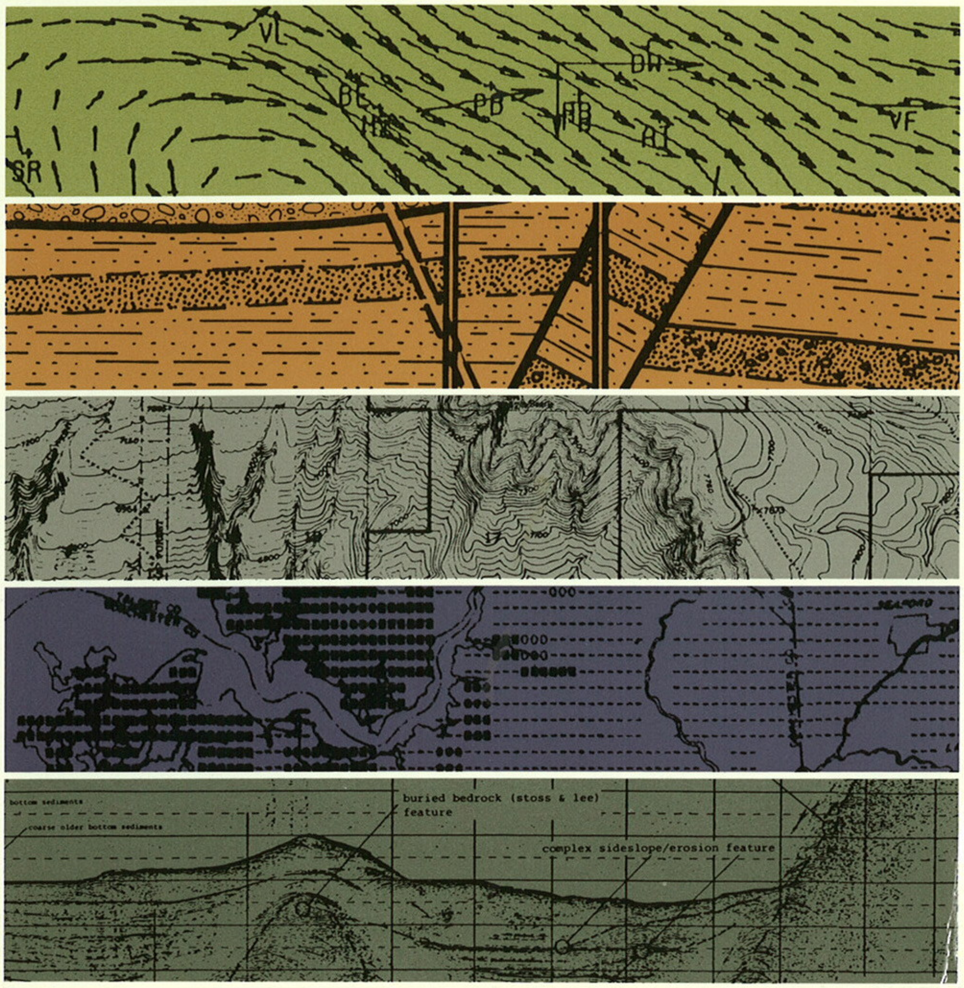

3.3

CAVE CREEK LANDFILL
HYDROLOGIC REPORT
FOR
MARICOPA COUNTY

DAMES & MOORE

REGISTERED GEOLOGIST
CERTIFICATE NO
25059
R. DOUGLAS
BARTLETT
Date Signed 9/17/93
ARIZONA U.S.A.

R. Douglas Bartlett

3.3

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FOR
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DAMES & MOORE

D&M Job. No. 25551-001-033
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CAVE CREEK LANDFILL
HYDROLOGIC REPORT

1.0 INTRODUCTION

The Cave Creek Landfill is a Municipal Solid Waste Landfill operated by Maricopa County since 1984. The County is required by the Arizona Department of Environmental Quality (ADEQ) to obtain an Aquifer Protection Permit (APP) for the landfill. This document has been prepared to fulfill the requirements for a hydraulic study for the Cave Creek Landfill as specified in the Arizona Administrative Code (R18-9-108.C.1) for APPs.

Section 2.0 provides a description of the location and operating characteristics of the Cave Creek Landfill. Section 3.0 summarizes the ground-water hydrology present in the area of the facility. The surface water hydrology is reviewed in Section 4.0, and ground-water quality is discussed in Section 5.0. The Discharge Impact Area is presented in Section 6.0.

2.0 LOCATION AND OPERATIONAL CHARACTERISTICS

2.1 FACILITY LOCATION

The Cave Creek Landfill is located about 3.4 miles southwest of the town of Cave Creek and 2,000 feet south of Carefree Highway. The landfill has been operated by Maricopa County since 1984. The landfill covers an area of about 40 acres and is about 800 feet wide and 2,750 feet long. Refuse has been placed in the landfill from north to south. Figures 1 and 2 provide an overview of the site location. Table 1 lists all known wells within a 3-mile radius of the landfill. Table 2 provides a summary of water level measurements for wells within 3 miles of the landfill. In this document, reference to the "Cave Creek Landfill" refers only to the presently active portion shown on Figure 2. This includes all of the land owned by Maricopa County at this site.

2.2 DESIGN AND OPERATION

Figure 2 illustrates the Cave Creek Landfill boundary locations. Only municipal solid waste is accepted for disposal at the facility. Hazardous or liquid wastes are not disposed of at the landfill. Green wastes, auto batteries, appliances, and tires are separated for recycling. Waste haulers are screened at the entrance to the landfill during operating hours. An inspector is stationed at the weigh station. Access to the landfill can be obtained only on maintained roads. Public access is limited by the presence of barbed wire fencing installed around the perimeter of the landfill. Approximately 550 tons per day (tpd) of refuse including 80 tpd of recyclable materials and 18 tpd of individual residence refuse are deposited into the landfill. The landfill is expected to be in operation for about 2 more years.

Currently the landfill is unlined and no future liner installation is anticipated. The virgin areas of the landfill requiring vertical expansion after October 1993 will be appropriately lined. The design and installation of the liner will comply with RCRA subtitle D part 258.

3.0 HYDROLOGY

3.1 HYDROGEOLOGY

3.1.1 Regional Setting

The Cave Creek Landfill is located in the East Salt River Valley sub-basin of the Phoenix Active Management Area (Reeter and Remick, 1986). The following discussion of the geology in the vicinity of the Cave Creek Landfill was derived from available published literature, the USGS, U.S. Bureau of Reclamation, and available drilling reports.

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). Although ground water is produced from all three units in this area, this report principally addresses the upper portion of the UAU, the unit most likely to be impacted by landfill operations.

In the vicinity of the Cave Creek Landfill, the regional ground-water table occurs at a depth greater than 600 feet. Therefore, the unsaturated thickness (vadose zone) of the UAU beneath this site is significant. Water migrating vertically downward through the vadose zone is strongly influenced (physically and chemically) by the unsaturated UAU formation. In general, water will migrate more slowly through unsaturated alluvium than saturated aquifer and will chemically react with the formation matrix. A more detailed discussion of this process is provided in Section 3.1.4.

The underlying water bearing formation of the UAU consists of unconsolidated and semiconsolidated alluvial deposits (Figures 4, 5, and 6). Reeter and Remick (1986) suggest that although ground water in the UAU is usually unconfined, confined and perched conditions can exist locally. No perched aquifers have been identified in the vicinity of the Cave Creek Landfill.

3.1.2 Site Stratigraphy

The thicknesses of the UAU, MFU, and LCU alluvial formations in the Paradise Valley area are estimated to be 1,100, 2,000, and 2,000 feet respectively (Bureau of Reclamation, 1976). The UAU was described by the Bureau of Reclamation (1976) as follows:

"The UAU 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."

Dames & Moore on behalf of Maricopa County installed two monitor wells at the Cave Creek Landfill in May 1993. CCMW-1 and CCMW-2 were drilled to 740 and 720 feet, respectively using the air rotary drilling method. The locations of the monitor wells are shown on Figures 1 and 2. The alluvium drilled during installation of the wells included coarse gravel with numerous boulders and cobbles making collection of undisturbed soil samples difficult. Six undisturbed samples were, however, obtained.

Three in situ soil samples each were collected from depths ranging from 10 to 30.5 feet in well CCMW-1 and three samples from 30 to 51.6 feet in well CCMW-2 (Table 7). The grain size fraction less than 200 mesh ranged between 0.4 to 6.6 percent in CCMW-1 and from 7.4 to 9.1 percent in CCMW-2. The moisture content was 11.3 percent by dry weight in one sample from CCMW-1 and ranged between 7.4 and 20.1 percent by dry weight in samples from CCMW-2. Total organic carbon was less than 0.2 percent in all samples.

Although only six undisturbed soil samples were collected and all were from shallow depths, drill cuttings from deeper intervals appeared to have properties consistent with the laboratory-tested samples. No significant silt or clay horizons were encountered. Figure 6 illustrates the lithologies encountered in well CCMW-1 and CCMW-2. Alluvial gravels and sands with little or no silt and clay dominate the lithologies encountered in CCMW-1 and CCMW-2 and agree well with the lithologies encountered within the upper 700 feet of City of Phoenix (COP) Wells 280 and 281 located about one mile southeast of the landfill.

Subsurface lithologic data were obtained by the COP in 1990 and 1991 during installation of the two production wells, COP Wells 280 and 281. James M. Montgomery Consulting Engineering, Inc., of Phoenix, Arizona was contracted by the COP to perform pre-construction and construction monitoring services for the installation of the wells. Reports written by J.M. Montgomery describing the well installation, pumping tests, water quality, soil descriptions and geophysical logging were obtained from the COP (J.M. Montgomery 1990 and 1991). The locations of wells 280 and 281 are indicated on Figure 1. Well 280 was drilled to 2,141 feet below ground surface (bgs) and Well 281 was drilled 1,649 feet bgs. The descriptions of the soils encountered in Well 280 as described by J.M. Montgomery were as follows:

- "The cuttings collected during drilling were comprised primarily of alluvial clays, silt, sands, and gravels derived from igneous, volcanic and metamorphic source rocks. All cuttings samples were poorly sorted and individual clasts generally exhibited poor to moderate roundness.

- Most drill cuttings samples from Well 280 displayed a strong reaction to a 10% solution of hydrochloric acid, implying the presence of calcium carbonate. Calcium carbonate cement in the form of surficial coatings on individual clasts and as interstitial cement was evident in many of the sample cuttings.

- Very fine to coarse-grained sands and gravels and varying amounts of clay were predominant from the surface to a depth of about 900 feet. Calcium carbonate coatings on clasts were common in this interval. The interval from this depth to about 1,575 feet was characterized by coarser-grained material and very little clay. While calcium carbonate grain coatings generally diminished in this interval, interstitial calcium carbonate cement increased in abundance, resulting in increased consolidation. Below 1,575 feet, the cuttings suggested a varying degree of consolidation with an increase in clay content toward the bottom."

The subsurface lithology encountered in Well 281 was described by J.M. Montgomery (1991) as follows:

- "The cuttings during drilling were composed primarily of alluvial clays, silts, sands and gravels derived from igneous, volcanic and metamorphic source rocks. All cuttings samples were poorly sorted and individual grains generally exhibited poor to moderate roundness.

- Fine to medium-grained sands with varying amounts of clay and gravel were predominant from the surface to a depth of about 735 feet. Below this depth, the sediments were 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. Varying amounts of clay were ubiquitous below 735 feet.

- Most samples displayed a strong response to a 10% solution of hydrochloric acid, implying the presence of calcium carbonate cement. Little direct evidence of cement was apparent in most of the cuttings; however, this may be due to the drilling method used."

The most favorable water producing strata from COP Wells 280 and 281 are from a depth of 670 feet to about 1,200 ft and 740 feet to about 930 feet, respectively (Figure 5).

Figure 3 illustrates the locations of two cross sections, A-A' and B-B'. Cross section A-A' is oriented north-south and is shown in Figure 4. Section A-A' shows the relationship between the water table and the bedrock to the north.

Section B-B' is shown in Figure 5 and depicts the relationship between lithologies, as represented using the Unified Soil Classification designations encountered in COP Wells 280 and 281. The water table is shown in relation to the lithologies.

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.

3.1.3 Ground-Water Elevations

Ground-water elevations were measured in monitor wells CCMW-1 and CCMW-2 and in the production well at the north end of the landfill in August 1993. Water levels also were obtained by the COP from Wells 280 and 281 in July 1993. These data were used to construct a water table elevation contour map depicted in Figure 1. Based on the measured water level elevations, ground water in the vicinity of the Cave Creek Landfill flows to the south-southeast.

It should be noted that water levels measured in the COP production wells were taken approximately one-half hour after shut down of the well pumps. It is not known whether the wells had fully recovered. Water level elevations measured in January 1991 in Wells 280 and

281 were within one foot of each other. A water level elevation contour map drawn from the January 1991 data results in ground-water flow toward the southeast. As shown on Figure 1, in July 1993, the water level in Well 280 was about 21 feet lower than the water level measured in Well 281 yielding a ground-water flow direction toward the south-southeast. It is not known whether this difference is due to unrecovered drawdown caused by pumping or due to regional seasonal variations in flow directions. Interpretation of water levels obtained from CCMW-1 and CCMW-2 concur with the south-southeast ground-water flow direction implied by the COP production-well data.

The hydraulic gradient measured in July-August 1993 is about 0.005 ft/ft. Temporal variations in water levels could not be evaluated due to a 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 City of Scottsdale production wells.

3.1.4 Hydraulic Properties

An aquifer test was conducted at monitor well CCMW-2 in July 1993. The test was conducted by pumping the well using the dedicated sampling pump. The pump yielded a maximum flow rate of 3 gpm. The net drawdown was about 0.2 feet and is shown graphically in Figure 7. The drawdown reached steady state after five minutes of pumping. Note the initial drawdown reached a maximum of about 0.5 feet and then slowly declined. This was caused by an increase in pumping rate before the 600 foot column of water had developed above the pump. As the head pressure built on the pump, the pumping rate slowly decreased to 3 gpm, the rate at which water discharged from the riser pipe after filling.

The test was evaluated using the Theim-Dupuit steady state equation for flow from a well, resulting in a calculated hydraulic conductivity of about 19 ft/day. Calculations used to derive this value are included on Figure 7. This number agrees well with a value of about 10 ft/day measured at downgradient City of Phoenix wells COP Wells 280 and 281 (James M. Montgomery & Associates, Inc., 1990 and 1991) and with permeability tests conducted on soil samples collected from the CCMW-1 boring.

Aquifer tests performed during construction of COP Wells 280 and 281 indicate that the transmissivity of the aquifer in this area ranges from about 25,000 gallons/day/foot (gpd/ft) in Well 281 to about 69,000 gpd/ft in Well 280 (James M. Montgomery & Associates, Inc., 1990 and 1991). The test intervals ranged in length from 690 to 640 feet for wells 280 and 281, respectively yielding hydraulic conductivity values ranging from about 5 to 14 feet per day.

Based on this data and the Cave Creek Landfill monitor well data, an average hydraulic conductivity value of 15 feet per day can be assumed for the area.

Permeability tests were conducted on undisturbed samples from monitor wells CCMW-1 and CCMW-2. The results are included in Table 7. The measured permeability from one sample collected at CCMW-1 was 10.5 ft/day. The measured permeability of three samples collected at CCMW-2 ranged from 1.4 to 1.8 ft/day. The measurement of hydraulic parameters is scale dependent (Dagan, 1986). Therefore the hydraulic conductivity implied by the laboratory permeability tests is likely to be larger than 2 feet/day. Laboratory tests tend to yield values of permeability that are smaller than hydraulic conductivity values measured from pumping tests.

The discharge velocity (Darcy velocity) of ground water is the product of the hydraulic conductivity and the hydraulic gradient. Since the hydraulic gradient in the vicinity of the Cave Creek Landfill facility is approximately 0.005 (ft/ft) and the average hydraulic conductivity is 15 ft/day, the estimated ground-water discharge velocity is about 0.075 ft/day. If an effective porosity of 20 percent is assumed (Fetter, 1980), the average particle velocity (i.e. the velocity at which a water or dissolved contaminant molecule may migrate in the aquifer) would be approximately 0.38 ft/day.

In the vadose zone, the flow velocity of water is dependent on the matric suction potential (negative suction head) and the relative hydraulic conductivity which is, in turn, dependent on the soil moisture content. When a soil is saturated, all of the pores transmit water. In the unsaturated zone large pores readily drain creating suction and leaving partially saturated small pores as the only pathways for water movement. A water or contaminant molecule must take a more tortuous path through the unsaturated aquifer relative to the path it would take in the same aquifer if it was saturated thus, increasing the travel time. In coarse grained sands and gravels, like those characteristic of alluvium below the Cave Creek Landfill, pore spaces are large and therefore the relative hydraulic conductivity is considerably smaller at low moisture contents. Conversely, in a clayey or silty formation, the relative hydraulic conductivity may equal or exceed the saturated hydraulic conductivity, even at low moisture content (Hillel, 1982). Water flow velocity in the unsaturated zone is difficult to quantify because the flow rate varies depending on the water content of soil. Numerical flow modeling can solve the complex multi-variable unsaturated flow equations to describe unsaturated zone flow and transport.

A vertical-plane ground-water flow and transport model was developed to evaluate flow through the unsaturated zone. The assumptions incorporated into the model and the interpretation of the results are discussed in Section 6.0, Discharge Impact Area.

The large thickness of the vadose zone at this site is an important consideration when assessing the discharge potential of the landfill. It has been demonstrated that unsaturated sediment is effective at removing organic and inorganic contaminants from leachate. The influence of the vadose zone on treatment of secondary wastewater effluent was investigated by Dr. Herman Bouwer of the U.S. Water Conservation Service and reported in Bouwer et al. (1984), Bouwer and Rice (1984), and Bouwer and Chase (1984). The studies, conducted using wastewater effluent from the 23rd Avenue Wastewater Treatment Plant, showed that the vadose zone was effective at decreasing concentrations of nitrate, total dissolved solids, phosphate, fluoride, and metals such as zinc, copper, cadmium, and lead. This study was conducted in an area adjacent to the Salt River where the depth to ground water was about 20 feet. With 600 feet of vadose zone beneath the Cave Creek Landfill, the effectiveness of contaminant removal could be significantly higher.

3.2 SUMMARY OF HYDROGEOLOGY

The upper portion of the aquifer in the vicinity of the Cave Creek Landfill is comprised of saturated alluvial deposits from the top of the water table to a total depth exceeding 1,100 feet. The hydrogeology of the area can be summarized as follows:

- The alluvium is composed primarily of sands, gravels and cobbles with little or no clay and silt.
- Regional ground water flows toward the south-southeast. The hydraulic gradient is approximately 0.005 (ft/ft) in the vicinity of the Cave Creek Landfill facility.
- The average value for the hydraulic conductivity is approximately 15 ft/day.
- The ground-water particle velocity is approximately 0.38 ft/day.
- The vadose zone, at over 600 feet of thickness, is expected to significantly reduce the flow velocity of leachate from the landfill to the water table and to reduce the concentrations of contaminants in leachate.

4.0 SURFACE WATER HYDROLOGY

The Cave Creek Landfill is located 0.5 miles south of the Carefree Highway and 0.25 - 0.5 miles east of Cave Creek. 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 Federal Emergency Management Agency (FEMA) conducts floodplain delineation studies on a recurring basis to determine flood insurance rates. FEMA uses the flow with a one percent probability of occurrence in any one year to establish the flood insurance rate maps. This flow is known as the 100-year flood flow. Figure 1 illustrates the 100-year flood plain near the Cave Creek Landfill boundary as identified by FEMA in their latest Flood Insurance Rate Map (dated April 15, 1988). The Cave Creek Landfill is not located within this boundary.

Two dry washes intersect the landfill (Figure 2). Each drains toward the 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. The design of the channels will be described as part of the APP application.

5.0 WATER QUALITY

5.1 GROUND WATER

There are several sources for ground-water quality data in the vicinity of the Cave Creek Landfill including the Cave Creek Landfill Production Well, the Cave Creek Landfill Monitor Wells, and the City of Phoenix Production Wells.

The production well at the Cave Creek Landfill was installed in 1982. The production well lies upgradient of the landfill near the weigh station. Samples from the well have been collected on an intermittent basis since 1985. Analytical results are summarized in Table 3.

Since 1985, 11 separate sampling events have occurred at the production well. The ground-water samples have been analyzed for a variety of compounds including volatile and semi-volatile organic compounds, phenols, pesticides and herbicides, metals, radionuclides, and ions and indicators.

Initial sampling of the production well (09/85) resulted in detections of methylene chloride (53.9 ppb), trichloroethylene (TCE) (9.8 ppb), and toluene (8.2 ppb). TCE and toluene were not detected in subsequent sampling events. Methylene chloride, a common laboratory contaminant, was detected in concentrations less than the MCL (5.0 ppb) through 1986. No detections of methylene chloride have been observed after 1986. Benzene and tetrachloroethylene (PCE) have been detected in concentrations less than the MCLs during sampling events conducted through October 1987. Benzene was detected at a concentration of 2.3 ppb during the August 1986 sampling event. PCE was detected at 3.3 ppb in December 1985 and again at 4.3 ppb in October 1987. No detections of any volatile or semi-volatile organic compounds have occurred in production well samples since October 1987.

With the exception of arsenic, metal concentrations above MCLs have not been observed for any of the production well samples. Arsenic was detected at 0.10 ppm (MCL=0.05 ppm) during the July 1992 sampling event. Other parameters from the well, such as pH, TDS, chloride, fluoride and nitrate, indicate good water quality and correspond with results from the monitor well samples.

Two monitor wells (CCMW-1 and CCMW-2) were installed at the Cave Creek Landfill in May 1993. Ground-water samples were collected from each of the wells in June 1993. Analytical results are summarized in Table 4. 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.

Two COP production wells lie within 1.5 miles downgradient of the Cave Creek Landfill. Wells COP 280 and COP 281 were sampled in June - September 1990 and August - September 1990, respectively. Analytical results are summarized in Tables 5 and 6.

Water quality analyses of the two COP wells correlate well with analyses from the Cave Creek Landfill wells. In Well 280, arsenic was detected in excess of the MCL in one sample. No detections for volatile or semi-volatile organic compounds were observed in either well. Total dissolved solids (TDS) analyses show concentrations in the 290 to 350 ppm range for both wells with the exception of one sample from Well 281 with a concentration of 560 ppm for TDS. The values for TDS correlate well with the Cave Creek well TDS data and range from 300 to 330 ppm.

6.0 DISCHARGE IMPACT AREA

The Discharge Impact Area (DIA) is defined as the "potential areal extent of pollutant migration, as projected on the land surface as a result of a discharge from a facility" (A.R.S. 49-201). A landfill can potentially generate leachate as precipitation infiltrates into landfill refuse mobilizing inorganic and organic contaminants. Leachate generation has not been observed in association with the Cave Creek Landfill. However, a hypothetical release from the landfill has been evaluated using a ground water flow and transport model. The results, discussed below, indicate that the Cave Creek Landfill will not impact ground water. Only the unsaturated zone beneath the landfill would be affected by a leachate release. Therefore, the DIA is proposed to coincide with the landfill boundaries. The following discussion provides a summary of computer modeling used to justify the DIA boundaries.

6.1 GROUND-WATER MODEL DEVELOPMENT

The unsaturated (vadose) zone underlying the Cave Creek Landfill is greater than 600 feet thick and is therefore a significant component of the hydrogeologic system at this site. A vertical plane flow and transport model capable of simulating unsaturated flow was used to evaluate the influence of the unsaturated zone on the transport time for a hypothetical release of landfill leachate to the water table. Dames & Moore used a proprietary code known as TARGET 2DU to simulate unsaturated flow. TARGET 2DU is a vertically integrated finite difference model capable of simulating flow and transport in variably saturated porous media. ADEQ is a licensed user of the TARGET 2DU code. The mathematical formulation and assumptions are provided in the documentation supplied with the model.

A vertical plane model was developed to represent vertical flow through the unsaturated zone to the water table. The model extends from just west of Cave Creek 10,800 feet southeast to just east of Cave Creek Road (Figure 8). The bottom of the model was placed about 50 feet below the water table coincident with the saturated screened interval lengths in monitor wells CCMW-1 and CCMW-2. The finite difference mesh includes 131 cells in the horizontal direction ranging from 50 to 200 feet long and 80 cells vertically, each 10 feet thick for a total of 10,480 calculation cells. Figure 9 illustrates the finite-difference mesh used for the model.

Hydraulic properties for the alluvium used in the model are tabulated in Table 8 and were derived from laboratory and field measurements and published literature. Unsaturated zone flow calculations require the input of coefficients used to describe the relationship between the degree of saturation, the relative hydraulic conductivity and the moisture content. These relationships are described using "characteristic curves" for specific materials. The values of these coefficients were derived from published literature and correspond to a "typical sand" (Van Genuchten, et al., 1977). Sand and gravel deposits drain quickly as compared to clay and silt-bearing materials. The typical sand characteristic curves are believed to best represent the material underlying the Cave Creek Landfill.

The value of hydraulic conductivity (15 ft/day) was derived from interpretation of aquifer tests (Section 3.1.3). The porosity (28 percent) was derived from laboratory testing (Table 7).

Fixed head cells were used to establish the position of the water table at the up- and downgradient model boundaries. Hydraulic heads along the bottom of the model were also fixed to allow flow from the bottom of the model domain and thereby avoid a curved water table surface. The result is a flat, sloping water table surface across the model domain. The upper model boundary was lined with fixed-infiltration cells. Two infiltration cell types were used: a cell representing natural infiltration, and a cell that includes concentrations of a leachate contaminant designed to simulate landfill leachate.

6.1.1 HELP Model Simulations

The infiltration rate assumed for the model was 0.5 inches per year. The percolation of water from the bottom of the Cave Creek Landfill was estimated utilizing the Hydrologic Evaluation of Landfill Performance (HELP) model. The climatological data from the Phoenix Sky Harbor airport is included in the HELP data base. Using the Phoenix monthly average of temperature and rainfall, 50 years of precipitation data were simulated using the simulation option of HELP. The simulated precipitation data were then used to predict percolation from the landfill over a period of 50 years.

A cross section of the landfill is shown on Figure 9. The final cover was assumed to be absent for the first 12 years of simulated percolation (1984 to 1996). Input parameters for the HELP model are given in Table 9. The landfill was characterized as open for the first 12 years of simulation. At the end of 12 years the final cover was added for two subsequent simulations over a period of 20 years each. The final soil moisture for each period of time was used as the initial soil moisture for the following period. These "initial" moisture contents are shown in Table 9 for each period of HELP simulation.

The initial soil moistures for the garbage and daily cover layers were selected on the basis of available data. For the garbage layer, moisture data were based on samples collected from borings in the 19th Avenue Landfill in Phoenix, Arizona (Dames & Moore, 1988). From the data, it was estimated that the moisture content of garbage at the 19th Avenue Landfill is 23 percent. This agrees with moisture content of garbage reported in the literature (e.g. Methane Generation and Recovery from Landfills, Emcon Associates, Ann Arbor Science Publishers, Inc. 1982).

Other parameters for the garbage layer were based on the default soil type 18 in the HELP model data base.

For the daily cover, the initial moisture content and saturated conductivity were based on data from several onsite soil borings (Table 7). Other soil parameters used for the daily cover are summarized in Table 9.

Soil parameters for the closure cap are based on design considerations. It is assumed that during compaction the moisture content will be brought to about 20 percent. With compaction, the conductivity of the soil should meet the minimum required conductivity of 3 x 10^{-6} cm/sec. Other parameters for the final cover are summarized in Table 9.

6.1.2 HELP Model Results

The outputs for the HELP model simulation are reproduced in Appendix B. The predicted percolation rates are shown on Figure 11 for 50 years of simulation. The HELP model predicts that the maximum percolation rate from the bottom of the garbage would be about 0.16 inch per year which is predicted to occur in year 13. Thereafter, the percolation rate is predicted to decrease steadily to 0.12 inch per year.

The prediction rate that is predicted after the closure cap is in place is due almost entirely to drainage of water present in the garbage at the time of closure. This is demonstrated by comparing the percolation rates predicted for the closure cap in place with predicted percolation rates that would occur if an impermeable cap were substituted for the actual closure cap. The results between the two cases are virtually identical as compared below.

	Average Percolation (in/year)	
	Years 13-32	Years 33-50
With Closure Cap	0.15	0.13
With Impermeable Cap	0.15	0.13

The above comparison indicates that, with the closure cap as planned, percolation from the garbage layer is due almost entirely to gravity drainage. Over time therefore, the percolation from the garbage layer is expected to progressively diminished and will not be affected by precipitation.

Based on the results of HELP modeling, the value of 0.5 inches per year used in the ground-water modeling is a conservative estimate of leachate generation potential from the Cave Creek Landfill. The value of 0.5 inches per year represents about 6 percent of the average annual precipitation in this area (about 8 inches per year).

6.1.3 Cave Creek Simulation

Cave Creek is an intermittent stream, flowing only during storm events. Initial model simulations assumed no flow in the Cave Creek. A sensitivity analysis was done to evaluate the influence of Cave Creek on leachate migration from the landfill. Cave Creek was simulated using an infiltration rate equivalent to the average hydraulic conductivity of the alluvium (15 ft/day) and a hydraulic gradient of 1.0 for a period of three months. The results are discussed below.

6.1.4 Starting Conditions

The flow model was run assuming steady state conditions. This assumption is valid because hydraulic conditions in the vadose zone are relatively unchanged by fluctuations in the water table. Seasonal variations in the water table elevation were assumed to be insignificant over the 50 year period of simulation. Transport calculations were performed transiently.

Figure 12 illustrates the assumptions incorporated for the starting conditions used for the base case simulation of leachate migration from the landfill. The model was run for a period of 50 years, from 1984 when the landfill was opened to 2034, about 40 years in the future. Closure of this landfill is expected within about 2 years. Ground water monitoring is required for 30 years after closure of the landfill (40 CFR 258.61), therefore, the simulated period of 50 years extends several years beyond the required monitoring period and results in a worst-case prediction of contaminant migration potential from the landfill.

A leachate concentration of 5,475 ppm of chloride was assumed to be generated from the landfill. Chloride is commonly associated with landfills and is a good indicator of leachate generation. Chloride is a non-reactive, mobile ion and is therefore a good compound to estimate the worst-case migration potential of leachate. Most other metals and organic compounds are reactive with alluvial materials, particularly when clay or silt are present. The concentration of 5,475 ppm represents the maximum value reported by the EPA (1979) for landfill leachate. Chloride has a secondary drinking water standard of 250 ppm. The minimum concentration of chloride in ground water measured in monitor wells at the Cave Creek Landfill is 13 ppm. Therefore, the model predictions have been compared to a background value of 13 ppm chloride to evaluate the potential impact on ground-water quality.

The longitudinal and transverse dispersivity was set to 100 feet and 10 feet, respectively based on an evaluation of measured dispersivities by Gelhar, et al., 1992.

The results of the modeling are discussed in the following section.

6.2 GROUND-WATER MODEL RESULTS

Figures 13 through 16 illustrate the predicted concentration of chloride after 5, 10, 30, and 50 years of leachate migration. Note that the figures have a vertical exaggeration of 10. These results indicate that, under worst-case conditions, the landfill, does not generate a concentration of chloride in ground water that exceeds the background concentration of 13 ppm after 50 years of continuous leachate generation.

The influence of Cave Creek on leachate migration was investigated by simulating flow in Cave Creek for three months. A three month continuous flow in Cave Creek would represent an unusually wet winter such as the 1992-1993 winter season. Figures 17 through 20 illustrate the predicted "plume" of clean water migrating downward from Cave Creek after three months of flow (Figure 17), three months after the flow had ceased (Figure 18), nine months after the flow (Figure 19), and five years after the flow (Figure 20). The results indicate that Cave Creek has no influence on the potential for leachate generation from the landfill.

Lateral migration and/or the development of a perched aquifer is not expected to occur in this area due to the lack of significant silt or clay horizons that could act as an aquitard.

6.2.1 SENSITIVITY ANALYSES

Sensitivity analyses were used to test the predictions of the model to variations in parameters such as hydraulic conductivity, infiltration rate, and dispersivity. The results were used to rank the sensitivity of input assumptions. For each input parameter, the value was increased and decreased over a hydrogeologically reasonable range and run to simulate 50 years of leachate generation.

The hydraulic conductivity of the alluvium was increased and decreased by a factor of 2 (from 1.5 to 30 feet per day). The results, presented on Figure 21 indicate that variation of hydraulic conductivity has no influence on the model predictions. This result is expected for unsaturated zone flow because the transport velocity of a contaminant in the unsaturated zone is dependent on the relative hydraulic conductivity and degree of saturation which are themselves dependent on the moisture content (see Section 3.1.3 for a detailed discussion). Variation of hydraulic conductivity would only influence flow and transport time in the saturated aquifer. It is concluded that the model is not sensitive to the value of hydraulic conductivity used in the model as long as no contamination migrates to the saturated aquifer.

Figure 22 illustrates the results of sensitivity analyses conducted by varying the infiltration rate. The infiltration rate is a key input parameter. The results show that the travel distance of a contaminant is directly proportional to the infiltration rate. In this case, however, even doubling the infiltration rate by a factor of 2 does not cause the model to predict an impact at the water table.

The dispersivity is an input parameter used to simulate advective dispersion of a contaminant as the contaminant moves through the unsaturated zone. Dispersivity values are typically derived from published sources because they are difficult to measure in the field. Dispersivity ranges over several orders of magnitude and is scale dependent. In this model, longitudinal and transverse dispersivity were established as 100 and 10 feet, respectively based on published data provided by Gelhar, et al. (1992). The sensitivity of dispersivity was tested by increasing and decreasing these values by a factor of 2. The results are presented on Figures 25 and 26. Dispersivity is slightly less sensitive to variation than the infiltration rate. Doubling the dispersivity does not result in a contaminant impact to ground water.

Based on the modeling results, the DIA boundary has been established as the boundaries of the landfill because only the vadose zone under the landfill is potentially influenced by leachate migration.

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Tables

TABLE 1

LIST OF WELLS WITHIN A 3-MILE RADIUS OF THE CAVE CREEK LANDFILL

Well # of Figure 1	ADWR		Owner	Total Well Depth (ft.)	Casing Diameter (in.)	Date Completed	Use
	Registration No	Legal Description					
1	55-601159	A(6-4)32abb	Goodman, G.J.	335	8	12/78	D
2	55-611757	A(6-4)32abd	Omundson, R.T.	320	6	1976	D
3	55-614064	A(6-4)32bad	Arizona State Land Dept	80	10	1944	UNK
4	55-805152	A(6-4)32bad	Arizona State Land Dept	UNK	12	UNK	J
5	55-518286	A(6-4)32caa	Flach & Soich	85	8	07/29/88	DJ
6	55-625150	A(6-4)32caa	Schubert, G.J.	106	12	10/45	DJ
7	55-625151	A(6-4)32caa	Schubert, G.J.	50	10	UNK	DJ
8	55-514411	A(6-4)32cab	Williams, Richard	340	8	11/29/86	D
9	55-506269	A(6-4)32ccc	David K.	175	6	09/12/83	D
10	55-506822	A(6-4)32ccc	Bowles, B.W.	140	8	12/15/83	DA
11	55-801126	A(6-4)32ccc	Bowles, et.al.	38	8	UNK	D
12	55-805321	A(6-3)34aaa	Bechtold, Phillip	600	UNK	12/01/71	DA
13	55-518165	A(6-3)34abb	Lares, Christopher	620	8	07/11/87	D
14	55-524131	A(6-3)34acc	Seely, Diane	785	8	04/15/89	D
15	55-502005	A(6-3)34acd	Beeskau, G.	820	8	02/26/82	D
16	55-521091	A(6-3)34bcc	Olson, John	695	8	05/10/88	D
17	55-523180	A(6-3)34bcd	Smith, Gary	710	8	02/03/89	D
18	55-531883	A(6-3)34bcd	Sones, James	715	UNK	05/30/91	D
19	55-524416	A(6-3)34bdd	Hoyt, Robert, et.al.	720	8	05/14/89	D
20	55-521687	A(6-3)34cab	Lawrence Family Trust	719	8	08/04/88	D
21	55-800842	A(6-3)34cac	Love Acres Association	700	8	12/79	D
22	55-636555	A(6-3)34daa	Perez, Raul M., Sr.	685	8	03/19/78	D
23	55-087362	A(6-3)34bab	Barton, B.	700	6	1981	D
24	55-517023	A(6-3)34dbb	Babbin, Stewart	700	8	03/20/87	D
25	55-530471	A(6-3)34ddd	Meeker, Rae Ellen	835	9	05/25/91	D
26	55-519950	A(6-3)35acc	Desert Foothills	915	8	01/09/88	JC
27	55-513379	A(6-3)35bab	Beard, Harold	550	8	02/20/86	D

TABLE 1 (Continued)

Well # of Figure 1	ADWR		Owner	Total Well Depth (ft.)	Casing Diameter (in.)	Date Completed	Use
	Registration No	Legal Description					
28	55-520855	A(6-3)35bac	Lopez, Ron	600	8	04/16/88	D
29	55-532262	A(6-3)35bbb	Emmett, James T. Jr.	738	8	10/16/91	D
30	55-638089	A(6-3)35bca	Stevens, H.	665	6	02/09/75	D
31	55-509150	A(6-3)35bcd	Mullens, C.	780	9	10/04/84	D
32	55-802504	A(6-3)35bcd	Silva, Irma	672	5	02/15/78	D
33	55-804560	A(6-3)35bcd	Ogden, Linda	200	8	10/22/84	D
34	55-628045	A(6-3)35bdb	Williams, L.E.	685	9	06/15/74	ADF
35	55-518430	A(6-3)35cbc	Combs, Jasper	400	8	08/10/87	D
36	55-528864	A(6-3)35cbc	Borders, Timothy	800	9	08/27/90	D
37	55-531151	A(6-3)35cdb	Cable, Robert	800	8	03/30/91	D
38	55-532341	A(6-3)35cdd	Fautin, Jim	795	9	07/26/91	D
39	55-804220	A(6-3)35dad	Ansick, Paul R. Jr.	1,000	6	UNK	AD
40	55-614030	A(5-3)01ccb	Arizona State Land Dept.	79	9	UNK	UNK
41	55-503913	A(5-3)12add	Arizona State Land Dept.	820	10	10/08/82	D
42	55-614031	A(5-3)22cbc	Arizona State Land Dept.	430	6	1949	D
43	55-518305	A(5-4)05bab	Johnson	535	8	06/25/87	D
44	55-638749	A(5-4)05bab	Flowers, J.L.	462	8	01/28/77	D
45	55-510670	A(5-4)05bac	Johnson, J.	520	7	05/13/85	D
46	55-640160	A(5-4)05caa	Hatcher, N.	875	10	UNK	D
47	55-507675	A(5-4)05cab	Johnson, J. Jr.	600	6	04/28/84	D
48	55-518167	A(5-4)05dcb	Winter, Frances	851	8	08/27/87	D
49	55-800785	A(5-4)05dcc	Formon, E.M.	997	8	1966	D
50	55-530868	A(5-4)06add	Joy Ridge, inc.	800	6	02/15/91	D
51	55-634474	A(5-4)07aad	Veres	980	6	1930	
52	55-600029	A(5-4)08dbd	City of Phoenix (COP 279)	1,100	10	02/61	D
53	55-524559	A(5-4)08dcc	City of Phoenix (COP 281)	1,400	13	09/25/90	E
54	55-602536	A(5-4)09ab	Carefree Black Mountain	1,400	8	01/81	D
55	55-600030	A(5-4)17bcd	City of Phoenix (COP 278)	864	14	12/18/69	D
56	55-527549	A(5-4)19acb	City of Phoenix (COP 280)	1,490	19	09/24/90	E
57	55-518789	A(5-4)21bbb	City of Scottsdale (COS 65)	1,698	30	10/23/87	E
58	55-522909	A(5-4)21cab	Kezele, Joseph M.	1,060	8	12/06/88	D

TABLE 1 (Continued)

Well # of Figure 1	ADWR		Owner	Total Well Depth (ft.)	Casing Diameter (in.)	Date Completed	Use
	Registration No	Legal Description					
59	55-635121	A(5-4)21cbb	Holbrook	200	8	11/29/73	D
60	55-633464	A(5-4)28bac	Councilman	200	6	1971	D
61	55-633735	A(5-4)28bcd	Perkins	NA	NA	NA	D
62	55-638933	A(5-4)28ddd	Olson	850	8	1974	D
63	55-638272	A(5-4)29acc	Nolte, et al.	825	8	01/19/73	DJ
64	55-603807	A(5-4)30bad	City of Phoenix (COP 276)	1,157	16	02/24/78	F
65	55-800775	A(5-4)30cab	Short	600	8	06/66	ADJ
66	55-516342	A(5-4)30dcc	Albert, George & E.	820	8	11/19/87	D
67	55-636545	A(5-4)31ac	Holgerson, Rex	632	8	NA	D
68	55-532698	A(5-4)31aca	Holgerson, Rex	820	8	9/12/91	D
69	55-511808	A(5-4)31dba	Saffer, Russell Dean	700	7	08/01/85	D
70	55-600117	A(5-4)33daa	Ironwood Water Co.	993	6	03/62	D
71	55-600115	A(5-4)33dcd	Ironwood Water Co.	1,555	16	01/73	D

Note: Data obtained from the ADWR Well Registry Report dated 5/11/92.
Legend: A = Irrigation, F = Industrial, UNK = Unknown, D = Domestic, J = Stock, E = Municipal, NA = Not Available

TABLE 2

WATER LEVEL DATA FOR WELLS WITHIN A 3-MILE RADIUS OF CAVE CREEK LANDFILL

ADWR Identification No.	Map No. from Figure 1	Date Measured	Elevation of Land Surface (ft.)	Elevation of Water Level (ft.)	Depth to Water (ft.)
A(5-3)12add	41	10/92	1879.0	1240.0	639.0
		08/09/93		1243.5	635.5
A(5-3)22cbc	42	04/77	1680.0	1280.00	400.00
A(5-4)5dcc2	49	04/27/83	2000.0	1305.30	694.70
		01/02/85		1294.50	705.50
		11/20/91		1242.70	757.30
A(5-4)7aad1	51	06/46	1950.0	1280.00	670.00
		04/26/83		1276.80	673.20
		01/02/85		1272.50	677.50
A(5-4)8dcc	53	01/91	2000.0	1222.0	778.00
		07/93		1221.0	779.00
A(5-4)19acb	56	01/91	1900.0	1221.0	679.00
		07/93		1200.0	700.00
A(5-4)17bcd2	55	01/10/85	1955.0	1248.60	706.40
		03/06/86		1245.20	709.80
A(5-4)28bbb	?	11/60	1978.0	1248.00	730.00
A(5-4)28ddd	62	02/07/75	1995.0	1245.70	749.30
		01/08/76		1245.40	749.60
		01/25/78		1243.50	751.50
A(5-4)29dcd	?	03/24/46	1900.0	1274.00	626.00
A(5-4)30ddc	?	11/05/91	2261.0	2245.20	15.80
A(5-4)30bac	64	04/26/83	1837.0	1224.50	612.50
		01/10/85		1221.30	615.70
		06/18/85		1217.90	619.10
		12/06/85		1218.50	618.50
		05/28/86		1213.50	623.50
A(6-3)35dca	?	09/07/82	1905.0	1349.90	555.10
A(6-3)35dab	?	05/09/74	1900.0	1232.00	668.00
A(6-4)32dad	?	11/11/91	1980.0	1589.30	390.70

TABLE 2 (Continued)

ADWR Identification No.	Map No. from Figure 1	Date Measured	Elevation of Land Surface (ft.)	Elevation of Water Level (ft.)	Depth to Water (ft.)
A(6-4)32caa	5,6,7	11/16/76	1970.0	1923.80	46.20
		04/27/83		1958.22	11.78
		01/02/85		1957.00	13.00

Note: Water level information obtained from the ADWR/GWSI files and from correspondence with COP.

TABLE 3

ANALYTICAL RESULTS
FOR THE CAVE CREEK LANDFILL PRODUCTION WELL

Constituents	MCL (SMCL)	Sample Event													
		09/19/85	11/18/85	12/06/85	07/16/86	08/04/86	06/08/87	06/10/87	10/23/87	05/25/88	03/19/90	02/25/91	11/20/91	08/14/91	07/22/92
PURGEABLE ORGANIC COMPOUNDS (ppb)															
Acrolein	ND	<10	<10	a	a	a	a	a	<0.5	<1.0	a	a	a	a	a
Acrylonitrile	ND	<10	<10	a	a	a	a	a	<0.5	<1.0	a	a	a	a	a
Benzene	5.0	<4.4	<4.4	<1	a	2.3/b	a	a	<0.5	<1.0	<0.5	a	<1.0	<1.0	<1.0
Bromodichloromethane	100	<2.2	<2.2	<1	a	a	a	a	<0.5	<1.0	<0.5	a	<1.0	<1.0	<1.0
Bromoform	100	<4.7	<4.7	<1	a	a	a	a	<0.5	<1.0	<0.5	a	<1.0	<1.0	<1.0
Bromomethane	ND	<10	<10	<1	a	a	a	a	<0.5	<1.0	<0.5	a	<1.0	<1.0	<1.0
Carbon tetrachloride	5.0	<2.8	<2.8	<1	a	a	a	a	<0.5	<1.0	<0.5	a	<1.0	<1.0	<0.5
Chlorobenzene	100	<6.0	<6.0	<1	a	a	a	a	<0.5	<1.0	<0.5	a	<1.0	<1.0	<1.0
Chloroethane	ND	<10	<10	<1	a	a	a	a	<0.5	<1.0	<0.5	a	<1.0	<1.0	<1.0
2-Chloroethylvinyl ether	ND	<10	<10	<1	a	a	a	a	<0.5	<1.0	<0.5	a	<1.0	<1.0	<15
Chloroform	100	<1.6	<1.6	<1	a	a	a	a	<0.5	<1.0	<0.5	a	<1.0	<1.0	<0.5
Chloromethane	ND	<10	<10	<1	a	a	a	a	<0.5	<1.0	<0.5	a	<1.0	<1.0	<1.0
Dibromomethane	ND	a	a	a	a	a	a	a	a	a	a	a	a	a	<1.0
Dichlorodifluoromethane	ND	a	a	a	a	a	a	a	a	a	a	a	<1.0	<1.0	<1.0
Dibromochloromethane	100	<3.1	<3.1	<1	a	a	a	a	<0.5	<1.0	<0.5	a	<1.0	<1.0	<1.0
1,2-Dichlorobenzene (o)	600 (10)*	<10	<10	<1	a	a	a	a	<0.5	<1.0	<0.5	a	<1.0	<1.0	<1.0
1,3-Dichlorobenzene (m)	600	<10	<10	<1	a	a	a	a	<0.5	<1.0	<0.5	a	<1.0	<1.0	<1.0

TABLE 3 (Continued)

Constituents	MCL (SMCL)	Sample Event													
		09/19/85	11/18/85	12/06/85	07/16/86	08/04/86	06/08/87	06/10/87	10/23/87	05/25/88	03/19/90	02/25/91	11/20/91	08/14/91	07/22/92
1,4-Dichlorobenzene (p)	75 (5)*	<10	<10	<1	a	a	a	a	<0.5	<1.0	<0.5	a	<1.0	<1.0	<1.0
1,1-Dichloroethane	ND	<4.7	<4.7	<1	a	a	a	a	<0.5	<1.0	<0.5	a	<1.0	<1.0	<0.5
1,2-Dichloroethane	5.0	<2.8	<2.8	<1	a	a	a	a	<0.5	<1.0	<0.5	a	<1.0	<1.0	<0.5
1,1-Dichloroethene	7.0	<2.8	<2.8	<1	a	a	a	a	<0.5	<1.0	<0.5	a	<1.0	<1.0	<0.5
trans-1,2-Dichloroethene	100	<1.6	<1.6	<1	a	a	a	a	<0.5	<1.0	<0.5	a	<1.0	<1.0	<1.0
1,2-Dichloropropane	5.0	<6.0	<6.0	<1	a	a	a	a	<0.5	<1.0	<0.5	a	<1.0	<1.0	<0.5
cis-1,3-Dichloropropene	ND	<10	<10	<1	a	a	a	a	<0.5	<1.0	<0.5	a	<1.0	<1.0	<0.5
trans-1,3-Dichloropropene	ND	<5.0	<5.0	<1	a	a	a	a	<0.5	<1.0	<0.5	a	<1.0	<1.0	<1.0
Ethylbenzene	700 (30)*	<7.2	<7.2	<1	a	a	a	a	<0.5	<1.0	<0.5	a	<1.0	<1.0	<1.0
Methylene chloride	5.0	53.9/2.8	<2.8	2.6/b	2.9/b	1.4/b	<1	<1	<0.5	<1.0	<0.5	a	<1.0	<1.0	<5.0
1,1,2,2-Tetrachloroethane	ND	<6.9	<6.9	<1	a	a	b	b	<0.5	<1.0	<0.5	a	<1.0	<1.0	<0.5
1,1,2,2-Tetrachloroethene	ND	a	a	a	a	a	a	a	a	a	a	a	a	a	<0.5
Tetrachloroethene	5.0	<4.1	<4.1	3.3/b	<1	a	<1	<1	4.3/b	<1.0	<0.5	a	<1.0	<1.0	a
Toluene	10^3 (40)*	8.2/6.0	<6.0	<1	<1	a	<1	<1	<0.5	<1.0	<0.5	a	<1.0	<1.0	<1.0
1,1,1-Trichloroethane	200	<3.8	<3.8	<1	a	a	b	b	<0.5	<1.0	<0.5	a	<1.0	<1.0	<0.5
1,1,2-Trichloroethane	5.0	<5.0	<5.0	<1	a	a	b	b	<0.5	<1.0	<0.5	a	<1.0	<1.0	<0.5
Trichloroethene	5.0	9.8/1.9	<1.9	<1	<1	a	<1	<1	<0.5	<1.0	<0.5	a	<1.0	<1.0	<0.5
Trichlorofluoromethane	ND	<10	<10	a	a	a	a	a	a	<1.0	a	a	<1.0	<1.0	<1.0
Vinyl chloride	2.0	<10	<10	<1	b	b	b	b	<0.5	<1.0	<0.5	a	<1.0	<1.0	<2.0
Xylenes	10^4 (20)*	a	a	a	a	a	a	a	a	a	a	a	<1.0	<1.0	<0.3

TABLE 3 (Continued)

Constituents	MCL (SMCL)	Sample Event													
		09/19/85	11/18/85	12/06/85	07/16/86	08/04/86	06/08/87	06/10/87	10/23/87	05/25/88	03/19/90	02/25/91	11/20/91	08/14/91	07/22/92
BASE/NEUTRAL EXTRACTABLE ORGANIC COMPOUNDS (ppb)															
Acenaphthene	ND	<1.9	a	a	a	a	a	a	a	a	a	a	a	a	a
Acenaphthylene	ND	<3.5	a	a	a	a	a	a	a	a	a	a	a	a	a
Anthracene	ND	<1.9	a	a	a	a	a	a	a	a	a	a	a	a	a
Benzo (a) anthracene	0.1*	<7.8	a	a	a	a	a	a	a	a	a	a	a	a	a
Benzo (b) fluoranthene	0.2*	<4.8	a	a	a	a	a	a	a	a	a	a	a	a	a
Benzo (k) fluoranthene	0.2*	<2.5	a	a	a	a	a	a	a	a	a	a	a	a	a
Benzo (a) pyrene	0.2	<2.5	a	a	a	a	a	a	a	a	a	a	a	a	a
Benzo (ghi) perylene	ND	<4.1	a	a	a	a	a	a	a	a	a	a	a	a	a
Benzyl butyl phthalate	100*	<2.5	a	a	a	a	a	a	a	a	a	a	a	a	a
Bis (2-chloroethyl) ether	ND	<5.7	a	a	a	a	a	a	a	a	a	a	a	a	a
Bis (2-chloroethoxy) methane	ND	<5.3	a	a	a	a	a	a	a	a	a	a	a	a	a
Bis (2-ethylhexyl) phthalate	ND	<2.5	a	a	a	a	a	a	a	a	a	a	a	a	a
Bis (2-chloroisopropyl) ether	ND	<5.7	a	a	a	a	a	a	a	a	a	a	a	a	a
4-Bromophenyl phenyl ether	ND	<1.9	a	a	a	a	a	a	a	a	a	a	a	a	a
2-Chloronaphthalene	ND	<1.9	a	a	a	a	a	a	a	a	a	a	a	a	a
4-Chlorophenyl phenyl ether	ND	<4.2	a	a	a	a	a	a	a	a	a	a	a	a	a
Chrysene	0.2*	<2.5	a	a	a	a	a	a	a	a	a	a	a	a	a
Dibenzo (a,h) anthracene	0.3*	<2.5	a	a	a	a	a	a	a	a	a	a	a	a	a
Di-n-butylphthalate	ND	<2.5	a	a	a	a	a	a	a	a	a	a	a	a	a
1,2-Dichlororbenzene	600 (10)*	<1.9	a	a	a	a	a	a	a	a	a	a	a	a	a
1,3-Dichlorobenzene	600	<1.9	a	a	a	a	a	a	a	a	a	a	a	a	a

TABLE 3 (Continued)

Constituents	MCL (SMCL)	Sample Event													
		09/19/85	11/18/85	12/06/85	07/16/86	08/04/86	06/08/87	06/10/87	10/23/87	05/25/88	03/19/90	02/25/91	11/20/91	08/14/91	07/22/92
1,4-Dichlorobenzene	75 (5)*	<4.4	a	a	a	a	a	a	a	a	a	a	a	a	a
3,3-Dichlorobenzidine	ND	<16.5	a	a	a	a	a	a	a	a	a	a	a	a	a
Diethyl phthalate	ND	<22	a	a	a	a	a	a	a	a	a	a	a	a	a
Dimethyl phthalate	ND	<1.6	a	a	a	a	a	a	a	a	a	a	a	a	a
2,4-Dinitrotoluene	ND	<5.7	a	a	a	a	a	a	a	a	a	a	a	a	a
2,6-Dinitrotoluene	ND	<1.9	a	a	a	a	a	a	a	a	a	a	a	a	a
Di-n-octylphthalate	ND	<2.5	a	a	a	a	a	a	a	a	a	a	a	a	a
Fluorantene	ND	<2.2	a	a	a	a	a	a	a	a	a	a	a	a	a
Fluorene	ND	<1.9	a	a	a	a	a	a	a	a	a	a	a	a	a
Hexachlorobenzene	1.0	<1.9	a	a	a	a	a	a	a	a	a	a	a	a	a
Hexachlorobutadiene	ND	<0.9	a	a	a	a	a	a	a	a	a	a	a	a	a
Hexachloroethane	ND	<1.6	a	a	a	a	a	a	a	a	a	a	a	a	a
Indeno (1,2,3-cd) pyrene	0.4*	<3.7	a	a	a	a	a	a	a	a	a	a	a	a	a
Isophorone	ND	<2.2	a	a	a	a	a	a	a	a	a	a	a	a	a
Naphthalene	ND	<1.6	a	a	a	a	a	a	a	a	a	a	a	a	a
Nitrobenzene	ND	<1.9	a	a	a	a	a	a	a	a	a	a	a	a	a
N-Nitrosodi-n-prypylamine	ND	<10	a	a	a	a	a	a	a	a	a	a	a	a	a
Phenanthrene	ND	<5.4	a	a	a	a	a	a	a	a	a	a	a	a	a
Pyrene	ND	<1.9	a	a	a	a	a	a	a	a	a	a	a	a	a
1,2,4-Trichlorobenzene	70	<1.9	a	a	a	a	a	a	a	a	a	a	a	a	a

TABLE 3 (Continued)

Constituents	MCL (SMCL)	Sample Event													
		09/19/85	11/18/85	12/06/85	07/16/86	08/04/86	06/08/87	06/10/87	10/23/87	05/25/88	03/19/90	02/25/91	11/20/91	08/14/91	07/22/92
PHENOLS (ppb)															
4-Chloro-3-methylphenol	ND	<3.0	a	a	a	a	a	a	a	a	a	a	a	a	a
2-Chlorophenol	ND	<3.3	a	a	a	a	a	a	a	a	a	a	a	a	a
2,4-Dichlorophenol	ND	<2.7	a	a	a	a	a	a	a	a	a	a	a	a	a
2,4-Dimethylphenol	ND	<2.7	a	a	a	a	a	a	a	a	a	a	a	a	a
2,4-Dinitrophenol	ND	<42	a	a	a	a	a	a	a	a	a	a	a	a	a
2-Methyl-4,6-dinitrophenol	ND	<24	a	a	a	a	a	a	a	a	a	a	a	a	a
2-Nitrophenol	ND	<3.6	a	a	a	a	a	a	a	a	a	a	a	a	a
4-Nitrophenol	ND	<2.4	a	a	a	a	a	a	a	a	a	a	a	a	a
Pentachlorophenol	1.0	<3.6	a	a	a	a	a	a	a	a	a	a	a	a	a
Phenol	ND	<1.5	a	a	a	a	a	a	a	a	a	a	a	a	a
2,4,6-Trichlorophenol	ND	<2.7	a	a	a	a	a	a	a	a	a	a	a	a	a
PESTICIDES/HERBICIDES (ppb)															
Aldrin	ND	<1.9	a	a	a	a	a	a	a	a	a	a	a	a	a
B- BHC	ND	<4.2	a	a	a	a	a	a	a	a	a	a	a	a	a
D- BHC	ND	<3.1	a	a	a	a	a	a	a	a	a	a	a	a	a
Chlordane	2.0	<10	a	a	a	a	a	a	a	a	a	a	a	a	a
4,4'-DDD	ND	<2.8	a	a	a	a	a	a	a	a	a	a	a	a	a
4,4'-DDE	ND	<5.6	a	a	a	a	a	a	a	a	a	a	a	a	a
4,4'-DDT	ND	<4.7	a	a	a	a	a	a	a	a	a	a	a	a	a
Dieldrin	ND	<2.5	a	a	a	a	a	a	a	a	a	a	a	a	a
Endosulfan sulfate	ND	<5.6	a	a	a	a	a	a	a	a	a	a	a	a	a
Endrin aldehyde	ND	<15	a	a	a	a	a	a	a	a	a	a	a	a	a

TABLE 3 (Continued)

Constituents	MCL (SMCL)	Sample Event													
		09/19/85	11/18/85	12/06/85	07/16/86	08/04/86	06/08/87	06/10/87	10/23/87	05/25/88	03/19/90	02/25/91	11/20/91	08/14/91	07/22/92
Heptachlor	0.40	<1.9	a	a	a	a	a	a	a	a	a	a	a	a	a
Heptachlor epoxide	0.20	<2.2	a	a	a	a	a	a	a	a	a	a	a	a	a
PCB-1016	0.50	<50	a	a	a	a	a	a	a	a	a	a	a	a	a
PCB-1221	0.50	<30	a	a	a	a	a	a	a	a	a	a	a	a	a
PCB-1232	0.50	<50	a	a	a	a	a	a	a	a	a	a	a	a	a
PCB-1242	0.50	<50	a	a	a	a	a	a	a	a	a	a	a	a	a
PCB-1248	0.50	<50	a	a	a	a	a	a	a	a	a	a	a	a	a
PCB-1254	0.50	<36	a	a	a	a	a	a	a	a	a	a	a	a	a
PCB-1260	0.50	<50	a	a	a	a	a	a	a	a	a	a	a	a	a
Toxaphene	3.0	<50	a	a	a	a	a	a	a	a	<1.0	a	<1.0	a	<5.0
Endrin	2.0	a	a	a	a	a	a	a	a	a	<0.1	a	<0.1	a	<0.2
Lindane	0.20	a	a	a	a	a	a	a	a	a	<1.0	a	<1.0	a	<4.0
Methoxychlor	40	a	a	a	a	a	a	a	a	a	<1.0	a	<1.0	a	<100
2,4-D	70	a	a	a	a	a	a	a	a	a	<1.0	a	<1.0	a	<100
2,4,5-TP (Silvex)	50	a	a	a	a	a	a	a	a	a	<1.0	a	<1.0	a	<10
METALS (ppm)															
Aluminum	(0.05-0.2)	a	a	a	a	a	a	a	a	<0.01	<0.1	a	<0.10	<0.1	0.08/b
Antimony	0.006	a	a	a	a	a	a	a	a	<0.02	<0.01	a	<0.02	<0.02	<0.05
Arsenic	0.05	a	a	a	a	a	a	a	0.01/b	0.013/b	<0.01	<0.2	<0.01	<0.01	0.10/b
Barium	2.0	a	a	a	a	a	a	a	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05
Beryllium	0.004	a	a	a	a	a	a	a	<0.01	<0.01	<0.01	a	<0.01	a	<0.05
Boron	ND	a	a	a	a	a	a	a	<0.005	0.05/b	a	a	a	<0.01	a
Cadmium	0.005	a	a	a	a	a	a	a	a	<0.005	<0.005	<0.02	<0.005	<0.005	<0.01

TABLE 3 (Continued)

Constituents	MCL (SMCL)	Sample Event													
		09/19/85	11/18/85	12/06/85	07/16/86	08/04/86	06/08/87	06/10/87	10/23/87	05/25/88	03/19/90	02/25/91	11/20/91	08/14/91	07/22/92
Chromium	0.1	a	a	a	a	a	a	a	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05
Cobalt	ND	a	a	a	a	a	a	a	<0.05	0.01	<0.01	a	<0.01	<0.01	<0.05
Copper	TT (1.0)	a	a	a	a	a	a	a	<0.05	<0.05	a	a	a	a	a
Iron	(0.3)	a	a	a	a	a	a	a	.0.32/b	<0.1	<0.1	a	<0.5	<0.1	<0.05
Lead	TT	a	a	a	a	a	a	a	<0.02	<0.01	<0.005	<0.2	<0.005	<0.002	<0.05
Lithium	ND	a	a	a	a	a	a	a	a	<0.05	a	a	a	a	a
Magnesium	ND	a	a	a	a	a	a	a	a	22/b	a	a	a	a	a
Manganese	0.05	a	a	a	a	a	a	a	<0.05	<0.05	<0.05	a	<0.05	<0.005	<0.05
Mercury	0.002	a	a	a	a	a	a	a	<0.001	<0.001	<0.001	<0.05	<0.001	<0.001	<0.001
Molybdenum	ND	a	a	a	a	a	a	a	a	<0.05	a	a	a	a	a
Nickel	0.1	a	a	a	a	a	a	a	a	<0.05	<0.05	a	<0.1	<0.5	<0.5
Selenium	0.05	a	a	a	a	a	a	a	<0.005	<0.005	<0.005	<0.1	<0.005	<0.005	<0.005
Silver	(0.1)	a	a	a	a	a	a	a	<0.02	<0.02	<0.02	<0.2	<0.02	<0.02	<0.05
Thallium	0.002	a	a	a	a	a	a	a	<0.01	<0.01	<0.01	a	<0.02	<0.01	<0.10
Tin	ND	a	a	a	a	a	a	a	<0.04	<0.01	<0.02	a	<0.02	<0.02	0.15/b
Vanadium	ND	a	a	a	a	a	a	a	<0.05	<0.05	<0.05	a	<0.05	<0.05	<0.05
Zinc	(5.0)	a	a	a	a	a	a	a	0.16/b	0.15/b	0.10/b	a	0.24/b	0.21/b	0.1/b
NON-METAL INORGANICS (ppm unless otherwise noted)															
pH (S.U.)	(6.5-8.5)	a	a	a	a	a	a	a	a	8.0/b	7.4/b	8.3/b	7.1/b	7.3/b	7.5/b
TDS	(500)	a	a	a	a	a	a	a	a	310/b	330/b	a	310/b	310/b	320/b
Alkalinity	ND	a	a	a	a	a	a	a	a	230/b	a	a	a	a	a
Ammonia-N	ND	a	a	a	a	a	a	a	a	<0.1	a	a	a	a	a

TABLE 3 (Continued)

Constituents	MCL (SMCL)	Sample Event													
		09/19/85	11/18/85	12/06/85	07/16/86	08/04/86	06/08/87	06/10/87	10/23/87	05/25/88	03/19/90	02/25/91	11/20/91	08/14/91	07/22/92
Calcium	ND	a	a	a	a	a	a	a	a	49/b	a	a	a	a	a
Chloride	(250)	a	a	a	a	a	a	a	a	16/b	16/b	a	16/b	16/b	17/b
Fluoride	4.0 (2.0)*	a	a	a	a	a	a	a	a	0.4/b	0.4/b	a	0.33/b	0.5/b	0.41/b
Nitrate-N	10	a	a	a	a	a	a	a	a	2.0/b	1.8/b	a	1/4.b	1.3/b	0.96/b
Phosphate-P, Ortho	ND	a	a	a	a	a	a	a	a	<0.01	a	a	a	a	a
Phosphate-P, Total	ND	a	a	a	a	a	a	a	a	<0.01	a	a	a	a	a
Silica	ND	a	a	a	a	a	a	a	a	41/b	a	a	a	a	a
Sodium	ND	a	a	a	a	a	a	a	a	33/b	a	a	a	a	a
Sulfate	(250)	a	a	a	a	a	a	a	a	22/b	25/b	a	26/b	27/b	21/b
Total Kjeldahl Nitrogen (TKN)	ND	a	a	a	a	a	a	a	a	0.02	a	a	a	a	a
Total Nitrogen	ND	a	a	a	a	a	a	a	a	2.0/b	a	a	a	a	a
Total Organic Carbon (TOC)	ND	a	a	a	a	a	a	a	a	0.58/b	a	a	a	a	a
Fecal Coliform Bacteria	ND	a	a	a	a	a	a	a	a	<2	a	a	a	a	a
(Cont.)															

TABLE 3 (Continued)

Constituents	MCL (SMCL)	Sample Event													
		09/19/85	11/18/85	12/06/85	07/16/86	08/04/86	06/08/87	06/10/87	10/23/87	05/25/88	03/19/90	02/25/91	11/20/91	08/14/91	07/22/92
RADIONUCLIDES (pCi/litre)															
Gross Alpha	15	a	a	a	a	a	a	a	a	<2	a	a	a	a	a

Notes:
[Result/Detection Limit]
< = less than practical quanitation limit (PQL)
a = not analyzed
b = detection limit not listed
* = proposed
MCL = maximum contaminant level
SMCL = secondary maximum contaminant level
ND = no MCL or SMCL determined

References
Arizona Department of Environmental Quality, 1992, Human Health-Based Guidance Levels for the Ingestion of Contaminants in Drinking Water and Soil.
Maricopa County Solid Waste Management Division files.
United States Environmental Protection Agency Region 9, 1992, Drinking Water Standards and Health Advisories Table.
United States Environmental Protection Agency, Office of Water, 1993, Drinking Water Regulations and Health Advisories.

TABLE 4

ANALYTICAL RESULTS FOR THE CAVE CREEK LANDFILL MONITOR WELLS

Constituents	MCL (SMCL)	Well CCMW-1 Sample Event 06/14/93	Well CCMW-1 Sample Event 06/22/93	Well CCMW-2 Sample Event 06/14/93	Well CCMW-2 Sample Event 06/22/93
PURGEABLE ORGANIC COMPOUNDS (ppb)					
Acetone	ND	<20	a	<20	a
Acrolein	ND	a	a	a	a
Acrylonitrile	ND	a	a	a	a
Benzene	5.0	<2.0	<1.0	<2.0	<1.0
Bromodichloromethane	100	<2.0	<1.0	<2.0	<1.0
Bromobenzene	ND	<2.0	a	<2.0	a
Bromochloromethane	ND	<2.0	a	<2.0	a
Bromoform	100	<5.0	<1.0	<5.0	<1.0
Bromomethane	ND	<5.0	<1.0	<5.0	<1.0
Carbon tetrachloride	5.0	<2.0	<0.5	<2.0	<0.5
Chlorobenzene	100	<2.0	<1.0	<2.0	<1.0
Chloroethane	ND	<2.0	<1.0	<2.0	<1.0
2-Chloroethylvinyl ether	ND	a	<15	a	<15
Chloroform	100	<2.0	<0.5	<2.0	<0.5
Chloromethane	ND	<2.0	<1.0	<2.0	<1.0
2-chlorotoluene	ND	<2.0	a	<2.0	a
4-chlorotoluene	ND	<2.0	a	<2.0	a
Dibromomethane	ND	<2.0	<1.0	<2.0	<1.0
Dichlorodifluoromethane	ND	<5.0	<1.0	<5.0	<1.0
Dibromochloromethane	100	<2.0	<1.0	<2.0	<1.0
1,2-Dibromoethane	ND	<5.0	a	<5.0	a
1,2-Dichlorobenzene (o)	600 (10)*	<2.0	<1.0	<2.0	<1.0
1,3-Dichlorobenzene (m)	600	<2.0	<1.0	<2.0	<1.0

TABLE 4 (Continued)

Constituents	MCL (SMCL)	Well CCMW-1		Well CCMW-2	
		Sample Event		Sample Event	
		06/14/93	06/22/93	06/14/93	06/22/93
1,4-Dichlorobenzene (p)	75 (5)*	<2.0	<1.0	<2.0	<1.0
1,1-Dichloroethane	ND	<2.0	<0.5	<2.0	<0.5
1,2-Dichloroethane	5.0	<2.0	<0.5	<2.0	<0.5
1,1-Dichloroethene	7.0	<2.0	<0.5	<2.0	<0.5
cis-1,2-Dichloroethene	70	<2.0	a	<2.0	a
trans-1,2-Dichloroethene	100	<2.0	<1.0	<2.0	<1.0
1,2-Dichloropropane	5.0	<2.0	<0.5	<2.0	<0.5
1,3-Dichloropropane	ND	<2.0	a	<2.0	a
2,2-Dichloropropane	ND	<2.0	a	<2.0	a
1,1-Dichloropropene	ND	<2.0	a	<2.0	a
cis-1,3-Dichloropropene	ND	a	<0.5	a	<0.5
trans-1,3-Dichloropropene	ND	a	<1.0	a	<1.0
Diethyl ether	ND	<100	a	<100	a
Ethylbenzene	700 (30)*	<2.0	<1.0	<2.0	<1.0
Hexachlorobutadiene	ND	<2.0	a	<2.0	a
2-hexanone	ND	<10	a	<10	a
Isopropylbenzene	ND	<2.0	a	<2.0	a
4-Isopropyltoluene	ND	<2.0	a	<2.0	a
Methyl Ethyl Ketone	ND	<20	a	<20	a
Methyl iso-Butyl Ketone	ND	<20	a	<20	a
Methyl tert-Butyl Ether	ND	<20	a	<20	a
Methylene chloride	5.0	<2.0	<5.0	<2.0	<5.0
Naphthalene	ND	<5.0	a	<5.0	a
1,1,1,2-Tetrachloroethane	ND	<2.0	a	<2.0	a
1,1,2,2-Tetrachloroethane	ND	<2.0	<0.5	<2.0	<0.5
1,1,2,2-Tetrachloroethene	ND	a	<0.5	a	<0.5

TABLE 4 (Continued)

Constituents	MCL (SMCL)	Well CCMW-1		Well CCMW-2	
		Sample Event		Sample Event	
		06/14/93	06/22/93	06/14/93	06/22/93
Tetrachloroethene	5.0	<2.0	a	<2.0	a
Toluene	10^3 (40)*	<2.0	<1.0	<2.0	<1.0
1,1,1-Trichloroethane	200	<2.0	<0.5	<2.0	<0.5
1,1,2-Trichloroethane	5.0	<2.0	<0.5	<2.0	<0.5
Trichloroethene	5.0	<2.0	<0.5	<2.0	<0.5
1,2,3-Trichlorobenzene	ND	<2.0	a	<2.0	a
1,2,4-Trichlorobenzene	70	<2.0	a	<2.0	a
1,2,4-Trimethylbenzene	ND	<2.0	a	<2.0	a
1,3,5-Trimethylbenzene	ND	<2.0	a	<2.0	a
1,2,3-Trichloropropane	ND	<2.0	a	<2.0	a
Trichlorofluoromethane	ND	<5.0	<1.0	<5.0	<1.0
1,1,2-Trichloro-1,2,2-Trifluoro Ethane	ND	<2.0	a	<2.0	a
Vinyl chloride	2.0	<5.0	<2.0	<5.0	<2.0
m-Xylene	ND	<2.0	a	<2.0	a
o-Xylene	ND	<2.0	a	<2.0	a
p-Xylene	ND	<2.0	a	<2.0	a
Total Xylenes	10^4 (20)*	a	<0.3	a	<0.3
PHENOLS (ppb)					
4-Chloro-3-methylphenol	ND	a	<20	a	<20
2-Chlorophenol	ND	a	<10	a	<10
2,4-Dichlorophenol	ND	a	<10	a	<10
2,4-Dimethylphenol	ND	a	<20	a	<20
2,4-Dinitrophenol	ND	a	<50	a	<50
2-Methyl-4,6-dinitrophenol	ND	a	<30	a	<30
2-Nitrophenol	ND	a	<10	a	<10
4-Nitrophenol	ND	a	<50	a	<50

TABLE 4 (Continued)

Constituents	MCL (SMCL)	Well CCMW-1 Sample Event 06/14/93	Well CCMW-1 Sample Event 06/22/93	Well CCMW-2 Sample Event 06/14/93	Well CCMW-2 Sample Event 06/22/93
Pentachlorophenol	1.0	a	<15	a	<15
Phenol	ND	a	<10	a	<10
2,4,6-Trichlorophenol	ND	a	<10	a	<10
PESTICIDES/HERBICIDES (ppb)					
Toxaphene	3.0	a	<2.5	a	<2.5
Endrin	2.0	a	<0.1	a	<0.1
Lindane	0.20	a	<2	a	<2
Methoxychlor	40	a	<50	a	<50
2,4-D	70	a	<50	a	<50
2,4,5-TP (Silvex)	50	a	<5	a	<5
METALS (ppm)					
Aluminum	(0.05-0.2)	a	0.13	a	0.14/0.05
Antimony	0.006	a	<0.05	a	<0.05
Arsenic	0.05	a	<0.05	a	<0.05
Barium	2.0	a	<0.05	a	<0.05
Beryllium	0.004	a	<0.05	a	<0.05
Cadmium	0.005	a	<0.01	a	<0.01
Chromium	0.1	a	<0.05	a	<0.05
Cobalt	ND	a	<0.05	a	<0.05
Iron	(0.3)	a	<0.05	a	1.2/0.05
Lead	TT	a	<0.05	a	<0.05
Manganese	(0.05)	a	0.06/0.05	a	0.08/0.05
Mercury	0.002	a	<0.001	a	<0.001
Nickel	0.1	a	<0.05	a	<0.05
Selenium	0.05	a	<0.01	a	<0.01
Silver	(0.1)	a	<0.05	a	<0.05
Thallium	(0.002)	a	<0.10	a	<0.10
Tin	ND	a	<0.05	a	<0.05

TABLE 4 (Continued)

Constituents	MCL (SMCL)	Well CCMW-1 Sample Event 06/14/93	Well CCMW-1 Sample Event 06/22/93	Well CCMW-2 Sample Event 06/14/93	Well CCMW-2 Sample Event 06/22/93
Vanadium	ND	a	<0.05	a	<0.05
Zinc	(5.0)	a	2.0/0.05	a	2.2/0.05
NON-METAL INORGANICS (ppm unless otherwise noted)					
pH (S.U.)	(6.5-8.5)	7.96/1.0	a	7.69/1.0	a
Electrical Conductivity (μmho/cm)	ND	480/0.5	a	2300/0.5	a
TDS	(500)	330/5	a	300/5	a
Alkalinity	ND	250/2.0	a	240/2.0	a
Chloride	(250)	13/1.0	a	20/1.0	a
Fluoride	4.0 (2.0)*	0.49/0.10	a	0.42/0.10	a
Nitrate-N	10	2.0/0.50	<0.50	1.8/0.50	<0.50
Sulfate	(250)	20/5.0	a	20/5.0	a
Total Kjeldahl Nitrogen	ND	<0.1	a	<0.1	a
Total Organic Halogens	ND	<0.05	a	<0.05	a
Chemical Oxygen Demand	ND	<5	a	6/5	a
Total Organic Carbon	ND	3.8/1.0	a	1.9/1.0	a

Notes:
[Result/Detection Limit]
< = less than practical quanitation limit (PQL)
a = not analyzed
* = proposed
MCL = maximum contaminant level
SMCL = secondary maximum contaminant level
ND = no MCL or SMCL determined

References
Arizona Department of Environmental Quality, 1992, Human Health-Based Guidance Levels for the Ingestion of Contaminants in Drinking Water and Soil.
Maricopa County Solid Waste Management Division files.
United States Environmental Protection Agency Region 9, 1992, Drinking Water Standards and Health Advisories Table.
United States Environmental Protection Agency, Office of Water, 1993, Drinking Water Regulations and Health Advisories.

TABLE 5

ANALYTICAL RESULTS FOR COP WELL 280
(AUGUST - SEPTEMBER, 1990)

Constituent	Units	MCL[a] (SMCL[b])	Sample 280-1000	Sample 280-1120	Sample 280-1445	Sample 280-1645	Sample 280-1840	Final Sample 280-0
pH	units	(6.5-8.5)	7.6	7.8	7.9	8.1	8.3	7.6
Arsenic	(mg/l)	0.05	0.016	0.011	0.016	0.049	0.12	0.014
Barium	(mg/l)	1.0	<0.5	<0.5	<0.5	<0.5	<0.05	<0.5
Cadmium	(mg/l)	0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Chromium	(mg/l)	0.05	<0.01	<0.01	0.018	0.032	0.011	0.011
Fluoride	(mg/l)	4.0	0.6	0.6	0.6	0.8	1.1	0.4
Lead	(mg/l)	0.05	<0.002	<0.002	<0.002	0.0066	0.0073	<0.002
Mercury	(mg/l)	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Nitrates-N	(mg/l)	10.0	1.3	1.7	1.2	1.3	1.2	1.3
Selenium	(mg/l)	0.01	<0.005	<0.005	<0.005	<0.005	<0.005	0.005
Silver	(mg/l)	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Alkalinity	(mg/l)		200	190	200	200	230	220
Calcium	(mg/l)		34	30	22	12	8.8	38
Chloride	(mg/l)	(250)	24	26	20	20	22	12
Copper	(mg/l)	(1.0)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Hardness	(mg/l)		180	170	130	60	41	210
Iron	(mg/l)	(0.3)	<0.1	<0.1	0.56	0.42	0.68	0.11
Magnesium	(mg/l)		24	23	18	7.3	4.7	29
Manganese	(mg/l)	(0.05)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Note: Information for this table was obtained from James M. Montgomery, C.O.P. Well report January 1991

TABLE 5 (Continued)

Constituent	Units	MCL[a] (SMCL[b])	Sample 280-1000	Sample 280-1120	Sample 280-1445	Sample 280-1645	Sample 280-1840	Final Sample 280-0
Sodium	(mg/l)		38	39	54	93	120	34
Sulfate	(mg/l)	(250)	20	21	15	20	26	18
Total Dissolved Solids @ 180° C	(mg/l)	(500)	310	310	290	300	350	310
Zinc	(mg/l)	(5.0)	<0.05	<0.05	<0.05	0.12	0.095	<0.05
Total coliform bacteria (number of tubes positive out of five)		(>2)						1
Temperature (field)	°C		27.8	28.3	28.9	28.9	31.1	26.7
Langelier Index			+.03	-0.3	+0.3	+0.1	+0.7	-0.1
p-Dichlorobenzene	(mg/l)	0.075	<0.0005				<0.0005	<0.0005
Vinyl Chloride	(mg/l)	0.002	<0.0005				<0.0005	<0.0005
1,1-Dichloroethylene	(mg/l)	0.007	<0.0005				<0.0005	<0.0005
1,2-Dichloroethane	(mg/l)	0.005	<0.0005				<0.0005	<0.0005
1,1,1-Trichlorethane	(mg/l)	0.2	<0.0005				<0.0005	<0.0005
Carbon Tetrachloride	(mg/l)	0.005	<0.0005				<0.0005	<0.0005
Trichloroethylene (TCE)	(mg/l)	0.005	<0.0005				<0.0005	<0.0005
Benzene	(mg/l)	0.005	<0.0005				<0.0005	<0.0005
Chloromethane	(mg/l)		<0.0005				<0.0005	<0.0005
Dichlorodifluoromethane	(mg/l)		<0.0005				<0.0005	<0.0005
Bromomethane	(mg/l)		<0.0005				<0.0005	<0.0005
Chloroethane	(mg/l)		<0.0005				<0.0005	<0.0005
Fluorotrichloromethane	(mg/l)		<0.0005				<0.0005	<0.0005
1,3-Dichloropropene	(mg/l)		<0.0005				<0.0005	<0.0005

Note: Information for this table was obtained from James M. Montgomery, C.O.P. Well report January 1991

TABLE 5 (Continued)

Constituent	Units	MCL[a] (SMCL[b])	Sample 280-1000	Sample 280-1120	Sample 280-1445	Sample 280-1645	Sample 280-1840	Final Sample 280-0
cis-1,2-Dichloroethylene	(mg/l)		<0.0005				<0.0005	<0.0005
Dibromomethane	(mg/l)		<0.0005				<0.0005	<0.0005
1,1-Dichloropropene	(mg/l)		<0.0005				<0.0005	<0.0005
1,3-Dichloropropane	(mg/l)		<0.0005				<0.0005	<0.0005
1,2,3-Trichloropropane	(mg/l)		<0.0005				<0.0005	<0.0005
2,2-Dichloropropane	(mg/l)		<0.0005				<0.0005	<0.0005
Chloroform	(mg/l)		<0.0005				<0.0005	<0.0005
Bromoform	(mg/l)		<0.0005				<0.0005	<0.0005
Bromodichloromethane	(mg/l)		<0.0005				<0.0005	<0.0005
Chlorodibromomethane	(mg/l)		<0.0005				<0.0005	<0.0005
Dibromochloropropane (DBCP)	(mg/l)		<0.00002				<0.00002	<0.00002
Ethylene Dibrommide (EDB)	(mg/l)		<0.00001				<0.00001	<0.00001
Dichloromethane	(mg/l)		<0.0005				<0.0005	<0.0005
O-Chlorotoluene	(mg/l)		<0.0005				<0.0005	<0.0005
p-Chlorotoluene	(mg/l)		<0.0005				<0.0005	<0.0005
m-Dichlorobenzene	(mg/l)		<0.0005				<0.0005	<0.0005
O-Dichlorobenzene	(mg/l)		<0.0005				<0.0005	<0.0005
1,1-Dichloroethane	(mg/l)		<0.0005				<0.0005	<0.0005
trans-1,2-Dichloroethylene	(mg/l)		<0.0005				<0.0005	<0.0005
1,2-Dichloropropane	(mg/l)		<0.0005				<0.0005	<0.0005
1,1,2-Trichloroethane	(mg/l)		<0.0005				<0.0005	<0.0005

Note: Information for this table was obtained from
James M. Montgomery, C.O.P. Well report January 1991

TABLE 5 (Continued)

Constituent	Units	MCL[a] (SMCL[b])	Sample 280-1000	Sample 280-1120	Sample 280-1445	Sample 280-1645	Sample 280-1840	Final Sample 280-0
1,1,1,2-Tetrachloroethane	(mg/l)		<0.0005				<0.0005	<0.0005
Tetrachloroethylene	(mg/l)		<0.0005				<0.0005	<0.0005
Chlorobenzene	(mg/l)		<0.0005				<0.0005	<0.0005
Toluene	(mg/l)		<0.0005				<0.0005	<0.0005
Ehtylbenzene	(mg/l)		<0.0005				<0.0005	<0.0005
Bromobenzene	(mg/l)		<0.0005				<0.0005	<0.0005
m-Xylene	(mg/l)		<0.0005				<0.0005	<0.0005
Styrene	(mg/l)		<0.0005				<0.0005	<0.0005
o-Xylene	(mg/l)		<0.0005				<0.0005	<0.0005
p-Xylene	(mg/l)		<0.0005				<0.0005	<0.0005
Endrin	(mg/l)	0.0002	<0.0001				<0.0001	<0.0001
Lindane	(mg/l)	0.004	<0.001				<0.001	<0.001
Methoxychlor	(mg/l)	0.1	<0.01				<0.01	<0.01
Toxaphene	(mg/l)	0.005	<0.001				<0.001	<0.001
2,4-D	(mg/l)	0.1	<0.01				<0.01	<0.01
1,4,5-TP Silvex	(mg/l)	0.01	<0.001				<0.001	<0.001
Gross Alpha	pCi/liter	15					4±3	2±1

a Primary Maximum Contaminant Level
b Secondary Maximum Contaminant Level

Note: Information for this table was obtained from James M. Montgomery, C.O.P. Well report January 1991

TABLE 6

ANALYTICAL RESULTS FOR COP WELL NO. 281 (JUNE - SEPTEMBER, 1990)

Constituent	Units	MCL[a] (SMCL[b])	Sample 281-1080	Sample 281-1280	Sample 281-1360	Sample 281-1490	Sample 281-1590	Sample 281-1649	Final Sample 281-0
pH	units	(6.5-8.5)	8.1	8.0	8.1	8.1	8.2	8.0	7.8
Arsenic	(mg/l)	0.05	<0.01	<0.01	<0.01	<0.01	0.010	<0.01	<0.01
Barium	(mg/l)	1.0	1.3	1.9	0.92	1.2	1.9	1.2	<0.5
Cadmium	(mg/l)	0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Chromium	(mg/l)	0.05	<0.01	<0.01	0.01	0.01	0.01	0.01	0.34
Fluoride	(mg/l)	4.0	0.6	0.7	0.7	0.7	0.7	0.7	0.6
Lead	(mg/l)	0.05	<0.0025	<0.002	<0.002	0.0030	0.0030	0.002	<0.002
Mercury	(mg/l)	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Nitrates-N	(mg/l)	10.0	1.2	1.2	0.8	1.0	0.9	1.0	2.5
Selenium	(mg/l)	0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.005
Silver	(mg/l)	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Alkalinity	(mg/l)		200	190	190	210	200	210	260
Calcium	(mg/l)		39	32	30	33	28	31	91
Chloride	(mg/l)	(250)	34	34	32	32	28	36	11
Copper	(mg/l)	(1.0)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Hardness	(mg/l)		170	140	150	160	140	160	330
Iron	(mg/l)	(0.3)	0.72	0.43	0.12	0.93	1.2	0.10	1.4
Magnesium	(mg/l)		18	16	18	19	18	19	25
Manganese	(mg/l)	(0.05)	0.10	<0.05	<0.05	0.13	0.11	<0.05	<0.05

Note: Information for this table was obtained from James M. Montgomery, C.O.P. Well report January 1991

TABLE 6 (Continued)

Constituent	Units	MCL[a] (SMCL[b])	Sample 281-1080	Sample 281-1280	Sample 281-1360	Sample 281-1490	Sample 281-1590	Sample 281-1649	Final Sample 281-0
Sodium	(mg/l)		55	52	50	49	51	53	75
Sulfate	(mg/l)	(250)	35	32	32	33	32	29	32
Total Dissolved Solids @ 180° C	(mg/l)	(500)	320	310	320	320	290	320	560
Zinc	(mg/l)	(5.0)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Total coliform bacteria (number of tubes positive out of five)		(>2)							0
Temperature (field)	°C		26.1			25.6			32.3
Langelier Index			+1.0			+0.6			+1.3
p-Dichlorobenzene	(mg/l)	0.075	<0.0005			<0.0005			<0.0005
Vinyl Chloride	(mg/l)	0.002	<0.0005			<0.0005			<0.0005
1,1-Dichloroethylene	(mg/l)	0.007	<0.0005			<0.0005			<0.0005
1,2-Dichloroethane	(mg/l)	0.005	<0.0005			<0.0005			<0.0005
1,1,1-Trichlorethane	(mg/l)	0.2	<0.0005			<0.0005			<0.0005
Carbon Tetrachloride	(mg/l)	0.005	<0.0005			<0.0005			<0.0005
Trichloroethylene (TCE)	(mg/l)	0.005	<0.0005			<0.0005			<0.0005
Benzene	(mg/l)	0.005	<0.0005			<0.0005			<0.0005
Chloromethane	(mg/l)		<0.0005			<0.0005			<0.0005
Dichlorodifluoromethane	(mg/l)		<0.0005			<0.0005			<0.0005
Bromomethane	(mg/l)		<0.0005			<0.0005			<0.0005
Chloroethane	(mg/l)		<0.0005			<0.0005			<0.0005
Fluorotrichloromethane	(mg/l)		<0.0005			<0.0005			<0.0005
1,3-Dichloropropene	(mg/l)		<0.0005			<0.0005			<0.0005

Note: Information for this table was obtained from James M. Montgomery, C.O.P. Well report January 1991

TABLE 6 (Continued)

Constituent	Units	MCL[a] (SMCL[b])	Sample 281-1080	Sample 281-1280	Sample 281-1360	Sample 281-1490	Sample 281-1590	Sample 281-1649	Final Sample 281-0
cis-1,2-Dichloroethylene	(mg/l)		<0.0005			<0.0005			<0.0005
Dibromomethane	(mg/l)		<0.0005			<0.0005			<0.0005
1,1-Dichloropropene	(mg/l)		<0.0005			<0.0005			<0.0005
1,3-Dichloropropane	(mg/l)		<0.0005			<0.0005			<0.0005
1,2,3-Trichloropropane	(mg/l)		<0.0005			<0.0005			<0.0005
2,2-Dichloropropane	(mg/l)		<0.0005			<0.0005			<0.0005
Chloroform	(mg/l)		<0.0005			<0.0005			<0.056
Bromoform	(mg/l)		<0.0005			<0.0005			0.0017
Bromodichloromethane	(mg/l)		<0.0005			<0.0005			0.0076
Chlorodibromomethane	(mg/l)		<0.0005			<0.0005			0.0033
Dibromochloropropane (DBCP)	(mg/l)		<0.00002			<0.00002			*
Ethylene Dibrommide (EDB)	(mg/l)		<0.00001			<0.00001			*
Dichloromethane	(mg/l)		<0.0005			<0.0005			<0.0005
O-Chlorotoluene	(mg/l)		<0.0005			<0.0005			<0.0005
p-Chlorotoluene	(mg/l)		<0.0005			<0.0005			<0.0005
m-Dichlorobenzene	(mg/l)		<0.0005			<0.0005			<0.0005
O-Dichlorobenzene	(mg/l)		<0.0005			<0.0005			<0.0005
1,1-Dichloroethane	(mg/l)		<0.0005			<0.0005			<0.0005
trans-1,2-Dichloroethylene	(mg/l)		<0.0005			<0.0005			<0.0005
1,2-Dichloropropane	(mg/l)		<0.0005			<0.0005			<0.0005
1,1,2-Trichloroethane	(mg/l)		<0.0005			<0.0005			<0.0005

Note: Information for this table was obtained from James M. Montgomery, C.O.P. Well report January 1991

TABLE 6 (Continued)

Constituent	Units	MCL[a] (SMCL[b])	Sample 281-1080	Sample 281-1280	Sample 281-1360	Sample 281-1490	Sample 281-1590	Sample 281-1649	Final Sample 281-0
1,1,1,2-Tetrachloroethane	(mg/l)		<0.0005			<0.0005			<0.0005
Tetrachloroethylene	(mg/l)		<0.0005			<0.0005			<0.0005
Chlorobenzene	(mg/l)		<0.0005			<0.0005			<0.0005
Toluene	(mg/l)		<0.0005			<0.0005			<0.0005
Ehtylbenzene	(mg/l)		<0.0005			<0.0005			<0.0005
Bromobenzene	(mg/l)		<0.0005			<0.0005			<0.0005
m-Xylene	(mg/l)		<0.0005			<0.0005			<0.0005
Styrene	(mg/l)		<0.0005			<0.0005			<0.0005
o-Xylene	(mg/l)		<0.0005			<0.0005			<0.0005
p-Xylene	(mg/l)		<0.0005			<0.0005			<0.0005
Endrin	(mg/l)	0.0002	<0.0001			<0.0001			<0.0001
Lindane	(mg/l)	0.004	<0.001			<0.001			<0.001
Methoxychlor	(mg/l)	0.1	<0.01			<0.01			<0.01
Toxaphene	(mg/l)	0.005	<0.001			<0.001			<0.001
2,4-D	(mg/l)	0.1	<0.01			<0.01			<0.01
1,4,5-TP Silvex	(mg/l)	0.01	<0.001			<0.001			<0.001
Gross Alpha	pCi/liter	15	3±2			7±4			<2
Radium 226/228	pCi/liter	5				1.6			

* unable to analyze due to matrix interference (chlorine)
a Primary Maximum Contaminant Level
b Secondary Maximum Contaminant Level

Note: Information for this table was obtained from James M. Montgomery, C.O.P. Well report January 1991

TABLE 7

ANALYTICAL SUMMARY FOR THE CAVE CREEK LANDFILL SOIL SAMPLES

Well I.D.	Sample Depth (ft)	Sieve (-200, % finer by weight)	Moisture Content (% dry wt.)	Moist Density (PCF)	Dry Density (PCF)	Permea-bility * (cm/sec)	Permea-bility * (ft/day)	Porosity (%)	Total Organic Carbon (%)
CCMW-1	10-14	6.6	11.3	128.2	115.3	3.7×10^{-3}	10.5	28	0.14
	20-22 comb.	1.4	N/A	N/A	N/A	N/A	N/A	N/A	0.05
	30-30.5	0.4	N/A	N/A	N/A	N/A	N/A	N/A	0.02
CCMW-2	30-33	7.8	20.1	120.14	100.5	6.4×10^{-4}	1.8	33	0.14
	40-43	9.1	10.1	119.5	108.5	5.9×10^{-4}	1.7	27	0.01
	50-51.6	7.4	7.4	121.9	113.6	5.1×10^{-4}	1.4	24	0.04

* - Recompacted to original moist density.
N/A - No analysis, insufficient sample.

TABLE 8

TARGET MODEL INPUT FOR THE CAVE CREEK LANDFILL

Parameter	Input
Horizontal Hydraulic Conductivity (ft/day)	15[a]
Vertical Hydraulic Conductivity (ft/day)	15[a]
Porosity (unitless)	0.28[b]
Longitudinal Dispersivity (ft)	100.0[c]
Transverse Dispersivity (ft)	10.0[c]
Source Data	Chloride concentration remains constant at 5,475 ppm[d]
Infiltration Rate	0.5 inches/year[e]

Notes:
[a] Aquifer test results see Section 3.1.4
[b] Measured (see Table 7)
[c] Gelhar et al. 1992
[d] EPA 1979
[e] Estimated based on HELP model results

TABLE 9

HELP MODEL INPUT FOR CAVE CREEK LANDFILL

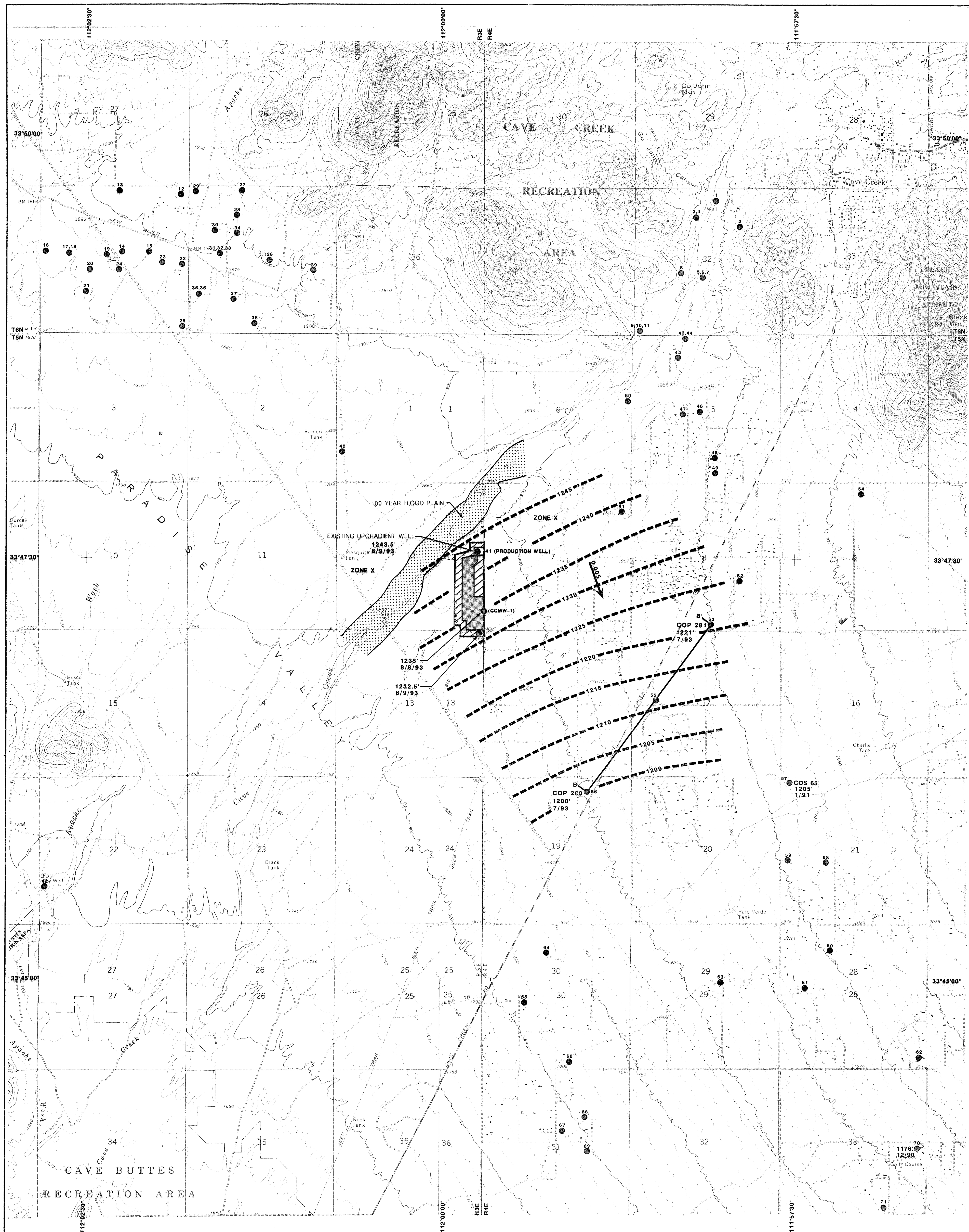
	Garbage	Daily Cover	Final Cover
Thickness (in)	960	12	12
Porosity (v/v	0.52	0.3	0.3
Field Capacity (v/v)	0.29	0.2	0.2
Wilting Point (v/v)	0.14	0.14	0.14
Saturated K (cm/sec)	2.0×10^{-4}	5.3×10^{-3}	1×10^{-5}
Slope (%)	N/A	0	3
Area (ft^2)	N/A	520,000	520,000
SCS Curve No	N/A	0*	95**
Runoff Fraction	N/A	0*	N/A
Initial θw (v/v)	0.23	0.21	0.20

* For Open Landfill years 1-12
** For Closed Landfill year 13-52

HELP Simulation Period (years)	Initial H_20 Content		
	Garbage	Daily Cover	Final Cover
0-12	0.23	0.21	N/A
13-32***	0.242	0.1493	0.2
33-52ᵗ	0.240	0.1512	0.209

*** Based on water content after 12 years
ᵗ Based on water content after 32 years

Figures



● LOCATION OF WELL BASED ON ADWR REGISTRATION REPORT

1221' / 1/91 WATER LEVEL ELEVATION (FEET AMSL) / DATE OF WATER LEVEL MEASUREMENT

● COP 280 CITY OF PHOENIX WELL LOCATION AND NUMBER

● COS 65 CITY OF SCOTTSDALE WELL LOCATION AND NUMBER

0.003 → DIRECTION OF GROUND WATER FLOW AND GRADIENT (FT/FT)

— 1230 — GROUND WATER LEVEL CONTOUR

PREFERRED MONITOR WELL LOCATION

○ ALTERNATIVE MONITOR WELL LOCATION

ZONE X 500 YEAR FLOOD PLAIN

FUTURE LANDFILL EXPANSION AREA

APPROXIMATE SCALE IN FEET 0 1500 3000

TABLE 1

LIST OF WELLS WITHIN A 3-MILE RADIUS OF THE CAVE CREEK LANDFILL

Well # of Figure 1	ADWR Registration No	ADWR Legal Description	Owner	Total Well Depth (ft.)	Casing Diameter (in.)	Date Completed	Use
1	55-601159	A(6-4)32abb	Goodman, G.J.	335	8	12/78	D
2	55-611757	A(6-4)32abd	Omundson, R.T.	320	6	1976	D
3	55-614064	A(6-4)32bad	Arizona State Land Dept	80	10	1944	UNK
4	55-805152	A(6-4)32bad	Arizona State Land Dept	UNK	12	UNK	J
5	55-518286	A(6-4)32caa	Flach & Soich	85	8	07/29/88	DJ
6	55-625150	A(6-4)32caa	Schubert, G.J.	106	12	10/45	DJ
7	55-625151	A(6-4)32caa	Schubert, G.J.	50	10	UNK	DJ
8	55-514411	A(6-4)32cab	Williams, Richard	340	8	11/29/86	D
9	55-506269	A(6-4)32ccc	David K.	175	6	09/12/83	D
10	55-506822	A(6-4)32ccc	Bowles, B.W.	140	8	12/15/83	DA
11	55-801126	A(6-4)32ccc	Bowles, et.al.	38	8	UNK	D
12	55-805321	A(6-3)34aaa	Bechtold, Phillip	600	UNK	12/01/71	DA
13	55-518165	A(6-3)34abb	Lares, Christopher	620	8	07/11/87	D
14	55-524131	A(6-3)34acc	Seely, Diane	785	8	04/15/89	D
15	55-502005	A(6-3)34acd	Beeskau, G.	820	8	02/26/82	D
16	55-521091	A(6-3)34bcc	Olson, John	695	8	05/10/88	D
17	55-523180	A(6-3)34bcd	Smith, Gary	710	8	02/03/89	D
18	55-531883	A(6-3)34bcd	Sones, James	715	UNK	05/30/91	D
19	55-524416	A(6-3)34bdd	Hoyt, Robert, et.al.	720	8	05/14/89	D
20	55-521687	A(6-3)34cab	Lawrence Family Trust	719	8	08/04/88	D
21	55-800842	A(6-3)34cac	Love Acres Association	700	8	12/79	D
22	55-636555	A(6-3)34daa	Perez, Raul M., Sr.	685	8	03/19/78	D
23	55-087362	A(6-3)34bab	Barton, B.	700	6	1981	D
24	55-517023	A(6-3)34dbb	Babbin, Stewart	700	8	03/20/87	D
25	55-530471	A(6-3)34ddd	Meeker, Rae Ellen	835	9	05/25/91	D
26	55-519950	A(6-3)35acc	Desert Foothills	915	8	01/09/88	JC
27	55-513379	A(6-3)35bab	Beard, Harold	550	8	02/20/86	D
28	55-520855	A(6-3)35bac	Lopez, Ron	600	8	04/16/88	D
29	55-532262	A(6-3)35bbb	Emmett, James T. Jr.	738	8	10/16/91	D
30	55-638089	A(6-3)35bca	Stevens, H.	665	6	02/09/75	D
31	55-509150	A(6-3)35bcd	Mullens, C.	780	9	10/04/84	D
32	55-802504	A(6-3)35bcd	Silva, Irma	672	5	02/15/78	D
33	55-804560	A(6-3)35bcd	Ogden, Linda	200	8	10/22/84	D
34	55-628045	A(6-3)35bdb	Williams, L.E.	685	9	06/15/74	ADF
35	55-518430	A(6-3)35cbc	Combs, Jasper	400	8	08/10/87	D
36	55-528864	A(6-3)35cbc	Borders, Timothy	800	9	08/27/90	D
37	55-531151	A(6-3)35cdb	Cable, Robert	800	8	03/30/91	D
38	55-532341	A(6-3)35cdd	Fautin, Jim	795	9	07/26/91	D
39	55-804220	A(6-3)35dad	Ansick, Paul R. Jr.	1,000	6	UNK	AD
40	55-614030	A(5-3)01ccb	Arizona State Land Dept.	79	9	UNK	UNK
41	55-503913	A(5-3)12add	Arizona State Land Dept.	820	10	10/08/82	D
42	55-614031	A(5-3)22cbc	Arizona State Land Dept.	430	6	1949	D
43	55-518305	A(5-4)05bab	Johnson	535	8	06/25/87	D
44	55-638749	A(5-4)05bab	Flowers, J.L.	462	8	01/28/77	D
45	55-510670	A(5-4)05bac	Johnson, J.	520	7	05/13/85	D
46	55-640160	A(5-4)05caa	Hatcher, N.	875	10	UNK	D
47	55-507675	A(5-4)05cab	Johnson, J. Jr.	600	6	04/28/84	D
48	55-518167	A(5-4)05dcb	Winter, Frances	851	8	08/27/87	D
49	55-800785	A(5-4)05dcc	Formon, E.M.	997	8	1966	D
50	55-530868	A(5-4)06add	Joy Ridge, inc.	800	6	02/15/91	D
51	55-634474	A(5-4)07aad	Veres	980	6	1930	
52	55-600029	A(5-4)08dbd	City of Phoenix (COP 279)	1,100	10	02/61	D
53	55-524559	A(5-4)08dcc	City of Phoenix (COP 281)	1,400	13	09/25/90	E
54	55-602536	A(5-4)09ab	Carefree Black Mountain	1,400	8	01/81	D
55	55-600030	A(5-4)17bcd	City of Phoenix (COP 278)	864	14	12/18/69	D
56	55-527549	A(5-4)19acb	City of Phoenix (COP 280)	1,490	19	09/24/90	E
57	55-518789	A(5-4)21bbb	City of Scottsdale (COS 65)	1,698	30	10/23/87	E
58	55-522909	A(5-4)21cab	Kezele, Joseph M.	1,060	8	12/06/88	D
59	55-635121	A(5-4)21cbb	Holbrook	200	8	11/29/73	D
60	55-633464	A(5-4)28bac	Councilman	200	6	1971	D
61	55-633735	A(5-4)28bcd	Perkins	NA	NA	NA	D
62	55-638933	A(5-4)28ddd	Olson	850	8	1974	D
63	55-638272	A(5-4)29acc	Nolte, et al.	825	8	01/19/73	DJ
64	55-603807	A(5-4)30bad	City of Phoenix (COP 276)	1,157	16	02/24/78	F
65	55-800775	A(5-4)30cab	Short	600	8	06/66	ADJ
66	55-516342	A(5-4)30dcc	Albert, George & E.	820	8	11/19/87	D
67	55-636545	A(5-4)31ac	Holgerson, Rex	632	8	NA	D
68	55-532698	A(5-4)31aca	Holgerson, Rex	820	8	9/12/91	D
69	55-511808	A(5-4)31dba	Saffer, Russell Dean	700	7	08/01/85	D
70	55-600117	A(5-4)33daa	Ironwood Water Co.	993	6	03/62	D
71	55-600115	A(5-4)33dcd	Ironwood Water Co.	1,555	16	01/73	D

Note: Data obtained from the ADWR Well Registry Report dated 5/11/92.

Legend: A = Irrigation; D = Domestic; E = Municipal; F = Industrial; J = Stock; NA = Not Available; UNK = Unknown

REFERENCES TITLE	REVISIONS NO.	BY	DATE	DESCRIPTION
USGS CAVE CREEK QUADRANGLE REVISED 1981				
USGS CURRYS CORNER QUADRANGLE REVISED 1982				
USGS NEW RIVER SE QUADRANGLE REVISED 1981				
USGS UNION HILLS QUADRANGLE REVISED 1981				
FIRM PANELS 795 AND 815 OF 4350 (9/29/89)				

CAVE CREEK LANDFILL BOUNDARY AND TOPOGRAPHIC SURVEY (6/23/92)

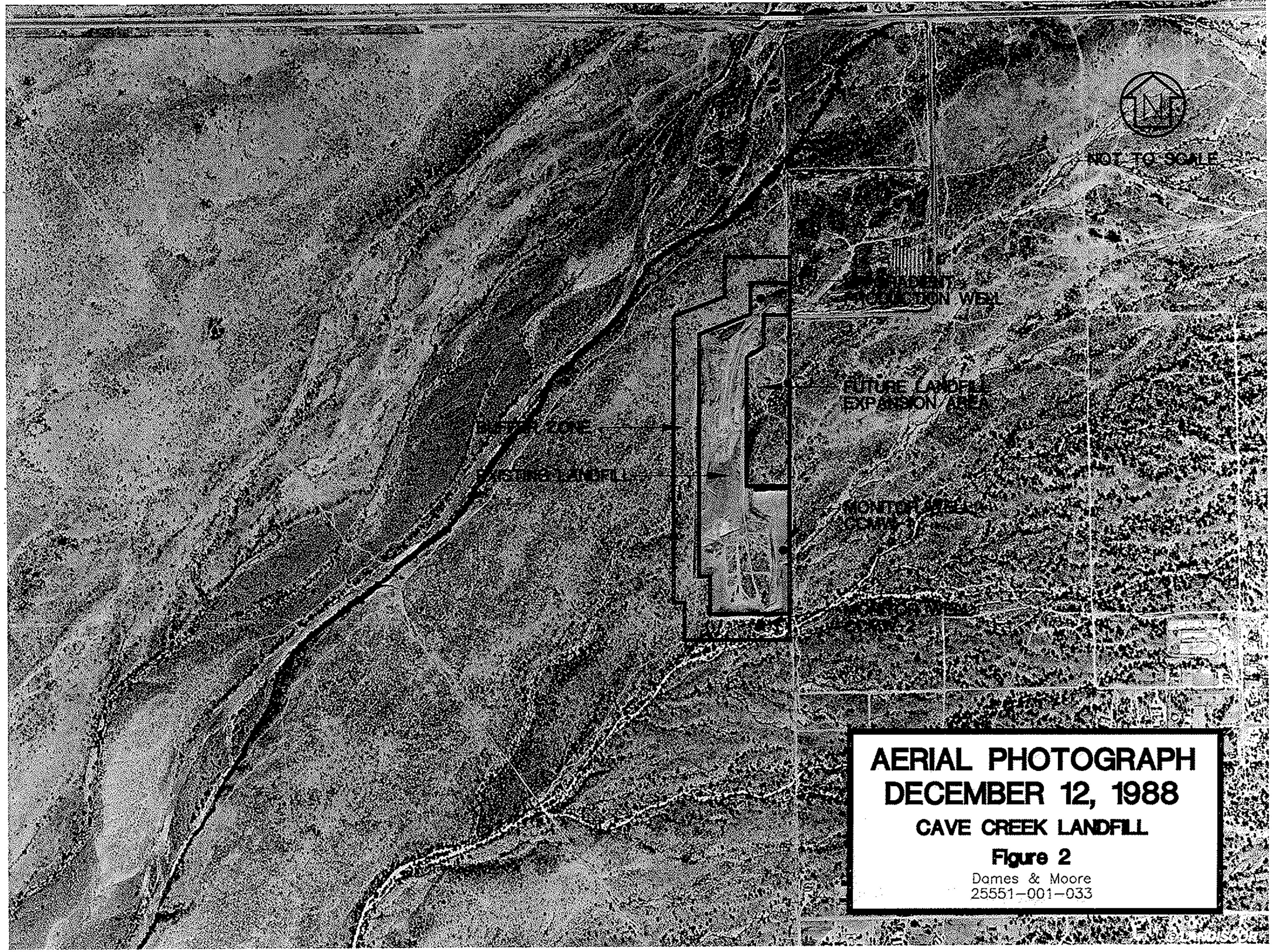
SCALE: 1"=1500' DATE

DESIGNED BY:
DRAWN BY:
CHECKED BY:
APPROVED BY:
CLIENT APPROVAL BY:

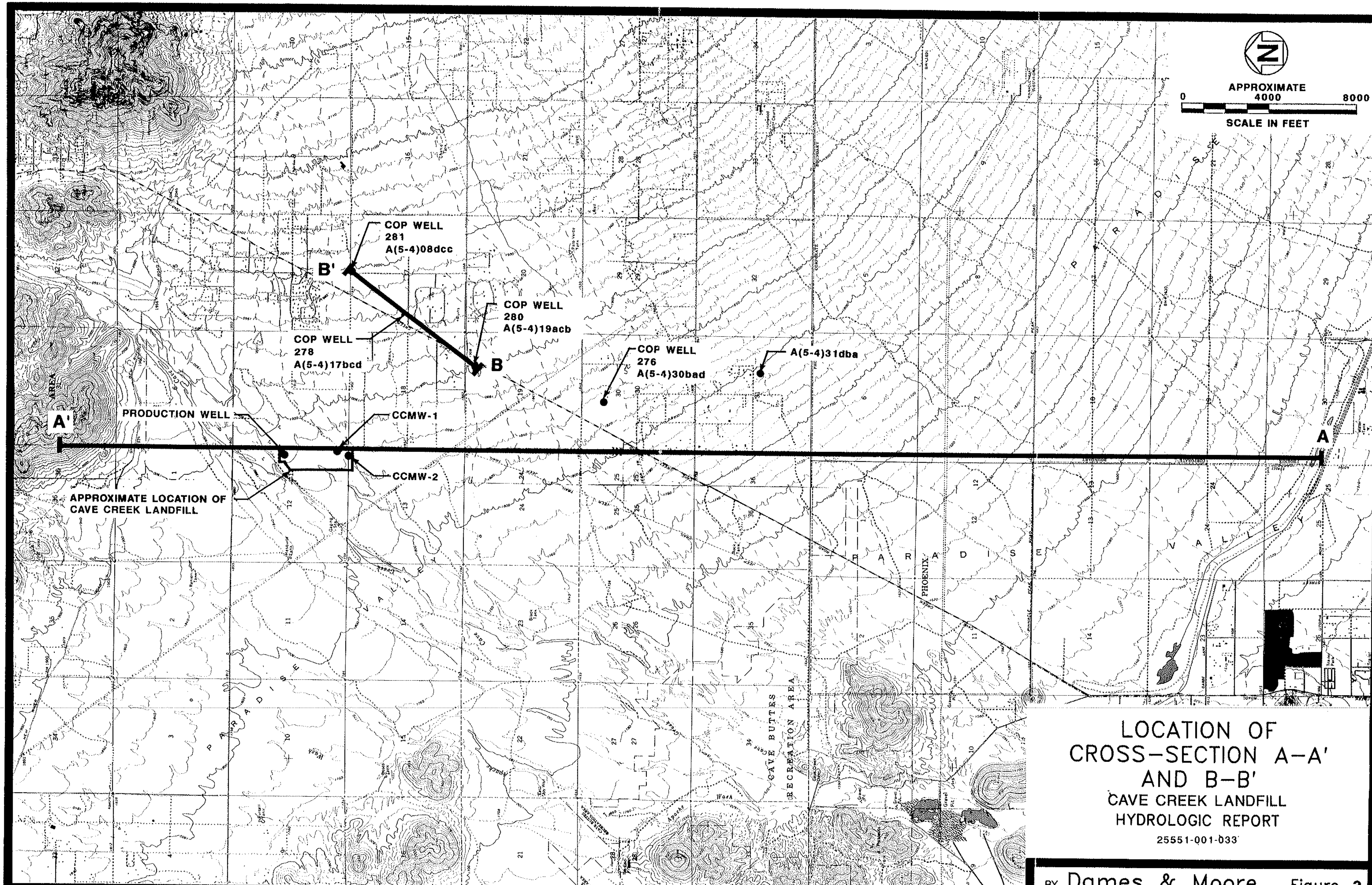
Dames & Moore

MARICOPA COUNTY
CAVE CREEK LANDFILL
WELL LOCATION MAP
PRELIMINARY GROUND WATER CONTOUR MAP

JOB NO. 25551-001-033
FIGURE NO. 1
REV.



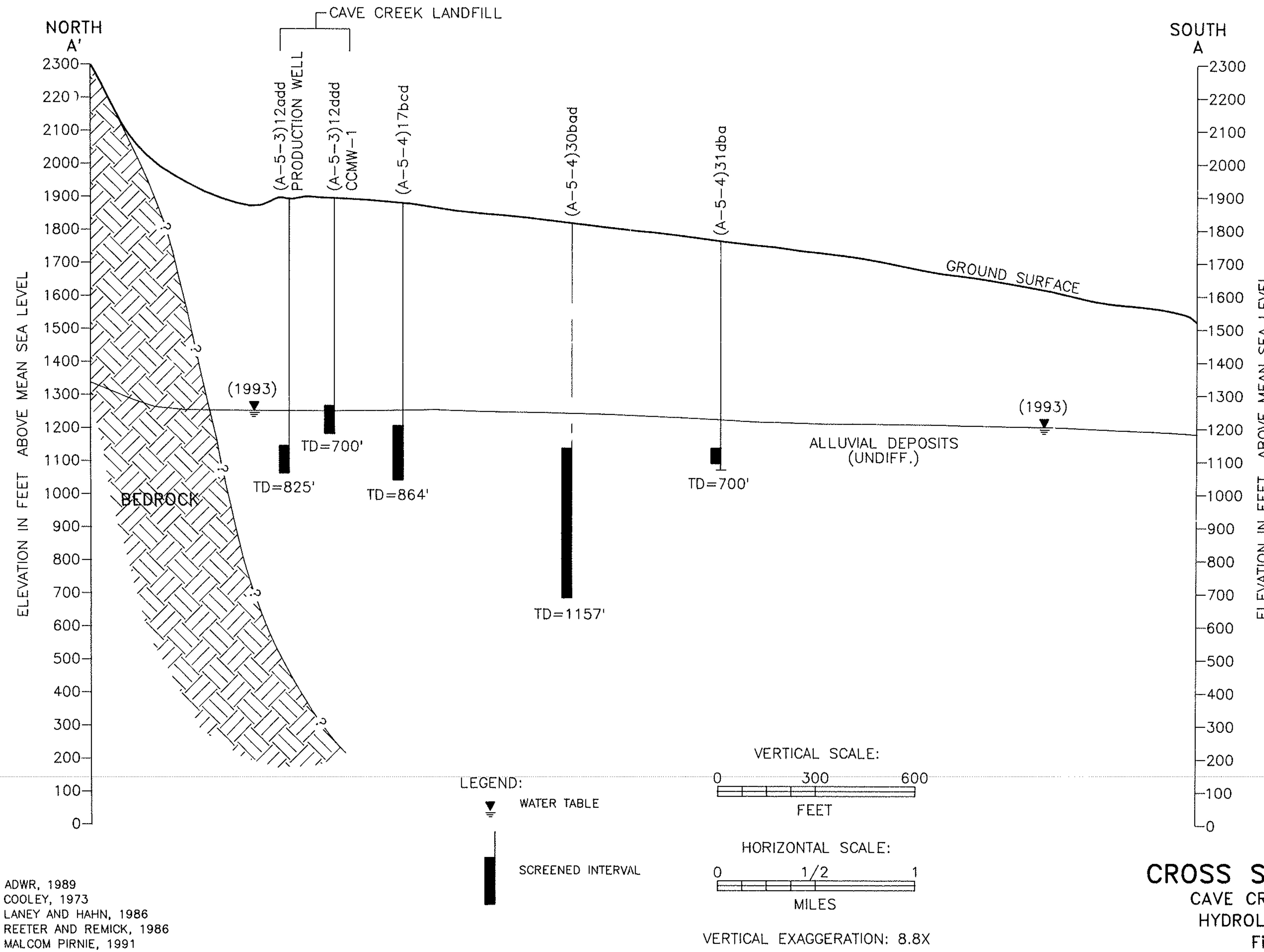
AERIAL PHOTOGRAPH
DECEMBER 12, 1988
CAVE CREEK LANDFILL
Figure 2
Dames & Moore
25551-001-033



LOCATION OF CROSS-SECTION A-A' AND B-B'

CAVE CREEK LANDFILL
HYDROLOGIC REPORT
25551-001-033

BY Dames & Moore Figure 3



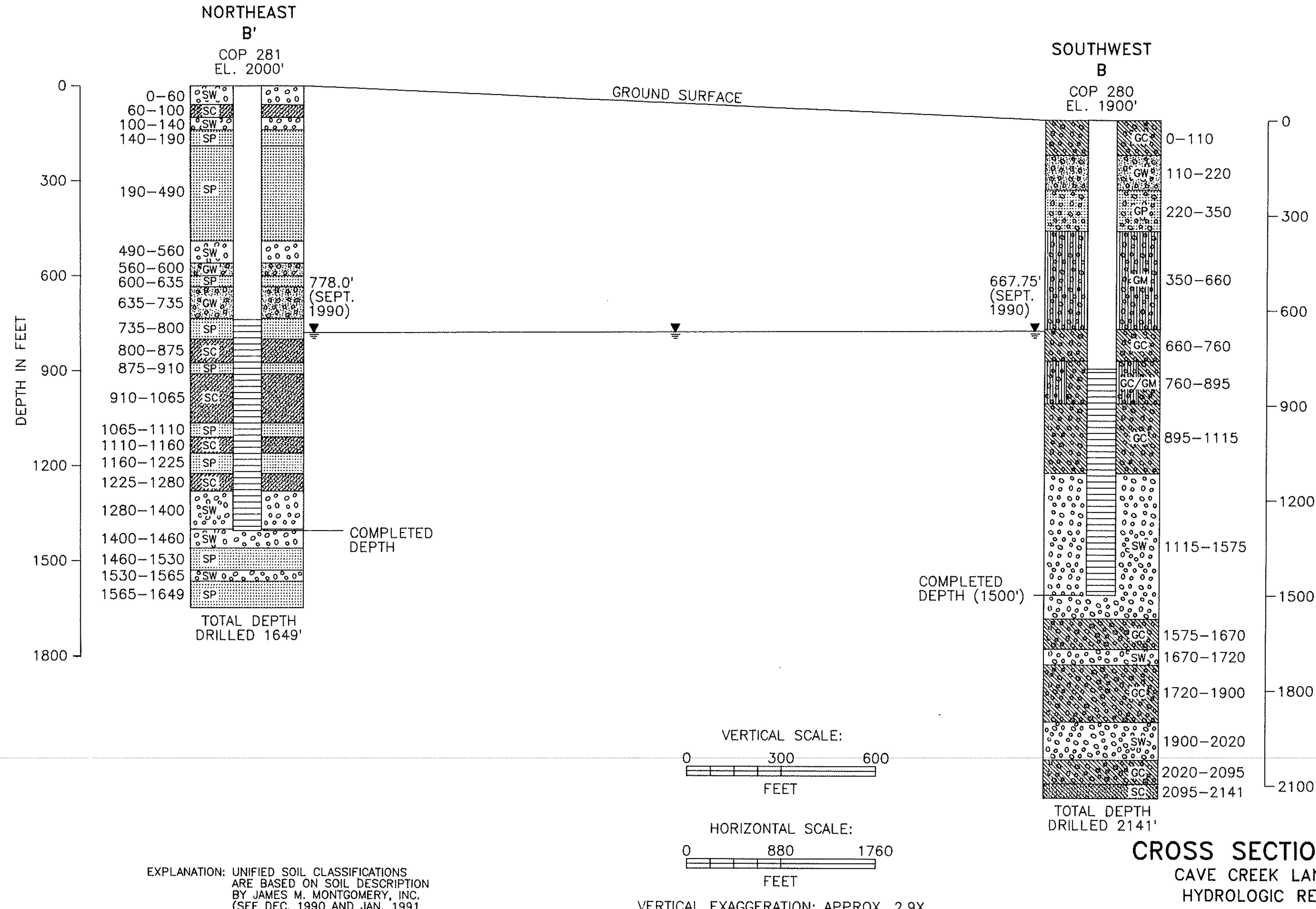
C00913-08-05-93

REFERENCE: ADWR, 1989
COOLEY, 1973
LANEY AND HAHN, 1986
REETER AND REMICK, 1986
MALCOM PIRNIE, 1991

CROSS SECTION A–A'

CAVE CREEK LANDFILL
HYDROLOGIC REPORT
Figure 4

DAMES & MOORE
25551-001-033

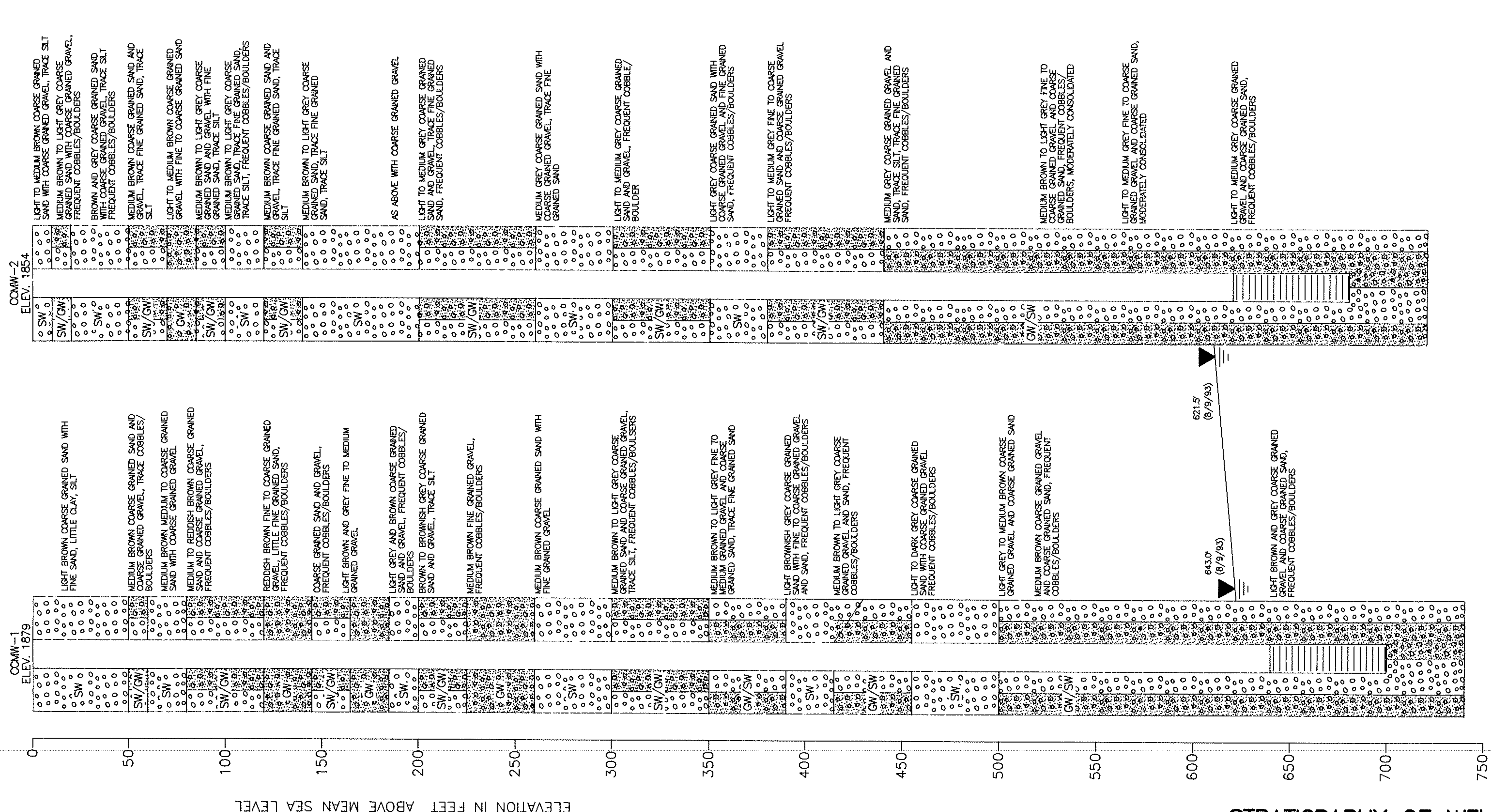


EXPLANATION: UNIFIED SOIL CLASSIFICATIONS ARE BASED ON SOIL DESCRIPTION BY JAMES M. MONTGOMERY, INC. (SEE DEC. 1990 AND JAN. 1991 REPORTS)

CROSS SECTION B–B'
CAVE CREEK LANDFILL
HYDROLOGIC REPORT
Figure 5

DAMES & MOORE
25551-001-033

C00914-08-05-93

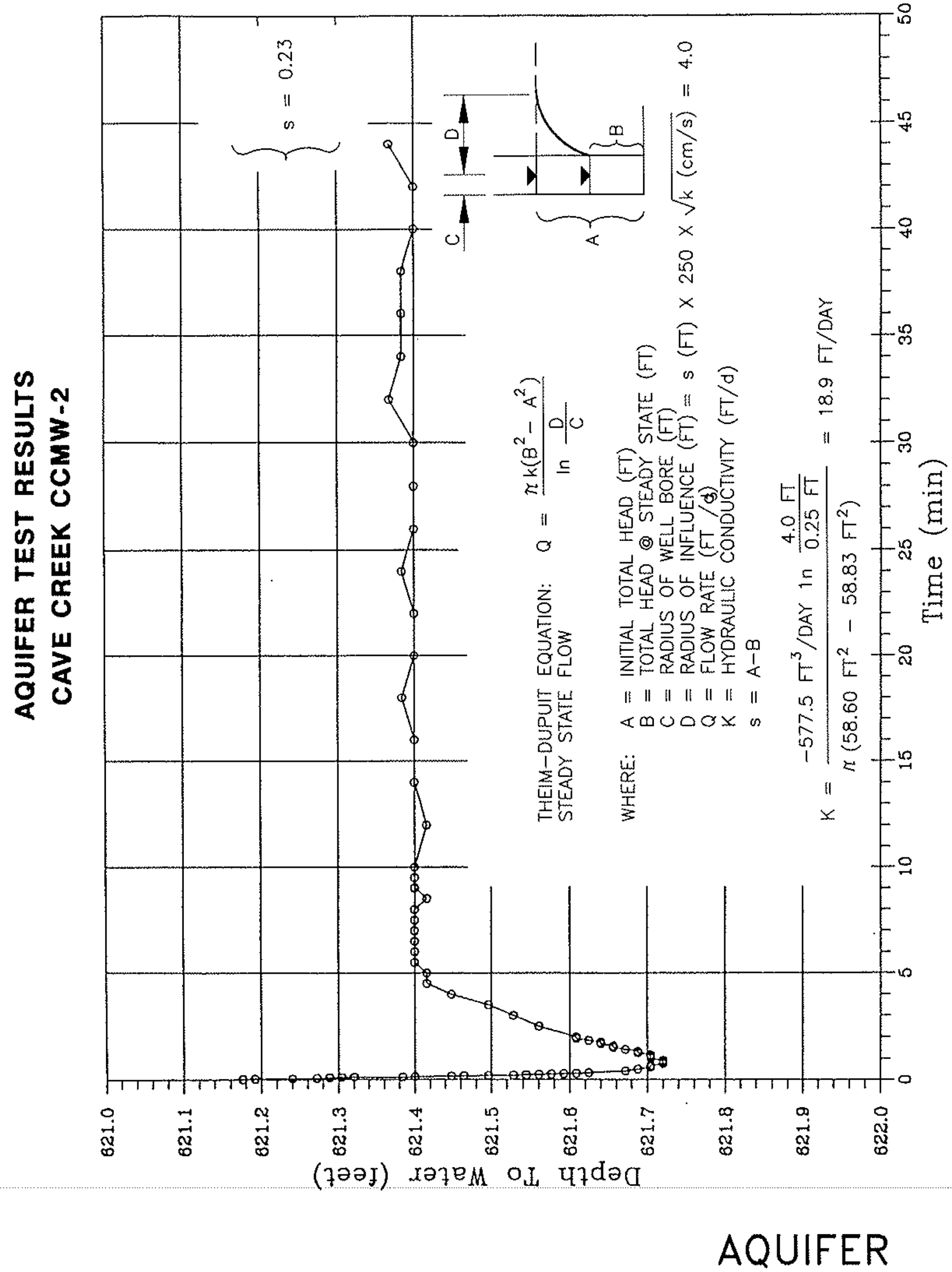


C00913-08-05-93

STRATIGRAPHY OF WELLS CCMW-1 AND CCMW-2

CAVE CREEK LANDFILL
HYDROLOGIC REPORT
Figure 6

DAMES & MOORE
25551-001-033



A01018-09-08-93

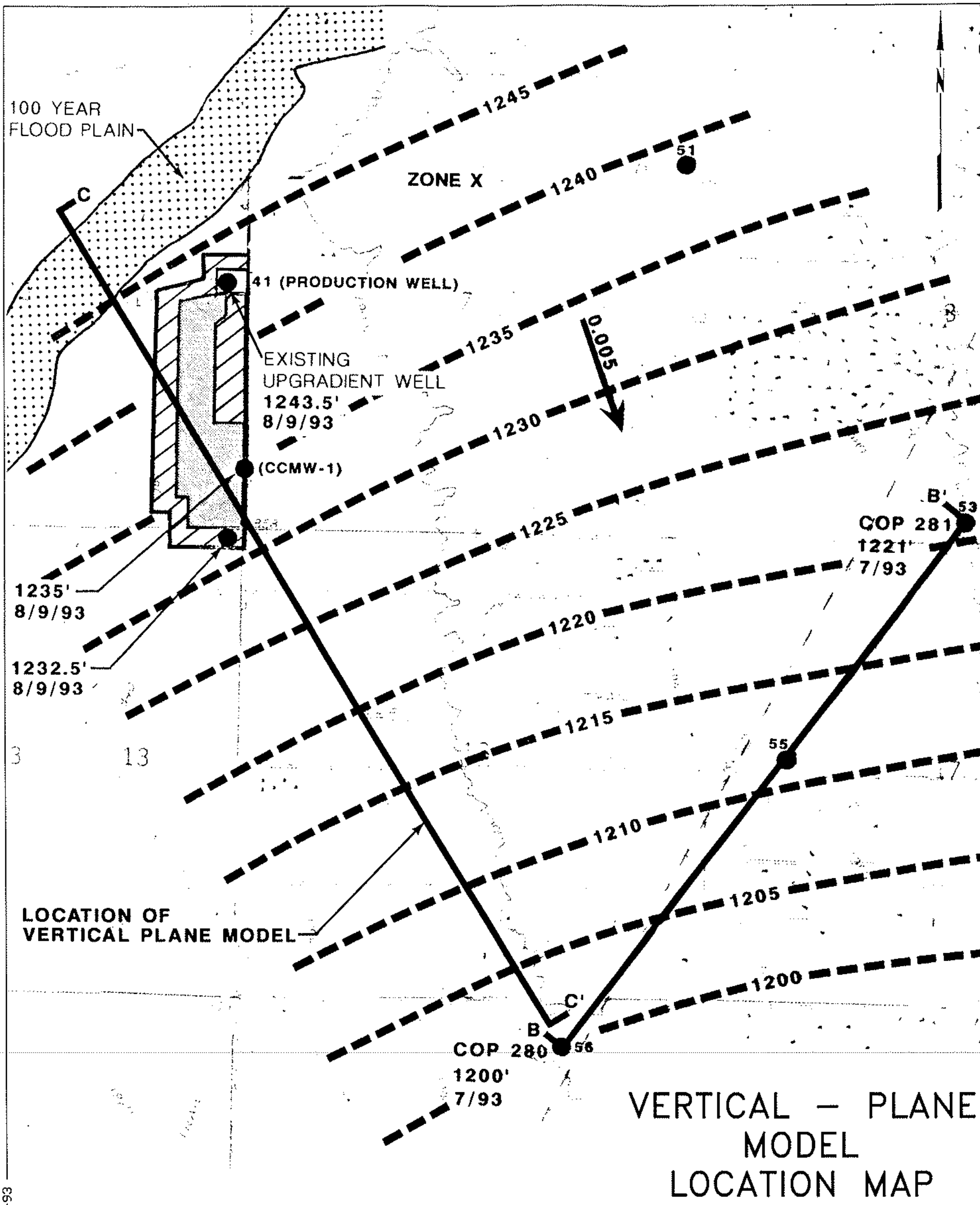
AQUIFER TEST RESULTS MW-2 TEST 1

CAVE CREEK LANDFILL
HYDROLOGIC STUDY

Figure 7

DAMES & MOORE

25551-001-033



VERTICAL – PLANE MODEL LOCATION MAP

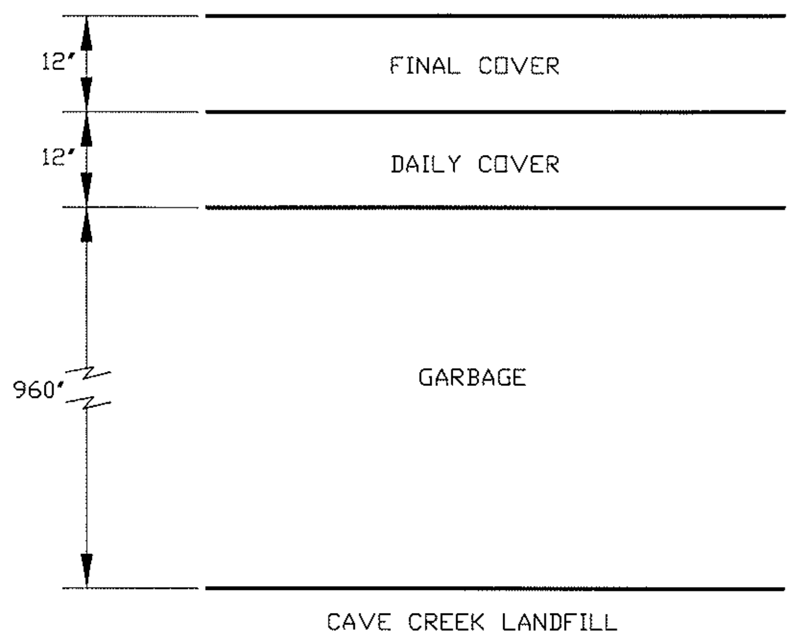
CAVE CREEK LANDFILL
HYDROLOGIC REPORT

Figure 8

DAMES & MOORE

25551-001-033

A01015-09-08-93



CAVE CREEK LANDFILL CROSS SECTION FOR HELP MODEL

CAVE CREEK LANDFILL

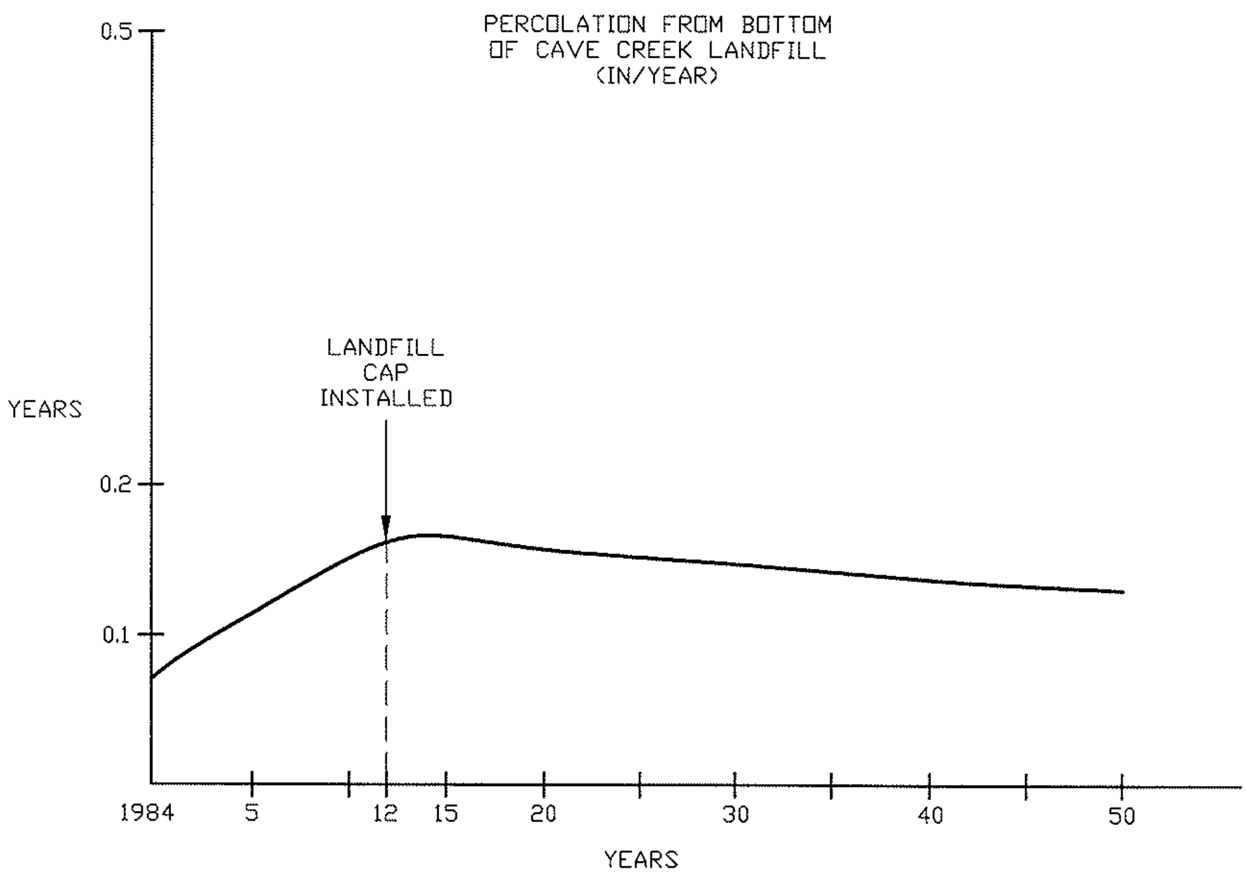
HYDROLOGIC REPORT

Figure 9

A01016-09-08-93

DAMES & MOORE

25551-001-003

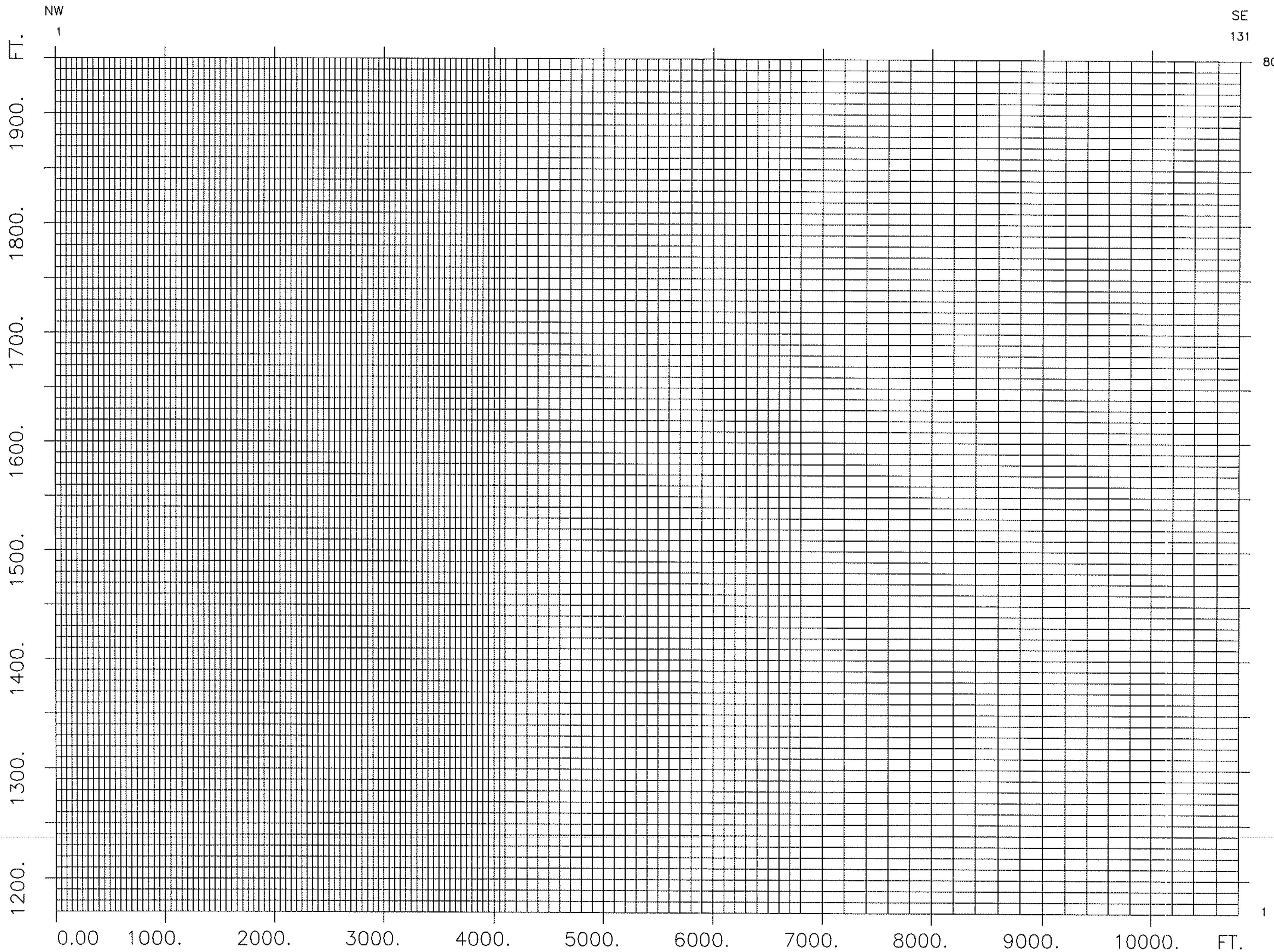


CAVE CREEK LANDFILL PREDICTED PERCOLATION RATE

CAVE CREEK LANDFILL
HYDROLOGIC REPORT
Figure 10

DAMES & MOORE
25551-001-033

A91017-09-08-93

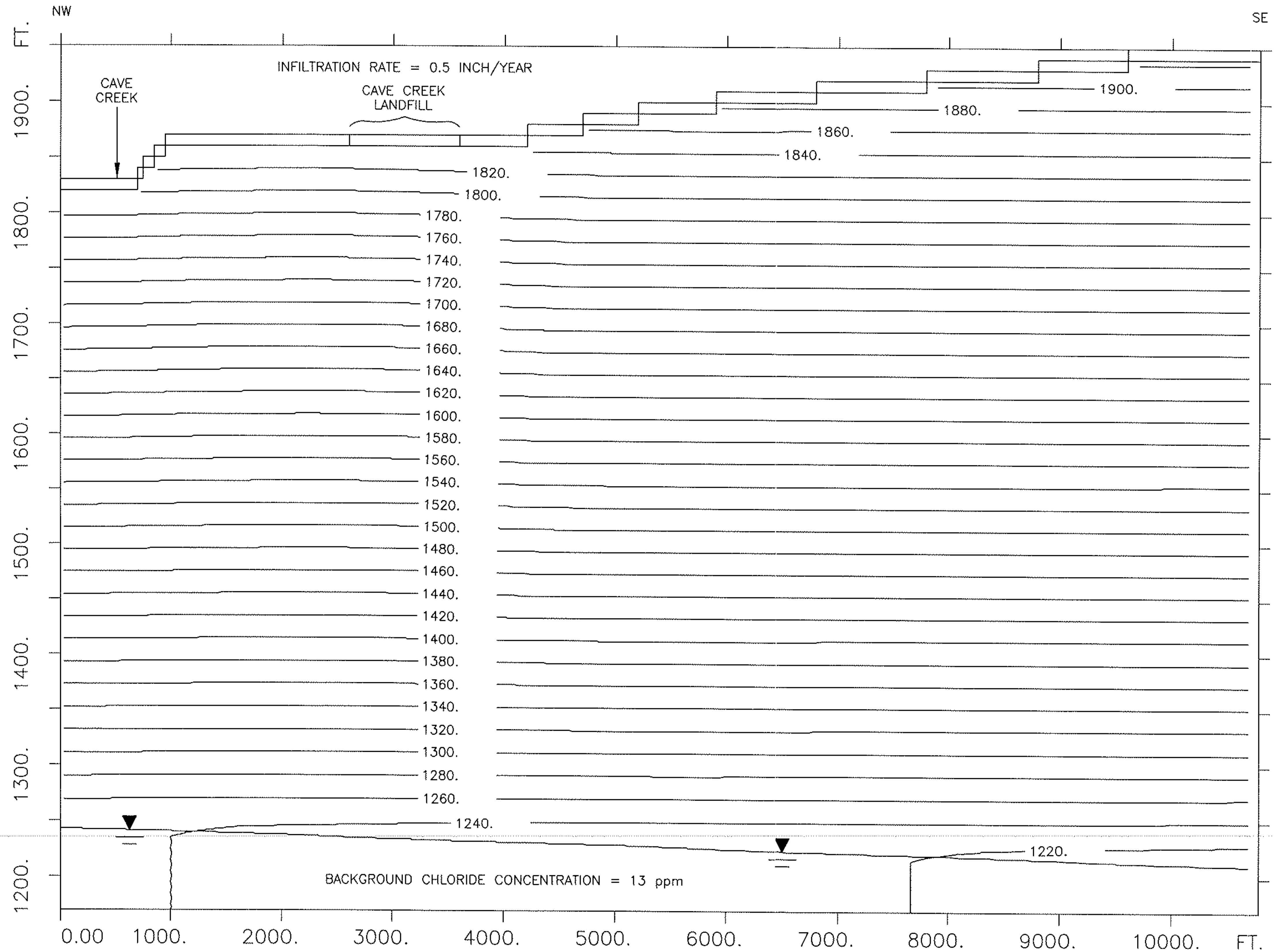


A00983-09-08-93

FINITE-DIFFERENCE MESH

CAVE CREEK LANDFILL
HYDROLOGIC REPORT
Figure 11

DAMES & MOORE
25557-001-033



ALLUVIAL PROPERTY ASSUMPTIONS

HYDRAULIC CONDUCTIVITY (HORIZONTAL = VERTICAL) = 15 FT/DAY

POROSITY = 0.28

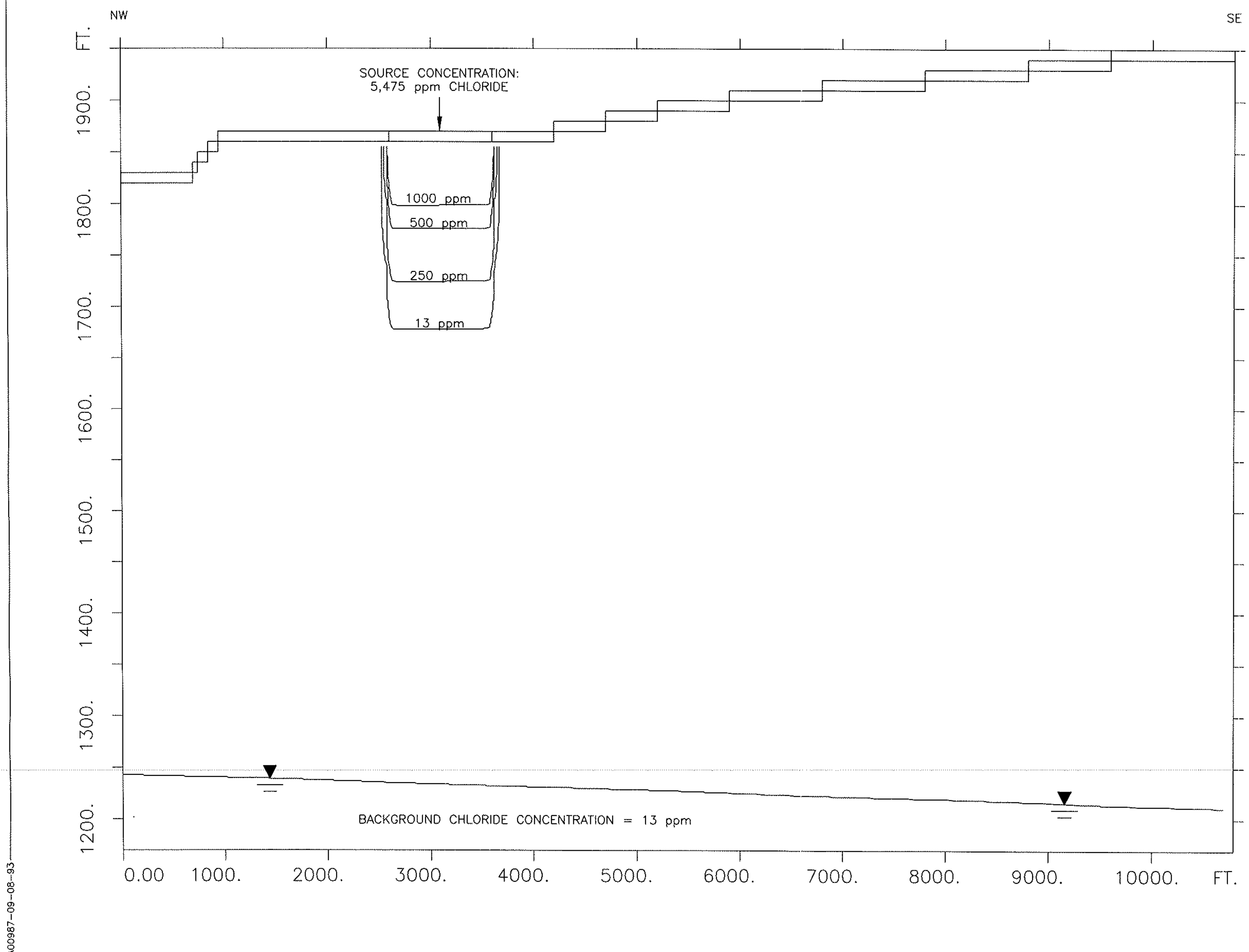
CHARICTERISTIC CURVE FOR "TYPICAL SAND"

STEADY STATE FLOW MODEL STARTING CONDITIONS

CAVE CREEK LANDFILL
HYDROLOGIC REPORT
Figure 12

DAMES & MOORE
25551-001-033

A00985-09-08-93



TRANSPORT ASSUMPTIONS

LONGITUDINAL DISPERSIVITY = 100 FEET

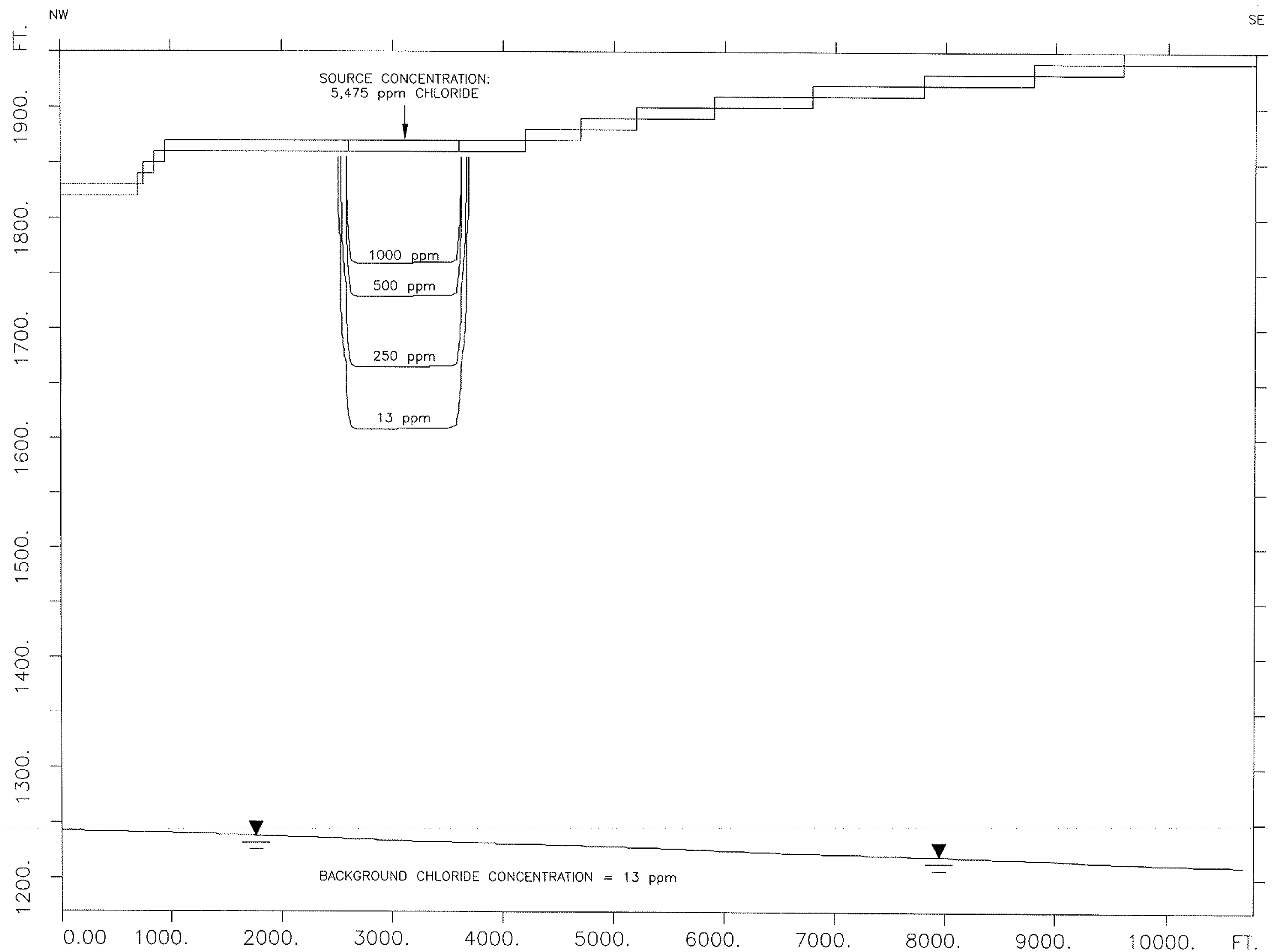
TRANSVERSE DISPERSIVITY = 10 FEET

NO RETARDATION
SIMULATION PERIOD = 5 YEARS

PREDICTED CHLORIDE CONCENTRATIONS AFTER 5 YEARS

CAVE CREEK LANDFILL
HYDROLOGIC REPORT
Figure 13

DAMES & MOORE
25551-001-033



TRANSPORT ASSUMPTIONS

LONGITUDINAL DISPERSIVITY = 100 FEET

TRANSVERSE DISPERSIVITY = 10 FEET

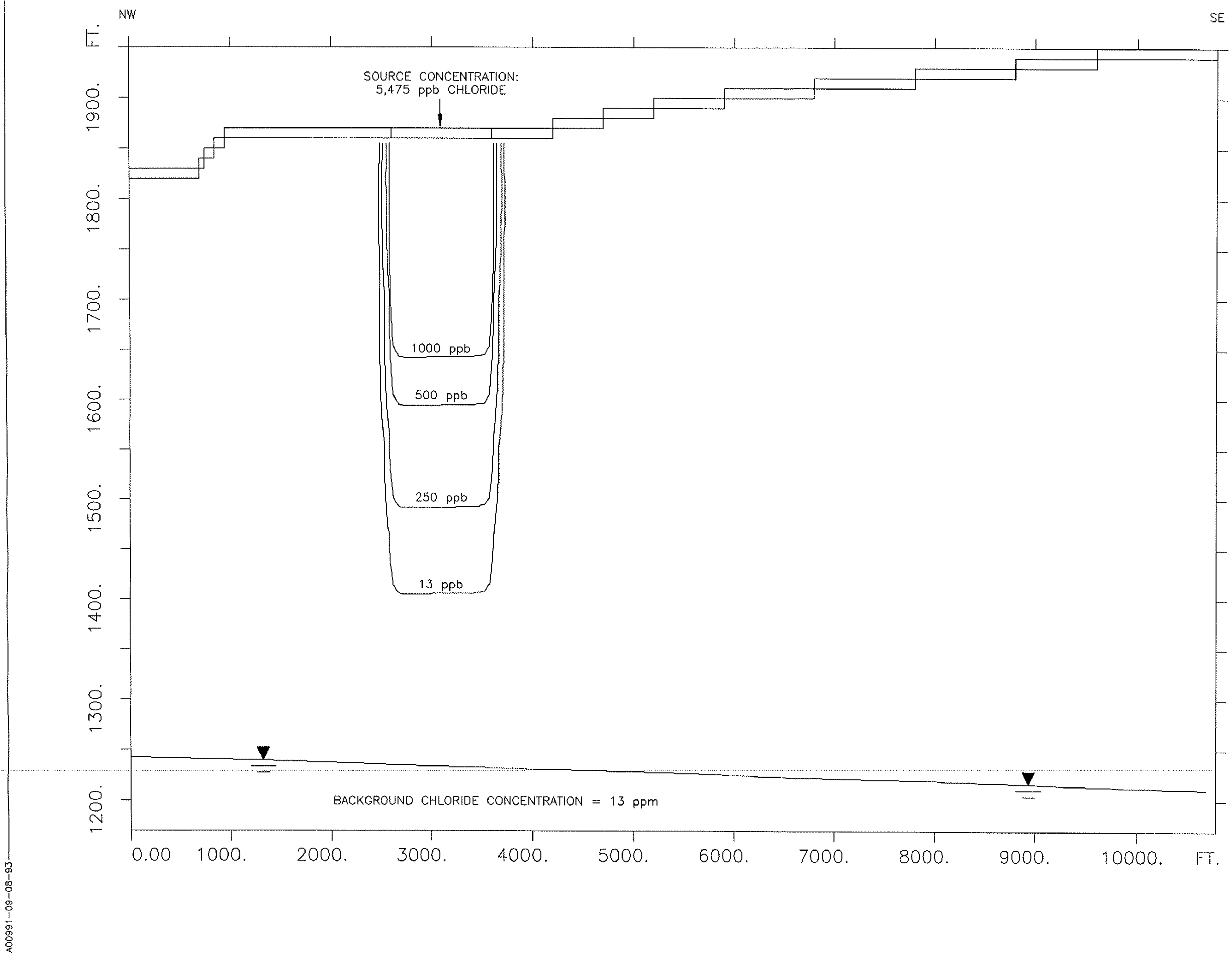
NO RETARDATION
SIMULATION PERIOD = 10 YEARS

A00989-09-08-93

PREDICTED CHLORIDE CONCENTRATIONS AFTER 10 YEARS

CAVE CREEK LANDFILL
HYDROLOGIC REPORT
Figure 14

DAMES & MOORE
25551-001-033



TRANSPORT ASSUMPTIONS

LONGITUDINAL DISPERSIVITY = 100 FEET

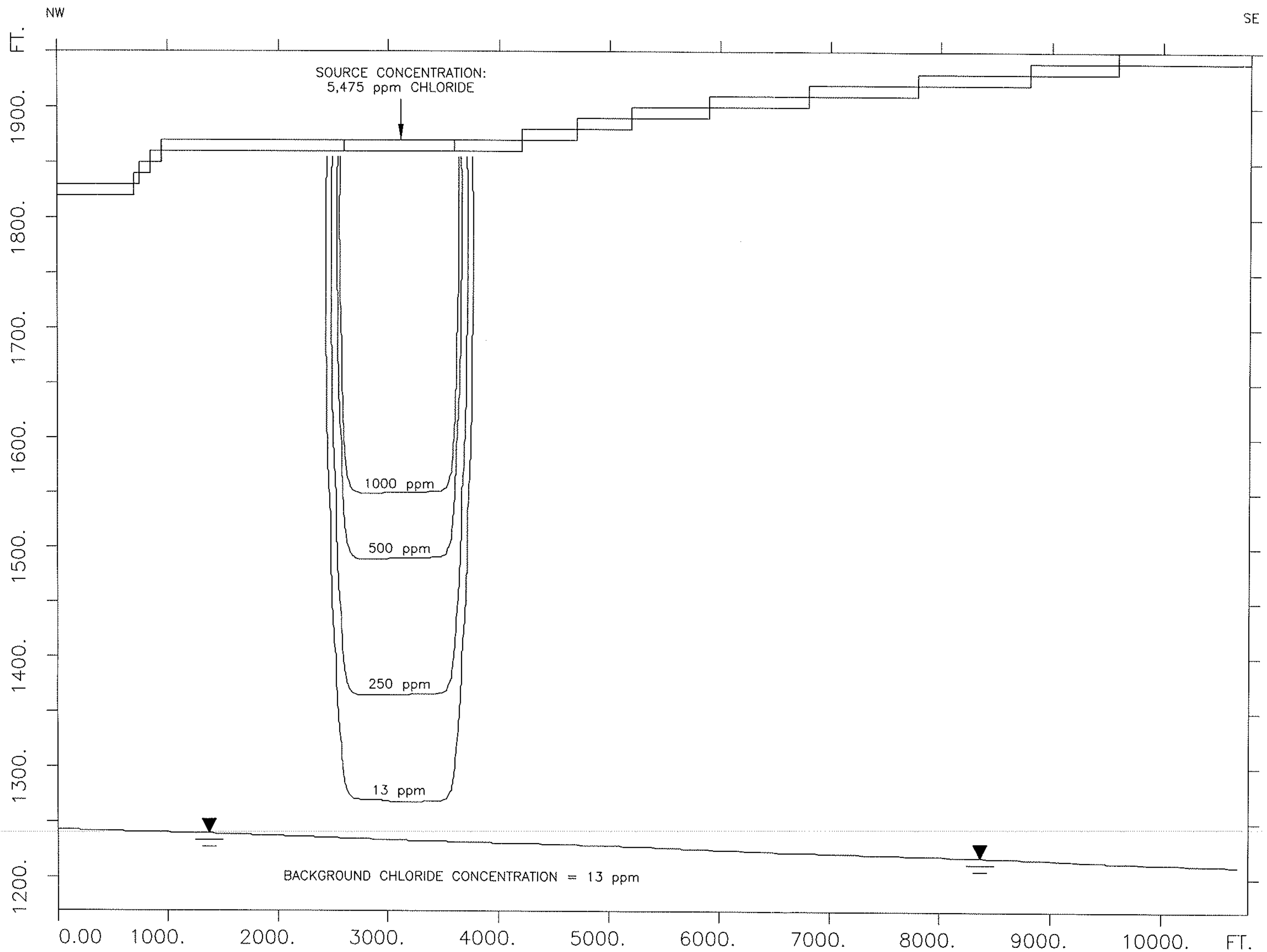
TRANSVERSE DISPERSIVITY = 10 FEET

NO RETARDATION
SIMULATION PERIOD = 30 YEARS

PREDICTED CHLORIDE CONCENTRATION AFTER 30 YEARS

CAVE CREEK LANDFILL
HYDROLOGIC REPORT
Figure 15

DAMES & MOORE
25551-001-033



A00997-09-08-93

TRANSPORT ASSUMPTIONS

LONGITUDINAL DISPERSIVITY = 100 FEET

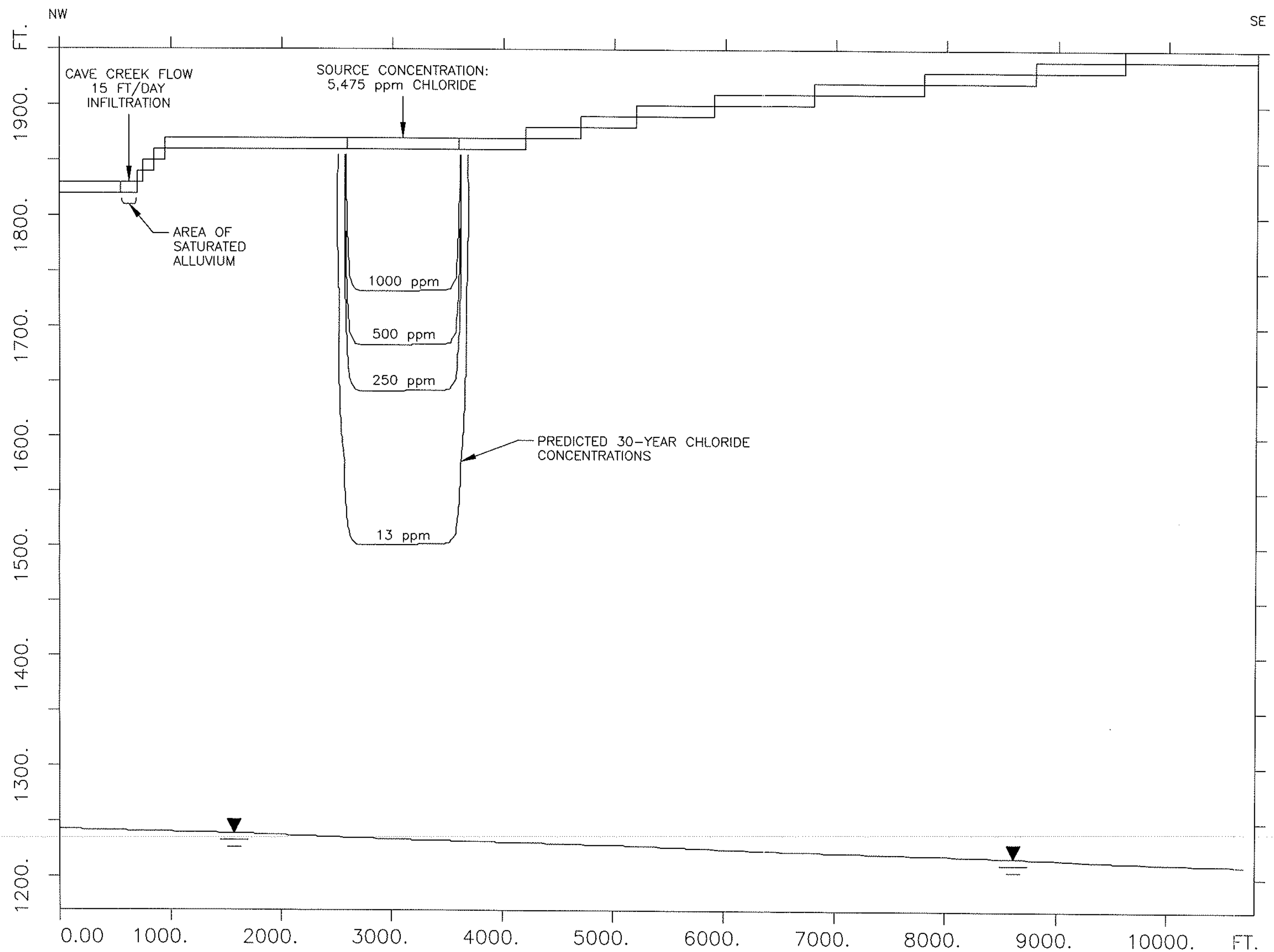
TRANSVERSE DISPERSIVITY = 10 FEET

NO RETARDATION
SIMULATION PERIOD = 50 YEARS

PREDICTED CHLORIDE CONCENTRATIONS AFTER 50 YEARS

CAVE CREEK LANDFILL
HYDROLOGIC REPORT
Figure 16

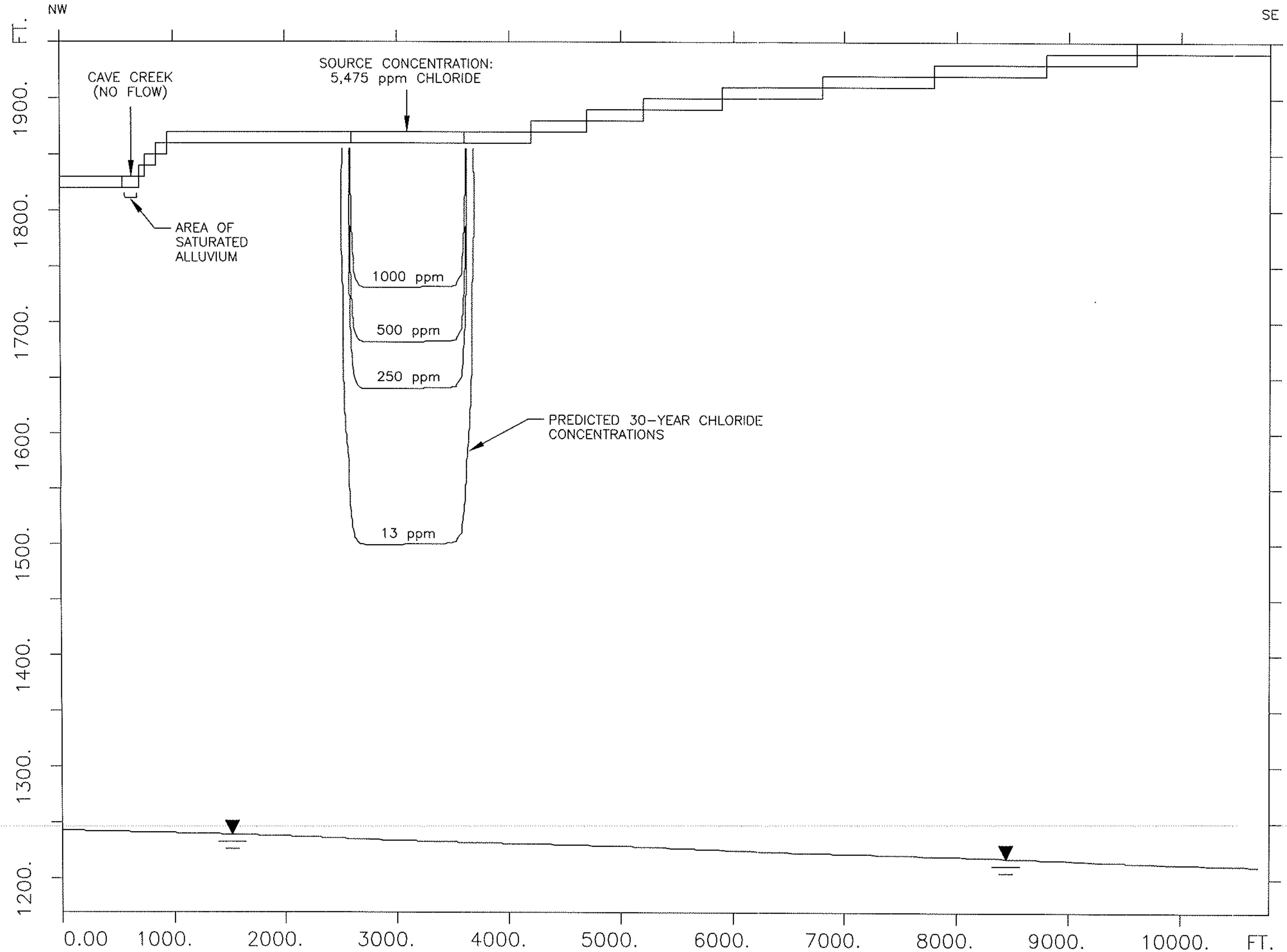
DAMES & MOORE
25551-001-033



A00992-09-08-93

CAVE CREEK
FLOW SIMULATION
3 MONTHS OF FLOW
CAVE CREEK LANDFILL
HYDROLOGIC REPORT
Figure 17

DAMES & MOORE
25551-001-033

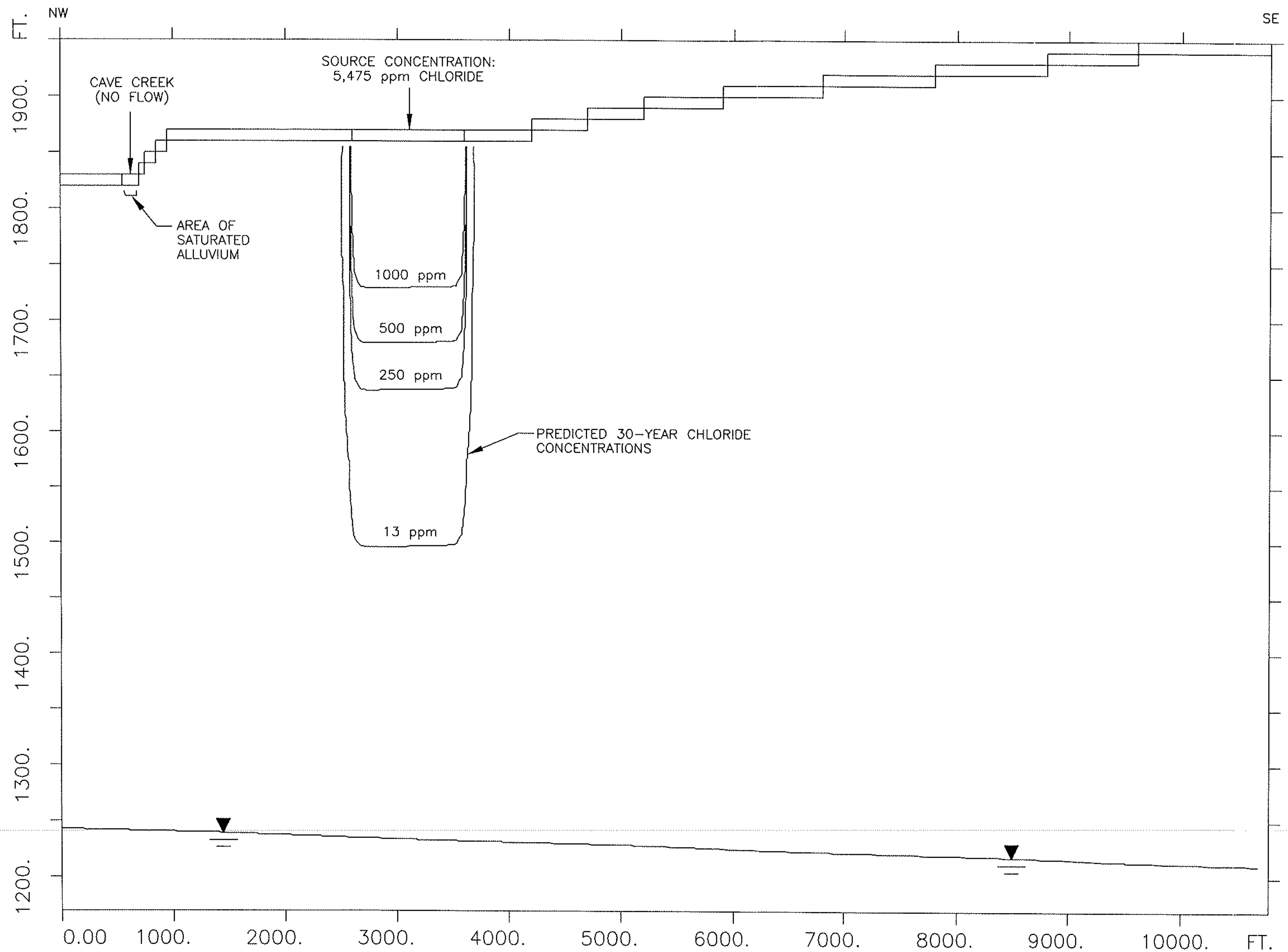


A00994-09-08-93

CAVE CREEK FLOW SIMULATION 3 MONTHS AFTER FLOW

CAVE CREEK LANDFILL
HYDROLOGIC REPORT
Figure 18

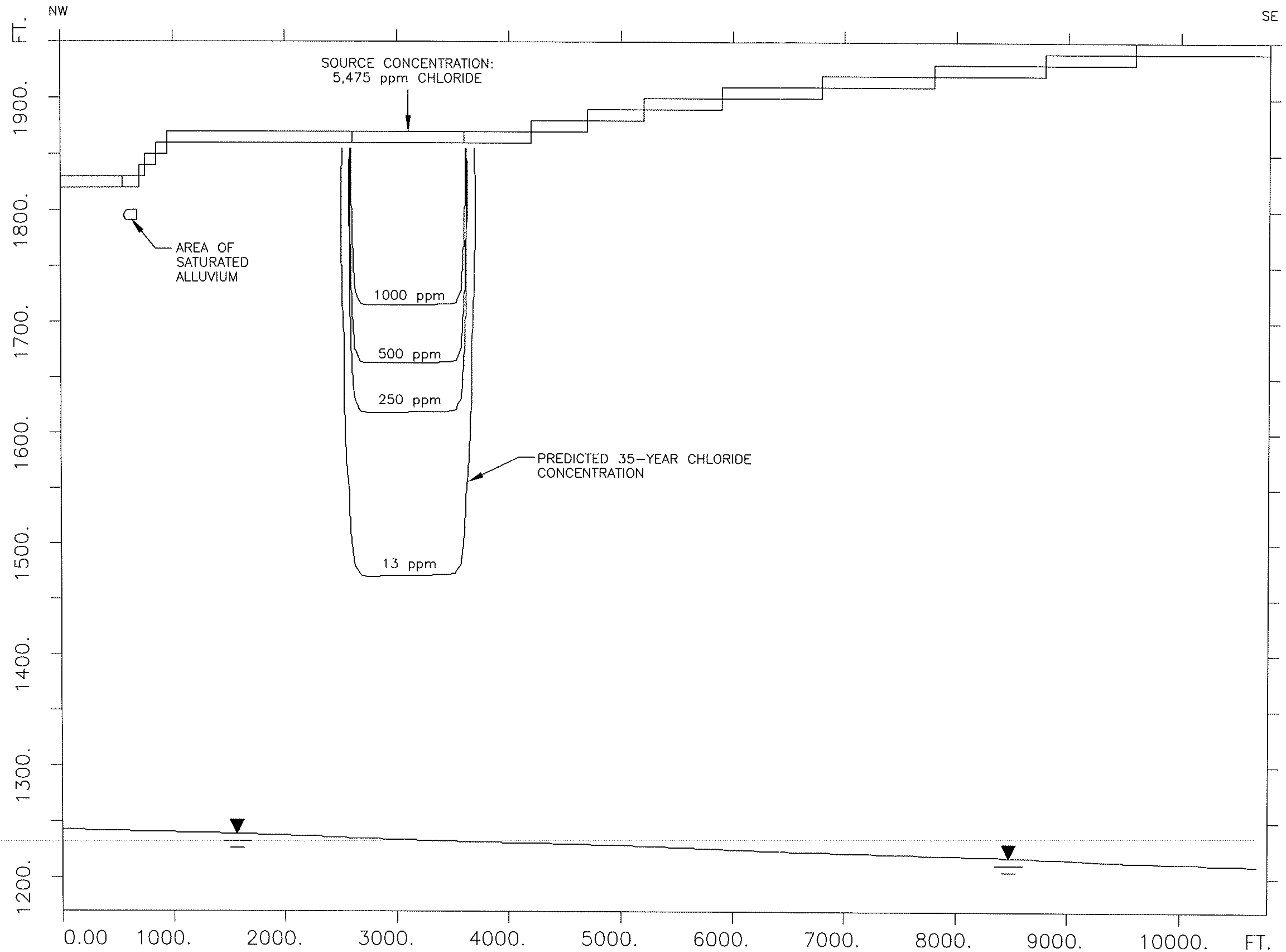
DAMES & MOORE
25551-001-033



CAVE CREEK FLOW SIMULATION 9 MONTHS AFTER FLOW

CAVE CREEK LANDFILL
HYDROLOGIC REPORT
Figure 19

DAMES & MOORE
25551-001-033

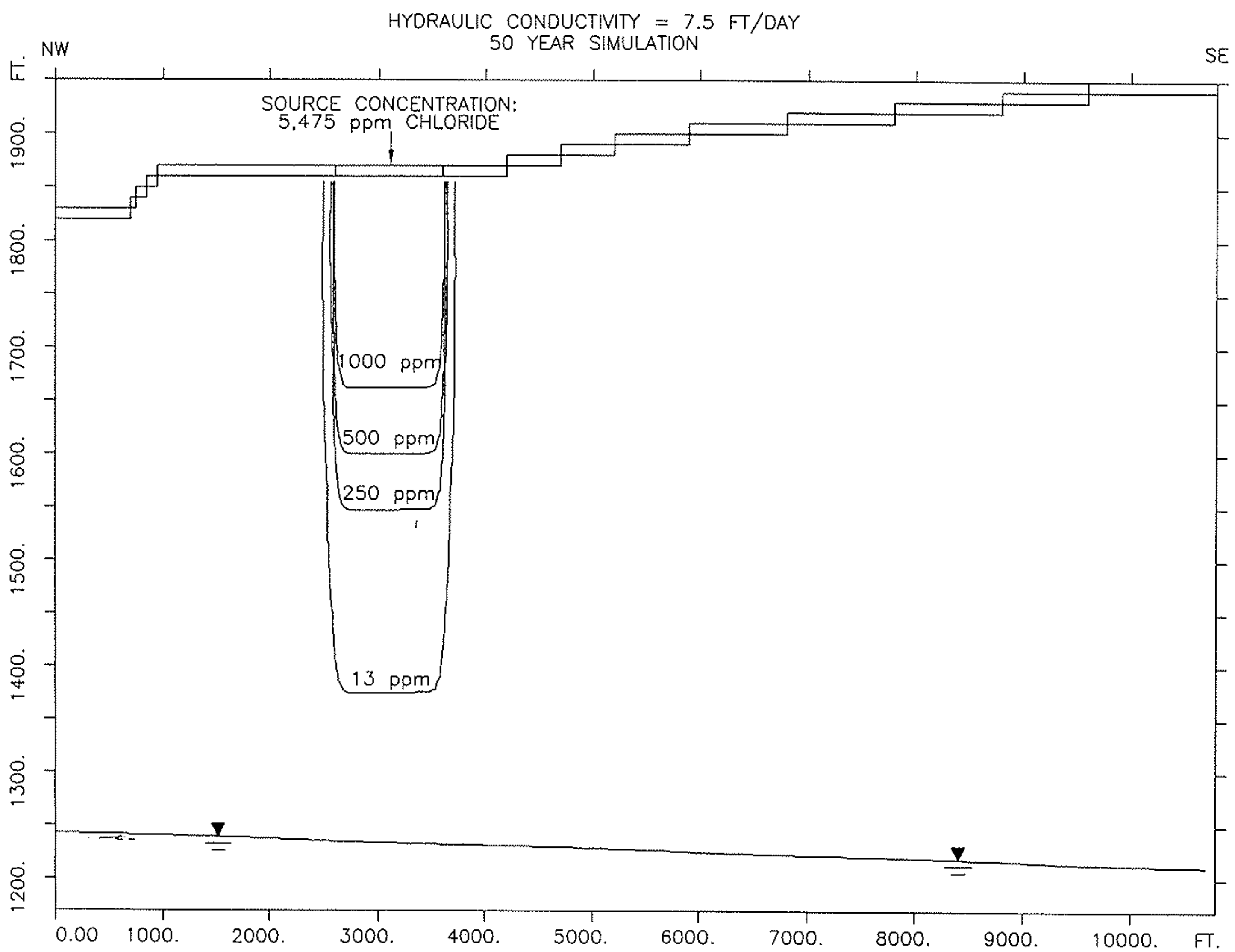


A01001-09-08-93

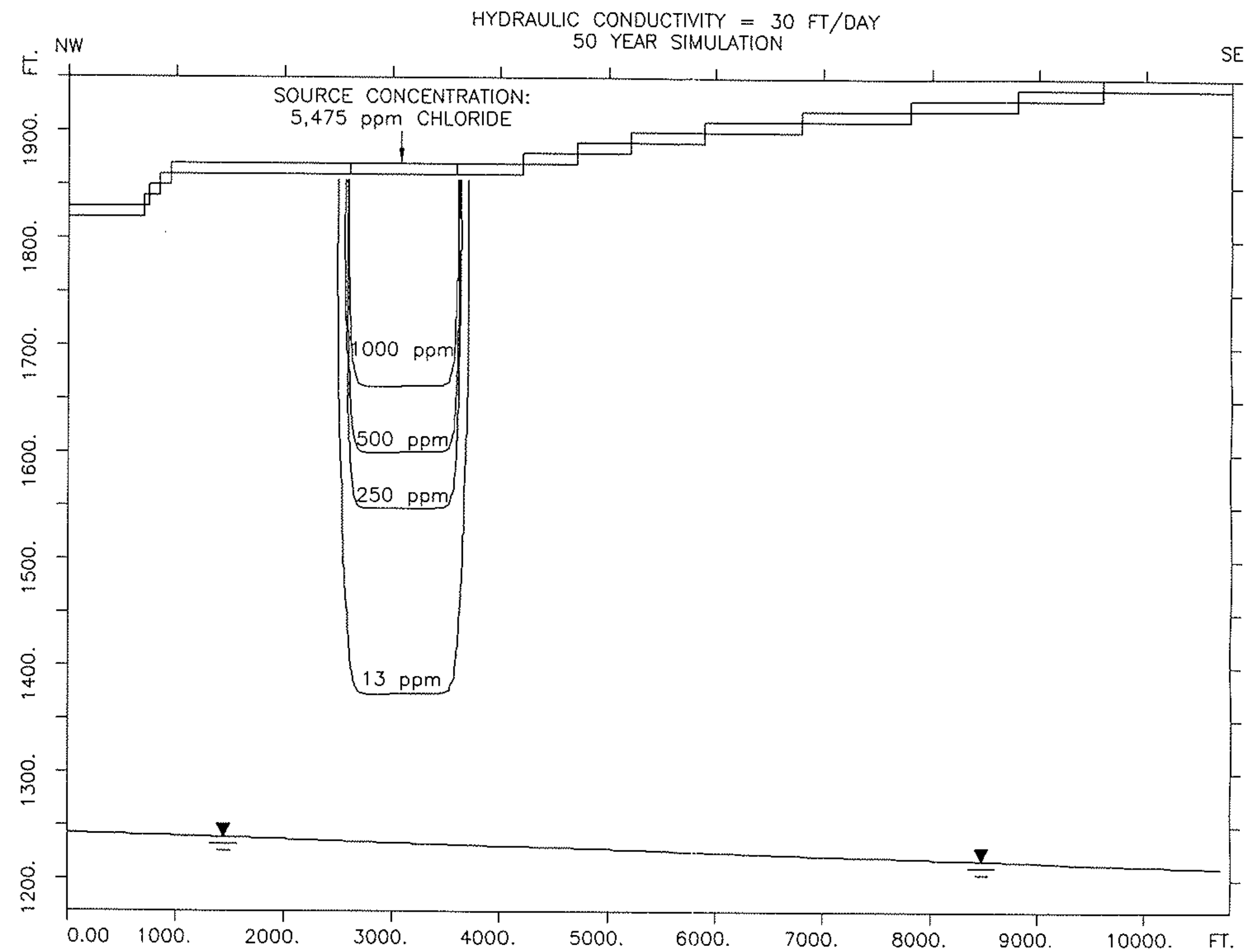
CAVE CREEK
FLOW SIMULATION
5 YEARS
AFTER FLOW

CAVE CREEK LANDFILL
HYDROLOGIC REPORT
Figure 20

DAMES & MOORE
25551-001-033



TIME 1/2



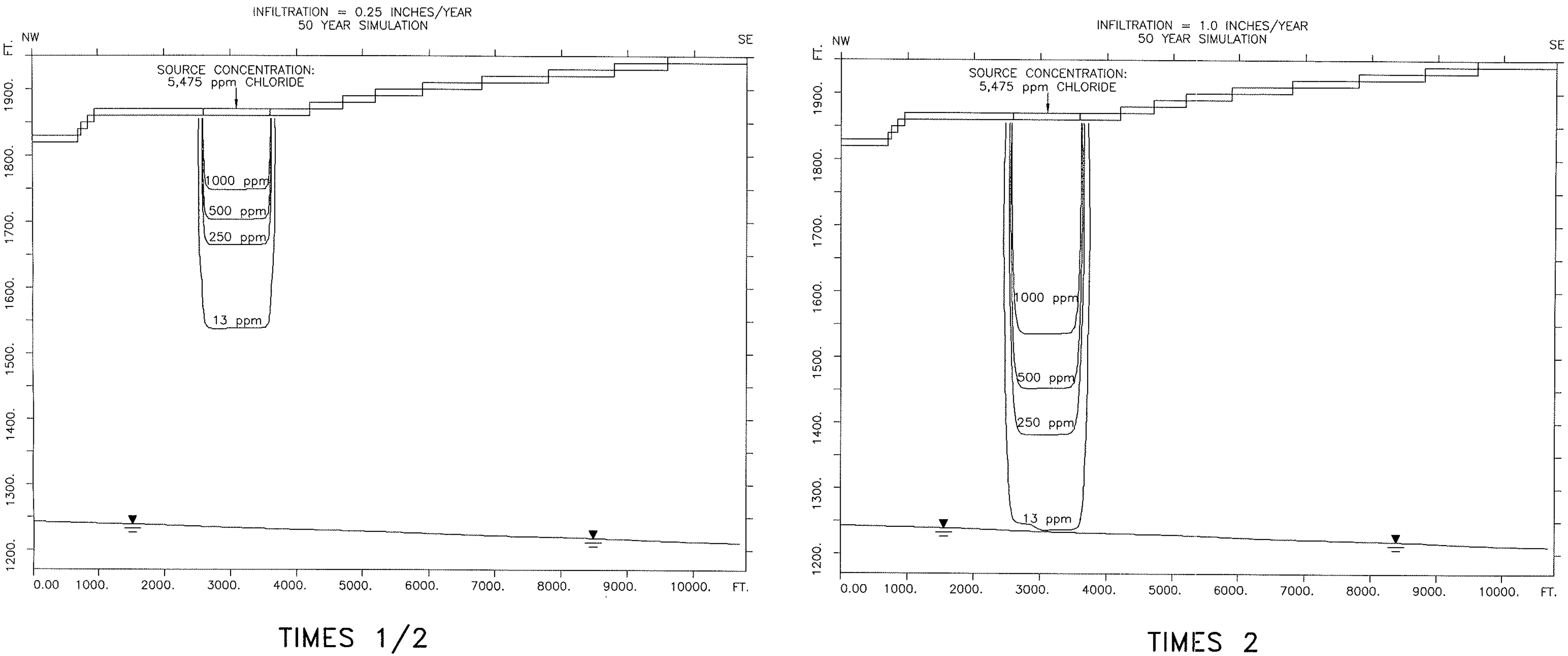
TIMES 2

SENSITIVITY ANALYSIS HYDRAULIC CONDUCTIVITY

CAVE CREEK LANDFILL
HYDROLOGIC REPORT
Figure 21

DAMES & MOORE
25551-001-033

A01005-09-08-93

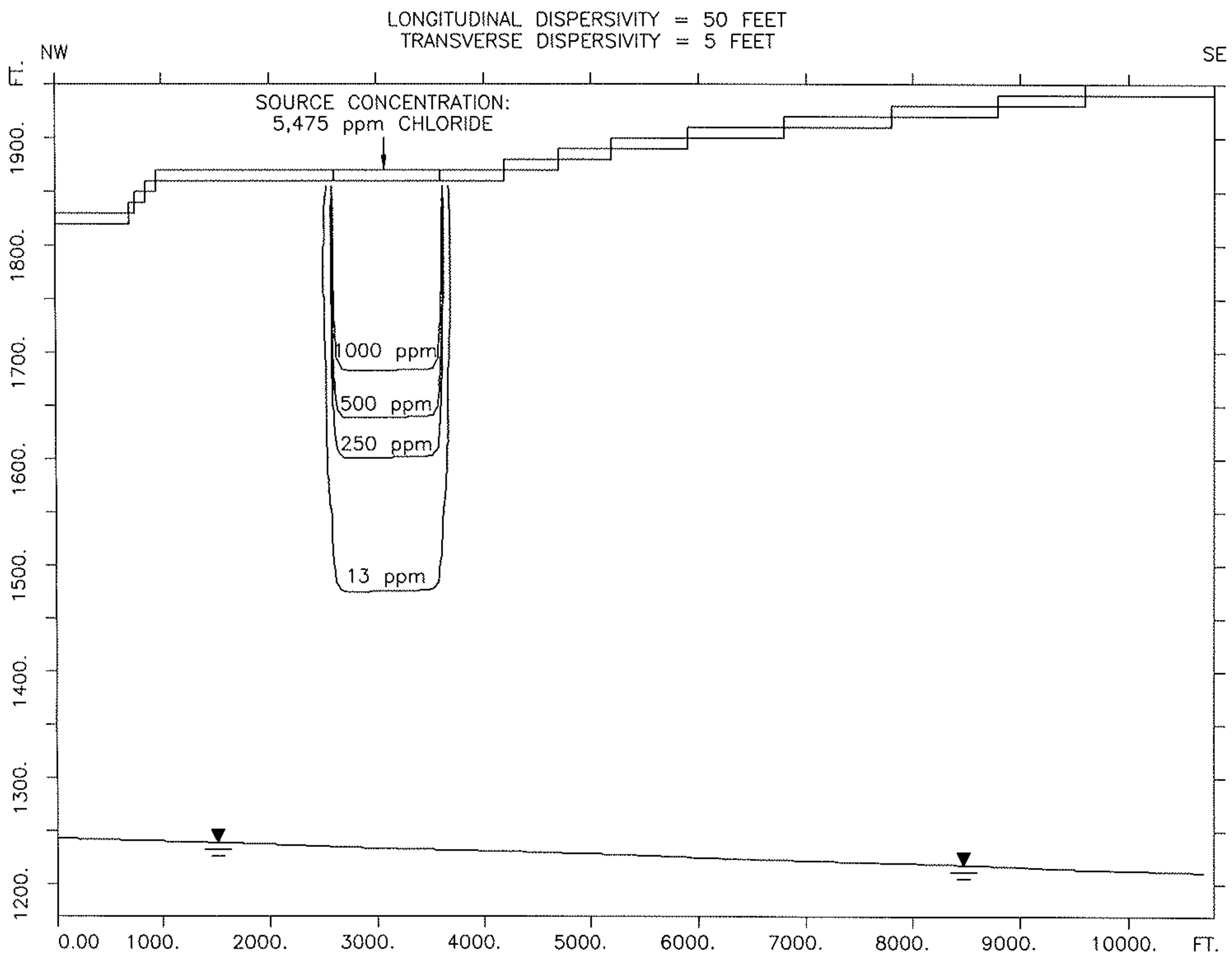


SENSITIVITY ANALYSIS
INFILTRATION

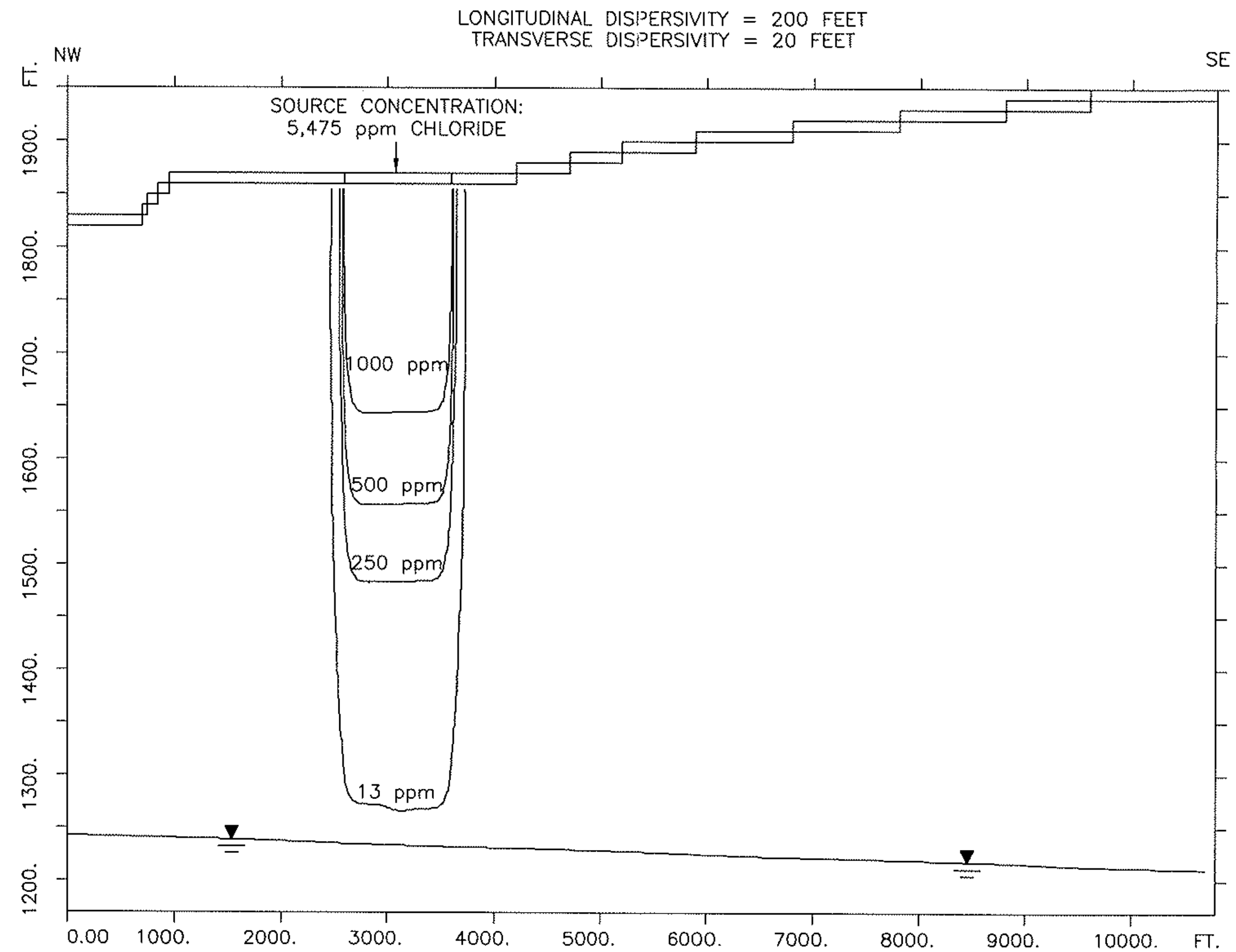
CAVE CREEK LANDFILL
HYDROLOGIC REPORT
Figure 22

DAMES & MOORE
25551-001-033

A01007-09-08-93



TIMES 1/2



TIMES 2

A01013-09-08-93

SENSITIVITY ANALYSIS
DISPERSIVITY

CAVE CREEK LANDFILL
HYDROLOGIC REPORT
Figure 23

DAMES & MOORE
25551-001-033

APPENDICES

APPENDIX A

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)

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
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.

Professional Engineer
CERTIFICATE
8216
ROBERT BRUCE
SCOTT

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. Noppe				
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. 2174W173-82
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. 2174W173-119
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

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

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

Received: 8/4/86

Submitted by: Same

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

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

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

Received: 10-23-87

Submitted by: Same

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

CHAIN OF CUSTODY RECORD

JOB NO.	PROJECT NAME
	MARICOPA

SAMPLERS: (SIGNATURE)

SAMPLE IDENT.	DATE	TIME	COMP	GRAB	SAMPLE LOCATION	NUMBER OF CONTAINERS	TEST METHOD: [illegible] 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		

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]	5/25/88 4:30p	A.M. Lucco			

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

T

S C

Parameter Name*	Storet Parameter Number	Laboratory Analysis Results
Arsenic +	P01002,	0.013 ,
Barium +	P01007,	< 0.5 ,
Cadmium +	P01027,	< 0.005 ,
Chromium +	P01034,	< 0.01 ,
Lead +	P01051,	< 0.01 ,
Mercury +	P71900,	< 0.001 ,
Nitrate (N)	P00620,	2.0 ,
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. ,
Iron +	P01045,	< 0.1 ,
Magnesium	P00927,	22. ,
Manganese +	P01055,	< 0.05 ,
pH	P00403,	8.0 ,
Sodium	P00929,	33. ,
Sulfate	P00945,	22. ,
TDS	P00500,	310. ,
Zinc +	P01092,	0.15 ,

Parameter Name*	Storet Parameter Number	Laboratory Analysis Results
Endrin[a]	P39390,	. ,
Lindane[a]	P39782,	. ,
MethoxyChlor[a]	P39480,	. ,
Toxaphene[a]	P39400,	. ,
2,4-D[a]	P39730,	. ,
2,4,5-TP Silvex[a]	P39045,	. ,
TTHM[a]	P82080,	. ,
	,	. ,
	,	. ,
	,	. ,
	,	.
	,	. ,
	,	. ,
	,	. ,
	,	. ,
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]	P01082,	. ,
Tritium[b]	P82126,	. ,
Uranium[b]	P22706,	. ,

*Units are mg/l unless otherwise noted.

[a] Units are μg/l
[b] Units are pCi/l

Page 1 of 2

Send 3 copies of completed form to:
Arizona Department of Health Services
Office of Waste and Water Quality Mgmt.
Compliance Section
Room 304
2005 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

OUT OF STATE 800/545-2188

CEP, Inc. REPORT LAB # 88-05-590

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

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

ATTEN

PHONE (505) 982-9841

CERTIFIED BY

CONTACT GAIL 000758

CLIENT AZ TEST LAB SAMPLES 1

COMPANY Arizona Testing Laboratories

FACILITY 817 West Madison Street
Phoenix, AZ 85007

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.

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

SAMPLE IDENTIFICATION

01 #921201 Cave Crk Landfill

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

ALPHA1 Gross Alpha

OUT OF STATE 800/343-2188

REPORT OF ANALYSIS

LAB # 88-05-590

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

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.
Cave Crk	3/19/90	3:00		X	Cave Creek Landfill	7	see attached						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)
[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	
		Joli Craft	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 FOR LABORATORY BY (SIGNATURE)	DATE / TIME	REMARKS
[signature]	3/21/90 4:30	[signature]	3/21/90 16:30	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: 0 0 0 0 2

SAMPLE DATE — MO DAY YEAR: 0 3 1 9 9 0

ANALYSIS DATE — MO DAY YEAR: 0 4 2 0 9 0

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*	P01082	
TRITIUM*	P32126	
URANIUM*	P22708	

* 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

Lab No. 205401

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

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: 0 0 0 0 2

SAMPLE DATE (MO DAY YEAR): 03 19 90

ANALYSIS DATE (MO DAY YEAR): 04 20 90

SAMPLE COLLECTION POINT: Cave Creek

FACILITY NAME & MAILING ADDRESS
Maricopa County Landfill Dept.
Attn: Nick Sciarro
3325 West Durango Street
Phoenix, AZ 85009

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†	P01082	
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

ANALYST [signature]
Robert J. Drake

"HAIN OF CUSTODY RECORD

JOB NO.	PROJECT NAME Maricopa County Landfill
SAMPLERS: (SIGNATURE)	Mike Schober

SAMPLE IDENT.	DATE	TIME	COMP	GRAB	SAMPLE LOCATION	NUMBER OF CONTAINERS	E.P. TOXICITY	TOTAL METALS	ORGANICS				REMARKS (PHYSICAL APPEARANCE, etc.)	LAB I.D.
Cave Creek P.W.	91 2/25	3:00		X	Cave Creek Landfill	3	X	X	X				101869	

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) Mike Schober	DATE / TIME 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 DESCRIPTION: SOIL ___ WATER ___ WASTE ___ WASTEWATER ___ OIL ___ GROUNDWATER X

TEST(S) REQUIRED: E.P. TOXICITY/TCLP, TOTAL METALS, ORGANICS ( ), HYDROCARBONS, 8010/8020, SOLVENT SCAN, SEE ATTACHED

SAMPLE IDENT	DATE 1991	TIME	COMP	GRAB	LOCATION TAKEN	NO. OF CONTAINERS	TEST(S) REQUIRED	LAB IDENTIFICATION
01 P.W. #1	11/20	1:40		X	CAVE CREEK LANDFILL	6	SEE ATTACHED	109803
02								
03								
04								
05								
06								
07								
08								
09								
10								

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. Carl 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

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

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	

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

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

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

*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 D. 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 D. Richardson	8/14/91 1:15	Lamarie Church	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

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 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

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

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	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

Umesh Rao, Ph.D.

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	ADDRESS	
MARICOPA COUNTY SOLID WASTE	2901 W. DURANGO PHOENIX AZ	
TELEPHONE: 506-2661	PROJECT: CAVE CREEK GROUNDWATER	JOB/P.O. NO: B23433

• REFER TO FEE SCHEDULE FOR ANALYSES SELECTION •

SAMPLER (SIGNATURE): Andy P. Richardson
SAMPLER (PLEASE PRINT): ANDY RICHARDSON

SAMPLE TYPE CODES
S – SOIL G – SLUDGE X – OTHE[R]
W – WATER T – TRAVEL BLANK
O – OIL F – FIELD BLANK

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		9210981

REQUESTED ANALYSES

CONSTITUENT	E.P.A. METHOD	LIMITS
ARSENIC	206.2 OR .3	0.05ppm
BARIUM	208.1	1.0ppm
CADMIUM	213.1	0.010ppm
CHROMIUM (TOTAL)	218.1 OR .2	0.05ppm
FLUORIDE	340.1 OR .2	4.0ppm
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	0.004ppm
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	407C	N/A
IRON	236.1	N/A
MANGANESE	243.1	N/A
pH	150.1	4-10
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	

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

D A T A   T A B L E

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: MS 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

(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: 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

(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: 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

(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: MG. GLN
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 *	<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.

(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: MC BEN
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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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 AEN
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

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
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: MS 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

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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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
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Phoenix, Arizona 85040
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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 B

MONITOR WELL ANALYTICAL RESULTS

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JUL 1993
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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

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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M. Englert
Managing Director

Westech Laboratories Inc.
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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

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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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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7500 NORTH DREAMY DRAW, SUITE 145
PHOENIX, AZ 85020

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

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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Managing Director

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ATTN: DOUG BARTLETT
7500 NORTH DREAMY DRAW, SUITE 145
PHOENIX, AZ 85020

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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ATTN: DOUG BARTLETT
7500 NORTH DREAMY DRAW, SUITE 145
PHOENIX, AZ 85020

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

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

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

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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M. Gnefil
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: DOUG BARTLETT
7500 NORTH DREAMY DRAW, SUITE 145
PHOENIX, AZ 85020

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

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

D A T A   T A B L E

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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M. Engl
Managing Director

Westech Laboratories Inc.
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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. : 9313964
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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7500 NORTH DREAMY DRAW, SUITE 145
PHOENIX, AZ 85020

SAMPLE NO. : 9313965
INVOICE NO.: 22132089
REPORT DATE: 07-07-93
REVIEWED BY: ABW

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

D A T A   T A B L E

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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PHOENIX, AZ 85020

SAMPLE NO. : 9313965
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. : 9313965
INVOICE NO.: 22132089
REPORT DATE: 07-07-93
REVIEWED BY: AGN

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

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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7500 NORTH DREAMY DRAW, SUITE 145
PHOENIX, AZ 85020

SAMPLE NO. : 9313966
INVOICE NO.: 22132089
REPORT DATE: 07-07-93
REVIEWED BY: AGN

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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Managing Director

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7500 NORTH DREAMY DRAW, SUITE 145
PHOENIX, AZ 85020

SAMPLE NO. : 9313966
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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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:

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

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

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

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:

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

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

Westech Laboratories Inc.
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Phoenix, Arizona 85040
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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:

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

4) Relative Percent Difference (RPD) is:

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

WESTECH
LABORATORIES
INC.
QUALITY ASSURANCE OFFICER
Anne Nichols
DATE: 7/3/93

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Phoenix, Arizona 85040
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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:

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

4) Relative Percent Difference (RPD) is:

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

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

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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

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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

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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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I..C.
QUALITY ASSURANCE OFFICER
Anne Nichols
DATE: 7/13/93

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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Anne Nichols
DATE: 7/13/93

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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:

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

4) Relative Percent Difference (RPD) is:

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

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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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Anne Nickel
DATE: 7/13/93

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 .....: 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:

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

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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:

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

[illegible]TECH
LABORATORIES
INC.
QUALITY ASSURANCE OFFICER
Anne Nichols
DATE: 7/13/93

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

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

REPLICATES -

SAMPLE NUMBER	PARAMETER	UNIT	RESULT	REPLICATE	RPD%
9313704	Ethyl Acetate	ug/Kg	<50.	<50.	NC
9313704	Ethylbenzene	ug/Kg	<50.	<50.	NC
9313704	Ethylene Glycol	ug/Kg	<50.	<50.	NC
9313704	Heptane	ug/Kg	<50.	<50.	NC
9313704	Hexane	ug/Kg	<50.	<50.	NC
9313704	Isobutyl Alcohol	ug/Kg	<50.	<50.	NC
9313704	Methanol	ug/Kg	<50.	<50.	NC
9313704	Methyl Acetate	ug/Kg	<50.	<50.	NC
9313704	Methyl Cellosolve	ug/Kg	<50.	<50.	NC
9313704	Methylene Chloride	ug/Kg	<200.	230.	NC
9313704	Methyl Ethyl Ketone	ug/Kg	<50.	<50.	NC
9313704	4-Methyl 2-Pentanone	ug/Kg	<50.	<50.	NC
9313704	Nitrobenzene	ug/Kg	<50.	<50.	NC
9313704	Pentane	ug/Kg	<50.	<50.	NC
9313704	Phenol	ug/Kg	<50.	<50.	NC
9313704	Pyridine	ug/Kg	<50.	<50.	NC
9313704	1-Propanol	ug/Kg	<50.	<50.	NC
9313704	2-Propanol	ug/Kg	<50.	<50.	NC
9313704	Tetrachloroethylene	ug/Kg	<50.	<50.	NC
9313704	Tetrahydrofuran	ug/Kg	<50.	<50.	NC
9313704	Toluene	ug/Kg	<50.	<50.	NC
9313704	Trichloroethene	ug/Kg	<50.	<50.	NC
9313704	Trichlorotrifluoroethane	ug/Kg	<50.	<50.	NC
9313704	1,1,1 Trichloroethane	ug/Kg	<50.	<50.	NC
9313704	1,1,2 Trichloroethane	ug/Kg	<50.	<50.	NC
9313704	1,1,2,2 Tetrachloroethane	ug/Kg	<50.	<50.	NC
9313704	Xylenes	ug/Kg	<50.	<50.	NC

SPIKES -

SAMPLE NUMBER	PARAMETER	UNIT	SAMPLE RESULT	SPIKE AMOUNT	SAMPLE+SPIKE RESULT	%RECOVERY
9313964	1,1,2,2-Tetrachloroethane	ug/L	<2.0	40.	32.	80.0
9313964	1,1-Dichloroethane	ug/L	<2.0	40.	31.	77.5
9313964	Bromoform	ug/L	<5.0	40.	32.	80.0
9313964	Chlorobenzene	ug/L	<2.0	40.	35.	87.5

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:

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

W..TECH
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
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RECEIVED 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: 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 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

(2) Copies to Client

M. Englis
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. : 9314574
INVOICE NO.: 22132193
REPORT DATE: 07-08-93
REVIEWED BY: AGN

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

D A T A T A B L E

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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(602) 437-1080 • fax 437-8706

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: AGN

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

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

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PHOENIX, AZ 85020

SAMPLE NO. : 9314574
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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PHOENIX, AZ 85020

SAMPLE NO. : 9314574
INVOICE NO.: 22132193
REPORT DATE: 07-08-93
REVIEWED BY: RLW
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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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

D A T A   T A B L E

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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Phoenix, Arizona 85040
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ATTN: ROB HARKLAU
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PHOENIX, AZ 85020

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

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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PHOENIX, AZ 85020

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

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

D A T A   T A B L E

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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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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Managing Director

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ATTN: ROB HARKLAU
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PHOENIX, AZ 85020

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

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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Managing Director

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Phoenix, Arizona 85040
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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

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

CLIENT SAMPLE ID : CCMW-1
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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 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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PHOENIX, AZ 85020

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

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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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
Dnne 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 INC.
QUALITY ASSURANCE OFFICER
Anne 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 .....: 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.
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3737 East Broadway Road
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

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%
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

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%
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
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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 :
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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
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

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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
Anne Dechoke
DATE: 7/21/93

Westech Laboratories Inc.
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3737 East Broadway Road
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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 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 .....: 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
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%
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

QUALITY CONTROL REPORT

QC IDENTIFIER .....: 109070293-1
REFERENCE NOTEBOOK :
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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	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.	19.	95.0
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
REFERENCE NOTEBOOK :
REFERENCE PAGE ....:

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
REFERENCE NOTEBOOK :
REFERENCE PAGE ....:

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:

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

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

22132193

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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	
Dames & Moore	[illegible] Drive #145	
	Phoenix, AZ [illegible]	
TELEPHONE	PROJECT	JOB/P.O. NO.
[illegible]	[illegible]-033/[illegible]	[illegible]

• REFER TO FEE SCHEDULE FOR ANALYSES SELECTION • D16225

SAMPLER (SIGNATURE): [signature]
SAMPLER (PLEASE PRINT): Rob Harklace

REQUESTED ANALYSES: See attached; Appt 501.1 (Rnhid) 6011602

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	See attached	Appt 501.1	6011602	COMMENTS	LABORATORY IDENTIFICATION
CCMW-2	[illegible]		[illegible] Landfill			W	11	~~X~~	X	X	X	Unfiltered, unpreserved	9314574
CCMW-1	"					W	11	~~X~~	X	X	X	Unfiltered, unpreserved	4575
~~Trip Blank~~	[illegible]					W	1	X				*	~~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 Cullen

* Samples ~~were~~ was taken off hold status, however volatiles had already been run

RELINQUISHED BY (SIGNATURE)	PRINT NAME	DATE / TIME	RECEIVED BY (SIGNATURE)	PRINT NAME
				MJ
				MJ
[signature]	Rob Harklace	6/23/93 0857	M. Miller	Melody Miller

REMARKS
Hold all samples pending Dames & Moore analysis request.

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 C

SOIL SAMPLE TEST RESULTS

25551-001-033
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

Project Title:

Job No.:

Field Personnel (Signature): [signature]

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	Weinecke	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	SAMPLED	5-27-93 BB
DEPTH	50'-51.6' Comb.	DATE TESTED	6-30-93 TNU
SAMPLE NO.		WASH SIEVE	Yes
SOIL DESCR.	Maricopa County Cave Creek Landfill	DRY SIEVE	No

MOISTURE/DENSITY DATA		WASH SIEVE ANALYSIS	
Wt. Soil & Ring(s) (g)		Wt. Wet Soil & Pan Before Washing (g)	661.3
Wt. Ring(s) (g)		Wt. Dry Soil & Pan Before Washing (g)	646.9
Wt. Soil (g)		Weight of Pan (g)	14.3
Wet Density PCF		Wt. of Dry Soil Before Washing	632.6
Wt. Wet Soil & Pan (g)	661.3	Wt. Dry Soil & Pan After Washing (g)	600.3
Wt. Dry Soil & Pan (g)	646.9	Wt. of Dry Soil After Washing (g)	586.1
Wt. Lost Moisture (g)	14.5	-#200 Wash. Out %	7.4
Wt. of Pan Only (g)	14.3		
Wt. of Dry Soil (g)	632.6		
Moisture Content %	2.3		
Dry Density PCF			

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

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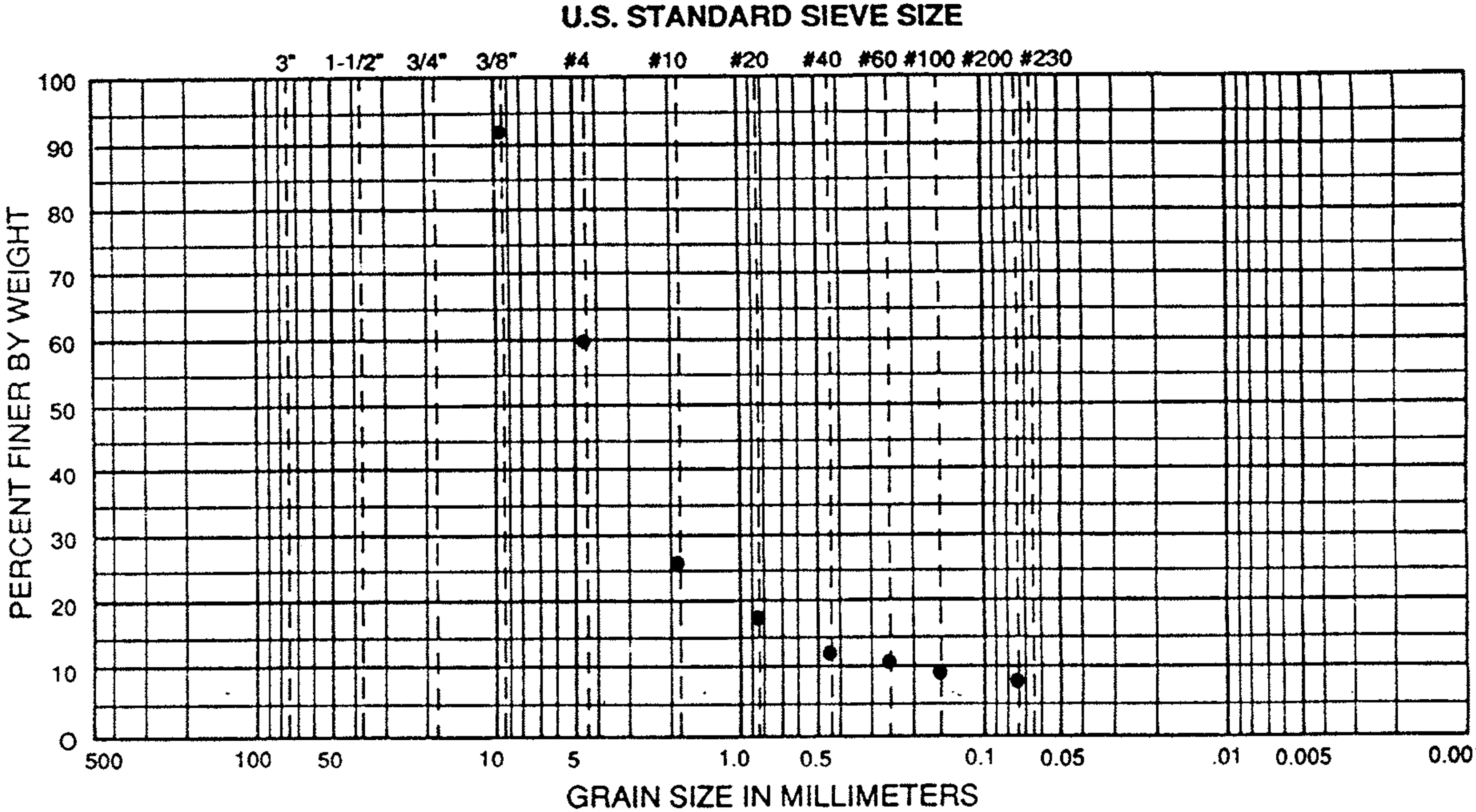

USCS	COBBLES	GRAVEL		SAND			SILT OR CLAY
		COARSE	FINE	COARSE	MEDIUM	FINE	

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

WELLNAME: CC MW - 2 SAMPLE NO.: DATE: 7-2-93 PROJECT NO.: 25551-001-03

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

MECHANICAL ANALYSIS - SIEVE TEST DATA

CLIENT	Dames & Moore	JOB NO.	25551-001-033
BORING NO.	CCMW-1	SAMPLED	5-13-93 BB
DEPTH	10'-14'	DATE TESTED	6-30-93 TNU
SAMPLE NO.		WASH SIEVE	Yes
SOIL DESCR.	Maricopa County Cave Creek Landfill	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

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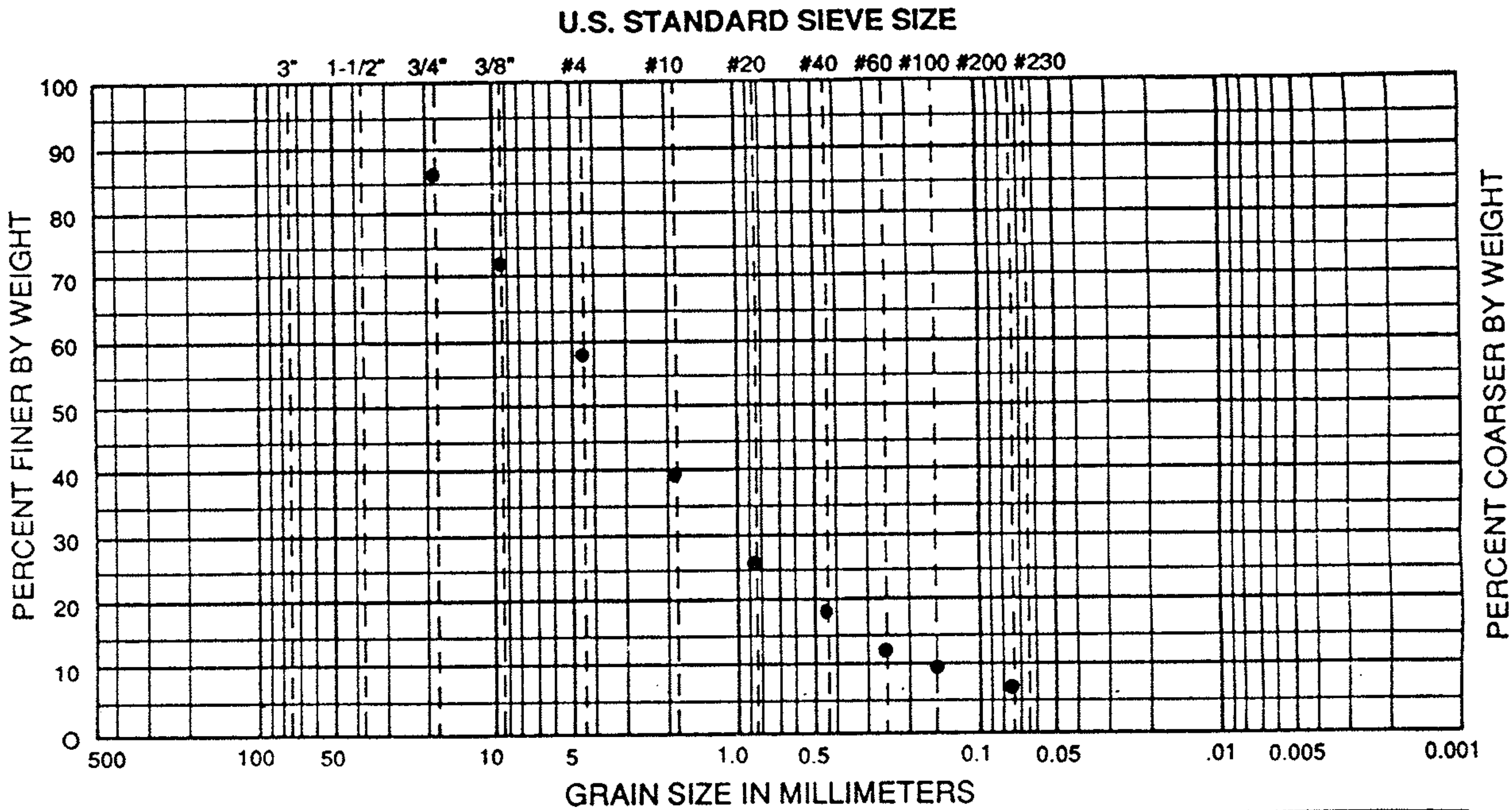

USCS	COBBLES	GRAVEL		SAND			SILT OR CLAY
		COARSE	FINE	COARSE	MEDIUM	FINE	

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.: 25551-001-03

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	SAMPLED	
DEPTH	40'-43'	DATE TESTED	6-23-93 EJK
SAMPLE NO.		WASH SIEVE	Yes
SOIL DESCR.	Maricopa County Cave Creek Landfill	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

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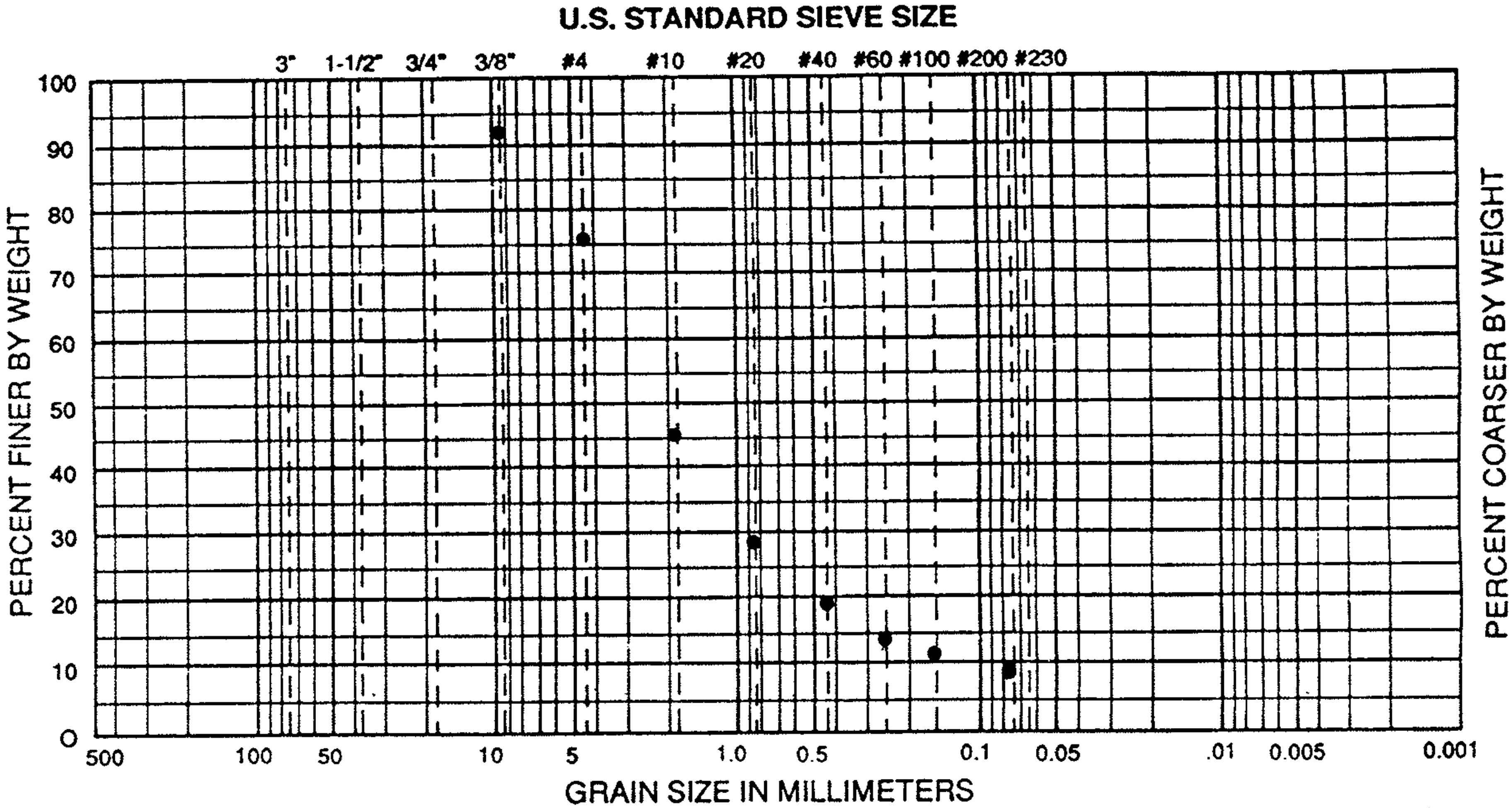

USCS	COBBLES	GRAVEL		SAND			SILT OR CLAY
		COARSE	FINE	COARSE	MEDIUM	FINE	

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.: 25551-001-03

AREA	DEPTH	CLASSIFICATION
MARICOPA CNTY CAVE CREEK [illegible]	40'-43'	

MECHANICAL ANALYSIS - SIEVE TEST DATA

CLIENT Dames & Moore

JOB NO. 25551-001-033

BORING NO.	CCMW-2	SAMPLED	
DEPTH	30'-33'	DATE TESTED	6-23-93 EJK
SAMPLE NO.		WASH SIEVE	Yes
SOIL DESCR.	Maricopa County Cave Creek Landfill	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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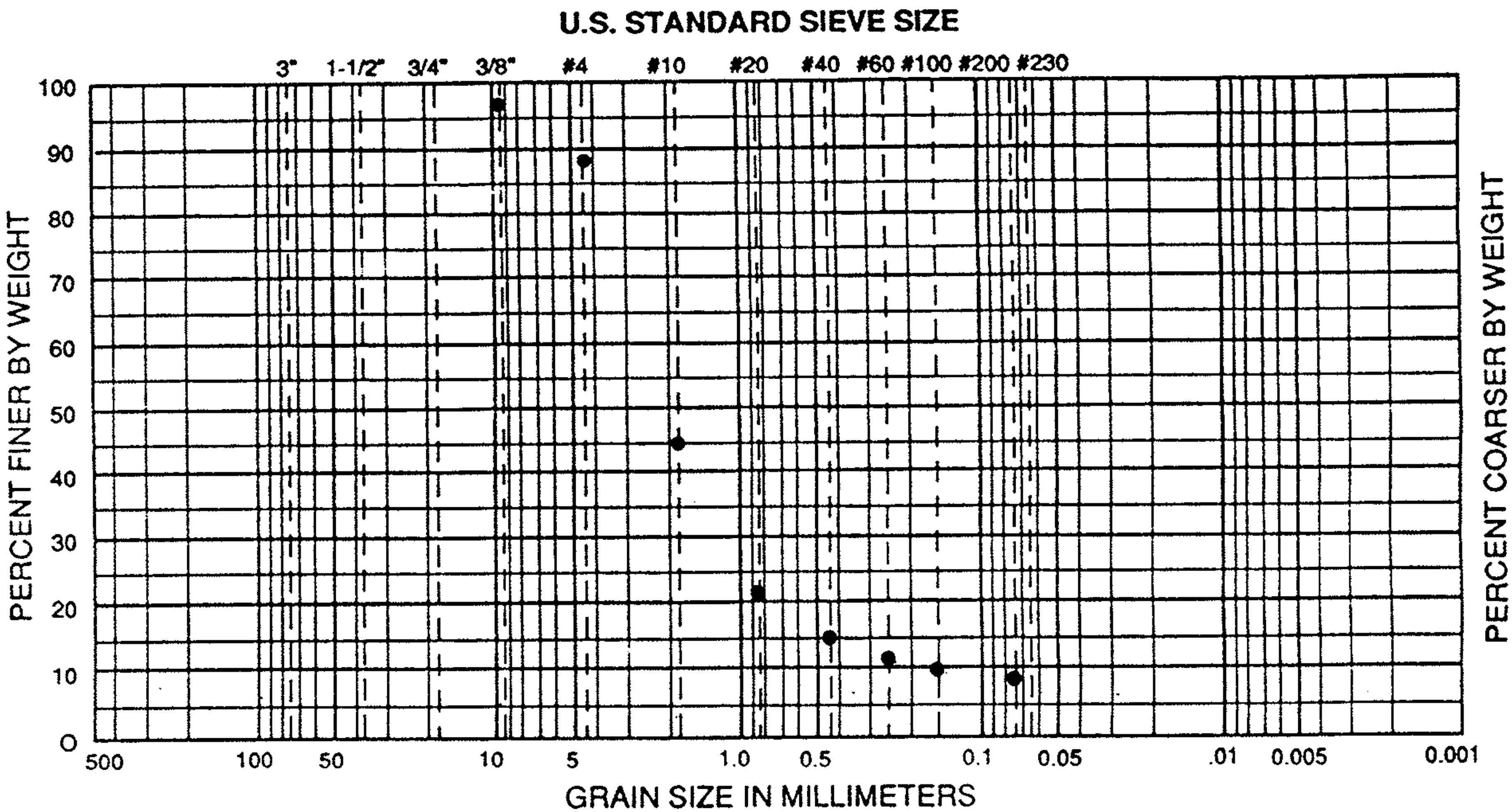
ADVANCED TERRA TESTING



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: 6-25-93 PROJECT NO.: 25551-001-03

AREA	DEPTH	CLASSIFICATION
MARICOPA CNTY. CAVE CREEK LNDFLL	30'-33'	

MECHANICAL ANALYSIS - SIEVE TEST DATA

CLIENT	Dames & Moore	JOB NO.	25551-001-033
BORING NO.	CCMW-1	SAMPLED	5-13-93
DEPTH	20'-22' COMB	DATE TESTED	6-21-93 EJK
SAMPLE NO.		WASH SIEVE	No
SOIL DESCR.	Maricopa County Cave Creek Landfill	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

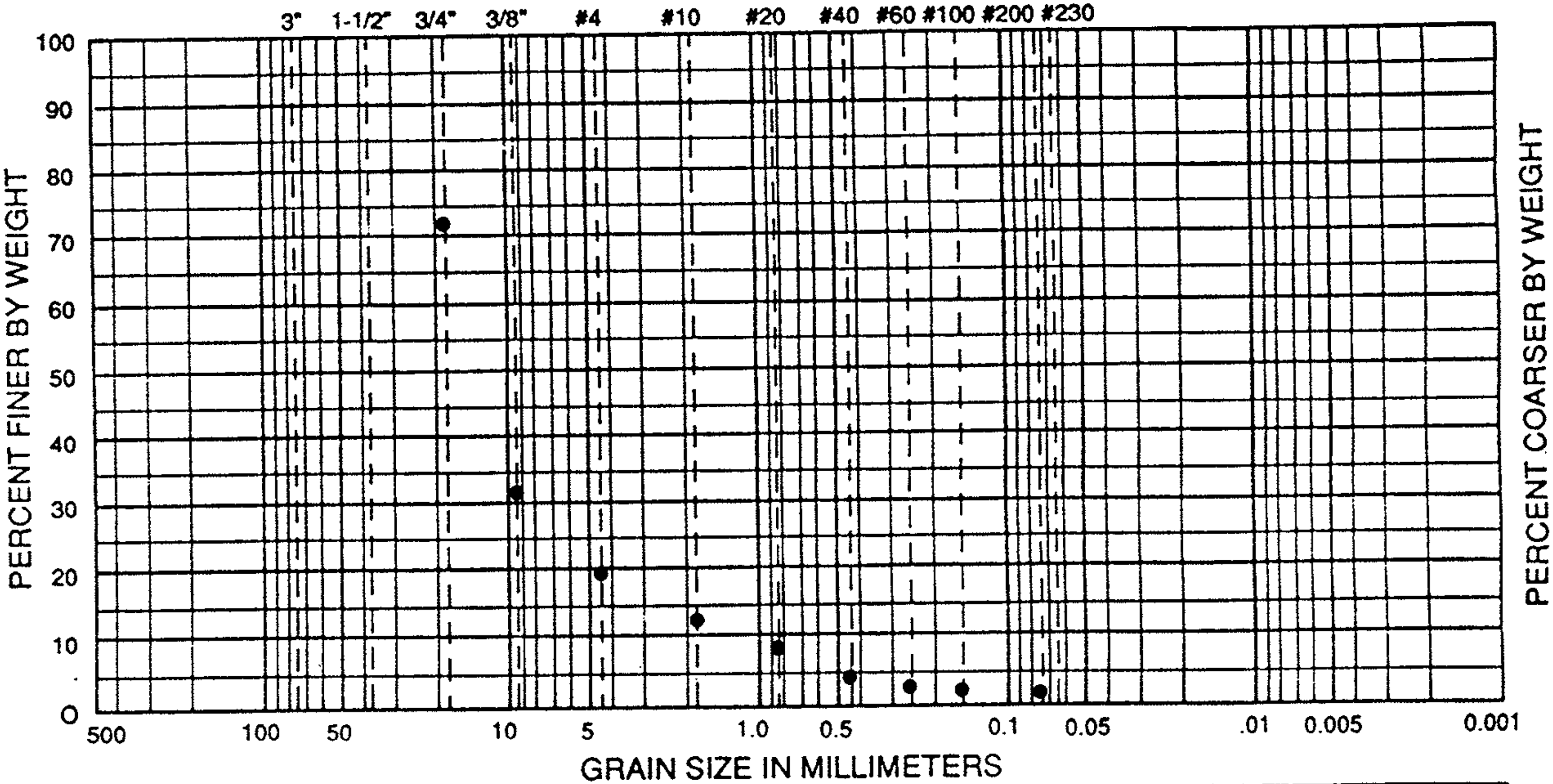
Wt. Wet Soil & Pan Before Sieving (g)	914.9
Wt. Dry Soil & Pan Before Sieving (g)	909.3
Weight of Pan (g)	38.8
Wt. of Dry Soil Before Sieving (g)	870.5
Wt. Dry Soil & Pan After Sieving (g)	897.4
Wt. of Dry Soil After Sieving (g)	858.6
-#200 Lost %	1.4

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

ADVANCED TERRA TESTING, INC.

ADVANCED TERRA TESTING

U.S. STANDARD SIEVE SIZE



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.: 25551-001-03

AREA	DEPTH	CLASSIFICATION
MARICOPA COUNTY CAVE CREEK LNDFL	20'-22' COMB	

MECHANICAL ANALYSIS - SIEVE TEST DATA

CLIENT	Dames & Moore	JOB NO.	25551-001-033
BORING NO.	CCMW-1	SAMPLED	5-13-93
DEPTH	30'-30.5'	DATE TESTED	6-21-93 EJK
SAMPLE NO.		WASH SIEVE	No
SOIL DESCR.	Maricopa County Cave Creek Landfill	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	

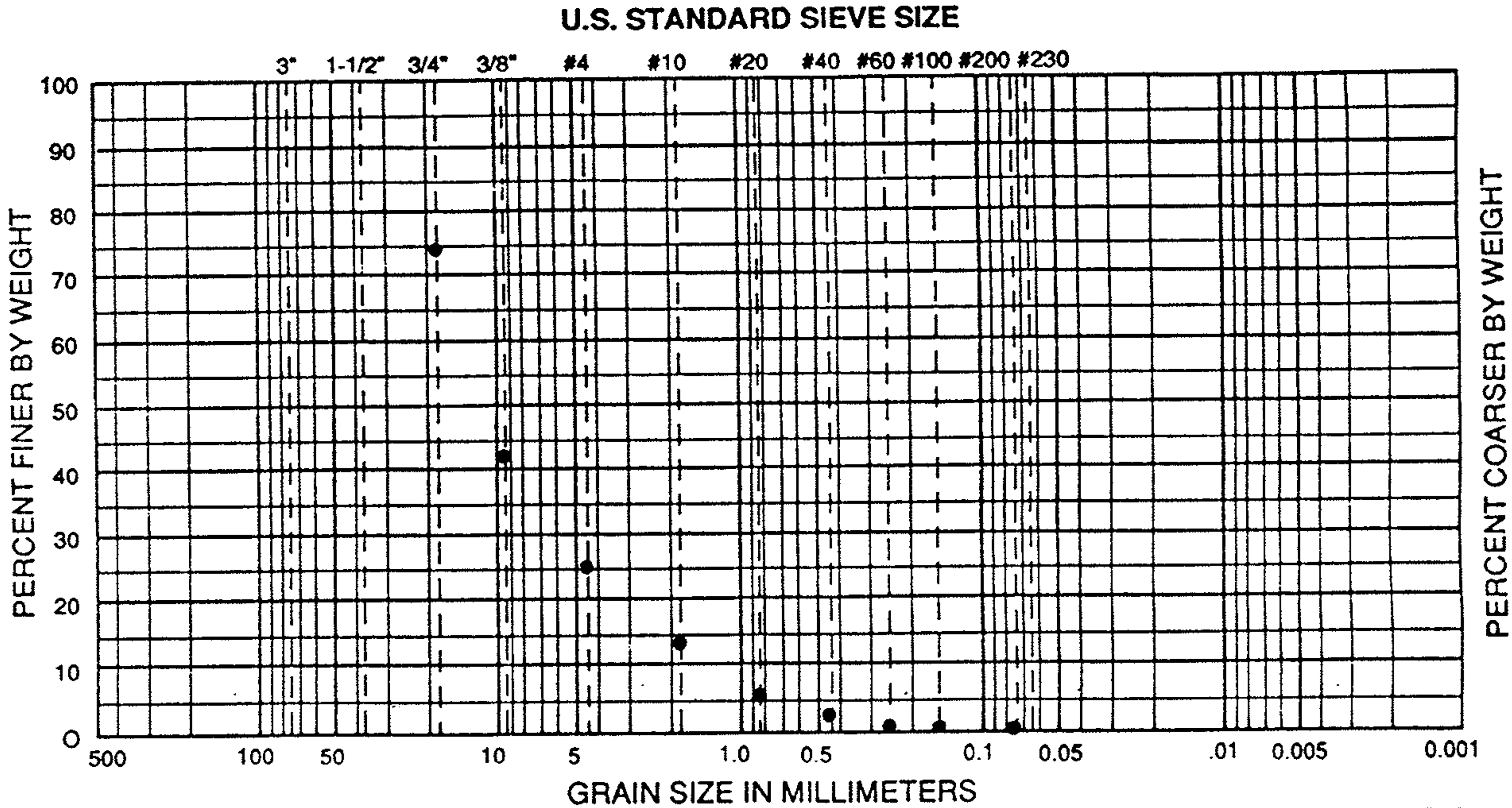
DRY SIEVE ANALYSIS

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.: Z5551-001-03

AREA	DEPTH	CLASSIFICATION
MARICOPA COUNTY CAVE 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

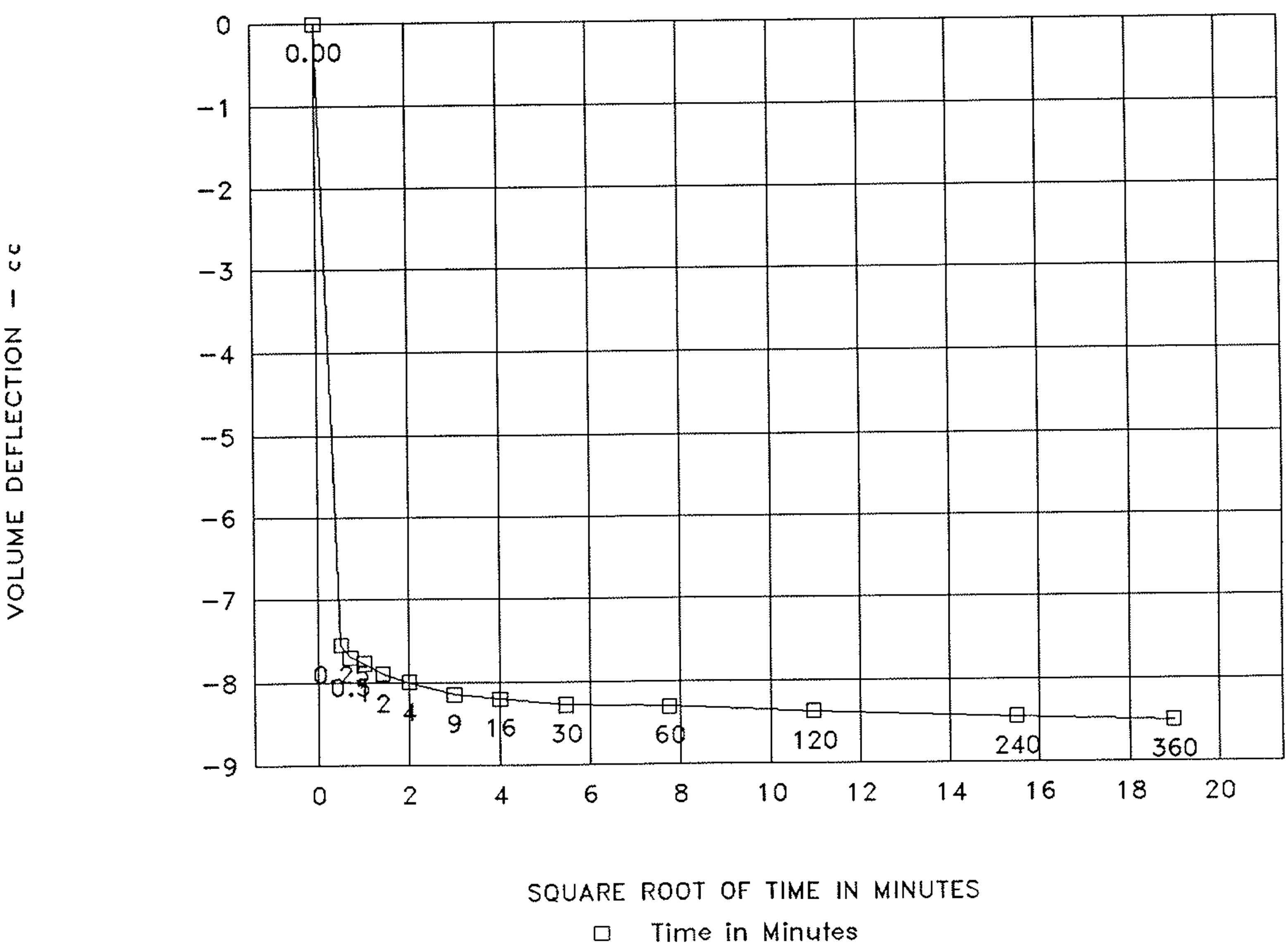
Elapsed Time (Min)	SQRT Time (Min)	Burette Reading (CC)	Volume Defl. (cc)
0.00	0.00	17.20	0.00
0.25	0.50	24.75	-7.55
0.5	0.71	24.90	-7.70
1	1.00	24.98	-7.78
2	1.41	25.10	-7.90
4	2.00	25.20	-8.00
9	3.00	25.35	-8.15
16	4.00	25.40	-8.20
30	5.48	25.48	-8.28
60	7.75	25.50	-8.30
120	10.95	25.58	-8.38
240	15.49	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

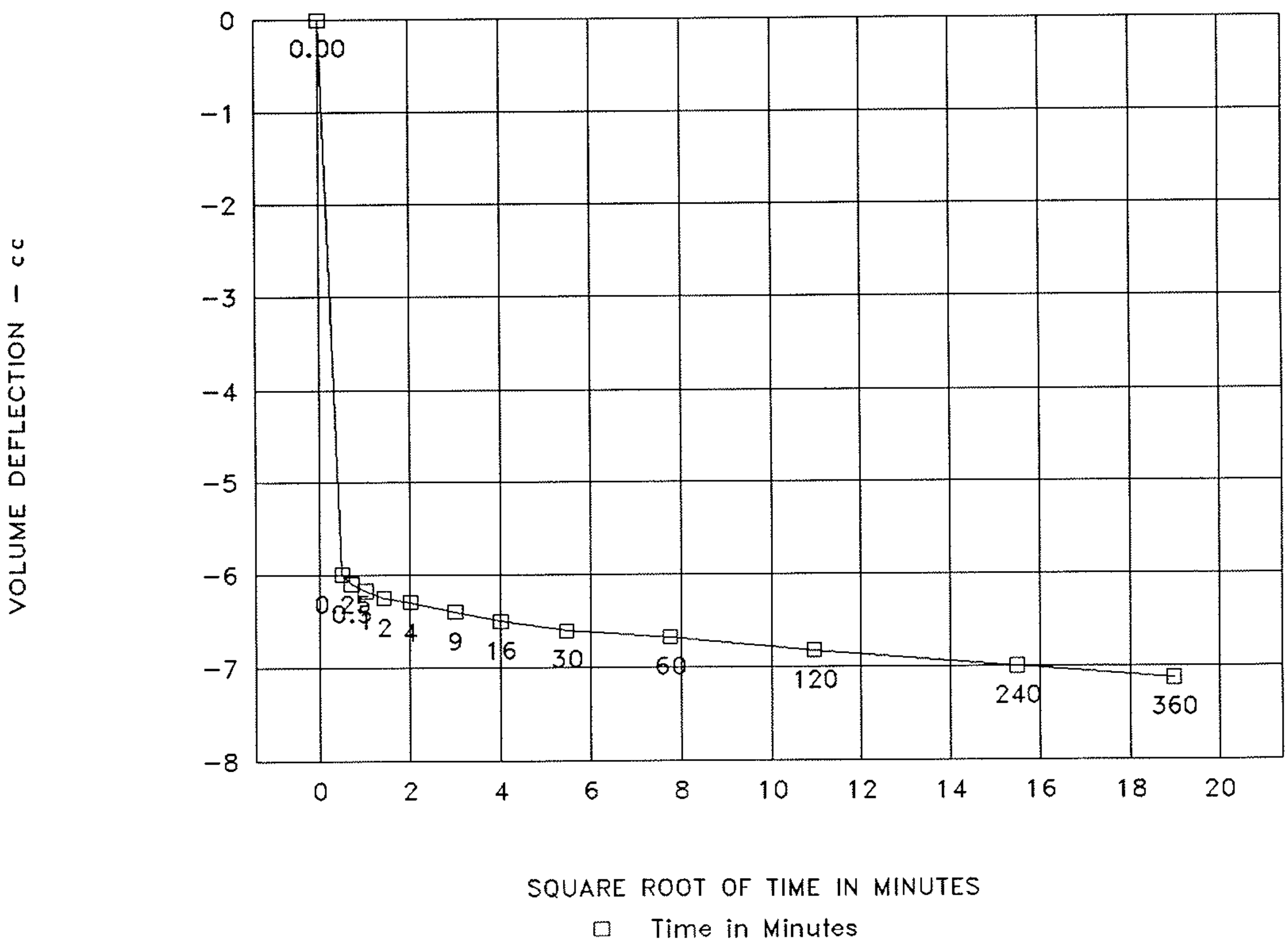
Elapsed Time (Min)	SQRT Time (Min)	Burette Reading (CC)	Volume Defl. (cc)
0.00	0.00	15.00	0.00
0.25	0.50	21.00	-6.00
0.5	0.71	21.10	-6.10
1	1.00	21.18	-6.18
2	1.41	21.25	-6.25
4	2.00	21.30	-6.30
9	3.00	21.40	-6.40
16	4.00	21.50	-6.50
30	5.48	21.60	-6.60
60	7.75	21.68	-6.68
120	10.95	21.83	-6.82
240	15.49	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

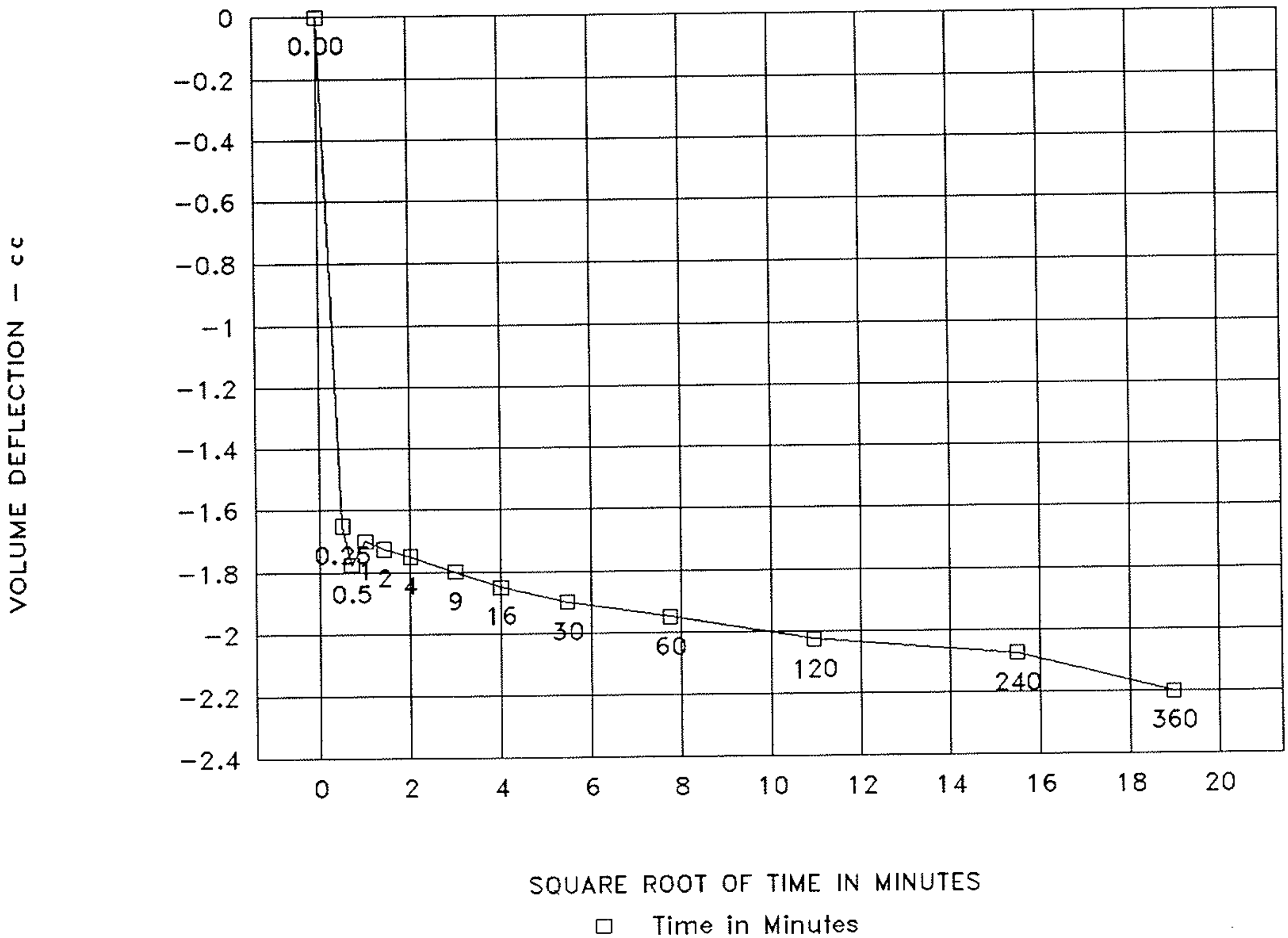
Elapsed Time (Min)	SQRT Time (Min)	Burette Reading (CC)	Volume Defl. (cc)
0.00	0.00	19.20	0.00
0.25	0.50	20.85	-1.65
0.5	0.71	20.98	-1.78
1	1.00	20.90	-1.70
2	1.41	20.93	-1.73
4	2.00	20.95	-1.75
9	3.00	21.00	-1.80
16	4.00	21.05	-1.85
30	5.48	21.10	-1.90
60	7.75	21.15	-1.95
120	10.95	21.23	-2.03
240	15.49	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

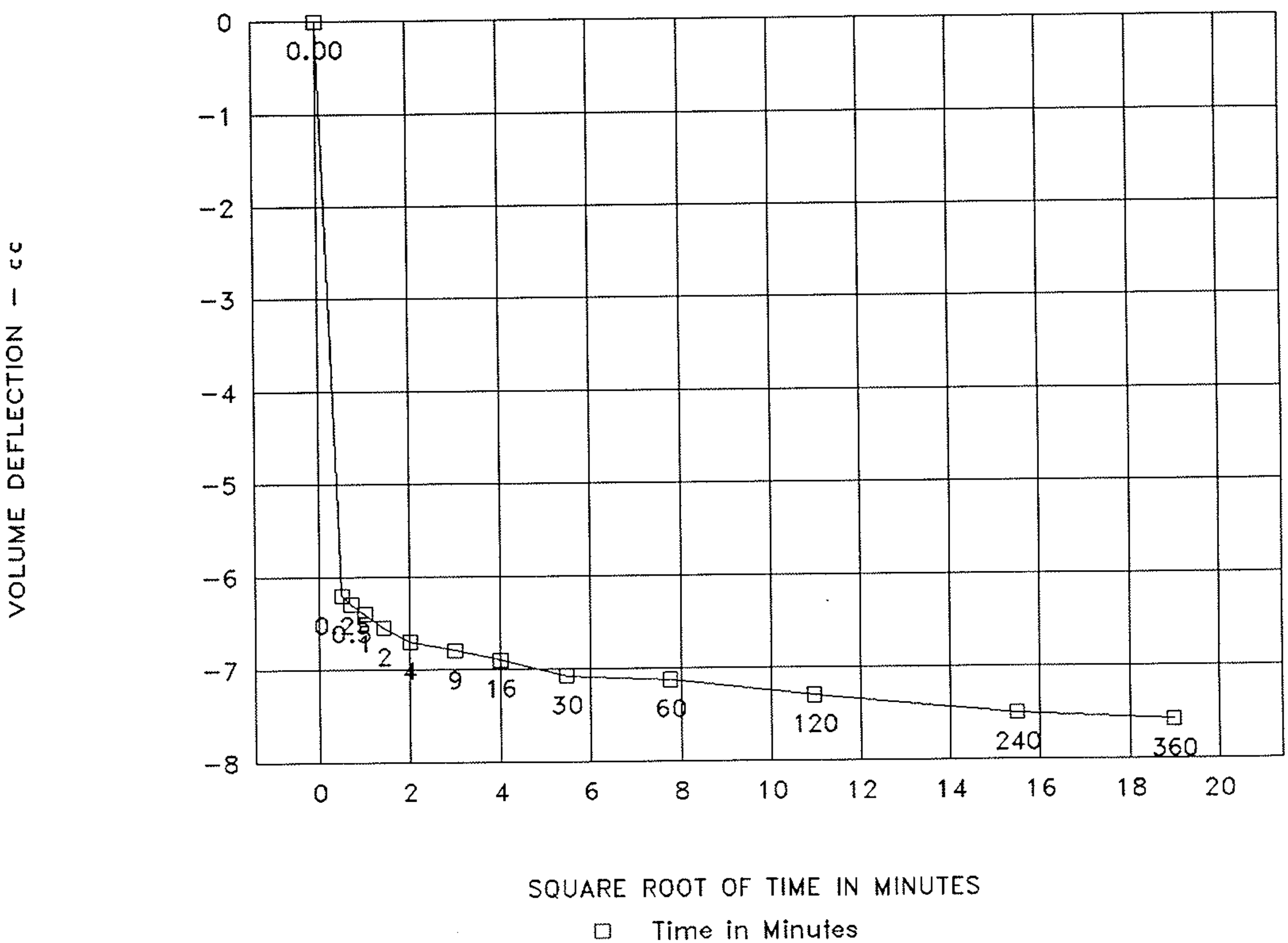
Elapsed Time (Min)	SQRT Time (Min)	Burette Reading (CC)	Volume Defl. (cc)
0.00	0.00	19.70	0.00
0.25	0.50	25.90	-6.20
0.5	0.71	26.00	-6.30
1	1.00	26.10	-6.40
2	1.41	26.25	-6.55
4	2.00	26.40	-6.70
9	3.00	26.50	-6.80
16	4.00	26.60	-6.90
30	5.48	26.78	-7.07
60	7.75	26.83	-7.13
120	10.95	27.00	-7.30
240	15.49	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

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 INC

CLIENT Dames + Moore JOB NO. 2555/-001-033

LOCATION Maricopa Cty CaveCreek L.F. PAGE OF

SAMPLE & SOIL TYPE	BORING	CCMW-2	→						
	SAMPLE NO.	1-2	2-3	4-5	3-4 ~~6-7A~~	6-7B			
	SAMPLE DEPTH	40-43'	→						
	DATE SAMPLED BY	5/24/93	→						
	DATE TESTED BY	6/21/93 DNW	→						
	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=1.422 L_0=5.515	D_0=1.429 L_0=5.576	D_0=1.435 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 Dames & Moore JOB NO. 25551-001-033

LOCATION Maricopa Cty Cave Ck. L.F. PAGE OF

SAMPLE & SOIL TYPE	BORING	CCMW-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_o = 1.424 L_o = 4.928	D_o = 1.428 L_o = 5.852	D_o = 1.411 L_o = 5.4015	D_o = 1.425 L_o = 4.041	D_o = 1.395 L_o = 5.417	D_o = 1.396 L_o = 5.405	Average	
	WT. OF WET SOIL & Liner ~~RINGS~~	361.52	430.24	405.99	321.67	394.43	451.16		
	WT. OF Liner ~~RINGS~~	120.36	118.98	120.62	120.69	121.08	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	

MOISTURE AND DENSITY DETERMINATIONS

ADVANCED TERRA TESTING INC

CLIENT Dames & Moore

JOB NO. 25551-001-033

LOCATION Maricopa Cty Cave Creek L.F

PAGE OF

SAMPLE & SOIL TYPE	BORING	CCMW-2	→						
	SAMPLE NO.	1-2	2-3	3-4	4-5	5-6	6-7		
	SAMPLE DEPTH	30-33'	→						
	DATE SAMPLED BY	5/24/93	→						
	DATE TESTED BY	6/21/93 MKD	→						
	SOIL TYPE	Untestable!							
	LABORATORY IDENTIFICATION								
DENSITY	NO. OF RINGS	Do = Lo =	Do=1.431 Lo=4.651	Do=1.429 Lo=5.165	Do=1.435 Lo=3.289	Do=1.431 Lo=5.444	Do=1.434 Lo=5.045	Average	
	WT. OF WET SOIL & RINGS		325.17	418.11	278.23	394.40	400.60		
	WT. OF RINGS		120.05	121.42	120.29	119.72	120.87		
	WT. OF WET SOIL	Untestable for MKD	205.12	296.[illegible]	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 INC

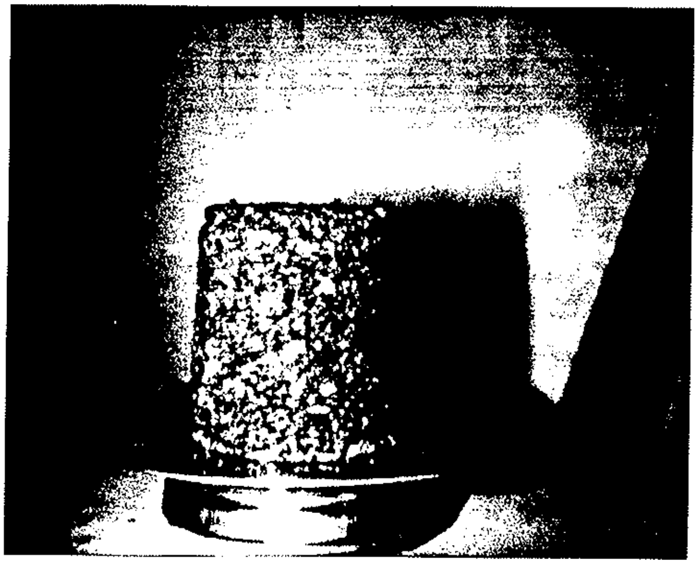
CLIENT Dames & Moore

JOB NO. 25551-001-033

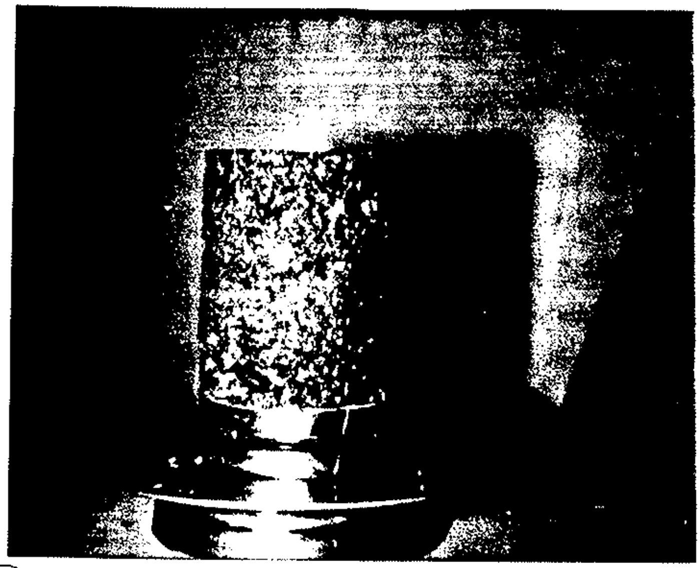
LOCATION Maricopa Ct. Cave Creek L.F.

PAGE OF

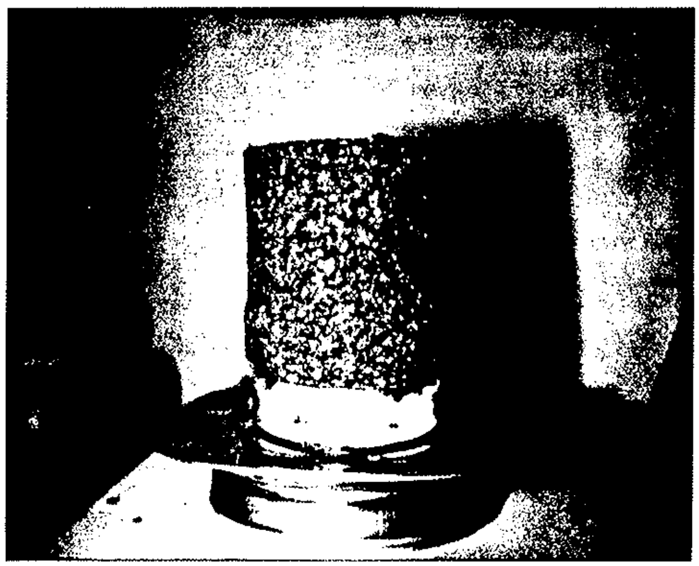
SAMPLE & SOIL TYPE									
	BORING	CCMW-2 →							
	SAMPLE NO.	1-2	3-4	5-6					
	SAMPLE DEPTH	50-51.6 →							
	DATE SAMPLED BY	5/27/93 →							
	DATE TESTED BY	6/21/93 JMW →							
	SOIL TYPE								
	LABORATORY IDENTIFICATION								
DENSITY	NO. OF RINGS	Do = 1.431 Lo = 5.325	Do = 1.429 Lo = 5.655	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' $\sqrt{3}$ = 3,000 PSF
TX/Pbp



Dames + Moore 25551-001-033
Maricopa Cty. Cave Creek Landfill
CCMW-1 @ 10-14' $\sqrt{3}$ = 1,200 PSF
TX/Pbp



Dames & Moore 25551-001-033
Maricopa Cty - Cave Creek Landfill
CCMW-2 @ 40-43' $\sqrt{3}$ = 4,000 PSF
TX/Pbp

APPENDIX D

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	621.283
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 E

HELP MODEL INPUT

HELP MODEL RUN WITH
EXISTING COVER
YEARS 1-12

****

CAVE CREEK LANDFILL
EXISTING COVER CCLF_E12.OUT
08/31/93

****

LAYER 1

VERTICAL PERCOLATION LAYER

THICKNESS	=	12.00 INCHES
POROSITY	=	0.3000 VOL/VOL
FIELD CAPACITY	=	0.2000 VOL/VOL
WILTING POINT	=	0.1400 VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.2100 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	=	0.00
TOTAL AREA OF COVER	=	520000. SQ FT
EVAPORATIVE ZONE DEPTH	=	18.00 INCHES
POTENTIAL RUNOFF FRACTION	=	0.000000
UPPER LIMIT VEG. STORAGE	=	6.7200 INCHES
INITIAL VEG. STORAGE	=	3.9000 INCHES
INITIAL SNOW WATER CONTENT	=	0.0000 INCHES
INITIAL TOTAL WATER STORAGE IN SOIL AND WASTE LAYERS	=	223.3200 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	9.15	396500.	100.00
RUNOFF	0.000	0.	0.00
EVAPOTRANSPIRATION	8.332	361043.	91.06

PERCOLATION FROM LAYER 2	0.0838	3629.	0.92
CHANGE IN WATER STORAGE	0.734	31828.	8.03
SOIL WATER AT START OF YEAR	223.32	9677200.	
SOIL WATER AT END OF YEAR	224.05	9709028.	
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	8.93	386967.	100.00
RUNOFF	0.000	0.	0.00
EVAPOTRANSPIRATION	7.075	306570.	79.22
PERCOLATION FROM LAYER 2	0.0889	3851.	1.00
CHANGE IN WATER STORAGE	1.766	76545.	19.78
SOIL WATER AT START OF YEAR	224.05	9709028.	
SOIL WATER AT END OF YEAR	225.82	9785573.	
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	9.37	406033.	100.00
RUNOFF	0.000	0.	0.00
EVAPOTRANSPIRATION	8.309	360049.	88.67
PERCOLATION FROM LAYER 2	0.0974	4219.	1.04
CHANGE IN WATER STORAGE	0.964	41765.	10.29
SOIL WATER AT START OF YEAR	225.82	9785573.	
SOIL WATER AT END OF YEAR	226.78	9827338.	
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	11.05	478833.	100.00
RUNOFF	0.000	0.	0.00
EVAPOTRANSPIRATION	8.486	367745.	76.80
PERCOLATION FROM LAYER 2	0.1036	4491.	0.94
CHANGE IN WATER STORAGE	2.460	106598.	22.26
SOIL WATER AT START OF YEAR	226.78	9827338.	
SOIL WATER AT END OF YEAR	229.24	9933936.	

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

ANNUAL TOTALS FOR YEAR 5

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	8.66	375267.	100.00
RUNOFF	0.000	0.	0.00
EVAPOTRANSPIRATION	8.219	356176.	94.91
PERCOLATION FROM LAYER 2	0.1142	4947.	1.32
CHANGE IN WATER STORAGE	0.326	14144.	3.77
SOIL WATER AT START OF YEAR	229.24	9933936.	
SOIL WATER AT END OF YEAR	229.57	9948080.	
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

ANNUAL TOTALS FOR YEAR 6

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	8.31	360100.	100.00
RUNOFF	0.000	0.	0.00
EVAPOTRANSPIRATION	7.943	344215.	95.59
PERCOLATION FROM LAYER 2	0.1217	5275.	1.46
CHANGE IN WATER STORAGE	0.245	10610.	2.95
SOIL WATER AT START OF YEAR	229.57	9948080.	
SOIL WATER AT END OF YEAR	229.82	9958690.	
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

ANNUAL TOTALS FOR YEAR 7

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	6.13	265633.	100.00
RUNOFF	0.000	0.	0.00
EVAPOTRANSPIRATION	5.181	224525.	84.52
PERCOLATION FROM LAYER 2	0.1224	5303.	2.00
CHANGE IN WATER STORAGE	0.826	35805.	13.48
SOIL WATER AT START OF YEAR	229.82	9958690.	
SOIL WATER AT END OF YEAR	230.64	9994495.	
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	10.34	448067.	100.00
RUNOFF	0.000	0.	0.00
EVAPOTRANSPIRATION	8.562	371026.	82.81
PERCOLATION FROM LAYER 2	0.1343	5818.	1.30
CHANGE IN WATER STORAGE	1.644	71223.	15.90
SOIL WATER AT START OF YEAR	230.64	9994495.	
SOIL WATER AT END OF YEAR	232.29	10065717.	
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

****

ANNUAL TOTALS FOR YEAR 9

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	5.72	247867.	100.00
RUNOFF	0.000	0.	0.00
EVAPOTRANSPIRATION	5.117	221736.	89.46
PERCOLATION FROM LAYER 2	0.1498	6489.	2.62
CHANGE IN WATER STORAGE	0.453	19641.	7.92
SOIL WATER AT START OF YEAR	232.29	10065717.	
SOIL WATER AT END OF YEAR	232.74	10085359.	
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

****

ANNUAL TOTALS FOR YEAR 10

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	13.65	591500.	100.00
RUNOFF	0.000	0.	0.00
EVAPOTRANSPIRATION	12.678	549401.	92.88
PERCOLATION FROM LAYER 2	0.1521	6591.	1.11
CHANGE IN WATER STORAGE	0.819	35507.	6.00
SOIL WATER AT START OF YEAR	232.74	10085359.	
SOIL WATER AT END OF YEAR	233.56	10120866.	
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	5.72	247867.	100.00
RUNOFF	0.000	0.	0.00
EVAPOTRANSPIRATION	5.397	233863.	94.35
PERCOLATION FROM LAYER 2	0.1618	7011.	2.83
CHANGE IN WATER STORAGE	0.161	6992.	2.82
SOIL WATER AT START OF YEAR	233.56	10120866.	
SOIL WATER AT END OF YEAR	233.72	10127858.	
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

ANNUAL TOTALS FOR YEAR 12

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	11.35	491833.	100.00
RUNOFF	0.000	0.	0.00
EVAPOTRANSPIRATION	10.311	446794.	90.84
PERCOLATION FROM LAYER 2	0.1616	7004.	1.42
CHANGE IN WATER STORAGE	0.878	38036.	7.73
SOIL WATER AT START OF YEAR	233.72	10127858.	
SOIL WATER AT END OF YEAR	234.60	10165894.	
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

AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 12

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	0.85	0.74	1.27	0.28	0.18	0.03
	1.16	0.65	0.46	0.64	0.93	1.85
STD. DEVIATIONS	0.50	0.68	1.16	0.47	0.33	0.04
	0.81	0.47	0.97	0.75	0.97	0.95
RUNOFF						
TOTALS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
STD. DEVIATIONS	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000
EVAPOTRANSPIRATION						
TOTALS	1.248	0.816	0.909	0.535	0.287	0.126
	0.551	0.485	0.326	0.796	0.498	1.391
STD. DEVIATIONS	0.783	0.473	0.927	0.607	0.211	0.185
	0.682	0.428	0.145	0.785	0.581	0.827
PERCOLATION FROM LAYER 2						
TOTALS	0.0104	0.0095	0.0105	0.0102	0.0105	0.0102
	0.0105	0.0105	0.0102	0.0107	0.0103	0.0109
STD. DEVIATIONS	0.0024	0.0022	0.0024	0.0023	0.0023	0.0023
	0.0023	0.0023	0.0023	0.0023	0.0023	0.0024

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AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 12

	(INCHES)		(CU. FT.)	PERCENT
PRECIPITATION	9.03	(2.405)	391372.	100.00
RUNOFF	0.000	(0.000)	0.	0.00
EVAPOTRANSPIRATION	7.968	(2.172)	345262.	88.22
PERCOLATION FROM LAYER 2	0.1243	(0.0278)	5386.	1.38
CHANGE IN WATER STORAGE	0.940	(0.692)	40725.	10.41

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PEAK DAILY VALUES FOR YEARS 1 THROUGH 12

	(INCHES)	(CU. FT.)
PRECIPITATION	2.01	87100.0
RUNOFF	0.000	0.0
PERCOLATION FROM LAYER 2	0.0005	20.0
SNOW WATER	0.00	0.0
MAXIMUM VEG. SOIL WATER (VOL/VOL)	0.2954	
MINIMUM VEG. SOIL WATER (VOL/VOL)	0.1377	

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FINAL WATER STORAGE AT END OF YEAR 12

LAYER	(INCHES)	(VOL/VOL)
1	1.79	0.1493
2	232.81	0.2425
SNOW WATER	0.00	

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HELP MODEL RUN WITH
CLOSURE CAP
YEARS 13-32

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 CAVE CREEK LANDFILL
 FINAL COVER CCLF_32.OUT
 09/01/93

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                              LAYER  1
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                    VERTICAL PERCOLATION LAYER
   THICKNESS                          =      12.00 INCHES
   POROSITY                           =       0.3000 VOL/VOL
   FIELD CAPACITY                     =       0.2000 VOL/VOL
   WILTING POINT                      =       0.1400 VOL/VOL
   INITIAL SOIL WATER CONTENT         =       0.2000 VOL/VOL
   SATURATED HYDRAULIC CONDUCTIVITY   =       0.000003000000 CM/SEC


                              LAYER  2
                              --------

                    VERTICAL PERCOLATION LAYER
   THICKNESS                          =      12.00 INCHES
   POROSITY                           =       0.3000 VOL/VOL
   FIELD CAPACITY                     =       0.2000 VOL/VOL
   WILTING POINT                      =       0.1400 VOL/VOL
   INITIAL SOIL WATER CONTENT         =       0.1493 VOL/VOL
   SATURATED HYDRAULIC CONDUCTIVITY   =       0.005299999844 CM/SEC


                              LAYER  3
                              --------

                    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         =       0.2425 VOL/VOL
   SATURATED HYDRAULIC CONDUCTIVITY   =       0.000199999995 CM/SEC
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GENERAL SIMULATION DATA

SCS RUNOFF CURVE NUMBER	=	95.00
TOTAL AREA OF COVER	=	520000. SQ FT
EVAPORATIVE ZONE DEPTH	=	18.00 INCHES
UPPER LIMIT VEG. STORAGE	=	5.4000 INCHES
INITIAL VEG. STORAGE	=	3.2958 INCHES
INITIAL SNOW WATER CONTENT	=	0.0000 INCHES
INITIAL TOTAL WATER STORAGE IN SOIL AND WASTE LAYERS	=	236.9916 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	9.15	396500.	100.00
RUNOFF	5.316	230342.	58.09
EVAPOTRANSPIRATION	4.448	192754.	48.61
PERCOLATION FROM LAYER 3	0.1647	7139.	1.80
CHANGE IN WATER STORAGE	-0.779	-33736.	-8.51
SOIL WATER AT START OF YEAR	236.99	10269636.	
SOIL WATER AT END OF YEAR	236.21	10235901.	
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	8.93	386967.	100.00
RUNOFF	5.630	243958.	63.04
EVAPOTRANSPIRATION	3.231	140015.	36.18
PERCOLATION FROM LAYER 3	0.1632	7073.	1.83
CHANGE IN WATER STORAGE	-0.094	-4079.	-1.05
SOIL WATER AT START OF YEAR	236.21	10235901.	
SOIL WATER AT END OF YEAR	236.12	10231821.	
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	9.37	406033.	100.00
RUNOFF	5.263	228080.	56.17
EVAPOTRANSPIRATION	4.338	187991.	46.30
PERCOLATION FROM LAYER 3	0.1617	7007.	1.73
CHANGE IN WATER STORAGE	-0.393	-17045.	-4.20
SOIL WATER AT START OF YEAR	236.12	10231821.	
SOIL WATER AT END OF YEAR	235.73	10214777.	
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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	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	11.05	478833.	100.00
RUNOFF	7.153	309961.	64.73
EVAPOTRANSPIRATION	3.375	146266.	30.55
PERCOLATION FROM LAYER 3	0.1607	6962.	1.45
CHANGE IN WATER STORAGE	0.361	15645.	3.27
SOIL WATER AT START OF YEAR	235.73	10214777.	
SOIL WATER AT END OF YEAR	236.09	10230422.	
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

ANNUAL TOTALS FOR YEAR 5

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	8.66	375267.	100.00
RUNOFF	4.762	206358.	54.99
EVAPOTRANSPIRATION	4.421	191570.	51.05
PERCOLATION FROM LAYER 3	0.1588	6880.	1.83
CHANGE IN WATER STORAGE	-0.682	-29541.	-7.87
SOIL WATER AT START OF YEAR	236.09	10230422.	
SOIL WATER AT END OF YEAR	235.40	10200881.	
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

ANNUAL TOTALS FOR YEAR 6

RUNOFF	3.995	173108.	48.07
EVAPOTRANSPIRATION	4.315	186992.	51.93
PERCOLATION FROM LAYER 3	0.1573	6817.	1.89
CHANGE IN WATER STORAGE	-0.157	-6817.	-1.89
SOIL WATER AT START OF YEAR	235.40	10200881.	
SOIL WATER AT END OF YEAR	235.25	10194064.	
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	6.13	265633.	100.00
RUNOFF	3.076	133274.	50.17
EVAPOTRANSPIRATION	3.043	131861.	49.64
PERCOLATION FROM LAYER 3	0.1559	6756.	2.54
CHANGE IN WATER STORAGE	-0.144	-6258.	-2.36
SOIL WATER AT START OF YEAR	235.25	10194064.	
SOIL WATER AT END OF YEAR	235.10	10187806.	
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	10.34	448067.	100.00

PERCOLATION FROM LAYER 3	0.1549	6714.	1.50
CHANGE IN WATER STORAGE	-0.166	-7213.	-1.61
SOIL WATER AT START OF YEAR	235.10	10187806.	
SOIL WATER AT END OF YEAR	234.94	10180593.	
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 9

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	5.72	247867.	100.00
RUNOFF	2.578	111707.	45.07
EVAPOTRANSPIRATION	3.009	130385.	52.60
PERCOLATION FROM LAYER 3	0.1531	6636.	2.68
CHANGE IN WATER STORAGE	-0.020	-862.	-0.35
SOIL WATER AT START OF YEAR	234.94	10180593.	
SOIL WATER AT END OF YEAR	234.92	10179731.	
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	13.65	591500.	100.00
RUNOFF	7.274	315202.	53.29
EVAPOTRANSPIRATION	6.507	281990.	47.67

SOIL WATER AT START OF YEAR	234.92	10179731.	
SOIL WATER AT END OF YEAR	234.63	10167462.	
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	5.72	247867.	100.00
RUNOFF	2.108	91331.	36.85
EVAPOTRANSPIRATION	3.427	148523.	59.92
PERCOLATION FROM LAYER 3	0.1505	6521.	2.63
CHANGE IN WATER STORAGE	0.034	1492.	0.60
SOIL WATER AT START OF YEAR	234.63	10167462.	
SOIL WATER AT END OF YEAR	234.67	10168954.	
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	11.35	491833.	100.00
RUNOFF	6.277	272020.	55.31
EVAPOTRANSPIRATION	5.259	227909.	46.34
PERCOLATION FROM LAYER 3	0.1496	6482.	1.32
CHANGE IN WATER STORAGE	-0.336	-14577.	-2.96

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 13

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	13.47	583700.	100.00
RUNOFF	7.139	309368.	53.00
EVAPOTRANSPIRATION	6.331	274332.	47.00
PERCOLATION FROM LAYER 3	0.1479	6408.	1.10
CHANGE IN WATER STORAGE	-0.148	-6408.	-1.10
SOIL WATER AT START OF YEAR	234.33	10154377.	
SOIL WATER AT END OF YEAR	234.18	10147968.	
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	7.94	344067.	100.00
RUNOFF	3.979	172403.	50.11
EVAPOTRANSPIRATION	3.859	167230.	48.60
PERCOLATION FROM LAYER 3	0.1466	6354.	1.85
CHANGE IN WATER STORAGE	-0.044	-1920.	-0.56
SOIL WATER AT START OF YEAR	234.18	10147968.	
SOIL WATER AT END OF YEAR	234.14	10146049.	

ANNUAL WATER BUDGET BALANCE	0.00	0.	0.00

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ANNUAL TOTALS FOR YEAR 15

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	8.26	357933.	100.00
RUNOFF	3.700	160315.	44.79
EVAPOTRANSPIRATION	4.330	187615.	52.42
PERCOLATION FROM LAYER 3	0.1454	6300.	1.76
CHANGE IN WATER STORAGE	0.085	3703.	1.03
SOIL WATER AT START OF YEAR	234.14	10146049.	
SOIL WATER AT END OF YEAR	234.23	10149752.	
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	7.38	319800.	100.00
RUNOFF	3.991	172944.	54.08
EVAPOTRANSPIRATION	3.474	150543.	47.07
PERCOLATION FROM LAYER 3	0.1445	6264.	1.96
CHANGE IN WATER STORAGE	-0.230	-9951.	-3.11
SOIL WATER AT START OF YEAR	234.23	10149752.	
SOIL WATER AT END OF YEAR	234.00	10139802.	
SNOW WATER AT START OF YEAR	0.00	0.	
SNOW WATER AT END OF YEAR	0.00	0.	

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ANNUAL TOTALS FOR YEAR 17

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	7.98	345800.	100.00
RUNOFF	3.642	157838.	45.64
EVAPOTRANSPIRATION	4.586	198712.	57.46
PERCOLATION FROM LAYER 3	0.1429	6194.	1.79
CHANGE IN WATER STORAGE	-0.391	-16945.	-4.90
SOIL WATER AT START OF YEAR	234.00	10139802.	
SOIL WATER AT END OF YEAR	233.60	10122857.	
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 18

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	7.47	323700.	100.00
RUNOFF	3.155	136725.	42.24
EVAPOTRANSPIRATION	4.103	177817.	54.93
PERCOLATION FROM LAYER 3	0.1418	6143.	1.90
CHANGE IN WATER STORAGE	0.070	3014.	0.93
SOIL WATER AT START OF YEAR	233.60	10122857.	
SOIL WATER AT END OF YEAR	233.67	10125871.	
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	4.87	211033.	100.00
RUNOFF	2.056	89109.	42.23
EVAPOTRANSPIRATION	2.772	120105.	56.91
PERCOLATION FROM LAYER 3	0.1406	6092.	2.89
CHANGE IN WATER STORAGE	-0.099	-4273.	-2.02
SOIL WATER AT START OF YEAR	233.67	10125871.	
SOIL WATER AT END OF YEAR	233.58	10121598.	
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 20

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	6.67	289033.	100.00
RUNOFF	4.079	176764.	61.16
EVAPOTRANSPIRATION	2.460	106603.	36.88
PERCOLATION FROM LAYER 3	0.1398	6059.	2.10
CHANGE IN WATER STORAGE	-0.009	-393.	-0.14
SOIL WATER AT START OF YEAR	233.58	10121598.	
SOIL WATER AT END OF YEAR	233.57	10121206.	
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	0.92	0.68	1.32	0.27	0.22	0.02
	1.08	0.65	0.64	0.54	0.68	1.62
STD. DEVIATIONS	0.84	0.57	1.01	0.46	0.34	0.04
	0.75	0.44	1.01	0.61	0.84	0.82
RUNOFF						
TOTALS	0.393	0.262	0.771	0.077	0.103	0.000
	0.563	0.215	0.433	0.323	0.402	1.029
STD. DEVIATIONS	0.505	0.276	0.728	0.203	0.212	0.000
	0.455	0.263	0.789	0.495	0.635	0.655
EVAPOTRANSPIRATION						
TOTALS	0.572	0.459	0.549	0.227	0.113	0.038
	0.334	0.450	0.245	0.248	0.274	0.560
STD. DEVIATIONS	0.410	0.288	0.374	0.292	0.134	0.061
	0.290	0.313	0.246	0.149	0.255	0.363
PERCOLATION FROM LAYER 3						
TOTALS	0.0129	0.0118	0.0129	0.0125	0.0129	0.0125
	0.0129	0.0129	0.0124	0.0128	0.0124	0.0128
STD. DEVIATIONS	0.0007	0.0006	0.0007	0.0006	0.0007	0.0006
	0.0007	0.0007	0.0006	0.0007	0.0006	0.0007

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AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 20

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	8.62 (2.416)	373577.	100.00
RUNOFF	4.571 (1.654)	198089.	53.02
EVAPOTRANSPIRATION	4.069 (1.068)	176340.	47.20
PERCOLATION FROM LAYER 3	0.1516 (0.0079)	6569.	1.76
CHANGE IN WATER STORAGE	-0.171 (0.261)	-7422.	-1.99

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	(INCHES)	(CU. FT.)
PRECIPITATION	2.56	110933.3
RUNOFF	2.416	104707.7
PERCOLATION FROM LAYER 3	0.0005	19.7
SNOW WATER	0.00	0.0

MAXIMUM VEG. SOIL WATER (VOL/VOL) 0.1831

MINIMUM VEG. SOIL WATER (VOL/VOL) 0.1395

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FINAL WATER STORAGE AT END OF YEAR 20

LAYER	(INCHES)	(VOL/VOL)
1	2.06	0.1718
2	1.69	0.1411
3	229.81	0.2394
SNOW WATER	0.00	

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HELP MODEL RUN WITH CLOSURE CAP
YEARS 33-50

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 CAVE CREEK LANDFILL
 FINAL COVER CCLF_52.OUT
 09/01/93

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                              LAYER  1
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                     VERTICAL PERCOLATION LAYER
   THICKNESS                           =      12.00 INCHES
   POROSITY                            =       0.3000 VOL/VOL
   FIELD CAPACITY                      =       0.2000 VOL/VOL
   WILTING POINT                       =       0.1400 VOL/VOL
   INITIAL SOIL WATER CONTENT          =       0.1718 VOL/VOL
   SATURATED HYDRAULIC CONDUCTIVITY    =       0.000003000000 CM/SEC



                              LAYER  2
                              --------

                     VERTICAL PERCOLATION LAYER
   THICKNESS                           =      12.00 INCHES
   POROSITY                            =       0.3000 VOL/VOL
   FIELD CAPACITY                      =       0.2000 VOL/VOL
   WILTING POINT                       =       0.1400 VOL/VOL
   INITIAL SOIL WATER CONTENT          =       0.1411 VOL/VOL
   SATURATED HYDRAULIC CONDUCTIVITY    =       0.005299999844 CM/SEC



                              LAYER  3
                              --------

                     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          =       0.2394 VOL/VOL
   SATURATED HYDRAULIC CONDUCTIVITY    =       0.000199999995 CM/SEC
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GENERAL SIMULATION DATA

SCS RUNOFF CURVE NUMBER	=	95.00
TOTAL AREA OF COVER	=	520000. SQ FT
EVAPORATIVE ZONE DEPTH	=	18.00 INCHES
UPPER LIMIT VEG. STORAGE	=	5.4000 INCHES
INITIAL VEG. STORAGE	=	2.9082 INCHES
INITIAL SNOW WATER CONTENT	=	0.0000 INCHES
INITIAL TOTAL WATER STORAGE IN SOIL AND WASTE LAYERS	=	233.5788 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	9.15	396500.	100.00
RUNOFF	5.316	230342.	58.09
EVAPOTRANSPIRATION	4.061	175963.	44.38
PERCOLATION FROM LAYER 3	0.1384	5998.	1.51
CHANGE IN WATER STORAGE	-0.365	-15804.	-3.99
SOIL WATER AT START OF YEAR	233.58	10121749.	
SOIL WATER AT END OF YEAR	233.21	10105945.	
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	8.93	386967.	100.00
RUNOFF	5.630	243958.	63.04
EVAPOTRANSPIRATION	3.231	140015.	36.18
PERCOLATION FROM LAYER 3	0.1373	5950.	1.54
CHANGE IN WATER STORAGE	-0.068	-2956.	-0.76
SOIL WATER AT START OF YEAR	233.21	10105945.	
SOIL WATER AT END OF YEAR	233.15	10102989.	
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	9.37	406033.	100.00
RUNOFF	5.263	228080.	56.17
EVAPOTRANSPIRATION	4.338	187991.	46.30
PERCOLATION FROM LAYER 3	0.1362	5902.	1.45
CHANGE IN WATER STORAGE	-0.368	-15939.	-3.93
SOIL WATER AT START OF YEAR	233.15	10102989.	
SOIL WATER AT END OF YEAR	232.78	10087049.	
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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	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	11.05	478833.	100.00
RUNOFF	7.153	309961.	64.73
EVAPOTRANSPIRATION	3.375	146266.	30.55
PERCOLATION FROM LAYER 3	0.1355	5871.	1.23
CHANGE IN WATER STORAGE	0.386	16735.	3.50
SOIL WATER AT START OF YEAR	232.78	10087049.	
SOIL WATER AT END OF YEAR	233.16	10103785.	
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 5

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	8.66	375267.	100.00
RUNOFF	4.762	206358.	54.99
EVAPOTRANSPIRATION	4.421	191570.	51.05
PERCOLATION FROM LAYER 3	0.1340	5809.	1.55
CHANGE IN WATER STORAGE	-0.657	-28470.	-7.59
SOIL WATER AT START OF YEAR	233.16	10103785.	
SOIL WATER AT END OF YEAR	232.51	10075315.	
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

RUNOFF	3.995	173108.	48.07
EVAPOTRANSPIRATION	4.315	186992.	51.93
PERCOLATION FROM LAYER 3	0.1330	5763.	1.60
CHANGE IN WATER STORAGE	-0.133	-5762.	-1.60
SOIL WATER AT START OF YEAR	232.51	10075315.	
SOIL WATER AT END OF YEAR	232.37	10069552.	
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	6.13	265633.	100.00
RUNOFF	3.076	133274.	50.17
EVAPOTRANSPIRATION	3.043	131861.	49.64
PERCOLATION FROM LAYER 3	0.1320	5718.	2.15
CHANGE IN WATER STORAGE	-0.120	-5220.	-1.96
SOIL WATER AT START OF YEAR	232.37	10069552.	
SOIL WATER AT END OF YEAR	232.25	10064333.	
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	10.34	448067.	100.00

	(INCHES)	(CU. FT.)	PERCENT
PERCOLATION FROM LAYER 3	0.1313	5689.	1.27
CHANGE IN WATER STORAGE	-0.143	-6188.	-1.38
SOIL WATER AT START OF YEAR	232.25	10064333.	
SOIL WATER AT END OF YEAR	232.11	10058145.	
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 9

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	5.72	247867.	100.00
RUNOFF	2.578	111707.	45.07
EVAPOTRANSPIRATION	3.009	130385.	52.60
PERCOLATION FROM LAYER 3	0.1299	5630.	2.27
CHANGE IN WATER STORAGE	0.003	145.	0.06
SOIL WATER AT START OF YEAR	232.11	10058145.	
SOIL WATER AT END OF YEAR	232.11	10058290.	
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	13.65	591500.	100.00
RUNOFF	7.274	315202.	53.29
EVAPOTRANSPIRATION	6.507	281990.	47.67

SOIL WATER AT START OF YEAR	232.11	10058290.	
SOIL WATER AT END OF YEAR	231.85	10047011.	
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	5.72	247867.	100.00
RUNOFF	2.108	91331.	36.85
EVAPOTRANSPIRATION	3.427	148523.	59.92
PERCOLATION FROM LAYER 3	0.1279	5544.	2.24
CHANGE IN WATER STORAGE	0.057	2469.	1.00
SOIL WATER AT START OF YEAR	231.85	10047011.	
SOIL WATER AT END OF YEAR	231.91	10049480.	
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	11.35	491833.	100.00
RUNOFF	6.277	272020.	55.31
EVAPOTRANSPIRATION	5.259	227909.	46.34
PERCOLATION FROM LAYER 3	0.1273	5517.	1.12
CHANGE IN WATER STORAGE	-0.314	-13612.	-2.77

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 13

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	13.47	583700.	100.00
RUNOFF	7.139	309368.	53.00
EVAPOTRANSPIRATION	6.331	274332.	47.00
PERCOLATION FROM LAYER 3	0.1260	5460.	0.94
CHANGE IN WATER STORAGE	-0.126	-5460.	-0.94
SOIL WATER AT START OF YEAR	231.60	10035867.	
SOIL WATER AT END OF YEAR	231.47	10030407.	
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	7.94	344067.	100.00
RUNOFF	3.979	172403.	50.11
EVAPOTRANSPIRATION	3.859	167230.	48.60
PERCOLATION FROM LAYER 3	0.1251	5420.	1.58
CHANGE IN WATER STORAGE	-0.023	-986.	-0.29
SOIL WATER AT START OF YEAR	231.47	10030407.	
SOIL WATER AT END OF YEAR	231.45	10029421.	

ANNUAL WATER BUDGET BALANCE	0.00	0.	0.00

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ANNUAL TOTALS FOR YEAR 15

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	8.26	357933.	100.00
RUNOFF	3.700	160315.	44.79
EVAPOTRANSPIRATION	4.330	187615.	52.42
PERCOLATION FROM LAYER 3	0.1241	5379.	1.50
CHANGE IN WATER STORAGE	0.107	4624.	1.29
SOIL WATER AT START OF YEAR	231.45	10029421.	
SOIL WATER AT END OF YEAR	231.55	10034045.	
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	7.38	319800.	100.00
RUNOFF	3.991	172944.	54.08
EVAPOTRANSPIRATION	3.474	150543.	47.07
PERCOLATION FROM LAYER 3	0.1236	5354.	1.67
CHANGE IN WATER STORAGE	-0.209	-9041.	-2.83
SOIL WATER AT START OF YEAR	231.55	10034045.	
SOIL WATER AT END OF YEAR	231.35	10025004.	
SNOW WATER AT START OF YEAR	0.00	0.	
SNOW WATER AT END OF YEAR	0.00	0.	

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ANNUAL TOTALS FOR YEAR 17

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	7.98	345800.	100.00
RUNOFF	3.642	157838.	45.64
EVAPOTRANSPIRATION	4.586	198712.	57.46
PERCOLATION FROM LAYER 3	0.1223	5301.	1.53
CHANGE IN WATER STORAGE	-0.370	-16051.	-4.64
SOIL WATER AT START OF YEAR	231.35	10025004.	
SOIL WATER AT END OF YEAR	230.98	10008953.	
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 18

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	7.47	323700.	100.00
RUNOFF	3.155	136725.	42.24
EVAPOTRANSPIRATION	4.103	177817.	54.93
PERCOLATION FROM LAYER 3	0.1214	5262.	1.63
CHANGE IN WATER STORAGE	0.090	3895.	1.20
SOIL WATER AT START OF YEAR	230.98	10008953.	
SOIL WATER AT END OF YEAR	231.07	10012848.	
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	4.87	211033.	100.00
RUNOFF	2.056	89109.	42.23
EVAPOTRANSPIRATION	2.772	120105.	56.91
PERCOLATION FROM LAYER 3	0.1206	5224.	2.48
CHANGE IN WATER STORAGE	-0.079	-3404.	-1.61
SOIL WATER AT START OF YEAR	231.07	10012848.	
SOIL WATER AT END OF YEAR	230.99	10009444.	
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 20

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	6.67	289033.	100.00
RUNOFF	4.079	176764.	61.16
EVAPOTRANSPIRATION	2.460	106603.	36.88
PERCOLATION FROM LAYER 3	0.1200	5201.	1.80
CHANGE IN WATER STORAGE	0.011	465.	0.16
SOIL WATER AT START OF YEAR	230.99	10009444.	
SOIL WATER AT END OF YEAR	231.00	10009909.	
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	0.92	0.68	1.32	0.27	0.22	0.02
	1.08	0.65	0.64	0.54	0.68	1.62
STD. DEVIATIONS	0.84	0.57	1.01	0.46	0.34	0.04
	0.75	0.44	1.01	0.61	0.84	0.82
RUNOFF						
TOTALS	0.393	0.262	0.771	0.077	0.103	0.000
	0.563	0.215	0.433	0.323	0.402	1.029
STD. DEVIATIONS	0.505	0.276	0.728	0.203	0.212	0.000
	0.455	0.263	0.789	0.495	0.635	0.655
EVAPOTRANSPIRATION						
TOTALS	0.553	0.459	0.549	0.227	0.113	0.038
	0.334	0.450	0.245	0.248	0.274	0.560
STD. DEVIATIONS	0.391	0.288	0.374	0.292	0.134	0.061
	0.290	0.313	0.246	0.149	0.255	0.363
PERCOLATION FROM LAYER 3						
TOTALS	0.0110	0.0100	0.0110	0.0106	0.0109	0.0106
	0.0109	0.0109	0.0106	0.0109	0.0105	0.0109
STD. DEVIATIONS	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005
	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005

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AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 20

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	8.62 (2.416)	373577.	100.00
RUNOFF	4.571 (1.654)	198089.	53.02
EVAPOTRANSPIRATION	4.050 (1.064)	175501.	46.98
PERCOLATION FROM LAYER 3	0.1287 (0.0058)	5579.	1.49
CHANGE IN WATER STORAGE	-0.129 (0.225)	-5592.	-1.50

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	(INCHES)	(CU. FT.)
PRECIPITATION	2.56	110933.3
RUNOFF	2.416	104707.7
PERCOLATION FROM LAYER 3	0.0004	16.5
SNOW WATER	0.00	0.0

MAXIMUM VEG. SOIL WATER (VOL/VOL)	0.1823
MINIMUM VEG. SOIL WATER (VOL/VOL)	0.1395

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FINAL WATER STORAGE AT END OF YEAR 20

LAYER	(INCHES)	(VOL/VOL)
1	2.06	0.1718
2	1.68	0.1400
3	227.26	0.2367
SNOW WATER	0.00	

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HELP MODEL RUN
WITH IMPERMEABLE CAP
YEARS 13-32

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CAVE CREEK LANDFILL
FINAL COVER DRAIN TEST FOR YEARS 13-32 DRN32.OUT
09/01/93

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                    LAYER  1
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           VERTICAL PERCOLATION LAYER
THICKNESS                        =     12.00 INCHES
POROSITY                         =      0.3000 VOL/VOL
FIELD CAPACITY                   =      0.2000 VOL/VOL
WILTING POINT                    =      0.1400 VOL/VOL
INITIAL SOIL WATER CONTENT       =      0.2000 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY =      0.000000000000 CM/SEC


                    LAYER  2
                    --------

           VERTICAL PERCOLATION LAYER
THICKNESS                        =     12.00 INCHES
POROSITY                         =      0.3000 VOL/VOL
FIELD CAPACITY                   =      0.2000 VOL/VOL
WILTING POINT                    =      0.1400 VOL/VOL
INITIAL SOIL WATER CONTENT       =      0.1493 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY =      0.005299999844 CM/SEC


                    LAYER  3
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           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       =      0.2425 VOL/VOL
SATURATED HYDRAULIC CONDUCTIVITY =      0.000199999995 CM/SEC
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GENERAL SIMULATION DATA

SCS RUNOFF CURVE NUMBER	=	95.00
TOTAL AREA OF COVER	=	520000. SQ FT
EVAPORATIVE ZONE DEPTH	=	18.00 INCHES
UPPER LIMIT VEG. STORAGE	=	5.4000 INCHES
INITIAL VEG. STORAGE	=	3.2958 INCHES
INITIAL SNOW WATER CONTENT	=	0.0000 INCHES
INITIAL TOTAL WATER STORAGE IN SOIL AND WASTE LAYERS	=	236.9916 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	9.15	396500.	100.00
RUNOFF	6.950	301166.	75.96
EVAPOTRANSPIRATION	2.976	128947.	32.52
PERCOLATION FROM LAYER 3	0.1647	7139.	1.80
CHANGE IN WATER STORAGE	-0.940	-40753.	-10.28
SOIL WATER AT START OF YEAR	236.99	10269636.	
SOIL WATER AT END OF YEAR	236.05	10228884.	
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	8.93	386967.	100.00
RUNOFF	7.353	318631.	82.34
EVAPOTRANSPIRATION	1.504	65180.	16.84
PERCOLATION FROM LAYER 3	0.1632	7073.	1.83
CHANGE IN WATER STORAGE	-0.090	-3918.	-1.01
SOIL WATER AT START OF YEAR	236.05	10228884.	
SOIL WATER AT END OF YEAR	235.96	10224966.	
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	9.37	406033.	100.00
RUNOFF	7.379	319763.	78.75
EVAPOTRANSPIRATION	2.064	89426.	22.02
PERCOLATION FROM LAYER 3	0.1617	7007.	1.73
CHANGE IN WATER STORAGE	-0.235	-10162.	-2.50
SOIL WATER AT START OF YEAR	235.96	10224966.	
SOIL WATER AT END OF YEAR	235.73	10214804.	
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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	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	11.05	478833.	100.00
RUNOFF	8.793	381031.	79.57
EVAPOTRANSPIRATION	2.177	94335.	19.70
PERCOLATION FROM LAYER 3	0.1607	6962.	1.45
CHANGE IN WATER STORAGE	-0.081	-3495.	-0.73
SOIL WATER AT START OF YEAR	235.73	10214804.	
SOIL WATER AT END OF YEAR	235.65	10211309.	
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

ANNUAL TOTALS FOR YEAR 5

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	8.66	375267.	100.00
RUNOFF	6.561	284294.	75.76
EVAPOTRANSPIRATION	2.179	94439.	25.17
PERCOLATION FROM LAYER 3	0.1588	6880.	1.83
CHANGE IN WATER STORAGE	-0.239	-10346.	-2.76
SOIL WATER AT START OF YEAR	235.65	10211309.	
SOIL WATER AT END OF YEAR	235.41	10200963.	
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

ANNUAL TOTALS FOR YEAR 6

RUNOFF	6.023	260996.	72.48
EVAPOTRANSPIRATION	2.287	99104.	27.52
PERCOLATION FROM LAYER 3	0.1573	6817.	1.89
CHANGE IN WATER STORAGE	-0.157	-6817.	-1.89
SOIL WATER AT START OF YEAR	235.41	10200963.	
SOIL WATER AT END OF YEAR	235.25	10194146.	
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	6.13	265633.	100.00
RUNOFF	4.538	196662.	74.04
EVAPOTRANSPIRATION	1.592	68972.	25.96
PERCOLATION FROM LAYER 3	0.1559	6756.	2.54
CHANGE IN WATER STORAGE	-0.156	-6756.	-2.54
SOIL WATER AT START OF YEAR	235.25	10194146.	
SOIL WATER AT END OF YEAR	235.09	10187389.	
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	10.34	448067.	100.00

PERCOLATION FROM LAYER 3	0.1549	6714.	1.50
CHANGE IN WATER STORAGE	-0.155	-6714.	-1.50
SOIL WATER AT START OF YEAR	235.09	10187389.	
SOIL WATER AT END OF YEAR	234.94	10180675.	
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 9

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	5.72	247867.	100.00
RUNOFF	4.195	181765.	73.33
EVAPOTRANSPIRATION	1.525	66102.	26.67
PERCOLATION FROM LAYER 3	0.1531	6636.	2.68
CHANGE IN WATER STORAGE	-0.153	-6637.	-2.68
SOIL WATER AT START OF YEAR	234.94	10180675.	
SOIL WATER AT END OF YEAR	234.79	10174039.	
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	13.65	591500.	100.00
RUNOFF	10.193	441697.	74.67
EVAPOTRANSPIRATION	3.457	149803.	25.33

SOIL WATER AT START OF YEAR	234.79	10174039.	
SOIL WATER AT END OF YEAR	234.63	10167461.	
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	5.72	247867.	100.00
RUNOFF	3.682	159549.	64.37
EVAPOTRANSPIRATION	1.958	84851.	34.23
PERCOLATION FROM LAYER 3	0.1505	6521.	2.63
CHANGE IN WATER STORAGE	-0.070	-3054.	-1.23
SOIL WATER AT START OF YEAR	234.63	10167461.	
SOIL WATER AT END OF YEAR	234.56	10164407.	
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	11.35	491833.	100.00
RUNOFF	8.621	373570.	75.95
EVAPOTRANSPIRATION	2.809	121730.	24.75
PERCOLATION FROM LAYER 3	0.1496	6482.	1.32
CHANGE IN WATER STORAGE	-0.230	-9948.	-2.02

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 13

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	13.47	583700.	100.00
RUNOFF	9.969	431984.	74.01
EVAPOTRANSPIRATION	3.501	151716.	25.99
PERCOLATION FROM LAYER 3	0.1479	6408.	1.10
CHANGE IN WATER STORAGE	-0.148	-6408.	-1.10
SOIL WATER AT START OF YEAR	234.33	10154459.	
SOIL WATER AT END OF YEAR	234.19	10148050.	
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	7.94	344067.	100.00
RUNOFF	5.979	259078.	75.30
EVAPOTRANSPIRATION	1.944	84239.	24.48
PERCOLATION FROM LAYER 3	0.1466	6354.	1.85
CHANGE IN WATER STORAGE	-0.129	-5604.	-1.63
SOIL WATER AT START OF YEAR	234.19	10148050.	
SOIL WATER AT END OF YEAR	234.06	10142446.	

ANNUAL WATER BUDGET BALANCE	0.00	0.	0.00

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ANNUAL TOTALS FOR YEAR 15

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	8.26	357933.	100.00
RUNOFF	5.517	239068.	66.79
EVAPOTRANSPIRATION	2.760	119615.	33.42
PERCOLATION FROM LAYER 3	0.1454	6300.	1.76
CHANGE IN WATER STORAGE	-0.163	-7050.	-1.97
SOIL WATER AT START OF YEAR	234.06	10142446.	
SOIL WATER AT END OF YEAR	233.89	10135397.	
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	7.38	319800.	100.00
RUNOFF	5.250	227490.	71.14
EVAPOTRANSPIRATION	2.084	90328.	28.25
PERCOLATION FROM LAYER 3	0.1445	6264.	1.96
CHANGE IN WATER STORAGE	-0.099	-4281.	-1.34
SOIL WATER AT START OF YEAR	233.89	10135397.	
SOIL WATER AT END OF YEAR	233.79	10131115.	
SNOW WATER AT START OF YEAR	0.00	0.	
SNOW WATER AT END OF YEAR	0.00	0.	

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ANNUAL TOTALS FOR YEAR 17

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	7.98	345800.	100.00
RUNOFF	5.544	240259.	69.48
EVAPOTRANSPIRATION	2.481	107523.	31.09
PERCOLATION FROM LAYER 3	0.1429	6194.	1.79
CHANGE IN WATER STORAGE	-0.189	-8177.	-2.36
SOIL WATER AT START OF YEAR	233.79	10131115.	
SOIL WATER AT END OF YEAR	233.61	10122939.	
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 18

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	7.47	323700.	100.00
RUNOFF	4.924	213381.	65.92
EVAPOTRANSPIRATION	2.546	110319.	34.08
PERCOLATION FROM LAYER 3	0.1418	6143.	1.90
CHANGE IN WATER STORAGE	-0.142	-6143.	-1.90
SOIL WATER AT START OF YEAR	233.61	10122939.	
SOIL WATER AT END OF YEAR	233.46	10116796.	
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	4.87	211033.	100.00
RUNOFF	3.420	148195.	70.22
EVAPOTRANSPIRATION	1.403	60814.	28.82
PERCOLATION FROM LAYER 3	0.1406	6092.	2.89
CHANGE IN WATER STORAGE	-0.094	-4068.	-1.93
SOIL WATER AT START OF YEAR	233.46	10116796.	
SOIL WATER AT END OF YEAR	233.37	10112728.	
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 20

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	6.67	289033.	100.00
RUNOFF	5.247	227352.	78.66
EVAPOTRANSPIRATION	1.415	61313.	21.21
PERCOLATION FROM LAYER 3	0.1398	6059.	2.10
CHANGE IN WATER STORAGE	-0.131	-5692.	-1.97
SOIL WATER AT START OF YEAR	233.37	10112728.	
SOIL WATER AT END OF YEAR	233.24	10107036.	
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	0.92	0.68	1.32	0.27	0.22	0.02
	1.08	0.65	0.64	0.54	0.68	1.62
STD. DEVIATIONS	0.84	0.57	1.01	0.46	0.34	0.04
	0.75	0.44	1.01	0.61	0.84	0.82
RUNOFF						
TOTALS	0.623	0.437	1.015	0.154	0.153	0.005
	0.815	0.390	0.546	0.410	0.536	1.324
STD. DEVIATIONS	0.679	0.429	0.859	0.337	0.277	0.023
	0.589	0.350	0.933	0.567	0.751	0.757
EVAPOTRANSPIRATION						
TOTALS	0.332	0.238	0.304	0.130	0.061	0.021
	0.227	0.276	0.106	0.115	0.153	0.285
STD. DEVIATIONS	0.249	0.158	0.194	0.153	0.069	0.032
	0.184	0.161	0.123	0.084	0.125	0.174
PERCOLATION FROM LAYER 3						
TOTALS	0.0129	0.0118	0.0129	0.0125	0.0129	0.0125
	0.0129	0.0129	0.0124	0.0128	0.0124	0.0128
STD. DEVIATIONS	0.0007	0.0006	0.0007	0.0006	0.0007	0.0006
	0.0007	0.0007	0.0006	0.0007	0.0006	0.0007

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AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 20

	(INCHES)		(CU. FT.)	PERCENT
PRECIPITATION	8.62	(2.416)	373577.	100.00
RUNOFF	6.409	(1.973)	277728.	74.34
EVAPOTRANSPIRATION	2.248	(0.626)	97410.	26.07
PERCOLATION FROM LAYER 3	0.1516	(0.0079)	6569.	1.76
CHANGE IN WATER STORAGE	-0.188	(0.184)	-8130.	-2.18

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	(INCHES)	(CU. FT.)
PRECIPITATION	2.56	110933.3
RUNOFF	2.533	109753.8
PERCOLATION FROM LAYER 3	0.0005	19.7
SNOW WATER	0.00	0.0

MAXIMUM VEG. SOIL WATER (VOL/VOL) 0.1831

MINIMUM VEG. SOIL WATER (VOL/VOL) 0.1400

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FINAL WATER STORAGE AT END OF YEAR 20

LAYER	(INCHES)	(VOL/VOL)
1	1.74	0.1446
2	1.69	0.1411
3	229.81	0.2394
SNOW WATER	0.00	

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HELP MODEL RUN WITH IMPERMEABLE CAP YEARS 33-50

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CAVE CREEK LANDFILL
FINAL COVER DRAIN TEST FOR YEARS 33-52 DRN52.OUT
09/01/93

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                        LAYER  1
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                VERTICAL PERCOLATION LAYER
  THICKNESS                         =    12.00 INCHES
  POROSITY                          =     0.3000 VOL/VOL
  FIELD CAPACITY                    =     0.2000 VOL/VOL
  WILTING POINT                     =     0.1400 VOL/VOL
  INITIAL SOIL WATER CONTENT        =     0.1718 VOL/VOL
  SATURATED HYDRAULIC CONDUCTIVITY  =     0.000000000000 CM/SEC


                        LAYER  2
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                VERTICAL PERCOLATION LAYER
  THICKNESS                         =    12.00 INCHES
  POROSITY                          =     0.3000 VOL/VOL
  FIELD CAPACITY                    =     0.2000 VOL/VOL
  WILTING POINT                     =     0.1400 VOL/VOL
  INITIAL SOIL WATER CONTENT        =     0.1411 VOL/VOL
  SATURATED HYDRAULIC CONDUCTIVITY  =     0.005299999844 CM/SEC


                        LAYER  3
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                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        =     0.2394 VOL/VOL
  SATURATED HYDRAULIC CONDUCTIVITY  =     0.000199999995 CM/SEC
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GENERAL SIMULATION DATA

SCS RUNOFF CURVE NUMBER	=	95.00
TOTAL AREA OF COVER	=	520000. SQ FT
EVAPORATIVE ZONE DEPTH	=	18.00 INCHES
UPPER LIMIT VEG. STORAGE	=	5.4000 INCHES
INITIAL VEG. STORAGE	=	2.9082 INCHES
INITIAL SNOW WATER CONTENT	=	0.0000 INCHES
INITIAL TOTAL WATER STORAGE IN SOIL AND WASTE LAYERS	=	233.5788 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	9.15	396500.	100.00
RUNOFF	6.950	301166.	75.96
EVAPOTRANSPIRATION	2.588	112155.	28.29
PERCOLATION FROM LAYER 3	0.1384	5998.	1.51
CHANGE IN WATER STORAGE	-0.527	-22820.	-5.76
SOIL WATER AT START OF YEAR	233.58	10121749.	
SOIL WATER AT END OF YEAR	233.05	10098929.	
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	8.93	386967.	100.00
RUNOFF	7.353	318631.	82.34
EVAPOTRANSPIRATION	1.504	65180.	16.84
PERCOLATION FROM LAYER 3	0.1373	5950.	1.54
CHANGE IN WATER STORAGE	-0.064	-2795.	-0.72
SOIL WATER AT START OF YEAR	233.05	10098929.	
SOIL WATER AT END OF YEAR	232.99	10096134.	
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	9.37	406033.	100.00
RUNOFF	7.379	319763.	78.75
EVAPOTRANSPIRATION	2.064	89426.	22.02
PERCOLATION FROM LAYER 3	0.1362	5902.	1.45
CHANGE IN WATER STORAGE	-0.209	-9057.	-2.23
SOIL WATER AT START OF YEAR	232.99	10096134.	
SOIL WATER AT END OF YEAR	232.78	10087077.	
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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	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	11.05	478833.	100.00
RUNOFF	8.793	381031.	79.57
EVAPOTRANSPIRATION	2.177	94335.	19.70
PERCOLATION FROM LAYER 3	0.1355	5871.	1.23
CHANGE IN WATER STORAGE	-0.055	-2404.	-0.50
SOIL WATER AT START OF YEAR	232.78	10087077.	
SOIL WATER AT END OF YEAR	232.72	10084673.	
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

ANNUAL TOTALS FOR YEAR 5

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	8.66	375267.	100.00
RUNOFF	6.561	284294.	75.76
EVAPOTRANSPIRATION	2.179	94439.	25.17
PERCOLATION FROM LAYER 3	0.1340	5809.	1.55
CHANGE IN WATER STORAGE	-0.214	-9276.	-2.47
SOIL WATER AT START OF YEAR	232.72	10084673.	
SOIL WATER AT END OF YEAR	232.51	10075397.	
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

ANNUAL TOTALS FOR YEAR 6

RUNOFF	6.023	260996.	72.48
EVAPOTRANSPIRATION	2.287	99104.	27.52
PERCOLATION FROM LAYER 3	0.1330	5763.	1.60
CHANGE IN WATER STORAGE	-0.133	-5763.	-1.60
SOIL WATER AT START OF YEAR	232.51	10075397.	
SOIL WATER AT END OF YEAR	232.38	10069634.	
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	6.13	265633.	100.00
RUNOFF	4.538	196662.	74.04
EVAPOTRANSPIRATION	1.592	68972.	25.96
PERCOLATION FROM LAYER 3	0.1320	5718.	2.15
CHANGE IN WATER STORAGE	-0.132	-5718.	-2.15
SOIL WATER AT START OF YEAR	232.38	10069634.	
SOIL WATER AT END OF YEAR	232.24	10063917.	
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	10.34	448067.	100.00

PERCOLATION FROM LAYER 3	0.1313	5689.	1.27
CHANGE IN WATER STORAGE	-0.131	-5690.	-1.27
SOIL WATER AT START OF YEAR	232.24	10063917.	
SOIL WATER AT END OF YEAR	232.11	10058227.	
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	5.72	247867.	100.00
RUNOFF	4.195	181765.	73.33
EVAPOTRANSPIRATION	1.525	66102.	26.67
PERCOLATION FROM LAYER 3	0.1299	5630.	2.27
CHANGE IN WATER STORAGE	-0.130	-5630.	-2.27
SOIL WATER AT START OF YEAR	232.11	10058227.	
SOIL WATER AT END OF YEAR	231.98	10052597.	
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	13.65	591500.	100.00
RUNOFF	10.193	441697.	74.67
EVAPOTRANSPIRATION	3.457	149803.	25.33

SOIL WATER AT START OF YEAR	231.98	10052597.	
SOIL WATER AT END OF YEAR	231.85	10047011.	
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	5.72	247867.	100.00
RUNOFF	3.682	159549.	64.37
EVAPOTRANSPIRATION	1.958	84851.	34.23
PERCOLATION FROM LAYER 3	0.1279	5544.	2.24
CHANGE IN WATER STORAGE	-0.048	-2078.	-0.84
SOIL WATER AT START OF YEAR	231.85	10047011.	
SOIL WATER AT END OF YEAR	231.81	10044933.	
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	11.35	491833.	100.00
RUNOFF	8.621	373570.	75.95
EVAPOTRANSPIRATION	2.809	121730.	24.75
PERCOLATION FROM LAYER 3	0.1273	5517.	1.12
CHANGE IN WATER STORAGE	-0.207	-8983.	-1.83

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 13

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	13.47	583700.	100.00
RUNOFF	9.969	431984.	74.01
EVAPOTRANSPIRATION	3.501	151716.	25.99
PERCOLATION FROM LAYER 3	0.1260	5460.	0.94
CHANGE IN WATER STORAGE	-0.126	-5461.	-0.94
SOIL WATER AT START OF YEAR	231.60	10035950.	
SOIL WATER AT END OF YEAR	231.47	10030489.	
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	7.94	344067.	100.00
RUNOFF	5.979	259078.	75.30
EVAPOTRANSPIRATION	1.944	84239.	24.48
PERCOLATION FROM LAYER 3	0.1251	5420.	1.58
CHANGE IN WATER STORAGE	-0.108	-4669.	-1.36
SOIL WATER AT START OF YEAR	231.47	10030489.	
SOIL WATER AT END OF YEAR	231.37	10025820.	

ANNUAL WATER BUDGET BALANCE	0.00	0.	0.00

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ANNUAL TOTALS FOR YEAR 15

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	8.26	357933.	100.00
RUNOFF	5.517	239068.	66.79
EVAPOTRANSPIRATION	2.760	119615.	33.42
PERCOLATION FROM LAYER 3	0.1241	5379.	1.50
CHANGE IN WATER STORAGE	-0.141	-6129.	-1.71
SOIL WATER AT START OF YEAR	231.37	10025820.	
SOIL WATER AT END OF YEAR	231.22	10019690.	
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	7.38	319800.	100.00
RUNOFF	5.250	227490.	71.14
EVAPOTRANSPIRATION	2.084	90328.	28.25
PERCOLATION FROM LAYER 3	0.1236	5354.	1.67
CHANGE IN WATER STORAGE	-0.078	-3372.	-1.05
SOIL WATER AT START OF YEAR	231.22	10019690.	
SOIL WATER AT END OF YEAR	231.15	10016318.	
SNOW WATER AT START OF YEAR	0.00	0.	
SNOW WATER AT END OF YEAR	0.00	0.	

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ANNUAL TOTALS FOR YEAR 17

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	7.98	345800.	100.00
RUNOFF	5.544	240259.	69.48
EVAPOTRANSPIRATION	2.481	107523.	31.09
PERCOLATION FROM LAYER 3	0.1223	5301.	1.53
CHANGE IN WATER STORAGE	-0.168	-7283.	-2.11
SOIL WATER AT START OF YEAR	231.15	10016318.	
SOIL WATER AT END OF YEAR	230.98	10009035.	
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 18

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	7.47	323700.	100.00
RUNOFF	4.924	213381.	65.92
EVAPOTRANSPIRATION	2.546	110319.	34.08
PERCOLATION FROM LAYER 3	0.1214	5262.	1.63
CHANGE IN WATER STORAGE	-0.121	-5262.	-1.63
SOIL WATER AT START OF YEAR	230.98	10009035.	
SOIL WATER AT END OF YEAR	230.86	10003773.	
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	4.87	211033.	100.00
RUNOFF	3.420	148195.	70.22
EVAPOTRANSPIRATION	1.403	60814.	28.82
PERCOLATION FROM LAYER 3	0.1206	5224.	2.48
CHANGE IN WATER STORAGE	-0.074	-3200.	-1.52
SOIL WATER AT START OF YEAR	230.86	10003773.	
SOIL WATER AT END OF YEAR	230.78	10000574.	
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 20

	(INCHES)	(CU. FT.)	PERCENT
PRECIPITATION	6.67	289033.	100.00
RUNOFF	5.247	227352.	78.66
EVAPOTRANSPIRATION	1.415	61313.	21.21
PERCOLATION FROM LAYER 3	0.1200	5201.	1.80
CHANGE IN WATER STORAGE	-0.112	-4833.	-1.67
SOIL WATER AT START OF YEAR	230.78	10000574.	
SOIL WATER AT END OF YEAR	230.67	9995740.	
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	0.92	0.68	1.32	0.27	0.22	0.02
	1.08	0.65	0.64	0.54	0.68	1.62
STD. DEVIATIONS	0.84	0.57	1.01	0.46	0.34	0.04
	0.75	0.44	1.01	0.61	0.84	0.82
RUNOFF						
TOTALS	0.623	0.437	1.015	0.154	0.153	0.005
	0.815	0.390	0.546	0.410	0.536	1.324
STD. DEVIATIONS	0.679	0.429	0.859	0.337	0.277	0.023
	0.589	0.350	0.933	0.567	0.751	0.757
EVAPOTRANSPIRATION						
TOTALS	0.312	0.238	0.304	0.130	0.061	0.021
	0.227	0.276	0.106	0.115	0.153	0.285
STD. DEVIATIONS	0.202	0.158	0.194	0.153	0.069	0.032
	0.184	0.161	0.123	0.084	0.125	0.174
PERCOLATION FROM LAYER 3						
TOTALS	0.0110	0.0100	0.0110	0.0106	0.0109	0.0106
	0.0109	0.0109	0.0106	0.0109	0.0105	0.0109
STD. DEVIATIONS	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005
	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005

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AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 20

	(INCHES)		(CU. FT.)	PERCENT
PRECIPITATION	8.62	(2.416)	373577.	100.00
RUNOFF	6.409	(1.973)	277728.	74.34
EVAPOTRANSPIRATION	2.229	(0.608)	96570.	25.85
PERCOLATION FROM LAYER 3	0.1287	(0.0058)	5579.	1.49
CHANGE IN WATER STORAGE	-0.145	(0.102)	-6300.	-1.69

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	(INCHES)	(CU. FT.)
PRECIPITATION	2.56	110933.3
RUNOFF	2.533	109753.8
PERCOLATION FROM LAYER 3	0.0004	16.5
SNOW WATER	0.00	0.0

MAXIMUM VEG. SOIL WATER (VOL/VOL)	0.1616
MINIMUM VEG. SOIL WATER (VOL/VOL)	0.1400

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FINAL WATER STORAGE AT END OF YEAR 20

LAYER	(INCHES)	(VOL/VOL)
1	1.74	0.1446
2	1.68	0.1400
3	227.26	0.2367
SNOW WATER	0.00	

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