.0
Lindane	ug/L	5.0	5.5	110.0
Aldrin	ug/L	5.0	5.5	110.0
Dieldrin	ug/L	5.0	4.8	96.0
Endrin	ug/l	5.0	4.8	96.0
Heptachlor Epoxide	ug/L	5.0	4.8	96.0
Lindane	ug/L	5.0	5.4	108.0

REPLICATES -

SAMPLE NUMBER	PARAMETER	UNIT	RESULT	REPLICATE	RPD%
9314029	Alachlor	mg/L	<0.001	<0.001	NC
9314029	Chlordane	mg/L	<0.001	<0.001	NC
9314029	Dieldrin	mg/L	<0.0003	<0.0003	NC
9314029	Heptachlor	mg/L	<0.0002	<0.0002	NC
9314029	Heptachlor Epoxide	mg/L	<0.0001	<0.0001	NC
9314029	Hexachlorobenzene	mg/L	<0.0001	<0.0001	NC
9314029	Hexachlorocyclopentadiene	mg/L	<0.025	<0.025	NC
9314029	Lindane	mg/L	<0.0001	<0.0001	NC
9314029	PCB 1016	mg/L	<0.00025	<0.00025	NC
9314029	PCB 1221	mg/L	<0.015	<0.015	NC
9314029	PCB 1232	mg/L	<0.00025	<0.00025	NC
9314029	PCB 1242	mg/L	<0.00025	<0.00025	NC
9314029	PCB 1248	mg/L	<0.00025	<0.00025	NC

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 102-070593-1
REFERENCE NOTEBOOK : 127
REFERENCE PAGE ....: 36-37

INSTRUMENT : H.P. GC w/Electron Capture Detector
ANALYZED BY : W. McCann
ANALYZED ON : 07-05-93

REPLICATES -

SAMPLE NUMBER	PARAMETER	UNIT	RESULT	REPLICATE	RPD%
9314029	PCB 1254	mg/L	<0.00025	<0.00025	NC
9314029	PCB 1260	mg/L	<0.00025	<0.00025	NC
9314029	Toxaphene	mg/L	<0.0015	<0.0015	NC
9314029	PCBs, Total	mg/L	<0.00025	<0.00025	NC
9314656	Aldrin	mg/L	<0.0008	<0.0008	NC
9314656	Endrin	mg/L	<0.0001	<0.0001	NC
9314656	Methoxychlor	mg/L	<0.01	<0.01	NC
9314656	Propachlor	mg/L	<0.005	<0.005	NC

SPIKES -

SAMPLE NUMBER	PARAMETER	UNIT	SAMPLE RESULT	SPIKE AMOUNT	SAMPLE+SPIKE RESULT	%RECOVERY
9314051	Dieldrin	mg/L	<0.0003	1.5	1.3	86.7
9314051	Heptachlor	mg/L	<0.0002	.5	.46	92.0
9314051	Lindane	mg/L	<0.0001	.5	.6	120.0
9314536	Aldrin	mg/L	<0.0008	.5	.6	120.0
9314536	Endrin	mg/L	<0.0001	1.3	1.3	100.0

METHOD BLANKS -

PARAMETER	UNIT	RESULT
Alachlor	mg/L	<0.001
Chlordane	mg/L	<0.001
Dieldrin	mg/L	<0.0003
Heptachlor	mg/L	<0.0002
Heptachlor Epoxide	mg/L	<0.0001
Hexachlorobenzene	mg/L	<0.0001
Hexachlorocyclopentadiene	mg/L	<0.025
Lindane	mg/L	<0.0001
Toxaphene	mg/L	<0.0015
PCB 1016	mg/L	<0.00025

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 102-070593-1
REFERENCE NOTEBOOK : 127
REFERENCE PAGE ....: 36-37

INSTRUMENT : H.P. GC w/Electron Capture Detector
ANALYZED BY : W. McCann
ANALYZED ON : 07-05-93

METHOD BLANKS -

PARAMETER	UNIT	RESULT
PCB 1221	mg/L	<0.015
PCB 1232	mg/L	<0.00025
PCB 1242	mg/L	<0.00025
PCB 1248	mg/L	<0.00025
PCB 1254	mg/L	<0.00025
PCB 1260	mg/L	<0.00025
PCBs, Total	mg/L	<0.00025

NOTE -

1) NC: Not Calculable because result is < 5 times the MDL

2) NP: Not Practical because sample result is 4 times or more greater than spike added.

3) Percent Recovery is:

$$\frac{\text{Sample+Spike Result} - \text{Sample Result}}{\text{Spike Amount}} \times 100$$

4) Relative Percent Difference (RPD) is:

$$\frac{\text{Sample Result} - \text{Replicate Result}}{(\text{Sample Result} + \text{Replicate Result})/2} \times 100$$

WESTECH
LABORATORIES
INC.
QUALITY ASSURANCE OFFICER
Anne Nichols
DATE: 7/21/93

Westech Laboratories Inc.
The Quality People
Since 1955

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Phoenix, Arizona 85040
(602) 437-1080 • fax 437-8706

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 110-070393-1
REFERENCE NOTEBOOK :
REFERENCE PAGE ....:

INSTRUMENT : Hewlett Packard GC/MS w/ Dir.Inject
ANALYZED BY : L. ANTONY
ANALYZED ON : 07-03-93

TEST DESCRIPTION ..: 604/625/8270 - Phenols/Base/Neutrals & Acids/Semi Vol. Organ
TEST METHOD .....: 604/625/8270

SAMPLES IN THIS RUN: 9314574 9314575 9314577 9314597 9314601 9314606 9314900 9314908

CALIBRATION CHECK -

PARAMETER	UNIT	TRUE VALUE	FOUND VALUE	%RECOVERY
2,4,6-Trichlorophenol	ug/L	100.	110.	110.0
2,4-Dichlorophenol	ug/L	100.	110.	110.0
2,4-Dinitrophenol	ug/L	100.	110.	110.0
2-Nitrophenol	ug/L	100.	100.	100.0
4-Chloro-3-methylphenol	ug/L	100.	110.	110.0
4-Nitrophenol	ug/L	100.	100.	100.0
Pentachlorophenol	ug/L	100.	100.	100.0
Phenol	ug/L	100.	98.	98.0
1,4-Dichlorobenzene	ug/L	100.	110.	110.0
Acenaphthene	ug/L	100.	110.	110.0
Benzo(a)pyrene	ug/L	100.	110.	110.0
Di-n-octyl phthalate	ug/L	100.	110.	110.0
Fluoranthene	ug/L	100.	110.	110.0
Hexachlorobutadiene	ug/L	100.	120.	120.0
Hexachlorocyclopentadiene	ug/L	100.	110.	110.0
N-Nitrosodiphenylamine	ug/L	100.	100.	100.0
N-Nitroso-di-n-propylamine	ug/L	100.	110.	110.0
2,4,6-Trichlorophenol	ug/L	100.	110.	110.0
2,4-Dinitrophenol	ug/L	100.	120.	120.0
2-Nitrophenol	ug/L	100.	89.	89.0
4-Chloro-3-methylphenol	ug/L	100.	78.	78.0
4-Nitrophenol	ug/L	100.	81.	81.0
1,4-Dichlorobenzene	ug/L	100.	120.	120.0
Acenaphthene	ug/L	100.	120.	120.0
Benzo(a)pyrene	ug/L	100.	100.	100.0
Di-n-octyl phthalate	ug/L	100.	110.	110.0
Fluoranthene	ug/L	100.	90.	90.0
Hexachlorocyclopentadiene	ug/L	100.	78.	78.0
N-Nitrosodiphenylamine	ug/L	100.	98.	98.0
2,4,6-Trichlorophenol	ug/L	100.	94.	94.0
2,4-Dichlorophenol	ug/L	100.	120.	120.0
2-Nitrophenol	ug/L	100.	98.	98.0
4-Chloro-3-methylphenol	ug/L	100.	110.	110.0
4-Nitrophenol	ug/L	100.	86.	86.0
Pentachlorophenol	ug/L	100.	86.	86.0
Phenol	ug/L	100.	100.	100.0
1,4-Dichlorobenzene	ug/L	100.	100.	100.0

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 110-070393-1
REFERENCE NOTEBOOK :
REFERENCE PAGE ....:

INSTRUMENT : Hewlett Packard GC/MS w/ Dir.Inject
ANALYZED BY : L. ANTONY
ANALYZED ON : 07-03-93

CALIBRATION CHECK -

PARAMETER	UNIT	TRUE VALUE	FOUND VALUE	%RECOVERY
Acenaphthene	ug/L	100.	96.	96.0
Benzo(a)pyrene	ug/L	100.	100.	100.0
Fluoranthene	ug/L	100.	95.	95.0
Hexachlorobutadiene	ug/L	100.	100.	100.0
N-Nitrosodiphenylamine	ug/L	100.	93.	93.0
N-Nitroso-di-n-propylamine	ug/L	100.	100.	100.0

REPLICATES -

SAMPLE NUMBER	PARAMETER	UNIT	RESULT	REPLICATE	RPD%
9314577	beta-BHC	ug/L	<10.	<10.	NC
9314577	2,4,5-Trichlorophenol	ug/L	<10.	<10.	NC
9314577	2,4,6-Trichlorophenol	ug/L	<10.	<10.	NC
9314577	2,4-Dichlorophenol	ug/L	<10.	<10.	NC
9314577	2,4-Dimethylphenol	ug/L	<10.	<10.	NC
9314577	2,4-Dinitrophenol	ug/L	<50.	<50.	NC
9314577	2,6-Dichlorophenol	ug/L	<10.	<10.	NC
9314577	2-Chlorophenol	ug/L	<10.	<10.	NC
9314577	2-Methylphenol	ug/L	<10.	<10.	NC
9314577	2-Nitrophenol	ug/L	<10.	<10.	NC
9314577	3-Methylphenol	ug/L	<10.	<10.	NC
9314577	4-Chloro-3-methylphenol	ug/L	<10.	<10.	NC
9314577	4-Methylphenol	ug/L	<10.	<10.	NC
9314577	4-Nitrophenol	ug/L	<10.	<10.	NC
9314577	Pentachlorophenol	ug/L	<10.	<10.	NC
9314577	Phenol	ug/L	<10.	<10.	NC
9314577	Dimethyl phthalate	ug/L	<10.	<10.	NC
9314577	Diethyl phthalate	ug/L	<10.	<10.	NC
9314577	Di-n-butyl phthalate	ug/L	<10.	<10.	NC
9314577	Butyl benzyl phthalate	ug/L	<10.	<10.	NC
9314577	Bis(2-ethylhexyl) phthalate	ug/L	<10.	<10.	NC
9314577	Di-n-octyl phthalate	ug/L	<10.	<10.	NC
9314577	Acenaphthene	ug/L	<10.	<10.	NC
9314577	Acenaphthylene	ug/L	<10.	<10.	NC
9314577	Anthracene	ug/L	<10.	<10.	NC
9314577	Benzo(a)anthracene	ug/L	<10.	<10.	NC
9314577	Benzo(a)pyrene	ug/L	<10.	<10.	NC
9314577	Benzo(b)fluoranthene	ug/L	<10.	<10.	NC

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 110-070393-1
REFERENCE NOTEBOOK :
REFERENCE PAGE ....:

INSTRUMENT : Hewlett Packard GC/MS w/ Dir.Inject
ANALYZED BY : L. ANTONY
ANALYZED ON : 07-03-93

REPLICATES -

SAMPLE NUMBER	PARAMETER	UNIT	RESULT	REPLICATE	RPD%
9314577	Benzo(ghi)perylene	ug/L	<10.	<10.	NC
9314577	Benzo(k)fluoranthene	ug/L	<10.	<10.	NC
9314577	Chrysene	ug/L	<10.	<10.	NC
9314577	Dibenzo(a,h)anthracene	ug/L	<10.	<10.	NC
9314577	Fluoranthene	ug/L	<10.	<10.	NC
9314577	Fluorene	ug/L	<10.	<10.	NC
9314577	Indenol(1,2,3-cd)pyrene	ug/L	<10.	<10.	NC
9314577	Naphthalene	ug/L	<10.	<10.	NC
9314577	Phenanthrene	ug/L	<10.	<10.	NC
9314577	Pyrene	ug/L	<10.	<10.	NC
9314577	Bis(2-chloroethyl)ether	ug/L	<10.	<10.	NC
9314577	Bis(2-chloroethoxy)methane	ug/L	<10.	<10.	NC
9314577	Bis(2-chloroisopropyl)ether	ug/L	<10.	<10.	NC
9314577	4-Bromophenyl phenyl ether	ug/L	<10.	<10.	NC
9314577	4-Chlorophenyl phenyl ether	ug/L	<10.	<10.	NC
9314577	2-Chloronaphthalene	ug/L	<10.	<10.	NC
9314577	Hexachlorobenzene	ug/L	<10.	<10.	NC
9314577	Hexachlorobutadiene	ug/L	<10.	<10.	NC
9314577	Hexachlorocyclopentadiene	ug/L	<10.	<10.	NC
9314577	Hexachloroethane	ug/L	<10.	<10.	NC
9314577	1,2,4-Trichlorobenzene	ug/L	<10.	<10.	NC
9314577	1,2-Dichlorobenzene	ug/L	<10.	<10.	NC
9314577	1,3-Dichlorobenzene	ug/L	<10.	<10.	NC
9314577	1,4-Dichlorobenzene	ug/L	<10.	<10.	NC
9314577	2-Methyl-4,6-dinitrophenol	ug/L	<30.	<30.	NC
9314577	N-Nitrosodibutylamine	ug/L	<20.	<20.	NC
9314577	N-Nitrosodiphenylamine	ug/L	<20.	<20.	NC
9314577	N-Nitroso-di-n-propylamine	ug/L	<20.	<20.	NC
9314577	4,4'-DDD	ug/L	<10.	<10.	NC
9314577	4,4'-DDE	ug/L	<10.	<10.	NC
9314577	4,4'-DDT	ug/L	<10.	<10.	NC
9314577	Aldrin	ug/L	<10.	<10.	NC
9314577	alpha-BHC	ug/L	<10.	<10.	NC
9314577	Chlordane	ug/L	<30.	<30.	NC
9314577	delta-BHC	ug/L	<10.	<10.	NC
9314577	Dieldrin	ug/L	<10.	<10.	NC
9314577	Endosulfan I	ug/L	<10.	<10.	NC
9314577	Endosulfan II	ug/L	<10.	<10.	NC
9314577	Endosulfan sulfate	ug/L	<10.	<10.	NC
9314577	Endrin	ug/L	<10.	<10.	NC
9314577	Endrin aldehyde	ug/L	<20.	<20.	NC

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 110-070393-1
REFERENCE NOTEBOOK :
REFERENCE PAGE ....:

INSTRUMENT : Hewlett Packard GC/MS w/ Dir.Inject
ANALYZED BY : L. ANTONY
ANALYZED ON : 07-03-93

REPLICATES -

SAMPLE NUMBER	PARAMETER	UNIT	RESULT	REPLICATE	RPD%
9314577	Heptachlor	ug/L	<10.	<10.	NC
9314577	Heptachlor Epoxide	ug/L	<10.	<10.	NC
9314577	Lindane	ug/L	<10.	<10.	NC
9314577	Methoxychlor	ug/L	<20.	<20.	NC
9314577	PCB 1016	ug/L	<20.	<20.	NC
9314577	PCB 1221	ug/L	<50.	<50.	NC
9314577	PCB 1232	ug/L	<20.	<20.	NC
9314577	PCB 1242	ug/L	<20.	<20.	NC
9314577	PCB 1248	ug/L	<20.	<20.	NC
9314577	PCB 1254	ug/L	<20.	<20.	NC
9314577	PCB 1260	ug/L	<20.	<20.	NC
9314577	Toxaphene	ug/L	<50.	<50.	NC
9314577	2,4-Dinitrotoluene	ug/L	<10.	<10.	NC
9314577	Isophorone	ug/L	<10.	<10.	NC
9314577	Nitrobenzene	ug/L	<10.	<10.	NC
9314577	2,6-Dinitrotoluene	ug/L	<10.	<10.	NC
9314577	2,3,7,8 TCDD(Screen)	ug/L	<100.	<100.	NC
9314577	1,2-Diphenyl Hydrazine	ug/L	<20.	<20.	NC
9314577	Benzidine	ug/L	<20.	<20.	NC
9314577	N-Nitroso Dimethyl Amine	ug/L	<20.	<20.	NC
9314577	Bis-(Chloro Methyl) Ether	ug/L	<10.	<10.	NC
9314577	3,3'-Dichlorobenzidine	ug/L	<20.	<20.	NC
9314577	Biphenyl	ug/L	<10.	<10.	NC
9314577	Diphenyloxide	ug/L	<20.	<20.	NC
9314577	Monomethylnaphthalene	ug/L	<30.	<30.	NC
9314900	beta-BHC	ug/L	<10.	<10.	NC
9314900	2,4,5-Trichlorophenol	ug/L	<10.	<10.	NC
9314900	2,4,6-Trichlorophenol	ug/L	<10.	<10.	NC
9314900	2,4-Dichlorophenol	ug/L	<10.	<10.	NC
9314900	2,4-Dimethylphenol	ug/L	<10.	<10.	NC
9314900	2,4-Dinitrophenol	ug/L	<50.	<50.	NC
9314900	2,6-Dichlorophenol	ug/L	<10.	<10.	NC
9314900	2-Chlorophenol	ug/L	<10.	<10.	NC
9314900	2-Methylphenol	ug/L	<10.	<10.	NC
9314900	2-Nitrophenol	ug/L	<10.	<10.	NC
9314900	3-Methylphenol	ug/L	<10.	<10.	NC
9314900	4-Chloro-3-methylphenol	ug/L	<10.	<10.	NC
9314900	4-Methylphenol	ug/L	<10.	<10.	NC
9314900	4-Nitrophenol	ug/L	<10.	<10.	NC
9314900	Pentachlorophenol	ug/L	<10.	<10.	NC
9314900	Phenol	ug/L	<10.	<10.	NC

QUALITY CONTROL REPORT

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ANALYZED BY : L. ANTONY
ANALYZED ON : 07-03-93

REPLICATES -

SAMPLE NUMBER	PARAMETER	UNIT	RESULT	REPLICATE	RPD%
9314900	Dimethyl phthalate	ug/L	<10.	<10.	NC
9314900	Diethyl phthalate	ug/L	<10.	<10.	NC
9314900	Di-n-butyl phthalate	ug/L	<10.	<10.	NC
9314900	Butyl benzyl phthalate	ug/L	21.	21.	NC
9314900	Bis(2-ethylhexyl) phthalate	ug/L	39.	39.	NC
9314900	Di-n-octyl phthalate	ug/L	<10.	<10.	NC
9314900	Acenaphthene	ug/L	<10.	<10.	NC
9314900	Acenaphthylene	ug/L	<10.	<10.	NC
9314900	Anthracene	ug/L	<10.	<10.	NC
9314900	Benzo(a)anthracene	ug/L	<10.	<10.	NC
9314900	Benzo(a)pyrene	ug/L	<10.	<10.	NC
9314900	Benzo(b)fluoranthene	ug/L	<10.	<10.	NC
9314900	Benzo(ghi)perylene	ug/L	<10.	<10.	NC
9314900	Benzo(k)fluoranthene	ug/L	<10.	<10.	NC
9314900	Chrysene	ug/L	<10.	<10.	NC
9314900	Dibenzo(a,h)anthracene	ug/L	<10.	<10.	NC
9314900	Fluoranthene	ug/L	<10.	<10.	NC
9314900	Fluorene	ug/L	<10.	<10.	NC
9314900	Indenol(1,2,3-cd)pyrene	ug/L	<10.	<10.	NC
9314900	Naphthalene	ug/L	<10.	<10.	NC
9314900	Phenanthrene	ug/L	<10.	<10.	NC
9314900	Pyrene	ug/L	<10.	<10.	NC
9314900	Bis(2-chloroethyl)ether	ug/L	<10.	<10.	NC
9314900	Bis(2-chloroethoxy)methane	ug/L	<10.	<10.	NC
9314900	Bis(2-chloroisopropyl)ether	ug/L	<10.	<10.	NC
9314900	4-Bromophenyl phenyl ether	ug/L	<10.	<10.	NC
9314900	4-Chlorophenyl phenyl ether	ug/L	<10.	<10.	NC
9314900	2-Chloronaphthalene	ug/L	<10.	<10.	NC
9314900	Hexachlorobenzene	ug/L	<10.	<10.	NC
9314900	Hexachlorobutadiene	ug/L	<10.	<10.	NC
9314900	Hexachlorocyclopentadiene	ug/L	<10.	<10.	NC
9314900	Hexachloroethane	ug/L	<10.	<10.	NC
9314900	1,2,4-Trichlorobenzene	ug/L	<10.	<10.	NC
9314900	1,2-Dichlorobenzene	ug/L	<10.	<10.	NC
9314900	1,3-Dichlorobenzene	ug/L	<10.	<10.	NC
9314900	1,4-Dichlorobenzene	ug/L	<10.	<10.	NC
9314900	2-Methyl-4,6-dinitrophenol	ug/L	<30.	<30.	NC
9314900	N-Nitrosodibutylamine	ug/L	<20.	<20.	NC
9314900	N-Nitrosodiphenylamine	ug/L	<20.	<20.	NC
9314900	N-Nitroso-di-n-propylamine	ug/L	<20.	<20.	NC
9314900	4,4'-DDD	ug/L	<10.	<10.	NC

QUALITY CONTROL REPORT

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INSTRUMENT : Hewlett Packard GC/MS w/ Dir.Inject
ANALYZED BY : L. ANTONY
ANALYZED ON : 07-03-93

REPLICATES -

SAMPLE NUMBER	PARAMETER	UNIT	RESULT	REPLICATE	RPD%
9314900	4,4'-DDE	ug/L	<10.	<10.	NC
9314900	4,4'-DDT	ug/L	<10.	<10.	NC
9314900	Aldrin	ug/L	<10.	<10.	NC
9314900	alpha-BHC	ug/L	<10.	<10.	NC
9314900	Chlordane	ug/L	<30.	<30.	NC
9314900	delta-BHC	ug/L	<10.	<10.	NC
9314900	Dieldrin	ug/L	<10.	<10.	NC
9314900	Endosulfan I	ug/L	<10.	<10.	NC
9314900	Endosulfan II	ug/L	<10.	<10.	NC
9314900	Endosulfan sulfate	ug/L	<10.	<10.	NC
9314900	Endrin	ug/L	<10.	<10.	NC
9314900	Endrin aldehyde	ug/L	<20.	<20.	NC
9314900	Heptachlor	ug/L	<10.	<10.	NC
9314900	Heptachlor Epoxide	ug/L	<10.	<10.	NC
9314900	Lindane	ug/L	<10.	<10.	NC
9314900	Methoxychlor	ug/L	<20.	<20.	NC
9314900	PCB 1016	ug/L	<20.	<20.	NC
9314900	PCB 1221	ug/L	<50.	<50.	NC
9314900	PCB 1232	ug/L	<20.	<20.	NC
9314900	PCB 1242	ug/L	<20.	<20.	NC
9314900	PCB 1248	ug/L	<20.	<20.	NC
9314900	PCB 1254	ug/L	<20.	<20.	NC
9314900	PCB 1260	ug/L	<20.	<20.	NC
9314900	Toxaphene	ug/L	<50.	<50.	NC
9314900	2,4-Dinitrotoluene	ug/L	<10.	<10.	NC
9314900	Isophorone	ug/L	<10.	<10.	NC
9314900	Nitrobenzene	ug/L	<10.	<10.	NC
9314900	2,6-Dinitrotoluene	ug/L	<10.	<10.	NC
9314900	2,3,7,8 TCDD(Screen)	ug/L	<100.	<100.	NC
9314900	1,2-Diphenyl Hydrazine	ug/L	<20.	<20.	NC
9314900	Benzidine	ug/L	<20.	<20.	NC
9314900	N-Nitroso Dimethyl Amine	ug/L	<20.	<20.	NC
9314900	Bis-(Chloro Methyl) Ether	ug/L	<10.	<10.	NC
9314900	3,3'-Dichlorobenzidine	ug/L	<20.	<20.	NC
9314900	Biphenyl	ug/L	<10.	<10.	NC
9314900	Diphenyloxide	ug/L	<20.	<20.	NC
9314900	Monomethylnaphthalene	ug/L	<30.	<30.	NC

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 110-070393-1
REFERENCE NOTEBOOK :
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INSTRUMENT : Hewlett Packard GC/MS w/ Dir.Inject
ANALYZED BY : L. ANTONY
ANALYZED ON : 07-03-93

SPIKES -

SAMPLE NUMBER	PARAMETER	UNIT	SAMPLE RESULT	SPIKE AMOUNT	SAMPLE+SPIKE RESULT	%RECOVERY
9314606	2-Chlorophenol	ug/L	<10.	2000.	850.	42.5
9314606	Phenol	ug/L	1100.	2000.	1500.	20.0
9314606	Bis(2-ethylhexyl) phthalate	ug/L	<10.	1000.	240.	24.0
9314606	Fluoranthene	ug/L	<10.	1000.	1200.	120.0
9314606	1,2-Dichlorobenzene	ug/L	<10.	1000.	260.	26.0
9314606	1,3-Dichlorobenzene	ug/L	<10.	1000.	350.	35.0
9314606	1,4-Dichlorobenzene	ug/L	<10.	1000.	460.	46.0
9314606	N-Nitroso-di-n-propylamine	ug/L	<20.	1000.	460.	46.0
9314908	2-Chlorophenol	ug/L	<10.	200.	79.	39.5
9314908	4-Chloro-3-methylphenol	ug/L	<10.	200.	130.	65.0
9314908	4-Nitrophenol	ug/L	<10.	200.	190.	95.0
9314908	Pentachlorophenol	ug/L	<10.	200.	190.	95.0
9314908	Phenol	ug/L	<10.	200.	220.	110.0
9314908	Acenaphthene	ug/L	<10.	100.	120.	120.0
9314908	1,2,4-Trichlorobenzene	ug/L	<10.	100.	54.	54.0
9314908	1,2-Dichlorobenzene	ug/L	<10.	100.	66.	66.0
9314908	1,3-Dichlorobenzene	ug/L	<10.	100.	88.	88.0
9314908	1,4-Dichlorobenzene	ug/L	<10.	100.	110.	110.0
9314908	N-Nitroso-di-n-propylamine	ug/L	<20.	100.	140.	140.0

METHOD BLANKS -

PARAMETER	UNIT	RESULT
N,N-Nitrosodi-n-Butylamine	ug/L	<20.
N,N-Nitrosodimethylamine	ug/L	<20.
N,N-Nitrosodiphenylamine	ug/L	<20.
N,N-Nitroso-di-n-Propylamine	ug/L	<20.
2,4-Dinitrotoluene	ug/L	<10.
Isophorone	ug/L	<10.
Nitrobenzene	ug/L	<10.
2,6-Dinitrotoluene	ug/L	<10.
beta-BHC	ug/L	<10.
4,4'-DDD	ug/L	<10.
4,4'-DDE	ug/L	<10.
4,4'-DDT	ug/L	<10.

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 110-070393-1
REFERENCE NOTEBOOK :
REFERENCE PAGE ....:

INSTRUMENT : Hewlett Packard GC/MS w/ Dir.Inject
ANALYZED BY : L. ANTONY
ANALYZED ON : 07-03-93

METHOD BLANKS -

PARAMETER	UNIT	RESULT
Aldrin	ug/L	<10.
alpha-BHC	ug/L	<10.
Chlordane (alpha+gamma)	ug/L	<30.
delta-BHC	ug/L	<10.
Dieldrin	ug/L	<10.
Endosulfan I	ug/L	<10.
Endosulfan II	ug/L	<10.
Endosulfan sulfate	ug/L	<10.
Endrin	ug/L	<10.
Endrin Aldehyde	ug/L	<20.
Heptachlor	ug/L	<10.
Heptachlor Epoxide	ug/L	<10.
Lindane (gamma-BHC)	ug/L	<10.
Methoxychlor	ug/L	<20.
PCB 1016	ug/L	<20.
PCB 1221	ug/L	<50.
PCB 1232	ug/L	<20.
PCB 1242	ug/L	<20.
PCB 1248	ug/L	<20.
PCB 1254	ug/L	<20.
PCB 1260	ug/L	<20.
Toxaphene	ug/L	<50.
2,3,7,8-TCDD (Screen)	ug/L	<100.
2-Methyl-4,6-Dinitrophenol	ug/L	<30.
2,4,5-Trichlorophenol	ug/L	<10.
2,4,6-Trichlorophenol	ug/L	<10.
2,4-Dichlorophenol	ug/L	<10.
2,4-Dimethylphenol	ug/L	<10.
2,4-Dinitrophenol	ug/L	<50.
2,6-Dichlorophenol	ug/L	<10.
2-Chlorophenol	ug/L	<10.
2-Methylphenol	ug/L	<10.
2-Nitrophenol	ug/L	<10.
3-Methylphenol	ug/L	<10.
4-Chloro-3-Methylphenol	ug/L	<10.
4-Methylphenol	ug/L	<10.
4-Nitrophenol	ug/L	<10.
Pentachlorophenol	ug/L	<10.
Phenol	ug/L	<10.
Dimethyl Phthalate	ug/L	<10.
Diethyl Phthalate	ug/L	<10.
Di-n-Butyl Phthalate	ug/L	<10.

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 110-070393-1
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INSTRUMENT : Hewlett Packard GC/MS w/ Dir.Inject
ANALYZED BY : L. ANTONY
ANALYZED ON : 07-03-93

METHOD BLANKS -

PARAMETER	UNIT	RESULT
Butyl Benzyl Phthalate	ug/L	<10.
Bis(2-Ethylhexyl) Phthalate	ug/L	<10.
Di-n-Octyl Phthalate	ug/L	<10.
Acenaphthene	ug/L	<10.
Acenaphthylene	ug/L	<10.
Anthracene	ug/L	<10.
Benzo-[a]-Anthracene	ug/L	<10.
Benzo-[a]-Pyrene	ug/L	<10.
Benzo-[b]-Fluoranthene	ug/L	<10.
Benzo-[g,h,i]-Perylene	ug/L	<10.
Benzo-[k]-Fluoranthene	ug/L	<10.
Chrysene	ug/L	<10.
Dibenzo-[a,h]-Anthracene	ug/L	<10.
Fluoranthene	ug/L	<10.
Fluorene	ug/L	<10.
Indeno-[1,2,3-cd]-Pyrene	ug/L	<10.
Napthalene	ug/L	<10.
Phenanthrene	ug/L	<10.
Pyrene	ug/L	<10.
Bis(2-Chloroethyl) Ether	ug/L	<10.
Bis(2-Chloroethoxy) Methane	ug/L	<10.
Bis(2-Chloroisopropyl) Ether	ug/L	<10.
4-Bromophenyl Phenyl Ether	ug/L	<10.
4-Chlorophenyl Phenyl Ether	ug/L	<10.
2-Chloronaphthalene	ug/L	<10.
Hexachlorobenzene	ug/L	<10.
Hexachlorobutadiene	ug/L	<10.
Hexachlorocyclopentadiene	ug/L	<10.
Hexachloroethane	ug/L	<10.
1,2,4-Trichlorobenzene	ug/L	<10.
1,2-Dichlorobenzene	ug/L	<10.
1,3-Dichlorobenzene	ug/L	<10.
1,4-Dichlorobenzene	ug/L	<10.
3,3'-Dichlorobenzidine	ug/L	<20.
1,2-Diphenyl Hydrazine	ug/L	<20.
Benzidine	ug/L	<20.
Bis-(Chloromethyl) Ether	ug/L	<10.
Diphenyloxide	ug/L	<20.
Biphenyl	ug/L	<10.
Monomethylnaphthalenes (Total)	ug/L	<30.

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 110-070393-1
REFERENCE NOTEBOOK :
REFERENCE PAGE ....:

INSTRUMENT : Hewlett Packard GC/MS w/ Dir.Inject
ANALYZED BY : L. ANTONY
ANALYZED ON : 07-03-93

NOTE -

1) NC: Not Calculable because result is < 5 times the MDL

2) NP: Not Practical because sample result is 4 times or more greater than spike added.

3) Percent Recovery is:

$$\frac{\text{Sample+Spike Result} - \text{Sample Result}}{\text{Spike Amount}} \times 100$$

4) Relative Percent Difference (RPD) is:

$$\frac{\text{Sample Result} - \text{Replicate Result}}{(\text{Sample Result} + \text{Replicate Result})/2} \times 100$$

WESTECH
LABORATORIES
INC.
QUALITY ASSURANCE OFFICER
Dave Richards
DATE: 7/21/93

Westech Laboratories Inc.
The Quality People
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Phoenix, Arizona 85040
(602) 437-1080 • fax 437-8706

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 17-062393-8
REFERENCE NOTEBOOK : WW-086
REFERENCE PAGE ....: 92

INSTRUMENT : Waters Ion Chromatography
ANALYZED BY : C. KOROGHLANIAN
ANALYZED ON : 06-23-93

TEST DESCRIPTION ..: Nitrate Nitrogen
TEST METHOD .....: 300.0

SAMPLES IN THIS RUN: 9314465 9314480 9314487 9314558 9314574 9314575 9314612

CALIBRATION CHECK -

PARAMETER	UNIT	TRUE VALUE	FOUND VALUE	%RECOVERY
Nitrate Nitrogen	mg/L	2.210	2.161	97.8
Nitrate Nitrogen	mg/L	3.000	3.018	100.6
Nitrate Nitrogen	mg/L	3.000	3.05	101.7

SPIKES -

SAMPLE NUMBER	PARAMETER	UNIT	SAMPLE RESULT	SPIKE AMOUNT	SAMPLE+SPIKE RESULT	%RECOVERY
9314480	Nitrate Nitrogen	mg/L	0.54	15.032	15.351	98.5

METHOD BLANKS -

PARAMETER	UNIT	RESULT
Nitrate Nitrogen	mg/L	<0.50

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 17-062393-8
REFERENCE NOTEBOOK : WW-086
REFERENCE PAGE ....: 92

INSTRUMENT : Waters Ion Chromatography
ANALYZED BY : C. KOROGHLANIAN
ANALYZED ON : 06-23-93

NOTE -

1) NC: Not Calculable because result is < 5 times the MDL

2) NP: Not Practical because sample result is 4 times or more greater than spike added.

3) Percent Recovery is:

$$\frac{\text{Sample+Spike Result} - \text{Sample Result}}{\text{Spike Amount}} \times 100$$

4) Relative Percent Difference (RPD) is:

$$\frac{\text{Sample Result} - \text{Replicate Result}}{(\text{Sample Result} + \text{Replicate Result})/2} \times 100$$

WESTECH
LABORATORIES
INC.
QUALITY ASSURANCE OFFICER
Anne Riechel
DATE: 7/21/93

Westech Laboratories Inc.
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3737 East Broadway Road
Phoenix, Arizona 85040
(602) 437-1080 • fax 437-8706

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 109070293-1
REFERENCE NOTEBOOK :
REFERENCE PAGE ....:

INSTRUMENT : Hewlett Packard GC/MS Purge & Trap
ANALYZED BY : L. ANTONY
ANALYZED ON : 07-02-93

TEST DESCRIPTION ..: 501/601/602/8010/8020/GC-MS Solvent Screen
TEST METHOD .....: 501/601/602/8010/8020/Sol.Scn.

SAMPLES IN THIS RUN: 9314450 9314451 9314452 9314453 9314574 9314575 9314589 9314590 9314811 9314812 9314901 9314946 9314991 9314992 9315067 9315068 9315094 9315095 9315096

CALIBRATION CHECK -

PARAMETER	UNIT	TRUE VALUE	FOUND VALUE	%RECOVERY
1,1,2,2-Tetrachloroethane	ug/L	10.	11.	110.0
1,1-Dichloroethane	ug/L	10.	10.	100.0
Bromoform	ug/L	10.	9.2	92.0
Chlorobenzene	ug/L	10.	11.	110.0
Chloroform	ug/L	10.	10.	100.0
Chloromethane	ug/L	10.	9.1	91.0
Ethylbenzene	ug/L	10.	11.	110.0
Toluene	ug/L	10.	11.	110.0
Vinyl chloride	ug/L	10.	9.3	93.0
Bromodichloromethane	ug/L	10.	9.6	96.0
Bromoform	ug/L	10.	9.2	92.0
Chloroform	ug/L	10.	10.	100.0
Dibromochloromethane	ug/L	10.	9.7	97.0
1,2-Dichloropropane	ug/L	10.	10.	100.0
1,1,2,2-Tetrachloroethane	ug/L	10.	11.	110.0
1,1-Dichloroethane	ug/L	10.	10.	100.0
1,1-Dichloroethene	ug/L	10.	10.	100.0
Bromoform	ug/L	10.	11.	110.0
Chlorobenzene	ug/L	10.	12.	120.0
Chloroform	ug/L	10.	10.	100.0
Chloromethane	ug/L	10.	10.	100.0
Ethylbenzene	ug/L	10.	12.	120.0
Toluene	ug/L	10.	12.	120.0
Vinyl chloride	ug/L	10.	10.	100.0
1,2-Dichloropropane	ug/L	20.	18.	90.0
1,1,2,2-Tetrachloroethane	ug/L	20.	20.	100.0
1,1-Dichloroethane	ug/L	20.	19.	95.0
1,1-Dichloroethene	ug/L	20.	19.	95.0
Bromoform	ug/L	20.	19.	95.0
Chlorobenzene	ug/L	20.	20.	100.0
Chloroform	ug/L	20.	19.	95.0
Chloromethane	ug/L	20.	18.	90.0
Ethylbenzene	ug/L	20.	20.	100.0
Toluene	ug/L	20.	20.	100.0
Vinyl chloride	ug/L	20.	18.	90.0
1,2-Dichloropropane	ug/L	20.	20.	100.0

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 109070293-1
REFERENCE NOTEBOOK :
REFERENCE PAGE ....:

INSTRUMENT : Hewlett Packard GC/MS Purge & Trap
ANALYZED BY : L. ANTONY
ANALYZED ON : 07-02-93

CALIBRATION CHECK -

PARAMETER	UNIT	TRUE VALUE	FOUND VALUE	%RECOVERY
1,1,2,2-Tetrachloroethane	ug/L	20.	20.	100.0
1,1-Dichloroethane	ug/L	20.	22.	110.0
1,1-Dichloroethene	ug/L	20.	24.	120.0
Bromoform	ug/L	20.	23.	115.0
Chlorobenzene	ug/L	20.	21.	105.0
Chloroform	ug/L	20.	23.	115.0
Chloromethane	ug/L	20.	20.	100.0
Ethylbenzene	ug/L	20.	23.	115.0
Toluene	ug/L	20.	22.	110.0
Vinyl chloride	ug/L	20.	21.	105.0

REPLICATES -

SAMPLE NUMBER	PARAMETER	UNIT	RESULT	REPLICATE	RPD%
9314575	Bromodichloromethane	mg/L	<0.001	<0.001	NC
9314575	Bromoform	mg/L	<0.001	<0.001	NC
9314575	Chloroform	mg/L	<0.001	<0.001	NC
9314575	Dibromochloromethane	mg/L	<0.001	<0.001	NC
9314575	Total Trihalomethanes	mg/L	<0.001	<0.001	NC
9314575	1,1,1-Trichloroethane	ug/L	<0.5	<0.5	NC
9314575	1,1,2,2-Tetrachloroethane	ug/L	<0.5	<0.5	NC
9314575	Tetrachloroethene (PCE)	ug/L	<0.5	<0.5	NC
9314575	1,1,2-Trichloroethane	ug/L	<0.5	<0.5	NC
9314575	1,1-Dichloroethane	ug/L	<0.5	<0.5	NC
9314575	1,1-Dichloroethene	ug/L	<0.5	<0.5	NC
9314575	1,2-Dichlorobenzene	ug/L	<1.0	<1.0	NC
9314575	1,2-Dichloroethane	ug/L	<0.5	<0.5	NC
9314575	1,2-Dichloropropane	ug/L	<0.5	<0.5	NC
9314575	1,3-Dichlorobenzene	ug/L	<1.0	<1.0	NC
9314575	1,4-Dichlorobenzene	ug/L	<1.0	<1.0	NC
9314575	Bromodichloromethane	ug/L	<1.0	<1.0	NC
9314575	Bromoform	ug/L	<1.0	<1.0	NC
9314575	Bromomethane	ug/L	<1.0	<1.0	NC
9314575	Carbon tetrachloride	ug/L	<0.5	<0.5	NC
9314575	Chlorobenzene	ug/L	<1.0	<1.0	NC
9314575	Chloroethane	ug/L	<1.0	<1.0	NC
9314575	Chloroform	ug/L	<0.5	<0.5	NC
9314575	Chloromethane	ug/L	<1.0	<1.0	NC

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 109070293-1
REFERENCE NOTEBOOK :
REFERENCE PAGE ....:

INSTRUMENT : Hewlett Packard GC/MS Purge & Trap
ANALYZED BY : L. ANTONY
ANALYZED ON : 07-02-93

REPLICATES -

SAMPLE NUMBER	PARAMETER	UNIT	RESULT	REPLICATE	RPD%
9314575	cis 1,3-Dichloropropene	ug/L	<0.5	<0.5	NC
9314575	Dibromochloromethane (W.W.)	ug/L	<1.0	<1.0	NC
9314575	Dibromomethane	ug/L	<1.0	<1.0	NC
9314575	Dichlorodifluoromethane	ug/L	<1.0	<1.0	NC
9314575	Dichloromethane	ug/L	<5.0	<5.0	NC
9314575	trans 1,2-Dichloroethene	ug/L	<1.0	<1.0	NC
9314575	trans 1,3-Dichloropropene	ug/L	<1.0	<1.0	NC
9314575	Trichloroethene	ug/L	<0.5	<0.5	NC
9314575	Trichlorofluoromethane	ug/L	<1.0	<1.0	NC
9314575	Vinyl chloride	ug/L	<2.0	<2.0	NC
9314575	2-Chloroethylvinyl ether	ug/L	<15.	<15.	NC
9314575	1,2-Dichlorobenzene	ug/L	<1.0	<1.0	NC
9314575	1,3-Dichlorobenzene	ug/L	<1.0	<1.0	NC
9314575	1,4-Dichlorobenzene	ug/L	<1.0	<1.0	NC
9314575	Benzene	ug/L	<1.0	<1.0	NC
9314575	Chlorobenzene	ug/L	<1.0	<1.0	NC
9314575	Ethylbenzene	ug/L	<1.0	<1.0	NC
9314575	Toluene	ug/L	<1.0	<1.0	NC
9314575	Total Xylenes	ug/L	<0.3	<0.3	NC
9315067	1,1,2-Trichloro 1,2,2-Trifluoro	ug/Kg	<100.	<100.	NC
9315067	1,1,1,2-Tetrachloroethane	ug/Kg	<50.	<50.	NC
9315067	1,1,1-Trichloroethane	ug/Kg	<50.	<50.	NC
9315067	1,1,2,2-Tetrachloroethane	ug/Kg	<50.	<50.	NC
9315067	Tetrachloroethene (PCE)	ug/Kg	<50.	<50.	NC
9315067	1,1,2-Trichloroethane	ug/Kg	<50.	<50.	NC
9315067	1,1-Dichloroethane	ug/Kg	<50.	<50.	NC
9315067	1,1-Dichloroethene	ug/Kg	<50.	<50.	NC
9315067	1,1-Dichloropropene	ug/Kg	<50.	<50.	NC
9315067	1,2-Dibromethane	ug/Kg	<50.	<50.	NC
9315067	1,2,3-Trichlorobenzene	ug/Kg	<50.	<50.	NC
9315067	1,2,3-Trichloropropane	ug/Kg	<50.	<50.	NC
9315067	1,2,4-Trichlorobenzene	ug/Kg	<50.	<50.	NC
9315067	1,2,4-Trimethylbenzene	ug/Kg	<50.	<50.	NC
9315067	1,2-Dichlorobenzene	ug/Kg	<50.	<50.	NC
9315067	1,2-Dichloroethane	ug/Kg	<50.	<50.	NC
9315067	1,2-Dichloropropane	ug/Kg	<50.	<50.	NC
9315067	1,3,5-Trimethylbenzene	ug/Kg	<50.	<50.	NC
9315067	1,3-Dichlorobenzene	ug/Kg	<50.	<50.	NC
9315067	1,3-Dichloropropane	ug/Kg	<50.	<50.	NC
9315067	1,4-Dichlorobenzene	ug/Kg	<50.	<50.	NC
9315067	2,2-Dichloropropane	ug/Kg	<50.	<50.	NC

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 109070293-1
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INSTRUMENT : Hewlett Packard GC/MS Purge & Trap
ANALYZED BY : L. ANTONY
ANALYZED ON : 07-02-93

REPLICATES -

SAMPLE NUMBER	PARAMETER	UNIT	RESULT	REPLICATE	RPD%
9315067	2-Chlorotoluene	ug/Kg	<50.	<50.	NC
9315067	2-Hexanone	ug/Kg	<500.	<500.	NC
9315067	4-Chlorotoluene	ug/Kg	<50.	<50.	NC
9315067	4-Isopropyltoluene	ug/Kg	<50.	<50.	NC
9315067	Acetone	ug/Kg	<500.	<500.	NC
9315067	Benzene	ug/Kg	<50.	<50.	NC
9315067	Bromobenzene	ug/Kg	<100.	<100.	NC
9315067	Bromodichloromethane	ug/Kg	<50.	<50.	NC
9315067	Bromoform	ug/Kg	<100.	<100.	NC
9315067	Bromomethane	ug/Kg	<100.	<100.	NC
9315067	Carbon tetrachloride	ug/Kg	<50.	<50.	NC
9315067	Chlorobenzene	ug/Kg	<50.	<50.	NC
9315067	Chloroethane	ug/Kg	<100.	<100.	NC
9315067	Chloroform	ug/Kg	<50.	<50.	NC
9315067	Chloromethane	ug/Kg	<100.	<100.	NC
9315067	cis 1,2-Dichloroethane	ug/Kg	<50.	<50.	NC
9315067	Dibromochloromethane	ug/Kg	<50.	<50.	NC
9315067	Dibromochloropropane	ug/Kg	<250.	<250.	NC
9315067	Dibromomethane	ug/Kg	<100.	<100.	NC
9315067	Dichlorodifluoromethane	ug/Kg	<250.	<250.	NC
9315067	Dichloromethane	ug/Kg	<250.	<250.	NC
9315067	Diethyl ether	ug/Kg	<1000.	<1000.	NC
9315067	Ethylbenzene	ug/Kg	<50.	<50.	NC
9315067	Hexachlorobutadiene	ug/Kg	<50.	<50.	NC
9315067	Isopropylbenzene	ug/Kg	<50.	<50.	NC
9315067	Methyl ethyl ketone	ug/Kg	<1000.	<1000.	NC
9315067	Methyl isobutyl ketone	ug/Kg	<1000.	<1000.	NC
9315067	Methyl tert-butyl ether	ug/Kg	<1000.	<1000.	NC
9315067	m-Xylene	ug/Kg	<50.	<50.	NC
9315067	Naphthalene	ug/Kg	<50.	<50.	NC
9315067	n-Butylbenzene	ug/Kg	<50.	<50.	NC
9315067	o-Xylene	ug/Kg	<50.	<50.	NC
9315067	Propylbenzene	ug/Kg	<50.	<50.	NC
9315067	p-Xylene	ug/Kg	<50.	<50.	NC
9315067	sec-Butylbenzene	ug/Kg	<50.	<50.	NC
9315067	Styrene	ug/Kg	<50.	<50.	NC
9315067	tert-Butylbenzene	ug/Kg	<50.	<50.	NC
9315067	Toluene	ug/Kg	<50.	<50.	NC
9315067	trans 1,2-Dichloroethene	ug/Kg	<50.	<50.	NC
9315067	Trichloroethene	ug/Kg	<50.	<50.	NC
9315067	Trichlorofluoromethane	ug/Kg	<250.	<250.	NC

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REPLICATES -

SAMPLE NUMBER	PARAMETER	UNIT	RESULT	REPLICATE	RPD%
9315067	Vinyl chloride	ug/Kg	<250.	<250.	NC
9315067	Cis 1,3-Dichloropropylene	ug/Kg	<50.	<50.	NC
9315067	Trans 1,3-Dichloropropylene	ug/Kg	<50.	<50.	NC
9315067	Chloroethylvinyl Ether	ug/Kg	<500.	<500.	NC
9315067	Bromochloromethane	ug/Kg	<50.	<50.	NC

SPIKES -

SAMPLE NUMBER	PARAMETER	UNIT	SAMPLE RESULT	SPIKE AMOUNT	SAMPLE+SPIKE RESULT	%RECOVERY
9314574	Bromodichloromethane	mg/L	<0.001	20.	19.	95.0
9314574	Bromoform	mg/L	<0.001	20.	18.	90.0
9314574	Chloroform	mg/L	<0.001	20.	20.	100.0
9314574	Dibromochloromethane	mg/L	<0.001	20.	18.	90.0
9314574	Total Trihalomethanes	mg/L	<0.001	80.	75.	93.8
9314574	1,1,2,2-Tetrachloroethane	ug/L	<0.5	20.	18.	90.0
9314574	1,1-Dichloroethane	ug/L	<0.5	20.	21.	105.0
9314574	Bromoform	ug/L	<1.0	20.	18.	90.0
9314574	Chlorobenzene	ug/L	<1.0	20.	19.	95.0
9314574	Chloroform	ug/L	<0.5	20.	20.	100.0
9314574	Chloromethane	ug/L	<1.0	20.	19.	95.0
9314574	Vinyl chloride	ug/L	<2.0	20.	19.	95.0
9314574	1,2-Dichlorobenzene	ug/L	<1.0	20.	21.	105.0
9314574	1,3-Dichlorobenzene	ug/L	<1.0	20.	20.	100.0
9314574	1,4-Dichlorobenzene	ug/L	<1.0	20.	21.	105.0
9314574	Benzene	ug/L	<1.0	20.	20.	100.0
9314574	Chlorobenzene	ug/L	<1.0	20.	19.	95.0
9314574	Ethylbenzene	ug/L	<1.0	20.	19.	95.0
9314574	Toluene	ug/L	<1.0	20.	20.	100.0
9314574	Total Xylenes	ug/L	<0.3	60.	57.	95.0
9315067	1,1,2,2-Tetrachloroethane	ug/Kg	<50.	1000.	870.	87.0
9315067	1,1-Dichloroethane	ug/Kg	<50.	1000.	880.	88.0
9315067	1,2-Dichloropropane	ug/Kg	<50.	1000.	880.	88.0
9315067	Bromoform	ug/Kg	<100.	1000.	840.	84.0
9315067	Chlorobenzene	ug/Kg	<50.	1000.	980.	98.0
9315067	Chloroform	ug/Kg	<50.	1000.	900.	90.0

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 109070293-1
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INSTRUMENT : Hewlett Packard GC/MS Purge & Trap
ANALYZED BY : L. ANTONY
ANALYZED ON : 07-02-93

SPIKES -

SAMPLE NUMBER	PARAMETER	UNIT	SAMPLE RESULT	SPIKE AMOUNT	SAMPLE+SPIKE RESULT	%RECOVERY
9315067	Chloromethane	ug/Kg	<100.	1000.	910.	91.0
9315067	Ethylbenzene	ug/Kg	<50.	1000.	1000.	100.0
9315067	Toluene	ug/Kg	<50.	1000.	1100.	110.0
9315067	Vinyl chloride	ug/Kg	<250.	1000.	880.	88.0

METHOD BLANKS -

PARAMETER	UNIT	RESULT
1,1,1-Trichloroethane	ug/L	<0.5
1,1,2,2-Tetrachloroethane	ug/L	<0.5
1,1,2,2-Tetrachloroethene	ug/L	<0.5
1,1,2-Trichloroethane	ug/L	<0.5
1,1-Dichloroethane	ug/L	<0.5
1,1-Dichloroethene	ug/L	<0.5
1,2-Dichlorobenzene	ug/L	<1.0
1,2-Dichloroethane	ug/L	<0.5
1,2-Dichloropropane	ug/L	<0.5
1,3-Dichlorobenzene	ug/L	<1.0
1,4-Dichlorobenzene	ug/L	<1.0
Bromodichloromethane	ug/L	<1.0
Bromoform	ug/L	<1.0
Bromomethane	ug/L	<1.0
Carbon tetrachloride	ug/L	<0.5
Chlorobenzene	ug/L	<1.0
Chloroethane	ug/L	<1.0
Chloroform	ug/L	<0.5
Chloromethane	ug/L	<1.0
cis 1,3-Dichloropropene	ug/L	<0.5
Dibromochloromethane	ug/L	<1.0
Dibromomethane	ug/L	<1.0
Dichlorodifluoromethane	ug/L	<1.0
Dichloromethane	ug/L	<5.0
trans 1,2-Dichloroethene	ug/L	<1.0
trans 1,3-Dichloropropene	ug/L	<1.0
Trichloroethene(TCE)	ug/L	<0.5
Trichlorofluoromethane	ug/L	<1.0
Vinyl chloride	ug/L	<2.0

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 109070293-1
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INSTRUMENT : Hewlett Packard GC/MS Purge & Trap
ANALYZED BY : L. ANTONY
ANALYZED ON : 07-02-93

METHOD BLANKS -

PARAMETER	UNIT	RESULT
2-Chloroethylvinyl ether	ug/L	<15.
1,2-Dichlorobenzene	ug/L	<1.0
1,3-Dichlorobenzene	ug/L	<1.0
1,4-Dichlorobenzene	ug/L	<1.0
Benzene	ug/L	<1.0
Chlorobenzene	ug/L	<1.0
Ethylbenzene	ug/L	<1.0
Toluene	ug/L	<1.0
Total Xylenes	ug/L	<0.3
Bromodichloromethane	mg/L	<0.001
Bromoform	mg/L	<0.001
Chloroform	mg/L	<0.001
Dibromochloromethane	mg/L	<0.001
Total Trihalomethanes	mg/L	<0.001

NOTE -

1) NC: Not Calculable because result is < 5 times the MDL

2) NP: Not Practical because sample result is 4 times or more greater than spike added.

3) Percent Recovery is:

$$\frac{\text{Sample+Spike Result} - \text{Sample Result}}{\text{Spike Amount}} \times 100$$

4) Relative Percent Difference (RPD) is:

$$\frac{\text{Sample Result} - \text{Replicate Result}}{(\text{Sample Result} + \text{Replicate Result})/2} \times 100$$

VISTECH
LABORATORIES
INC.
QUALITY ASSURANCE OFFICER
Anne Pichob
DATE: 7/21/93

Westech Laboratories Inc.
The Quality People
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(602) 437-1080 • fax 437-8706

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 1-070993-1
REFERENCE NOTEBOOK :
REFERENCE PAGE ....:

INSTRUMENT : Thermo Jarrell Ash ICP
ANALYZED BY : D. HENZLER
ANALYZED ON : 07-09-93

TEST DESCRIPTION ..: Total Tin
TEST METHOD .....: 200.7

SAMPLES IN THIS RUN: 9314311 9314312 9314574 9314575 9314971 9314972 9315149 9315150 9315151

CALIBRATION CHECK -

PARAMETER	UNIT	TRUE VALUE	FOUND VALUE	%RECOVERY
Total Tin	mg/L	1.0	1.0	100.0
Total Tin	mg/L	1.0	1.1	110.0
Total Tin	mg/L	1.0	1.0	100.0

REPLICATES -

SAMPLE NUMBER	PARAMETER	UNIT	RESULT	REPLICATE	RPD%
9314574	Total Tin	mg/L	<0.05	<0.05	NC

SPIKES -

SAMPLE NUMBER	PARAMETER	UNIT	SAMPLE RESULT	SPIKE AMOUNT	SAMPLE+SPIKE RESULT	%RECOVERY
9314575	Total Tin	mg/L	<0.05	1.0	1.0	100.0
9314971	Total Tin	mg/L	<0.05	1.0	1.0	100.0

METHOD BLANKS -

PARAMETER	UNIT	RESULT
Total Tin	mg/L	<0.05

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 1-070993-1
REFERENCE NOTEBOOK :
REFERENCE PAGE ....:

INSTRUMENT : Thermo Jarrell Ash ICP
ANALYZED BY : D. HENZLER
ANALYZED ON : 07-09-93

NOTE -

1) NC: Not Calculable because result is < 5 times the MDL

2) NP: Not Practical because sample result is 4 times or more greater than spike added.

3) Percent Recovery is:

$$\frac{\text{Sample+Spike Result} - \text{Sample Result}}{\text{Spike Amount}} \times 100$$

4) Relative Percent Difference (RPD) is:

$$\frac{\text{Sample Result} - \text{Replicate Result}}{(\text{Sample Result} + \text{Replicate Result})/2} \times 100$$

WESTECH
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QUALITY ASSURANCE OFFICER
Anne Reichel
DATE: 7/21/93

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QUALITY CONTROL REPORT

QC IDENTIFIER .....: 1-062993-1
REFERENCE NOTEBOOK :
REFERENCE PAGE ....:

INSTRUMENT : Thermo Jarrell Ash ICP
ANALYZED BY : D. HENZLER
ANALYZED ON : 06-29-93

TEST DESCRIPTION ..: Total, Dissolved, Total Recoverable & TCLP Metals
TEST METHOD .....: 200.7/6010

SAMPLES IN THIS RUN: 9313713 9314431 9314432 9314433 9314434 9314574 9314575 9314607 9314608 9314609 9314630 9314631 9314632 9314633 9314634 9314635 9314636 9314659 9314699 9314735 9314736 9314737 9314738 9314739 9314740 9314802 9314803

CALIBRATION CHECK -

PARAMETER	UNIT	TRUE VALUE	FOUND VALUE	%RECOVERY
Total Silver	mg/L	1.0	1.0	100.0
Total Aluminum	mg/L	1.0	0.94	94.0
Total Arsenic	mg/L	1.0	0.96	96.0
Total Barium	mg/L	1.0	1.0	100.0
Total Beryllium	mg/L	1.0	0.99	99.0
Total Cobalt	mg/L	1.0	1.0	100.0
Total Chromium	mg/L	1.0	0.93	93.0
Total Iron	mg/L	1.0	1.0	100.0
Total Manganese	mg/L	1.0	1.0	100.0
Total Nickel	mg/L	1.0	0.92	92.0
Total Lead	mg/L	1.0	0.96	96.0
Total Antimony	mg/L	1.0	0.96	96.0
Total Thallium	mg/L	1.0	1.0	100.0
Total Vanadium	mg/L	1.0	0.95	95.0
Total Zinc	mg/L	1.0	1.0	100.0
Total Silver	mg/L	1.0	1.0	100.0
Total Aluminum	mg/L	1.0	1.0	100.0
Total Arsenic	mg/L	1.0	0.98	98.0
Total Barium	mg/L	1.0	1.0	100.0
Total Beryllium	mg/L	1.0	0.99	99.0
Total Cobalt	mg/L	1.0	1.0	100.0
Total Chromium	mg/L	1.0	0.95	95.0
Total Iron	mg/L	1.0	1.0	100.0
Total Manganese	mg/L	1.0	1.0	100.0
Total Nickel	mg/L	1.0	0.95	95.0
Total Lead	mg/L	1.0	0.98	98.0
Total Antimony	mg/L	1.0	0.99	99.0
Total Thallium	mg/L	1.0	1.0	100.0
Total Vanadium	mg/L	1.0	0.95	95.0
Total Zinc	mg/L	1.0	1.0	100.0
Total Silver	mg/L	1.0	1.0	100.0
Total Aluminum	mg/L	1.0	1.1	110.0
Total Arsenic	mg/L	1.0	0.98	98.0
Total Barium	mg/L	1.0	1.0	100.0
Total Beryllium	mg/L	1.0	0.99	99.0

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 1-062993-1
REFERENCE NOTEBOOK :
REFERENCE PAGE ....:

INSTRUMENT : Thermo Jarrell Ash ICP
ANALYZED BY : D. HENZLER
ANALYZED ON : 06-29-93

CALIBRATION CHECK -

PARAMETER	UNIT	TRUE VALUE	FOUND VALUE	%RECOVERY
Total Cobalt	mg/L	1.0	1.0	100.0
Total Chromium	mg/L	1.0	0.98	98.0
Total Iron	mg/L	1.0	1.1	110.0
Total Manganese	mg/L	1.0	1.0	100.0
Total Nickel	mg/L	1.0	0.93	93.0
Total Lead	mg/L	1.0	1.0	100.0
Total Antimony	mg/L	1.0	1.0	100.0
Total Selenium	mg/L	1.0	0.92	92.0
Total Thallium	mg/L	1.0	1.0	100.0
Total Vanadium	mg/L	1.0	0.97	97.0
Total Zinc	mg/L	1.0	1.0	100.0
Total Silver	mg/L	1.0	1.0	100.0
Total Aluminum	mg/L	1.0	1.0	100.0
Total Arsenic	mg/L	1.0	0.95	95.0
Total Barium	mg/L	1.0	1.0	100.0
Total Beryllium	mg/L	1.0	0.99	99.0
Total Cobalt	mg/L	1.0	1.0	100.0
Total Chromium	mg/L	1.0	0.96	96.0
Total Iron	mg/L	1.0	1.0	100.0
Total Manganese	mg/L	1.0	1.0	100.0
Total Nickel	mg/L	1.0	0.93	93.0
Total Lead	mg/L	1.0	0.99	99.0
Total Antimony	mg/L	1.0	0.99	99.0
Total Selenium	mg/L	1.0	0.94	94.0
Total Thallium	mg/L	1.0	1.0	100.0
Total Vanadium	mg/L	1.0	0.96	96.0
Total Zinc	mg/L	1.0	1.0	100.0
Total Silver	mg/L	1.0	1.0	100.0
Total Aluminum	mg/L	1.0	1.1	110.0
Total Arsenic	mg/L	1.0	0.95	95.0
Total Barium	mg/L	1.0	1.0	100.0
Total Beryllium	mg/L	1.0	0.99	99.0
Total Cobalt	mg/L	1.0	1.0	100.0
Total Chromium	mg/L	1.0	0.95	95.0
Total Iron	mg/L	1.0	1.0	100.0
Total Manganese	mg/L	1.0	1.0	100.0
Total Nickel	mg/L	1.0	0.95	95.0
Total Lead	mg/L	1.0	0.98	98.0
Total Antimony	mg/L	1.0	0.98	98.0
Total Selenium	mg/L	1.0	0.93	93.0
Total Thallium	mg/L	1.0	1.0	100.0
Total Vanadium	mg/L	1.0	0.96	96.0
Total Zinc	mg/L	1.0	1.0	100.0

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 1-062993-1
REFERENCE NOTEBOOK :
REFERENCE PAGE ....:

INSTRUMENT : Thermo Jarrell Ash ICP
ANALYZED BY : D. HENZLER
ANALYZED ON : 06-29-93

CALIBRATION CHECK -

PARAMETER	UNIT	TRUE VALUE	FOUND VALUE	%RECOVERY
Total Silver	mg/L	1.0	1.0	100.0
Total Aluminum	mg/L	1.0	1.0	100.0
Total Arsenic	mg/L	1.0	0.94	94.0
Total Barium	mg/L	1.0	1.0	100.0
Total Beryllium	mg/L	1.0	0.98	98.0
Total Cobalt	mg/L	1.0	1.0	100.0
Total Chromium	mg/L	1.0	0.94	94.0
Total Iron	mg/L	1.0	1.0	100.0
Total Manganese	mg/L	1.0	1.0	100.0
Total Nickel	mg/L	1.0	0.93	93.0
Total Lead	mg/L	1.0	0.98	98.0
Total Antimony	mg/L	1.0	0.99	99.0
Total Thallium	mg/L	1.0	1.0	100.0
Total Vanadium	mg/L	1.0	0.95	95.0
Total Zinc	mg/L	1.0	1.0	100.0

REPLICATES -

SAMPLE NUMBER	PARAMETER	UNIT	RESULT	REPLICATE	RPD%
9314434	Total Silver	mg/Kg	<2.5	<2.5	NC
9314434	Total Arsenic	mg/Kg	17.	18.	5.7
9314434	Total Beryllium	mg/Kg	<2.5	<2.5	NC
9314434	Total Chromium	mg/Kg	68.	69.	1.5
9314434	Total Copper	mg/Kg	41.	44.	7.1
9314434	Total Nickel	mg/Kg	110.	110.	0.0
9314434	Total Lead	mg/Kg	36.	38.	5.4
9314434	Total Antimony	mg/Kg	9.2	7.9	NC
9314434	Total Thallium	mg/Kg	39.	40.	2.5
9314434	Total Zinc	mg/Kg	71.	74.	4.1
9313713	Nickel	mg/L	<0.05	<0.05	NC
9314607	Total Chromium	mg/L	<0.05	<0.05	NC
9314607	Total Magnesium	mg/L	230.	240.	4.3
9314607	Total Recoverable Silver	ug/L	<31.	<31.	NC
9314607	Total Recoverable Nickel	ug/L	<400.	<400.	NC
9314607	Total Recoverable Zinc	ug/L	<290.	<290.	NC
9314659	Total Silver	mg/L	<0.05	<0.05	NC
9314659	Total Arsenic	mg/L	<0.05	<0.05	NC
9314659	Total Barium	mg/L	<0.05	<0.05	NC

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 1-062993-1
REFERENCE NOTEBOOK :
REFERENCE PAGE ....:

INSTRUMENT : Thermo Jarrell Ash ICP
ANALYZED BY : D. HENZLER
ANALYZED ON : 06-29-93

REPLICATES -

SAMPLE NUMBER	PARAMETER	UNIT	RESULT	REPLICATE	RPD%
9314659	Total Chromium	mg/L	<0.05	<0.05	NC
9314659	Total Copper	mg/L	0.25	0.20	NC
9314659	Total Manganese	mg/L	<0.05	<0.05	NC
9314659	Total Nickel	mg/L	<0.05	<0.05	NC
9314659	Total Lead	mg/L	<0.05	<0.05	NC
9314659	Total Zinc	mg/L	0.10	0.09	NC

SPIKES -

SAMPLE NUMBER	PARAMETER	UNIT	SAMPLE RESULT	SPIKE AMOUNT	SAMPLE+SPIKE RESULT	%RECOVERY
9314431	Total Silver	mg/Kg	<2.5	50.	43.	86.0
9314431	Total Arsenic	mg/Kg	7.2	50.	49.	83.6
9314431	Total Beryllium	mg/Kg	<2.5	50.	45.	90.0
9314431	Total Cadmium	mg/Kg	4.6	50.	45.	80.8
9314431	Total Chromium	mg/Kg	8.4	50.	54.	91.2
9314431	Total Nickel	mg/Kg	6.2	50.	46.	79.6
9314431	Total Lead	mg/Kg	13.	50.	50.	74.0
9314431	Total Thallium	mg/Kg	6.8	50.	52.	90.4
9314431	Total Zinc	mg/Kg	35.	50.	78.	86.0
9314608	Dissolved Silver	ug/L	<31.	1000.	890.	89.0
9314608	Dissolved Copper	ug/L	<32.	1000.	970.	97.0
9314608	Dissolved Manganese	ug/L	120.	1000.	960.	84.0
9314608	Dissolved Zinc	ug/L	<50.	1000.	900.	90.0
9314803	Silver (TCLP)	mg/L	<0.05	1.0	0.87	87.0
9314803	Arsenic (TCLP)	mg/L	<0.05	1.0	1.0	100.0
9314803	Barium (TCLP)	mg/L	0.28	1.0	1.2	92.0
9314803	Chromium (TCLP)	mg/L	<0.05	1.0	0.79	79.0
9314803	Lead (TCLP)	mg/L	0.05	1.0	0.85	80.0
9314803	Selenium (TCLP)	mg/L	<0.05	1.0	1.1	110.0

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 1-062993-1
REFERENCE NOTEBOOK :
REFERENCE PAGE ....:

INSTRUMENT : Thermo Jarrell Ash ICP
ANALYZED BY : D. HENZLER
ANALYZED ON : 06-29-93

METHOD BLANKS -

PARAMETER	UNIT	RESULT
Total Aluminum	mg/L	<0.05
Total Antimony	mg/L	<0.05
Total Arsenic	mg/L	<0.05
Total Barium	mg/L	<0.05
Total Beryllium	mg/L	<0.05
Total Chromium	mg/L	<0.05
Total Cobalt	mg/L	<0.05
Total Iron	mg/L	<0.05
Total Lead	mg/L	<0.05
Total Manganese	mg/L	<0.05
Total Nickel	mg/L	<0.05
Total Silver	mg/L	<0.05
Total Thallium	mg/L	<0.10
Total Vanadium	mg/L	<0.05
Total Zinc	mg/L	<0.05

NOTE -

1) NC: Not Calculable because result is < 5 times the MDL

2) NP: Not Practical because sample result is 4 times or more greater than spike added.

3) Percent Recovery is:

$$\frac{\text{Sample+Spike Result} - \text{Sample Result}}{\text{Spike Amount}} \times 100$$

4) Relative Percent Difference (RPD) is:

$$\frac{\text{Sample Result} - \text{Replicate Result}}{(\text{Sample Result} + \text{Replicate Result})/2} \times 100$$

WESTECH
LABORATORIES
INC.
QUALITY ASSURANCE OFFICER
Anne Rischel
DATE: 7/21/93

22132/73

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The Quality People
Since 1955

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El Paso • 10737 Gateway West #100 • TX 79935 • 915-592-3591 • fax 592-3594

CHAIN OF CUSTODY RECORD

CLIENT	ADDRESS
Burns & Mcdonnell	1001 N. Central Ave #145 Phoenix, AZ 85004
TELEPHONE 602 371 1100	PROJECT 25941-01-00-33/Tech Point Lotti — JOB PO NO. D16225

• REFER TO FEE SCHEDULE FOR ANALYSES SELECTION •

SAMPLER (SIGNATURE): Rob Hartkline
SAMPLER (PLEASE PRINT): Rob Hartkline

SAMPLE TYPE CODES: S – Soil, O – Oil, T – Travel Blank, W – Water, G – Sludge, F – Field Blank, X – Other (Specify)

SAMPLE IDENTIFICATION	DATE	TIME	SAMPLE LOCATION	COMPOSITE	GRAB	SAMPLE TYPE	NUMBER OF CONTAINERS	HOLD	REQUESTED ANALYSES: See attached MOT 501 Form 6011602	COMMENTS	LABORATORY IDENTIFICATION
CCMW-2	6/6/93		[illegible]			W	11	*	X	Unfiltered, Unpreserved	9314574
CCMW-1	"					W	11	*	X	Unfiltered, Unpreserved	4575
~~Trip blank~~	6/6/93					W	1	*		*	~~4576~~

Note: CCMW-1 — CCMW-2
4 x 40 ml VOA — "
4 x 1 l amber — "
2 x 1 l plastic — "
1 x 1 l clear glass — "

Invoice to:
Maricopa County Solid Waste Mgmt Div.
Attn: Pete Lullen

* Samples ~~[illegible]~~ was taken off hold status, hence volatiles had already been run

RELINQUISHED BY (SIGNATURE)	PRINT NAME	DATE / TIME	RECEIVED BY (SIGNATURE)	PRINT NAME
RELINQUISHED BY (SIGNATURE)	PRINT NAME	DATE / TIME	RECEIVED BY (SIGNATURE)	PRINT NAME
RELINQUISHED BY (SIGNATURE) Rob Hartkline	PRINT NAME Rob Hartkline	DATE / TIME 6/25/93 1857	RECEIVED BY (SIGNATURE) M Miller	PRINT NAME Melody Miller

REMARKS: Hold all samples pending Burns & McDonnell report.

SAMPLE PROCESS TURNAROUND TIME: ☐ 10 BUSINESS DAYS ☐ OTHER (SPECIFY)

6-23-93 0857

623 (8/92) White - Testing Laboratory; Yellow - Department Job File; Pink - Client

APPENDIX F

SOIL SAMPLE TEST RESULTS

Received 7/12/93
Cave Creek Landfill
Soil sample results
CCMW-1
CCMW-2
monitor wells

file: 5.3

Sent to Ash Madhok
7/12/93

ADVANCED TERRA TESTING, inc.

833 Parfet Street
Lakewood, Colorado 80215
(303) 232-8308

CHAIN-OF-CUSTODY RECORDS

W# 25551-001-033

DAMES & MOORE CHAIN-OF-CUSTODY RECORD

Sample Source & Client: MARICOPA COUNTY CAVE CREEK LANDFILL

Field Personnel (Signature): [signature]

Project Title:

Job No.:

Date	Time	Sample I.D. No.	Sample Type	No. of Containers	Sampling Site	Remarks
5-13-93	0905	CCMW-1 20-22'	SOIL/ROCK	2 LOOSE	(DEPTH) 20'-22'	* TO BE DECIDED UPON
5-13-93	1030	CCMW-1	SOIL/ROCK	1 "	* 30-30.5	UPON CONFERENCE W/
5-13-93	0900	CCMW-1	SOIL ROCK	6	* 10'-14'	DOUG BARTLETT...
5-24-93	1100	CCMW-2	SOIL/ROCK	5	X 40-43	DAMES AND MOORE
5-27-93	1030	CCMW-2	SOIL ROCK	3	* 50'-51.6'	PHOENIX
5-24-93	1000	CCMW-2	SOIL/ROCK	6	* 30-33	

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time	Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
[signature]	6/2/93	0900	Weinsche	6/4/93	1700						
Relinquished by: (Signature)	**Date**	**Time**	**Received by: (Signature)**	**Date**	**Time**	**Relinquished by: (Signature)**	**Date**	**Time**	**Received by: (Signature)**	**Date**	**Time**
Relinquished by: (Signature)	**Date**	**Time**	**Received by: (Signature)**	**Date**	**Time**	**Relinquished by: (Signature)**	**Date**	**Time**	**Received by: (Signature)**	**Date**	**Time**

GRAIN SIZE ANALYSIS, MECHANICAL
ASTM D 422

MECHANICAL ANALYSIS - SIEVE TEST DATA

CLIENT Dames & Moore

JOB NO. 25551-001-033

BORING NO. CCMW-2
DEPTH 50'-51.6' Comb.
SAMPLE NO.
SOIL DESCR. Maricopa County Cave Creek Landfill

SAMPLED 5-27-93 BB
DATE TESTED 6-30-93 TNU
WASH SIEVE Yes
DRY SIEVE No

MOISTURE/DENSITY DATA

Wt. Soil & Ring(s)	(g)	
Wt. Ring(s)	(g)	
Wt. Soil	(g)	
Wet Density	PCF	
Wt. Wet Soil & Pan	(g)	661.3
Wt. Dry Soil & Pan	(g)	646.9
Wt. Lost Moisture	(g)	14.5
Wt. of Pan Only	(g)	14.3
Wt. of Dry Soil	(g)	632.6
Moisture Content	%	2.3
Dry Density	PCF	

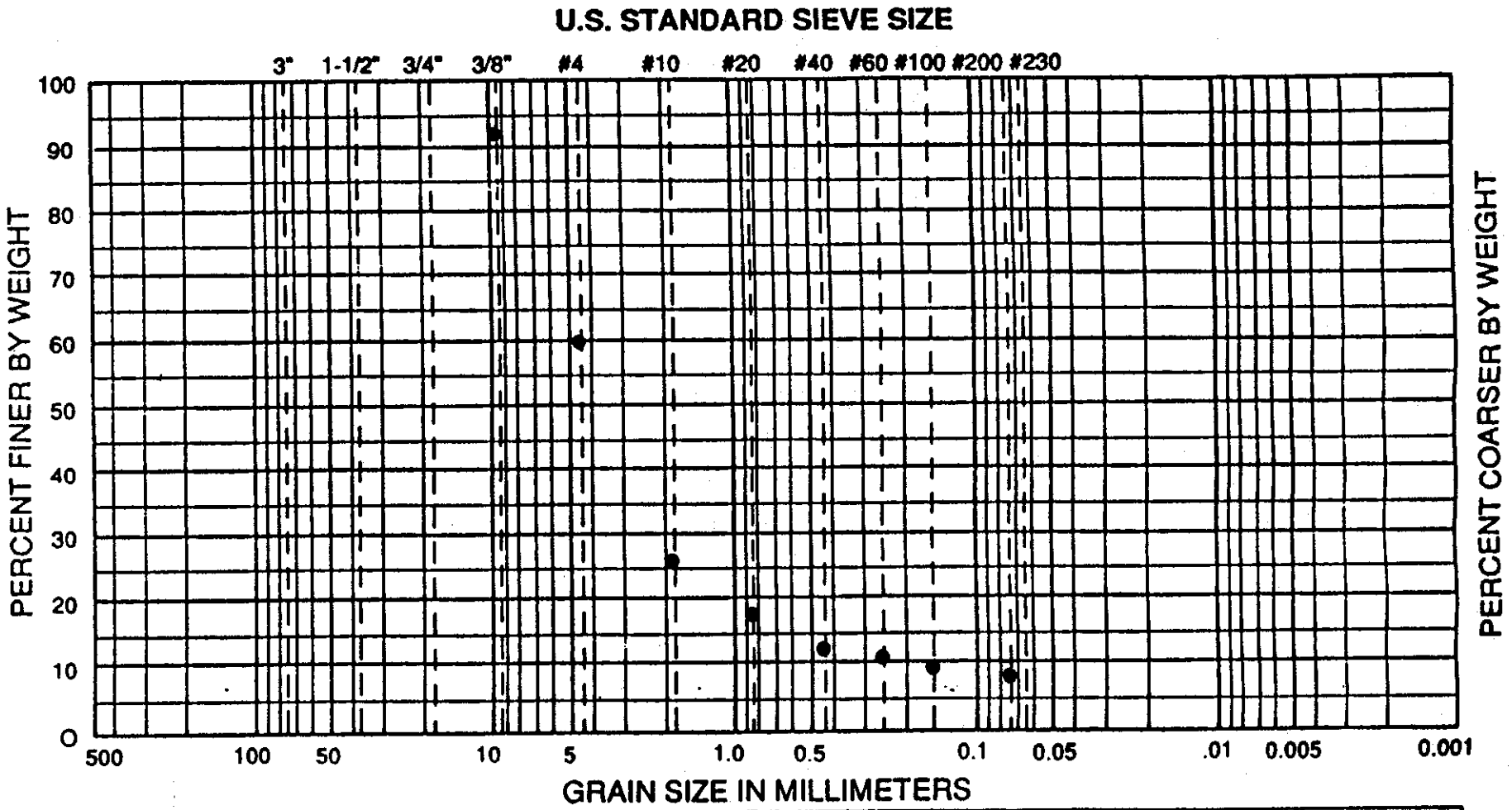
WASH SIEVE ANALYSIS

Wt. Wet Soil & Pan Before Washing (g)	661.3
Wt. Dry Soil & Pan Before Washing (g)	646.9
Weight of Pan (g)	14.3
Wt. of Dry Soil Before Washing	632.6
Wt. Dry Soil & Pan After Washing (g)	600.3
Wt. of Dry Soil After Washing (g)	586.1
-#200 Wash. Out %	7.4

Sieve Number (Size)	Pan Weight (g)	Indiv. Wt. + Pan (g)	Indiv. Wt. Retain.	Cum. Wt. Retain.	Cum. % Retain.	% Finer By Wt.
3"	0.00	0.00	0.00	0.00	0.0	100.0
1 1/2"	0.00	0.00	0.00	0.00	0.0	100.0
3/4"	0.00	0.00	0.00	0.00	0.0	100.0
3/8"	3.56	49.23	45.67	45.67	7.2	92.8
#4	3.56	210.05	206.49	252.16	39.9	60.1
#10	8.40	226.26	217.86	470.02	74.3	25.7
#20	3.51	61.42	57.91	527.93	83.5	16.5
#40	3.59	28.91	25.32	553.25	87.5	12.5
#60	3.89	16.46	12.57	565.82	89.4	10.6
#100	3.63	13.32	9.69	575.51	91.0	9.0
#200	3.64	14.18	10.54	586.05	92.6	7.4

ADVANCED TERRA TESTING, INC.

ADVANCED TERRA TESTING



USCS	COBBLES	GRAVEL		SAND			SILT OR CLAY		
		COARSE	FINE	COARSE	MEDIUM	FINE			
WENTWORTH	COBBLES TO BOULDERS	PEBBLE GRAVEL			SAND			SILT	CLAY
		COARSE	MED	FINE	GRAN	COARSE	MED	FINE		

WELLNAME: CCMW - 2 SAMPLE NO.: DATE: 7-2-93 PROJECT NO.: 25551-001-0

AREA	DEPTH	CLASSIFICATION
MARICOPA COUNTY CAVE CREEK LANDFILL	50'-51.6' COMB	

MECHANICAL ANALYSIS - SIEVE TEST DATA

CLIENT Dames & Moore

JOB NO. 25551-001-033

BORING NO. CCMW-1
DEPTH 10'-14'
SAMPLE NO.
SOIL DESCR. Maricopa County Cave Creek Landfill

SAMPLED 5-13-93 BB
DATE TESTED 6-30-93 TNU
WASH SIEVE Yes
DRY SIEVE No

MOISTURE/DENSITY DATA

Wt. Soil & Ring(s) (g)
Wt. Ring(s) (g)
Wt. Soil (g)
Wet Density PCF

Wt. Wet Soil & Pan	(g)	1310.8
Wt. Dry Soil & Pan	(g)	1186.5
Wt. Lost Moisture	(g)	124.3
Wt. of Pan Only	(g)	14.3
Wt. of Dry Soil	(g)	1172.2
Moisture Content	%	10.6
Dry Density PCF		

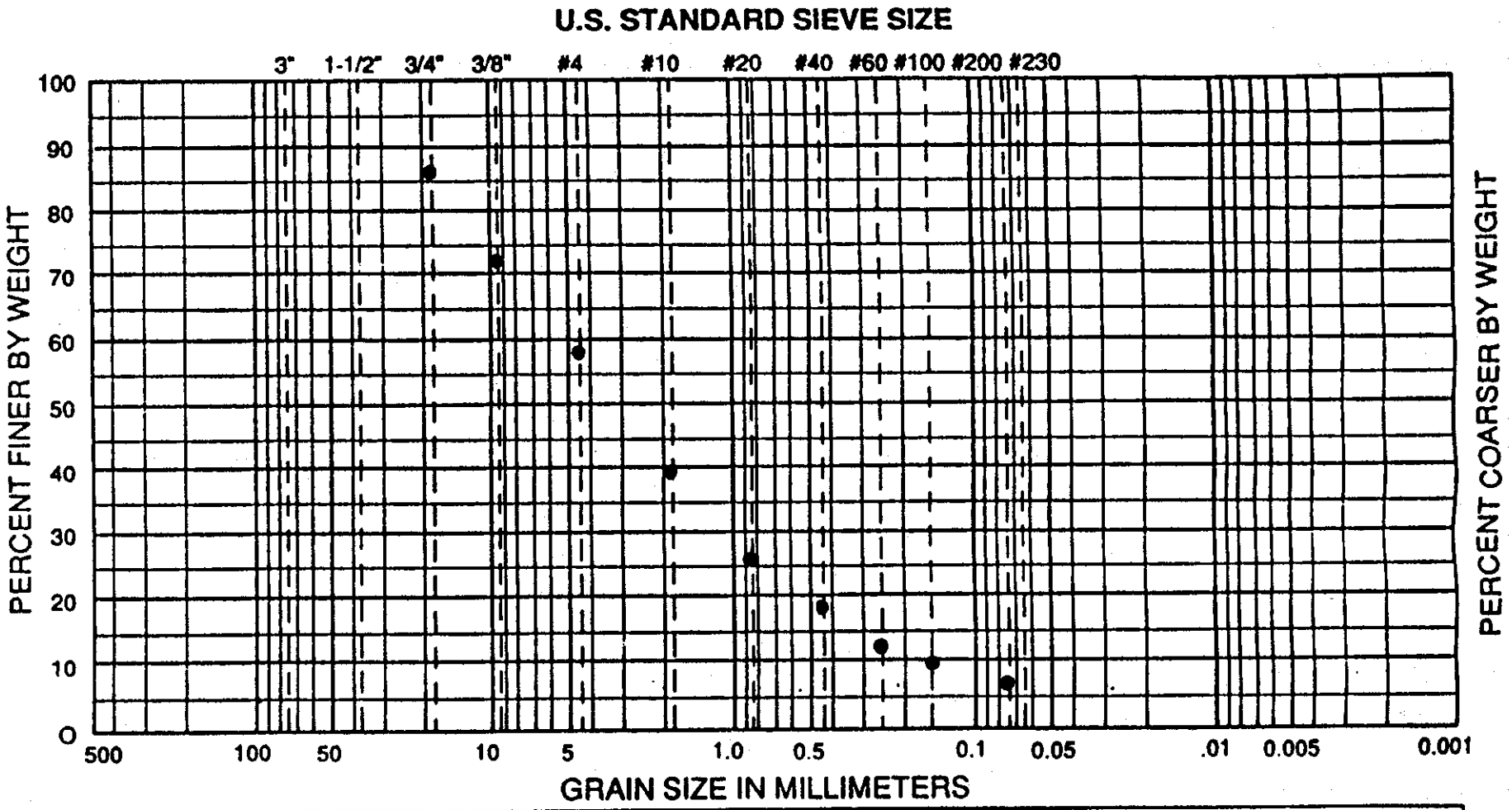
WASH SIEVE ANALYSIS

Wt. Wet Soil & Pan Before Washing (g)	1310.8
Wt. Dry Soil & Pan Before Washing (g)	1186.5
Weight of Pan (g)	14.3
Wt. of Dry Soil Before Washing	1172.2
Wt. Dry Soil & Pan After Washing (g)	1109.7
Wt. of Dry Soil After Washing (g)	1095.4
-#200 Wash. Out %	6.6

Sieve Number (Size)	Pan Weight (g)	Indiv. Wt. + Pan (g)	Indiv. Wt. Retain.	Cum. Wt. Retain.	Cum. % Retain.	% Finer By Wt.
3"	0.00	0.00	0.00	0.00	0.0	100.0
1 1/2"	0.00	0.00	0.00	0.00	0.0	100.0
3/4"	8.05	180.81	172.76	172.76	14.7	85.3
3/8"	8.43	165.73	157.30	330.06	28.2	71.8
#4	8.30	169.85	161.55	491.61	41.9	58.1
#10	8.19	226.69	218.50	710.11	60.6	39.4
#20	3.64	164.33	160.69	870.80	74.3	25.7
#40	3.54	102.32	98.78	969.58	82.7	17.3
#60	3.71	53.06	49.35	1018.93	86.9	13.1
#100	3.82	43.16	39.34	1058.27	90.3	9.7
#200	3.60	40.77	37.17	1095.44	93.4	6.6

ADVANCED TERRA TESTING, INC.

ADVANCED TERRA TESTING



USCS	COBBLES	GRAVEL		SAND			SILT OR CLAY
		COARSE	FINE	COARSE	MEDIUM	FINE	

WENTWORTH	COBBLES TO BOULDERS	PEBBLE GRAVEL				SAND			SILT	CLAY
		COARSE	MED	FINE	GRAN	COARSE	MED	FINE		

WELLNAME: CCMW-1 SAMPLE NO.: DATE: 7-2-93 PROJECT NO.: 25551-001-0

AREA	DEPTH	CLASSIFICATION
MARICOPA COUNTY CAVE CREEK LANDFILL	10' - 14'	

MECHANICAL ANALYSIS - SIEVE TEST DATA

CLIENT Dames & Moore

JOB NO. 25551-001-033

BORING NO. CCMW-2
DEPTH 40'-43'
SAMPLE NO.
SOIL DESCR. Maricopa County Cave Creek Landfill

SAMPLED
DATE TESTED 6-23-93 EJK
WASH SIEVE Yes
DRY SIEVE No

MOISTURE/DENSITY DATA

Wt. Soil & Ring(s) (g)
Wt. Ring(s) (g)
Wt. Soil (g)
Wet Density PCF

Wt. Wet Soil & Pan	(g)	590.5
Wt. Dry Soil & Pan	(g)	539.1
Wt. Lost Moisture	(g)	51.4
Wt. of Pan Only	(g)	14.3
Wt. of Dry Soil	(g)	524.8
Moisture Content	%	9.8
Dry Density PCF		

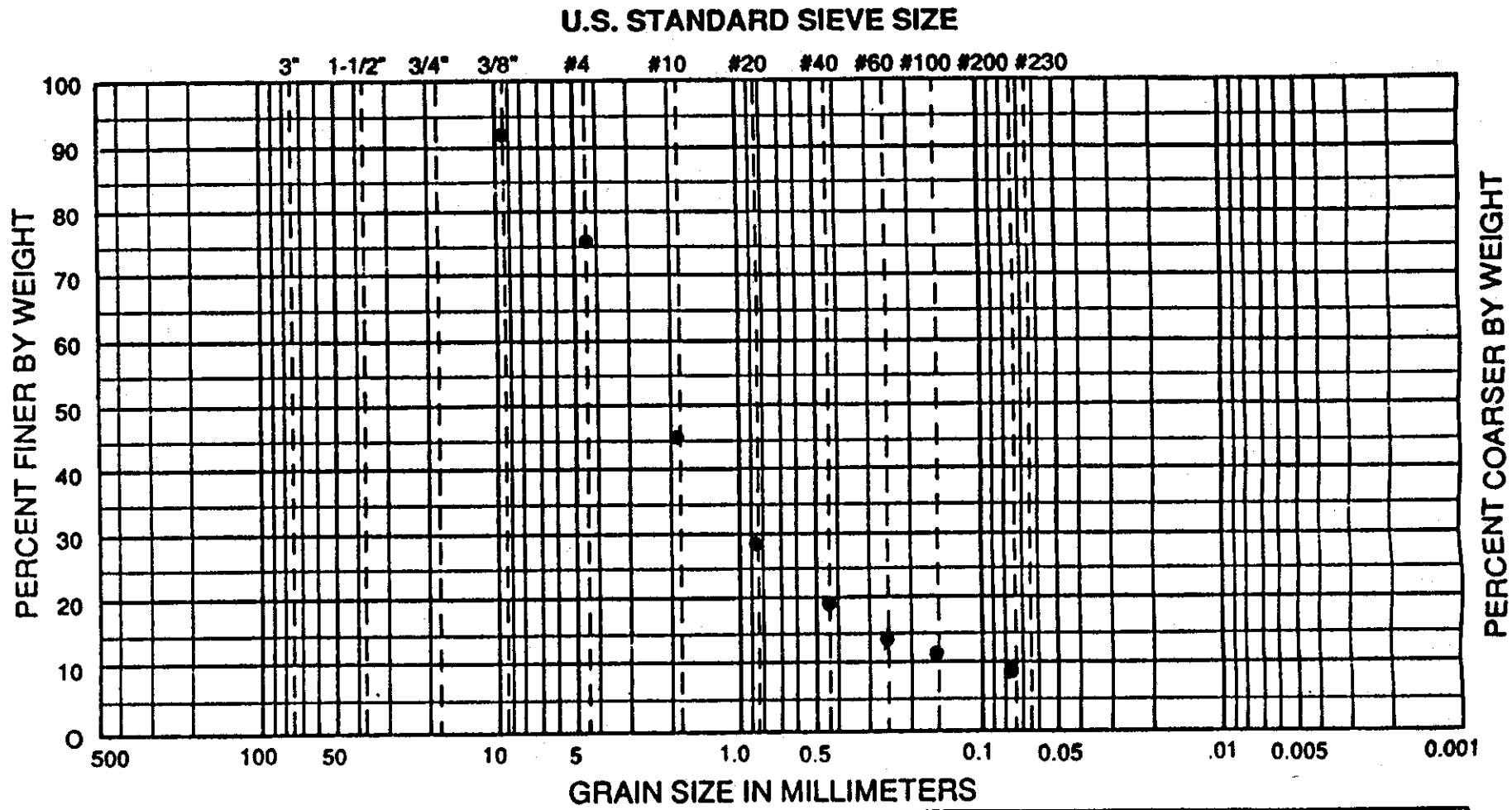
WASH SIEVE ANALYSIS

Wt. Wet Soil & Pan Before Washing (g)	590.5
Wt. Dry Soil & Pan Before Washing (g)	539.1
Weight of Pan (g)	14.3
Wt. of Dry Soil Before Washing	524.8
Wt. Dry Soil & Pan After Washing (g)	491.5
Wt. of Dry Soil After Washing (g)	477.2
-#200 Wash. Out %	9.1

Sieve Number (Size)	Pan Weight (g)	Indiv. Wt. + Pan (g)	Indiv. Wt. Retain.	Cum. Wt. Retain.	Cum. % Retain.	% Finer By Wt.
3"	0.00	0.00	0.00	0.00	0.0	100.0
1 1/2"	0.00	0.00	0.00	0.00	0.0	100.0
3/4"	0.00	0.00	0.00	0.00	0.0	100.0
3/8"	3.61	42.66	39.05	39.05	7.4	92.6
#4	3.65	92.82	89.17	128.22	24.4	75.6
#10	3.60	156.59	152.99	281.21	53.6	46.4
#20	3.56	102.19	98.63	379.84	72.4	27.6
#40	3.63	51.19	47.56	427.40	81.4	18.6
#60	3.58	25.00	21.42	448.82	85.5	14.5
#100	3.67	18.47	14.80	463.62	88.3	11.7
#200	3.56	17.16	13.60	477.22	90.9	9.1

ADVANCED TERRA TESTING, INC.

ADVANCED TERRA TESTING



USCS	COBBLES	GRAVEL		SAND			SILT OR CLAY
		COARSE	FINE	COARSE	MEDIUM	FINE	

WENTWORTH	COBBLES TO BOULDERS	PEBBLE GRAVEL				SAND			SILT	CLAY
		COARSE	MED	FINE	GRAN	COARSE	MED	FINE		

WELLNAME: CCMW-2 SAMPLE NO.: DATE: 6-25-93 PROJECT NO.: 25551-001-0

AREA	DEPTH	CLASSIFICATION
MARICOPA CNTY CANE CREEK LANDFILL	40'-43'	

MECHANICAL ANALYSIS - SIEVE TEST DATA

CLIENT Dames & Moore

JOB NO. 25551-001-033

BORING NO. CCMW-2
DEPTH 30'-33'
SAMPLE NO.
SOIL DESCR. Maricopa County Cave Creek Landfill

SAMPLED
DATE TESTED 6-23-93 EJK
WASH SIEVE Yes
DRY SIEVE No

MOISTURE/DENSITY DATA

Wt. Soil & Ring(s) (g)
Wt. Ring(s) (g)
Wt. Soil (g)
Wet Density PCF

Wt. Wet Soil & Pan	(g)	694.9
Wt. Dry Soil & Pan	(g)	594.5
Wt. Lost Moisture	(g)	100.4
Wt. of Pan Only	(g)	14.4
Wt. of Dry Soil	(g)	580.1
Moisture Content	%	17.3
Dry Density PCF		

WASH SIEVE ANALYSIS

Wt. Wet Soil & Pan Before Washing (g)	694.9
Wt. Dry Soil & Pan Before Washing (g)	594.5
Weight of Pan (g)	14.4
Wt. of Dry Soil Before Washing	580.1
Wt. Dry Soil & Pan After Washing (g)	549.5
Wt. of Dry Soil After Washing (g)	535.2
-#200 Wash. Out %	7.8

Sieve Number (Size)	Pan Weight (g)	Indiv. Wt. + Pan (g)	Indiv. Wt. Retain.	Cum. Wt. Retain.	Cum. % Retain.	% Finer By Wt.
3"	0.00	0.00	0.00	0.00	0.0	100.0
1 1/2"	0.00	0.00	0.00	0.00	0.0	100.0
3/4"	0.00	0.00	0.00	0.00	0.0	100.0
3/8"	3.69	23.80	20.11	20.11	3.5	96.5
#4	4.04	59.81	55.77	75.88	13.1	86.9
#10	8.12	250.17	242.05	317.93	54.8	45.2
#20	3.63	138.80	135.17	453.10	78.1	21.9
#40	3.68	46.21	42.53	495.63	85.4	14.6
#60	3.61	21.29	17.68	513.31	88.5	11.5
#100	3.70	14.80	11.10	524.41	90.4	9.6
#200	3.60	14.36	10.76	535.17	92.2	7.8

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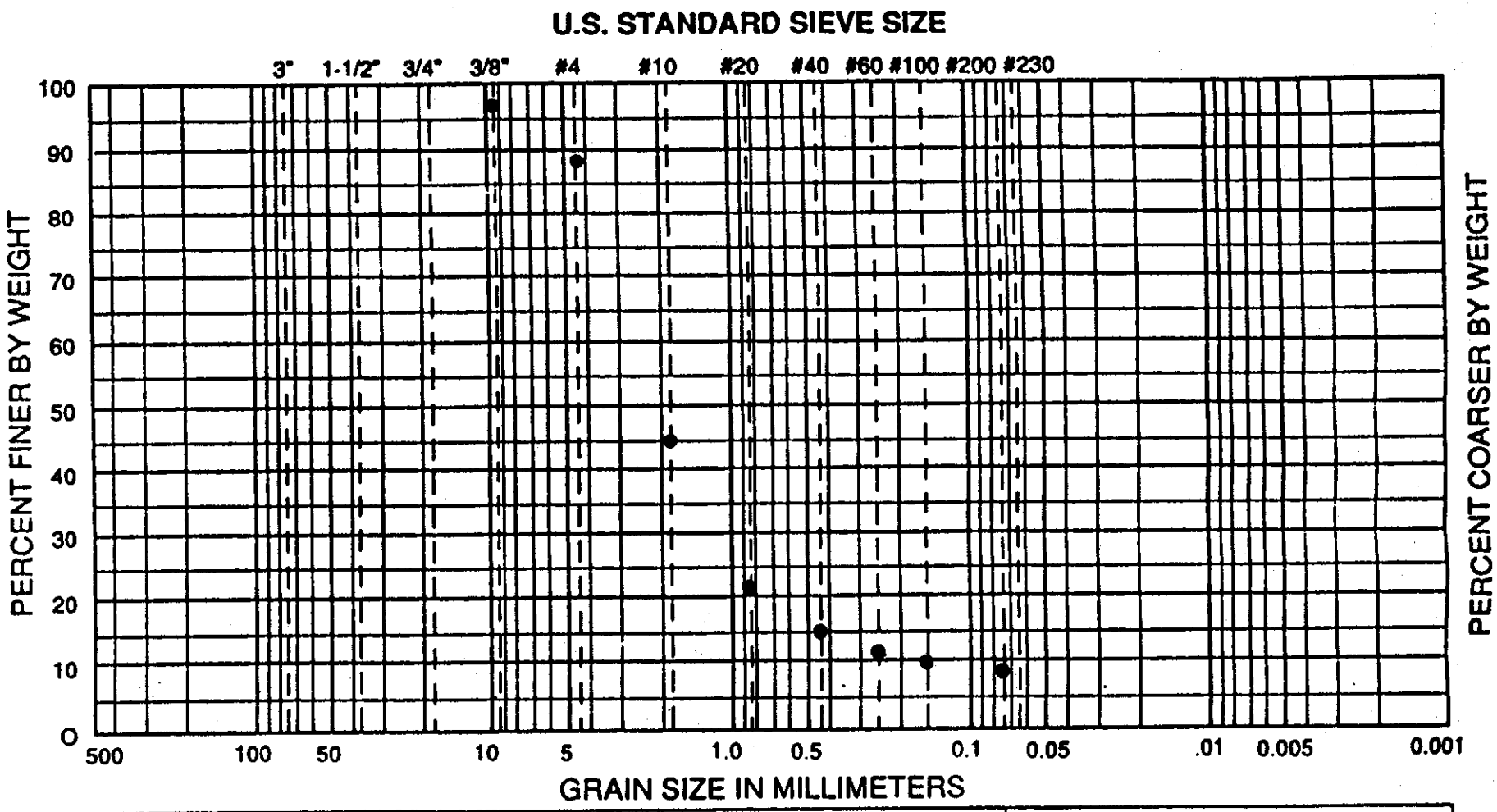
ADVANCED TERRA TESTING



USCS	COBBLES	GRAVEL		SAND			SILT OR CLAY		
		COARSE	FINE	COARSE	MEDIUM	FINE			
WENTWORTH	COBBLES TO BOULDERS	PEBBLE GRAVEL				SAND			SILT	CLAY
		COARSE	MED	FINE	GRAN	COARSE	MED	FINE		

WELLNAME: CCMW-2 SAMPLE NO.: DATE: 6-23-93 PROJECT NO.: 25551-001-0

AREA	DEPTH	CLASSIFICATION
MARICOPA CNTY. CANE CREEK ENDFILL	36'-33'	

MECHANICAL ANALYSIS - SIEVE TEST DATA

CLIENT Dames & Moore

JOB NO. 25551-001-033

BORING NO.	CCMW-1
DEPTH	20'-22' COMB
SAMPLE NO.	
SOIL DESCR.	Maricopa County Cave Creek Landfill

SAMPLED	5-13-93
DATE TESTED	6-21-93 EJK
WASH SIEVE	No
DRY SIEVE	Yes

MOISTURE/DENSITY DATA

Wt. Soil & Ring(s)	(g)	
Wt. Ring(s)	(g)	
Wt. Soil	(g)	
Wet Density	PCF	
Wt. Wet Soil & Pan	(g)	914.9
Wt. Dry Soil & Pan	(g)	909.3
Wt. Lost Moisture	(g)	5.6
Wt. of Pan Only	(g)	38.8
Wt. of Dry Soil	(g)	870.5
Moisture Content	%	0.6
Dry Density	PCF	

DRY SIEVE ANALYSIS

Wt. Wet Soil & Pan Before Sieving (g)	914.9
Wt. Dry Soil & Pan Before Sieving (g)	909.3
Weight of Pan (g)	38.8
Wt. of Dry Soil Before Sieving (g)	870.5
Wt. Dry Soil & Pan After Sieving (g)	897.4
Wt. of Dry Soil After Sieving (g)	858.6
-#200 Lost %	1.4

Sieve Number (Size)	Pan Weight (g)	Indiv. Wt. + Pan (g)	Indiv. Wt. Retain.	Cum. Wt. Retain.	Cum. % Retain.	% Finer By Wt.
3"	0.00	0.00	0.00	0.00	0.0	100.0
1 1/2"	0.00	0.00	0.00	0.00	0.0	100.0
3/4"	0.00	241.16	241.16	241.16	27.7	72.3
3/8"	0.00	366.76	366.76	607.92	69.8	30.2
#4	0.00	101.05	101.05	708.97	81.4	18.6
#10	0.00	52.68	52.68	761.65	87.5	12.5
#20	0.00	44.84	44.84	806.49	92.6	7.4
#40	0.00	29.45	29.45	835.94	96.0	4.0
#60	0.00	11.30	11.30	847.24	97.3	2.7
#100	0.00	6.21	6.21	853.45	98.0	2.0
#200	0.00	5.19	5.19	858.64	98.6	1.4

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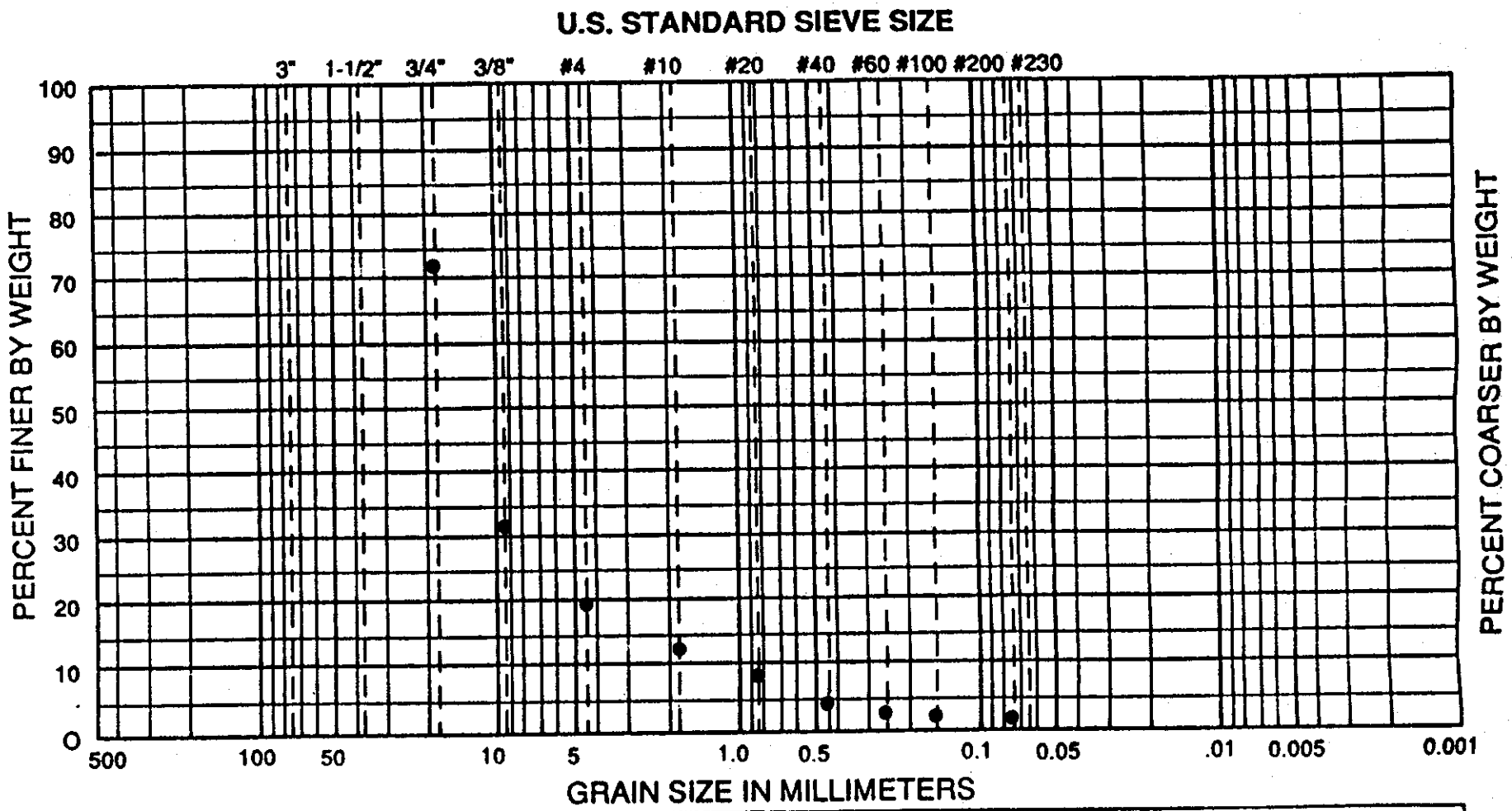
ADVANCED TERRA TESTING



USCS	COBBLES	GRAVEL		SAND			SILT OR CLAY		
		COARSE	FINE	COARSE	MEDIUM	FINE			
WENTWORTH	COBBLES TO BOULDERS	PEBBLE GRAVEL				SAND			SILT	CLAY
		COARSE	MED	FINE	GRAN	COARSE	MED	FINE		

WELLNAME: CCMW-1 SAMPLE NO.: DATE: 6-21-93 PROJECT NO.: 25551-001-0

AREA	DEPTH	CLASSIFICATION
MARICOPA COUNTY LAVECLEEK UNDFILL	20'-22' COMB	

MECHANICAL ANALYSIS - SIEVE TEST DATA

CLIENT Dames & Moore

JOB NO. 25551-001-033

BORING NO.	CCMW-1
DEPTH	30'-30.5'
SAMPLE NO.	
SOIL DESCR.	Maricopa County Cave Creek Landfill

SAMPLED	5-13-93
DATE TESTED	6-21-93 EJK
WASH SIEVE	No
DRY SIEVE	Yes

MOISTURE/DENSITY DATA

Wt. Soil & Ring(s)	(g)	
Wt. Ring(s)	(g)	
Wt. Soil	(g)	
Wet Density	PCF	
Wt. Wet Soil & Pan	(g)	664.1
Wt. Dry Soil & Pan	(g)	648.8
Wt. Lost Moisture	(g)	15.4
Wt. of Pan Only	(g)	38.2
Wt. of Dry Soil	(g)	610.5
Moisture Content	%	2.5
Dry Density	PCF	

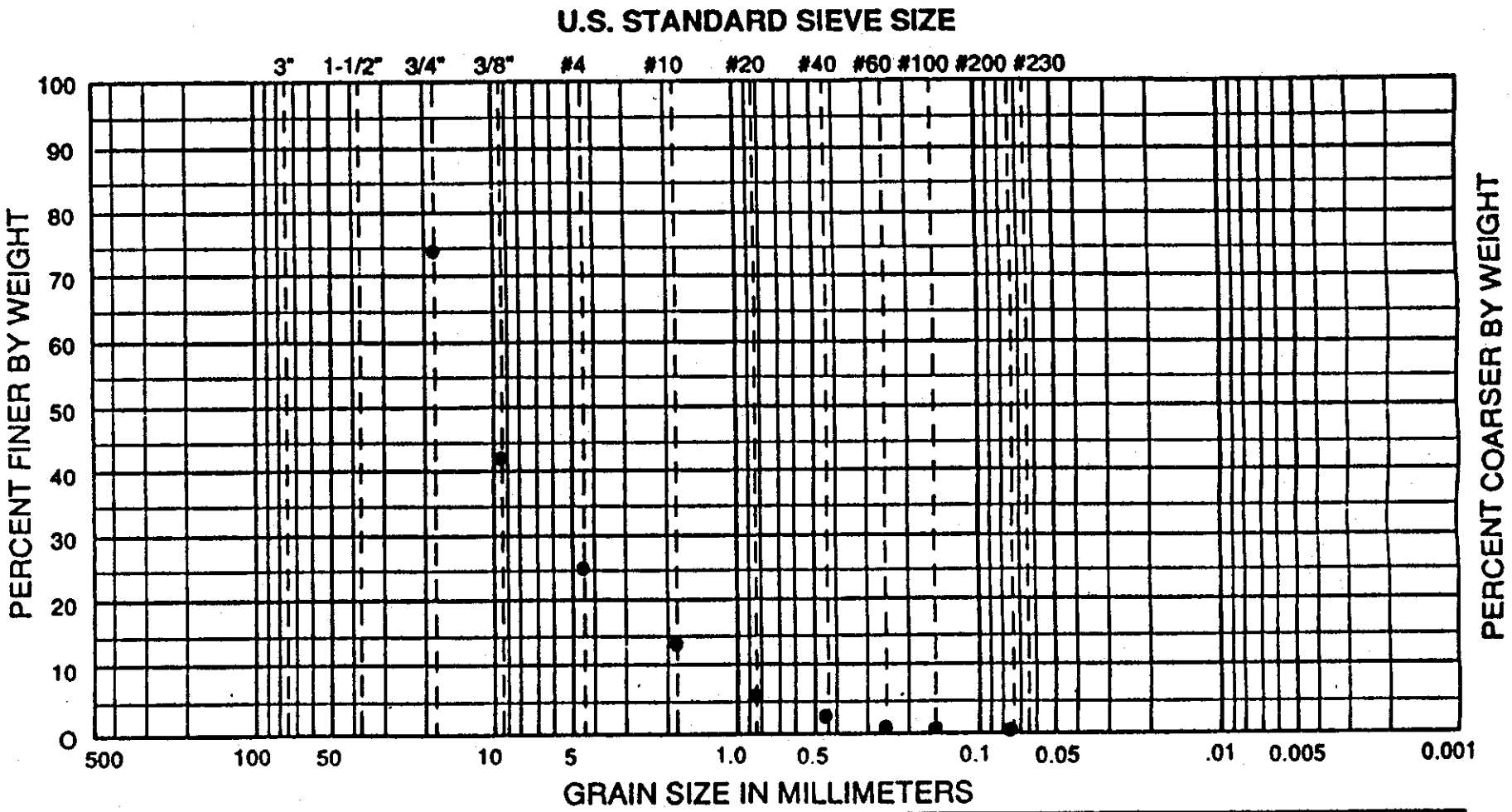
DRY SIEVE ANALYSIS

Wt. Wet Soil & Pan Before Sieving (g)	664.1
Wt. Dry Soil & Pan Before Sieving (g)	648.8
Weight of Pan (g)	38.2
Wt. of Dry Soil Before Sieving (g)	610.5
Wt. Dry Soil & Pan After Sieving (g)	646.3
Wt. of Dry Soil After Sieving (g)	608.0
-#200 Lost %	0.4

Sieve Number (Size)	Pan Weight (g)	Indiv. Wt. + Pan (g)	Indiv. Wt. Retain.	Cum. Wt. Retain.	Cum. % Retain.	% Finer By Wt.
3"	0.00	0.00	0.00	0.00	0.0	100.0
1 1/2"	0.00	0.00	0.00	0.00	0.0	100.0
3/4"	0.00	157.94	157.94	157.94	25.9	74.1
3/8"	0.00	195.18	195.18	353.12	57.8	42.2
#4	0.00	103.87	103.87	456.99	74.9	25.1
#10	0.00	69.83	69.83	526.82	86.3	13.7
#20	0.00	47.19	47.19	574.01	94.0	6.0
#40	0.00	22.43	22.43	596.44	97.7	2.3
#60	0.00	7.34	7.34	603.78	98.9	1.1
#100	0.00	2.75	2.75	606.53	99.3	0.7
#200	0.00	1.50	1.50	608.03	99.6	0.4

ADVANCED TERRA TESTING, INC.

ADVANCED TERRA TESTING



USCS	COBBLES	GRAVEL		SAND			SILT OR CLAY		
		COARSE	FINE	COARSE	MEDIUM	FINE			

WENTWORTH	COBBLES TO BOULDERS	PEBBLE GRAVEL				SAND			SILT	CLAY
		COARSE	MED	FINE	GRAN	COARSE	MED	FINE		

WELLNAME: CCMW-1 SAMPLE NO.: DATE: 6-21-93 PROJECT NO.: 25551-001-0

AREA	DEPTH	CLASSIFICATION
MARICOPA COUNTY LAVE CREEK LNDFLL	30'-30.5'	

TRIAXIAL, BACK-PRESSURE PERMEABILITY, TX/Pbp
ASTM D 5084

PERMEABILITY TEST - BACK PRESSURE CONSTANT HEAD

CLIENT Dames & Moore

JOB NO. 25551-001-033

BORING NO.	CCMW-2	SAMPLED	5-27-93 DB
DEPTH	50 - 51.6'	TEST STARTED	6-23-93 TNU
SAMPLE NO.	Combined	TEST FINISHED	06/30/93 TNU
SOIL DESCR.	Cave Creek Landfill	SETUP NO.	15S
TEST TYPE	TX/Pbp	SATURATED TEST	Yes
CONF. PRES. PSF	5000	AT FIELD MOIST.	No

MOISTURE/DENSITY DATA		BEFORE TEST	AFTER TEST
Wt. Soil + Moisture	(g)	438.0	464.8
Wt. Wet Soil & Pan	(g)	445.9	472.7
Wt. Dry Soil & Pan	(g)	421.5	421.5
Wt. Lost Moisture	(g)	24.4	51.2
Wt. of Pan Only	(g)	7.9	7.9
Wt. of Dry Soil	(g)	413.6	413.6
Moisture Content %		5.9	12.4
Wet Density PCF		121.9	137.1
Dry Density PCF		115.1	122.0

Init. Diameter	(in)	2.410	(cm)	6.121
Init. Area	(sq in)	4.562	(sq cm)	29.432
Init. Height	(in)	3.000	(cm)	7.620
Vol. Bef. Consol.	(cu ft)	0.00792		
Vol. After Consol.	(cu ft)	0.00747		
Porosity %		24.17		
Constant Head	(PSI)	1.00	(cm)	70.39

Time Min	Time Sec	Init. Burette CC	Final Burette CC	Head Corr. CC	Permeability k cm/sec
1.0	60	49.9	11.4	34.0	4.8E-03
1.0	60	49.2	10.0	35.5	5.1E-03
1.0	60	49.2	9.9	35.6	5.1E-03
1.0	60	49.7	10.4	34.9	5.0E-03
1.0	60	49.3	9.6	35.7	5.2E-03
1.0	60	49.1	9.5	35.9	5.2E-03

ADVANCED TERRA TESTING, INC.

TRIAXAL COMPRESSION TEST DATA

CLIENT Dames & Moore

JOB NO. 25551-001-033

BORING NO.	CCMW-2	SAMPLED	5-27-93 DB
DEPTH	50 - 51.6'	TEST STARTED	6-23-93 TNU
SAMPLE NO.	Combined	TEST FINISHED	06/30/93 TNU
SOIL DESCR.	Cave Creek Landfill	SETUP NO.	15S
TEST TYPE	TX/Pbp	SATURATED TEST	Yes
CONF. PRES. PSF	5000	AT FIELD MOIST.	No

SATURATION DATA

Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)		Pore Pressure (PSI)		Change	B
		Close	Open	Close	Open		
40.0	38.0	3.2	11.6				
50.0	48.0	12.9	13.7	38.6	46.1	7.5	0.75
60.0	58.0	14.3	14.9	48.2	56.5	8.3	0.83
70.0	68.0	15.2	15.6	58.3	67.2	8.9	0.89
80.0	78.0	16.0	16.6	68.5	77.8	9.3	0.93
90.0		16.8	17.2	78.5	88.2	9.7	0.97

CONSOLIDATION DATA

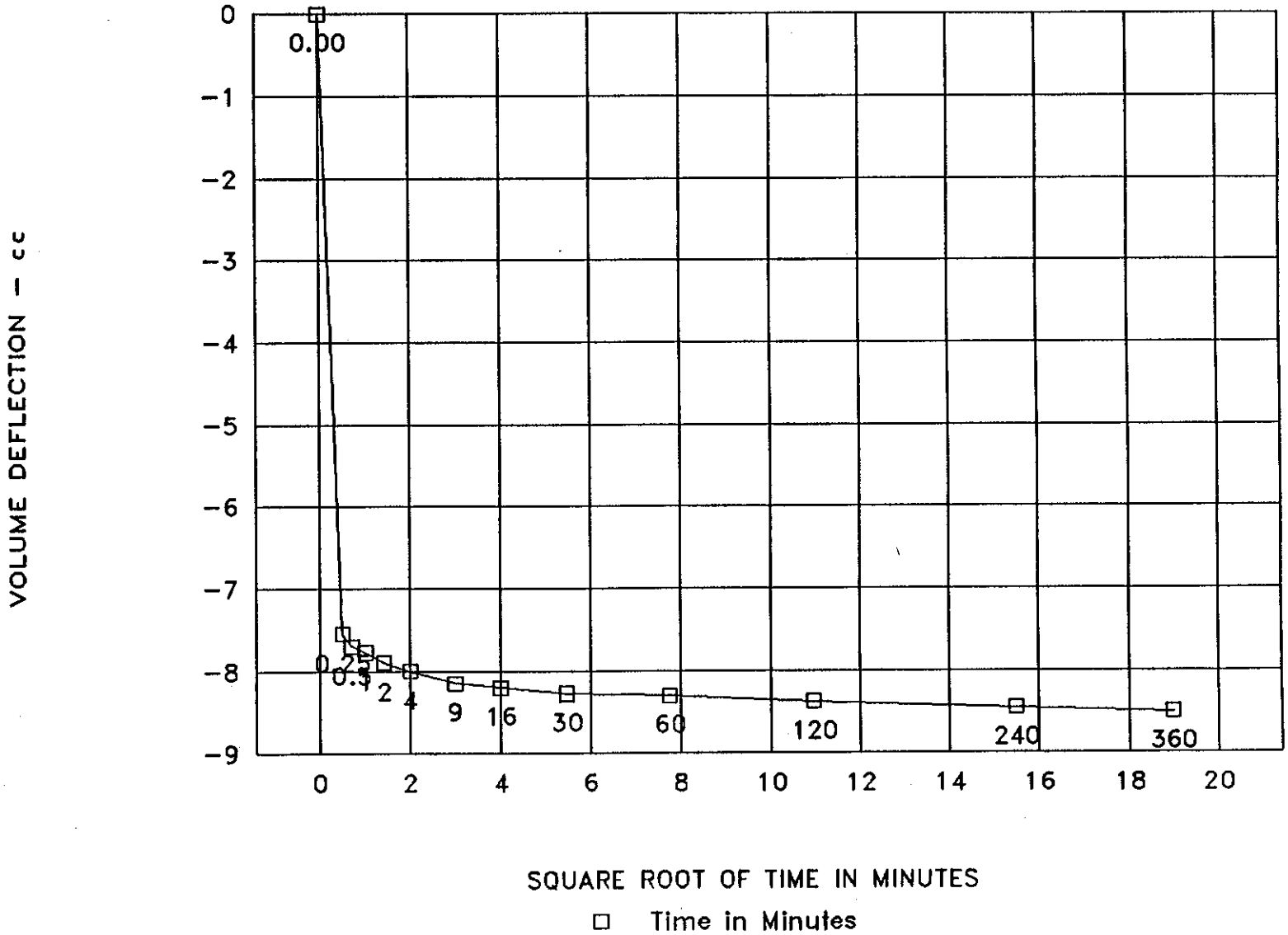
Elapsed Time (Min)	SQRT Time (Min)	Burette Reading (CC)	Volume Defl. (cc)
0.00	0.00	17.20	0.00
0.25	0.50	24.75	-7.55
0.5	0.71	24.90	-7.70
1	1.00	24.98	-7.78
2	1.41	25.10	-7.90
4	2.00	25.20	-8.00
9	3.00	25.35	-8.15
16	4.00	25.40	-8.20
30	5.48	25.48	-8.28
60	7.75	25.50	-8.30
120	10.95	25.58	-8.38
240	15.49	25.65	-8.45
360	18.97	25.70	-8.50

Initial Height	(in)	3.000	Init. Vol.	(CC)	224.30
Height Change	(in)	0.019	Vol. Change	(CC)	23.10
Ht. After Cons.	(in)	2.981	Cell Exp.	(CC)	10.50
Initial Area	(sq in)	4.562	Net Change	(CC)	12.60
Area After Cons.	(sq in)	4.333	Cons. Vol.	(CC)	211.70

ADVANCED TERRA TESTING, INC.

CONSOLIDATION DATA

CCMW-2, @ 50 - 51.6', 5000 psf Conf.



PERMEABILITY TEST - BACK PRESSURE CONSTANT HEAD

CLIENT Dames & Moore

JOB NO. 25551-001-033

BORING NO.	CCMW-2	SAMPLED	5-24-93 DB
DEPTH	40 - 43'	TEST STARTED	06/23/93 TNU,CJW
SAMPLE NO.	Combined	TEST FINISHED	06/30/93 TNU
SOIL DESCR.	Cave Creek Landfill	SETUP NO.	14S
TEST TYPE	TX/Pbp	SATURATED TEST	Yes
CONF. PRES. PSF	4000	AT FIELD MOIST.	No

MOISTURE/DENSITY DATA		BEFORE TEST	AFTER TEST
Wt. Soil + Moisture	(g)	429.3	447.7
Wt. Wet Soil & Pan	(g)	437.6	455.9
Wt. Dry Soil & Pan	(g)	402.7	402.7
Wt. Lost Moisture	(g)	34.9	53.2
Wt. of Pan Only	(g)	8.3	8.3
Wt. of Dry Soil	(g)	394.4	394.4
Moisture Content %		8.8	13.5
Wet Density PCF		119.5	143.7
Dry Density PCF		109.8	126.7

Init. Diameter	(in)	2.410	(cm)	6.121
Init. Area	(sq in)	4.562	(sq cm)	29.432
Init. Height	(in)	3.000	(cm)	7.620
Vol. Bef. Consol.	(cu ft)	0.00792		
Vol. After Consol.	(cu ft)	0.00687		
Porosity %		27.38		
Constant Head	(PSI)	1.00	(cm)	70.39

Time Min	Time Sec	Init. Burette CC	Final Burette CC	Head Corr. CC	Permeability k cm/sec
1.0	60	49.3	12.6	33.6	4.9E-03
1.0	60	49.3	3.0	40.3	7.5E-03
1.0	60	49.2	10.1	35.4	5.5E-03
1.0	60	49.6	8.6	36.2	5.9E-03
1.0	60	49.0	8.4	36.7	5.9E-03
1.0	60	49.2	9.6	35.8	5.6E-03
1.0	60	48.7	7.7	37.4	6.1E-03
1.0	60	48.8	8.5	36.8	5.9E-03
1.0	60	49.2	9.9	35.6	5.5E-03

ADVANCED TERRA TESTING, INC.

TRIAXAL COMPRESSION TEST DATA

CLIENT Dames & Moore

JOB NO. 25551-001-033

BORING NO.	CCMW-2	SAMPLED	5-24-93 DB
DEPTH	40 - 43'	TEST STARTED	06/23/93 TNU,CJW
SAMPLE NO.	Combined	TEST FINISHED	06/30/93 TNU
SOIL DESCR.	Cave Creek Landfill	SETUP NO.	14S
TEST TYPE	TX/Pbp	SATURATED TEST	Yes
CONF. PRES. PSF	4000	AT FIELD MOIST.	No

SATURATION DATA

Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)		Pore Pressure (PSI)		Change	B
		Close	Open	Close	Open		
40.0	38.0	2.2	10.8				
50.0	48.0	12.2	12.9	38.7	47.0	8.3	0.83
60.0	58.0	13.8	14.4	48.5	57.5	9.0	0.90
70.0		15.0	15.0	58.4	67.9	9.5	0.95

CONSOLIDATION DATA

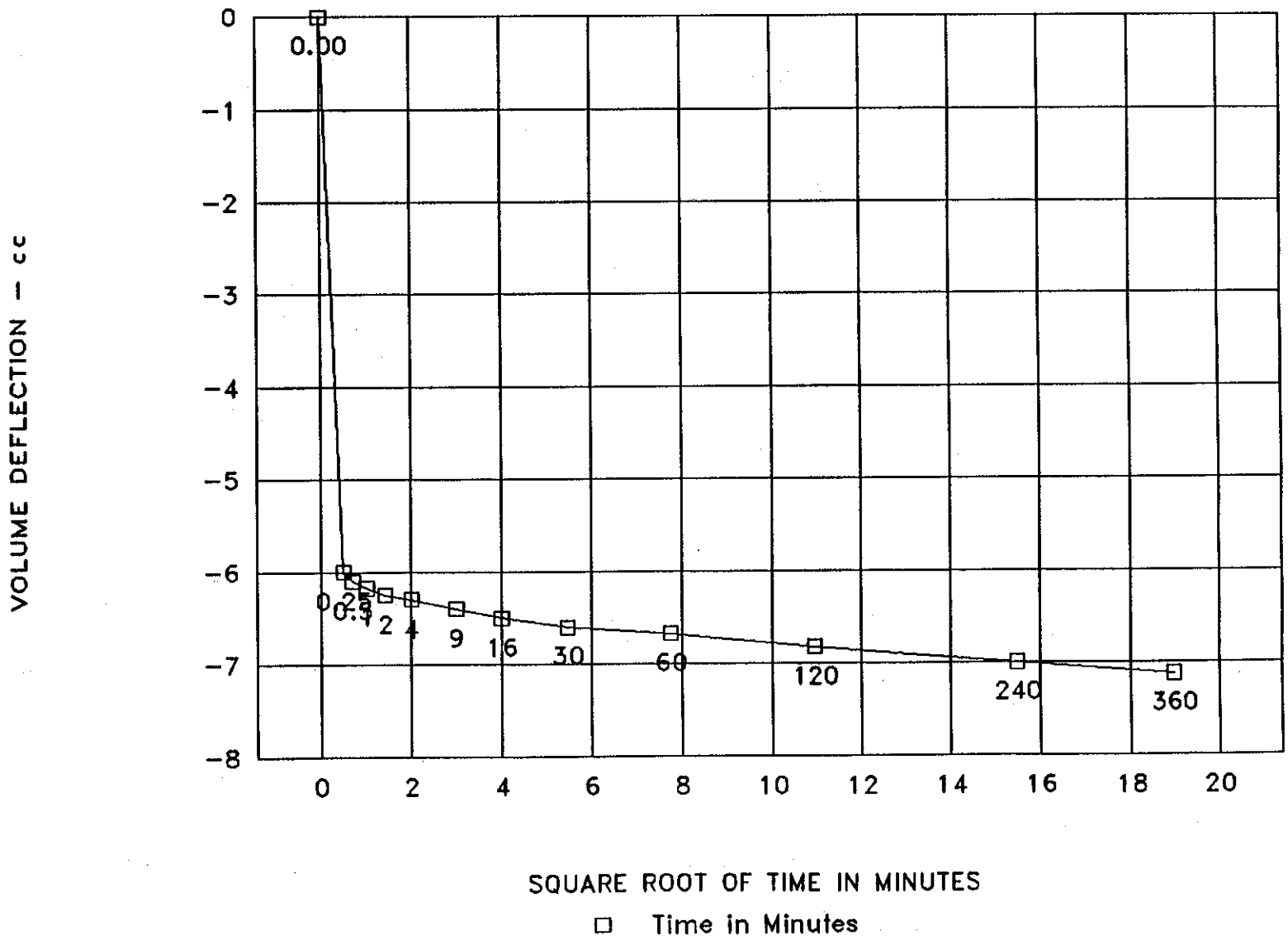
Elapsed Time (Min)	SQRT Time (Min)	Burette Reading (CC)	Volume Defl. (cc)
0.00	0.00	15.00	0.00
0.25	0.50	21.00	-6.00
0.5	0.71	21.10	-6.10
1	1.00	21.18	-6.18
2	1.41	21.25	-6.25
4	2.00	21.30	-6.30
9	3.00	21.40	-6.40
16	4.00	21.50	-6.50
30	5.48	21.60	-6.60
60	7.75	21.68	-6.68
120	10.95	21.83	-6.82
240	15.49	22.00	-7.00
360	18.97	22.13	-7.13

Initial Height	(in)	3.000	Init. Vol.	(CC)	224.30
Height Change	(in)	0.022	Vol. Change	(CC)	38.35
Ht. After Cons.	(in)	2.978	Cell Exp.	(CC)	8.50
Initial Area	(sq in)	4.562	Net Change	(CC)	29.85
Area After Cons.	(sq in)	3.984	Cons. Vol.	(CC)	194.45

ADVANCED TERRA TESTING, INC.

CONSOLIDATION DATA

CCMW-2, @ 40 - 43', 4000 psf Conf.



PERMEABILITY TEST - BACK PRESSURE CONSTANT HEAD

CLIENT Dames & Moore

JOB NO. 25551-001-033

BORING NO.	CCMW-1	SAMPLED	5-13-93 DB
DEPTH	10 - 14'	TEST STARTED	6-23-93 TNU
SAMPLE NO.	Combined	TEST FINISHED	06/30/93 TNU
SOIL DESCR.	Cave Creek Landfill	SETUP NO.	2N
TEST TYPE	TX/Pbp	SATURATED TEST	Yes
CONF. PRES. PSF	1200	AT FIELD MOIST.	No

MOISTURE/DENSITY DATA		BEFORE TEST	AFTER TEST
Wt. Soil + Moisture	(g)	460.5	479.6
Wt. Wet Soil & Pan	(g)	468.8	487.9
Wt. Dry Soil & Pan	(g)	427.2	427.2
Wt. Lost Moisture	(g)	41.6	60.7
Wt. of Pan Only	(g)	8.3	8.3
Wt. of Dry Soil	(g)	418.9	418.9
Moisture Content %		9.9	14.5
Wet Density PCF		128.2	138.4
Dry Density PCF		116.6	120.9

Init. Diameter	(in)	2.410	(cm)	6.121
Init. Area	(sq in)	4.562	(sq cm)	29.432
Init. Height	(in)	3.000	(cm)	7.620
Vol. Bef. Consol.	(cu ft)	0.00792		
Vol. After Consol.	(cu ft)	0.00764		
Porosity %		28.07		
Constant Head	(PSI)	1.00	(cm)	70.39

Time Min	Time Sec	Init. Burette CC	Final Burette CC	Head Corr. CC	Permeability k cm/sec
2.0	120	49.6	2.4	40.5	3.5E-03
2.0	120	49.6	2.9	40.2	3.4E-03
2.0	120	49.7	0.4	41.9	3.8E-03
2.0	120	49.6	-0.4	42.5	4.0E-03
2.0	120	49.9	2.1	40.5	3.5E-03
2.0	120	50.0	1.0	41.2	3.7E-03
2.0	120	50.0	0.0	41.9	3.9E-03

ADVANCED TERRA TESTING, INC.

TRIAXAL COMPRESSION TEST DATA

CLIENT Dames & Moore

JOB NO. 25551-001-033

BORING NO.	CCMW-1	SAMPLED	5-13-93 DB
DEPTH	10 - 14'	TEST STARTED	6-23-93 TNU
SAMPLE NO.	Combined	TEST FINISHED	06/30/93 TNU
SOIL DESCR.	Cave Creek Landfill	SETUP NO.	2N
TEST TYPE	TX/Pbp	SATURATED TEST	Yes
CONF. PRES. PSF	1200	AT FIELD MOIST.	No

SATURATION DATA

Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)		Pore Pressure (PSI)		Change	B
		Close	Open	Close	Open		
40.0	38.0	3.6	15.0				
50.0	48.0	16.7	17.5	38.5	47.1	8.6	0.86
60.0	58.0	18.1	18.8	48.2	57.4	9.2	0.92
70.0		19.2	19.2	58.1	67.8	9.7	0.97

CONSOLIDATION DATA

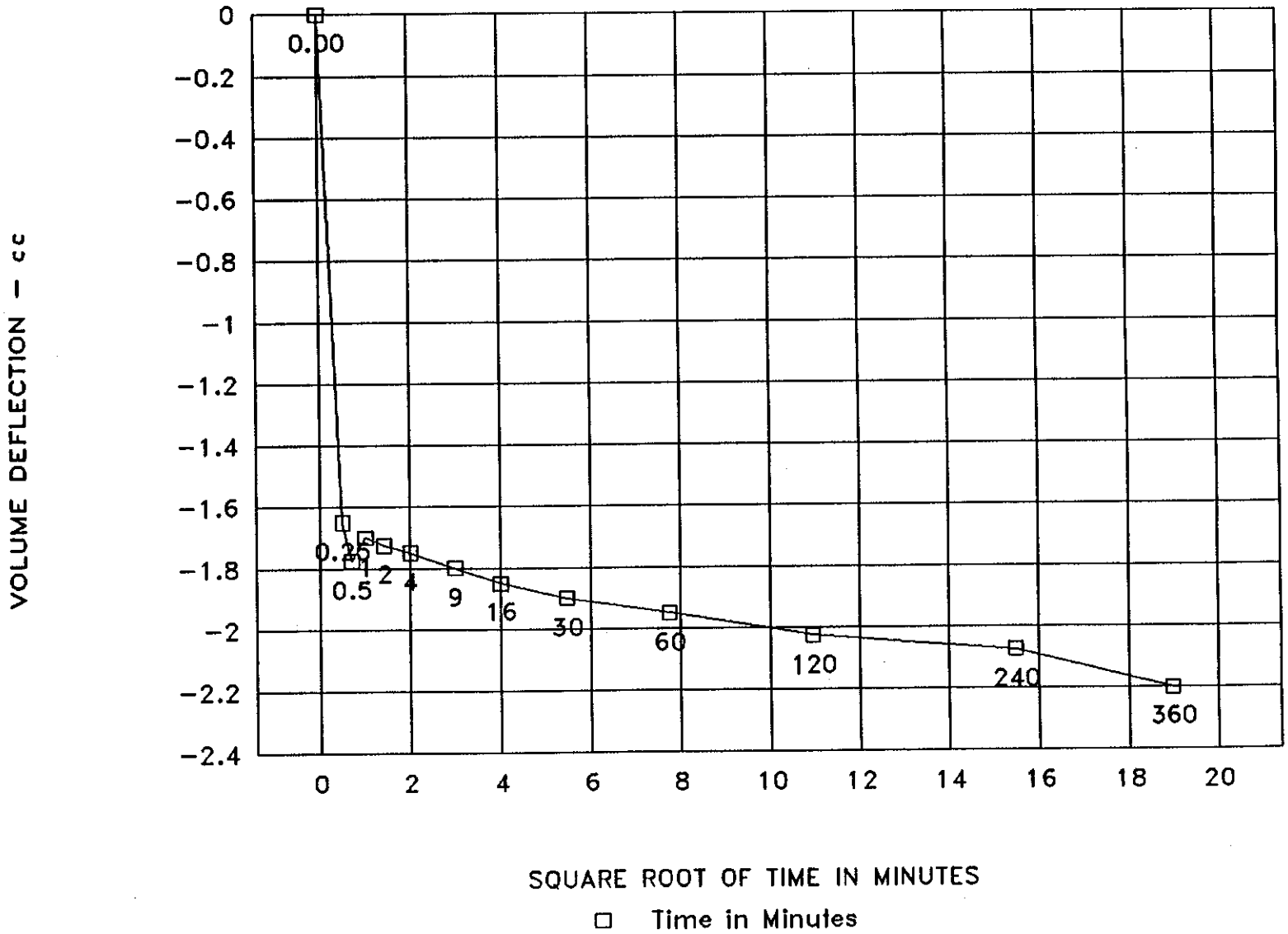
Elapsed Time (Min)	SQRT Time (Min)	Burette Reading (CC)	Volume Defl. (cc)
0.00	0.00	19.20	0.00
0.25	0.50	20.85	-1.65
0.5	0.71	20.98	-1.78
1	1.00	20.90	-1.70
2	1.41	20.93	-1.73
4	2.00	20.95	-1.75
9	3.00	21.00	-1.80
16	4.00	21.05	-1.85
30	5.48	21.10	-1.90
60	7.75	21.15	-1.95
120	10.95	21.23	-2.03
240	15.49	21.28	-2.07
360	18.97	21.40	-2.20

Initial Height	(in)	3.000	Init. Vol.	(CC)	224.30
Height Change	(in)	0.016	Vol. Change	(CC)	18.48
Ht. After Cons.	(in)	2.984	Cell Exp.	(CC)	10.50
Initial Area	(sq in)	4.562	Net Change	(CC)	7.98
Area After Cons.	(sq in)	4.423	Cons. Vol.	(CC)	216.32

ADVANCED TERRA TESTING, INC.

CONSOLIDATION DATA

CCMW-1, @ 10 - 14', 1200 psf Conf.



PERMEABILITY TEST - BACK PRESSURE CONSTANT HEAD

CLIENT Dames & Moore

JOB NO. 25551-001-033

BORING NO.	CCMW-2	SAMPLED	5-24-93 DB
DEPTH	30-33'	TEST STARTED	6-23-93 TNU
SAMPLE NO.	Combined	TEST FINISHED	06/30/93
SOIL DESCR.	Cave Creek Landfill	SETUP NO.	1N
TEST TYPE	TX/Pbp	SATURATED TEST	Yes
CONF. PRES. PSF	3000	AT FIELD MOIST.	No

MOISTURE/DENSITY DATA		BEFORE TEST	AFTER TEST
Wt. Soil + Moisture	(g)	431.4	436.6
Wt. Wet Soil & Pan	(g)	439.4	444.7
Wt. Dry Soil & Pan	(g)	374.9	374.9
Wt. Lost Moisture	(g)	64.5	69.7
Wt. of Pan Only	(g)	8.0	8.0
Wt. of Dry Soil	(g)	366.9	366.9
Moisture Content %		17.6	19.0
Wet Density PCF		120.1	128.9
Dry Density PCF		102.1	108.3

Init. Diameter	(in)	2.410	(cm)	6.121
Init. Area	(sq in)	4.562	(sq cm)	29.432
Init. Height	(in)	3.000	(cm)	7.620
Vol. Bef. Consol.	(cu ft)	0.00792		
Vol. After Consol.	(cu ft)	0.00747		
Porosity %		32.98		
Constant Head	(PSI)	2.00	(cm)	140.79

Time Min	Time Sec	Init. Burette CC	Final Burette CC	Head Corr. CC	Permeability k cm/sec
5.0	300	48.7	5.0	39.3	3.8E-04
4.0	240	49.5	-1.0	43.0	5.8E-04
4.0	240	49.5	5.2	38.6	4.8E-04
4.0	240	49.4	4.2	39.4	5.0E-04
4.0	240	49.4	3.6	39.8	5.1E-04
4.0	240	49.3	6.9	37.6	4.6E-04
4.0	240	49.4	4.2	39.4	5.0E-04
4.0	240	49.5	-1.9	43.6	5.9E-04
3.0	180	49.9	5.2	38.3	6.5E-04
3.0	180	49.6	6.9	37.4	6.2E-04
3.0	180	49.3	4.4	39.4	6.6E-04
3.0	180	49.6	3.3	39.9	6.8E-04
3.0	180	49.6	2.5	40.4	7.0E-04
3.0	180	49.8	0.4	41.8	7.4E-04
3.0	180	50.0	-0.4	42.2	7.6E-04
2.0	120	50.0	11.7	33.7	8.0E-04
2.0	120	50.0	11.2	34.1	8.1E-04
2.0	120	49.9	10.3	34.8	8.3E-04
2.0	120	50.0	9.9	35.0	8.5E-04

TRIAXAL COMPRESSION TEST DATA

CLIENT Dames & Moore

JOB NO. 25551-001-033

BORING NO.	CCMW-2	SAMPLED	5-24-93 DB
DEPTH	30-33'	TEST STARTED	6-23-93 TNU
SAMPLE NO.	Combined	TEST FINISHED	06/30/93
SOIL DESCR.	Cave Creek Landfill	SETUP NO.	1N
TEST TYPE	TX/Pbp	SATURATED TEST	Yes
CONF. PRES. PSF	3000	AT FIELD MOIST.	No

SATURATION DATA

Cell Pres. (PSI)	Back Pres. (PSI)	Burette Reading (CC)		Pore Pressure (PSI)		Change	B
		Close	Open	Close	Open		
40.0	38.0	6.3	17.7				
50.0		19.4	19.5	38.6	48.2	9.6	0.96

CONSOLIDATION DATA

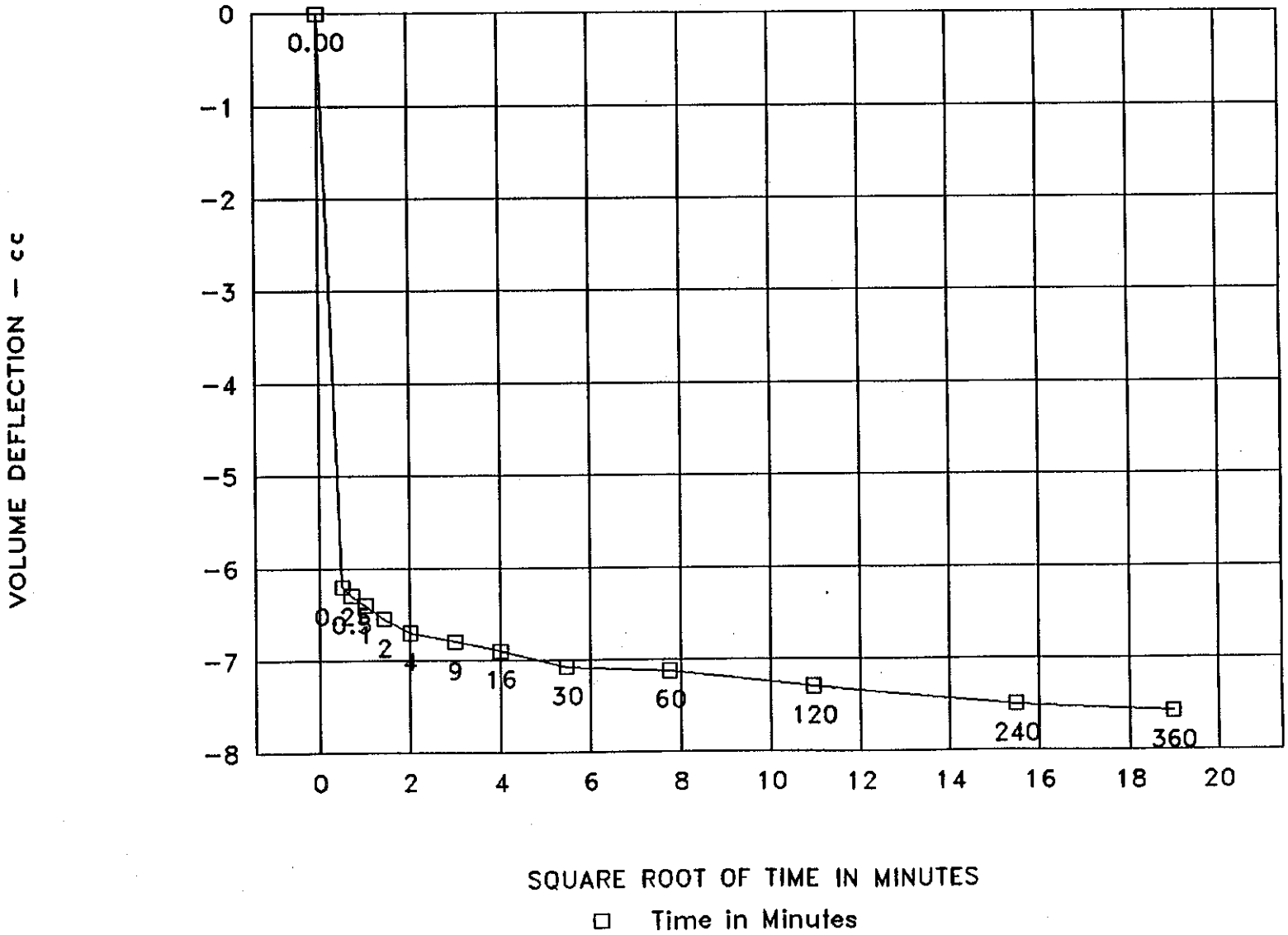
Elapsed Time (Min)	SQRT Time (Min)	Burette Reading (CC)	Volume Defl. (cc)
0.00	0.00	19.70	0.00
0.25	0.50	25.90	-6.20
0.5	0.71	26.00	-6.30
1	1.00	26.10	-6.40
2	1.41	26.25	-6.55
4	2.00	26.40	-6.70
9	3.00	26.50	-6.80
16	4.00	26.60	-6.90
30	5.48	26.78	-7.07
60	7.75	26.83	-7.13
120	10.95	27.00	-7.30
240	15.49	27.20	-7.50
360	18.97	27.28	-7.57

Initial Height	(in)	3.000	Init. Vol.	(CC)	224.30
Height Change	(in)	0.036	Vol. Change	(CC)	22.63
Ht. After Cons.	(in)	2.964	Cell Exp.	(CC)	9.80
Initial Area	(sq in)	4.562	Net Change	(CC)	12.83
Area After Cons.	(sq in)	4.353	Cons. Vol.	(CC)	211.47

ADVANCED TERRA TESTING, INC.

CONSOLIDATION DATA

CCMW-2, @ 30 - 33', 3000 psf Conf.



ORGANIC MATTER CONTENT

Hazen Research, Inc.
4601 Indiana St. • Golden, Colo. 80403
Tel: (303) 279-4501 • Telex 45-860
FAX: (303) 278-1528

DATE	June 29, 1993
HRI PROJECT	002-39P
HRI SERIES NO.	F413/93
DATE REC'D.	06/22/93
CUST P.O.#	25551-001-033

Advanced Terra Testing, Inc.
833 Parfet St., Unit B
Lakewood, CO 80215
Attn: Chris

REPORT OF ANALYSIS

SAMPLE NUMBER	SAMPLE IDENTIFICATION	Organic Carbon %
F413-1	CCMW-1 06/22/93 @ 1145 10-14'	0.14
-2	CCMW-1 06/22/93 @ 1145 30-30.5'	0.02
-3	CCMW-1 06/22/93 @ 1145 20-22' Comb	0.05
-4	CCMW-2 06/22/93 @ 1145 30-33'	0.14
-5	CCMW-2 06/22/93 @ 1145 40-43'	0.01
-6	CCMW-2 06/22/93 @ 1145 50-51.6'	0.04

By: _____
Robert Rostad
Laboratory Manager

MOISTURE AND DENSITY
ASTM D 2216 & 2937

MOISTURE AND DENSITY DETERMINATIONS

ADVANCED TERRA TESTING

CLIENT Dames + Moore

LOCATION Pinecrest City Cave Creek L.F.

JOB NO. 25551-001-053

PAGE OF

SAMPLE & SOIL TYPE	BORING	CCMW-2					→		
	SAMPLE NO.	1-2	2-3	4-5	~~6-7A~~ 3-4	6-7B			
	SAMPLE DEPTH	40-43'					→		
	DATE SAMPLED BY	5/24/93					→		
	DATE TESTED BY	6/21/93 SMW					→		
	SOIL TYPE								
	LABORATORY IDENTIFICATION								
DENSITY	NO. OF RINGS	D_0=1.433 L_0=4.258	D_0=1.483 L_0=4.945	D_0=1.922 L_0=5.515	D_0=1.921 L_0=5.576	D_0=1.935 L_0=5.484	Average		
	WT. OF WET SOIL & RINGS	317.14	360.13	415.03	390.11	423.61			
	WT. OF RINGS	119.72	119.86	121.05	119.62	120.33			
	WT. OF WET SOIL	197.42	240.27	293.98	270.49	303.28			
	WET DENSITY (LBS./CU.FT.)	109.5	114.8	127.9	115.2	130.3	119.5		
	DRY DENSITY (LBS./CU.FT.)	100.2	104.4	114.1	104.6	119.4	108.5		
MOISTURE CONTENT	DISH NO.	14B	104	33	34Z	15B.			
	WT. OF WET SOIL & DISH	42.28	51.02	69.59	74.63	67.39			
	WT. OF DRY SOIL & DISH	39.00	46.76	62.49	68.05	62.07			
	NET LOSS OF MOISTURE	3.28	4.26	7.10	6.58	5.32			
	WT. OF DISH	3.60	3.75	3.64	3.54	3.56			
	WT. OF DRY SOIL	35.4	43.01	58.85	64.51	58.51			
	MOISTURE CONTENT (% DRY WT.)	9.3	9.9	12.1	10.2	9.1	10.1		

MOISTURE AND DENSITY DETERMINATIONS

ADVANCED TERRA TESTING INC.

CLIENT Daines & Moore

LOCATION Burlington City Landfill

JOB NO. 25551-001-033

PAGE OF

SAMPLE & SOIL TYPE	BORING	CMW-1	→						
	SAMPLE NO.	1/2	3/4	5/6	7/8	9/10	11/12		
	SAMPLE DEPTH	10-14'	→						
	DATE SAMPLED BY	5/13/93							
	DATE TESTED BY	6/18/93 TNU	6/18/93 TNU	6/18/93 SR	6/18/93 TNU	6/18/93 SR	6/18/93 SR		
	SOIL TYPE	Soil/Rock	→						
	LABORATORY IDENTIFICATION							n	
DENSITY	NO. OF RINGS	D_0 = 1.424 L_0 = 4.928	D_0 = 1.428 L_0 = 5.852	D_0 = 1.411 L_0 = 5.4015	D_0 = 1.425 L_0 = 4.041	D_0 = 1.395 L_0 = 5.417	D_0 = 1.396 L_0 = 5.405	Average	
	WT. OF WET SOIL & ~~RINGS~~ Liner g	361.52	430.24	405.99	321.67	394.43	451.16		
	WT. OF ~~RINGS~~ Liner	120.36	118.98	120.62	120.69	121.05	120.41		
	WT. OF WET SOIL	241.16	311.26	285.37	200.98	273.35	330.75		
	WET DENSITY (LBS./CU.FT.)	117.1	126.5	128.7	118.8	125.8	152.3	128.2	
	DRY DENSITY (LBS./CU.FT.)	105.3	116.8	119.4	103.8	110.4	136.2	115.3	
MOISTURE CONTENT	DISH NO.	37Z	34Z	33	8Z	A29	104		
	WT. OF WET SOIL & DISH	32.67	42.82	51.03	43.84	60.65	62.41		
	WT. OF DRY SOIL & DISH	29.74	39.82 ~~29.73~~	47.62	38.76	53.67	56.20		
	NET LOSS OF MOISTURE	2.93	3.00	3.41	5.08	6.98	6.21		
	WT. OF DISH	3.62	3.63	3.64	3.70	3.70	3.79		
	WT. OF DRY SOIL	26.12	36.19	43.98	35.06	49.47	52.4		
	MOISTURE CONTENT (% DRY WT.)	11.2	8.3	7.8	14.5	14.0	11.8	11.3	

11-91

MOISTURE AND DENSITY DETERMINATIONS

ADVANCED TERRA TESTING

CLIENT Dames & Moore

LOCATION Mascoma City Cove Creek LF

JOB NO. 25551-001-033

PAGE OF

SAMPLE & SOIL TYPE	BORING	CCMW-2					→		
	SAMPLE NO.	1-2	2-3	3-4	4-5	5-6	6-7		
	SAMPLE DEPTH	30-38'					→		
	DATE SAMPLED BY	5/24/93					→		
	DATE TESTED BY	6/21/93					→		
	SOIL TYPE								
	LABORATORY IDENTIFICATION	Untestable!							
DENSITY	NO. OF RINGS	D_b = L_0 =	D_b = 1.431 L_0 = 4.651	D_b = 1.429 L_0 = 5.165	D_b = 1.435 L_0 = 3.289	D_b = 1.431 L_0 = 5.444	D_b = 1.434 L_0 = 5.045	Average	
	WT. OF WET SOIL & RINGS	Untestable for MXD	325.17	418.11	273.23	394.40	400.60		
	WT. OF RINGS		120.05	121.42	120.29	119.72	120.87		
	WT. OF WET SOIL		205.12	296.76	152.94	274.68	279.73		
	WET DENSITY (LBS./CU.FT.)		104.5	136.4	109.5	119.5	130.8	120.14	
	DRY DENSITY (LBS./CU.FT.)		91.7	121.2	89.7	89.5	110.5	100.5	
MOISTURE CONTENT	DISH NO.		26B	85B	6B	8B	32B		
	WT. OF WET SOIL & DISH		53.61	65.11	55.09	86.91	74.76		
	WT. OF DRY SOIL & DISH		47.50	58.24	45.76	65.95	63.73		
	NET LOSS OF MOISTURE		6.11	6.86	9.33	20.96	11.03		
	WT. OF DISH		3.51	3.59	3.60	3.58	3.57		
	WT. OF DRY SOIL		43.99	54.65	42.16	62.37	60.16		
	MOISTURE CONTENT (% DRY WT.)		13.9	12.6	22.1	33.6	18.3	20.1	

MOISTURE AND DENSITY DETERMINATIONS

ADVANCED TERRA TESTING

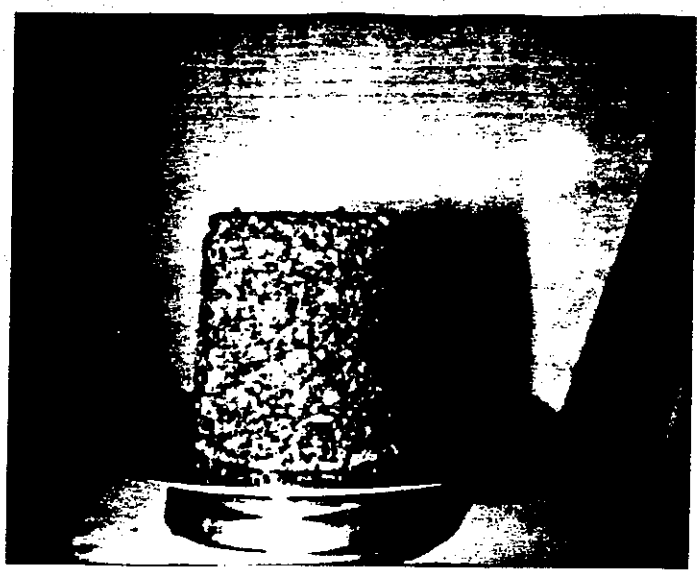
CLIENT Dames & Moore

LOCATION Mas Vegas Ck. Cap Creek L.F.

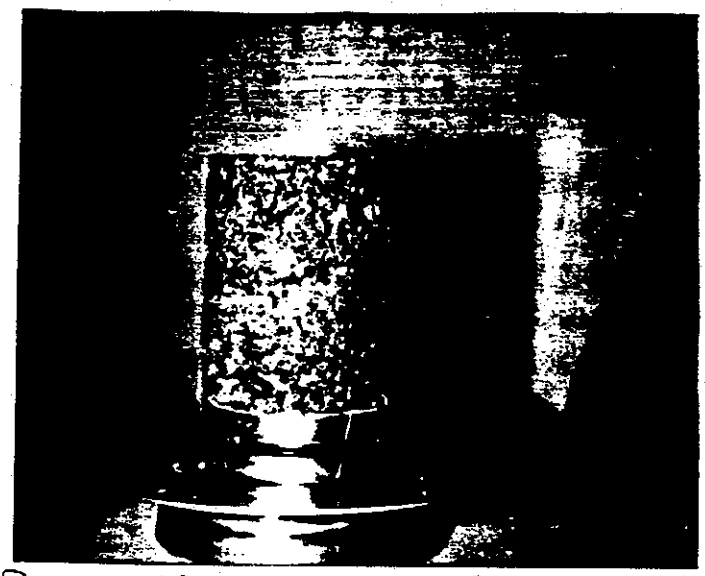
JOB NO. 25551-001-033

PAGE OF

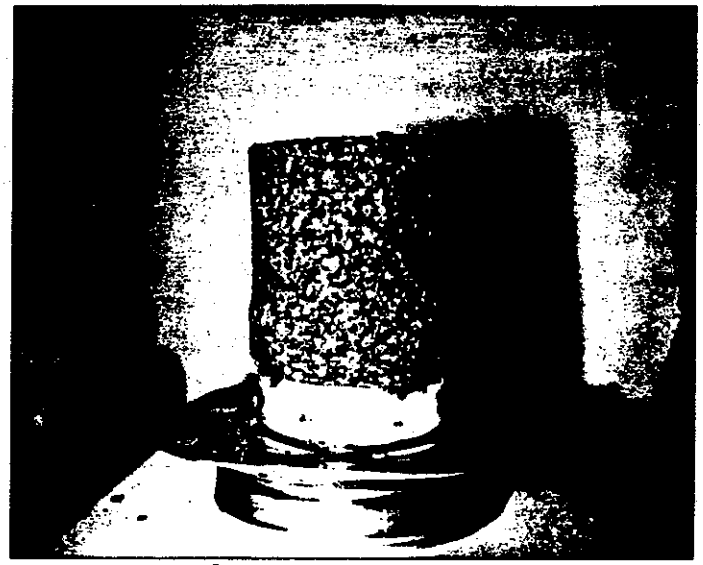
SAMPLE & SOIL TYPE	BORING	CCMW-2			→				
	SAMPLE NO.	1030 1-2	3-4	5-6					
	SAMPLE DEPTH	50-51.6			→				
	DATE SAMPLED BY	5/27/93			→				
	DATE TESTED BY	6/21/93 DMJ			→				
	SOIL TYPE								
	LABORATORY IDENTIFICATION								
DENSITY	NO. OF RINGS	Do=1.431 Lo=5.325	Do=1.429 Lo=5.655	Do=1.434 Lo=5.833	Average				
	WT. OF WET SOIL & RINGS	423.45	392.54	409.96					
	WT. OF RINGS	120.76	120.88	120.71					
	WT. OF WET SOIL	302.69	271.66	289.25					
	WET DENSITY (LBS./CU.FT.)	134.6	114.1	117.0	121.9				
	DRY DENSITY (LBS./CU.FT.)	126.3	107.7	106.7	113.6				
MOISTURE CONTENT	DISH NO.	34B	7B	13B					
	WT. OF WET SOIL & DISH	78.23	56.36	55.23					
	WT. OF DRY SOIL & DISH	73.61	53.41	50.71					
	NET LOSS OF MOISTURE	4.62	2.95	4.52					
	WT. OF DISH	3.60	3.58	3.59					
	WT. OF DRY SOIL	70.01	49.83	47.12					
	MOISTURE CONTENT (% DRY WT.)	6.6	5.9	9.6	7.4				



Dames & Moore 25551-001-033
Maricopa County - Cave Creek Landfill
CCMW-2 @ 30-33'
TX/PBP $\bar{\sigma}_3$ = 3,000 PSF



Dames + Moore 25551-001-033
Maricopa Cty. Cave Creek Landfill
CCMW-1 @ 10-14'
TX/PBP $\bar{\sigma}_3$ = 1,000 PSF



Dames & Moore 25551-001-033
Maricopa Cty - Cave Creek Landfill
CCMW-2 @ 40-43'
TX/PBP $\bar{\sigma}_3$ = 4,000 PSF

APPENDIX G

AQUIFER TEST DATA

SE1000C
Environmental Logger
06/22 14:29

Unit# 00498 Test 0

INPUT 1: Level (F) TOC

Reference	621.000
Linearity	0.090
Scale factor	50.520
Offset	-0.200
Delay mSEC	50.000

Step 0 06/22 09:49:46

Elapsed Time	INPUT 1
0.0000	621.416
0.0033	621.432
0.0066	621.432
0.0100	621.432
0.0133	621.432
0.0166	621.448
0.0200	621.448
0.0233	621.448
0.0266	621.448
0.0300	621.448
0.0333	621.464
0.0500	621.480
0.0666	621.496
0.0833	621.496
0.1000	621.512
0.1166	621.528
0.1333	621.528
0.1500	621.544
0.1666	621.544
0.1833	621.560
0.2000	621.560
0.2166	621.576
0.2333	621.576
0.2500	621.576
0.2666	621.576
0.2833	621.576
0.3000	621.592
0.3166	621.592
0.3333	621.592
0.4166	621.608
0.5000	621.608
0.5833	621.608
0.6666	621.608
0.7500	621.608
0.8333	621.608
0.9166	621.592
1.0000	621.592
1.0833	621.576
1.1666	621.576
1.2500	621.576
1.3333	621.560
1.4166	621.544
1.5000	621.544
1.5833	621.528
1.6666	621.512
1.7500	621.512
1.8333	621.496
1.9166	621.496
2.0000	621.480
2.5000	621.448
3.0000	621.416
3.5000	621.384
4.0000	621.352
4.5000	621.304
5.0000	621.288
5.5000	621.288
6.0000	621.288
6.5000	621.288
7.0000	621.288
7.5000	621.288
8.0000	621.288
8.5000	621.288
9.0000	621.288
9.5000	621.288
10.0000	621.288
12.0000	621.288
14.0000	621.272
16.0000	621.272
18.0000	621.288
20.0000	621.288
22.0000	621.288
24.0000	621.288
26.0000	621.288
28.0000	621.288
30.0000	621.288
32.0000	621.288
34.0000	621.288
36.0000	621.288
38.0000	621.288
40.0000	621.288
42.0000	621.288
44.0000	621.288
46.0000	621.272
48.0000	621.288
50.0000	621.288
52.0000	621.288
54.0000	621.288
56.0000	621.288
58.0000	621.288
60.0000	621.288
62.0000	621.288
64.0000	621.288
66.0000	621.288
68.0000	621.304
70.0000	621.288
72.0000	621.304
74.0000	621.304
76.0000	621.304
78.0000	621.304
80.0000	621.304
82.0000	621.288
84.0000	621.288
86.0000	621.288
88.0000	621.288
90.0000	621.288
92.0000	621.304
94.0000	621.288
96.0000	621.288
98.0000	621.288
100.000	621.288
110.000	621.288
120.000	621.288
130.000	621.304
140.000	621.288
150.000	621.272
160.000	621.272
170.000	621.272
180.000	621.272
190.000	621.272
200.000	621.256
210.000	621.288
220.000	621.256
230.000	621.256
240.000	621.256
250.000	621.240

APPENDIX H

HELP MODEL INPUT

HELP MODEL RUN WITH
EXISTING COVER
YEARS 1-12

****
****

CAVE CREEK LANDFILL
CLOSURE CAP. YEARS 13 THROUGH 32
NOVEMBER 24,1993 CCLFB.OUT

****
****

LAYER 1

VERTICAL PERCOLATION LAYER

THICKNESS	=	6.00 INCHES
POROSITY	=	0.3000 VOL/VOL
FIELD CAPACITY	=	0.2000 VOL/VOL
WILTING POINT	=	0.1500 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.1500 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.000049999999 CM/SEC

LAYER 2

VERTICAL PERCOLATION LAYER

THICKNESS	=	18.00 INCHES
POROSITY	=	0.3000 VOL/VOL
FIELD CAPACITY	=	0.2000 VOL/VOL
WILTING POINT	=	0.1500 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.1500 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.000010000000 CM/SEC

LAYER 3

VERTICAL PERCOLATION LAYER

THICKNESS	=	12.00 INCHES
POROSITY	=	0.3000 VOL/VOL
FIELD CAPACITY	=	0.2000 VOL/VOL
WILTING POINT	=	0.0800 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.1028 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.005299999844 CM/SEC

LAYER 4

VERTICAL PERCOLATION LAYER

THICKNESS	=	960.00 INCHES
POROSITY	=	0.5200 VOL/VOL
FIELD CAPACITY	=	0.2900 VOL/VOL
WILTING POINT	=	0.1400 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.2405 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.000199999995 CM/SEC

GENERAL SIMULATION DATA

SCS RUNOFF CURVE NUMBER	=	95.00
TOTAL AREA OF COVER	=	2000000. SQ FT
EVAPORATIVE ZONE DEPTH	=	18.00 INCHES
UPPER LIMIT VEG. STORAGE	=	5.4000 INCHES
INITIAL VEG. STORAGE	=	2.7000 INCHES
INITIAL SNOW WATER CONTENT	=	0.0000 INCHES
INITIAL TOTAL WATER STORAGE IN SOIL AND WASTE LAYERS	=	235.7136 INCHES

SOIL WATER CONTENT INITIALIZED BY USER.

CLIMATOLOGICAL DATA

SYNTHETIC RAINFALL WITH SYNTHETIC DAILY TEMPERATURES AND
SOLAR RADIATION FOR PHOENIX ARIZONA

MAXIMUM LEAF AREA INDEX	=	0.00
START OF GROWING SEASON (JULIAN DATE)	=	62
END OF GROWING SEASON (JULIAN DATE)	=	348

NORMAL MEAN MONTHLY TEMPERATURES, DEGREES FAHRENHEIT

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
52.00	56.00	61.00	68.00	77.00	86.00
92.00	90.00	85.00	73.00	61.00	53.00

****

ANNUAL TOTALS FOR YEAR 1

	(INCHES)	(CU. FT.)	PERCENT

PRECIPITATION	6.16	1026667.	100.00
RUNOFF	1.322	220367.	21.46
EVAPOTRANSPIRATION	4.380	729945.	71.10
PERCOLATION FROM LAYER 4	0.1481	24680.	2.40
CHANGE IN WATER STORAGE	0.310	51674.	5.03
SOIL WATER AT START OF YEAR	235.71	39285600.	
SOIL WATER AT END OF YEAR	236.02	39337276.	
SNOW WATER AT START OF YEAR	0.00	0.	
SNOW WATER AT END OF YEAR	0.00	0.	
ANNUAL WATER BUDGET BALANCE	0.00	1.	0.00

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ANNUAL TOTALS FOR YEAR 2

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	7.57	1261667.	100.00
RUNOFF	1.440	240029.	19.02
EVAPOTRANSPIRATION	5.476	912622.	72.33
PERCOLATION FROM LAYER 4	0.1475	24579.	1.95
CHANGE IN WATER STORAGE	0.507	84437.	6.69
SOIL WATER AT START OF YEAR	236.02	39337276.	
SOIL WATER AT END OF YEAR	236.53	39421712.	
SNOW WATER AT START OF YEAR	0.00	0.	
SNOW WATER AT END OF YEAR	0.00	0.	
ANNUAL WATER BUDGET BALANCE	0.00	-1.	0.00

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ANNUAL TOTALS FOR YEAR 3

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	8.96	1493333.	100.00
RUNOFF	2.340	390068.	26.12
EVAPOTRANSPIRATION	6.440	1073409.	71.88
PERCOLATION FROM LAYER 4	0.1465	24420.	1.64
CHANGE IN WATER STORAGE	0.033	5435.	0.36
SOIL WATER AT START OF YEAR	236.53	39421712.	
SOIL WATER AT END OF YEAR	236.56	39427148.	
SNOW WATER AT START OF YEAR	0.00	0.	
SNOW WATER AT END OF YEAR	0.00	0.	
ANNUAL WATER BUDGET BALANCE	0.00	1.	0.00

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ANNUAL TOTALS FOR YEAR 4

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	7.87	1311667.	100.00
RUNOFF	1.990	331610.	25.28
EVAPOTRANSPIRATION	5.356	892747.	68.06
PERCOLATION FROM LAYER 4	0.1459	24311.	1.85
CHANGE IN WATER STORAGE	0.378	62998.	4.80
SOIL WATER AT START OF YEAR	236.56	39427148.	
SOIL WATER AT END OF YEAR	236.94	39490144.	
SNOW WATER AT START OF YEAR	0.00	0.	
SNOW WATER AT END OF YEAR	0.00	0.	
ANNUAL WATER BUDGET BALANCE	0.00	1.	0.00

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ANNUAL TOTALS FOR YEAR 5

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	6.38	1063333.	100.00
RUNOFF	0.924	154047.	14.49
EVAPOTRANSPIRATION	5.903	983771.	92.52
PERCOLATION FROM LAYER 4	0.1445	24080.	2.26
CHANGE IN WATER STORAGE	-0.591	-98564.	-9.27
SOIL WATER AT START OF YEAR	236.94	39490144.	
SOIL WATER AT END OF YEAR	236.35	39391580.	
SNOW WATER AT START OF YEAR	0.00	0.	
SNOW WATER AT END OF YEAR	0.00	0.	
ANNUAL WATER BUDGET BALANCE	0.00	0.	0.00

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ANNUAL TOTALS FOR YEAR 6

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	7.73	1288333.	100.00
RUNOFF	1.054	175678.	13.64
EVAPOTRANSPIRATION	7.070	1178317.	91.46
PERCOLATION FROM LAYER 4	0.1444	24065.	1.87
CHANGE IN WATER STORAGE	-0.538	-89727.	-6.96
SOIL WATER AT START OF YEAR	236.35	39391580.	
SOIL WATER AT END OF YEAR	235.81	39301856.	
SNOW WATER AT START OF YEAR	0.00	0.	
SNOW WATER AT END OF YEAR	0.00	0.	
ANNUAL WATER BUDGET BALANCE	0.00	1.	0.00

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ANNUAL TOTALS FOR YEAR 7

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	8.37	1395000.	100.00
RUNOFF	1.389	231459.	16.59
EVAPOTRANSPIRATION	6.294	1048937.	75.19
PERCOLATION FROM LAYER 4	0.1440	24008.	1.72
CHANGE IN WATER STORAGE	0.544	90597.	6.49
SOIL WATER AT START OF YEAR	235.81	39301856.	
SOIL WATER AT END OF YEAR	236.35	39392452.	
SNOW WATER AT START OF YEAR	0.00	0.	
SNOW WATER AT END OF YEAR	0.00	0.	
ANNUAL WATER BUDGET BALANCE	0.00	-1.	0.00

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ANNUAL TOTALS FOR YEAR 8

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	6.02	1003333.	100.00
RUNOFF	0.532	88596.	8.83
EVAPOTRANSPIRATION	5.040	840028.	83.72
PERCOLATION FROM LAYER 4	0.1437	23955.	2.39
CHANGE IN WATER STORAGE	0.305	50753.	5.06
SOIL WATER AT START OF YEAR	236.35	39392452.	
SOIL WATER AT END OF YEAR	236.66	39443204.	
SNOW WATER AT START OF YEAR	0.00	0.	
SNOW WATER AT END OF YEAR	0.00	0.	
ANNUAL WATER BUDGET BALANCE	0.00	1.	0.00

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ANNUAL TOTALS FOR YEAR 9

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	12.83	2138334.	100.00
RUNOFF	3.185	530840.	24.82
EVAPOTRANSPIRATION	9.515	1585765.	74.16
PERCOLATION FROM LAYER 4	0.1431	23854.	1.12
CHANGE IN WATER STORAGE	-0.013	-2126.	-0.10
SOIL WATER AT START OF YEAR	236.66	39443204.	
SOIL WATER AT END OF YEAR	236.65	39441080.	
SNOW WATER AT START OF YEAR	0.00	0.	
SNOW WATER AT END OF YEAR	0.00	0.	
ANNUAL WATER BUDGET BALANCE	0.00	1.	0.00

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ANNUAL TOTALS FOR YEAR 10

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	8.42	1403333.	100.00
RUNOFF	1.444	240668.	17.15
EVAPOTRANSPIRATION	6.488	1081339.	77.06
PERCOLATION FROM LAYER 4	0.1439	23983.	1.71
CHANGE IN WATER STORAGE	0.344	57345.	4.09
SOIL WATER AT START OF YEAR	236.65	39441080.	
SOIL WATER AT END OF YEAR	236.99	39498424.	
SNOW WATER AT START OF YEAR	0.00	0.	
SNOW WATER AT END OF YEAR	0.00	0.	
ANNUAL WATER BUDGET BALANCE	0.00	-1.	0.00

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ANNUAL TOTALS FOR YEAR 11

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	7.82	1303333.	100.00
RUNOFF	1.570	261716.	20.08
EVAPOTRANSPIRATION	6.300	1049947.	80.56
PERCOLATION FROM LAYER 4	0.1439	23989.	1.84
CHANGE IN WATER STORAGE	-0.194	-32318.	-2.48
SOIL WATER AT START OF YEAR	236.99	39498424.	
SOIL WATER AT END OF YEAR	236.80	39466104.	
SNOW WATER AT START OF YEAR	0.00	0.	
SNOW WATER AT END OF YEAR	0.00	0.	
ANNUAL WATER BUDGET BALANCE	0.00	0.	0.00

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ANNUAL TOTALS FOR YEAR 12

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	8.86	1476667.	100.00
RUNOFF	0.680	113308.	7.67
EVAPOTRANSPIRATION	8.425	1404146.	95.09
PERCOLATION FROM LAYER 4	0.1446	24108.	1.63
CHANGE IN WATER STORAGE	-0.389	-64896.	-4.39
SOIL WATER AT START OF YEAR	236.80	39466104.	
SOIL WATER AT END OF YEAR	236.41	39401208.	
SNOW WATER AT START OF YEAR	0.00	0.	
SNOW WATER AT END OF YEAR	0.00	0.	

ANNUAL WATER BUDGET BALANCE	0.00	1.	0.00

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ANNUAL TOTALS FOR YEAR 13

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	8.76	1460000.	100.00
RUNOFF	2.595	432501.	29.62
EVAPOTRANSPIRATION	6.132	1022011.	70.00
PERCOLATION FROM LAYER 4	0.1446	24092.	1.65
CHANGE IN WATER STORAGE	-0.112	-18603.	-1.27
SOIL WATER AT START OF YEAR	236.41	39401208.	
SOIL WATER AT END OF YEAR	236.30	39382608.	
SNOW WATER AT START OF YEAR	0.00	0.	
SNOW WATER AT END OF YEAR	0.00	0.	
ANNUAL WATER BUDGET BALANCE	0.00	-1.	0.00

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ANNUAL TOTALS FOR YEAR 14

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	7.69	1281667.	100.00
RUNOFF	1.753	292181.	22.80
EVAPOTRANSPIRATION	5.140	856700.	66.84
PERCOLATION FROM LAYER 4	0.1452	24200.	1.89
CHANGE IN WATER STORAGE	0.652	108584.	8.47
SOIL WATER AT START OF YEAR	236.30	39382608.	
SOIL WATER AT END OF YEAR	236.95	39491192.	
SNOW WATER AT START OF YEAR	0.00	0.	

SNOW WATER AT END OF YEAR	0.00	0.	
ANNUAL WATER BUDGET BALANCE	0.00	1.	0.00

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ANNUAL TOTALS FOR YEAR 15

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	5.92	986667.	100.00
RUNOFF	0.713	118892.	12.05
EVAPOTRANSPIRATION	5.204	867307.	87.90
PERCOLATION FROM LAYER 4	0.1474	24567.	2.49
CHANGE IN WATER STORAGE	-0.145	-24099.	-2.44
SOIL WATER AT START OF YEAR	236.95	39491192.	
SOIL WATER AT END OF YEAR	236.80	39467092.	
SNOW WATER AT START OF YEAR	0.00	0.	
SNOW WATER AT END OF YEAR	0.00	0.	
ANNUAL WATER BUDGET BALANCE	0.00	0.	0.00

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ANNUAL TOTALS FOR YEAR 16

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	10.49	1748333.	100.00
RUNOFF	1.923	320516.	18.33
EVAPOTRANSPIRATION	8.894	1482289.	84.78
PERCOLATION FROM LAYER 4	0.1484	24725.	1.41
CHANGE IN WATER STORAGE	-0.475	-79198.	-4.53
SOIL WATER AT START OF YEAR	236.80	39467092.	
SOIL WATER AT END OF YEAR	236.33	39387892.	

SNOW WATER AT START OF YEAR	0.00	0.	
SNOW WATER AT END OF YEAR	0.00	0.	
ANNUAL WATER BUDGET BALANCE	0.00	2.	0.00

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ANNUAL TOTALS FOR YEAR 17

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	10.22	1703333.	100.00
RUNOFF	1.812	301975.	17.73
EVAPOTRANSPIRATION	8.052	1341950.	78.78
PERCOLATION FROM LAYER 4	0.1473	24556.	1.44
CHANGE IN WATER STORAGE	0.209	34854.	2.05
SOIL WATER AT START OF YEAR	236.33	39387892.	
SOIL WATER AT END OF YEAR	236.54	39422748.	
SNOW WATER AT START OF YEAR	0.00	0.	
SNOW WATER AT END OF YEAR	0.00	0.	
ANNUAL WATER BUDGET BALANCE	0.00	-1.	0.00

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ANNUAL TOTALS FOR YEAR 18

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	4.99	831667.	100.00
RUNOFF	0.542	90345.	10.86
EVAPOTRANSPIRATION	4.971	828544.	99.62
PERCOLATION FROM LAYER 4	0.1465	24411.	2.94
CHANGE IN WATER STORAGE	-0.670	-111633.	-13.42
SOIL WATER AT START OF YEAR	236.54	39422748.	

SOIL WATER AT END OF YEAR	235.87	39311112.	
SNOW WATER AT START OF YEAR	0.00	0.	
SNOW WATER AT END OF YEAR	0.00	0.	
ANNUAL WATER BUDGET BALANCE	0.00	0.	0.00

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ANNUAL TOTALS FOR YEAR 19

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	10.06	1676667.	100.00
RUNOFF	1.656	275935.	16.46
EVAPOTRANSPIRATION	7.423	1237243.	73.79
PERCOLATION FROM LAYER 4	0.1455	24250.	1.45
CHANGE IN WATER STORAGE	0.835	139236.	8.30
SOIL WATER AT START OF YEAR	235.87	39311112.	
SOIL WATER AT END OF YEAR	236.70	39450352.	
SNOW WATER AT START OF YEAR	0.00	0.	
SNOW WATER AT END OF YEAR	0.00	0.	
ANNUAL WATER BUDGET BALANCE	0.00	2.	0.00

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ANNUAL TOTALS FOR YEAR 20

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	6.10	1016667.	100.00
RUNOFF	0.774	128999.	12.69
EVAPOTRANSPIRATION	5.485	914238.	89.93
PERCOLATION FROM LAYER 4	0.1454	24239.	2.38
CHANGE IN WATER STORAGE	-0.305	-50809.	-5.00

SOIL WATER AT START OF YEAR	236.70	39450352.	
SOIL WATER AT END OF YEAR	236.40	39399540.	
SNOW WATER AT START OF YEAR	0.00	0.	
SNOW WATER AT END OF YEAR	0.00	0.	
ANNUAL WATER BUDGET BALANCE	0.00	0.	0.00

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AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 20

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	0.71	0.67	0.90	0.28	0.34	0.04
	1.04	0.68	0.90	0.85	0.69	0.95
STD. DEVIATIONS	0.74	0.53	1.24	0.25	0.69	0.07
	0.85	0.39	0.98	1.01	0.82	0.83
RUNOFF						
TOTALS	0.114	0.063	0.164	0.014	0.114	0.000
	0.176	0.036	0.267	0.211	0.111	0.211
STD. DEVIATIONS	0.217	0.149	0.358	0.031	0.301	0.000
	0.332	0.044	0.444	0.332	0.288	0.301
EVAPOTRANSPIRATION						
TOTALS	0.551	0.577	0.820	0.463	0.360	0.139
	0.413	0.462	0.703	0.688	0.566	0.657
STD. DEVIATIONS	0.476	0.413	0.770	0.373	0.353	0.089
	0.495	0.317	0.632	0.753	0.523	0.457
PERCOLATION FROM LAYER 4						
TOTALS	0.0124	0.0113	0.0124	0.0120	0.0124	0.0120
	0.0124	0.0124	0.0120	0.0123	0.0119	0.0123
STD. DEVIATIONS	0.0001	0.0002	0.0001	0.0001	0.0001	0.0001
	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001

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AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 20

	(INCHES)		(CU. FT.)	PERCENT
PRECIPITATION	8.06	(1.899)	1343500.	100.00
RUNOFF	1.482	(0.711)	246986.	18.38
EVAPOTRANSPIRATION	6.399	(1.421)	1066563.	79.39
PERCOLATION FROM LAYER 4	0.1455	(0.0016)	24254.	1.81
CHANGE IN WATER STORAGE	0.034	(0.446)	5697.	0.42

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PEAK DAILY VALUES FOR YEARS 1 THROUGH 20

	(INCHES)	(CU. FT.)
PRECIPITATION	1.82	303333.3
RUNOFF	1.020	170025.7
PERCOLATION FROM LAYER 4	0.0004	67.7
SNOW WATER	0.00	0.0

MAXIMUM VEG. SOIL WATER (VOL/VOL) 0.2713

MINIMUM VEG. SOIL WATER (VOL/VOL) 0.1494

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FINAL WATER STORAGE AT END OF YEAR 20

LAYER	(INCHES)	(VOL/VOL)
1	1.05	0.1748
2	3.70	0.2054
3	1.12	0.0932
4	230.53	0.2401

SNOW WATER 0.00

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HELP MODEL RUN WITH
CLOSURE CAP
YEARS 13-32

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 CAVE CREEK LANDFILL
 EXISTING COVER. YEARS 1 THROUGH 12
 NOVEMBER 24 1993. FILE CCLFA.OUT

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LAYER 1

VERTICAL PERCOLATION LAYER

THICKNESS	=	12.00 INCHES
POROSITY	=	0.3000 VOL/VOL
FIELD CAPACITY	=	0.2000 VOL/VOL
WILTING POINT	=	0.0800 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0800 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.005299999844 CM/SEC

LAYER 2

VERTICAL PERCOLATION LAYER

THICKNESS	=	960.00 INCHES
POROSITY	=	0.5200 VOL/VOL
FIELD CAPACITY	=	0.2900 VOL/VOL
WILTING POINT	=	0.1400 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.2300 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.000199999995 CM/SEC

GENERAL SIMULATION DATA

SCS RUNOFF CURVE NUMBER	=	90.00
TOTAL AREA OF COVER	=	2000000. SQ FT
EVAPORATIVE ZONE DEPTH	=	18.00 INCHES
UPPER LIMIT VEG. STORAGE	=	6.7200 INCHES
INITIAL VEG. STORAGE	=	2.3400 INCHES
INITIAL SNOW WATER CONTENT	=	0.0000 INCHES

INITIAL TOTAL WATER STORAGE IN
SOIL AND WASTE LAYERS = 221.7600 INCHES

SOIL WATER CONTENT INITIALIZED BY USER.

CLIMATOLOGICAL DATA

SYNTHETIC RAINFALL WITH SYNTHETIC DAILY TEMPERATURES AND
SOLAR RADIATION FOR PHOENIX ARIZONA

MAXIMUM LEAF AREA INDEX = 0.00
START OF GROWING SEASON (JULIAN DATE) = 62
END OF GROWING SEASON (JULIAN DATE) = 348

NORMAL MEAN MONTHLY TEMPERATURES, DEGREES FAHRENHEIT

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
52.00	56.00	61.00	68.00	77.00	86.00
92.00	90.00	85.00	73.00	61.00	53.00

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ANNUAL TOTALS FOR YEAR 1

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	6.16	1026667.	100.00
RUNOFF	0.107	17812.	1.73
EVAPOTRANSPIRATION	4.832	805415.	78.45
PERCOLATION FROM LAYER 2	0.0813	13547.	1.32
CHANGE IN WATER STORAGE	1.139	189893.	18.50
SOIL WATER AT START OF YEAR	221.76	36960000.	
SOIL WATER AT END OF YEAR	222.90	37149892.	
SNOW WATER AT START OF YEAR	0.00	0.	
SNOW WATER AT END OF YEAR	0.00	0.	
ANNUAL WATER BUDGET BALANCE	0.00	0.	0.00

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ANNUAL TOTALS FOR YEAR 2

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	7.57	1261667.	100.00
RUNOFF	0.323	53753.	4.26
EVAPOTRANSPIRATION	6.302	1050361.	83.25
PERCOLATION FROM LAYER 2	0.0884	14738.	1.17
CHANGE IN WATER STORAGE	0.857	142815.	11.32
SOIL WATER AT START OF YEAR	222.90	37149892.	
SOIL WATER AT END OF YEAR	223.76	37292708.	
SNOW WATER AT START OF YEAR	0.00	0.	
SNOW WATER AT END OF YEAR	0.00	0.	
ANNUAL WATER BUDGET BALANCE	0.00	0.	0.00

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ANNUAL TOTALS FOR YEAR 3

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	8.96	1493333.	100.00
RUNOFF	0.301	50148.	3.36
EVAPOTRANSPIRATION	7.464	1243936.	83.30
PERCOLATION FROM LAYER 2	0.0940	15660.	1.05
CHANGE IN WATER STORAGE	1.102	183589.	12.29
SOIL WATER AT START OF YEAR	223.76	37292708.	
SOIL WATER AT END OF YEAR	224.86	37476296.	
SNOW WATER AT START OF YEAR	0.00	0.	
SNOW WATER AT END OF YEAR	0.00	0.	
ANNUAL WATER BUDGET BALANCE	0.00	1.	0.00

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ANNUAL TOTALS FOR YEAR 4

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	7.87	1311667.	100.00
RUNOFF	0.274	45594.	3.48
EVAPOTRANSPIRATION	6.018	1003062.	76.47
PERCOLATION FROM LAYER 2	0.0993	16542.	1.26
CHANGE IN WATER STORAGE	1.479	246470.	18.79
SOIL WATER AT START OF YEAR	224.86	37476296.	
SOIL WATER AT END OF YEAR	226.34	37722764.	
SNOW WATER AT START OF YEAR	0.00	0.	
SNOW WATER AT END OF YEAR	0.00	0.	
ANNUAL WATER BUDGET BALANCE	0.00	-2.	0.00

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ANNUAL TOTALS FOR YEAR 5

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	6.38	1063333.	100.00
RUNOFF	0.095	15811.	1.49
EVAPOTRANSPIRATION	6.418	1069612.	100.59
PERCOLATION FROM LAYER 2	0.1047	17456.	1.64
CHANGE IN WATER STORAGE	-0.237	-39546.	-3.72
SOIL WATER AT START OF YEAR	226.34	37722764.	
SOIL WATER AT END OF YEAR	226.10	37683220.	
SNOW WATER AT START OF YEAR	0.00	0.	
SNOW WATER AT END OF YEAR	0.00	0.	
ANNUAL WATER BUDGET BALANCE	0.00	0.	0.00

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ANNUAL TOTALS FOR YEAR 6

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	7.73	1288333.	100.00
RUNOFF	0.166	27713.	2.15
EVAPOTRANSPIRATION	7.039	1173199.	91.06
PERCOLATION FROM LAYER 2	0.1067	17780.	1.38
CHANGE IN WATER STORAGE	0.418	69641.	5.41
SOIL WATER AT START OF YEAR	226.10	37683220.	
SOIL WATER AT END OF YEAR	226.52	37752860.	
SNOW WATER AT START OF YEAR	0.00	0.	
SNOW WATER AT END OF YEAR	0.00	0.	
ANNUAL WATER BUDGET BALANCE	0.00	1.	0.00

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ANNUAL TOTALS FOR YEAR 7

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	8.37	1395000.	100.00
RUNOFF	0.153	25514.	1.83
EVAPOTRANSPIRATION	7.317	1219418.	87.41
PERCOLATION FROM LAYER 2	0.1132	18862.	1.35
CHANGE IN WATER STORAGE	0.787	131205.	9.41
SOIL WATER AT START OF YEAR	226.52	37752860.	
SOIL WATER AT END OF YEAR	227.30	37884068.	
SNOW WATER AT START OF YEAR	0.00	0.	
SNOW WATER AT END OF YEAR	0.00	0.	
ANNUAL WATER BUDGET BALANCE	0.00	0.	0.00

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ANNUAL TOTALS FOR YEAR 8

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	6.02	1003333.	100.00
RUNOFF	0.035	5835.	0.58
EVAPOTRANSPIRATION	4.718	786260.	78.36
PERCOLATION FROM LAYER 2	0.1144	19065.	1.90
CHANGE IN WATER STORAGE	1.153	192174.	19.15
SOIL WATER AT START OF YEAR	227.30	37884068.	
SOIL WATER AT END OF YEAR	228.46	38076240.	
SNOW WATER AT START OF YEAR	0.00	0.	
SNOW WATER AT END OF YEAR	0.00	0.	
ANNUAL WATER BUDGET BALANCE	0.00	-1.	0.00

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ANNUAL TOTALS FOR YEAR 9

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	12.83	2138334.	100.00
RUNOFF	0.477	79547.	3.72
EVAPOTRANSPIRATION	10.650	1775024.	83.01
PERCOLATION FROM LAYER 2	0.1265	21080.	0.99
CHANGE IN WATER STORAGE	1.576	262683.	12.28
SOIL WATER AT START OF YEAR	228.46	38076240.	
SOIL WATER AT END OF YEAR	230.03	38338924.	
SNOW WATER AT START OF YEAR	0.00	0.	
SNOW WATER AT END OF YEAR	0.00	0.	
ANNUAL WATER BUDGET BALANCE	0.00	0.	0.00

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ANNUAL TOTALS FOR YEAR 10

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	8.42	1403333.	100.00
RUNOFF	0.139	23174.	1.65
EVAPOTRANSPIRATION	6.523	1087134.	77.47
PERCOLATION FROM LAYER 2	0.1342	22370.	1.59
CHANGE IN WATER STORAGE	1.624	270655.	19.29
SOIL WATER AT START OF YEAR	230.03	38338924.	
SOIL WATER AT END OF YEAR	231.66	38609580.	
SNOW WATER AT START OF YEAR	0.00	0.	
SNOW WATER AT END OF YEAR	0.00	0.	
ANNUAL WATER BUDGET BALANCE	0.00	0.	0.00

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ANNUAL TOTALS FOR YEAR 11

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	7.82	1303333.	100.00
RUNOFF	0.197	32808.	2.52
EVAPOTRANSPIRATION	6.499	1083116.	83.10
PERCOLATION FROM LAYER 2	0.1418	23637.	1.81
CHANGE IN WATER STORAGE	0.983	163773.	12.57
SOIL WATER AT START OF YEAR	231.66	38609580.	
SOIL WATER AT END OF YEAR	232.64	38773352.	
SNOW WATER AT START OF YEAR	0.00	0.	
SNOW WATER AT END OF YEAR	0.00	0.	

ANNUAL WATER BUDGET BALANCE	0.00	1.	0.00

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ANNUAL TOTALS FOR YEAR 12

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	8.86	1476667.	100.00
RUNOFF	0.054	9031.	0.61
EVAPOTRANSPIRATION	9.217	1536235.	104.03
PERCOLATION FROM LAYER 2	0.1500	25004.	1.69
CHANGE IN WATER STORAGE	-0.562	-93605.	-6.34
SOIL WATER AT START OF YEAR	232.64	38773352.	
SOIL WATER AT END OF YEAR	232.08	38679744.	
SNOW WATER AT START OF YEAR	0.00	0.	
SNOW WATER AT END OF YEAR	0.00	0.	
ANNUAL WATER BUDGET BALANCE	0.00	1.	0.00

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AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 12

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	0.75	0.78	1.13	0.26	0.26	0.02
	1.04	0.69	0.75	0.65	0.77	0.98
STD. DEVIATIONS	0.85	0.62	1.53	0.29	0.63	0.05
	1.01	0.34	0.82	0.78	0.98	0.86
RUNOFF						
TOTALS	0.010	0.003	0.030	0.003	0.026	0.000
	0.029	0.007	0.019	0.022	0.010	0.033

STD. DEVIATIONS	0.030	0.006	0.058	0.007	0.091	0.000
	0.077	0.010	0.046	0.042	0.025	0.063

EVAPOTRANSPIRATION

TOTALS	0.789	0.731	1.042	0.396	0.357	0.126
	0.490	0.414	0.698	0.777	0.521	0.575
STD. DEVIATIONS	0.694	0.518	1.065	0.384	0.487	0.103
	0.643	0.405	0.764	0.969	0.612	0.563

PERCOLATION FROM LAYER 2

TOTALS	0.0094	0.0086	0.0095	0.0092	0.0095	0.0092
	0.0096	0.0096	0.0093	0.0097	0.0094	0.0098
STD. DEVIATIONS	0.0018	0.0017	0.0018	0.0018	0.0018	0.0018
	0.0018	0.0018	0.0018	0.0019	0.0017	0.0018

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AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 12

	(INCHES)		(CU. FT.)	PERCENT
PRECIPITATION	8.08	(1.795)	1347083.	100.00
RUNOFF	0.193	(0.129)	32228.	2.39
EVAPOTRANSPIRATION	6.916	(1.669)	1152731.	85.57
PERCOLATION FROM LAYER 2	0.1129	(0.0215)	18812.	1.40
CHANGE IN WATER STORAGE	0.860	(0.684)	143312.	10.64

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PEAK DAILY VALUES FOR YEARS 1 THROUGH 12

	(INCHES)	(CU. FT.)
PRECIPITATION	1.64	273333.3
RUNOFF	0.295	49190.4
PERCOLATION FROM LAYER 2	0.0004	68.7
SNOW WATER	0.00	0.0

MAXIMUM VEG. SOIL WATER (VOL/VOL) 0.2424

MINIMUM VEG. SOIL WATER (VOL/VOL) 0.0969

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FINAL WATER STORAGE AT END OF YEAR 12

LAYER	(INCHES)	(VOL/VOL)
1	1.23	0.1028
2	230.84	0.2405
SNOW WATER	0.00	

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HELP MODEL RUN WITH CLOSURE CAP
YEARS 33-50

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 CAVE CREEK LANDFILL\
 CLOSURE CAP  YEARS 33 THROUGH 50
 NOVEMBER 29, 1993  CCLFC.OUT

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LAYER 1

VERTICAL PERCOLATION LAYER

THICKNESS	=	6.00 INCHES
POROSITY	=	0.3000 VOL/VOL
FIELD CAPACITY	=	0.2000 VOL/VOL
WILTING POINT	=	0.1500 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.1748 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.000049999999 CM/SEC

LAYER 2

VERTICAL PERCOLATION LAYER

THICKNESS	=	18.00 INCHES
POROSITY	=	0.3000 VOL/VOL
FIELD CAPACITY	=	0.2000 VOL/VOL
WILTING POINT	=	0.1500 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.2054 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.000010000000 CM/SEC

LAYER 3

VERTICAL PERCOLATION LAYER

THICKNESS	=	12.00 INCHES
POROSITY	=	0.3000 VOL/VOL
FIELD CAPACITY	=	0.2000 VOL/VOL
WILTING POINT	=	0.0800 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.0932 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.005299999844 CM/SEC

LAYER 4

VERTICAL PERCOLATION LAYER

THICKNESS	=	960.00 INCHES
POROSITY	=	0.5200 VOL/VOL
FIELD CAPACITY	=	0.2900 VOL/VOL
WILTING POINT	=	0.1400 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.2401 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY	=	0.000199999995 CM/SEC

GENERAL SIMULATION DATA

SCS RUNOFF CURVE NUMBER	=	95.00
TOTAL AREA OF COVER	=	2000000. SQ FT
EVAPORATIVE ZONE DEPTH	=	18.00 INCHES
UPPER LIMIT VEG. STORAGE	=	5.4000 INCHES
INITIAL VEG. STORAGE	=	3.5136 INCHES
INITIAL SNOW WATER CONTENT	=	0.0000 INCHES
INITIAL TOTAL WATER STORAGE IN SOIL AND WASTE LAYERS	=	236.3604 INCHES

SOIL WATER CONTENT INITIALIZED BY USER.

CLIMATOLOGICAL DATA

SYNTHETIC RAINFALL WITH SYNTHETIC DAILY TEMPERATURES AND
SOLAR RADIATION FOR PHOENIX ARIZONA

MAXIMUM LEAF AREA INDEX	=	0.00
START OF GROWING SEASON (JULIAN DATE)	=	62
END OF GROWING SEASON (JULIAN DATE)	=	348

NORMAL MEAN MONTHLY TEMPERATURES, DEGREES FAHRENHEIT

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
52.00	56.00	61.00	68.00	77.00	86.00
92.00	90.00	85.00	73.00	61.00	53.00

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ANNUAL TOTALS FOR YEAR 1

	(INCHES)	(CU. FT.)	PERCENT

PRECIPITATION	6.16	1026667.	100.00
RUNOFF	1.322	220367.	21.46
EVAPOTRANSPIRATION	5.193	865534.	84.31
PERCOLATION FROM LAYER 4	0.1443	24051.	2.34
CHANGE IN WATER STORAGE	-0.500	-83285.	-8.11
SOIL WATER AT START OF YEAR	236.36	39393400.	
SOIL WATER AT END OF YEAR	235.86	39310116.	
SNOW WATER AT START OF YEAR	0.00	0.	
SNOW WATER AT END OF YEAR	0.00	0.	
ANNUAL WATER BUDGET BALANCE	0.00	-1.	0.00

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ANNUAL TOTALS FOR YEAR 2

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	7.57	1261667.	100.00
RUNOFF	1.440	240029.	19.02
EVAPOTRANSPIRATION	5.476	912624.	72.33
PERCOLATION FROM LAYER 4	0.1435	23914.	1.90
CHANGE IN WATER STORAGE	0.511	85101.	6.75
SOIL WATER AT START OF YEAR	235.86	39310116.	
SOIL WATER AT END OF YEAR	236.37	39395216.	
SNOW WATER AT START OF YEAR	0.00	0.	
SNOW WATER AT END OF YEAR	0.00	0.	
ANNUAL WATER BUDGET BALANCE	0.00	0.	0.00

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ANNUAL TOTALS FOR YEAR 3

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	8.96	1493333.	100.00
RUNOFF	2.340	390067.	26.12
EVAPOTRANSPIRATION	6.440	1073410.	71.88
PERCOLATION FROM LAYER 4	0.1425	23755.	1.59
CHANGE IN WATER STORAGE	0.037	6101.	0.41
SOIL WATER AT START OF YEAR	236.37	39395216.	
SOIL WATER AT END OF YEAR	236.41	39401316.	
SNOW WATER AT START OF YEAR	0.00	0.	
SNOW WATER AT END OF YEAR	0.00	0.	
ANNUAL WATER BUDGET BALANCE	0.00	0.	0.00

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ANNUAL TOTALS FOR YEAR 4

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	7.87	1311667.	100.00
RUNOFF	1.990	331609.	25.28
EVAPOTRANSPIRATION	5.356	892749.	68.06
PERCOLATION FROM LAYER 4	0.1421	23691.	1.81
CHANGE IN WATER STORAGE	0.382	63616.	4.85
SOIL WATER AT START OF YEAR	236.41	39401316.	
SOIL WATER AT END OF YEAR	236.79	39464932.	
SNOW WATER AT START OF YEAR	0.00	0.	
SNOW WATER AT END OF YEAR	0.00	0.	
ANNUAL WATER BUDGET BALANCE	0.00	1.	0.00

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ANNUAL TOTALS FOR YEAR 5

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	6.38	1063333.	100.00
RUNOFF	0.924	154047.	14.49
EVAPOTRANSPIRATION	5.903	983773.	92.52
PERCOLATION FROM LAYER 4	0.1418	23640.	2.22
CHANGE IN WATER STORAGE	-0.589	-98127.	-9.23
SOIL WATER AT START OF YEAR	236.79	39464932.	
SOIL WATER AT END OF YEAR	236.20	39366808.	
SNOW WATER AT START OF YEAR	0.00	0.	
SNOW WATER AT END OF YEAR	0.00	0.	
ANNUAL WATER BUDGET BALANCE	0.00	0.	0.00

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ANNUAL TOTALS FOR YEAR 6

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	7.73	1288333.	100.00
RUNOFF	1.054	175677.	13.64
EVAPOTRANSPIRATION	7.070	1178317.	91.46
PERCOLATION FROM LAYER 4	0.1430	23829.	1.85
CHANGE IN WATER STORAGE	-0.537	-89490.	-6.95
SOIL WATER AT START OF YEAR	236.20	39366808.	
SOIL WATER AT END OF YEAR	235.66	39277316.	
SNOW WATER AT START OF YEAR	0.00	0.	
SNOW WATER AT END OF YEAR	0.00	0.	
ANNUAL WATER BUDGET BALANCE	0.00	0.	0.00

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ANNUAL TOTALS FOR YEAR 7

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	8.37	1395000.	100.00
RUNOFF	1.389	231458.	16.59
EVAPOTRANSPIRATION	6.294	1048940.	75.19
PERCOLATION FROM LAYER 4	0.1428	23795.	1.71
CHANGE IN WATER STORAGE	0.545	90808.	6.51
SOIL WATER AT START OF YEAR	235.66	39277316.	
SOIL WATER AT END OF YEAR	236.21	39368124.	
SNOW WATER AT START OF YEAR	0.00	0.	
SNOW WATER AT END OF YEAR	0.00	0.	
ANNUAL WATER BUDGET BALANCE	0.00	0.	0.00

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ANNUAL TOTALS FOR YEAR 8

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	6.02	1003333.	100.00
RUNOFF	0.532	88596.	8.83
EVAPOTRANSPIRATION	5.040	840027.	83.72
PERCOLATION FROM LAYER 4	0.1425	23747.	2.37
CHANGE IN WATER STORAGE	0.306	50962.	5.08
SOIL WATER AT START OF YEAR	236.21	39368124.	
SOIL WATER AT END OF YEAR	236.51	39419084.	
SNOW WATER AT START OF YEAR	0.00	0.	
SNOW WATER AT END OF YEAR	0.00	0.	
ANNUAL WATER BUDGET BALANCE	0.00	1.	0.00

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ANNUAL TOTALS FOR YEAR 9

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	12.83	2138334.	100.00
RUNOFF	3.185	530840.	24.82
EVAPOTRANSPIRATION	9.515	1585767.	74.16
PERCOLATION FROM LAYER 4	0.1419	23651.	1.11
CHANGE IN WATER STORAGE	-0.012	-1923.	-0.09
SOIL WATER AT START OF YEAR	236.51	39419084.	
SOIL WATER AT END OF YEAR	236.50	39417164.	
SNOW WATER AT START OF YEAR	0.00	0.	
SNOW WATER AT END OF YEAR	0.00	0.	
ANNUAL WATER BUDGET BALANCE	0.00	-1.	0.00

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ANNUAL TOTALS FOR YEAR 10

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	8.42	1403333.	100.00
RUNOFF	1.444	240667.	17.15
EVAPOTRANSPIRATION	6.488	1081341.	77.06
PERCOLATION FROM LAYER 4	0.1427	23781.	1.69
CHANGE IN WATER STORAGE	0.345	57543.	4.10
SOIL WATER AT START OF YEAR	236.50	39417164.	
SOIL WATER AT END OF YEAR	236.85	39474708.	
SNOW WATER AT START OF YEAR	0.00	0.	
SNOW WATER AT END OF YEAR	0.00	0.	
ANNUAL WATER BUDGET BALANCE	0.00	1.	0.00

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ANNUAL TOTALS FOR YEAR 11

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	7.82	1303333.	100.00
RUNOFF	1.570	261715.	20.08
EVAPOTRANSPIRATION	6.300	1049947.	80.56
PERCOLATION FROM LAYER 4	0.1427	23789.	1.83
CHANGE IN WATER STORAGE	-0.193	-32120.	-2.46
SOIL WATER AT START OF YEAR	236.85	39474708.	
SOIL WATER AT END OF YEAR	236.66	39442588.	
SNOW WATER AT START OF YEAR	0.00	0.	
SNOW WATER AT END OF YEAR	0.00	0.	
ANNUAL WATER BUDGET BALANCE	0.00	1.	0.00

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ANNUAL TOTALS FOR YEAR 12

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	8.86	1476667.	100.00
RUNOFF	0.680	113307.	7.67
EVAPOTRANSPIRATION	8.425	1404146.	95.09
PERCOLATION FROM LAYER 4	0.1435	23909.	1.62
CHANGE IN WATER STORAGE	-0.388	-64695.	-4.38
SOIL WATER AT START OF YEAR	236.66	39442588.	
SOIL WATER AT END OF YEAR	236.27	39377892.	
SNOW WATER AT START OF YEAR	0.00	0.	
SNOW WATER AT END OF YEAR	0.00	0.	

ANNUAL WATER BUDGET BALANCE	0.00	-1.	0.00

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ANNUAL TOTALS FOR YEAR 13

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	8.76	1460000.	100.00
RUNOFF	2.595	432500.	29.62
EVAPOTRANSPIRATION	6.132	1022012.	70.00
PERCOLATION FROM LAYER 4	0.1434	23895.	1.64
CHANGE IN WATER STORAGE	-0.110	-18407.	-1.26
SOIL WATER AT START OF YEAR	236.27	39377892.	
SOIL WATER AT END OF YEAR	236.16	39359484.	
SNOW WATER AT START OF YEAR	0.00	0.	
SNOW WATER AT END OF YEAR	0.00	0.	
ANNUAL WATER BUDGET BALANCE	0.00	0.	0.00

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ANNUAL TOTALS FOR YEAR 14

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	7.69	1281667.	100.00
RUNOFF	1.753	292181.	22.80
EVAPOTRANSPIRATION	5.140	856701.	66.84
PERCOLATION FROM LAYER 4	0.1440	24004.	1.87
CHANGE IN WATER STORAGE	0.653	108780.	8.49
SOIL WATER AT START OF YEAR	236.16	39359484.	
SOIL WATER AT END OF YEAR	236.81	39468264.	
SNOW WATER AT START OF YEAR	0.00	0.	

SNOW WATER AT END OF YEAR	0.00	0.	
ANNUAL WATER BUDGET BALANCE	0.00	2.	0.00

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ANNUAL TOTALS FOR YEAR 15

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	5.92	986667.	100.00
RUNOFF	0.713	118892.	12.05
EVAPOTRANSPIRATION	5.204	867308.	87.90
PERCOLATION FROM LAYER 4	0.1462	24369.	2.47
CHANGE IN WATER STORAGE	-0.143	-23903.	-2.42
SOIL WATER AT START OF YEAR	236.81	39468264.	
SOIL WATER AT END OF YEAR	236.67	39444360.	
SNOW WATER AT START OF YEAR	0.00	0.	
SNOW WATER AT END OF YEAR	0.00	0.	
ANNUAL WATER BUDGET BALANCE	0.00	0.	0.00

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ANNUAL TOTALS FOR YEAR 16

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	10.49	1748333.	100.00
RUNOFF	1.923	320516.	18.33
EVAPOTRANSPIRATION	8.894	1482288.	84.78
PERCOLATION FROM LAYER 4	0.1472	24528.	1.40
CHANGE IN WATER STORAGE	-0.474	-79000.	-4.52
SOIL WATER AT START OF YEAR	236.67	39444360.	
SOIL WATER AT END OF YEAR	236.19	39365360.	

SNOW WATER AT START OF YEAR	0.00	0.	
SNOW WATER AT END OF YEAR	0.00	0.	
ANNUAL WATER BUDGET BALANCE	0.00	1.	0.00

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ANNUAL TOTALS FOR YEAR 17

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	10.22	1703333.	100.00
RUNOFF	1.812	301973.	17.73
EVAPOTRANSPIRATION	8.052	1341950.	78.78
PERCOLATION FROM LAYER 4	0.1462	24362.	1.43
CHANGE IN WATER STORAGE	0.210	35047.	2.06
SOIL WATER AT START OF YEAR	236.19	39365360.	
SOIL WATER AT END OF YEAR	236.40	39400408.	
SNOW WATER AT START OF YEAR	0.00	0.	
SNOW WATER AT END OF YEAR	0.00	0.	
ANNUAL WATER BUDGET BALANCE	0.00	2.	0.00

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ANNUAL TOTALS FOR YEAR 18

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	4.99	831667.	100.00
RUNOFF	0.542	90345.	10.86
EVAPOTRANSPIRATION	4.971	828546.	99.62
PERCOLATION FROM LAYER 4	0.1453	24220.	2.91
CHANGE IN WATER STORAGE	-0.669	-111443.	-13.40
SOIL WATER AT START OF YEAR	236.40	39400408.	

SOIL WATER AT END OF YEAR	235.73	39288964.	
SNOW WATER AT START OF YEAR	0.00	0.	
SNOW WATER AT END OF YEAR	0.00	0.	
ANNUAL WATER BUDGET BALANCE	0.00	-2.	0.00

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AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 18

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	0.69	0.70	0.93	0.27	0.38	0.02
	0.99	0.69	0.87	0.77	0.75	1.00
STD. DEVIATIONS	0.71	0.56	1.28	0.26	0.72	0.05
	0.87	0.39	0.99	1.03	0.84	0.85
RUNOFF						
TOTALS	0.112	0.070	0.171	0.016	0.126	0.000
	0.160	0.033	0.277	0.194	0.124	0.230
STD. DEVIATIONS	0.224	0.156	0.377	0.033	0.315	0.000
	0.347	0.040	0.464	0.346	0.301	0.312
EVAPOTRANSPIRATION						
TOTALS	0.627	0.560	0.825	0.475	0.378	0.140
	0.403	0.448	0.654	0.646	0.585	0.698
STD. DEVIATIONS	0.481	0.399	0.805	0.392	0.367	0.084
	0.512	0.309	0.592	0.741	0.546	0.464
PERCOLATION FROM LAYER 4						
TOTALS	0.0122	0.0111	0.0122	0.0118	0.0122	0.0118
	0.0122	0.0122	0.0118	0.0122	0.0118	0.0122
STD. DEVIATIONS	0.0001	0.0002	0.0001	0.0001	0.0001	0.0001
	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001

****

****

AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 18

	(INCHES)		(CU. FT.)	PERCENT
PRECIPITATION	8.06	(1.889)	1343148.	100.00
RUNOFF	1.512	(0.730)	251933.	18.76
EVAPOTRANSPIRATION	6.438	(1.411)	1073077.	79.89
PERCOLATION FROM LAYER 4	0.1436	(0.0016)	23941.	1.78
CHANGE IN WATER STORAGE	-0.035	(0.430)	-5802.	-0.43

****

****

PEAK DAILY VALUES FOR YEARS 1 THROUGH 18

	(INCHES)	(CU. FT.)
PRECIPITATION	1.82	303333.3
RUNOFF	1.020	170025.9
PERCOLATION FROM LAYER 4	0.0004	67.1
SNOW WATER	0.00	0.0

MAXIMUM VEG. SOIL WATER (VOL/VOL) 0.2713

MINIMUM VEG. SOIL WATER (VOL/VOL) 0.1494

****

****

FINAL WATER STORAGE AT END OF YEAR 18

LAYER	(INCHES)	(VOL/VOL)
1	1.07	0.1777
2	3.11	0.1726
3	1.04	0.0864
4	230.52	0.2401
SNOW WATER	0.00	

****
****

APPENDIX I

WATER QUALITY SAMPLE COLLECTION RECORD

WATER QUALITY SAMPLE COLLECTION RECORD

OWNER: _____ WELL NO. _____

PROJECT: _____ JOB NO: _____ - _____ - _____

SAMPLER(S): _____ AFFILIATION(S): _____
(PRINT)

_____ _____

INSTRUMENTATION

WATER LEVEL METER: _____ CORRECTION FACTOR(CF): _____ ft

pH METER (brand and model): _____
CALIBRATED WITH ph 4: _____ pH 7: _____ pH 10: _____ TIME: _____

SC METER (brand and model): _____
STANDARD SOLUTION USED: _____ umhos/cm TIME: _____

WELL EVACUATION

DEPTH TO WATER(DTW+or-CF): _____ ft DATE@TIME MEAS.: _____
ELEV.OF MEAS.POINT(ELEV): _____ ft SWL ELEV.(ELEV-DTW)= _____ ft
TOTAL DEPTH OF WELL (TD): _____ ft CASING DIA (d): _____ inches
ONE EVACUATION VOL.=(((d/24)**2)(3.14)(TD-DTW)(7.48)): _____ gal

DATE@TIME EVACUATION STARTED: _____

CLOCK TIME:				
ELAPSED TIME (min):				
PUMPING RATE (gal/min):				
VOLUME EVACUATED (gal):				
DTW (feet)				
pH:				
SC (umhos/cm):				
TEMPERATURE (F or C):				
COLOR:				
CLARITY:				
ODOR:				

TOTAL VOL. EVAC.: _____ gal DATE@TIME EVACUATED: _____

EVACUATION EQUIPMENT: _____

SAMPLE COLLECTION

DEPTH TO WATER(DTW+or-CF): _____ ft DATE@TIME MEAS.: _____
DATE@TIME SAMPLED: _____ COLLECTION EQUIPMENT: _____

SAMPLE DESCRIPTION:
COLOR: _____ CLARITY: _____ ODOR: _____ FREE PHASE?: _____

PARAMETERS COLLECTED/BOTTLE TYPES: _____

_____

FILTERED?(yes/no) _____ FILTER EQUIPMENT: _____

APPROX. AIR TEMP.(C or F): _____ GEN.WEATHER COND.: _____

COMMENTS: _____

_____

Signature of Sampler/Date Signature of Sampler/Date

APPENDIX J

SUBTITLE D APPENDIX II CONSTITUENTS FOR ASSESSMENT MONITORING

Appendix II to this Part 258

List of Hazardous Inorganic and Organic Constituents[1]

Common Name[2]	CAS RN[3]	Chemical abstracts service index name[4]	Suggested methods[5]	PQL (µg/L)[6]
Acenaphthene	83-32-9	Acenaphthylene, 1,2-dihydro-	8100	200
			8270	10
Acenaphthylene	208-96-8	Acenaphthylene	8100	200
			8270	10
Acetone	67-64-1	2-Propanone	8260	100
Acetonitrile; Methyl cyanide	75-05-8	Acetonitrile	8015	100
Acetophenone	98-86-2	Ethanone, 1-phenyl-	8270	10
2-Acetylaminofluorene; 2-AAF	53-96-3	Acetamide, N-9H-fluorene-2-yl-	8270	20
Acrolein	107-02-8	2-Propenal	8030	5
			8260	100
Acrylonitrile	107-13-1	2-Propenenitrile	8030	5
			8260	200
Aldrin	309-00-2	1,4:5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a-hexahydro - (1a,4α,4α β ,5α,8α,8αβ)-	8080	0.05
			8270	10
Allyl chloride	107-05-1	1-Propene, 3-chloro	8010	5
			8260	10
4-Aminobiphenyl	92-67-1	[1,1 ¹-Biphenyl]-4-amine	8270	20
Anthracene	120-12-7	Anthracene	8100	200
			8270	10
Antimony	(Total)	Antimony	6010	300
			7040	2000
			7041	30
Arsenic	(Total)	Arsenic	6010	500
			7060	10
			7061	20
Barium	(Total)	Barium	6010	20
			7080	1000
Benzene	71-43-2	Benzene	8020	2
			8021	0.1
			8260	5
Benzo[a]anthracene; Benzanthracene	56-55-3	Benzo[a]anthracene	8100	200
			8270	10
Benzo[b]fluoranthene	205-99-2	Benzo[e]acephenanthrylene	8100	200
			8270	10
Benzo[k]fluoranthene	207-08-9	Benzo[k]fluoranthene	8100	200
			8270	10
Benzo[ghi]perylene	191-24-2	Benzo[ghi]perylene	8100	200
			8270	10
Benzo[a]pyrene	50-32-8	Benzo[a]pyrene	8100	200
			8270	10
Benzyl alcohol	100-51-6	Benzenemethanol	8270	20
Beryllium	(Total)	Beryllium	6010	3
			7090	50
			7091	2
alpha BHC	319-84-6	Cyclohexane, 1,2,3,4,5,6-hexachloro-, (1α,2α,3β,4α,5β,6β)-	8080	0.05
			8270	10
beta-BHC	319-85-7	Cyclohexane, 1,2,3,4,5,6-hexachloro-, (1α,2β,3α,4β,5α,6β)-	8080	0.05
			8270	20
delta-BHC	319-86-8	Cyclohexane, 1,2,3,4,5,6-hexachloro-, (1α,2α,3α,4β,5α,6β)-	8080	0.1
			8270	20
gamma-BHC; Lindane	58-89-9	Cyclohexane, 1,2,3,4,5,6-hexachloro-, (1α,2α,3β,4α,5α,6β)-	8080	0.05
			8270	20

[Part 258, Appendix II]

List of Hazardous Inorganic and Organic Constituents[1]—Contd.

Common Name[2]	CAS RN[3]	Chemical abstracts service index name[4]	Suggested methods[5]	PQL (µg/L)[6]
Bis(2-chloroethoxy)methane	111-91-1	Ethane, 1,1[1]-[methylenebis(oxy)]bis[2-chloro-	8110	5
			8270	10
Bis(2-chloroethyl) ether; Dichloroethyl ether	111-44-4	Ethane, 1,1[1]-oxybis[2-chloro-	8110	3
			8270	10
Bis-(2-chloro-1-methylethyl) ether; 2,2[1]-Dichlorodiisopropyl ether; DCIP, See note 7	108-60-1	Propane, 2,2[1]-oxybis[1-chloro-	8110	10
			8270	10
Bis(2-ethylhexyl) phthalate	117-81-7	1,2-Benzenedicarboxylic acid, bis(2-ethylhexyl) ester	8060	20
Bromochloromethane; Chlorobromomethane	74-97-5	Methane, bromochloro-	8021	0.1
			8260	5
Bromodichloromethane; Dibromochloromethane	75-27-4	Methane, bromodichloro	8010	1
			8021	0.2
			8260	5
Bromoform; Tribromomethane	75-25-2	Methane, tribromo-	8010	2
			8021	15
			8260	5
			8110	25
4-Bromophenyl phenyl ether	101-55-3	Benzene, 1-bromo-4-phenoxy-	8270	10
Butyl benzyl phthalate; Benzyl butyl phthalate	85-68-7	1,2-Benzenedicarboxylic acid, butyl [Aphenylmethyl ester	8060	5
			8270	10
Cadmium	(Total)	Cadmium	6010	40
			7130	50
			7131	1
Carbon disulfide	75-15-0	Carbon disulfide	8260	100
Carbon tetrachloride	56-23-5	Methane, tetrachloro-	8010	1
			8021	0.1
			8260	10
Chlordane	See Note 8	4,7-Methano-1H-indene, 1,2,4,5,6,7,8,8-octachloro-2,3,3a, 4,7,7a-hexahydro	8080	0.1
			8270	50
p-Chloroaniline	106-47-8	Benzenamine, 4-chloro	8270	20
Chlorobenzene	108-90-7	Benzene, chloro-	8010	2
			8020	2
			8021	0.1
			8260	5
Chlorobenzilate	510-15-6	Benzeneacetic acid, 4-chloro-α(4-chlorophenyl)-α-hydroxyethyl ester.	8270	10
p-Chloro-m-cresol; 4-Chloro-3-methylphenol	59-50-7	Phenol, 4-chloro-3-methyl-	8040	5
			8270	20
Chloroethane; Ethyl chloride	75-00-3	Ethane, chloro-	8010	5
			8021	1
			8260	10
Chloroform; Trichloromethane	67-66-3	Methane, trichloro	8010	0.5
			8021	0.2
			8260	5
2-Chloronaphthalene	91-58-7	Naphthalene, 2-chloro	8120	10
			8270	10
2-Chlorophenol	95-57-8	Phenol, 2-chloro-	8040	5
			8270	10
4-Chlorophenyl phenyl ether	7005-72-3	Benzene, 1-chloro-4-phenoxy-	8110	40
			8270	10
Chloroprene	126-99-8	1,3-Butadiene, 2-chloro	8010	50
			8260	20
Chromium	(Total)	Chromium	6010	70
			7190	500

[Part 258, Appendix II]

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List of Hazardous Inorganic and Organic Constituents[1]—Contd.

Common Name[2]	CAS RN[3]	Chemical abstracts service index name[4]	Suggested methods[5]	PQL (µg/L)[6]
trans-1,4-Dichloro-2-butene	110-57-6	2-Butene, 1,4-dichloro-, (E)-	8260	100
Dichlorodifluoromethane; CFC 12;	75-71-8	Methane, dichlorodifluoro-	8021	0.5
			8260	5
1,1-Dichloroethane; Ethylidene chloride	75-34-3	Ethane, 1,1-dichloro-	8010	1
			8021	0.5
			8260	5
1,2-Dichloroethane; Ethylene dichloride	107-06-2	Ethane, 1,1-dichloro-	8010	0.5
			8021	0.3
			8260	5
1,1-Dichloroethylene; 1,1-Dichloroethene; Vinylidene chloride	75-35-4	Ethene, 1,1-dichloro-	8010	1
			8021	0.5
			8260	5
cis-1,2-Dichloroethylene; cis-1,2-Dichloroethene	156-59-2	Ethene, 1,2-dichloro-, (Z)-	8021	0.2
			8260	5
trans-1,2-Dichloroethylene trans-1,2-Dichloroethene	156-60-5	Ethene, 1,2-dichloro-, (E)-	8010	1
			8021	0.5
			8260	5
2,4-Dichlorophenol	120-83-2	Phenol, 2,4-dichloro-	8040	5
			8270	10
2,6-Dichlorophenol	87-65-0	Phenol, 2,6-dichloro-	8270	10
1,2-Dichloropropane; Propylene dichloride	78-87-5	Propane, 1,2-dichloro-	8010	0.5
			8021	0.05
			8260	5
1,3-Dichloropropane; Trimethylene dichloride	142-28-9	Propane, 1,3-dichloro-	8021	0.3
			8260	5
2,2-Dichloropropane; Isopropylidene chloride	594-20-7	Propane, 2,2-dichloro-	8021	0.5
			8260	15
1,1-Dichloropropene	563-58-6	1-Propene, 1,1-dichloro-	8021	0.2
			8260	5
cis-1,3-Dichloropropene	10061-01-5	1-Propene, 1,3-dichloro-, (Z)	8010	20
			8260	10
trans-1,3-Dichloropropane	10061-02-6	1-Propene, 1,3-dichloro-, (E)-	8010	5
			8260	10
Dieldrin	60-57-1	2,7:3,6-Dimethanonaphth[2,3-b]oxirene, 3,4,5,6,9,9-hexa chloro- 1a,2,2a,3,6,6a,7,7a- octahydro-, (1aα, 2β, 2aα,3β, 6β, 6aα, 7β, 7aα)-	8080	0.05
			8270	10
Diethyl phthalate	84-66-2	1,2- Benzenedicarboxylic acid, diethyl ester	8060	5
			8270	10
0,0-Diethyl 0-2-pyrazinyl phosphorothioate; Thionazin	297-97-2	Phosphorothioic acid, 0,0-diethyl 0-pyrazinyl ester	8141	5
			8270	20
Dimethoate	60-51-5	Phosphorodithioic acid, 0,0-dimethyl :S-[2-(methylamino)-2-oxoethyl] ester.	8141	3
			8270	20
p-(Dimethylamino)azobenzene	60-11-7	Benzenamine, N,N-dimethyl-4-(phenylazo)-	8270	10
7,12-Dimethylbenz[a]anthracene	57-97-6	Benz[a]anthracene, 7,12-dimethyl-	8270	10
3,3'-Dimethylbenzidine	119-93-7	[1,1'-Biphenyl]-4,4'-diamine, 3,3 'dimethyl-	8270	10
2,4-Dimethylphenol; m-Xylenol	105-67-9	Phenol, 2,4-dimethyl	8040	5
			8270	10
Dimethyl phthalate	131-11-3	1,2-Benzenedicarboxylic acid, dimethyl ester	8060	5
			8270	10
m-Dinitrobenzene	99-65-0	Benzene, 1,3-dinitro-	8270	20

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List of Hazardous Inorganic and Organic Constituents[1]—Contd.

Common Name[2]	CAS RN[3]	Chemical abstracts service index name[4]	Suggested methods[5]	PQL (µg/L)[6]
Hexachlorobenzene	118-74-1	Benzene, hexachloro-	8120	0.5
			8270	10
Hexachlorobutadiene	87-68-3	1,3-Butadiene, 1,1,2,3,4,4-hexachloro-	8021	0.5
			8120	5
			8260	10
			8270	10
Hexachlorocyclopentadiene	77-47-4	1,3-Cyclopentadiene, 1,2,3,4,5,5-hexachloro-	8120	5
			8270	10
Hexachloroethane	67-72-1	Ethane, hexachloro-	8120	0.5
			8260	10
			8270	10
Hexachloropropene	1888-71-7	1 - Propene, 1,1,2,3,3,3 - hexachloro-	8270	10
2 - Hexanone; Methyl butyl ketone	591-78-6	2 - Hexanone	8260	50
Indeno (1,2,3 - cd) pyrene	193-39-5	Indeno(1,2,3 - cd)pyrene	8100	200
			8270	10
Isobutyl alcohol	78-83-1	1 - Propanol, 2 - methyl-	8015	50
			8240	100
Isodrin	465-73-6	1,4,5,8 - Dimethanonaphthalene, 1,2,3,4,10,10- hexachloro-	8270	20
		1,4,4a,5,8,8a hexahydro- (1α,4α,4aβ,5β,8β,8aβ)-	8260	10
Isophorone	78-59-1	2 - Cyclohexen-1 - one, 3,5,5 - trimethyl-	8090	60
			8270	10
Isosafrole	120-58-1	1,3, - Benzodioxole, 5 -(1 - propenyl)-	8270	10
Kepone	143-50-0	1,3,4 - Metheno-2H - cyclobuta [cd]pentalen -2 - one, 1,1a,3,3a,4,5,5a,5b,6 - decachloroctahydro-	8270	10
			8270	20
Lead	(Total)	Lead	6010	400
			7420	1000
			7421	10
Mercury	(Total)	Mercury	7470	2
Methacrylonitrile	126-98-7	2-Propenenitrile, 2-methyl-	8015	5
			8260	100
Methapyrilene	91-80-5	1,2-Ethanediamine, N,N-dimethyl-N[1] -2-pyridinyl-N1/2-thienylmethyl)-	8270	100
Methoxychlor	72-43-5	Benzene,1,1[1] -(2,2,2,trichloroethylidene) bis[4-methoxy-	8080	2
			8270	10
Methyl bromide; Bromomethane	74-83-9	Methane, bromo-	8010	20
			8021	10
Methyl chloride; Chloromethane	74-87-3	Methane, chloro-	8010	1
			8021	0.3
3-Methylcholanthrene	56-49-5	Benz[j]aceanthrylene, 1,2-dihydro-3-methyl-	8270	10
Methyl ethyl ketone; MEK; 2-Butanone	78-93-3	2-Butanone	8015	10
			8260	100
Methyl iodide; Iodomethane	74-88-4	Methane, iodo-	8010	40
			8260	10
Methyl methacrylate	80-62-6	2-Propenoic acid, 2-methyl-, methyl ester	8015	2
			8260	30
Methyl methanesulfonate	66-27-3	Methanesulfonic acid, methyl ester	8270	10
2-Methylnaphthalene	91-57-6	Naphthalene, 2-methyl-	8270	10
Methyl parathion; Parathion methyl	298-00-0	Phosphorothioic acid, 0,0-dimethyl 0-(4-nitrophenyl) ester	8140	0.5
			8141	1
			8270	10
4-Methyl-2-pentanone; Methyl isobutyl ketone	108-10-1	2-Pentanone, 4-methyl-	8015	5
			8260	100

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List of Hazardous Inorganic and Organic Constituents[1]—Contd.

Common Name[2]	CAS RN[3]	Chemical abstracts service index name[4]	Suggested methods[5]	PQL (µg/L)[6]
Silver	(Total)	Silver	7740	20
			7741	20
			6010	70
			7760	100
			7761	10
Silvex; 2,4,5-TP	93-72-1	Propanoic acid, 2-(2,4,5-trichlorophenoxy)-	8150	2
Styrene	100-42-5	Benzene, ethenyl-	8020	1
			8021	0.1
			8260	10
Sulfide	18496-25-8	Sulfide	9030	4000
2,4,5-T; 2,4,5-Trichlorophenoxyacetic acid	93-76-5	Acetic acid, (2,4,5-trichlorophenoxy)-	8150	2
1,2,4,5-Tetrachlorobenzene	95-94-3	Benzene, 1,2,4,5-tetrachloro-	8270	10
1,1,1,2-Tetrachloroethane	630-20-6	Ethane, 1,1,1,2-tetrachloro-	8010	5
			8021	0.05
			8260	5
1,1,2,2-Tetrachloroethane	79-34-5	Ethane, 1,1,1,2-tetrachloro-	8010	0.5
			8021	0.01
			8260	5
Tetrachloroethylene; Tetrachloroethane; Perchloroethylene	127-18-4	Ethane, tetrachloro-	8010	0.5
			8021	0.5
			8260	5
2,3,4,6-Tetrachlorophenol	58-90-2	Phenol, 2,3,4,6-tetrachloro-	8270	10
Thallium	(Total)	Thallium	6010	400
			7840	1000
			7841	10
Tin	(Total)	Tin	6010	40
Toluene	106-88-3	Benzene, methyl-	8020	2
			8021	0.1
			8260	5
o-Toluidine	95-53-4	Benzenamine, 2-methyl-	8270	10
Toxaphene	See Note 10	Toxaphene	8060	2
1,2,4-Trichlorobenzene	120-82-1	Benzene,1,2,4-trichloro-	8021	0.3
			8120	0.5
			8260	10
			8270	10
1,1,1-Trichloroethane; Methylchloroform	71-55-6	Ethane, 1,1,1-trichloro-	8010	0.3
			8021	0.3
			8260	5
1,1,2-Trichloroethane	79-00-5	Ethane, 1,1,2-trichloro-	8010	0.2
			8260	5
Trichloroethylene; Trichloroethene	79-01-6	Ethene, trichloro-	8010	1
			8021	0.2
			8260	5
Trichlorofluoromethane; CFC-11	75-69-4	Methane, trichlorofluro-	8010	10
			8021	0.3
			8260	5
2,4,5-Trichlorophenol	95-95-4	Phenol, 2,4,5-trichloro-	8270	10
2,4,6-Trichlorophenol	88-06-2	Phenol, 2,4,6-trichloro-	8040	5
			8270	10
1,2,3-Trichloropropane	96-18-4	Propane, 1,2,3-trichloro-	8010	10
			8021	5
			8260	15
0,0,0-Triethyl phosphorothioate	126-68-1	Phosphorothioic acid, 0,0,0-triethylester	8270	10
sym-Trinitrobenzene	99-35-4	Benzene, 1,3,5-trinitro-	8270	10
Vanadium	(Total)	Vanadium	6010	80
			7910	2000
			7911	40
Vinyl acetate	108-05-4	Acetic acid, ethenyl ester	8260	50
Vinyl chloride; Chloroethene	75-01-4	Ethene, chloro-	8010	2

[Part 258, Appendix II]

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APPENDIX K

CAVE CREEK LANDFILL LEGAL DESCRIPTION

That part of the East half of the Southeast quarter (E1/2SE/14) and the Southeast quarter of the Northeast quarter (SE1/4NE1/4) of Section 12, Township 5 North, Range 3 East, Gila and Salt River Meridian, Maricopa County, Arizona more precisely described as follows:

Beginning at the Southeast corner of said Section 12;

Thence West along the South line of said section a distance of 950.00 feet;

Thence Leaving said South line, North, a distance of 155.00 feet;

Thence West, a distance of 133.67 feet;

Thence N1 degree 59' 10" E, a distance of 2540.53 feet;

Thence N72 degrees 00' 00" E, a distance of 458.04 feet;

Thence North, a distance of 299.45 feet;

Thence East, a distance of 560.00 feet to the East line of said section;

Thence South along said east line, a distance of 3135.00 feet to the place of beginning containing 70.35 Acres, more or less; and

The North 200.00 feet of the East 950.00 feet of the Northeast quarter of Section 13, Township 5 North, Range 3 East, Gila and Salt River Meridian, Maricopa County, Arizona containing 4.36 Acres, more or less.

APPENDIX L

VEGETATIVE COVER PLAN

APPENDIX L

VEGETATIVE COVER PLAN

The purpose of the vegetative cover plan is to provide assurance that a drought-resistant, sustainable vegetative growth be established on the final cover layer as soon as possible following final closure of the landfill. This cover will be designed, using native species which have demonstrated their sustainable viability in the immediate vicinity of the Cave Creek Landfill, under similar soil and climatologic conditions.

Confirmation Botanical Site Observation

A botanical inspection of the adjacent closed landfill was conducted in order to identify the vegetative species established there, which have provided effective vegetative cover and erosion control of that site. An undisturbed comparison site in the vicinity was also observed to identify native plant species on undisturbed soils under conditions otherwise, similar to the Cave Creek Landfill. The following report summarizes the findings of these observations:

The parcel described in this report is a portion of the Cave Creek Landfill just south of the Carefree Highway in Maricopa County Arizona. The parcel is contained in SW¼ of the NW¼ of Section 7 of the Cave Creek USGS 7.5 Minute Quadrangle. The parcel is an old landfill site that was capped and compacted approximately eight years ago. The parcel is raised (10-12 ft.) above the natural elevation of 1900 ft. and is approximately 40 acres in size. The topsoil used to cap the landfill was brought in from Cave Buttes Dam (Nick Sciarro Maricopa Co. Waste Management personal communication) a nearby flood control project. The topsoil was dredged out of the dam site and contained seeds that had naturally accumulated over time. Also some of the larger trees around the perimeter were left undisturbed to act as seed trees. No additional planting or seeding has been done since the time the landfill was capped.

The parcel is basically flat with a slight increase in elevation (3-6 ft.) in the center. A dirt road encircles the parcel a few feet in from its steep sloping sides (40-45°). In addition there are several other small two track roads on the parcel. There are two large piles of old corrugated drainage pipes in the south and east edge of the parcel. Also three small mounds of soil and rock on the southern edge of the parcel. The rest of the parcel is refuse free.

The parcel is thickly vegetated, primarily with Russian thistle (*Salsola kali*) and assorted grasses. Grasses found on the parcel include tufted grama grass (*Aristida glabrata*), wild oat (*Avena*

fatua), Carolina canary grass (*Phalaris caroliniana*), bottlebrush squirreltail (*Eylmus elymoides*), foxtail brome (*Bromus ruben*), red grama grass (*Bouteloua trifida*), and feather fingergrass (*Chloris virgata*). Creosotebush (*Larrea divaricata*) is found in small groups throughout the parcel. Also commonly found throughout the parcel is black mustard (*Brassica nigra*) and (*Sisymbrium Trio L.*). There is a large population of cheese-weed (*Malva parviflora*) in the southwest corner of the parcel. There are approximately 40 small trees (1-7 ft.) primarily located along the western edge of the parcel. Tree species include Mexican paloverde (*Parkinsonia aculeata*), velvet mesquite (*Prosopis velutina*), and foothills paloverde (*Cercidium floridum*). Mexican paloverde (*P. aculeata*) is the most abundant. Also present sporadically in the parcel are New Mexican thistle (*Cirsium neomexicanum*), globemallow (*Sphaeralcea ambigua*), desert sunflower (*Geraea canescens*), desert saltbush (*Atriplex polycarps*), and desert broom (*Baccharis sarothroides*). Substrate is clayey loam combined with silt and also some rock.

To determine how similar the vegetation present on the capped parcel is to the surrounding area a comparison site was surveyed. Also this additional survey partially determines the possible species that may establish themselves naturally over a period of time. The comparison site selected is adjacent and north of the above described parcel and south of the Carefree Highway. The comparison site appeared to be undisturbed and not impacted by activity at the landfill or cattle grazing.

The comparison site is characterized as Sonoran Desertscrub with a foothills paloverde/bursage association (Brown 1982). Tree species present on the comparison site include foothills paloverde (*C. floridum*), velvet mesquite (*P. velutina*), and Mexican paloverde (*P. aculeata*). Cacti are abundant and species include Saguaro (*Carnegiea gigantea*), teddy bear cholla (*Opuntia bigelovii*), chainfruit cholla (*O. fulgida*), staghorn cholla (*O. versicolor*), desert Christmas cactus (*O. leptocaulis*), barrel cactus (*Ferocactus wislizenii*), and hedgehog cactus (*Echinocereus engelmannii*). Shrub species present include triangleleaf bursage (*Ambrosia deltoidea*) and white bursage (*A. dumosa*). Also commonly present is spurge (*Euphorbia sp.*) and a few assorted grasses. Substrate is sandy loam with rock.

The most striking difference between the two parcels is that the capped landfill does not support any cacti and the comparison site supports an abundance of cacti. Also the capped landfill is dominated by grasses and annuals and the comparison site is a foothills paloverde\bursage association. The other major difference is that the capped landfill vegetation is mainly invasion species, where the comparison site is not.

The approximate overall percent vegetation cover of the capped landfill is 90-95%. There are two small areas (≤ ¼ acre) along the northern edge of the parcel where the surface substrate is mainly rock and the percent cover is much less, only 20-40%. There is also a 1.5-2.5 acre barren area in the southwest corner of the parcel. This area still is impacted by vehicular traffic. These three areas of less dense vegetation represent ≤ 8% of the total parcel.

At the time of the investigation the parcel was in a severe drought condition. Most of the plants were brown and withered. The substrate was caked and cracked showing further evidence of drought. The weather condition was sunny and hot with a constant breeze.

Although the vegetation currently being used to stabilize the capped landfill is mainly annuals (≥ 90%), the soil appeared to be stabilized. The root depth of these annual plants are similarly shallow ≤ 12 inches. These root structures spread out and persist adding to the stabilization of the soil especially when densely interwoven. These annuals also reseed readily and would be expected to persist for many years giving the perennials time to become more established. Even thought most of the vegetation was dead or dying at the time of the investigation, there were no signs of soil erosion from wind or water. Soil was observed blowing away from the barren area and roads but not on the rest of the parcel. It is important to note that the time of year at which the investigation was performed is the time of year where the highest number of plants present on the parcel would be dead and dying. This also means that at the time of the investigation the plants present would have the least stabilizing effect on the soil during the year. The parcel should be more stable at other times of the year when most of the plants are green and growing. Also as time progresses more perennials should establish themselves from the surrounding area as the trees have done, and add to the stabilization of the soil.

Vegetative Cover Plan Implementation Procedure

The vegetative cover plan will utilize a procedure involving establishment of vegetative cover on the imported Cave Butte Reservoir soils blended with local topsoil, which is proposed for the Erosion Control Layer. Much of this seeding will be naturally accomplished with the import of the Cave Butte Reservoir soils already vegetated with these species. The vegetative cover plan will provide for augmenting the seed contained in the imported soils by seeding with plant materials and their seeds currently growing on the Cave Butte Reservoir sediments to be imported. These species predominantly consist of the following native grasses: tufted grama grass (*Aristida glabrata*), wild oat (*Avena fatua*), Carolina canary grass (*Phalaris caroliniana*), red grama grass (*Boutelous trifida*), and feather fingergrass (*Chloris virgata*).

Temporary irrigation to accelerate establishment of these grasses may be provided in the event seasonal precipitation is inadequate to provide early establishment. The existing on-site well would provide the source of this irrigation water.

APPENDIX M

OPERATIONS PLAN
CAVE CREEK LANDFILL

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1.0 FACILITY DESCRIPTION

1.1 LOCATION

The Cave Creek Landfill is located in Maricopa County 3 miles west of Cave Creek Road and nine miles east of Interstate Highway 17 on the Carefee Highway. The legal description for the facility is East 1/2 of Section 12, Township 5 North, Range 3 East and Northeast 1/4, of Northeast 1/4, of Northeast 1/4, of Section 13, Township 5 North, Range 3 East. The facility lies approximately 25 miles north of the City of Phoenix, and is within the City of Phoenix city limits. The approximate latitude and longitude of the site are 33 degrees, 47 minutes north, 111 degrees 59 minutes west, respectively.

1.2 FINANCIAL AND LEGAL RESPONSIBILITIES

1.2.1 Owner and Operator

The Cave Creek landfill is owned and operated by the

Maricopa County Solid Waste Management Department
2901 West Durango Street
Phoenix, Arizona 85009
(602)506-7060

John Stufflebean, Director

The facility manager is

John Stufflebean
Maricopa County Solid Waste Manager
2901 West Durango Street
Phoenix, Arizona 85009
(602)506-7060

1.2.2 Operating Hours

The Cave Creek landfill operating hours are Monday through Saturday 5:00 am to 5:00 pm and on Sundays from 9:00 am to 5:00 pm. Commercial haulers are allowed to dump during operating hours from Monday through Saturday. The facility is closed on New Years Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day.

1.2.3 Staff and Qualifications

The staff for the Cave Creek landfill are divided into two crews. One crew operates the facility from Sunday through Wednesday and the other from Wednesday through Saturday. Each crew consists of three equipment operators, one crew chief, one Solid Waste Compliance Inspector, and one cashier. In addition, the Operations Supervisor and Solid Waste Manager are on call.

The managing organization and personnel are shown in Figure 2. The roles and qualifications of primary personnel are described below.

John E. Stufflebean, P.E., Solid Waste Director

Mr. Stufflebean manages all operational and administrative functions of the Solid Waste Division. He has managed the division for three years. For the previous six years he has designed landfills, transfer stations, wastewater facilities, performed siting studies, and managed other environmental programs and projects for Pima County. He is a registered civil engineer in Arizona and is certified as a Manager of landfill Operations by SWANA. He has a B.S. in Civil Engineering from the Colorado State University and a M.S. in Environmental Engineering from the University of Arizona.

Crew Supervisors

Crew Supervisors direct operations at individual facilities, perform special projects, verify maintenance is performed, and check that records are maintained. Three of the four crew supervisor positions are filled with staff who are certified as Managers of landfill Operations by SWANA.

Equipment Operators

The equipment operators operate the waste movement and compaction equipment, haul equipment to and from the facility, perform maintenance, and collect and record data. Six operators (three per shift) will staff the landfill, although others will periodically come in to cross train and fill in.

Solid Waste Compliance Inspectors

Solid Waste Compliance Inspectors observe unloading of wastes, perform random inspections, review manifests, direct traffic, supply information to facility users, and collect and record data. Two Inspectors (one per shift) will be rotated to the facility from Monday through Saturday.

Inspectors have an educational background in environmental sciences and have received training in hazard recognition.

Cashiers

The cashiers handle disposal charges, question haulers about contents, and supply information to facility users. All cashiers receive in-house training on hazardous waste recognition.

Environmental Compliance Office

Technicians from this office perform ground water monitoring at all county solid waste and wastewater facilities. They also assist solid waste and wastewater engineers in preparing permit applications.

1.3 SITE CHARACTERISTICS

1.3.1 Climate

The Cave Creek site has typical Sonoran Desert community plan life characterized by creosote bushes in the flats with Palo Verde, ironwood, and catclaw bushes in the washes. The Cave Creek area climate is generally very arid and warm. It is also characterized by low relative humidity, low precipitation, high diurnal temperatures and breezy, dusty conditions. The landfill receives approximately 8 inches of average annual precipitation. The majority of rainfall develops in thunderstorms in the winter months of December, January and February and also in the summer months of July, August, and early September. During the summer months, high temperatures average between 102 and 105 degrees and low temperatures average between 70 and 80 degrees. During the winter months, high temperatures average between 65 and 75 degrees and low temperatures average between 39 and 47 degrees.

1.3.2 Surface Water

The Cave Creek Landfill is located 2,600 feet south of the Carefree Highway and 1,300 - 2,600 feet east of Cave Creek. The slope of the land surface in the area of the landfill is approximately 0.015 ft/ft to the southwest. Surface water features in the area include Cave Creek to the west of the landfill and two dry washes to the east of the landfill.

Cave Creek is an ephemeral stream that originates near the New River Mesa. Cave Creek runs in a southwesterly direction through Paradise Valley into Deer Valley and ends at the Arizona

Canal Diversion Channel in northwest Phoenix. The average annual flow of Cave Creek in the area of the landfill is 2,600 acre-feet (USGS, 1991). The Cave Creek Landfill is not located within the 100-year flood plain of Cave Creek.

Two dry washes intersect the landfill. Each drains toward Cave Creek to the southwest. Berms placed around the landfill have caused diversion of flow in the washes. Diversion channels will be used to control flooding and washout.

1.3.3 Regional Geology

The Cave Creek Landfill is located in the East Salt River Valley sub-basin of the Phoenix Active Management Area (Reeter and Remick, 1986).

1.3.4 Site Subsurface Conditions

Stratigraphic units in the area of Cave Creek Landfill consist of a thick sequence of alluvial and lacustrine valley deposits which have been subdivided by the U.S. Bureau of Reclamation (1976) into the lower conglomerate unit (LCU), the middle fine grained unit (MFU), and the upper alluvial unit (UAU). The UAU, the unit most likely to be impacted by landfill operations, is comprised of unconsolidated, relatively fresh to slightly weathered detritus of all igneous and metamorphic rock types. It also includes reworked older alluvial materials. Much of the material along the axial portion of many of the basins is primarily fine-grained, with the coarser material occurring as near-surface deposits.

Fine to medium-grained sands with varying amounts of clay and gravel are predominant from the surface to a depth of about 700 feet. Below this depth, the sediments are more stratified with generally 35-65 foot intervals of predominantly coarse-grained pebbly sands alternating with generally 35-75 foot intervals of predominantly fine-grained clayey and silty sands. The sands and gravels underlying the Cave Creek landfill are widespread through the area. It is unlikely that a clay or silt horizon of any significant thickness occurs under the landfill.

1.3.5 Groundwater

Ground water information for the site comes mainly from the two monitoring wells installed in May 1993. The wells (CCMW-1 and CCMW-2) were drilled to depth of 740 and 720 feet,

respectively. In addition, water levels were collected from COP Wells 280 and 281 located one to one and one-half miles south and southeast of the Cave Creek Landfill.

The depth to ground water in the vicinity of the site exceeds 600 feet and flows to the south-southeast. The hydraulic gradient measured in July-August 1993 is about .005 ft/ft. Temporal variations in water levels could not be evaluated due to lack of historical water levels for wells in this area. Seasonal variations in water levels may occur due to seasonal pumping from the COP and the City of Scottsdale production wells.

Ground-water samples were collected from each well CCMW-1 and CCMW-2 in June 1993. The samples were analyzed for the following constituents: volatile and semi-volatile organic compounds, phenols, pesticides and herbicides, metals, and ions and indicators. Analytical results show that no MCLs were exceeded in either monitor well. Non-metal inorganic parameters indicate good water quality.

1.3.6 Features of Proximate Lands

Properties surrounding the Cave Creek landfill include the following:

North:	Bureau of Land Management, old landfill
South:	Privately owned undeveloped land
East:	Tarantini, privately owned undeveloped land
West:	State of Arizona, undeveloped land

Current land use is generally light residential within one mile of the landfill boundary. Approximately one-quarter mile north of the landfill is a discontinued sand and rock company. To the west, the Cave Creek Wash is located less than one-quarter of a mile away. Except for the landfill access road which is a paved all weather road, no other roads exist within one-half mile or more.

1.4 FACILITY DESIGN

1.4.1 Configuration and Capacity

The Cave Creek Landfill contains two active municipal solid waste disposal cells and two future expansion cells as shown on the Closure Plan.

1.4.2 Landfill Cell Construction

Cell A and B - Both Cells A and B are unlined cells with a subgrade material consisting of alluvial gravels and sands with little or no silt and clay. Cell A was excavated to the depth of 1850 feet and Cell B to a depth of 1820 feet.

Cell C and D - Cell C and D will be excavated to a depth of 1820 feet and covered with a composite liner. The liner will consist of a 2 foot layer of clay, an HDPE membrane, geotextile, a 6" layer of drain rock, and a final geotextile layer as shown on sheet 8 of the drawings.

1.4.3 Landfill Leachate Collection

Cell A and B - Cells A and B do not contain a leachate collection system.

Cell C and D - A leachate collection system is planned for both future cells C and D. The details of this system will be completed during final design of the expansion cells.

1.4.4 Stormwater Design Elements

The landfill is protected from flooding during the 100-year flood event by berms which totally surround the site. The most recent Flood Insurance Rate Map (FIRM) dated April 15, 1988 which covers the Cave Creek landfill indicates that the site is not located within the boundary of the 100-year flood plain of Cave Creek.

Two dry washes intersect the landfill. Each drains toward the Cave Creek to the southwest. Berms placed around the landfill have caused diversion of flow in the washes. As part of the future expansion of cells C and D an interceptor drainage swale has been designed to control flooding and washout from off-site drainage. The drainage swale has been sized to contain the 100-yr 24 hour storm.

2.0 FACILITY OPERATIONS

2.1 WASTE CHARACTERIZATION AND ACCEPTANCE

Maricopa County Solid Waste facilities usually receive residential and commercial waste from the local areas they serve. Cities that border the Cave Creek Landfill bring waste in pick-up trucks, trailers, semi's, compactor vehicles, and open type roll-off bins.

Due to recent floods of 1993, the City of Scottsdale discontinued their delivery of waste to the Tri-City Indian Reservation Landfill and are now temporarily bringing all city waste to the Cave Creek Landfill. The Town of Paradise Valley, City of Phoenix, Town of Cave Creek, Town of Carefree, county areas of New River, areas northwest of the landfill and the Tonto National Forest all deliver solid waste to the landfill. Several Maricopa County departments including Parks and Recreation, Department of Transportation, and the Maricopa County Flood Control District also deliver waste to the landfill.

An estimated 500 tons of refuse is deposited at the landfill each day. In addition, 80 tons of recyclables including white goods and other recycled products are received daily.

2.1.1 General Waste Characterization

The following types of wastes are accepted in the landfill. Refuse from homes and businesses, empty barrels, yard waste, mattresses, appliances, barn yard and stable waste, demolition material, clean soil, paper products, wire, non-infectious medical waste, bottled beverages, domestic animals (small pets), junk cars, boats, and trailers. Prohibited waste includes hazardous waste, fuel tanks, infectious wastes, chemical by-products, containers not properly rinsed, explosives, ammunition, shock sensitive wastes, hot coals, burning materials, industrial waste water treatment sludge, livestock, pressurized containers, and radioactive material. In the past farm animals and pressurized tanks were accepted. Hazardous and liquid wastes have never been accepted. White goods, vegetation, tires, glass, batteries, paper, metal, and cardboard are presently received for recycling.

The following is a general listing of materials that are accepted at the Cave Creek landfill:

- **Municipal refuse** (garbage, trash, and other wastes from households and businesses)

- **Green waste** (branches, leaves, cactus, etc.) All sizes of materials are acceptable at the Cave Creek facility, although very large items may require special handling.
- **Construction debris** (wood, concrete, asphalt, and soil)
- **Recyclable materials**
- **Large appliances**

The following materials are not accepted at the Cave Creek landfill.

- **Automobiles**
- **Tires**
- **Automobile batteries**
- **Septage and Sewage**
- **Hazardous Wastes**
- **Household Hazardous Waste**
- **Used oil**
- **Unused pesticides and herbicides**
- **PCB-containing wastes regulated under 40 CFR 761**
- **Untreated infectious wastes**
- **Explosives**
- **Fuel tanks and chemical storage tanks**
- **Paint and paint products**
- **Radioactive wastes**
- **Septic tank pumpings and untreated sewage**

2.1.2 Waste Screening and Inspections

Maricopa County has established a program to evaluate incoming wastes at the Cave Creek landfill and other solid waste facilities located within the County. This program is designed to keep unwanted wastes out of County landfills and involves waste screening and inspection programs. The waste screening program is accomplished through several different mechanisms. These include inspection of the waste generation process and/or sampling of the waste when it is delivered to the landfill.

Maricopa County's landfill inspection program includes observation of waste unloading and random load inspection reporting. The program is administered through Solid Waste Compliance

Inspectors who are stationed at Maricopa County Solid Waste disposal facilities. Inspectors are present at the Cave Creek facility during operating hours Monday through Saturday.

Duties performed by the inspectors include the following:

Observation of unloading of solid wastes by commercial and residential haulers to assess whether material being delivered to the landfill is acceptable. If unacceptable materials are discovered the Inspector is responsible for informing the hauler that the material cannot be dumped. If the hauler has left the site the Inspector is responsible for assessing the scene; determining whether the material presents an immediate threat to user and worker safety; informing the appropriate parties of the situation; attempting to determine who generated the material; and take appropriate actions to comply with applicable regulations.

Random selection of commercial loads for inspection. The Inspector visually inspects the material as it is being dumped and reports the findings on a random load inspection form. The random load inspection form is used to ascertain what wastes are being delivered from businesses, identify potential problems, and assist in identifying the generator of the material.

Traffic control of residential and commercial unloading areas. The Inspector patrols for scavengers in the dump area and inform them that this activity is not allowed at Maricopa County landfills.

2.2 DISPOSAL METHODS

To date the northwesterly quadrant of the landfill, shown as Cell A on the drawings, has been substantially completed and will be raised to final closure grade by early 1994. Current operations at Cave Creek landfill are conducted in Cell B. Cell B is functionally an extension of Cell A inasmuch as the two areas are contiguous with no separating berm. In the future, Cells C and D will be constructed in accordance with the conceptual drawings. All Cells will be covered with a final cap when filling is complete.

Over the last ten years several methods of operation have been practiced. Where it has been advantageous a Trench method was used. Where excavation and placement of materials were available the Area method was used. Presently a combination of both methods is used, however,

due to the difficult soil conditions, preference is given to excavation and hauling soil materials to the working face. The site is regularly maintained and a scheduled litter maintenance program is utilized. The Parks and Recreation Department furnishes offenders on probation to clean wind blown papers and debris.

A permanent on-site supervisor directs the activities of the landfill and schedules personnel. Equipment consists of a D-9 bulldozer, water truck, D-7 bulldozer and/or track loaders. These are used to spread and compact the waste and excavate soil. Acquisition of a compactor is planned to enhance compaction and extend the useful life of the landfill. During the landfill operation waste is evenly spread in layers of approximately 8 feet and compacted. A layer of soil is then spread over the waste as daily cover.

2.2.1 Dead Animals

Cave Creek landfill accepts dead animals (domestic small pets) without any prior screening, or special approval. Landfill operators prepare an area for dead animal disposal by creating a depression in the waste adjacent to the working face. The haulers are directed to dump their load in the depression. Soil and other waste materials are immediately placed over the animal bodies until at least three feet of cover has been achieved. The material is then compacted over the animal bodies.

2.2.2 Recyclable Materials Drop Off Area

Cave Creek landfill operates a recyclable materials drop-off area in the northeast corner of the site near the landfill entrance. The drop off area will consist of bins, each labeled with an accepted material type. Accepted materials will include corrugated cardboard, newspaper, aluminum cans, glass (sorted by color), and plastic drink containers (milk jugs, water jugs, soda bottles), tires, batteries, white goods, and vegetation.

The Cashier and Solid Waste Compliance Inspectors will monitor the drop-off area and spend time when possible at the bins watching haulers unload and provide information about what materials are acceptable.

The Cashier or Inspector will notify the Solid Waste Staff when a bin or bins will soon be full. One staff member and a roll-off trailer/tractor are dedicated to emptying and replacing recyclable materials bins from the county solid waste facilities. The bins are transported to a private facility

that processes, packages, and resells recyclable materials. If a bin fills before the roll-off trailer arrives, the Cashier or Inspector will place a cover over the bin. Haulers will then be advised to place the material into a storage bunker for disposal as a last resort.

2.2.3 Green Waste

Green waste is landscape debris. When this material is delivered to the facility the majority is segregated from the other solid waste materials by the hauler. Material that is considered clean (does not contain an abundant amount of rocks, soil, or other wastes) is deposited in a location designated by the landfill personnel. Unclean, or contaminated, green waste is landfilled and buried with the other solid waste. Clean green waste is accumulated on site and milled using a tub grinder. The material generated from milling operations will be used for several purposes, including shipment off site for use by other parties or use as landfill cover material. This material may also be landfilled as a waste.

2.2.4 Tires

Maricopa County currently participates in the Arizona State waste tire program. Tires delivered to Cave Creek are deposited in an area designated by landfill personnel. Tires are collected only from residential haulers. Tires will ultimately be processed in accordance with state requirements.

2.3 EQUIPMENT

The operational equipment of the Maricopa County Solid Waste Division that will be stationed at the Cave Creek landfill includes the following:

D-9 Dozer
D-7 Dozer
Caterpillar 826C landfill Compactor
Scraper
Grader
Loader
Water tank (14,000 gallons)
Water Truck
Air Compressor
Generator
Portable Pump (1,000 gpm)

Landfill equipment at all Maricopa County Solid Waste facilities receives regular maintenance, refueling, and minor repairs by Maricopa County maintenance staff. For larger repair needs equipment is trucked to Maricopa County's Automotive Services Facility.

2.4 LEACHATE MANAGEMENT

No leachate collection system existing in existing Cells A and B. However, a leachate collection system is planned for the expansion into Cells C and D.

2.5 CONTROL METHODS

2.5.1 Drainage Control

Drainage control in the existing cell is achieved through the following methods:

- strict controls on the type and conditions of waste accepted for disposal (see Section 2.4);
- grading of inactive portions of the cell to promote positive drainage;
- covering of inactive portions of the existing cell with approximately 12 inches of soil borrowed from the cell excavations to limit infiltration of direct precipitation; and
- control of direct precipitation adjacent to the working face to minimize potential for saturation of landfill material.

Inactive covered surfaces are generally graded to drain to the perimeter of the cell or to areas that do not contain waste. The positive grades encourage surface water runoff and decrease potential for ponding and surface water infiltration. Some minor ponding is unavoidable due to constraints caused by access requirements, the perimeter berm, and temporary soil stockpiles. Minimizing surface water infiltration serves as a discharge control technology by minimizing the potential for leachate generation.

During waste placement, the base of the placement area is sloped away from the waste being placed to ensure that direct precipitation runs away from the waste rather than soaking into the exposed waste. During placement of the first lift, any runoff from this area is absorbed and evaporated from the upper few inches of the subgrade. During placement of subsequent lifts, runoff from the working face is absorbed in the upper few inches of the soil cover placed over

the earlier lifts. In this manner, saturation of waste during placement by direct precipitation is avoided and the potential for leachate generation is controlled.

2.5.2 Litter Control

The facility uses daily cover to reduce the amount of waste that has the potential to become airborne. Additionally, the facility is completely surrounded by fence in part to reduce the amount of blowing litter that leaves the site. The site is regularly maintained and a scheduled litter maintenance program is utilized. The Parks and Recreation Department furnishes offenders on probation to clean wind blown papers and debris.

The Solid Waste Division can also assess a special fee for loads that arrive improperly restrained. This measure not only reduces litter on the grounds of the facility but encourages measures that reduce litter on public roads.

2.5.3 Dust Control

A water truck is used for dust control and equipment maintenance in addition to fire control when necessary. A large 14,000 gallon water tank supplies water for dust control and sanitary facilities. A production well continuously replenishes water to the tank. No external water source is available at this time although there is a water line along the north side of Carefree Highway serviced by a private water company. Vehicular access to the landfill is maintained by the County Department of Transportation.

2.5.4 Vector Control

Operating personnel conduct inspections for vectors on a regular basis. The only type of vector commonly observed in the vicinity of the facility are pack rats. To date pack rats have not been a problem within the facility. The predominant vector control employed by the facility is the use of daily cover. If vectors are discovered at the facility, operating personnel contact an exterminator to eradicate the problem.

2.5.5 Odor Control

Daily cover also provides an effective method of controlling odors at the facility. Particularly odorfious wastes are buried immediately upon receipt at the landfill to prevent an odor problem.

2.5.6 Fire Control

Fire control at the facility uses several preventative measures. Solid Waste Compliance Inspectors check loads for hot wastes, and refuse flammable materials delivered to the landfill. A daily cover is placed on waste materials to help prevent exposure to potential ignition sources.

All heavy equipment used at the facility is equipped with a fire extinguisher to handle small fires. The water truck is also equipped with a fire hose for small fires. The fire department is contacted for large fires.

2.5.7 Access Control and Security

Doors to all buildings and all gates on the perimeter fence are closed and locked at the end of each day. In the evening a private security company has been employed to observe the site and report any concerns, problems, etc. Security guards present a daily report to the Solid Waste Division. In the event of security problems during the day, the operators, cashiers, or the compliance inspector contacts the Phoenix Police Department.

2.5.8 Signs

Signs are used at the landfill to guide traffic, inform users of the recyclable materials drop-off center, inform haulers of fees, and inform haulers of restricted activities.

2.6 GROUND WATER MONITORING

Groundwater monitoring will conform to the requirements set forth in US EPA Subtitle D regulations, *EPA Criteria for Municipal Solid Waste Landfills* (40 CFR 258; 56 FR 51016, October 9, 1991; Amended at 57 FR 28627, June 26, 1992); *ADEQ Aquifer Protection Permits Application Guidance Manual* (modified September 11, 1992); and *ADEQ Guidance Document I, Establishing Ambient Groundwater Quality and Groundwater Levels for Aquifer Protection Permit Facility* (June 1993).

Ground-water sampling will be conducted on a regular basis at three onsite wells. Initially, an Ambient Aquifer Quality Determination Program will be conducted to assess background ground-water quality in the area of the landfill. Sampling will then continue with a Detection Monitoring Program. If necessary, additional ground-water sampling may take place as part of an

Assessment Monitoring Program and a Corrective Measures Program. These latter two programs are discussed in the Contingency Plan (Section 4.0).

Ambient Aquifer Quality Determination

The Ambient Aquifer Quality Determination Program will consist of 12 quarterly ground-water sampling events. For each sampling event, Maricopa County will submit a report to ADEQ. The report will present the analytical data sheets received from the laboratory (to include the date the analysis was complete, the individual who performed the analysis, the analytical method used to perform the analysis, the analytical result, and the reporting limit of the analytical method), and an assessment of the direction of ground-water flow based on water-level measurements performed at the time of sampling.

During the first, fifth, and ninth quarterly sampling events, the samples collected from the three on-site wells will be analyzed for the full list of parameters presented in Appendix I of the US EPA Subtitle D regulations. For the remaining nine events, samples from the three wells will be analyzed for the 15 Appendix I inorganics plus the Appendix I organics previously detected during the annual events. Following the 12 sampling events, Alert Levels (AL) and Aquifer Quality Limits (AQLs) will be established according to the required protocol. The calculated AL and AQL values will be presented to ADEQ in the report submitted for the twelfth and final sampling event of the Ambient Determination Program.

Detection Monitoring Program

Once the ALs and AQLs have been established, semi-annual samples will be collected from the three wells for full Appendix I analyses plus supplemental inorganic analyses. A report will be submitted to ADEQ for each semi-annual sampling event. Each report will include the analytical data sheets and an assessment of ground-water flow directions.

Upon receipt of the analytical results, Maricopa County will perform an initial review of the data to determine if any detections have exceeded an AL or AQL. If an AL or AQL is exceeded, a verification sample(s) will be collected as soon as possible. The results of each verification analysis will be evaluated to determine if the Detection Monitoring Program is to continue, or if the Assessment Monitoring Program or Corrective Measures Program is to begin.

2.7 GAS MONITORING

Gas monitoring will be conducted on a quarterly basis after closure.

2.8 RECORD KEEPING

An operations file for the Cave Creek Landfill is maintained in the Maricopa County Solid Waste Office. The operations file contains facility design and proposed design alterations, inspection reports, incident reports, calculations, and the operations plan.

3.0 RESTRICTED ACTIVITIES

The following activities are restricted at the Cave Creek Landfill:

3.1 SCAVENGING

No scavenging is permitted. Scavengers are politely told to stop when first observed. If a scavenger continues after this notice, the person is advised that the local Police Department has been notified and the Solid Waste Compliance Inspector or the Cashier contacts the police. Scavenging is prohibited by county ordinance.

3.2 OPEN BURNING

No open burying is allowed at the facility. Smoldering ashes are not accepted. Solid Waste Compliance Inspectors are present to screen loads and hot loads are refused. If a hot load is inadvertently accepted, the operators or inspectors take the appropriate actions or if necessary activate the fire contingency procedures.

3.3 LIQUID WASTE

No liquid wastes are accepted at the Cave Creek Landfill. Acceptable liquids are routed to the liquids disposal facility, located at the New River Landfill.

3.4 SMOKING

No smoking is permitted at the facility or within facility buildings, other than the Operators trailer. A sign is posted at the entrance gate to inform landfill users of this policy. Cashiers, Operators, and Solid Waste Compliance Inspectors are present to assist in enforcing this policy.

4.0 CONTINGENCY PLAN

4.1 IMPACT TO GROUNDWATER

Maricopa County will begin an Assessment Monitoring Program or Corrective Measures Program as determined from Figure 3-25. The details presented in this Contingency Plan for these two Programs are in conformance with the requirements set forth in the US EPA Subtitle D regulations (1991), ADEQ Aquifer Protection Permit Application Guidance Manual (1991), and the ADEQ Technical Guidance Document I (1993).

4.1.1 Assessment Monitoring Program

Maricopa County will begin the Assessment Monitoring Program as determined by Figure 3-25. ADEQ will be notified within 14 days of receiving an analytical report verifying an exceedance of an Alert Level. Within 90 days of verification ground-water samples will be collected from each of the three on-site wells for analysis of the full list of US EPA Subtitle D Appendix II constituents as presented in Appendix J. Additional components of the Assessment Monitoring Program are as follows:

1) Collect annual samples for the full list of Appendix II constituents.

2) Perform eight monthly sampling events to establish Alert Levels and Aquifer Quality Limits for each detected Appendix II constituent not found on the Appendix I list.

3) Collect semiannual samples for the full list of Appendix I analytes plus the site-specific (previously detected) Appendix II constituents.

In order to meet the requirements of the Assessment Monitoring Plan the sampling schedule shown on Table 15 will be implemented. This schedule will be followed until one of two

findings are encountered: 1) all Appendix I and site-specific Appendix II concentrations are below Alert Levels for two consecutive sampling events, in which case the Detection Monitoring Program will be reimplemented; or 2) one or more verified concentrations exceed an Aquifer Quality limit, in which case a Corrective Measures Program will be implemented (Section 4.1.2) if the conditions on Figure 3-25 are satisfied.

4.1.2 Corrective Measures Program

Maricopa County will begin a Corrective Measures Program as determined by Figure 3-25. ADEQ will be notified within 14 days of receiving an analytical report verifying an exceedance of an Aquifer Quality Limit. Within 90 days of receiving the verification report, a proposal will be presented to ADEQ discussing the need for installation of additional monitoring wells, downgradient property owners will be notified of the verified exceedance(s), and an assessment of corrective measures will begin. The assessment of corrective measures will be performed according to the protocols described in the US EPA Subtitle D regulations. The Assessment Monitoring Program will continue during the period of time that corrective measures are being assessed. Prior to selection and implementation of a remedy, the results of the corrective measures assessment will be discussed at a public meeting with interested and affected parties. After the public meeting, a remedy will be selected and the corrective measure will be implemented according to the protocols described in the US EPA Subtitle D regulations.

4.2 FIRE

The purpose of the fire contingency plan is to prevent fires, and control them in the event they develop. The principal means of fire prevention are nonacceptance of smoldering ashes and highly flammable materials, controlling (and monitoring) potential methane buildup, daily equipment checks, and non-allowance of smoking in the facility.

Fire control equipment includes a water truck equipped with a fire nozzle, one fire extinguisher in each of the onsite buildings, and fire suppressing systems in each piece of landfill equipment. This equipment is inspected on a regular basis to insure proper operation. Fire extinguishers are recharged after use or if during inspection is discovered to need recharging. Fire extinguishers are inspected annually by the Facilities Management Division of Maricopa County and retagged after inspection.

Response procedures for fires are as follows:

Minor fire in onsite building

1. If necessary evacuate building and area.
2. Suppress fire with extinguisher.
3. If fire cannot be controlled quickly contact fire department (911).
4. Evacuate the affected building and if necessary the surrounding area.
5. Contact the landfill manager.
6. Contact the Solid Waste Director.

Small surface landfill fire

1. If necessary, evacuate the affected area(s).
2. Suppress fire with extinguisher, or use water wagon to extinguish flames.
3. If necessary, contact the fire department (911)
4. Contact the landfill manager.
5. Contact the Solid Waste Director.

Large Landfill fire

1. Evacuate the affected area(s).
2. Try to excavate and isolate burning debris.
3. Contact the landfill manager.
4. If necessary, contact the fire department (911)
5. Contact the Solid Waste Director.

Landfill equipment engine fire

1. Attempt to isolate equipment and avoid areas of exposed debris.
2. Activate self contained halon unit by depressing inside or outside plunger.
3. Evacuate area if necessary.
4. Contact the landfill manager.
5. Contact the Solid Waste Director.

Landfill equipment fire - nonengine

1. If small fire, Suppress with fire extinguisher.
2. Evacuate area(s), if necessary.
3. Contact the landfill manager.
4. Contact the Solid Waste Director.

Smoldering fire or flames in hauler transport trailer

1. Have hauler empty contents of the trailer onto the ground in an area designated by the operator. If the load has been dumped already, isolate the load to the extent possible.
2. Allow contents to burn out if no structures or people are threatened.
3. If necessary, spread the load out and extinguish the fire.

Minor vehicle fire

1. Isolate the vehicle to the extent possible.
2. Suppress fire with extinguisher.
3. If necessary, evacuate the area.
4. If necessary, call the fire department (911).
5. Contact the landfill manager.
6. Contact the Solid Waste Director.

Fire in recyclable materials bin

1. Evacuate people from the area.
2. Suppress fire with extinguisher if fire is small
3. Allow contents to burn out if fire is large
4. Contact the landfill manager.
5. Contact the Solid Waste Director.

Small electrical or equipment fire

1. Extinguish fire with extinguisher.
2. Evacuate affected area.
3. Contact the landfill manager.
4. Contact the Solid Waste Director.

The Operations Supervisor and Solid Waste Manager should be notified as soon as possible after a fire has occurred. A list of division personnel's pager numbers, home phone numbers, and emergency numbers is kept next to each telephone.

If evacuation is necessary, Solid Waste personnel should direct all members of the public in and around the facility to leave the area. Vehicle drivers should be directed to slowly drive their vehicles out of the facility past the cashier's booth. If an immediate threat is apparent people should be directed to leave the facility without attempting to remove vehicles.

All Solid Waste employees on duty at the time of a fire evacuation should meet at the entrance to the landfill at the Carefree Highway. The Technician in charge of the facility at the time of the fire should verify that all Solid Waste employees on duty have evacuated the facility. If the Technician must leave the site a designated representative should be directed to fulfill this duty in the event of a fire.

4.3 INJURY OR ACCIDENTS

In the event of injury or accident to anyone at the Cave Creek Landfill, Solid Waste personnel should:

1. Assess the injury.
2. Call for rescue assistance (911) if needed.
3. Provide appropriate level of first aid.
4. Contact Operations Supervisor and Solid Waste Director.
5. If necessary, assist in transporting victim to nearest hospital (see directions below).
6. Complete accident and injury report forms as soon as the situation is resolved.
7. Contact Administrative Manager for further instructions.

If a vehicle accident occurs on the site, Solid Waste personnel should:

1. Assess if injuries are involved.
2. Call for rescue assistance and provide the appropriate level of first aid.
3. Call the Maricopa County Sheriffs department (911).
4. Call Operations Supervisor
5. If necessary, assist in transporting victim to nearest hospital
6. Contain any liquid spills with shovel-fulls of dirt.
7. Move vehicles involved out of traffic flow if possible.
8. If a fire is involved follow procedures for small vehicle fire.

4.4 FACILITY SHUTDOWN

In the unlikely event that the Cave Creek Landfill were shut down for one day or less all standard solid waste could be taken to the New River Landfill.

If prolonged closure of the facility were to occur, (greater than one day) Maricopa County would evaluate the situation and provide alternative means of disposal when appropriate.

4.5 EQUIPMENT MALFUNCTION

Normal operations at the Cave Creek Landfill rely on the function of many types of heavy machinery, pumps, electrical tools, and generators. In cases where smaller problems occur, the Solid Waste personnel will attempt to determine what the problem is and make the appropriate repairs, if possible. Responses to larger malfunctions are as follows:

Malfunction of heavy machinery

If a piece of heavy machinery were to malfunction, that particular piece of machinery would first be checked by the Maricopa County automotive unit. If the equipment cannot be repaired on site, it is transported to the Automotive Services Facility. The Solid Waste Division has numerous sources for short term replacement of malfunctioning equipment including, borrowing equipment from other Maricopa County landfills, rental of equipment from a rental company, or borrowing from the county equipment pool. Repair of landfill machinery is accomplished as quickly as possible to prevent undue operational hardships for the facility.

Ground water well pumps

Ground water monitoring wells are sampled and maintained by Maricopa County. Wells are monitored on a biannual basis and pumps are checked for problems at that time. In the event that a malfunction is discovered, Solid Waste personnel will contract with a ground water pump company to perform repairs.

Generators

An outside contractor will be used to check, maintain, and repair generators used at the facility. Solid Waste personnel will periodically check the generators to insure they are operational, regularly change fluids, and perform trouble shooting if generators appear to be nonoperational. The contractor will be contacted to perform repair services as needed.

During the generator repair time a backup generator can be rented or possibly borrowed from other Maricopa County departments.

Power Outage

If a power outage were to occur at the site, Solid Waste personnel would contact Arizona Public Service Co. to determine whether the problem was regional or local. The facility would continue operations and transactions would be handwritten. In the unlikely event that power were out for longer than two days, water for dust control would need to be obtained from an off site source.

Computer

A computer is used at the Cave Creek Landfill to perform transactions with haulers. Computer malfunctions are reported immediately to the Solid Waste Administrative staff. The Administrative staff reports the malfunction to the management systems division of Maricopa County Wastewater. During short term malfunctions (one day or less) transactions are handwritten. A backup computer exists within the Solid Waste Division, and can be used during prolonged absence of the facility's dedicated computer.

APPENDIX N

CLOSURE CONSTRUCTION QUALITY CONTROL PLAN

APPENDIX N

CLOSURE CONSTRUCTION QUALITY ASSURANCE SPECIFICATIONS

The purpose of the Construction Quality Assurance (CQA) plan is to verify that materials used in closure construction, testing procedures for these materials and their placement, as well as construction practices, and construction inspection methods assure that the final cover is constructed as set forth in the Final Closure and Post-Closure Maintenance Plan (Plan). The CQA specifications delineated in this Appendix detail the materials, testing, placement and inspection of the final cover.

MATERIAL SPECIFICATION

Foundation layer

The final daily cover/foundation layer will consist of a minimum of 12 inches of suitable material compacted to a minimum of 90 percent relative compaction. Material utilized for the foundation layer will be free of rocks greater than 6 inches in diameter, roots, debris, and refuse. Foundation layer material will be sourced from the site. These soil units are described in detail in Section 3.2.2 of this document. Laboratory tests on all proposed foundation layer materials will minimally include the following:

- Particle size analysis using ASTM designation D 422-63 [7/84] Standard Method for Particle Size Analysis of Soils;

- Atterberg Limits using ASTM designation D 4318-84 [10/84] Standard Test Method for Liquid Limit, Plastic Limit and Plasticity Index of Soils;

- Engineering classification using ASTM designation D 2487-85 [1/89] Standard Test Method for Classification of Soils for Engineering Purposes; and

- Moisture density relations in accordance with ASTM designation D 1557-78 [5/88] Standard Test Method for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures.

A description of the field testing procedures, sampling equipment and calibration procedures, sampling methods and frequencies, sampling locations, as well as the name and QA/QC

procedures of the laboratory to be used for sample analysis will be provided for regulatory review.

Infiltration Control Layer

The infiltration control layer will consist of an 18-inch thick layer of Cave Butte Reservoir sediment, compacted to a relative compaction which will provide a minimum in place permeability of 1 X 10^{-5} centimeters per second (cm/sec). Laboratory tests on representative samples of all proposed low permeability layer materials will minimally include the following:

- Particle size analysis using ASTM designation D 422-63 [7/84] Standard Method for Particle Size Analysis of Soils;

- Atterberg limits in accordance with ASTM designation D 4318-84 Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soil;

- Engineering classification using ASTM designation D 2487-85 [1/89] Standard Test Method for Classification of Soils for Engineering Purposes;

- Moisture density relations in accordance with ASTM designation D 1557-78 [5/88] Standard Test Method for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures;

- Laboratory permeability using a triaxial permeability (back pressure saturated) test procedure as described in EPA SW-846 Method 9100. The clay will be compacted to target relative compactions as determined by ASTM designation D 1557-78.

A description of the field testing procedures, sampling equipment and calibration procedures, sampling methods and frequencies, sampling locations, as well as the name and QA/QC procedures of the laboratory to be used for sample analysis will be provided for regulatory review.

Erosion Control Layer

The erosion control layer will consist of a minimum of 6 inches of suitable material and will be vegetated. Material utilized for the erosion control layer will be free of rocks greater than 3 inches in diameter, roots, debris, and refuse. Vegetative layer material will be an approximate 50/50 blend of Cave Butte sediment and on-site granular fines. Laboratory tests on all proposed vegetated layer materials will minimally include the following:

- Particle size analysis using ASTM designation D 422-63 [7/84] Standard Method for Particle Size Analysis of Soils;

- Atterberg limits in accordance with ASTM designation D 4318-84 Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soil;

- Engineering classification using ASTM designation D 2487-85 [1/89] Standard Test Method for Classification of Soils for Engineering Purposes; and

- Moisture density relations in accordance with ASTM designation D 1557-78 [5/88] Standard Test Method for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures.

A description of the field testing procedures, sampling equipment and calibration procedures, sampling methods and frequencies, sampling locations, as well as the name and QA/QC procedures of the laboratory to be used for sample analysis will be provided for regulatory review.

FINAL COVER

A field testing program will be instituted to ensure that the final cover meets the minimum specifications of design. CQA audits on the field testing program will occur at a frequency determined by the CQA engineer. The field testing program will include the following tests and minimum frequency of testing:

- Particle size analysis using ASTM designation D 422-63 [7/84] standard method for Particle Size Analysis of Soils to be minimally performed once for every 1000 yards of material placed or four tests per day;

- Atterberg Limits using ASTM designation D 4318-84 [10/84] Standard Test Method for Liquid Limit, Plastic Limit and Plasticity Index of Soils to be minimally performed once for every 1000 yards of material placed, or 4 tests per day;

- Engineering classification using ASTM designation D 2487-85 [1/89] Standard Test Method for Classification of Soils for Engineering Purposes to be minimally be performed once for every 1000 yards of material placed or four tests per day;

- Moisture density relations in accordance with ASTM designation D 1557-78 [5/88] Standard Test Method for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures will be performed once for every 5000 yards of material placed, or a minimum of one test per week;

- Compaction tests in accordance with ASTM designation D 2922-81 [5/81] Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth) will be performed once for every 1000 yards of material placed, or a minimum of four tests per day.

Additional field and laboratory tests to be performed on the low-permeability layer of the final cover include:

- Laboratory permeability using a triaxial permeability (back pressure saturated) test procedure as described in EPA SW-846 Method 9100 will be performed once for every 5000 yards of material placed, or a minimum of one test per week. Samples obtained for permeability testing will be representative.

- Infiltration tests will be performed in accordance with ASTM designation D 3385-88 Standard Test Method for Infiltration Rate of Soils in Field Using Double Ring Infiltrometers. Infiltration tests will be performed on the final cover to confirm an infiltration rate of less than five percent of a 100-year, 24-hour storm. Otherwise, field infiltration tests will only carried out on the test pad. If field infiltration tests are performed on the final cover, they will be conducted for a duration necessary to achieve steady-state conditions.

Actual field testing frequencies may be modified by the CQA engineer to be compatible with field conditions. No modifications will be proposed for testing at a lesser frequency than specified in this Appendix without the written approval of ADEQ.

The infiltration control layer will be maintained in a sufficiently moist condition throughout final cover construction to avoid desiccation cracking. If desiccation cracking occurs, the cap will be scarified a minimum of 1 inch deeper than the deepest desiccation crack found, moisture conditioned, and re-compacted.

All holes and depressions caused by field testing of the final clay cap will be filled with a bentonite paste, placed in 6-inch lifts, and tamped to remove voids and provide a positive seal against the side of the hole or depression.

DRAINAGE CONTROL FACILITIES

Down Drain Ditch Construction

Ditches and swales will be cut accurately to the cross-sections and grades shown on the drawings. No ponding will be allowed. All roots, stumps, rocks and foreign material along the sides and bottom of the ditch and swale changes will be trimmed or removed. Care will be taken in cutting down drain ditches to avoid excavating into the clay layer beneath.

Excavation below the grade indicated on the Drawings will be back-filled to grade with thoroughly compacted material. Suitable material excavated from the ditches and swales will be stockpiled for use as foundation layer or daily cover.

Ditch Rock Liner

Rock will be placed along drainage channels where shown on the Drawings to inhibit scouring of the underlying material. Rock lining will be a readily available material approved by the CQA engineer. It will consist of aggregate not larger than 1½ inches in diameter and not less than one inch in diameter with a maximum of five percent passing the No. 200 sieve.

APPENDIX O

COST ESTIMATES

APPENDIX O

COST ESTIMATES

Cost estimates are given below in 1993 dollars for landfill operations, capital improvements, closure, and post closure.

Operations	$ 1,710,000.00
Capital Improvements	7,316,567.00
Closure	732,140.00
Post-Closure	3,786,740.00
Total	$13,545,447.00

Operational costs are based on the following assumptions:

- Cost of $5 per ton of refuse;
- 500 tons per day of refuse landfilled;
- Six days per week of landfill operation;
- Operational life of 114 wks (10/15/93 through 12/31/95).

Capital Improvements include the costs associated with landfill expansion and drainage control. Also included are costs for the capping of cells A and B.

Closure costs represent the costs associated with the closure of approximately the last 20 acres of the landfill (Cells C and D). Costs for closing the remaining 30-35 acres of the landfill are included in capital improvements because the tasks and costs associated with closure of cells A and B are so closely related to the costs of constructing and installing cells C and D.

Post closure costs include those costs for post closure maintenance and monitoring. Note that these costs are given in 1993 dollars and that post closure care will continue for a period of 30 years.

APPENDIX O

OPERATIONS FOR IMPROVEMENT, CAPITAL IMPROVEMENT, AND CLOSURE
CONCEPTUAL COST ESTIMATE
CAVE CREEK – LANDFILL

PREPARED BY: KRS–D&M
D&M Job No. 25551–002–022

RUN DATE: 29–Nov–93
RUN TIME: 05:43 PM

Task #	Sub Task #	Task Description / Subtask Description	Performed By	Quantity	Unit	Total Unit Cost OH/P	OPER. FOR IMPROVEMT Percent of Funding	OPER. FOR IMPROVEMT Total Subtask Cost	OPER. FOR IMPROVEMT Total Task Cost	CAPITAL IMPROVEMENT Percent of Funding	CAPITAL IMPROVEMENT Total Subtask Cost	CAPITAL IMPROVEMENT Total Task Cost	CLOSURE Percent of Funding	CLOSURE Total Subtask Cost	CLOSURE Total Task Cost
1.0		STRUCTURAL REMOVAL AND ABANDONMENT													
	1.1	Contractor mob/demob	Contractor	1	LS	$500.00				100%	$500				
	1.2	Remove chainlink fencing	Contractor	7480	LF	$1.45				100%	$10,846	$11,346			
2.0		FINAL COVER													
	2.1	Contractor mob/demob	Contractor	1	LS	$11,800.00				65%	$7,670		35%	$4,130	
	2.2	Survey layout/asbuilts	Contractor	1	LS	$9,500.00				65%	$6,175		35%	$3,325	
	2.3	Berm fill	Cave Creek LF	23,233	CY	$2.00	100%	$46,466							
	2.4	Infiltration & vegetation layer material onsite in stockpile	Cave Creek LF	148,507	CY	$6.00				65%	$579,178		35%	$311,865	
	2.5	Mix/spread/compact/fine grade infilt. control layer (18")	Contractor	127,292	CY	$3.10				65%	$256,493		35%	$138,112	
	2.6	Mix / spread / fine grade vegetation layer (6")	Contractor	42,431	CY	$2.25			$46,466	65%	$62,055	$911,571	35%	$33,414	$490,846
3.0		LATERAL EXPANSION CELL "C"													
	3.1	Contractor mob/demob	Contractor	1	LS	$5,000.00				100%	$5,000				
	3.2	Survey layout/asbuilts	Contractor	1	LS	$2,000.00				100%	$2,000				
	3.3	Develop haul roads	Contractor	4,400	LF	$2.00				100%	$8,800				
	3.4	Finish existing berms	Cave Creek LF	63,655	CY	$2.00	100%	$127,310							
	3.5	Excavation of cell "C"	Contractor	168,903	CY	$1.50				100%	$253,355				
	3.6	Maintain haul roads	Contractor	4,400	LF	$1.00				100%	$4,400				
	3.7	Finish base grades and slopes	Contractor	66,096	SY	$1.50				100%	$99,144				
	3.8	Puchase soil	Contractor	44,064	CY	$2.00				100%	$88,128				
	3.9	Haul soil from 25 mile source	Contractor	44,064	CY	$4.00				100%	$176,256				
	3.10	Place compacted soil floor	Contractor	44,064	CY	$5.00				100%	$220,320				
	3.11	Finish soil layer for HDPE	Contractor	66,096	SY	$1.00				100%	$66,096				
	3.12	Maintain soil for HDPE	Contractor	66,096	SY	$0.25				100%	$16,524				
	3.13	Furnish gravel – 12" blanket	Contractor	28,641	TON	$5.00				100%	$143,205				
	3.14	Geocomposite on slopes	Contractor	550,000	SF	$0.30				100%	$165,000				
	3.15	Geotextile (2 layers 16 oz)	Contractor	105,000	SF	$0.26				100%	$27,300				
	3.16	Geosynthetic liner 60 mil	Contractor	594,860	SF	$0.65				100%	$386,659				
	3.17	Leachate collection and removal	Contractor	750	LF	$15.00				100%	$11,250				
	3.18	Haul operations	Cave Creek LF	3,889	CY	$2.00	100%	$7,778							
	3.19	Place operations layer	Cave Creek LF	3,889	CY	$1.00	100%	$3,889	$138,977			$1,673,437			
4.0		LATERAL EXPANSION CELL "D"													
	4.1	Contractor mob/demob	Contractor	1	LS	$5,000.00				100%	$5,000				
	4.2	Survey layout/asbuilts	Contractor	1	LS	$2,000.00				100%	$2,000				
	4.3	Develop haul roads	Contractor	7,500	LF	$2.00				100%	$15,000				
	4.4	Finish existing berms	Cave Creek LF	116,169	CY	$2.00	100%	$232,338			$0				
	4.5	Excavation of cell "D"	Contractor	247,000	CY	$1.50				100%	$370,500				
	4.6	Maintain haul roads	Contractor	7,500	LF	$1.00				100%	$7,500				
	4.7	Finish base grades and slopes	Contractor	101,358	SY	$1.50				100%	$152,037				
	4.8	Puchase soil	Contractor	67,572	CY	$2.00				100%	$135,144				
	4.9	Haul soil from 25 mile source	Contractor	67,572	CY	$4.00				100%	$270,288				
	4.10	Place compacted soil floor	Contractor	67,572	CY	$5.00				100%	$337,860				
	4.11	Finish soil layer for HDPE	Contractor	101,358	SY	$1.00				100%	$101,358				
	4.12	Maintain soil for HDPE	Contractor	101,358	SY	$0.25				100%	$25,340				
	4.13	Furnish gravel – 12" blanket	Contractor	43,922	TON	$5.00				100%	$219,610				
	4.14	Geocomposite on slopes	Contractor	843,750	SF	$0.30				100%	$253,125				
	4.15	Geotextile (2 layers 16 oz)	Contractor	4,500	SF	$0.26				100%	$1,170				
	4.16	Geosynthetic liner 60 mil	Contractor	912,220	SF	$0.65				100%	$592,943				
	4.17	Leachate collection and removal	Contractor	1,500	LF	$15.00				100%	$22,500				
	4.18	Haul operations	Cave Creek LF	5,833	CY	$2.00	100%	$11,666			$0				
	4.19	Place operations layer	Cave Creek LF	5,833	CY	$1.00	100%	$5,833	$249,837		$0	$2,511,375			

APPENDIX O

OPERATIONS FOR IMPROVEMENT, CAPITAL IMPROVEMENT, AND CLOSURE
CONCEPTUAL COST ESTIMATE
CAVE CREEK -- LANDFILL

PREPARED BY: KRS-D&M
D&M Job No. 25551-002-022

RUN DATE: 29-Nov-93
RUN TIME: 05:43 PM

Task #	Sub Task #	Task Description / Subtask Description	Performed By	Quantity	Unit	Total Unit Cost OH/P	OPER. FOR IMPROVEMT Percent of Funding	OPER. FOR IMPROVEMT Total Subtask Cost	OPER. FOR IMPROVEMT Total Task Cost	CAPITAL IMPROVEMENT Percent of Funding	CAPITAL IMPROVEMENT Total Subtask Cost	CAPITAL IMPROVEMENT Total Task Cost	CLOSURE Percent of Funding	CLOSURE Total Subtask Cost	CLOSURE Total Task Cost
5.0		CONSTRUCTION QUALITY ASSURANCE													
	5.1	Onsite CM/testing/inspection/record keeping/QA report	Eng Consultant	1	LS	$175,000.00				65%	$113,750	$113,750	35%	$61,250	$61,250
6.0		REVEGETATION OF THE FINAL COVER													
	6.1	Planting seed	Contractor	52.6	AC	$550.00				65%	$18,805		35%	$10,126	
	6.2	Mulch / fertilization	Contractor	52.6	AC	$950.00				65%	$32,481		35%	$17,490	
	6.3	Establishment (temporary) irrigation	Contractor	1	LS	$7,500.00				65%	$4,875	$56,160	35%	$2,625	$30,240
7.0		DRAINAGE CONTROL SYSTEMS AND FACILITIES													
	7.1	Contractor mob/demob	Contractor	1	LS	$8,100.00				65%	$5,265		35%	$2,835	
	7.2	Survey layout/asbuilts	Contractor	1	LS	$4,500.00				65%	$2,925		35%	$1,575	
	7.3	Earthwork for perimeter diversion channels	Contractor	33,057	CY	$3.60				100%	$119,005				
	7.4	Earthwork for perimeter toe drain collection ditches	Contractor	3,629	CY	$5.30				65%	$12,502		35%	$6,732	
	7.5	Earthwork improvements to existing drainage wash	Contractor	4,073	CY	$1.25				100%	$5,091				
	7.6	Earthwork for traverse collection ditches	Contractor	2,083	CY	$5.30				65%	$7,176		35%	$3,864	
	7.7	Drain rock/erosion protection (2")	Contractor	400	CY	$25.00				65%	$6,500		35%	$3,500	
	7.8	Pipe down drains (12") to toe drain ditch	Contractor	1,300	LF	$14.00				65%	$11,830		35%	$6,370	
	7.9	Prefab concrete inlet down drain pipe structure	Contractor	16	EA	$300.00				65%	$3,120		35%	$1,680	
	7.10	Earthwork cut for detention basins	Contractor	17,006	CY	$3.25				100%	$55,270				
	7.11	Earthwork fill for detention basins	Contractor	1,955	CY	$3.50				100%	$6,843				
	7.12	Earthwork road building (load/haul/fill/compact)	Contractor	1,000	CY	$3.50				65%	$2,275		35%	$1,225	
	7.13	Riprap/erosion cntrl (12") @ toe drain collect. ditch outlets	Contractor	80	CY	$40.00				100%	$3,200				
	7.14	Riprap/erosion cntrl 12" of diversion channel bends	Contractor	658	CY	$40.00				100%	$26,320	$267,321			$27,781
8.0		IMPLEMENTING SITE SECURITY MEASURES													
	8.1	Chainlink fencing (8' high, with 3 strand barbed wire top)	Contractor	8,300	LF	$12.00				100%	$99,600				
	8.2	Barbed wire (4 strand) fencing	Contractor	2,800	LF	$6.00				100%	$16,800				
	8.3	Signage	Contractor	1	LS	$500.00				100%	$500	$116,900			
Subtotal									**$435,280**			**$5,661,859**			**$610,117**
Engineering, design, administration, legal and consulting services @ 10%									**$43,528**			**$566,186**			**$61,012**
Contingency @ 10%									**$43,528**			**$566,186**			**$61,012**
Total									**$522,336**			**$6,794,231**			**$732,140**

Notes: (a) Conceptual estimates based on the assumptions listed in this appendix.

APPENDIX O

POST–CLOSURE MAINTENANCE
CONCEPTUAL COST ESTIMATE
CAVE CREEK LANDFILL

PREPARED BY: AAF–D&M
D&M Job No. 25551–002–022

RUN DATE: 29–Nov–93
RUN TIME: 04:01 AM

Task #	Task Description / Subtask Description	Quantity	Unit	Total Unit Cost OH/P	Total Task Cost
1	Final Cover and Grading Maintenance	52.9	AC	$500	$26,450
2	Drainage Control Systems and Facilities Maintenance	1	LS	$5,000	$5,000
3	Groundwater Monitoring				
	Sampling and Reporting	4	QTR	$2,200	$8,800
	Analytical	4	QTR	$2,250	$9,000
4	Landfill Gas Monitoring				
	Sampling and Reporting	12	MON	$1,100	$13,200
	Analytical	12	MON	$200	$2,400
5	Security and Site Facilities Maintenance	1	LS	$5,000	$5,000
6	Post–Closure Inspection and Reporting	1	LS	$15,000	$15,000
	Subtotal				**$84,850**
	Contingency @ 20%				**$16,970**
	Annual Total				**$101,820**

Note: Assumptions of tasks to be performed are outlined in Section 3.7 of this document.

BASIS FOR ESTIMATE
(Assumptions)

CAPITAL IMPROVEMENTS AND CLOSURE
CAVE CREEK LANDFILL

1. Unit costs in 1993 dollars.

2. Construction sequences and work are continuous, minimizing mob/demob requirements.

3. Portable offices, scales, and facilities remain on site for use as a transfer station at some time in the future.

4. Debris consists of chainlink fence waste. Debris is hauled offsite to an approved construction debris landfill.

5. The amount of daily soil cover placed by Cave Creek landfill is approximately 30 percent of the waste volume.

6. Import material is hauled from a source 25 miles away and is stockpiled onsite.

7. Import material contains sufficient soil gradation for cap layer. Import material does not require processing/screening.

8. Import material is 100 percent silt and process with water to produce cap layers (infiltration and vegetation).

9. Infiltration layer is compacted to 95 percent modified procter density at moisture content.

10. Vegetation layer is compacted to 90 percent standard procter density at optimum moisture content.

11. Subtitle "D" areas to receive liner will be scarified with dozer/graders to a depth of 1 foot over entire area, and compacted with sheepsfoot compactors to 95 percent standard procter density.

12. Excavation of 2 x 3 feet cross section trench around the entire perimeter of area to receive liner to anchor the liner at the top of slope. Excavated by rubber tire backhoe.

13. Process/screen onsite/native material to produce 2-inch minus bedding material using a screen plant and conveyor system and stockpiled. Screen is fed by a loader.

14. Place bedding material over entire area to receive liner and compact to 95 percent standard procter density using smooth drum roller compactor, wheel roll with rubber tire when necessary such as 3 to 1 slopes or steeper.

15. The Subtitle "D" cells will have a 2-foot thick low-permeable soil layer as a liner foundation.

16. HDPE 60 mil liner is required for primary liner and placed immediately over compacted soil foundation.

17. A drain material or bedding over the composite liner system is placed 12 inches deep with low-weight bearing track equipment.

18. Backfill of anchor trench required using bedding material, compacted to 95 percent standard procter density.

19. Construction quality assurance for engineering consultant consists of coordination and administration construction contractors, pay quantity verification, review pay requests, field documentation (record keeping), photodocumentation, inspection of liner installations, QA field testing soil densities, lab testing of soil, lab testing of liner samples, and preparation of CQA report.

20. Revegetation is general ground cover. Unit costs obtained from cost estimates provided by the county that were previously prepared by other.

21. Temporary irrigation consists of rented sprinkler systems to get the ground cover started for a term of eight months, natural watering will be sufficient beyond that point.

22. Perimeter diversion channels will be excavated using dozers, and grader will be used to construct it shape and fine grade. A loader and haul trucks is used to wheel rolled to 95 percent standard procter density. No channel lining is considered.

23. Toe drains (collection ditches) will be excavated and shaped using a trackhoe or grade-all with a special bucket. No channel lining is considered.

24. Existing drainage wash minor improvements consist of general site grading, clear and grubbing, and shaping to match inverts of new channels. Improvements made with dozer and grader. No channel lining is considered.

25. Traverse drainage ditches constructed with a grader mortar board. All fine grading by motor grader.

26. Traverse drainage ditches are lined 4 inches thick with D50 size 2-inch drain rock over entire ditch surface.

27. Pipe down drains from the traverse ditches to the toe drain (collection ditches) are 12 inches in diameter HDPE pipe material.

28. Inlet of pipe down drains at traverse ditches require a prefabricated concrete inlet structure for a transition with minimum erosion.

29. Detention basins are excavated with dozers. Loaders and haul truck are used to remove excess soil and transport to the central stockpile. Final shaping and fine grading is conducted by grader. The entire basins are compacted to 95 percent standard procter density using a smooth drum roller compactor and wheel rolling when necessary.

30. Access road required constructed with fill material and is compacted to 95 percent standard procter density.

31. Riprap consists of D50 size 12-inch with a minimum size of 6-inch and a maximum of 24 inch. Riprap is placed on slopes and invert at each bend of the diversion channel. The length of channel lined with riprap at each of the two bends is approximately 150 feet.

32. Riprap is required for energy dissipation at the outlet of the toe drains (collection ditches) as it spills into the detention basins. D50 size 12 inch is used.

33. New chainlink fence needed around perimeter of landfill enclosing the drainage structures. Fence is 8 feet high and has a barbed three-wire security top.

34. New barbed four-wire cattle fence is required to reconstruct to near original plans.

35. Well monitoring consists of two PVC pipes constructed during waste fill operations. Planning for installation is important. PVC pipe is 4 inches in diameter, one end exposed to surface has locking cap, other end submerged in detection sump has screen cap.

36. Engineering, design, administration, legal and consulting services are 15 percent of the capital construction costs, within industry standard. These services may include but are not limited to the following: hydrology evaluations; further agency review and negotiation; additional site investigations of soil conditions; engineering of lined cells, drainage structures, and cap; final design and preparation of drawings and specification and contract documents; legal review and advise, and evaluations for feasibility and constructability.